

# An innovation's perceived advantage

A combination of adopter characteristics and innovation attributes



Karlijn Morsink

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attributes**

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**Photograph on title page:**

The photograph on the title page was taken in Navalli. This girl walked from village Uni uphill to bring the families' empty gas-cylinder to Navalli. Uni is an off-road village, five kilometres downhill. Village Navalli is a

village on the road. Drivers of taxi's will take her empty cylinder to a bigger city where it can be refilled at the gas office. Tonight a full cylinder has to be taken back to Uni.

## **Executive summary**

In international policy making a strong rationale exists for promoting the development of small rural enterprises as a key contributor to poverty reduction. A central aspect in this promotion is the transfer of technology to increase productivity and competitiveness. A lot of resources are provided to promote access to modern energy sources as an input for further technological development. This research will show that the adoption of modern energy is not only influenced by adopters' access to modern energy. The ability to attract demand for the products of enterprises is an important determinant as well.

This research will consider the adoption of modern energy from the viewpoint of the adoption of innovations. One of the most prominent frameworks used for analyzing innovation-adoption is Rogers' (1995) theory of the diffusion of innovations. One of the explanatory variables which Rogers' describes is the relative advantage of increased efficiency of an innovation which is both determined by the characteristics of adopters and the characteristics of innovations. This research will combine social participation as a characteristic of an entrepreneur with the demand for the enterprise's products. This combination may lead to the adoption of modern energy because it creates a relative advantage.

The geographical area where the research will be performed is the state of Uttaranchal in India. This research focuses on the following research question: 'How and why does the social participation of an entrepreneur in Uttaranchal, India influence the adoption of an innovation'. Rogers' theory is used to develop a model which encompasses the relationship between social participation and the adoption of modern energy through including the demand for the enterprise's products as an intervening variable.

An explanatory qualitative case study is done in which entrepreneurs are interviewed based on a semi-structured questionnaire. For the purpose of triangulation, these data will be supplemented by participant observation, focus groups and documentation.

The results show that an entrepreneur's social participation may influence the adoption of modern energy because social participation may provide customers for the enterprise which increases the demand for the enterprise's products. A larger demand for the enterprises products may cause a need for increased efficiency of the energy source so the entrepreneur can sell more products. It was found that the relationship can be strengthened by looking for rival explanations in cases which do not confirm this relationship. It can be concluded that other factors may

be the decisive factor for entrepreneurs not to adopt modern energy but the demand for the enterprise's product is always considered in the decision to adopt modern energy.

## Nederlandse samenvatting

Internationale beleidsmakers besteden veel aandacht aan het stimuleren van de ontwikkeling van kleine bedrijfjes in afgelegen gebieden omdat het een bijdrage levert aan het verminderen van armoede. Deze aandacht wordt vaak gericht op het verspreiden van technologieën omdat het de productiviteit en competitiviteit van deze enterprises kan vergroten. Toegang tot moderne energie wordt gezien als een belangrijke stimulans voor verdere technologische ontwikkeling. In dit onderzoek zal naar voren komen dat de adoptie van modern energie niet alleen wordt beïnvloed door betere toegang tot moderne energie. De vaardigheid van een entrepreneur om de vraag naar de producten van een enterprise te vergroten is ook zeker van belang.

Dit onderzoek zal de adoptie van moderne energie benaderen door het te beschouwen als een adoptie van een innovatie. Een van de prominentste theorieën die worden gebruikt om de adoptie van innovaties te begrijpen is de theorie van Rogers (1995) over de diffusie van innovaties. Eén van de verklarende variabelen die Rogers (1995) beschrijft is het relatieve voordeel van verhoogde efficiency van een innovatie. Dit relatieve voordeel wordt volgens Rogers bepaald door kenmerken van de adopter in combinatie met de kenmerken van een innovatie. In dit onderzoek zal sociale participatie als een kenmerk van een entrepreneur worden gecombineerd met de vraag naar de producten van de enterprise. Deze combinatie kan leiden tot een relatief voordeel waardoor een entrepreneur besluit om zijn energie bron te innoveren.

Het geografische gebied waar dit onderzoek is uitgevoerd is de Indiase staat Uttaranchal. De onderzoeksvraag is daarom als volgt gedefinieerd: Hoe en waarom beïnvloedt de sociale participatie van een entrepreneur in Uttaranchal, India de adoptie van modern energie? De theorie van Rogers (1995) is gebruikt om een model te ontwikkelen waarin de relatie tussen sociale participatie wordt verklaard door de vraag naar de producten van de enterprise te gebruiken als interveniërende variabele.

Een verklarende, kwalitatieve casestudy is gedaan waarin entrepreneurs zijn geïnterviewd met behulp van een semi-gestructureerde vragenlijst. Met het doel de betrouwbaarheid en validiteit van het onderzoek te vergroten zijn naast deze interviews ook observatie, focus groepen en documentatie gebruikt voor de dataverzameling.

De resultaten laten zien dat de sociale participatie van een entrepreneur de adoptie van moderne energie kan beïnvloeden omdat sociale participatie klanten kan opleveren voor de enterprise. Het grotere aantal klanten kan ervoor zorgen dat de entrepreneur een grotere vraag ervaart waardoor een hogere efficiency van moderne energie de entrepreneur kan stimuleren om moderne energie te gebruiken. Door andere verklaringen te zoeken voor relaties die de veronderstelde relatie tegenspreken wordt

deze relatie versterkt. Er kan geconcludeerd worden dat andere factoren de beslissende factor kunnen zijn voor een entrepreneur om moderne energie te gebruiken maar de vraag naar de producten van de enterprise wordt altijd meegenomen.

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## **Preface**

Once there was a girl, who started out for a quest to find the truth. She carried a scientific model and her own perception of reality. Both were founded on the past, the scientific model guided by previous research and her own perception of reality guided by the concepts which she was used to reason from and the emotions which lead to their construction.

During the first episode of the quest she stepped into a world, realizing that the model and her perception of reality were crushed by the different present she entered. Both had to be redesigned. Every place she visited, every face she saw, every conversation she had and every relationship she built, simultaneously shaped their development. The scientific model shaped her perception and the perception fed the construction of her scientific understanding.

In the second episode she stepped back into her own world. A new world. A world not shaped by realities but by people's perceptions of them. She acknowledged a different reality in her, in you, in me and in everybody around us.

For the purpose of finding a truth, the final episode demanded her to construct a scientific model. A universal truth which encompasses people's different perceived realities so it can guide people's future actions.

Therefore she had to leave all the personal lessons she had learnt from every place, every face, every conversation and every relationship.

Distancing from her own perception of reality....her method to give sense to the world.

Karlijn

Poem without title  
Rabindranath Tagore  
(7 mei 1861 - 7 augustus 1941)

*"Through death and sorrow  
there dwells peace  
in the heart of the Eternal.  
Life's current flows without cease,  
the sunlight and starlights  
carry the smile of existence  
and springtime its songs.*

*Waves rise and fall,  
the flowers blossom and fade  
and my heart yearns for its place  
at the feet of the Endless."*

*"I have felt your muffled steps in my blood,  
Evermoving Past,  
have seen your hushed countenance  
in the heart of the garrulous day.*

*You have come to write the unfinished  
stories of our fathers in unseen script  
on the pages of our destiny;  
You lead back to life the unremembered  
designs  
for the shaping of new images.*

*Is not the restless Present itself a crowd  
of your own visions  
Flung up like a constellation from the abyss  
of dumb night?"*

*" You ask me, mother, where I most wish  
to go. It is there from where I  
first came to you. But I never can  
remember the place.  
My father smiles at my trouble and says,  
"It is beyond the clouds in the land  
of the evening star".  
But I hear from you, it is deep in the  
bosom of the earth, from where the  
flowers come away seeking the sun.  
"That land lies unseen," my auntie says,  
"in the bottom of the seas, hiding*

*all the precious gems in its store."  
My brother pulls my hair and says, "How  
can you find it, you stupid one, for  
it is mingled in the air."  
It must be everywhere, it seems to me  
when I listen to you all.  
Only my school-master shakes his head  
and says- "It is nowhere."*

*"Once again I wake up when the night has  
waned,  
when the world opens all its petals once more,  
and this is an endless wonder.  
Vast islands have sunk in the abyss  
unnamed,  
stars have been beggared of the last flicker  
of their light,  
countless epochs have lost their loadings.  
World-conquerors have vanished into the  
shadow of a name  
behind dim legends,  
great nations raised their towers of triumph  
as a mere offering to the unappeasable  
hunger of the dust.  
Among this dissolving crowd of the  
discarded  
my forehead receives the consecration of  
light,  
and this is an endless wonder.  
I stand for another day with the  
Himalayas,  
with constellations of stars.  
I am here where in the surging sea-waves  
the infuriate dance of the Terrible  
is rhythmical with his boisterous laughter.  
The centuries on which have flashed up  
and foundered  
kingly crowns like bubbles  
have left their signature on the bark of  
this aged tree,  
where I am allowed to sit under its ancient  
shade for one more day,  
and this is an endless wonder."*

# Chapter 1: Introduction

## 1.1 Background

In international policy making a strong rationale exists for promoting the development of small rural enterprises as a key contributor to poverty reduction. A central aspect in this promotion is the transfer of technology to increase productivity and competitiveness.

Johannesburg World Summit on Sustainable Development 2002, Plan on Implementation (UN 2002):

*"To strengthen the contribution of industrial development to poverty eradication, financial and technological support has to be provided to rural communities of developing countries to enable them to benefit from safe and sustainable livelihood opportunities in small scale enterprises."*

An important enabling factor for promoting the use of new technologies is the adoption of modern energy sources. Most literature confirms that improved energy access to modern energy services has led to an increase in enterprise's activities due to increased efficiency or variation in productive uses (Barnes, 1998, Meadows, 2003, Karekezi et al, 2002, Fakira 1994, Etcheverry 2003). Attention is therefore focused to promoting the uptake of modern energy.

Millenium Development Goals Plan of Action (UN 2005):

*"The availability of jobs, productivity increases or economic opportunities is severely limited without access to modern energy services and fuels- which can catalyse the creation of micro enterprises, livelihood activities beyond daylight hours and locally owned businesses"*

United Nations Industrial Development Organization, 2006: (UNIDO 2006):

*"Improved industrial energy efficiency can be a major contributor to improved competitiveness, which is itself a key contributor to poverty reduction."*

One thing is clear: Modern energy aids development. Then why do not all entrepreneurs, who have access to modern energy, adopt it? Pachauri and Spreng (2003) explain that physical access to energy and energy using end-use equipment is a prerequisite. However, real access to energy services can be limited by the purchasing power of the household, the cost of energy and the cost of energy using equipment (Pachauri and Spreng, 2003, p. 5). Kooijman-van Dijk (2005) explains that access to modern energy is just one factor influencing entrepreneurs' decision to use modern energy. One of the most important factors is the demand for an enterprise's products. The demand may lead to a relative advantage, such

as increased efficiency, comfort or quality. These are the motivations of entrepreneurs to choose for modern energy or the energy end-use equipment which these modern energy sources make possible (Kooijman-van Dijk, 2005: 5).

This is in line with literature about the uptake of any technology in general, which states that the adoption of technology is spurred by market opportunity or demand-pull (Kamien and Schwartz, 1982, Scherer, 1982, Cohen and Levin, 1989, Cohen, 1995).

An explanation for the fact that not all entrepreneurs who have access to modern energy, adopt it, may thus be related to the demand for their enterprise's products. In this respect, demand can not be considered as a fixed value but as a determinant of the ability of the entrepreneur to reach customers as well as the demand and supply in the market. As Hollifield (2003) states: *"To be economical, there must be demand, but there must be access to generate demand."*

## **1.2 Problem definition**

This research tries to understand why some entrepreneurs use modern energy while others don't. The demand for the enterprise's products may explain this. Demand for the enterprise's products is both determined by the ability of the entrepreneur to attract customers as well as the demand and supply in the market. The ability of the entrepreneur to attract customers can be classified as a characteristic of the entrepreneur while the demand and supply in the market are related to the type of product which the energy source helps to produce. To understand the reasons why entrepreneurs choose modern energy it is possible to view the adoption of modern energy as an innovation. A great deal of literature is available which offers a framework for understanding the adoption of an innovation. One of the most prominent frameworks used is Rogers' (1995) theory of the diffusion of innovations. Rogers (1995) defines an innovation as an idea, practice or object that is perceived as new by an individual or other unit of adoption. Rogers describes five variables which influence the adoption of an innovation. These are: the perceived attributes of an innovation, the type of innovation-decision, the communication channels used, the extent of change agents' promotion efforts and the nature of the social system (Rogers, 1995: 207).

According to Rogers, the diffusion literature indicates that much effort has been spent in studying the characteristics of different adopters in innovativeness but that relatively little effort has been devoted to combining these with the properties of an innovation. Rogers explains that these properties can be very important in understanding people's reactions to innovations because they can be modified by the way the innovation is given shape (Rogers, 1995: 204).

These properties of an innovation are reflected in Rogers' variable: the perceived attributes of the innovation. Rogers explains that from 49 – 87 percent of the variance in the rate of adoption is explained by this variable (Rogers, 1995: 206).

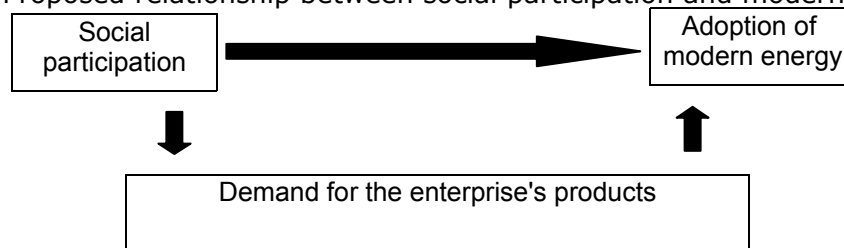
The perceived attributes of the innovation consist of a component which is determined by the factual characteristics of the innovation but the adjective perceived sheds light on the subjectivity due to characteristics of the entrepreneur (Rogers, 1995:209).

In this research, the demand for the enterprise's products is considered as an perceived attribute of the innovation. As was mentioned before, this is subject to the ability of the entrepreneur to reach customers and the demand and supply for the product in the market. The ability of the entrepreneur to reach customers depends on the strategies which are used for advertisement, networking etc. Landry et al (2002) explain that one important factor influencing the ability to attract sufficient customers is social participation. Since the scope of this research is a bachelor's assignment this research will focus on social participation.

This research will imply that an important reason for entrepreneurs to adopt modern energy is that they experience a demand for the enterprise's products. An important factor influencing this demand is the ability of the entrepreneur to attract customers and this is influenced by the entrepreneur's social participation. For international policy makers this means that investing in access to modern energy is just one side of the story. It is just as important to create demand for the enterprise's products. This can be influenced both by increasing the abilities of entrepreneurs to attract customers through social participation and by investing in the creation of markets.

Figure 1 shows the proposed relationship between social participation, the demand for the enterprise's products and the adoption of modern energy.

Figure 1: Proposed relationship between social participation and modern energy adoption



### 1.3 Research strategy

For this research a deductive approach will be used. Theory about the adoption of innovations will be used to develop an analytical framework and select units. Also during the fieldwork, theory will be used to increase the validity and achieve saturation. The results will be followed by analytical generalisations and a search for rival explanations to try and make a contribution to theory.

## **1.4 Research questions**

Since this research is performed in the light of a bachelor's assignment the geographical area of research is limited to the state of Uttaranchal in India.

This research will focus on the following research question:

'How and why does the social participation of an entrepreneur in Uttaranchal, India influence the adoption of modern energy?'

The sub-questions derived from this are:

1. How can the relationship between an entrepreneur's social participation and the adoption of modern energy be explained by Rogers' theory of the diffusion of innovations?
2. How can Rogers' theory be operationalized to research the relationship between an entrepreneur's social participation and the adoption of modern energy?
3. How does the social participation of an entrepreneur in Uttaranchal, India, influence the adoption of modern energy, in practice?

## **1.5 Research design**

An explanatory qualitative case study will be done (Yin, 2003). The aim of this research is to conduct an in-depth investigation of the relationship between variables at a specific instance and location. According to Yin (2002) the qualitative case study is an appropriate method for empirical research when the phenomena being studied cannot be easily separated from their organizational context. This is the case when entrepreneurs' characteristics are researched, in the light of their social participation and the demand for the entrepreneurs products. Case studies are preferred when "how" and "why" questions are being posed and when the focus is on a contemporary phenomenon with some real-life context, when the investigator has little control over the events (Yin, 2003).

## Chapter 2: Theory and concepts

*"One of the greatest pains to human nature is the pain of a new idea. It...makes you think that after all, your favorite notions may be wrong, your firmest beliefs ill-founded... Naturally, therefore, common men hate a new idea, and are disposed more or less to ill-treat the original man who brings it."*  
- Walter Bagehot (1872) *Physics and Politics*

In 2.1 the concepts will be defined which are related to the understanding of the research question. In 2.2 an analytical framework will be developed which will be conceptualized in 2.3.

### 2.1 Concepts

Since this research analyses the adoption of modern energy in enterprises from the viewpoint of innovations, the concepts of innovation, enterprise and energy source will first be defined.

#### 2.1.1 Innovation

Rogers (1995) explains that an innovation is an idea, practice or object that is perceived as new by an individual or other unit of adoption. In this research an innovation will be considered as the implementation of a technology which has not been used in the enterprise before.

#### 2.1.2 Enterprise

An enterprise will be considered as an entity in which an entrepreneur is doing something for somebody else, who is voluntarily willing to pay for it. In this research an enterprise is considered in the light of activities of innovation. Therefore it is important to distinguish between people doing labour and entrepreneurs. Labour is described as performing activities against a fixed wage per time unit. In this case the person performing the value addition does not have a possibility to increase his/her income through, for example, increased efficiency or customer satisfaction. Entrepreneurs get paid according to the amount of products or services they deliver to their customers. Through increased efficiency or customer satisfaction they can increase their profit.

#### 2.1.3 Energy source

Barnett (2000) describes that traditional energy sources can be distinguished from modern energy sources such as electricity, coal, oil and gas. The characteristics of modern energy are that they are in some senses more convenient. Barnett describes this convenience as more energy per unit volume, easier storage or distribution or more efficient at doing useful work.



Karakezi, Lata and Coelho (2004) refer to traditional energy sources as being immediately ready for combustion. Examples are wood, charcoal, leaves, agriculture residue, animal/human waste. The use of these sources is often very inefficient. Modern energy sources have been converted from traditional sources into advanced sources as gas, liquid fuels and electricity (Karakezi, Lata and Coelho, 2004: 3).

Water power can not be categorized according to these definitions. Therefore it will be categorized as a traditional energy source because it is immediately ready for use (as are the other traditional energy sources) and is often less efficient compared to using diesel or electricity for the same purpose. In table 1 this classification is presented.

Table 1: Classification of traditional and modern sources of energy

Traditional energy sources	Animal labour, Agricultural residue, Dung, Human labour, Wood, Leaves, Charcoal, Water
Modern energy sources	Electricity, Oil, Gas, Diesel, Kerosene

#### 2.1.4 Energy source and energy end-uses

Generally speaking people innovate for a reason. The difficulty with innovations in energy sources is that it is not the energy source itself why people choose to adopt it but what can be done with this energy. Barnett (2000: 5 ) describes these as energy-end uses:

*"energy-end uses include cooking, lighting, heating, static and mobile shaft power and, services such as communications and entertainment.....Converting energy from one form to another has a cost. This means that the cost of **"useful energy"** can be quite different from the cost of the "primary energy" or fuel. This is why energy specialists increasingly refer to the provision of **"energy services"** rather than merely the supply of **"energy"**".*

In this research the difference will be made between the energy source and the energy-end use. Both may explain the adoption of modern energy. An example of the influence of the 'energy source' is that an entrepreneur may decide to use gas because it is more efficient in comparison to kerosene. An example of the influence of the energy-end use is that an entrepreneur chooses to use a machine which runs from electricity because it is more efficient than a machine on manual labour.

## 2.2 Rogers' theory of the diffusion of innovations

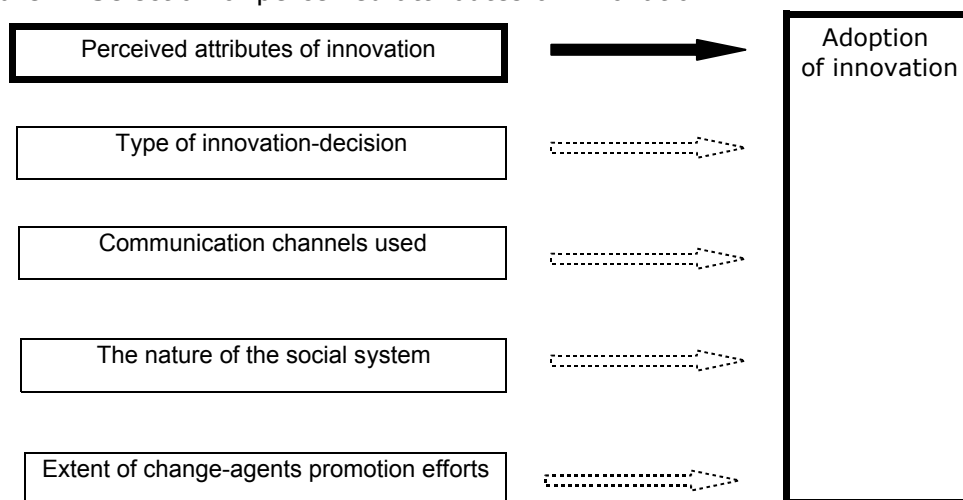
The rate of adoption of an innovation is the relative speed with which an innovation is adopted by members of a social system. In general it is measured as the number of individuals who adopt a new idea in a specific period, such as each year (Rogers, 1995: 206). This means that the rate of adoption is influenced by people adopting an innovation but also by people rejecting an innovation. In addition, the rate of adoption considers

the spread of an innovation over time. This research does not focus on the adoption of modern energy by a predefined group of people but on the adoption of modern energy by an individual, in this case an entrepreneur. Therefore this research will not talk about a 'rate' of adoption but will distinguish among entrepreneurs who use modern energy and have thus adopted modern energy and entrepreneurs who use traditional energy and have thus rejected modern energy.

### 2.2.1 Perceived attributes of innovation: combination of adopter and innovation

In his model for the diffusion of innovations, Rogers (1995) includes five variables which explain the adoption. These variables are the perceived attributes of innovations, the type of innovation-decision, the communication channels used to diffuse an innovation, the extent to which change agents have promoted the innovation and the nature of the social system (Rogers, 1995: 207). This research will consider the perceived attributes of the innovation because this makes it possible to view the demand for the enterprise's products as subject to the social participation of an entrepreneur. Figure 2 shows the selection of the variable perceived attributes of an innovation from the five variables which, according to Rogers, influence the adoption of an innovation.

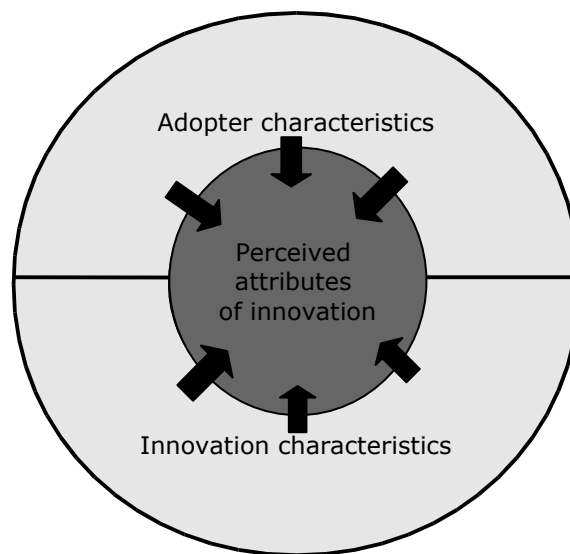
Figure 2: Selection of perceived attributes of innovation



### 2.2.2 Perceived attribute of an innovation: relative advantage

There are five perceived attributes of an innovation. They consist of a component which is determined by the factual characteristics of the innovation but the adjective perceived sheds light on the subjectivity due to characteristics of the adopter. Figure 3 shows how the combination of characteristics of an innovation and the characteristics of an adopter lead to the perceived attributes of the innovation.

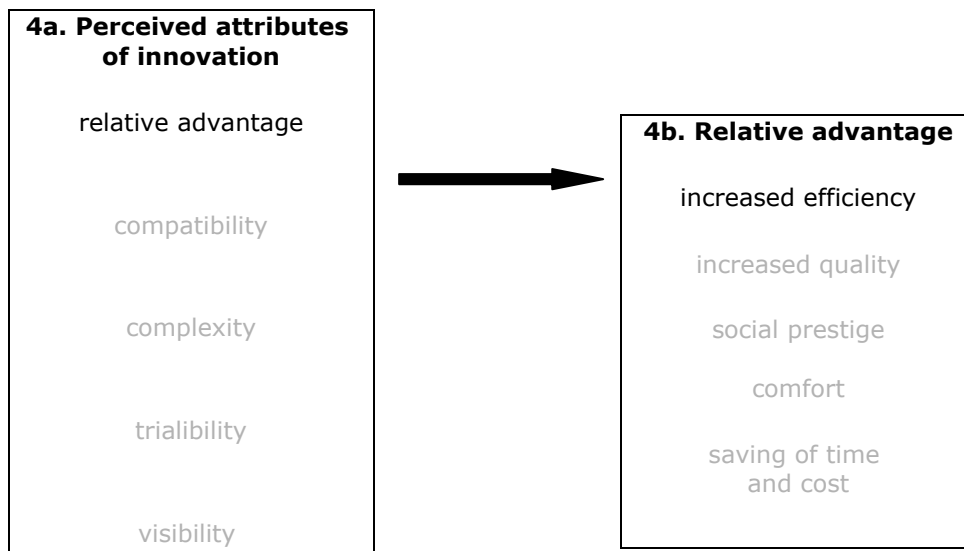
Figure 3: Characteristics of the innovation and the adopter determine the perceived attributes of an innovation



The combination of the factual attributes with the characteristics of adopters leads to the following motivations for adopting or rejecting an innovation: the relative advantage, compatibility, complexity, trialability and visibility. Rogers (1995) explains that diffusion research has found that the relative advantage is one of the best predictors of an innovation's rate of adoption. For the feasibility of this research the relative advantage will be chosen as the perceived attribute of an innovation. Figure 4, part 4a, shows the selection of relative advantage from the perceived attributes of the innovation.

The relative advantage is the degree to which an innovation is perceived, by an individual, as better than the idea it supersedes. The relative advantage can be increased efficiency, quality, comfort, social prestige, saving of time and cost or other benefits (Rogers, 1995: 212-216). Since this research is a bachelor's assignment only the increased efficiency will be included because this can be directly related to an increase in demand for the similar product. Figure 4, part 4b, shows the selection of increased efficiency from the other possible relative advantages which an adopter can experience. Comfort and social prestige tend to be more related to the intrinsic motivations of entrepreneurs. Saving of cost and time do not directly influence the demand because only additional actions, based on these savings, can influence demand. Increased quality might be directly related to demand but it can be questioned to what extent this is an increase for the demand in a similar product. It may attract a larger part of the potential customers from the previous market but it may also attract new customers from other markets. In this case increased quality can be considered as a product innovation.

Figure 4: The selection of the relative advantage of increased efficiency from the perceived attributes of an innovation



### 2.2.3 Adopter characteristic: social participation

*"It is hardly possible to overrate the value...of placing human beings in contact with persons dissimilar to themselves, and with modes of thought and action unlike those with which they are familiar.... Such communication has always been, and is peculiarly in the present age, one of the primary sources of progress."* - John Stuart Mill (1848)

Rogers(1995) does not directly link characteristics of adopters to the perceived attributes of the innovation even though he explains that a combination of characteristics of an adopter and characteristics of the innovation are very important in explaining adoption (Rogers, 1995: 204-206). In his theory he describes several characteristics of adopters which may influence the relative advantage. Since the scope of this research is a bachelor's assignment one of these characteristics will be chosen.

Social participation is part of the social capital of an individual. Woolcock and Narayan (2000) explain that during the 1990s the contribution of social capital to development has experienced an increase of attention in development thinking. It is thought that social capital makes an important contribution to risk and vulnerability reduction, which are important variables in explaining the adoption of innovations (Rogers, 1995). In addition Woolcock and Narayan stress that research on social capital is still in its early stages (Woolcock, 2000: 19). Landry et al. (2002) have found that social participation contributes more than any other social

variable to the likelihood of innovation (Landry et al, 2002: 682). Therefore this research will consider the social participation of an adopter.

## **2.3 Conceptualization**

### **2.3.1 Conceptualizing social participation and the adoption of modern energy**

#### *Social participation*

Rogers (1995) confirms a relationship between social participation and the adoption of an innovation. He states that earlier adopters have more social participation than later adopters. Rogers does not offer a systematic method for analysing the social participation of adopters.

Lindstrom et al. (2003) explain that social participation is the degree to which people are engaged in formal and informal activities. Lindstrom et al. explain that this can be measured by asking respondents to what extent they are engaged in formal and informal activities (Lindstrom et al, 2003: 274).

#### *Adoption of modern energy*

If entrepreneurs use modern energy sources they are considered to have adopted modern energy. If entrepreneurs use traditional energy sources they are considered to have rejected modern energy sources.

It can be hypothesized that:

*"If entrepreneurs engage more in formal and informal activities, they are more likely to use modern energy."*

### **2.3.2 Conceptualizing demand for the enterprise's products and relative advantage**

#### *Relative advantage*

As was mentioned in 2.1.6 the adoption of modern energy is motivated through the advantages which the energy source or the energy end-use offers. The advantage of increased efficiency is therefore guided by the efficiency of the energy source or energy end-use.

Efficiency will be defined as input versus output.

$$\text{Efficiency : } \frac{\text{Input}}{\text{Output}}$$

Since this research considers increased efficiency of modern energy in the light of the demand for the enterprise's products, efficiency will be defined as producing more products in a similar time span. In section 2.2.2 it was mentioned that producing the same amount of products in the shortest

possible time span refers to a motivation of cost reduction and this will not be considered. Therefore input will be considered fixed because the research considers varying output (the amount of products). Increased efficiency will thus be defined as an increase in the amount of products which the enterprise is able to produce in a similar time span.

As was mentioned in 2.1.2 a modern energy source offers greater efficiency but the degree to which this increased efficiency is beneficial for the entrepreneur depends on the demand for the enterprise's products.

#### *Demand for the enterprise's products*

The demand for the enterprise's products is both determined by the consumer demand in the market as well as the enterprise's strategies. Kotler (2000) describes the demand in the consumer market as the total volume which is bought by consumers of a defined group within a defined geographical area, period and market environment. The size of the market is determined by the number of potential customers. However the number of potential customers in the market is not directly related to the demand for the enterprise's products. This is also subject to the ability of the entrepreneur to attract customers. The demand for the enterprise's products will therefore be assessed at the level of the entrepreneur. In relation to the production of the entrepreneur two situations in the demand can be distinguished. In the first case, the number of potential customers in the market can be larger than what the entrepreneur supplies. In the second case the number of potential customers can be equal to or smaller than what the entrepreneur supplies.

If the number of potential customers is larger than what the entrepreneur supplies he can increase the number of products which he sells by producing more. He may adopt modern energy because it offers him increased efficiency.

If the number of potential customers is equal to or smaller than what the entrepreneur supplies he can not sell more products by producing more. Therefore the demand for his products does not lead him to experience an incentive to adopt modern energy because of increased efficiency.

It can therefore be hypothesized that

*" If the number of potential customers is larger than what the entrepreneur supplies he may adopt modern energy because he can increase the amount of products which he sells by increasing efficiency ."*

*" If the number of potential customers is equal to or smaller than what the entrepreneur supplies he will not adopt modern energy because he can not increase the amount of products which he sells by increasing efficiency."*

### 2.3.3 Conceptualizing social participation and the demand for the enterprise's products

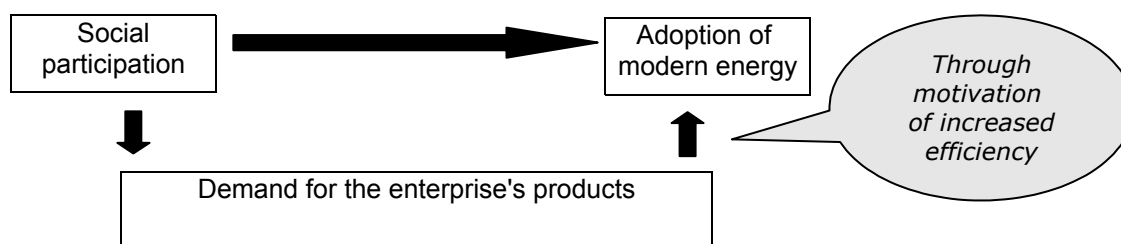
It is hypothesized that there is a positive relationship between social participation and the adoption of modern energy and it is hypothesized that if the demand for the enterprise's products is larger than the supply, he may adopt modern energy. If the demand for the enterprise's products explains the relationship between social participation and the adoption of modern energy, there has to be a positive relationship between an entrepreneur's social participation and the demand for the enterprise's products.

It is therefore hypothesized that:

*"If an entrepreneur engages more in formal and informal activities he is more likely to experience a demand for his products which is larger than what he supplies."*

The hypotheses mentioned in 2.3.1-2.3.3 are combined in the model presented in figure 5.

Figure 5: Relationship between social participation and the adoption of modern energy



## Chapter 3: Methodology

*"Be not the first by who the new is tried, nor the last to lay the old aside."*

*-Alexander Pope (1711) An Essay on Criticism, Part II*

The research method that will be used is based on Yin.

Yin (1989) uses the following steps:

1. Research questions
2. Development of a theoretical framework
3. Units of analysis
4. Logic for linking data to theoretical framework
5. Criteria for interpreting findings
6. Case study
7. Theory building through analytic generalisation, looking for rival explanations

### 3.1 Research questions

This research will focus on the following research question:

'How and why does the social participation of an entrepreneur in Uttaranchal, India influence the adoption of modern energy?'

The sub-questions derived from this are:

1. How can the relationship between an entrepreneur's social participation and the adoption of modern energy be explained by Rogers' theory of the diffusion of innovations?
2. How can Rogers' theory be operationalized to research the relationship between an entrepreneur's social participation and the adoption of modern energy?
3. How does the social participation of an entrepreneur in Uttaranchal, India, influence the adoption of modern energy, in practice?

The relationship between the independent variable, social participation, and the dependent variable, adoption of modern energy, will be described.

### 3.2 Development of a theoretical framework.

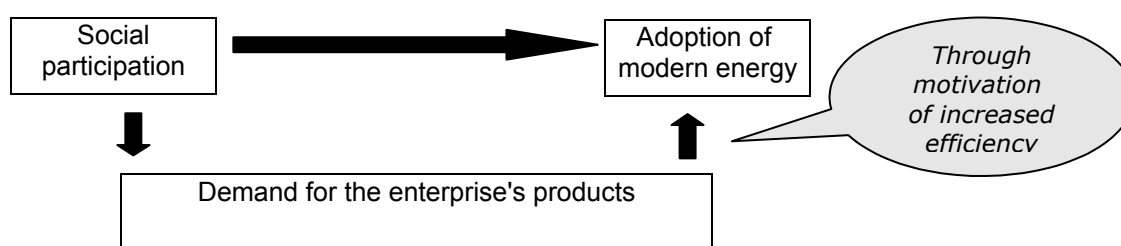
For understanding the relationship between social participation and the adoption of modern energy Rogers' (1995) model of the diffusion of innovations will be used. In this research the innovation is modern energy. Rogers explains that the perceived attributes of an innovation influence the adoption of innovations. The perceived attributes of an innovation consist of a component which is determined by the characteristics of the adopter, in this research the social participation of an entrepreneur and by the factual attribute of the innovation, in this case the demand for the enterprise's products. Rogers (1995) describes the relative advantage as a perceived attribute of an innovation. This research will consider the relative advantage of increased efficiency. By involving the intervening



variable of the demand for the enterprise's products the relationship between adoption of modern energy will be explained. To do this three relationships will be researched:

1. The relationship between social participation and the adoption of modern energy.
2. The relationship between the demand for the enterprise's products and the adoption of modern energy.
3. The relationship between social participation and the demand for the enterprise's products

Figure 6: Relationship between social participation and the adoption of modern energy



### 3.3 Units of analysis

As was mentioned in section 1.4, an explanatory qualitative case study will be done in the state of Uttaranchal in India. In this study a multiple-case design will be used because it will strengthen the results through pattern-matching and increase the internal validity of the research (Yin, 1994). The units of analysis in this research are entrepreneurs.

Practical constraints, such as time and money, lead to the decision to limit the analysis to entrepreneurs within the tiny and small rural industry in Uttaranchal in India. The objective of this research is to understand why entrepreneurs adopt or reject modern energy. This objective was developed to make a contribution to the understanding of poverty eradication, by promoting the adoption of modern energy in small enterprises. A first criterion is that the research area has to include enterprises with and without modern energy. The second criterion is that the area should include small enterprises and based on Chadha (2003) it was concluded that these are most prevalent in rural areas.

India was chosen because it seemed to be a good sample with variation in social participation because Indian society is characterized by essential differences between (groups of) people (Chadha, 2003). Rogers (1995) explains that the differences between groups may be essential in understanding why some people adopt and others reject innovations.

The state of Uttaranchal in India was chosen because this is a mountainous state with mostly rural areas. Uttaranchal used to be a remote area with low energy development, partly because of this it became a separate state in 2000. Since then many investments have been made to promote the uptake of modern energy but there are still many advancements to be made in energy promotion. The chance of

finding both enterprises which are using modern as well as traditional energy sources was therefore considered to be high.

### **3.3.1 Selection of units**

Following the choice for a case study Yin (1989) stresses the importance of purposive sampling. In this research, stratified, multi-stage purposive sample is used to decrease the chance of intervening variables. Patton gives a list of sampling methods which will all be used in selecting the units (Patton, 1990: 182-183). Fortuijn explains that this will serve the aim of triangulation of data (Fortuijn, 2004).

In total 43 enterprises were selected in 16 village clusters in two districts of Uttaranchal. The first stage of the multi-stage purposive sampling consists of the selection of two districts within the state of Uttaranchal based on their geographical characteristics. Almora district was chosen as a mountainous region and Dehradun as a region in the plains, at the border with the mountains.

The second stage consists of the selection of village clusters within both districts. Porter (1998: 78) defines clusters as geographic concentrations of interconnected companies and institutions in a particular field. Village clusters were selected based on their location, on the size of the market, on their interconnectedness with other markets and on the characteristics of energy sources.

The third stage of the multi-stage purposive sampling consists of the selection of enterprises within the village clusters. For selecting the enterprises it is important that they represent the theoretical possible variation in the phenomenon under research (Glaser and Strauss (1967)). Enterprises are selected based on their size, the industry, the energy source, the energy service, their market access.

The sampling was done based on the information of Non-Governmental Organizations (NGOs)<sup>1</sup>, government officials, villagers and entrepreneurs. The complete process of selection of units can be found in appendix 8

### **3.4 Logic for linking data to analytical framework.**

Although Rogers (1995) states that a relationship exists between the variable social participation and the adoption of modern energy, he does not give explanations for this. The variable social participation is thus conceptualized based on Lindstrom's definition of social participation (Lindstrom et al, 2003, Lindstrom, 2000). He defines social participation as the engagement in formal and informal activities.

In addition, Rogers (1995) does not shed light on the influence of the demand for the enterprise's products on the adoption of innovation. Kotler's (2000) definition of market demand is used to define the demand in the market but the analysis is done to understand the demand for the enterprise's products. Therefore two types of demand at the level of the enterprise are distinguished. In the first case demand exceeds supply in

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<sup>1</sup>Non-Governmental Organization. In the Indian definition this is an independent organization which focusses its attention to social issues such as protection of environment, health issues, development issues or human rights.

the second case demand equals or is smaller than supply. This relationship is explained by Rogers' explanation of the influence of increased efficiency on the adoption of an innovation.

### **3.4.1 Local concepts based on research area**

For the feasibility of this research the research will focus on the tiny and small rural industry in Uttaranchal, India. The motivation for this decision can be found in chapter 3. As Yin (1989) explains, it is important to use local definitions for concepts and indicators and this is especially important in this research because the Indian concept of industry is essentially different from our Western concept.

#### *Enterprise and farming*

Especially in rural areas in India it is important to separate income generation through farming from other non-farm income generating activities by enterprises. Farm income generation will be defined as selling agricultural products or animals directly from the land without adding additional value by making the products go through a production process. Any other activity producing income in an enterprise will be considered non-farm income generation.

#### *Rural industry*

In Uttaranchal the definitions of rural *town*, *roadhead* and *offroad village* are used. These are not defined by their size but by the function they perform in access to products and services. Off road villages are villages without access to a road, the enterprises which are found in these villages serve daily needs for the villagers, such as food and clothing. *Roadheads* are villages which are situated on the road-side. They also serve daily needs but their customers are both villagers and passers-through. Rural towns are also situated on the road side but they serve differentiated, irregular needs for local villages and for villages at distant locations. People from off-road and basic needs occasionally visit these markets for their irregular needs.

#### *Tiny and small industry*

To define the classification of tiny and small rural industry according to measurable variables Chadha (2003) refers to the industrial surveys that have already been performed in India which classify enterprises according to the number of workers in the enterprise. The first classification is the own-account manufacturing enterprises (OAME's). These enterprises are owned and operated without the help of any hired worker, employed on a fairly regular basis. Second, an establishment which employs a total of not more than 5 workers is known as non-directory manufacturing establishment (NDME). Finally, an establishment which employs a total of 6-10 workers is categorized as a directory manufacturing establishment (DME) (Chadha, 2003: 53).

In this research the tiny industry consists of enterprises which are owned and operated without the help of any hired worker, employed on a fairly regular basis (Chadha, 2003: 53). The small industry consists of enterprises which employ a total of not more than five workers (Chadha, 2003: 53).

### **3.5 Criteria for interpreting findings; operationalization.**

According to Lindstrom et al. (2003), the engagement in formal and informal activities can be operationalized by asking respondents to what extent they are engaged in informal and formal activities such as unions, formal organizations, church, night clubs, large gatherings of relatives, private parties, theatre, sports or other activities. Because the engagement in formal and informal activities may be different in the Indian context it is necessary to find out in which activities entrepreneurs take part before assessing how strong their engagement is. The examples of formal and informal activities which Lindstrom et al. (2003) have identified are used as a guide. An entrepreneur's social participation will be assessed through a questionnaire. Their answers will be supplemented by information from focus groups and customers about the entrepreneur. Table 2 presents the operationalization.

Table 2: Operationalization of social participation

Indicator	Operationalization	Questions
1. Respondents engagement in formal and informal activities (Lindstrom et al., 2003).	Engagement in: <ul style="list-style-type: none"> <li>– unions</li> <li>– formal organizations</li> <li>– church</li> <li>– night clubs</li> <li>– private parties</li> <li>– theatre</li> <li>– sports or other activities.</li> <li>– large gatherings of relatives</li> </ul>	<ul style="list-style-type: none"> <li>– At what occasions does the entrepreneur meet groups of people?</li> <li>– How often does the entrepreneur meet groups of people?</li> <li>– Does the entrepreneur visit other cities?</li> <li>– How often does the entrepreneur visit other cities?</li> <li>– Is the entrepreneur a member of a group?</li> <li>– Is the entrepreneur a member of a government organization?</li> <li>– Is the entrepreneur a member of a private organization?</li> </ul>

The different indicators of social participation will be combined to give an impression of the total social participation of the entrepreneur. The scoring of the indicators for social participation will be done based on the activities in which entrepreneurs engage. The method for scoring and the scores of all the individual entrepreneurs are presented in Appendix 9

In this research an entrepreneur has adopted modern energy when he uses modern energy. An entrepreneur has rejected modern energy when he uses traditional energy. The adoption of modern energy will be assessed by observation and by asking entrepreneurs which energy sources they use. The entrepreneurs are also asked to indicate their motivations for adopting or rejecting their energy source. In table 3 the adoption of modern energy is operationalized.



Table 3: Operationalization of the adoption of modern energy

Indicator	Operationalization
The use of modern energy sources.	The entrepreneur uses electricity, oil, gas, diesel, kerosene or other modern energy sources.
The use of traditional energy sources	The entrepreneur uses animal labour, agricultural residue, dung, human labour, wood, leaves, charcoal , water or other traditional energy sources.

The demand for the enterprise's products is separated into two possible values, demand exceeds supply or demand equals or is smaller than supply. The value of the enterprise's demand will be assessed through a questionnaire.

Table 4: Operationalization of the demand for the enterprise's products

Indicator	Operationalization	Questions
Demand exceeding supply	The number of potential customers is larger than what the entrepreneur supplies.	<ul style="list-style-type: none"> <li>Does the entrepreneur ever tell customers that he/she cannot deliver the product? Why?</li> <li>Would the entrepreneur be able to sell more if he produces more? Why?</li> </ul>
Supply exceeding or equaling demand	The number of potential customers is equal to or smaller than what the entrepreneur supplies.	

Based on the operationalization an in-depth, qualitative, semi-structured questionnaire is constructed. (See appendix 1) During the interviews observations of the local translator and researcher will be used to verify the data. Focus-groups and interviews with village leaders are used to embed the entrepreneurs within their context for purposes of verification. Information from government agencies will be used to get information about policies and programmes related to enterprise and energy (See appendix 6: table 21). These will foster understanding of the context and concepts related to social participation, demand and energy sources.

### 3.6 Case study

The case study is based on 43 interviews with entrepreneurs in 16 villages in 2 districts of Uttaranchal, 5 interviews with village leaders, 18 focus groups, participant observation and documentation of NGO files and files from government agencies. This was done over a time period of 6 months. The selection of cases was not done in advance to the case study but was a process designed during the case study based on expert information and observations. The cases were selected based on multiple sampling methods as identified by Patton (1990) to achieve triangulation (see 3.3 Units of analysis).

During the fieldwork indicators appeared which shaped the selection of cases and the research design. Several times during the case study

experts from NGOs and scientific translators were consulted to increase the construct validity of the research (Yin, 1994).

The collected data have been coded with software programme QSR. QSR is a qualitative data analyses programme with which interviews, notes and other qualitative data can be coded based on the important definitions which were identified in advance and during the interview. Both Eisenhardt (1989) and Yin (1989) stress the importance of using local definitions for concepts, selection of cases and indicators. In Appendix 5 the terminology for coding the indicators is described.

After the coding of the data, the programme can be asked to look for relationships between coding categories or find coding relationships within certain documents. For example it is possible to combine the variable 'membership of government' with the variable 'energy source used'. This can be presented in a cross table with rows identifying the variation in membership of government and columns identifying the variation in energy source used. The relationship between the two variables are thus easier to assess.

### **3.7 Theory building through analytic generalisation**

Yin (1994) points out that generalizations of results, from either single or multiple designs, is made to theory and not to populations. This research aims to make a contribution to the understanding of the adoption of modern energy. The three relationships, which were all separately addressed in the research sub-questions are answered. Their answers are combined to given an answer to the question how social participation influences the adoption of modern energy and how this can be explained through the demand for the enterprise's products.

Based on the analyses of validity and reliability and the search for rival explanations the causal relationship will be assessed. This will lead to reflections about the objective and the implementation of the research and the theories used to come to this conclusion. Recommendations will be made for science and for policy makers concerned with the promotion of modern energy.

## Chapter 4: Results

### 4.1 Social participation and adoption of modern energy

#### 4.1.1 Entrepreneurs' engagement in activities

As was mentioned in section 2.4.1, one method for measuring social participation is by asking respondents how often they engage in activities. Based on Lindstrom et al (2003) several indicators of social participation were listed. It was found that the engagement in activities in Uttaranchal, India is different from the engagement in activities in Malmo, Sweden, where Lindstrom et al (2003) performed their research. Table 5, column 2 lists the activities in which the interviewed entrepreneurs take part. Column 3 indicates the amount of entrepreneurs from the entire sample which took part in these activities.

Table 5: Amount of entrepreneurs which engage in several social activities

Activity		Number of entrepreneurs taking part in the activity (total 43)
Social events	Marriages and religious	43
	Visiting market places	42
Government Organization	Member of panchayat <sup>2</sup>	3
	Member of government school	3
	Employee of post office	2
	Member of Sahar-India <sup>3</sup>	2
Private organization	Member of NGO	5
	Member of Trade organization	1
	Member of committee of directors of companies	1
	Member of a music band	1
	Member of a Self Help Group <sup>4</sup>	3

In paragraph 4.1.2 to paragraph 4.1.5 the relationship between engagement in social events and membership of either government organizations or private organizations in relation to the adoption of modern energy will be discussed. Even though the total number of entrepreneurs is 43, not all have indicated their engagement in all formal

<sup>2</sup>A panchayat is a local administrative government unit. The panchayat is made up of a prathan, who is the head of the panchayat, and wardmembers, who are in charge of sub-units within the panchayat. The function of the panchayat is to distribute the money, coming from the state government, according to the needs of the villages.

<sup>3</sup>Sahar-India is an insurance company which holds monthly meetings for its members, to decide about the execution and formulation of policy.

<sup>4</sup>A Self Help Group is a group of people which collectively save money, either for investing in livelihood creation or for insurance purposes.



and informal activities. In case they did not they were left out of the sample for this specific activity. The size of the sample is indicated below the tables.

#### 4.1.2 Frequency of attending marriages and religious functions.

The entrepreneurs were asked to indicate how often they attend marriages. In table 6 the relationship between the frequency of attending a marriage and the type of energy source used is shown. Row 4 shows that entrepreneurs who attend more than 20 marriages a year all use modern energy sources. There is no obvious relationship between a frequency of less than 20 marriages per year and the use of modern energy sources. Chi-square can't be used for assessing a relationship because the expected value of every cell in the table is not 5 or more.

Table 6: Attendance in marriages or religious functions related to the energy source used

Energy source Frequency attending marriage/religious functions	electricity	LPG	diesel	kerosene	Other gas	Upgraded gharat	Traditional energy source
< 10 times per year	2	1	1	-	-	1	7
10-20 times per year	1	1	1	-	1	-	3
> 20 times per year	4	2	1	3	-	-	-

Based on QSR results: frequency of attending marriage near religious functions and energy source, n=26 (MATRIX)

#### 4.1.3 Frequency of going to bigger cities.

The entrepreneurs were asked how often they go to bigger cities. In table 7 the relationship between the frequency of going to bigger cities and the type of energy sources used in the enterprise is shown. Entrepreneurs who go to bigger cities on a weekly or monthly basis seem to use modern energy sources more often than entrepreneurs who go to bigger cities only a few times per year.

Table 7: Frequency of going to bigger cities related to the energy source used

Energy source Frequency of going to bigger cities	electricity	LPG	diesel	kerosene	Other gas	Upgraded gharat	Traditional energy source
On a weekly basis	7	1	4	-	2	2	4
On a monthly basis	5	4	1	3	-	-	3
A few times per year	-	1	-	1	-	-	8

Based on QSR results: frequency of going to bigger cities and energy source, n = 41 (MATRIX)

#### 4.1.4 Membership of government organization.

Entrepreneurs were asked if they were a member of a government organization. Table 8 shows the relationship between membership of a government organization and the energy source used in the enterprise. It is shown that all but two entrepreneurs who are a member of a government organization use modern energy sources. In row 2, 4 and 5 it

is shown that all the entrepreneurs who are, respectively, a member of the panchayat, an employee at the post office or a member of Sahar India use modern energy sources.

Table 8: Relationship between membership of government organization and energy source

Energy source Membership of government organization	electricity	LPG	diesel	kerosene	Other gas	Upgraded gharat	Traditional energy source
Panchayat member	3	1	-	-	-	-	-
Member of government school	-	1	-	-	-	-	2
Employee of post office	1	-	-	1	-	-	-
Member of Sahar India	1	1	-	-	-	-	-
No member	10	2	4	2	2	2	13

Based on QSR results: Membership of government organization near energy source, n = 42 (MATRIX)

#### 4.1.5 Membership of a private organization

Entrepreneurs were asked if they were a member of a private organization. Table 9 shows the relationship between membership of a private organization and the energy source used in the enterprise. It is shown in row 2 and 5 that no obvious relationship exists between membership of an NGO or Self Help Group and the energy source used. Row 3 shows that the entrepreneurs are a member of the committee of directors do use modern energy sources. The entrepreneur who plays in a band also uses modern energy.

Table 9: Relationship between membership of private organization and energy source

Energy source Membership of private organization	electricity	LPG	diesel	kerosene	Other gas	Upgraded gharat	Traditional energy source
NGO	1	1	1	-	-	2	1
Committee of directors of companies	2	1	-	-	1	-	-
Music band	-	-	-	1	-	-	-
Self Help Group	-	-	-	-	-	-	3
No member	13	4	3	2	1	0	10

Based on QSR results: Membership of private organization near energy source, n = 41 (MATRIX)

#### 4.1.6 Total social participation

In paragraph 4.1.2 to 4.1.5 the influence of four separate indicators on the energy source have been discussed. The combination of these indicators will give an indication of an entrepreneur's total social participation. In appendix 9 the method for scoring is explained. The entrepreneurs which did not provide a measure on all the above-mentioned indicators were left out of this sample. This is done because the score in table 10 is calculated by adding the scores for the separate

indicators. From table 10 it becomes clear that entrepreneurs who use traditional energy sources score lower on the social participation.

Table 10: Total score on social participation and the energy source used

Score	0	1	2	3	4	5	6	7	8	Average per entrepreneur
traditional	4	2	2	-	2	-	-	-	-	1.4
modern	-	1	1	5	2	2	-	2	1	4.1

n = 24

#### 4.1.7 Conclusion

An important method for strengthening the reliability of qualitative research would have been the use of chi-square. The prescriptions for using this method are that the expected value of every cell in the table has to be five or more. The total sample of entrepreneurs shows to be too small for achieving this. Therefore, the strength of the conclusions about the the relationship between social participation and the adoption of modern energy is not high. This section will discuss the statistical conclusion validity and rival explanations.

A threat to statistical conclusion validity is the probability that other, intervening variables may explain the relationship between social participation and the adoption of modern energy which is presented in table 10. An example of an intervening variable may be an entrepreneurs available financial capital. When relating financial capital to the social participation score it can be concluded that all the entrepreneurs with poor financial status have a low score on social participation (Appendix QSR results: financial status near social participation score). When relating financial capital to the energy source used it can be concluded that 9 out of 10 entrepreneurs with low financial status use traditional energy sources. It is possible that financial capital accounts for the relationship which has been found.

The relationship, presented in table 7, between more frequent visits to bigger cities does not necessarily reflect more social participation. This also depends on the size of the city in which the enterprise is located. If an entrepreneur is located in a big market he may experience less incentive to go to another big city because he can purchase all the required products in his own market while an entrepreneur in a remote area might have to go to bigger cities frequently.

Table 8 shows that all entrepreneurs which are members of government organizations use modern energy sources except for two. This relationship can be strengthened by concluding that both entrepreneurs do not have their enterprise as their main income source (Appendix1: Kotmil1 and Mantl1). Both entrepreneurs claim that they do not have more time to invest in the enterprise.

The relationship between membership of a government organization and adoption of modern energy, presented in table 8, may (partly) be explained by the fact that all these organizations offer some kind of security of financial capital which may decrease the risk of adopting modern energy. The employees of the post office save money in a bank account of the post office (Appendix1: Chhmil1 and Lanch1). The members of the panchayat have control over the investments within the village (Appendix 1: Ambcp1) and the members of Sahar-India are insured (Appendix1: Pilsw1 and Piltl1). This may present the relationship between social participation and the adoption of modern energy stronger than it is because financial security may be related to social participation and the adoption of modern energy

Table 9 shows that all entrepreneurs which are members of private organizations use modern energy sources except for two. This relationship can be strengthened by concluding that both are members of Self Help Groups (SHGs). SHGs are designed by the government of India to provide the poorest people with decentralized collective insurance so the main members will be the poorest people in communities. The likelihood of this membership to create a substantial increase in demand or in adoption of modern energy is small because these SHGs are within-village groups of the poorest people so their available financial capital is very limited.

The values for total social participation score, which are reflected in table 10, were assigned based on a score on every indicator between 0-2. The above-mentioned threats to validity are thus also reflected in the total score. Another threat in this computation is that all government organizations and private organizations were valued equally. However, it can be hypothesized that membership of a government organization concerned with the promotion of enterprises might be of greater importance for increasing demand than being an employee in a government school.

However, it is impossible to provide them with different scores since their effect on increasing demand is not known.

The frequency of going to marriages and religious functions and to cities, may reflect social participation, but an entrepreneur may also refrain from going to marriages, religious functions and cities because the demand for the enterprise's products is high and he has to work. The high demand can be caused by another variable. The proposed positive relationship between more frequent attendance of marriages, religious functions and cities and the adoption of modern energy and the demand for the enterprise's products may come out less strong because low social participation is combined with high demand. The entrepreneur of a

sweetshop in Pilkholi has stated that he was too busy to go to marriages (Appendix1: Pilsw1).

## 4.2 Demand and the adoption of modern energy.

Table 11 shows that out of all the 14 entrepreneurs which use traditional energy sources 11 enterprises are confronted with demand for their products which is equal to or smaller than what they supply. All these entrepreneurs explain that they don't use modern energy because they cannot sell a higher amount of products which prevents increased efficiency or quality from being a motivation.

Table 11: Demand versus supply related to the energy source used

Energy source	electricity	LPG	diesel	kerosene	Other gas	Upgraded gharat	Traditional energy source
Demand exceeds supply	10	2	2	0	1	0	3
Demand is equal to or smaller than supply	5	3	3	3	1	2	11

QSR results: demand versus supply near energy source, n = 43 (MATRIX)

### 4.2.1 Demand exceeds supply

The following entrepreneurs explain that they use modern energy because their demand is larger than supply and they can meet a larger demand through increasing efficiency or quality.

The entrepreneur of a welding enterprise confirms (Appendix 1: Sahwel1):

*"I use oxygen-gas and carbide for welding thin materials such as iron and silver. Electricity is used for heavy joints."....."The demand in the market is very high so I have hired two workers to increase production"....."My customers are from all over Uttaranchal and they come here to my enterprise. I even have a customer in Bombay"*

A tailor in Sahaspur uses electricity for sewing (Appendix 1: Sahtl1).

*"I have been using electricity for five years. Before that I used manual labour. By using electricity my machines run faster and I can produce more. It is all about the demand which I have to meet why I choose to use electricity"*

A carpenter in Ambiwala explains that they use electricity because the production takes a lot less time. Without a machine one finished product which used to take two months to complete will now take 15 days. He explains that his demand is higher than what he supplies and he is thinking about getting more workers so he can sell more (Appendix 1: Ambcp1).

A shoe-maker in Sahaspur has bought an electrical machine for finishing the rims of shoes because of increased quality and increased efficiency. Before that he used to finish the shoe-rims by hand. This machine does better work because it does qualitatively good finishing and it works much

faster. The entrepreneur explains that this helped him to meet the demand (Appendix 1: Sahsh1).

The entrepreneur of a chai-shop<sup>5</sup> in Langhaf uses kerosene instead of wood because when he uses kerosene he can deliver better quality. He explains that reaching a high temperature by burning wood takes much more time than by burning kerosene. If customers have to wait for their tea they might not have it at all. When there is an immediate requirement for his product he can supply it (Appendix 1: Lanch1).

A tailor in Pilkholi explains (Appendix 1: Piltl1):

*"I use electricity for my interlock machine because it is not possible to make a interlock machine run from manual labour. By using the interlock machine I can hem the rims of clothes. This increases demand."*

#### **4.2.2 Supply exceeds or equals demand**

The following entrepreneurs explain that they use traditional energy because their demand is not large enough that they need to produce more products. Increased efficiency or increased quality would therefore not result in the sale of more products.

A blacksmith in off-road village Karchuli explains that he does not use charcoal or electricity for making his tools because there is no more demand (Appendix 1: Karbl1).

A tailor using manual sewing machines lives in Kotra. Kotra is an on-road, small village with a maximum of 150 families. He says (Appendix 1: Kottl1):

*"I do not change my sewing machines into electrical machines because this is expensive and my demand is not high enough for me too have sufficient money to invest"*

A blacksmith in Navalli explains (Appendix 1: Navbl1):

*"There was never such high demand that it was necessary or required to use a more efficient energy source."*

The entrepreneur of a sweetshop in Navalli explains that the demand for sweets is not higher than what he is currently supplying so there is no need for him to increase the production (Appendix 1: Navsw2).

A tailor in the same village uses a machine on hand labour. He doesn't have a machine on foot labour because these machines are much more expensive. The entrepreneur says that it never happens that he says no to customers. The entrepreneur is working up to demand. His demand is not such that it is worthwhile to invest in a footmachine (Appendix 1: Navtl1).

A miller in Tana explains (Appendix 1: Tanmil1)

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<sup>5</sup> A chai-shop is an Indian tea shop.

*"I don't use electricity because the demand is that large that electricity would be beneficial."*

An entrepreneur of a sweetshop in Langhaf explains (Appendix 1: Lansw1):

*"If the demand would be higher I could produce more by first using kerosene and eventually with really high demand LPG because these are more efficient than wood."*

#### **4.2.3 Conclusion**

The evidence that an entrepreneur's motivation for using modern energy may be that it offers a possibility to sell more products through increased efficiency and the evidence that entrepreneur's motivation for using traditional energy may be that they can't increase their sales, is strong. Even though other motivations may exist for rejecting modern energy, such as a lack of financial capital to invest in modern energy or the reliance on another income source, most entrepreneurs consider a demand for their products as a necessary condition. The search for motivations and rival explanations even strengthens the relationship found in table 11. In three out of the 14 enterprises which use traditional energy, the demand is larger than supply. All three entrepreneurs realize that they could sell more but other factors are hampering the adoption. 2 out of these entrepreneurs have their enterprise as an additional income source, next to their main income sources. The other entrepreneur does not have the financial capital to adopt modern energy. The fact that rival explanations are found for this relationship makes the relationship between demand for the enterprise's products and the adoption of modern energy stronger.

The demand for the enterprise's products is also related to the demand in the market for the product. Kotler (2000) defines the size of the market as the number of potential customers. Especially in India the type of market is essential in explaining the number of potential customers. Kooijman-van Dijk (2005) explains that three types of markets exist in Uttaranchal: off-road basic needs markets, on-road basic needs markets and differentiated markets. It appears that products for off-road basic needs markets are only bought by customers from the off-road village, products for on-road markets by people from the village and passers through and that differentiated markets are markets where local people buy products but many people from basic needs markets come to these markets for differentiated needs. The demand in the market appears to be larger than in the other markets. This is reflected in the fact that modern energy is more prevalent in this market. The type of market may therefore be an important intervening variable.



### 4.3 Social participation and demand

Table 12 presents the relationship between the demand for the enterprise's products and the social participation score. Row three shows that entrepreneurs which have low social participation with scores 0, 1 and 2 all claim that the demand for their products is equal to or smaller than what they supply. Row two shows that three out of four entrepreneurs which have high social participation with scores 7 and 8 explain that their demand exceeds supply.

Table 12: Relationship between demand for enterprise's products and the social participation score

Social participation score	0	1	2	3	4	5	6	7	8
Demand exceeds supply	0	0	0	1	3	1	0	2	1
Demand is equal to or smaller than supply	4	3	2	4	2	0	0	1	0

QSR results: Demand versus supply near social participation score, n = 24 (MATRIX)

A few entrepreneurs confirm a direct relationship between their social participation and the demand for the enterprise's products. The entrepreneur of a fruitprocessing enterprise in Ambiwala explains that she knows people in Delhi and Bombay. They sometimes order jams and squashes from her enterprise. Her husband is a government employee and his department is also a regular customer. In addition she is a member of the Uttaranchal Fruit Processing Association through which she sells products. She explains that the largest part of her income comes from these regular customers (Appendix 1: Ambfr1).

The entrepreneur from a welding enterprise in Sahaspur is Muslim and got into a social scheme from the government of Uttaranchal providing him a loan and support for his enterprise. Following the success of the enterprise, the entrepreneur was subscribed to an exam for welders, organized by the an organization for the promotion of technology. The members from this organization delivered many customers, business and private. (Appendix 1: Sahwel1).

If enterprises which are in the same market and sell a similar product have a different demand this may be related to their social participation. The entrepreneurs of two welding enterprises in the main market of Sahaspur, Mr. Arshad and Mr. Hussein experience a substantial difference in their total sales. While Mr. Hussein has a monthly sales of approximately 50.000 Rs, Mr. Arshad has monthly sales of 1.000.000 Rs. Mr. Arshad explains that he is able to sell to both business and private customers through his contacts with the organization for the promotion of technology (Appendix 1: Sahwel1). Mr. Hussein only sells his products to people who pass by his enterprise (Appendix 1: Sahwel2).

A miller from Tana, an off-road village in the village cluster Pilkholi, explains that the demand for his flour is so small that he only grinds 1 hour per day while a miller from Chamoli, another off-road village in the

village cluster Pilkholi, explains that he grinds approximately 7 hours per day. Most people from Tana also come to this enterprise (Appendix 1: Chamil1 and Tanmil1). After talking to a group of locals it can be concluded that nobody wants to have their wheat grinded by the miller from Tana because he has strange behaviour and nobody wants to be in contact with him (Appendix 1: Tanfocus1).

#### **4.3.1 Conclusion**

The relationship between social participation and the demand for the enterprise's products is directly confirmed by entrepreneurs who explain that they have acquired customers through their membership of organizations. The relationship represented in table 12 can be strengthened by analyzing why the entrepreneur, with a social participation score of 7, has a demand for the enterprise's products which is equal to or smaller than what he supplies. The entrepreneur explains that he is making chai and the demand in the market is low because his village is a small village with a population of 600 people, even though he is the only entrepreneur of a chai-shop in Langhaf (Appendix1: Lanch1 and Lanprathan). Since the characteristics of chai does not make it a product which can be sold in distant markets, the demand is confined to the local market. The entrepreneur also explains that the chai-shop is an additional income source next to his main job as a postmen.

The statistical power of the relationship between total social participation and demand for the enterprise's products is decreased because the entrepreneurs which have a missing value on one of the indicators are kept out of table 12. The sample size therefore decreases which makes the statistical power decrease.

The relationship between social participation and demand for the enterprise's products is not very strong because it was not directly researched how engagement in marriages and functions, visiting bigger cities and membership of organizations has influenced the number of customers of an enterprise.

As was mentioned in section 4.2.3, the demand for the enterprise's products is also related to the demand in the market for the product. Three types of markets are identified in Uttaranchal: off-road basic needs markets, on-road basic needs markets and differentiated markets (Kooijman-van Dijk, 2005). As was concluded from the entrepreneur from the chai shop in Langhaf, social participation may not be of use for acquiring customers if the market for the product is local and the amount of people in the local environment is so small that the demand is not sufficient to adopt modern energy.

## 4.4 Discussion

Even though it was hypothesized that the relationship between social participation influences the adoption of modern energy through the demand for the enterprise's products the relationship may also be inverse. This causes ambiguous temporal precedence (Shadish, Cook and Campbell, 2000:52). An example of this is when the entrepreneur tries to enlarge the market by advertisement or enlarging the geographical area in which he sells. This may directly lead to a substantial increase in the demand for the enterprise's products which may lead to the adoption of modern energy. The investment in marketing may also cause an increase in social participation by travelling to other cities or making new acquaintances.

The threat of unreliability of measures is high because of lack of knowledge of the culture and the language barrier. Even though the case study design was extensively discussed with the translators and local experts it is impossible to understand the manner in which the translator asks the questions. The method of interviewing was through open-questions but several times the entrepreneur did not understand the question and the translator had to rephrase the question. It is possible that he gave leads towards the answers which were given during previous interviews. This may have caused investigator bias. Another language problem is that it is difficult for the researcher to anticipate on questions and answers since the translator may leave phrases from the answer which he does not consider to be important for the research while they are.

Since the researcher was not familiar with the culture some questions might have been sensitive questions for the entrepreneurs. Within the Indian culture objecting to foreigners or people from higher castes is hardly done, especially in rural areas where the caste system plays a more important role in the social organization. The translator may have formulated or changed an answer or the entrepreneur may have not told the truth. An example of this is the negative connotation around financial capital. Entrepreneurs may have been reluctant to admit that they do not have sufficient financial capital to pay for modern energy.

Another problem caused by the language barrier is that it is difficult to have informal conversations and understand the informal talks between villagers, entrepreneurs, customers and workers in the enterprise. This may pose a problem to internal validity since triangulation through participant observation is hampered.

The unfamiliarity with the Indian culture has also caused several threats to internal and construct validity. It takes time to understand concepts as defined by local definitions and the importance of different concepts can differ within different cultures. During the initial stages of the research, constructs and the right questions to understand their values were less understood in comparison to the final stages of the research. The validity

and reliability of the research was therefore increased during the research because constructs were better understood and the best method for reaching the correct value of the constructs gradually developed. This is a threat to reliability of treatment implementation.

An important method which was used to increase the reliability and validity of the research was the use of local translators with a scientific background. Their local knowledge about the villages, local government, characteristics of energy sources, entrepreneurs, activities of NGOs etc. has been a very important source of information. This also made it possible not to only research a moment in time but also look into developments over a longer time period. Their scientific background provided better understanding of methodology and made them assertive in giving information which they considered to be important. Their acquaintance with the local community also made the entrepreneurs feel secure in providing information. Several times entrepreneurs gave as a reason for refusing collaboration that they were scared that the information would end up with the government. A disadvantage of the local translators is that entrepreneurs may have obligations to sharing personal information out of fear that the community would find out about this. This may cause a threat to internal validity. It should be mentioned that the entrepreneur may not mention this information to an outsider either.

According to Yin (1994) the biggest threat to validity in case study research is potential investigator subjectivity. This threatens the construct validity of the conclusions. Yin (1994) has offered three possibilities to decrease or overcome this threat. These are to have a key informant review the case study proposal, acquiring several sources of evidence and establishing a chain of evidence. This research counters potential investigator subjectivity by using multiple cases and triangulation of data, for example in-depth interviews, participant observations, focus-groups and documentation. The case-study proposal has been discussed with local experts such as NGO members and scientifically educated translators.

The fact that only one researcher performed the case studies also harms the validity of the research. Every researcher has his own frame of reference. Especially when being introduced in another culture the experience of the culture and the manner of involvement in the culture may be of great influence.

Another way to counter construct validity is by using local definitions for concepts (Eisenhardt (1989) & Yin (1989)). Local definitions were used in this research to understand concepts. Appendix 5 describes the indicators of the variables based on the local definitions. They were extensively discussed with local experts and compared with existing literature. The software program used for the analysis of the data also requires a careful process of categorization. Especially since only one researcher was

involved in the case study validity may be threatened. An example is the financial status of entrepreneurs. As was mentioned above this is a sensitive issue for entrepreneurs. In some cases the reliability of the answers was questioned and the categorization within the categories identified under financial status wasn't certain. This may have caused a threat to the internal validity.

It should be realized that the importance of the demand for the enterprise's products may be of importance in Uttaranchal because this is a mountainous region. These regions in Uttaranchal are very often characterized by a low population density and difficult access to markets. These characteristics combined with the low economical development cause difficulties for factors as communication, exportation and importation. Therefore the demand for the enterprise's products is often low. The importance of demand for the adoption of modern energy in Uttaranchal may therefore be overvalued in comparison to other geographical regions because demand is very often a barrier for adoption. In other regions, where the number of potential customers is larger this barrier may be of less importance and an entrepreneur's marketing strategies or financial capital may be more important. To decrease the chance of this threat to external validity a district in the plains was chosen next to a district in the mountains. Within the districts, village clusters were identified with different market sizes and different levels off access to bigger markets such as cities and towns. It appears that the percentage of entrepreneurs which use modern energy is much higher in the plains because markets are bigger and more accessible.

Since this is a social science research, it is impossible to separate cases from their organizational context. Many variables are influencing the researched relationship and these variables are not fixed. As is typical for social science research, many relationships found were caused are influenced by intervening variables. To increase the reliability of the relationship pattern matching was used. In total 43 entrepreneurs were interviewed in which the relationship was researched. This increases the reliability of the conclusions. Recognizing similar patterns in decision making related to the adoption of modern of modern energy causes that the modes of thought of entrepreneurs are better understood. This is best represented in the relationship between the demand for the enterprise's products and the adoption of modern energy. This relationship was researched through analysing the motivation for increased efficiency. All entrepreneurs seem to consider that investment in energy sources is only beneficial if this investment can increase their profit. Even though other variables may hamper this relationship, the understanding of this mode of thought strengthens the assumption that demand influences the adoption of energy sources.

## Chapter 5: Conclusions

*"Ideas confine a man to certain social groups and social groups confine a man to certain ideas. Many ideas are more easily changed by aiming at a group than by aiming at an individual."* -Josephine Klein, 1963, *Working with Groups: The Social Psychology of Discussion and Decision*

### 5.1 Conclusion

The research focusses on the following research question:

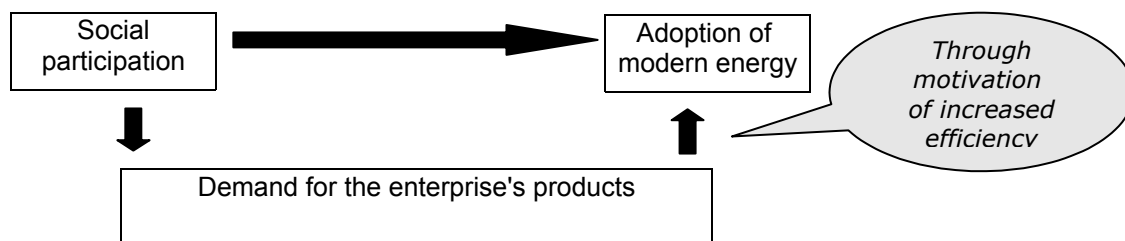
How and why does the social participation of an entrepreneur in Uttaranchal, India, influence the adoption of modern energy?'

The sub-questions derived from this are:

1. How can the relationship between an entrepreneur's social participation and the adoption of modern energy be explained by Rogers' theory of the diffusion of innovations?
2. How can Rogers' theory be operationalized to research the relationship between an entrepreneur's social participation and the adoption of modern energy?
3. How does the social participation of an entrepreneur in Uttaranchal, India, influence the adoption of modern energy, in practice?

In chapter two, Rogers' theory of the diffusion of innovations was used to develop a model to analyse the relationship between social participation and the adoption of modern energy. The relative advantage of increased efficiency was chosen as the perceived attribute of an innovation. This variable is chosen because it offers the possibility to combine the livelihood characteristic of social participation with the demand for the enterprise's products. This relationship is presented in figure 7.

Figure 7: Relationship between social participation and the adoption of modern energy



In chapter three the operationalization of this model is described. Social participation was operationalized through assessing entrepreneur's engagement in marriages, religious functions and government and private organizations. The demand for the enterprise's products was researched through distinguishing among demand which is larger than supply and demand which is equal to or smaller than supply. The adoption of modern energy was described as the use of a modern energy source.

An explanatory qualitative case study design was developed in which interviews with 43 entrepreneurs and 5 village leaders, focus groups, participant observation and documentation were used for the purpose of triangulation of data.

In chapter 4 the results are presented. It was found that a relationship exists between an entrepreneur's social participation and the adoption of modern energy sources. It can be concluded that the higher the social participation of an entrepreneur the higher the likelihood that he uses modern energy.

A relationship between the demand for the enterprise's products and the adoption of modern energy was also confirmed. It is found that if the demand for the enterprise's products is larger than what the entrepreneur supplies he is more likely to adopt modern energy. This relationship is strengthened by investigating entrepreneurs which have a demand which is larger than supply but do not use modern energy. Insufficient financial capital to invest in modern energy may prevent the entrepreneur from being able to adopt modern energy. Unwillingness to innovate is also given as a motivation for not adopting modern energy, this is mostly related to the fact that the entrepreneur has another main income source next to the enterprise on which he/she relies. If the demand for the enterprise's products is smaller than what the entrepreneur supplies he is unlikely to adopt modern energy. This relationship can be understood through the relative advantages of increased efficiency. If the demand is larger than supply the entrepreneur can increase the amount of products which he sells because modern energy has the advantage of delivering increased efficiency. If the demand is smaller or equal to supply the entrepreneur can not increase the amount of products which he sells through increased efficiency.

A relationship between an entrepreneur's social participation and the demand for the enterprise's products was also confirmed by the data. The entrepreneurs with low scores on social participation are more likely to have a demand which is equal to or smaller than they supply. Entrepreneur's with high social participation are more likely to have a demand which is larger than supply. A few entrepreneurs give direct explanations for this relationship. They explain that their membership of organizations provided them with customers for the enterprise's products.

It can therefore be concluded that an entrepreneur's social participation may influence the adoption of modern energy because social participation may provide customers for the enterprise which increases the demand for the enterprise's products. A larger demand for the enterprises products may cause a need for increased efficiency of the energy source so the entrepreneur can sell more products. It was found that the relationship can be strengthened by looking for rival explanations in cases which do

not confirm this relationship. It can be concluded that other factors may be the decisive factor for entrepreneurs not to adopt modern energy but the demand for the enterprise's product is always considered in the decision to adopt modern energy.

## 5.2 Reflections

*"One must learn by doing the thing, for though you think you know it, you have no certainty until you try." - Sophocles, 400 BC*

The objective of this research was to understand how social participation influences the adoption of modern energy and why this can be explained by the demand for the enterprise's products. Strong evidence was found that increased efficiency is an important consideration for entrepreneurs when they decide to adopt modern energy. Direct evidence for a relationship between social participation and the demand was only found with two entrepreneurs, so the objective of explaining the relationship between social participation and adoption of modern energy through the demand is not convincing. However, this is a difficult relationship to confirm based on the information of an entrepreneur because it is not possible to assess if a customer comes to an enterprise because he knows the entrepreneur.

The motivation for the research was based on the attention in international policy making for promoting modern energy as an instrument to reduce poverty alleviation through the stimulation of small scale enterprises. Most policies focus on investment in increased access to modern energy while it appears from this research that a very important factor in explaining the adoption of modern energy is the demand for the enterprise's products. The problem with assessing modern energy as an innovation is that it is not the modern energy itself which brings the advantage but the energy end-uses. Recently a lot of focus is directed toward market driven innovation (7<sup>th</sup> Framework Programme of the European Commission, Hurley and Hult, 1998, Kumar, Scheer and Kotler, 2000 ). This research shows that if the promotion of modern energy is considered from the viewpoint of energy-end uses it provides a much better understanding of motivations for entrepreneurs to adopt modern energy.

As Rogers (1995) states, the attributes of an innovation can be very important in understanding people's reactions to innovations (Rogers, 1995: 204). Rogers (1995) explains that diffusion research has found that the relative advantage is one of the best predictors of an innovation's rate of adoption. This research has combined an entrepreneur's social participation with the demand for the enterprise's product as an attribute of modern energy. Through the relative advantage of increased efficiency this relationship was explained. It was found that the demand for the enterprise's products is important in understanding the adoption of



modern energy and that this demand is influenced by an entrepreneur's social participation.

Rogers (1995) theory made a significant contribution to this understanding because by using the variable of perceived attributes of the innovation it was possible to understand that a relative advantage of increased efficiency, which modern energy is claimed to make (United Nations Industrial Development Organization, 2006, Johannesburg World Summit on Sustainable Development 2002), is not merely an attribute of an innovation but is substantially influenced by other conditions related to the entrepreneur, in this case the demand for the enterprise's products. As Rogers (1995) states, the perceived attributes of an innovation are most important in understanding the adoption of innovations. However, the demand for an enterprise's products is only part of the total attributes of modern energy which may influence adoption and social participation is only part of the total characteristics of an entrepreneur. In addition, increased efficiency is only one of the relative advantages which modern energy may bring. Roger's theory can therefore be very important in understanding possible factors influencing the adoption of innovations but it remains very abstract. If one tries to understand the adoption of a specific innovation this requires a translation of all the abstract factors to all the practical characteristics of the innovation.

The abstract nature of Rogers model has caused enormous problems in drawing conclusions because it involves so much interrelated variables. In addition this problem was enlarged because this research started out with the aim of integrating the two scientific disciplines of business administration and social sciences. Business administration focusses on direct relationships between causal and dependent variables and is much more focussed towards the development of a practical advice while social science is much more focussed on an understanding of interrelated variables and the processes which may explain a causal relationship. The aim of social science is understanding in itself, while the aim of business administration is much more understanding with the aim of practical use. Since their objectives differ an integration of both disciplines can never give a satisfactory result for both.

In advance to the case study a research proposal was developed. Due to the abstract nature of the model in combination with the fact that the researcher had no experience with the research area it was difficult to understand the most important factors related to the research question. Even though the research proposal was extensively discussed with experts in Uttaranchal it took a lot of time to understand the local concepts and the manifestations of social participation, energy sources and demand, in practice. Especially when the research is performed in a location completely unknown to the researcher, it is important to have a narrow defined causal relationship. If additional variables appear to be important during the case study, they can always be integrated into the research.

This is a method of enlarging the causal relationship by including other factors in the research, instead of narrowing down the factors included, which was done in this research. A pilot study would have overcome this problem and would have made it possible to reconstruct concepts according to local definitions. This makes it easier to ask the right questions.

An advantage of the 'first-time problem' described above, is that everything seemed relevant to the causal relationship and all factors were extensively researched. This has strengthened the research because no important variables were missed.

### **5.3 Recommendations**

The focus of international policy makers on promoting access to modern energy to reduce poverty through enterprise promotion might be founded on incomplete assumptions. Of course, energy access is important in explaining the uptake of modern energy but the focus in energy policies should include the energy end-use which modern energy makes possible. Even if entrepreneurs want to adopt modern energy and have access to it, they always consider the relative advantage of using the modern energy sources. If there is no demand for an enterprise's products he may invest in modern energy but if he can not sell the products than he does not feel an incentive to adopt. Policy makers should understand that the development of demand through the promotion of markets may be just as important in promoting the uptake of new technologies as the access to modern energy.

In this research the demand was considered at the level of an entrepreneur. This variable reflects both the demand in the market as well as the ability of the entrepreneur to attract customers. If market demand is separated from the demand for an enterprise's products it is possible to identify barriers to demand which are caused by the market demand and barriers to demand which are caused by the characteristics of an entrepreneur.

The use of a diffusion model for analyzing the adoption of modern energy is very difficult because the attributes of the innovation are very important in explaining why adopters take up innovations (Rogers, 1995). The attributes are characteristics of a specific innovation and cannot be generalized to innovations in general. Therefore the construction of a practical model for understanding the diffusion of innovations can be very complicated and much more research on the influence of perceived attributes of innovations is required.

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# An innovation's perceived advantage

A combination of adopter characteristics and innovation attributes

Appendix 1: Interviews with entrepreneurs



Hengelo, 8 February 2007  
Karlijn Morsink  
s0081191

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# 1. District Dehradun

## Typical villages in Dehradun

Interview with Manmohan Singh (Bourkee) and Manoosh. Manmohan Singh is a local from Mehuwala who has been living in Mehuwala for the last ten years. He is working in the projects with the villagers. He has been directly realizing the watermills with the people in the villages and he has been developing enterprise in the different villages. He has also helped to develop the fruit-processing enterprise in Ambiwala. Manoosh has been living his whole life in Dokwala which is very close to Ambiwala. Ambiwala is the basic needs market for Dokwala.

Interview done by Riga and Karlijn on 20-04-2006

Now it is the crop harvesting. In many places in Dehradun district there are problems with the irrigation of fields. Food is not available because the crop cannot be watered properly. Many people have to go to markets to supply themselves with sufficient amounts of food. Dehradun is now the centre of the district. Most people who were living close to Dehradun have sold off their land. Because of this some people are very rich. The cost of land is very high. In Ambiwala some people have a lot of land. Some people don't have jobs but they are landholders.

Light is available everywhere in district of Dehradun. There are some villages of 20 families of which 10 have light and 10 don't have light. In these partly electrified villages there are no enterprises. Ambiwala is typical for the plains of Dehradun, especially for the areas which are close to Dehradun. Bhauta is a typical village of the foothills. Bhauta is not a very big village. Most villages in the foothills are bigger than Bhauta. The typical amount of families would be 100-150 families. According to district of Dehradun, Chharba is not a typical village according to Manmohan Singh's definition. He would call a village a smaller unit. Most villages in Dehradun district do have a road going to them or through like Chharba has.

Typical characteristics of villages in the district of Dehradun are that they don't have much land. They don't go to the market everyday because their location is such that there is no easy access to markets. They don't have many facilities. They don't have a phone and typical enterprises are milk production and blacksmithy work.

The entire village of Ambiwala is Hindu while the entire village of Bhuti is Muslim. In the villages of Tiparpur, Sahaspur and Mehuwala there are a lot of Muslims. Maldipvt is poor compared to Ambiwala and Maldipvt is quite a small village. In the Ambiwala there is a large variety of people while in Maldipvt the people are very much the same.

Sahaspur block

## **Interview with Block Development Officer of Sahaspur block.**

Interview done by Karlijn on 23-03-2006

The total population of Sahaspur block is, according to the 2001 census is 119.819  
There are in total 22.610 families. The total amount of men is 61.885 and the total amount of women is 57.934.

The total number of panchayats is 54. In these 54 panchayats there are 108 villages.

There is a three step panchayat system:

1. gram panchayat
2. cheet panchayat
3. gira panchayat

1. The panchayat on the village level is made up by the gram prathan. The gram prathan is elected by the people of that village for a period of five years. The wardmembers in the village are also selected by village electorate for a period of five years. In a village there is a minimum of 5 wardmembers and a maximum of 15 wardmembers, depending on the size of the village. The secretary of the gram panchayat is chosen by the government.

2. The Block Development Officer is elected by the people of the block for a period of five years. 2500 people make up a block. A Block Development Committee exists of 40 people which are all Block Permucks and chosen by the people. The Block Development Officer(BDO) is chosen by the government. The public service commission of the state government has elected him. The function of the BDO is that he is the secretary of the cheet panchayat.

3. In the gira panchayat the additional chief officer is the secretary of the gira panchayat committee. For the total district of Dehraun there are 40 members. They are elected by the gira panchayat.

The district of Dehradun has six blocks. Sahaspur is one block. The population of Muslims in the block is approximately 50-52%. In Chakrata block the percentage of Muslims is 0%. Education is lower in Muslim area's. In comparison to other blocks the percentage of Muslims is high. The number of women who are literate is less than in other blocks. There are 107 juniot basic schools in Sahaspur, 28 secondary schools, 12 inter-colleges and there is no degree college. The inter-colleges are all run by the government.

The main source of income in the Sahaspur block is agriculture. There are mostly wheat, corn and vegetable crops. Common crops are cucumber and peas. Selaqui is the industrial area of the block. The main production there is farmaceutical and herbal products.

Vulnerability exposure is caused by drought, little irrigation and problems of labour durinf the rainy season because there is no construction or outside activities. In this season the only source of income is labour. There are problems of landlessness.

- geographical area: 32.206 Ha
- forest area: 10.982 Ha
- pure crop area: 10.937 Ha
- villages: 10.000 Ha

There are no agro-industries in the block. The total irrigated area is 4.753 Ha.

There are two main cropping seasons. From September to April Darabi crops are produced. These are weed, sugarcane. From June until September Chrif crops are produced. This is for example rice,

mudge or bagera.

The BDO names some industries in the block: handlooms, weavers and sericulture.

The total number of BPL families is 5820 which is approximately 25% of the total amount of families.

After asking again again for the practical activities I still do not get any real data or practical information. Only information concerning policies.

The coordination of the panchayat:

- The BDO implements policies and programmes:
  - § The BDO does construction work for drinking water: They work in all the villages. They get a subsidy from the central government and they employ people to do work.
  - § They have programs for sanitation
  - § They develop roads
  - § They built health institutions
- They distribute subsidies
- The BDO has done 289 works in the financial year of 2005-2006

## Informal talks with ADOPT members

Talk on 12-03-2006 with Neeraj, local, 21 one year old. Has always been living in Chharba. His family has a farm and a bakery

- Sahaspur (road head)

From Dehradun, Sahaspur is 20 kilometers when following the road. When going right in Sahaspur on a small road Chharba starts. Chharba is 0-7 kilometers from Sahaspur

Chharba is close to regional centre of Sahaspur and is a road head on the small road.

- lacking access to distant market: 2-10 km from road (0,5-2 hrs walk)

Sahaspur used to be a village but now it turned into a town

Dehradun is divided into seven blocks and one block is also Sahaspur

State-district-block-villages-wards(sub-villages)

Chharba is 7 kilometers long when following the road. The width of Chharba is 5 kilometers.

Chharba has thirteen wards.

- When following the road away from Sahaspur there are several other villages to be found which are again road heads on the small road. Off-road villages can also be found.

- Sahaspur is a rural town according to local definitions.

Therefore Sahaspur will be researched

The village with the watermill

- The translator will be Neeraj, who is 21 years old and is studying chemistry in Dehradun. He still lives in one of the villages. He is studying how agriculture can be done through preserving all sources which are produced during the process. His family has a farm on which they experiment with irrigation. His family also has an enterprise, a bakery. They used to use firewood for baking the dough. Since one year they started using diesel and they sometimes use electricity. They started doing this because the demand on the market has changed. People want their bakery products all in the same size, with a pretty packaging around it. Firewood causes fluctuations in temperature while diesel and electricity do not. Fluctuations may cause different shapes and sizes which is not good for selling on the market. They do not only rely on electricity because the electricity supply may be fluctuating as well, this might cause problems for production.

- Neeraj also knows a bakery enterprise which is not using electricity because the people in that enterprise cannot afford to buy electricity.

- Electricity used to be more stable than it is now. Since the birth of the state Uttaranchal, 2000, electricity production is commercialized causing an unreliable supply.

Talk with Neeraj (local) on 12-03-2006 and with the flourgrinding entrepreneur who has always been living in Chharba as well, as has his family

- Watermill

On a distance of half an hour walking from the village, in the mountains, there are 5 watermills to be found which grind grain flour and herbs. This way of grinding is much better than grinding with electricity because grinding with electricity warms up the flour. This decreases the quality of the flour and the nutrients within the flour. On a good, eight hour day these mills can produce 200 kg of flour. The product brought to a storage place close to the small road. This flour is mainly used by the people in the villages but they also have clients in Uttar Pradesh. Over the hill, at another river there are four other watermills. The total of nine mills are all separate enterprises but their entrepreneurs are all related. They were taught how to build and run this through their families. The knowledge is inherited.

The flour grinding is the profession of their family.

Flourgrinding entrepreneur tells: "In the same village as the village with the watermill/flourgrinding enterprise (which has in total 5 of these enterprises) there is also a blacksmith which is working with wood."

Talk with Kedar Banerjee and Madhulika Banerjee on 16-03-2006

The directors of the NGO ADOPT in Charmba, husband and wife. Have been living in the village and in Delhi. Since 6 years they started an NGO in the village. Their aim is to give the villagers the same opportunities through providing education, sanitation etc.

- Sahaspur is characterized by the following industries:

- § Pottery
- § Blacksmiths
- § Grindingmills
- § Bakery
- § Sweatermaking
- § Weaving
- § Pickles
- § Wood splitting
- § Shoe making

Dr. Banerjee explains that the adoption of energy sources in tiny and small enterprises generally follows a pattern which is highly related to the energy source which is used in the household. Generally traditional energy sources are used such as human labour, animal labour, burning cow dung, burning wood. As soon as the income of the people increases kerosene, diesel and eventually electricity are used. The adoption of electricity mostly starts with the use of a light in the house, this is then followed-up by using electricity in other appliances and finally the adoption in the enterprise. Generally, cooking in the household remains dependent on wood.

For pottery there are no good weather conditions in the mountains. The weather is unpredictable and this is bad when pots dry. They first dry in the sun and after that they are put in an oven. There is difficult transport in the mountains. Many people are now using aluminium. Because the people in the hills/mountains cannot make pots, they used to get them from the plains. The hill people come down to sell herbs, pickles, jams and different kinds of handlooms and trade these with pots and other products which are produced in the plains. This still happens at Kalsi, between Chakrata block and Kalsi block. There is a border between the hilly regions and the plains. There is a gate there and one road. At specified times people are allowed to go up the hill. At other times people are allowed to go down the hill. An industry which is needed everywhere is a blacksmith. The Kumaoni region is well known for its sweater making.

**Secularism, muslim separation, Pakistan**

Talk with Alpena on 10-03-2006

There is a state

consists of the prathan and the wardmembers.

There are policies and subsidies for the poor, also concerning electrification. These subsidies are for people who are Below Poverty Level (BPL). The subsidies for these people are provided through the prathan. He decides who gets the subsidies. The people who he likes will get it and the people who he doesn't like he will not give it.

Most villages in Dehradun district are electrified

Problems in the villages are:

- home-made alcohol
- alcohol abuse
- corruption in the panchayat
- land difficulties
- some problems with dalits
- Their dam

Talk at Block Development Office, 22-03-2006

There are six blocks in Dehradun and 54 panchayats in Sahaspur

Talk with people at Sahaspur powerhouse, 22-03-2006

All the villages in Sahaspur block have been electrified. In all villages in Sahaspur, 95% of the households is electrified. The people below poverty level get subsidies from the government to get electricity. The households which have not been electrified are households which are far from the grid. If they have to be electrified it is really expensive and the government cannot pay for all of that (?) says the director of the powerhouse.



## 1.1 Village cluster Sahaspur

### 1.1.1 Village Sahaspur

#### Sahbk1

Enterprise 5: Enterprise which uses firewood for baking buns, biscuits and bread and electricity for a dough machine.

Interview with Neeraj and Karlijn on 23-03-2006, 17.00 o'clock Sahaspur

There are two entrepreneurs: Neeraj' uncle Shakti Dogra and another uncle

#### Production process

The dough is made by putting flour, eggs, butter and sugar in the dough machine, which runs on electricity. The ingredients are mainly bought at the local main market in Sahaspur. Some ingredients like oil and sometimes eggs are bought in Dehradun. The entrepreneurs are both also farmers so a small amount is used in the enterprise because they also have to feed themselves. When the dough is made it is brought into shape in buns, cookies, biscuits and baked in an oven on firewood for 15 minutes. The firewood is also bought in the market. The products are sold in the enterprise to locals, they are delivered to villages in the neighbourhood and they are supplied to other enterprises which buy the products and then sell them in their own enterprise.

*(The enterprise is a separate enterprise but they are part of a larger bakery in Sahaspur. I was taken to this enterprise even though I had explained that I needed only tiny and small enterprises with less than five workers. They told me that they had five workers but when I arrived I think there were fifteen people working in the enterprise, also children. I think they wanted to show me their progressive technology because they had an oven on electricity and all kinds of machines on electricity. The owner of this enterprise is a brother of the other enterprise)*

#### Location

The enterprise is located in Sahaspur at the interior market, a few minutes walking from the main market in Sahaspur which is at the National Highway.

#### A. Adoption, rejection or no knowledge

Electricity is used for lighting, dough machine, telephone and van. The monthly use is 62 units which costs 680 Rs (Entrepreneur shows the energy bill). Two reasons are given for the fact that they do not have an oven on electricity in this enterprise. First because they have it at the other enterprise and 'why would we need another one?'. Second he is explaining that he would like to have an oven on electricity because they could then produce more but they do not have the financial capital to pay for it. The dough maker on electricity has always been there, since ten years, and has not run on any other energy source but electricity.

#### B. Vulnerability context

They do not directly depend on natural resources which threaten their livelihood when not available. Indirectly price fluctuations cause problems for them. The price of weed increases in the winter season with 20%. The prices of eggs are normally stable only now with the Avian flu they are cheaper. The price of butter does not fluctuate but is really high, 160/180 Rs. per kg. Drought is a real big threat for them because at that time they cannot get flour at the market. They have to import it from other states which is really expensive. They have regular customers so they cannot let them down.

#### C. Human capital

The entrepreneur completed primary school and finished the eight class at the age of 12-13. He learnt how to read and write. He did not do any exams which is not required for finishing the primary school.

After that he worked for the State Bank of India until he was twenty. At the age of 20 he started working in bakery's, just like his brothers did. He started in his bakery in 1977 with his father, mother, four brothers and two sisters. He became the main entrepreneur in the enterprise with one of his brothers in 1980. He learnt his baking skills as well as his management skills from working in and seeing other enterprises. They started their enterprise out of poverty. They had to make money in some way. Entrepreneur would like to get more education in baking but due to age and the time-pressure in the enterprise he cannot. He starts at 4.00 in the morning and generally works until 21.00 at night. Only on Sundays they get a day off.

#### **D. Financial capital**

The total sales of the enterprise are 60.000-70.000 Rs. per month. The total cost is 55000. The entrepreneur stated that the profit is approximately 10.000 Rs. which he has to share with the other entrepreneur so their monthly income is 5000 Rs. The entrepreneurs do invest a part of the weed they produce in the enterprise. If they would sell it on the market they would earn in approximately six months 60.000 Rs, which is 10.000 per month. But they invest this in the enterprise. The total land of the both entrepreneurs is 20 bimar, which is split between the two of them so they both have 10 bimar. Together they own one buffalo, one goat, 1 small buffalo, one scooter and no bikes. They both have a stock of 50.000 Rs. in the bank.

#### **E. Social Capital**

The joint family is very important. (Returns very often during the interview and I actually get the feeling that this enterprise is not separate at all but that they just say so because they think it is interesting when somebody from the Netherlands comes to interview them.). The customers which come to the enterprise are local Sahaspur villagers. He goes to the market in Sahaspur and weekly he visits the main market in Dehradun for his supply in flour, sugar, oil and eggs. He also goes by scooter to neighbouring villages to sell to households. The selling to other villages makes up approximately 10% of total sales. They sell to business which then sell their product as retailing. This makes up approximately 40% of total sales and the other 50 % are customers which come to the enterprise. The entrepreneur has relatives in Dehradun, in Hardiwar, in Rishikesh and also in Himachal and Delhi. They speak to all the relatives at least once a month. The relatives are in a different field so they hardly discuss the bakery with them.

#### **F. Natural Capital**

The entrepreneurs do rely on natural capital but this natural capital is all bought in the local market in Sahaspur or the main market in Dehradun. They use wood, eggs, butter, weed, sugar. Except for weed they get all the input in the market.

#### **G. Physical capital**

The entrepreneurs' house is in the village behind Chharba. At the enterprise they have a telephone, van, lighting. At their house they have TV, radio, telephone. They read the newspaper daily. The electricity drops weekly or sometimes monthly. The times fluctuate but a few times a year the electricity is gone for a whole day. At days like these they have to make their dough with manual labour. This happens either in winter or in summer, with heavy rainfall. This affects their production because they have their regular customers to which they have to supply. They do not want to lose them and at days like this they have to work extra or hire a daily labourer for helping with the work.

#### **H. Influence on and access to transforming structures and processes**

Every day the entrepreneur visits the neighbouring villages by scooter. This happens in the morning and takes about three to four hours. The demand in the market is high because Sahaspur is in between two industrial areas. These are Selaqui and Langa road. They do not produce more because they do not have the financial capital to electrify their oven, which would increase their production.

Savings are put in the bank but they do not have a loan. They do not receive any assistance from the government. They pay income tax at the lowest level, which is 1000 Rs. per year. They have a license from the health department and it is a registered enterprise (formal). To the panchayat of Sahaspur he pays 280 Rs. per year. He has good contact with the pradhan but he does not know him too the extent

that the prathan would help him out with problems he might face, not financial, not policy etc. The only way to influence things in the village is by voting.

**I. Perceived Attributes of Innovation**

The enterprise exists for coping. They have to struggle to meet their daily needs. They use traditional energy source because they have no money for an oven on electricity or gas. The advantage of using wood is that it is cheaper and does not need the investment of an electrical or gas oven. They experiment with wood ovens because they had been working in other bakery's before they started their own. They had learnt this way of working in the other bakery's and they did not have to change their production methods. They did not have to learn skills concerning the production process but they did have to learn skills concerning the management issues.

**J. Innovation-decision**

The decision for the wood oven was made out of lack of other possibilities in 1977 by his father. He inherited the enterprise.

**K. Communication-channels used**

They learnt about using wood for the oven in the other enterprises both brothers had worked in.

**L. Extent of change-agents promotion efforts**

## Sahbl1

Enterprise 11 (E-11) Blacksmith using iron and charcoal to produce farming equipment (small farming tools), 2 entrepreneurs are in charge of the enterprise. One blower is used to add oxygen to the charcoal to sufficiently heat it up. Both entrepreneurs live in Vikas Nagar. They started working in Sahaspur only two months ago. Before that they worked in Vikas Nagar.

Name entrepreneur: Jamir Ahmed

Interviewed by Neeraj and Karlijn on 26-03-2006 with a customer and 4/5 other people present. 16.00 o'clock.

### Production process

The entrepreneur gets iron in Sahaspur. If he cannot get it he goes to Vikas Nagar, Saharandpur or Dehradun with the local bus. This happens weekly. He gets the charcoal from a unit in Selaqui where they make bricks. He goes by local bus. Selaqui is on a distance by bus of ten minutes. He buys the charcoal for 20 Rs. per 50 kg. On a good day they use this whole amount. On lesser these they do not. The iron is heated in the burning coals. A blower is swindled to create sufficient oxygen for letting the coals burn. With a few manual tools (a hammer and a holder) he makes small farming equipment.

### Location

The location of the enterprise is on the far end of the main market in Sahaspur.

### A. Adoption, rejection or no knowledge

The entrepreneur uses charcoal. First he states that his work can only be done with charcoal (probably because he is afraid to say that he cannot afford electricity or any other modern energy source). Then he tells that electricity is costly and that it would be a commercial undertaking and he would have to pay for the electricity. He has the enterprise for two months and he also has been using charcoal for two months. Before that he was working in Vikas Nagar, where they also used charcoal. *(The day after I found a blacksmith in Kotra which uses wood, burns it to make charcoal, and then heats up the charcoal until it is smothering(smeulen). He can not afford the charcoal)*

### B. Vulnerability context

There are fluctuations in the price of iron. He gets his iron from Sahaspur, Dehradun and Saharandpur. He goes there by local bus. If he finds it in Sahaspur he does not go to Dehradun and Saharandpur. Because he makes farming equipment the demand is high during the farming season, else it is low. The increase in demand is twenty % during the farming season.

### C. Human capital

The entrepreneur is illiterate. He learnt this job in Vikas Nagar, in another blacksmith. His father was a blacksmith and a carpenter but he did not learn from his father because his father died when he was really young. He started working at the age of 12-13. Since then he has worked as a labourer in hammering and farming. He has a partner in the enterprise who also works daily and he learnt to be a blacksmith from his father. He does not do any bookkeeping, accounting or management. He used to do tin work as a labourer in Vikas Nagar. He has been doing that for 15-16 years. Tin work is occasional work which you do for two to three months and then it is finished. It is not permanent work. His enterprise is not permanent. He claims that he is going to do the tin work but that it is not the season. When asked for the season he claims it is from February to June (than now would be the season, Neeraj says that he has not been able to find a job in tin work). For the last two years he has not been doing any tin work. He would like to get an electrical hammer and he would like to get the knowledge to use these but due to financial problems he cannot.

### D. Financial capital

When asked for his sales the entrepreneur claims he has 9000 Rs. in sales per month. He rents the location of the enterprise at the main market for 1000 Rs. per month. He claims that his costs for the materials are 7000 Rs. and that his profit is 4500 Rs. (This cannot be right but it seems like the entrepreneur is not aware of this, and when explained he does not understand). When asked how much a hammer costs he explains it costs 800 Rs and that out of this his profit is 300 Rs. His only costs are charcoal, iron and the rent of the enterprise location. 3/8 of the sales are his profit. When asked again he claims his total sales are 9000 Rs. 3/8 of 9000 Rs. is 3375 Rs (which he has to share with the other entrepreneur). At this time this is his only income source. He does not save any money. He has 2,5 biswa land in Vikas Nagar but he has not been able to built a house there. He lives there with his wife, three girls and one boy and he has eight goats.

#### E. Social Capital

The entrepreneur is Muslim and he goes to the mosk only occasionally because he has to work. He meets people in the main market of Sahaspur and he knows people in Vikas Nagar, where he lives. He does not know any people in Dehradun but he has acquaintances in Himachal to whom he speaks once per half a year to once per year. He does meet people at marriages and festivals. When asked if he knows people in other countries he does not understand the concept of another country. (Even when Neeraj tries to explain he does not know what he is talking about.)

#### F. Natural Capital

The entrepreneur gets charcoal from a unit in Selaqui where they make bricks. He pays 20 Rs. for 50 kg. This 50 kg lasts him one day if the demand is high but longer when the demand is not so high. The entrepreneur claims that it is not possible to use wood for doing the work because it does not smuther enough (*the day after we find out that another blacksmith whom we interviewed does use wood, which he burns first and than he lets it smuther*) The entrepreneur uses water during the production process but it is not a problem to get it during drought.

#### G. Physical capital

The entrepreneurs go to Sahaspur from Vikas Nagar every day by bus. They do not have any other means of transportation. The interviewed entrepreneur has a black and white tv, 2,5 biswa of land but he does not have a house, he lives in a tent. He only watches TV occasionally. The entrepreneur is illiterate and so he cannot read the paper.

#### H. Influence on and access to transforming structures and processes

For getting the charcoal the entrepreneur has to go to Selaqui which is 5 minutes by bus and fifteen minutes of walking. For the iron he generally goes to Sahaspur on the main market where he is situated. When he has to go to Saharandpur by bus it takes him 30 minutes, when he has to go to Dehradun by bus it takes him 1,5 hour. During the farming season the demand is high but during the off-farming season the demand is lower. The demand is higher than they can produce. The customers just stop by the enterprise and give him an order. There are no policies, licenses or regulations that he is confronted with. No income tax, no tax for the district panchayat. He does not pay the village panchayat and he pays nothing for opening his shop. There was never a government official who came to check him. His customers are people from Ramsawala, Saphawala, Chharba and Sahaspur (all small neighbouring villages). He does not have any friendly relations with his customers. He does not know the prathan in Sahaspur.

#### I. Perceived Attributes of Innovation

The entrepreneur has the enterprise for coping, he does not get profit, he is just sustaining his family. (in line with the fact that he has no house, and earns approximately 2000 Rs. a month or less from the enterprise). The entrepreneur knew that this source would be beneficial according to his conditions because the energy source is cheaper compared to modern energy sources. The entrepreneur had the chance to experiment because he learnt from another blacksmith. When shifting from tin making to blacksmith the entrepreneur had to change his production methods, he had to buy a blower and needed to get a location for his enterprise.

J. Innovation-decision

The two entrepreneurs decided together to do this enterprise and they decided together that they were going to use charcoal (as far as you can call it a choice and not a condition)

K. Communication-channels used

He learnt through interpersonal channels, from another blacksmith where he used to work.

L. Extent of change-agents promotion efforts

Nobody ever promoted a modern energy source.

Seems really poor

## **Sahel1**

Enterprise 15: Tv, radio, stereo, Dvd and Cd-player repair shop. They use electricity for repairing these. The electricity is used for the soldering (soldeer) iron and multi-meters. For screwdrivers and other small hand-equipment they use manual labour. The entrepreneur has had the enterprise for 13-14 years. There are two workers in the enterprise, the entrepreneur and another worker.

Name entrepreneur: Sanjeev Kumar Rohilla

Interview done by Neeraj and Karlijn on 30-03-2006. During the interview the other worker is present. 3-4 people are surrounding the enterprise during the interview. All locals.

### **Production process**

Customers bring their electronics to the enterprise. With all kinds of wiring and soldering (soldeer) the workers repair the electronics. The customers come to pick up the finished goods at the enterprise.

### **Location:**

Inner market of Sahaspur, 30 seconds walking from the main market, which is on the National Highway running through Sahaspur.

### **A. Adoption, rejection or no knowledge**

Electricity is used for soldering for which electricity is the only possible energy source. At the time he started the enterprise he bought all the machines and appliances. At that time he borrowed 250 Rs. from his friend and he started his business from that. He has always been using electricity.

### **B. Vulnerability context**

The entrepreneur buys input and raw materials in Dehradun. He buys the material by looking for a seller. Where he can get a good price he will buy. He goes to Dehradun once a week. The prices of the input fluctuates. Since he started his enterprise the prices of the input have come down because the supply of electronics has increased and with that the demand for electronics has increased. The amount of people coming to the enterprise have therefore also increased.

### **C. Human capital**

The entrepreneur passed the tenth class in 1992, he was then 14 years old. He finished primary and secondary school. He failed in the first year of the eleventh (inter-college). He hasn't tried again to complete it because his family had a financial problem. Therefore he started to learn electronics in an institute for electronics in Najibabad, Uttar Pradesh. His father is from there and his mother is from Uttaranchal. He started at this institute when he was 14 years old. In part his parents paid for the institute, in part he collected money by repairing radio's. In the period he was collecting the money he used to fix radio's and during the rest of the time he used to sleep. The institute trained him for a period of six months. It was a private institute and after the six months the training was finished. He did not do an exam, that was not part of the training. The management skills he learnt himself. He started with a small shop with only a table and a chair. People saw him repairing electronics and they came to the enterprise as customers. Agents of dealers of the raw material used to come to sell input to the entrepreneur and he bought from them. He still buys input from dealers but for specific materials he goes to Dehradun. The entrepreneur does not require any extra machines. He would like to get the knowledge to repair mobile phones and computer hardware. He does not have the time to learn this because he has his enterprise where he has to work.

The entrepreneur taught the worker the skills in electronics.

### **D. Financial capital**

The entrepreneur does not do any accounting. For the location he pays 600 Rs. per month. In one week he sells approximately 2500 Rs. The costs are his worker, whom he pays 500 Rs. per week (on a

monthly basis 2000 Rs.), he pays 800 Rs in raw materials, 80 Rs for the electricity bill (on a two monthly basis 640 Rs.) and 150 Rs. for the rent. His weekly profit is 970 Rs. This amounts to a profit of 3880 Rs. per month. The entrepreneur also has a property business. He sells land and of selling this land he gets a commission of 2%. This happens sometimes once in six months, sometimes once a year. Sometimes it is 10 000 Rs, sometimes it is 1000 Rs, sometimes it is 20 000 Rs. Together with his brother he supports a family of seven. have no land, no cattle, they do have a house, a motorcycle, his brother has a bike. They have a tv, a CD-player, a stereo, a phone through landline and a mobile phone. The entrepreneur does not save any money. Sometimes he has 2000-3000 Rs. at his home. Three years ago he took a loan of 80.000 Rs. which he used for investing in his business, in raw materials and in basic infrastructure. In the beginning he had to pay 3000 Rs. instalment, now he pays 1500 Rs.

#### **E. Social Capital**

The entrepreneur lives with his wife, 2 boys and one girl, his mother and his elder brother. The entrepreneur goes to Dehradun to buy the raw materials once a week. The entrepreneur meets groups of people at marriages, birthday parties and condolences. When the market is closed, he meets with a group of 5-6 friends. He is not a member of any organization. He meets people at the enterprise. He goes to Dehradun only for business purposes. The entrepreneur knows people in neighbouring villages of Sahaspur. The customers always come to the enterprise and bring their electronics and also pick it up. If he has to repair for example a colour-tv, he goes to people's house. Most of the time he takes his bike, sometimes the bus. He has acquaintances (relatives and friends) in the cities Haridwar and Rishikesh. He also knows people in Punjab. These people he talks to at marriage or when it is required. Sometimes this is twice a month, sometimes once a year. The entrepreneur is Hindu. He goes to the temple and he meets with groups of people there.

#### **F. Natural Capital**

Entrepreneur does not rely on any natural sources.

#### **G. Physical capital**

Electricity is provided through the central grid from the powerhouse in Sahaspur. The electricity drops sometimes. The entrepreneur has an inverter. It recharges when electricity is gone and when it drops the inverter provides electricity. The inverter does not cost him anything at the moment but when he installed it he had to pay 8500 Rs. The entrepreneur is not confronted with any restrictions on the supply of electricity. Both the entrepreneur and the worker work eight hours a day. The entrepreneur reads the paper, daily. The entrepreneur owns a motorcycle, his brother has a bike. They have a TV, a CD-player, a stereo, a phone through landline and a mobile phone.

#### **H. Influence on and access to transforming structures and processes**

With his motor-cycle it takes the entrepreneur 40 minutes to reach Dehradun. He goes to Dehradun once a week. The customers he visits at their homes (which have a colour-tv) are sometimes 20 km away. There is no more demand, so he cannot sell more if he produces more. This is the reason why he does not hire an extra worker. If he learns other appliances (repairing mobile-phones and computer hard-ware) he will be able to sell more. He has no time to learn these other appliances. He pays 125 Rs. to district panchayat. He is not confronted with any regulations concerning health, safety or workers. No people come to inspect the enterprise. Only once a year, when he has to pay the district panchayat.

The entrepreneur lives in Sahaspur, next to the house of the prathan. He also visits the prathan's house and the prathan visits his house. He meets the prathan daily in the morning. He has some fixed customers which come whenever they require an electronic repair. They come to him because they believe in him. He also gets new customers. He sees old and new faces.

#### **I. Perceived Attributes of Innovation**

The entrepreneur has this enterprise because he has a technical mind and he has always been interested in electronics. He has also studied motor cycle and auto repair. He got his hands dirty and he did not like this. He has invested in his business because he wants to grow. (The fact that he has a loan and



that he invested in this enterprise and that he earns 3880 Rs. per month also confirm the entrepreneurs aim for profit.

The entrepreneur had learnt about using electricity for electronic-repairing in the institute where he got taught. The advantage of this energy source is that it is the only source which can be used for soldering. Soldering is required for electronic-repairs.

The entrepreneur experimented with the energy source for this appliance in the institute.

#### **J. Innovation-decision**

The entrepreneur did not really decide on the innovation in electricity because it was the only source which can be used. He rolled in the business because he was interested in electronics. He used to do it, when people came to his enterprise to bring electronics he started repairing more and more. He also went to the institute.

#### **K. Communication-channels used**

The entrepreneur learnt about electricity use for soldering in the institute.

#### **L. Extent of change-agents promotion efforts**

Nobody ever came to promote an energy source in his enterprise

## Sahprathan

Interview with Prathan Sahaspur

Ram Singh Mourya

Prathan of Sahaspur, actually the prathan is his wife, Shima Mourya. (*Dadajee: The post is selected by the government and it was supposed to be a woman. You get all the information from her husband. Dadajee thinks that Shima cannot do the job. Prathan has to develop the village. Government has selected some projects for that particular village. The Prathans duty is to do these things. The prathan in Sahaspur is really doing that.*) (*Karlijn: very big fat man, who was lying on the bed when we came in*)

Interview on 22-03-2006 done with Dadajee as a translator. Sahaspur has 10 large enterprises of which four have more than 5 employees and six have more than ten employees.

There are approximately a hundred tiny and small enterprises in Sahaspur

- 3 bakery's which all use either electricity or firewood or kerosene with a generator
- 20 tailors which are all working by hand
- 8 booksellers, human labour
- 15 barbers, using electricity or manual
- 13 sweetshops, human labour
- 15 restaurants using mainly kerosene and LPG-gas
- 10 vegetable/fruitshops, human labour
- 2 engineering enterprises which both use electricity and a dieselgenerator
- 5 electricians, using electricity, no diesel
- 5 TV-repair shops using electricity
- 5 weedmills, generated by a dieselgenerator or electricity
- 5 drycleaning shops, which for pressing use electricity
- 5 public telephone offices, which use electricity
- 1 petrolpump

Total: 112

Kerosene can be purchased at the retail shops

Diesel can be purchased from the petrol pump

LPG can be purchased from the LPG station

LPG is the cheapest both diesel and kerosene are a little bit cheaper.

18% of the villagers has a TV and there are two internetshops which get used a lot in Sahaspur.

The main sources of income are agriculture and labourers.

Education: There are 2 intercolleges, 3 primary schools and 2 secondary schools

Total population is approximately 10.000 and the total area is two kilometres by 1 kilometre.

Facilities: There is one block development office, 1 postoffice, 1 policestation, a agricultural government office, an electricity office, a primary health centre, a waterward, an animal hospital, a central silk office, a forest office, a telephone exchange office, the KSS office which gives loans to farmers, shopkeepers and students, there are three banks for home loans, shop loans and agricultural loans. CDPO, the Chai Development program office, a office for health for baby's, children and women.

Of the population 50% is Muslim and 50% is Hindu. (Many of the women muslims are immediately recognisable because they are completely covered, they even cover their heads with a veil, not even having holes, or see-through for the eyes.

Panchayat consists of the prathan and 13 wards. Sahaspur is one and has no localities. It is unclear if prathan is elected or chosen by the government. The ward-members are elected by the public through voting. In Sahaspur there are no parties, just individuals.

Sahaspur is special because it is the main village of the Sahaspur block. It has all the government offices and departments of the block in its village. It is a roadhead on the national highway.

(When confronting Neeraj with the prathan he says he is corrupt....we will talk about it)

## Sahsh1

### Sahaspur

Enterprise 14, shoe maker who makes and repairs shoes. He uses manual labour, he has a manual sewing machine and he has a grander, a machine on electricity for finishing the rims of shoes.

Name entrepreneur: Balvant Singh. Entrepreneur has the enterprise since 1982. He has bought the grander 5-6 months ago. Before that he would finish the shoe-rims by hand. This machine does better work because it does qualitatively good finishing and it works faster. The sewing machine he has now for three years. Before that he used to buy ready-made stitched leather, to which he just had to attach the soles. He still does that for some shoes but he also makes shoes completely himself.

Interview done by Neeraj and Karlijn on 30-03-2006, a few times during the interview a customer dropped by. The rest of the time we were alone with the entrepreneur. The entrepreneur is the only worker in the enterprise

### Production process

Customers bring their shoes to the enterprise for repairing or they come to the enterprise for new shoes. The entrepreneur draws their feet on a piece of paper and approximately a week later they can pick up the shoes at the enterprise. He gets the materials from a wholesaler in Dehradun. In the market there are three of these shops located next to each other. He has a preference in the shops. If his preferred shop does not have the materials he goes to another shop.

### Location

The enterprise is located at the main market in Sahaspur.

### A. Adoption, rejection or no knowledge

The entrepreneur uses manual labour and electricity. He has a stove which he heats with kerosene. He does not make this work on electricity because that it would be a heater, which is a different appliance which he would then have to purchase and this would be too expensive. The entrepreneur explains that the grander only works on electricity, it can't work on another energy source. He does not get a heater running from electricity because electricity is expensive and he would have to buy the heater. He does not have a really high demand and it would be too expensive to have the sewing machine running from electricity. He does not have a direct connection (from the powerhouse) to the grid. He taps of the electricity from the neighbours. If he would opt for a direct electricity connection from the grid he would have to do an initial investment of 2000-3000 Rs. Next to that he would have to pay a two-monthly bill of a minimum of 250 Rs. Now he pays the neighbours 100 Rs. for the electricity bill.

### B. Vulnerability context

The prices of the raw materials do not fluctuate very much. Therefore, once a month, he checks for the prices of the materials in the three shops. He goes to Dehradun every second or third day. At that time he closes his shop. The demand for shoes increases during the marriage season, which is in April and May. In summer customers demand sandals, in winter customers demand shoes. Sandals cost 200-300 Rs., shoes cost 150-350 Rs. The demand for shoes in winter is comparable to the demand for sandals in summer. The total demand for shoes in the market is still the same but out of all people requiring shoes there are now a lot of people who want ready-made shoes. Today, the price of raw materials is four times as high as when he started in 1982 but he also increased the price of his finished shoes by four times.

### C. Human capital

The entrepreneur has finished the fifth class, he can read and write. He stopped school because his father used to be a labourer and his parents needed him to work. He was fourteen years old when he

stopped school. He is currently 54. He went to school at the age of ten because in earlier days there used to be no schools and you had to travel really far for reaching the school. At that time people brought their kids to school at the age of ten. He worked as a labourer from the age of 14. Next to being a shoemaker, his father also used to be a shoemaker. His father taught him how to do the job. As a labourer he did cutting of grains, constructing buildings and digging. The labouring jobs were not permanent. He used to do that and the rest of the time he was free. He started shoemaking before the age of 14. He used to help his father in the enterprise where he learnt how to make the shoes and he also learnt how to do accounting, marketing. There are no machines that he requires that could increase his production but he would like to send his son for a training in shoemaking. He can't learn himself because he has to work in the shop. If he doesn't he cannot support his family.

#### D. Financial capital

His total sales are 4000-5000 Rs. His problem is that he manufactures on demand. If he could invest in raw-materials he would be able to sell more but due to financial problems he can't. Per day he produces approximately 15 shoes. This will give him a total profit of 2500 Rs per month. For making shoes but also for repairing shoes he has to invest in raw materials. He is the owner of the shop and he bought the shop in 1982, together with the materials. He bought the shop on an instalment of 42 Rs. per month. He got it through a special scheme of the government for which he had to pay, for a period of ten years, 42 Rs per month. The costs of his enterprise are electricity, raw material. The maintenance of the machines he does himself. He owns a cow. He has 1,5 biga of land which he cultivates for his own food. He has a house and as transportation he has a bicycle. He has a loan of 50.000 Rs which he got 4-5 years ago. He has to pay monthly a fee of 400-500 Rs. The interest rate is 12%. With the money he upgraded his shop and he bought a sewing machine and a grander. He does not save any money.

#### E. Social Capital

The entrepreneur lives with his wife, his 2 boys and his 2 girls. He is Hindu. He meets people during marriage parties. The entrepreneur goes to Dehradun every second or third day. At that time he has to close his shop. He goes only for the dealer to Dehradun. He goes there and comes back. He is not a member of an organization. He has to girls of 15-17 and his boys are 14-12. Three of them go to school. One girl dropped out. She works at home. He lives in Indripur, which is 2 km. away. He goes by bicycle to his shop. He knows people in Selaqui, Rampur and Sahaspur. When he needs them he meets them. Sometimes this is once in 6 months. Sometimes this is once per 2 years. He also knows people in Sahandpur in Uttar Pradesh. He meets them once in 15 days, once a month. They are also dealers where he gets materials. He has no relatives there. He has relatives in Himachal and Haryana. He speaks to them when there is a marriage party or when he requires them for something. This is approximately once a year. He does not know people in other countries. (When doing the interviews another shoe-maker from Sahaspur comes into the store to buy a material)

#### F. Natural Capital

#### G. Physical capital

#### H. Influence on and access to transforming structures and processes

The entrepreneu

#### I. Perceived Attributes of Innovation

#### J. Innovation-decision

#### K. Communication-channels used

#### L. Extent of change-agents promotion efforts

## Sahsurvey

Sahaspur, total amount of enterprises 310, survey with Neeraj on 26-03-2006

### Main market

- 4 photographers
- 13 tailors, some using electricity for sewing, some manual, for ironing they use electricity
- 4 booksellers
- 13 barbers using manual labour
- 9 sweetshops some using gas some using wood
- 4 restaurants, some using gas, some using wood
- 11 vegetable or fruit shops
- 3 electricians using electricity
- 3 grinders some using electricity, some diesel
- 1 drycleaning using electricity
- 10 public phone
- 86 retailshops
- 13 motor/car/cycle repairshops using electricity
- 5 blacksmiths all using coal
- 7 welding enterprises using electricity, oxygen-gas or carbide
- 4 carpenters
- 13 chemists
- 2 shoemakers, one using electricity, one manual labour
- 6 chaishops
- 1 big picklefactory
- 1 big rice mill factory
- 3 banks
- 5 jewellery/watch stores
- 3 spice stores
- 1 dentalstore
- 3 meatshops
- 2 painters
- 3 cementstores
- 2 religious shops

Total: 235

### Internal market

- 1 big bakery using electricity
- 37 retailshops
- 1 cable operator
- 3 carpenters using manual labour
- 3 electronic shops using electricity
- 1 print shop
- 1 photographer
- 5 public phone shops
- 3 barbers
- 2 pottery's
- 2 grinders one on diesel, one own diesel and electricity
- 5 tailors, using manual labour
- 3 jewellery/watch shops
- 1 small bakery
- 1 ice cream shop
- 5 chemists
- 1 weaving enterprise

Total: 75

The main market is the made up by all enterprise which are located at the national highway through Sahaspur, the interior market are all enterprises which are located on side-streets of the main market. Sahaspur starts at one bridge and ends at the following bridge.

## **Sahtl1**

Sahaspur

Enterprise 10, tailoring with 5 machines which operate either with manual labour or with electricity and one embroidery machine, on manual labour.

Name entrepreneur: Mohammed Galib, the entrepreneur is 31 years old.

Interview done by Neeraj and Karlijn on 26-03-2006, during the interview one of his workers is present in the enterprise, 15.00 o'clock.

### **Production Process**

His customers come to the enterprise with a fabric. mHe measures their sizes and notes these on a receipt. He cuts a small piece of the fabric and attaches it to the receipt which he gives to the customer. He measures the fabric and cuts it, sews it, sometimes there is embroidery, and than it is ready and his customers pick it up at the enterprise. Sometimes he gets an order, for example for school uniforms. Than he goes to look for fabric in Sahaspur, if a better or other kind of fabric is required he will go to the market in Vikas Nagar or Dehradun. The thread he gets in Sahaspur. If he cannot obtain it there he calls a contact in Dehradun who brings it over. The entrepreneur owns the enterprise for eleven years, when he started renting the shop and he bought the machines. When demand requires he hires a labourer, which happens on a weekly basis.

### **Location**

Main market, on the national highway in Sahaspur

#### **A. Adoption, rejection or no knowledge**

The entrepreneur uses electricity for sewing. If the electricity drops he uses manual labour by his feet. He has been using electricity for five years, before that he used to use manual labour, by his feet. With using the electricity the machines run faster and he can produce more and he saves his personal energy. It is all about the demand which he has to meet why he uses the electricity. He does not use diesel because it is more expensive and he would have to buy a generator. The entrepreneur has an electricity bill of 265-300 Rs. a month.

#### **B. Vulnerability context**

The entrepreneur is confronted with fluctuations in demand. He has a higher demand when there are marriage parties and weddings. When he started his enterprise the demand was high and it was increasing. Right now demand is falling because he is facing tough competition from cheap ready-made garments and the number of tailors have increased. When he started there were only a few, now there are 18 in Sahaspur.

#### **C. Human capital**

The entrepreneur failed in high-school with only two numbers. He did primary until the ninth class, he stopped at the age of 15-15. He tried the exam of the ninth class five times but he never passed. The first time he went to school the whole year but the other times he only did the exam. He learnt tailoring work during the rest of the year. His elder brother used to work in tailoring and he learnt from him. He learnt tailoring and managementskills from an institute in Chandigarh where he worked for 2,5 years and where he obtained a diploma in tailoring. This institute is a private institute. He opened the enterprise when he was about 20-21 years old. He has been hiring workers since he started his enterprise, depending on the demand. Some of them he has trained and some of them are skilled. 60% of the times that something is wrong with the machines he repairs them. For the other 40% of the times he has to call a maintenance guy. This happens occasionally, he cannot say how often. When asking for weekly, monthly, yearly he can still not say. He would like to get a locking machine, with



which he could increase the variation in his supply to the customers. He is also interested in learning more about locking because it is simple and because he could do some more designs. He hasn't started yet to learn this because he does not know an institute which can teach him this. He can not buy a locking machine because he has financial problems..

#### **D. Financial capital**

The entrepreneur has a total profit of approximately 4000 Rs. per month. On every garment he sells he has a investment of about 30%. The profit depends on the demand. The costs he pays are the rent for the shop, 1000 Rs. per month, thread, electricity, oil for the machines, labour costs. The enterprise is his only source of income. He does not save. Now he is married so he doesn't. He has a mud house, no land, no animals and a bicycle for transport.

#### **E. Social Capital**

He lives with his joint family, his wife, his parents, his two daughters and his son. He is a Muslim. He meets groups of people at weddings and festivals and in the musk in the evening hours. He does not transport the goods to anybody, the customers pick it up at the enterprise. He explains that he does business all according to his contacts. If he knows somebody in a school he can get an order from there. He knows people in Vikas Nagar, Dehradun and Sahaspur. He speaks to them on a monthly/weekly basis by public phone. He has a lot of people in Chandigarh to whom he speaks on festivals (eve-festivals) and weddings. He has a passport and he would like to go out of the country. Once he was in Bombay where he had planned a trip for leaving India. He had planned it with a travel agent who turned out to be a fake agent and he lost his investment. He has a friend in Saudi-Arabia who he would like to visit. He speaks to this friend approximately once per half a year.

#### **F. Natural Capital**

#### **G. Physical capital**

He uses electricity. The electricity drops occasionally. He pays an electricity bill of 265-300 Rs. a month. He has a bicycle for transportation. He has no TV. He has a radio. He reads the paper every day. He reads the Koran and he is learning English (he shows an Hindi-English book, but he does not speak any English).

#### **H. Influence on and access to transforming structures and processes**

It takes the entrepreneur an hour to reach Vikas Nagar and 1, 5 hour to reach Dehradun by local bus. The reason why he does not produce more is because the demand is not high enough due to increasing competition from other tailors and due to cheap ready made garments of which the use has increased. Getting clients is all about his behaviour and his work. He has 30% fixed customers and the rest of the customers fluctuate. Industrialization of the ready-made garments broke his back. His customers are locals, mainly from Sahaspur but also from neighbouring villages. He can use electricity the whole day. There are no regulations. He has no licenses. He has working days from 12 hours, from 8.00 am to 8.00 pm. He has an informal enterprise. He knows the prathan and the wardmembers, they just say hello when they cross but they do not go to each others house.

#### **I. Perceived Attributes of Innovation**

The entrepreneur has the enterprise for coping. He earns 4000, to sustain his wife, children and his family. He does not have a tv, he works twelve hours a day. They entrepreneur knew that using electricity would have beneficial outcomes because he had worked with electrical sewing machines at the institute where he used to work. He also knew that he would have to do less human labour. The entrepreneur experimented with electricity in the institute. He had to change his machines, he had to attach motors to them and connect them to the grind. The machines work faster than human labour so he could produce more and could focus attention on increasing the demand for his garments.

#### **J. Innovation-decision**

The entrepreneur decided about the innovation in energy source

**K. Communication-channels used**

He learnt from the institute where he used to work

**L. Extent of change-agents promotion efforts**

None

## **Sahwel1**

### **Sahaspur**

#### **Enterprise 2 (E2)**

Engineering enterprise named Universal Engineering Works

Interview on 22-03-2006 with Dadajee as translator. Dadajee describes this enterprise to be highly innovative. Dadajee has known this man for 20 years. 4 years ago the man was in extreme poverty but since he took a loan to invest in his enterprise he has accumulated a lot of technology and has grown fast. The entrepreneur even managed to get a certificate from the government of Uttaranchal for the quality of his work.

Entrepreneur S.M. Arshad (phone: 94120 54469)

*Owens a business card saying:*

*Specialist in: Lathe work, grinding work, all types of machinery repairs, welding work, metal polishing, rubber works, all kinds cutting edge and mould repair*

*Manufacturers: plastic machinery parts as a blow moulding machine, injection, moulding machine, packaging machine and all type of grinder blades.*

*Near police station & primary school, main market Sahaspur, District Dehradun (UA) tel 0135-2697656(W), 0135-2697901 (O)*

#### **Production process**

Producing engineering parts. He is an expert on this line. He produces any sorts of parts for heavy and small machines.

His company is approved by the government of Uttaranchal and is therefore a formal enterprise.

#### **A. Adoption, rejection or no knowledge**

The entrepreneur uses electricity, an oxygen-gas cylinder and a carbide system. The oxygen-gas cylinder and the carbide system are used for welding thin materials such as iron or silver. Electricity cannot be used for these appliances because it is a precise and careful job. Electricity is used for heavy joints. Electricity has too much power for the small machines that he uses. With electricity the energy provided is too high, causing the thin materials to melt.

He uses electricity because it is cheaper than diesel, kerosene and LPG. He does have a generator which runs on diesel for the times when the electricity drops. This happens approximately 2-3 times a day. The periods vary. For the electricity he pays 1000 Rs. per month and for the diesel generator, depending on the demand, approximately 250-300 Rs. Using diesel for the total production would be 3 times as expensive as using electricity.

#### **B. Vulnerability context**

Not appropriate because the materials he uses do not fluctuate with the seasons and the drought does not affect him because he does not use water.

#### **C. Human capital**

Entrepreneur has passed primary school and secondary school. He learnt all the skills which he uses in the enterprise from his father. His father used to be in the same industry and had a large enterprise.

The entrepreneur started working at the age of 12-13 in his fathers enterprise, next to going to school, because he was very interested and fond of these machines. Dadajee knows him for 20 years because they met in 1987 when Dadajee lived in Chharba for one year. Normally entrepreneurs in this industry need to get engineering course but he did not because he learnt everything from his father. He has also learnt the management skills from his father. In the engineering industry he does not have to learn anything because he already knows everything. He received a certificate from the government of

Uttaranchal because he scored highest on an exam. He was well-known with directors of companies in the industrial area because of his work. These companies have a committee. The committee made him attend the exam and he scored highest. Therefore the government of Uttaranchal gave him a certificate. (He does bookkeeping from two folders in which he puts all the orders he gets). His customers are B2B and B2C customers. The businesses are companies from the industrial area. Entrepreneur does also know a little bit of English.

#### **D. Financial capital**

His total sales are 10 lakh Rs. after deducting the all the expenses 15-20 thousand Rs. remain. The engineering enterprise is his only source of income. He has an enormous loan, a couple of lakh roepies which he built up till until three years ago. Most of the money he earns he has to invest in repaying the loan. Uptil three years ago he was working in the enterprise of his father. Three years ago this enterprise got divided among the three sons of which one is still in the industry of engineering(next door). The entrepreneur was in great trouble 3-4 years back. He got into a social scheme from the government of Uttaranchal and he received a loan and support through this. Now he is doing really good because the last 2-3 years enterprise have settled in the area, this started since Dehradun became the capital of Uttaranchal in 2001. Entrepreneur also has a car, since two years which he bought on a loan. The only institution he deals with in financial issues is the bank

#### **E. Social Capital**

Entrepreneur is not a member of any formal groups. Informal groups are his family, wife and son. He has also two helpers in his enterprise, since two years, of which one is from Chharba. He taught these helpers their skills. He is situated in the main market of Sahaspur which is a market with more than a hundred enterprises. There he is in contact with a lot of people. He also knows this committee of directors of companies, he has a lot of customers, business and private. He has a lot of acquaintances in Uttaranchal which are all in engineering. He gets his materials, input, from Saharanpur and Dehradun where he travels by car. For some special parts he goes to Delhi. His customers are from Uttaranchal and visit him, in his enterprise. He also has a customer in Bombay, a company, which send him a appliance which he than has to copy exactly. In doing this he thinks of a lot of innovations in technology himself.

He is a Muslim. When he was doing bad, 3-4 years ago, he was under the care of the social committee.

#### **F. Natural Capital**

Not appropriate

#### **G. Physical capital**

He owns a car. He uses electricity which is provided by the grid. The diesel he gets from the dieselpump. He has his enterprise with his house attached on the back. The enterprise is 3 by 10 meters. He has approximately six machines which he uses. He has a TV and a telephone, no computer. He reads the paper and sees the news through the TV.

#### **H. Influence on and access to transforming structures and processes**

The entrepreneur is already in a market of the rural town Sahaspur. This is a market which also provides luxury goods like TV's, telephone's. He reaches Saharandpur and Dehradun, and for special parts Delhi, for getting his supplies. There is a large demand in the market and therefore he has hired the two helpers with which he can increase the production volume. The bank is the only institution providing financial capital. The entrepreneur has a license in engineering. He pays income tax, approximately 20%. He is working in a repairing shop if he would start producing materials he could get new technology. If he would do that he would have to pay more tax. He is already busy enough that is why he does not want this technology.

There are regulations for hiring employees but the entrepreneur has no idea. He does not know which laws apply. Nobody has come to check.

#### **I. Perceived Attributes of Innovation**

The reason why he is in this enterprise is for making a profit. He has a car, a tv, a business card etc. He

knew that electricity had beneficial outcomes because he knew that electricity was cheaper. He knew that he could not use electricity for his work on small, thin materials from his father who taught him the engineering work. He did not experiment because he inherited the machines from his father. He had already learnt all the skills from his father.

**J. Innovation-decision**

The entrepreneur.

**K. Communication-channels used**

He learnt about using this energy source from his father

**L. Extent of change-agents promotion efforts**

*(The entrepreneurs strikes me as an intelligent man, he is not immediately really enthousiastic, confirms that I have to come back for photographs, he gives me his business card. I get the feeling that he is very good in networking. One, because of his actions towards me, second, because he seems to have sufficient contacts to get access to an exam, without engineering education, he has a customer in Bombay and knows people from everywhere. Dadajee tells me that he is well-known for his work)*

## **Sahwel2**

Sahaspur

Enterprise 9 (E9) Welding which uses a welding machine and a drilling machine for working on iron for creating doors, fences, gates.

Name entrepreneur: Jageer Hussein

Interview with Neeraj and Karlijn on 26-03-2006, during the interview his 4 workers are present and also some other curious people. 13.00 o'clock.

### **Production process:**

Iron is bought on the markets of Sahaspur, Vikas Nagar or Dehradun. Where the price is lowest he buys it. The clients give an order and they pay 50% of the price of the product beforehand so the entrepreneur can buy the iron. The iron is transported to the enterprise by a hired car from Vikas Nagar and Dehradun and by walking from Sahaspur. The entrepreneur has four workers and with a drilling machine and welding machine they make the product. The customers come to pick up the product at the enterprise. The entrepreneur has the enterprise since five years. He then hired the location and bought the machines.

### **Location:**

The enterprise is situated in the main market of Sahaspur, at the National Highway

### **A. Adoption, rejection or no knowledge**

The entrepreneur uses electricity. Without electricity it is not possible to use the machines he is using. When asked for the possibility of using diesel he claims that he would have to buy a generator and that diesel is much more expensive. The entrepreneur has always been using electricity. The entrepreneur pays a monthly electricity bill of 700 Rs. He never considered using diesel because it was more expensive and he had to purchase a generator

### **B. Vulnerability context**

The prices of iron fluctuate on a monthly basis. The demand of his products fluctuates as well. During the rainy season it is low because people do not build during these months. After the rainy season the demand is high.

### **C. Human capital**

The entrepreneur did primary school and secondary school until the tenth class, at the age of thirteen. He stopped then because he did not find it interesting. From thirteen to sixteen he did not do anything but from 16 onward he started working in other enterprises. He is now 27. (When asked to for his name he started spelling but he did not finish the spelling because he wasn't sure). The management skills he learnt in Haridwar. He worked there with a blacksmith all the time until he started the enterprise. He would like to get extra machines, for example a pressing machine, but he is not able to get this because of financial problems. He would like to learn a technical education concerning working with iron but he would not like to work with other materials. He learnt all the operations he does in his enterprise from the job with the other blacksmith. He hired the workers in his enterprise immediately when he opened. Two workers had been working in other blacksmiths, two he taught the operations.

### **D. Financial capital**

His monthly sales fluctuate between 20.000-50.000 Rs., due to the fluctuation in demand. After deducting material, electricity, labour cost, rent of enterprise and transportation, he has a monthly profit of approximately 3000 Rs. Per kg of iron he gets 1 Rs. profit. He has to pay a monthly bill of

2500 Rs. which he pays to the owner of the shop. He pays his workers between 2000 and 2500 Rs. a month. The entrepreneur has no other income sources. He claims that he saves 1000 Rs. per month but when asked for his capital in the bank he claims that there is nothing in the bank (Neeraj thinks that he does not save but he feels obliged to say he does because the entrepreneur might think that we do not find this sensible).

#### **E. Social Capital**

The entrepreneur lives with his joint family, his brother, his sister and his parents. He is single. The entrepreneur meets people at the main market in Sahaspur and at festivals and marriages and he meets his suppliers in Vikas Nagar and Dehradun a few times a month. He also has a man who manufactures homes that he knows. This man lives in Kushalpur, 3 kilometres from Sahaspur. He made an arrangement with this man for supplying fences when the man makes houses. He knows people in neighbouring villages. He has acquaintances in Dehradun to whom he speaks weekly. He also speaks to people in Himachal and Delhi on a monthly basis. The entrepreneur is Muslim.

#### **F. Natural Capital**

Iron, of which the demand fluctuates. According to the entrepreneur the prices of iron have not increased the last few years. The entrepreneur owns fifteen biga's of land with his family and they have one buffalo. The land they use for their own use.

#### **G. Physical capital**

The electricity is provided through the grid, by the powerhouse in Sahaspur. The electricity drops on a daily basis for a short period of time. During, the peak period, from 18.00 until 20.00 hours he is not allowed to use electricity. He works over hours when this is required, according to demand. The working day goes from 8.00 – 18.00 hours. The entrepreneur owns a motorcycle, a mobile phone, no tv, no radio. He reads the paper on a daily basis.

#### **H. Influence on and access to transforming structures and processes**

The entrepreneur is on the market of Sahaspur. Vikas Nagar is half an hour away, Dehradun 45 minutes. If necessary he reaches Vikas Nagar and Dehradun by a hired car. With his motorcycle he comes from Vikas Nagar, where he lives, everyday to Sahaspur. The demand is larger than the entrepreneur can supply and if the entrepreneur would produce more he would be able to sell. The entrepreneur can not produce more because he does not have the money to invest in the raw material. The entrepreneur does not have loans, does not have licenses and does not pay income-tax. He is not confronted with any regulations. For his machines he pays 250 Rs. per year to the district panchayat. No government official did ever come to check his enterprise. He does not know the prathan very well, he speaks to him on a monthly basis and they do just greet. His customers come from neighbouring villages and from Dehradun and Vikas Nagar.

#### **I. Perceived Attributes of Innovation**

The entrepreneur has the enterprise for coping. He would like to expand but he cannot invest in the raw material, he owns no tv and he owns no radio. The entrepreneur knew that this energy source would be cheapest. He had the possibility to experiment with these machines on electricity in the other blacksmith where he has been working. He did not have to learn any new skills.

#### **J. Innovation-decision**

The entrepreneur decided about the choice for electricity

#### **K. Communication-channels used**

He learnt through interpersonal channels, through the blacksmith where he has been working for five years.

#### **L. Extent of change-agents promotion efforts**

Nobody ever promoted the energy source to him.

## **Sahwv1**

Sahaspur

Enterprise 6: Enterprise with three weaving machines with energy sources muscular energy and electricity

Name of one of entrepreneurs: Parveen Gupta

Interview with Neeraj and Karlijn on 23-03-2006, 19.00 uur, during the interview two of the other entrepreneurs are present. The enterprise is attached to the house of one of the entrepreneurs. The wife of this entrepreneur and another lady are also present at the interview. Sometimes, when demand is large, in some periods in the winter season their wife's assist in the enterprise or by arranging the transport to the market. In general, only the four entrepreneurs are working in the enterprise

### **Production Process:**

They enterprise is owned by four entrepreneurs in the age group of twentyseven. They buy thread from the main market in Dehradun, where the go by bus. They run their machines on electricity and human labour. From the thread, they weave socks and sweaters which they then transport to other enterprises who buy the products from them and sell them in their own enterprise.

### **Location**

The enterprise is located in Sahaspur, on the National Highway, about five minutes driving by car from the main market.

### **A. Adoption, rejection or no knowledge**

The enterprise uses no diesel or LPG. The efficiency is the same as electricity but diesel and LPG are more expensive than electricity. The problem with electricity is that electricity goes off weekly, ranging from 15 minutes to 1 or 2 hours. At times when this happens the entrepreneurs have to produce manually. Generally, all the three weaving machines are running for eight hours a day. Their electricity bill is 1200 Rs. a month

### **B. Vulnerability context**

For input the entrepreneurs require thread which is not fluctuating in price or supply. The demand for their products fluctuates. The demand is higher in the winter compared to the demand in the summer.

### **C. Human capital**

All entrepreneurs know each other from the time they were in school. They all did primary school, secondary school and inter-college which they finalised at the age of 20. After a few years, all four of them were still unemployed and that is why they started the enterprise. They gained access to knowledge about the weaving machines by calling a maintenance person which repairs these machines. Management skills they learnt themselves, based on some knowledge they gained when they were in secondary and inter-college concerning economics and finance. They would be very interested in learning more about computerised machines and they knowledge to operate them but that is financially impossible. Currently the entrepreneurs are 27 years old and they have had the enterprise for 7-8 years.

They got the idea to start this enterprise when they travelled to Delhi and Ludhiana. They saw similar enterprises there with which they had conversations about this type of enterprise, the requirements, the production, the expected profit, market knowledge.

### **D. Financial capital**

When they started the enterprise they had been unemployed since they had left inter-college. Therefore they could not provide money for investment themselves. Their parents backed them up.



Their yearly total sales are 500.000 Rs. Their total cost is 400.000 Rs. including thread, maintenance, electricity and transportation. Their yearly profit is 100.000 Rs. Divided by four the yearly income per entrepreneur is 25.000 Rs (which comes down to 2100 Rs. per month). None of the entrepreneurs has any other sources of income. They all have a separate house, tv and telephone. One of them has a scooter but they do not own land and they are not able to save any money. They do not have a loan.

#### **E. Social Capital**

Their clients are shopkeepers. They have customers in neighbouring villages, in Dehradun and vikas Nagar. They transport their products to the markets by bus and the products they buy as input they also transport by local bus.

They are no members of formal groups. They meet groups of people just occasionally at weddings or at they markets that they go to. They do have relatives in Delhi and Ludhyana to whom they speak monthly. They also know people in the neighbouring villages.

#### **F. Natural Capital**

Does not apply

#### **G. Physical capital**

Their electricity is provided by the Sahaspur power house. The entrepreneurs have one scooter and they use the local bus for transportation which they stop in front of their house. They do have telephone, tv and radio. They read the newspaper.

#### **H. Influence on and access to transforming structures and processes**

It takes the entrepreneurs 1,5 hour to reach Dehradun and the main market in Sahaspur is 5 minutes by bus and 20 minutes walking. They reach the markets by bus. Their customers are shops which buy their products and than retail them into the market. They say that the demand in the market is not higher, else they could do shifts of eight and eight hours and produce a lot more. They currently do not have the resources to produce more, with which they mean their financial resources. (This is unclear, when I ask them to explains they say:) The demand is not higher and therefore they are not able to produce more but they also do not have the financial resources to produce more (*This is not consistent because the only thing they would have to do is work in two eight hour shifts, with night and day shifts. It appears to me that they also do not feel like doing this, either because they have accepted their current state or because of any other reason. I have tried to find out more but they were not cooperating*) (Afterwards I talked to Neeraj: Neeraj thinks that they might have been very tired a the time of the interview from a whole day of work. When I confront him with the inconsistency he says that it may be that they cannot find the customers to supply to, even though they are in the market. Maybe they do not have the financial resources to increase the amount of customers and they are scared of taking a business-risk. He says that they might not be clever enough to see business opportunities. Because they are really poor they may also not find the time and energy to increase their network). The enterprise is informal. They have not paid any licenses and are not confronted with any regulations, no government officials have ever checked their operation. They do not pay income tax because their income is below the tax level. They do know the prathan and the wardmembers of Sahaspur.

#### **I. Perceived Attributes of Innovation**

They have the enterprise for coping (They are struggling to make a living and they have no luxuries). When they started the enterprise they had talked to other people having enterprises in this industry. Based on their information, they had expected to earn a better living than what they are currently doing. Beneficial outcomes they derived from the talk with other entrepreneurs in same industry. Other energy sources are more expensive and they also require a generator for power production. They could not experiment because they would have needed to get another type of machine if they had taken diesel or LPG. No change in production process. New skills were management, maintaining machine, operating machines, acquiring customers.

#### **J. Innovation-decision**

The four entrepreneurs

**K. Communication-channels used**

Interpersonal, by travelling to Delhi and Ludhyana where they saw enterprises like these. They talked to entrepreneurs about the type of enterprises. They knew that diesel and LPG would be more expensive.

**L. Extent of change-agents promotion efforts**

None

## **Sahobser**

### **Sahaspur**

- Most people who have a house and an enterprise on the National Highway have a concrete house, the houses are generally smaller than the houses in Chharba. There are mostly two room houses with on front of the house a shop. Neeraj explains that the houses are smaller because everybody in Sahaspur wants to stay on the roadside and therefore there is not sufficient room while in Chharba the houses are much bigger because this is a village with a lot of land.) In the interior market there are mostly concrete houses. The interior market is located very close to the road. When going further from the road into the village there is mainly a Muslim community living with mud houses with a few rooms, 2-3. There are only a few concrete Hindu houses. These have more rooms, stone floors, a TV, wall paintings.
- The land that people in Sahaspur have is very small. Outside of the area there is community land which can not be used for cultivation.

## 1.1.2 Village Chharba

### Chhfocus1

Chharba

Interview with Sushil Kumar Meity alias Dadajee on 21-03-2006

#### Introduction to person

Has been working for ADOPT for 6 years. ADOPT is situated in Chharba village. The activities of ADOPT serves the upliftment of villages by creating new toilets, digging wells for water, arranging operations for sick children, providing education to adolescent girls, women and children. This has been done in Chharba and currently they are also doing these activities in surrounding villages (*remains representable, although there is an NGO, because most blocks in Dehradun have an NGO working, by knowing the activities of the NGO, the effect on the rate of adoption can be assessed*) Dadajee lives as the only NGO member of ADOPT in Chharba so he is all the time with the local villagers. ADOPT is organized so that they help villagers build their own toilets and wells so he is working with the villagers. In 1987 Dadajee was also in Chharba for a year, then he went to Calcutta as an employee of the Indian railway service. Kedar, the chair-man of ADOPT is a childhood friend. Dadajee has always been interested in doing social work and because Kedar, from childhood he was attached to social work. Up to 1994 he was in Calcutta. In September 2000 Dadajee came to Chharba.

In Dehradun there are 7 blocks, out of which Sahaspur-block is one. In Sahaspur, there are 51 panchayats. Out of which Chharba is one. In some villages one panchayat consists of three or four villages because they are really small. Chharba is the biggest village in Dehradun district, while it does not have many enterprises compared to Sahaspur, Silaqui. These villages are smaller but they are on the National Highway nr. 72. road and therefore they have more enterprises. In 2002 there were 54 panchayats in Sahaspur block.

Chharba starts from Chakrata road, named Rirapur up to the forest. Then the forest starts and it is 1,5 kilometre after that when Chandpur starts, under Vikasnagar block, after that from Chandpur 3 kilometres to Horawala under Vikasnagar block, after 5 kilometres Kotra under Sahaspur block, in between are a few small villages, after that Koti under Vikasnagar block. After that Dalani under Vikasnagar block. Vikasnagar is 10 times bigger than Chharba. Vikasnagar is the main city. That is where people go for irregular shopping. For daily shopping (roti, chappati, dahl, tailor, blacksmith) people go to local market. In almost every village in Dehradun you can find these enterprises. If they have special commands from the market they go to Sahaspur or Vikas Nagar.

(location in district, how is village typical or normal compared to other villages).

Chharba is 35 square kilometres and the population more than 10500 (population size, density and location). Chharba panchayat has 13 wards, under Sahaspur block. After five years, there are elections for ward members. These wards make up groups of people which are more connected to each other than to the people from the other wards but the people do not identify themselves with the wards, they have another way on which they base a locality. Chharba is divided into lower Chharba and upper Chharba by an imaginary line which can be drawn through the village separating it in two equal halves. The Chharba village is divided into several names to identify that locality. There are two small villages within Chharba, Rirapur and Osmanpur and a few places marked as Serugati, Naiakolony, Banjara, Budhi, Lakila, Purbia, Indrupuri, Binodhanagr. This makes it easier to find out the locality. The people have no idea of the ward, they just know the name of the locality (identification of localities). Dadajee explains that the enterprises can't be found in most wards but they are situated add the 'road'. (*It is of no use to look at the localities as communities because the enterprises are not spread over the localities*)

The ward members are elected to serve the people of the village. Dadajee says that they do nothing, they don't bother regarding their locality (political organization).

There is no division between Hindu and Muslim people. People of the scheduled caste do not become ward-member or prathan. The Muslims in Dehradun are less educated than Hindu's (cultural and ethnic groups). They go to school for 4-5 years and then they stay home because they are too poor (education). Dadajee explains that with the separation of Pakistan and the killing of both Hindus and Muslims most educated, rich Muslims left India to go to Pakistan. What remains in India are the less-educated and poor Muslims. Children of Muslims don't continue school after 10-12 years of age because the children of Muslims have to work because their families are really poor.

The people in this Chharba are mostly BPL(below poverty line). Their monthly income is around 900-1000 rupees (main sources of income). Dadajee explains that the caste-system is the main reason. 65% of people in Chharba is Hindu, 30% is Muslim, 5 % is Punjabi and Sikh. A few are tribals which means that they belong to a tribe. Within the 65%, half is scheduled caste and janjati (is also scheduled caste), few percent is Brahmin and the rest is general (*by which Dadajee means not the highest, not the lowest but in between*) caste. The general caste people and the Brahmins are reluctant to get goods from people from a scheduled caste. In general all of the scheduled caste are really poor, only a few are rich. Currently, 10-15% of total population in Dehradun comes from Himachal, they are all general caste. The people from the scheduled cast have no enterprises, they do only farming and day labour. The children of the scheduled cast get primary education and after that secondary. All the children in Chharba get education. There are four government primary schools, which are up to class five. There is one secondary school, the inter-college. There are also four private kindergarten schools. These are only used by people from the general caste because you have to pay for it (cultural and ethnic groups, education, distribution of wealth, literacy, education).

### **Markets and enterprises**

Sahaspur is the roadhead which supplies people with irregular need for goods

Sahaspur has:

- bakery
- blacksmith (with the use of electricity)

Chharba is a big village (the amount of inhabitants) but the amount and type of enterprises is low, most people live BPL with just basic needs fulfilment. Only a few have access to TV (*small local market*) Compared to Sahaspur Chharba is a local market. People go to this market for their needs and only in special cases they go to Sahaspur which has a more differentiated market. Walking from Chharba to Sahaspur will take between 30 minutes to one hour, on a paved road. Reaching by car would take only 15 minutes. In most villages the amount of enterprises will be less than in Chharba but the differentiation and the purpose that the market serves are similar.

### **(Industries):**

- 4 knitting by machine. They all use electricity as main
- weed grinders, 6 or 7 enterprises
- Oil grinder, 2 enterprises.
- Sugarcane, candy enterprise, 3 enterprises
- General stores 6 or 7 enterprise
- Tailors, 6 or 7 enterprises
- Blacksmith, 3 or 4 enterprises (All on charcoal)
- Carpenter, 4 or 5
- Clay-pottery, 1 enterprise

### **Kotra:**

Where we went to see the watermill is Kotra, there are five watermills. There are two or three blacksmiths in Kotra.

Kotra is a small village, 30 minutes driving from Chharba. It only has a small local market with a few enterprises. Walking to Chharba will take 2-3 hours and walking to Sahaspur an additional 1,5 hour.

### Energy sources

All villages in Dehradun are electrified. Diesel is really expensive just like LPG and Kerosene, therefore people use electricity.

### Vulnerability context.

In the winter season 2005-2006 in Uttaranchal there has been a huge drought. The last five months there has been no rain. This means that it is difficult to survive on the weed the villagers have been able to harvest because the volume is half of its normal size. Therefore the villagers have to buy their food from the market. In general, people in Chharba have sufficient land to provide themselves with food. Most people in Chharba work as a daily labourer. On their own land they cultivate weeds to provide them with food. The harvesting is the only period where people cannot work because they have to work on their farm. This will take approximately 15 days. The rest of the year they go to work as daily labourer. These daily labourers are mainly men. Women work only during the harvesting season, which in Chharba is the rice-season and pea-season women also work.

In this year, because of the drought, the market prices may be a few percent higher

### Livelihood assets

To do:

#### Natural resources:

In 1987 most houses were mud houses, when he returned most were concrete. In the upper part are problems with water and irrigation. The government sometimes stopped the water for a few days, sometimes fifteen days. ADOPT has deep wells, five tanks. When these problems arrived they used to take water from the wells from ADOPT.

Infrastructure, there is a well paved road, leading all the way to Kotra. On this road, every 2 hours a bus drives.

Neeraj mother has a phone

No internet

### gender differences

If the government provides subsidies for the BPL people in a village this money is provided through the prathan. If the poor people can be divided into really poor, poor and a little poor and the person who is just a little poor knows the prathan. He will get it and the really poor people do not have the possibility for getting access to it.

If electricity drops in the village, generally all people do not have electricity at that point in time. There are some exceptions when something is wrong with an extension of the grid.

## **Chhmil1**

Chharba

Enterprise 3

Enterprise weed grinding with dieselgenerator

Interview with Dadajee on 22-03-2006

Name entrepreneur: Bisswnath Gaswel

### **Production process**

Entrepreneur actually has two enterprises. The weed grinding enterprise and a retail shop which is a general store. For the weed-grinding enterprise he collects the weed from the people in the village during daytime, he writes down the amount that they bring in. At night he grinds the weed and at night or the following day the customers come to pick it up. Per hour he can grind 50-60 kg. In this process the weed or flour heats up a little bit (*remember the enterprise which grinds through the watermill, he stated that it is not good when the weed or flour gets heated up because than it loses its nutrients. This entrepreneur could produce 200 kg of flour on one day*)

He started the enterprise three years ago. In upper part of Chharba there was no grinding. In lower part of Chharba there are 3 or 4 grinders. The people from upper Chharba had to go to lower Chharba for their grinding. That is why he started the enterprise.

### **Location**

The enterprise is located at the main road through Chharba, at approximately 4 kilometres from the National Highway

### **A. Adoption, rejection or no knowledge**

The entrepreneur uses diesel because at the time that he bought the diesel generator the diesel was cheaper than electricity. Which he could have used if the price had been lower. The price of electricity remained the same but the price of diesel increased. Now he would be better off if he could use electricity. The supply of electricity through the grid is 220 V. For his generator he needs 440 V. If he wants to get this he would have to pay a lot of extra money to the energy-supplier. The general store is 15 years old, the weed-grinding enterprise is 3 years old. Since the beginning he has been using the dieselgenerator.

### **B. Vulnerability context**

Most of the villagers come with their own weed to the enterprise to get it grinded. He charges 0.88 Rs. for grinding a kilo of weed. The people have to eat so in times of drought the production volume does not decrease. The people might get less weed from their land but than they buy it in the market.

### **C. Human capital**

The entrepreneur can read and write. He has finished primary and secondary school and at the age of 16 he passed his exams. He used to work as a labourer as a maintenance-person in a company. At that time he came to know about grinding and possible ways for doing it. At that company he did also come in contact with other kinds of machines. The management skills he knows are general knowledge. He would like to learn additional skills but there is no possibility for it in the village. Entrepreneur does also understand a little bit of English.

### **D. Financial capital**

His main sources of income are his general retail store and the weed-grinding. In addition he makes a little bit of money through farming. He earns approximately 50-60 Rs. a day by these two enterprises. The whole year through he has work with his weed grinding enterprise. If there is not weed, there is

corn or herbs. The cost of diesel is 32,5 Rs. per liter and for one hour of grinding he uses 1,5 litre. Per day he grinds 3-4 hours. This means the cost of the diesel alone is 150-200 Rs. Out of his earnings he is able to save a small amount. He also has an old scooter which he uses for getting the diesel in Sahaspur.

#### **E. Social Capital**

He is alone with his son, daughter, wife and 90-year old mother. First he stated that he is not a member of a group. But he is a member of ADOPT. Since the start of ADOPT he has been voluntarily working for the organization by offering his manual labour. The rest of his family is also aiding ADOPT. The entrepreneur's son is in the twelfth grade at Horawala intercollege in Horawala, which is about eight kilometres from Chharba. He has many relatives in other blocks, districts and also in Himachal and Delhi. He migrated from Himachal to Uttaranchal 40 years ago, with his parents. (He talks to a lot of people in Sahaspur and has a bench in front of his shop. Everytime I have passed by there, there were some people sitting at the bench. I passed by five times since I came here)

#### **F. Natural Capital**

He only requires weed, which his customers deliver, and water. The generator needs 100 liters of water for cooling but this is not replaced. Only once in a while he has to add some because the rest has evaporated.

#### **G. Physical capital**

He has his house, with one or two rooms and in front of his house there are three rooms. One of two by two, two of three by three. He has a scooter for transportation and is located at the main road in Chharba, where the bus passes by. He gets diesel from Sahaspur, either by scooter or by bus. He gets it when it is required, takes his own jerry-can and fills it up at the petrol station. He does have electricity for lighting and a TV. He has a newspaper and he talks to a lot of people in Sahaspur.

#### **H. Influence on and access to transforming structures and processes**

The customers come to him. He only has to get diesel in Sahaspur. With his scooter or the bus this would take 15 minutes. The demand is not larger than the entrepreneur can supply. Probably there are no more people who need their weed grinded.

Entrepreneur does not want to take a loan. He is afraid of it getting a loan. They have to pay a license fee, 350 Rs. for the general store and 500 Rs. for the weed-grinding enterprise. They have to pay no income-tax because their income is really low.

The customers of the entrepreneur are the villagers of Chharba.

The entrepreneur is of general caste.

#### **I. Perceived Attributes of Innovation**

Entrepreneur has the enterprise for maintaining his family. He knew that the enterprise would have beneficial outcomes because he knew that the price of diesel was cheaper than that of electricity, when he bought the machine.(He had not taken in account that diesel might become more expensive).

Compared to electricity, this energy source was cheaper. They entrepreneur learnt from his job as a maintenance guy in a company, where he also had the change to experiment with the diesel generator. He did not have to change any of his production methods, except that he had to start working in evening hours. He already had all the knowledge

#### **J. Innovation-decision**

The entrepreneur made the decision to use this energy source on his own

#### **K. Communication-channels used**

The entrepreneur learnt through interpersonal channels because he learnt during his maintenance job. He learnt from his former employer.

#### **L. Extent of change-agents promotion efforts**

Nobody ever came to promote an energy source to the entrepreneur.



## **Chhmil2**

Chharba

Enterprise 7, Enterprise which grinds weed, spices, rice and oil with four different machines, all running on electricity.

Name entrepreneur Dinish Chauhan

Interview with Dadajee and Karlijn on 25-03-2006 at the enterprise, with only the entrepreneur there.

### **Production process:**

The enterprise is owned by a joint family, father, mother, grandmother, brother and wife and two children and him and his wife and a baby. His family owns the enterprise since 1982 when he bought it from somebody else. At that time there were only the weed and the rice mill. They were already running on electricity. The family bought the spice mill and oil mill afterwards. They have also always been running on electricity. For the weed, the spices and the oil the customers come to the enterprise, the entrepreneur grinds it, and then the grinded product is returned to the customers, the rice he grinds for free, but the gram from the rice he sells as feed for the cattle. The weed he grinds for 1 Rs/Kg, the oil he grinds at 2 Rs/kg and the masala he grinds at 5 Rs./kg.

### **Location**

The enterprise is located at the main road in Chharba, 3 kilometres from the National Highway.

### **A. Adoption, rejection or no knowledge**

Since 1982 he has been using electricity for his weed and rice grinder because he bought the enterprise from somebody else who was using electricity as well. The spice grinder and oil grinder were bought later and have also been running on electricity since the purchase. The electricity bill is 2850 Rs. per month. In 1982, with the two machines it was 300 Rs. a month. He never considered using diesel (even though it has been cheaper than electricity sometime between 1982 and now). Diesel would be too costly and they would have to purchase it in the market in Sahaspur which would not be possible because of they are busy with their enterprise and they cannot go down to Sahaspur to get the diesel or LPG. (Later during interview I found out that he is also working as a labourer in the post-office in Sahaspur, 2-3 hours a day and he could buy diesel when he is there. I think he didn't want to say that the only reason is, is that diesel is more expensive).

The electricity drops 2-3 times a day, sometimes up to 1-2 hours.

### **B. Vulnerability context**

During the drought his production is less, approximately 35% because people have less products to be grinded. The drought period is just before the rainy season.

### **C. Human capital**

The entrepreneur did his masters in sociology at the DAB PG College in Dehradun. He did primary school, secondary school, inter-college and after that his bachelor and his master. He could not get any job in sociology. He has got a job at the postal department where he picks up the mail from the village post office and brings it to the central post office in Sahaspur. This takes him 2-3 hours a day. He is currently 29. He learnt how to operate the machines from his childhood and now he knows everything about it. First they were in a joint family. After the division his father and uncle got it. His father has it now and he is mainly operating the machines. The former owner taught the family how to operate the machines. The management skills came from general knowledge and the enterprise does not keep any accounts. He would like to get another rice-machine or modify his own machines but due to financial problems both cannot be achieved. By doing this he would be able to supply a higher demand and increase his sales. He would not need any additional knowledge for operating these

machines.

#### **D. Financial capital**

Per month the total sales are 6000-7000 Rs. After deducting all costs (electricity, maintenance) he has a profit of 3000. He earns the most from the weed grinder and the rice mill. The joint family has a little bit of land for their own cultivation. This is not a source of income but provides them with their need for food. The entrepreneur is still working at the postal department, 2-3 hours a day with which he earns 3000 Rs. a month. The 3000 profit that they make with the enterprise they have to share with the joint family. The entrepreneur is able to save approximately 1000 Rs. after he has paid for two insurances. He owns a scooter, tv, telephone.

#### **E. Social Capital**

The entrepreneur meets people in Sahaspur every day with his job in Sahaspur, at the postal office. He doesn't go to Dehradun. He knows people in the surrounding villages. He picks up mail from the postoffice in Chharba, brings it to the central postoffice in Sahaspur, takes back the mail from the central postoffice to the post office in Chharba. He also knows people in Vikas Nagar. He only goes there occasionally, which is monthly. He does not know people outside these neighbouring villages and Chharba.

#### **F. Natural Capital**

The entrepreneur does not directly rely on natural sources for his production. Indirectly, he produces less in periods of drought.

#### **G. Physical capital**

The entrepreneur relies on electricity, He has access to it through the grid. The energy drops 2-3 times a week, sometimes for 1-2 hours. He claims that he does not use diesel or LPG because it is more expensive than electricity and because he would have to go to Sahaspur to get it (which is 10 minutes by bus and 10 minutes by scooter. Walking it would be 1 hour.). Due to time-constraints he can't. He has TV, telephone and a radio and he always reads the paper.

#### **H. Influence on and access to transforming structures and processes**

It takes the entrepreneur 10 minutes by bus or scooter or 1 hour to walk to Sahaspur and half the time to get to the National Highway road. The demand for grinded weed, oil, spices and rice is higher than he can supply. He would be able to sell more if he could produce more. His customers are people from Chharba and people from neighbouring villages. The Chharba villagers come to him because they are friends and for convenience. People from other villages come also because they are friends. He cannot use electricity from 5-9 pm because at this time enterprises are not aloud to use electricity. They (the people from the powerhouse in Sahaspur) come to check this regularly. In the beginning he made a mistake once. Now he knows and he does not do it now. The entrepreneur pays money to the mundeesanity, the union of businessmen where he has two licenses. There is a big market in Sahaspur. They have got a union of businessmen there (purpose is unclear). He pays 150 Rs per year per machine (total of 600 Rs.) to district panchayat. The entrepreneur is of general caste. He pays for the electricity by going to the powerhouse to pay the monthly bill. The entrepreneur does not have any loans. The only way to influence the legislation and policies is by voting.

#### **I. Perceived Attributes of Innovation**

The reason he has the enterprise is for coping. When I confront him with the fact that he earns 3000 Rs. per month through the postal office and ask him why he works in the enterprise he tells that he is free after 2 hours of work at the postal office and why should he waste his time? The enterprise is of his family and he needs to sustain his family. When it is required, some family members help out in the enterprises but generally this is just one other person. When the enterprise was bought, the rice mill and the weed grinder were already running on electricity. They bought the whole enterprise as one. If they would have changed it to diesel they would have needed to get a generator. At this point in time electricity is cheaper than diesel or LPG. This energy source was already there. The entrepreneur did not experiment with the energy source before buying the enterprise. The entrepreneur learnt the

operation and management skills during his childhood.

**J. Innovation-decision**

The decision to get the enterprise and the electricity was made because the machine were already running on electricity.

**K. Communication-channels used**

They learnt about the machines and how to use them, so also about the electricity from the former owner whom they bought it from

**L. Extent of change-agents promotion efforts**

Nobody ever promoted an energy source to the entrepreneur

## Chhpot1

Village Chharba

Enterprise 1 (E-1)

Interview on 23-03-2006 with translator Dadajee

Pottery enterprise

**Name entrepreneur:** Sushil Kumar, name father Rehaturam Kumar

**Production process:**

From clay the entrepreneur makes pots on a turning, flat stone, which he turns by putting a stick in the stone and turning the stone. He adds water to the clay to make it soft, than he makes a pot which he than dries in the sun. Than it is painted. The entrepreneur creates an oven by digging a whole in which he puts cow dung and the pots. It is than covered with earth. In the top of the oven he makes a hole in which he puts burning coal. The whole thing is than again cover-up completely. The oven has to remain for 1,5 day. After this they are taken out. The closing of the oven is really important else all the pots will break.

The market for pots is only during summertime because it is than that people need pots for storing things and water to keep them cold. In winter people hardly buy pots. The selling and making of the pots he does for 5 months a year. During the other months the entrepreneur also has an enterprise in which he sells stones and sand. This can only be done during the off-rainy season because than the river is dry and he can collect stones. So the rest of the year, during approximately 9 months he is in this business. During the time that the pots are not made he also works as a daily labourers.

**A Adoption, rejection, no knowledge**

The entrepreneur uses manual labour for his enterprise. He could use electricity for making pots but he does not have the money to get the electricity. In his household he has electricity for lighting only. He has always used this manual energy source. (*When the stone is turning it remains turning for a very long time, say 5 minutes.*)

**B. Vulnerability context**

There is always clay in the forest for which he has to walk 1 kilometer from his house. The main road in Chharba is 10 minutes walking.

**C. Human capital**

The entrepreneur attended school until class three. At the age of eight he had to start working because his family was really poor. He can read and write a few things, like his name, but not more than that (*info from Dadajee*). The profession of pottery is a family tradition of the Kumar family. He learnt the skills from his father at the age of eight, also the management skills. His father is living next to him and he used to work in that enterprise since he was eight, at that time they were a joint-family. Three years ago he built a mud house and started his own enterprise because he could increase production in that way. His brothers still work in the enterprise of his father. His wife helps him in his enterprise. ADOPT has helped his father to get a lens in one of the eyes so he could remain working.

**D. Financial capital**

With the pottery he can earn 2500 Rs. a year. The rest of the year he works as daily labourer for 15 Rs. a day and combined with the stones and sand enterprise he earns 60-70 Rs. a day. The entrepreneur tries to save money but he is hardly able to. His stocks are three oxes, one horse and a small piece of land of 5 by 10 meters.

When he went on pilgrimage to Punjab he saw a pottery which used electricity. He would like to use electricity as well because he thinks he could increase his income from pottery to 7500 Rs. But to get

the electricity he would have to make a one time investment of 8000 Rs. which he cannot do.

#### **E. Social capital**

The enterprise does not receive any help from the government. For his pottery enterprise he receives people who come as customers to his house/enterprise to buy the pots. For the sand and stones enterprise he goes to the village of Chharba. He does meet people in the village. He is from scheduled caste(I think these people are very insecure, shy and reluctant to talk to others, I think they have the feeling they are useless). They have no acquaintances outside the village. No friends and no relatives live outside.

If he could get the 8000 Rs he needs for electricity than he has a contact in upper chharba where he can sell higher amounts up to a yearly salary of 7500.

#### **F. Natural capital**

The natural capital they use is clay, which is readily available on a distance of less than 1 kilometer. They get stones and sand from the river during the off-rainy season. They use small amounts of water for the pottery. They have three oxes and a horse and hardly any land. Just a piece from 5 by 10 meters. Therefore they cannot supply themselves with their entire need of food and they have to buy weed. They also use small amounts of coal for the oven and cow dung which they get from their oxes.

#### **G. physical capital**

He lives in a mud house but is connected to the grid for lighting. For the sand and stone enterprise he has the horse with a wagon with which he transports the stones and the sand to his customers in Chharba. They have no tv, no radio and they do not read the paper. *(First of all he can probably not read it and Dadajee states that they also don't care because they have enough on their mind already)* He has no land, only a few metres.

#### **H. access to and influence on structures and processes**

The customers of the pottery come to his enterprise. He transports they sand and stones to his customers in Chharba. This will take him a maximum time of half an hour.

The demand is larger than he can supply because he has contacts to which he could sell additional pots.

There is no loan or any other financial support.

The entrepreneur is not confronted with policies and licenses accept for the 100 Rs. per cubic feet that he has to pay to the forest department. He does not pay income-tax, simply because nobody has come to ask for it yet.

His customers are only people in Chharba.

He pays for the electricity he uses by paying electricity bill. This electricity bill comes every other month *(according to Dadajee this happens in a honest way)*

He is of scheduled caste but he is connected to the grid

#### **I**

He has the enterprises for coping *(I can tell because he has absolutely no luxuries, no TV and pottery is not a status industry to be in and they require all the money for their daily needs like food, school of his two children)*

He knows that other energy sources, like electricity would make it possible to increase production but he does not have the financial capital to get a machine which runs on electricity and he cannot pay for the electricity. The advantage of using manual labour is that it is cheaper. He learnt the production process from his father so he had the possibility to experiment with manual labour and the turning stone. He did not have to learn any new things. When he started the enterprise for himself he did not have to learn the production process and he learnt the management from his father.

#### **J**

The entrepreneur decided to start his enterprise as an individual decision *(which is influenced by his parents who live next to him, also in a mud house)*

**K**

He learnt about the production process and how to use manual labour from his father.

**L**

There has never been anybody at the enterprise trying to promote a modern source of energy

*(Entrepreneur is scheduled caste, he seems very insecure, hardly has contacts, is located far from the road. He works really hard.)*

## Chhprathan

Interview with the prathan of Chharba

Name: Munna Khan

At around the age of 22 he learnt to read and write. At that time (20 years back) there was a scheme in India which aimed for teaching illiterate people reading and writing. He is currently 44. He has three sons and two daughters. One son has a chicken farm and the other is in cement building.

general

Chharba has a population of 10500 people, 800 families. The total land is 54.000 biga, 1500 biga's of land are owned by villagers which is forest land. Most of the land is used for cultivation. There are five ponds in Chharba with a total size of 50 biga.

Chharba panchayat has 13 wards and one prathan, and a deputy prathan which is selected by the panchayat members. They are all selected by the general public for a period of five years. The division between upper and lower Chharba is not a government recognized division, this has been there traditionally. There are some political orientation present but this does not lead to any problems. There are members of the Congress, the BJP, few CPM and SP. The area is very peaceful.

When asking what is special about Chharba the prathan explains that it is known as a full form village, Adas gram because there are many biogas plants used for cooking and there is a reserved forest. Apart from ADOPT there is another NGO which sometimes does activities in the villages, named Chakriti, their office is in Rampur.

Vulnerability context

The main problem is Chharba is the irrigation problem. 30% of cultivated land can be supplied by deep well and 70% is irrigation land which requires water. This gives very big problems during drought. The 70% of land only depends on nature for its supply in water

Livelihood assets

The main sources of income in the village are cultivation, labouring either in Chharba or in neighbouring villages, enterprise. Approximately 200 people serve for the nation in the military department (which is in Dehradun) and approximately 150 people are working in institutions like schools, offices and government agencies)

In Chharba about 59% is literate only on the mother language. Women which are older than 35 are basically illiterate, except for the Hindu women. Women younger than 35, 65 % are literate.

Educational institutions: There are four government owned primary schools up to class five. One inter-college (class 6-12) and four English-medium kindergartens (the parents think that their children will learn to speak English, this are private schools).

Of the total population, 65% is Hindu and 35% is Muslim. Of the Hindu population, 20% is scheduled caste, 40% is general caste and 40% is backward caste. Of the 800 families in Chharba, 10% have a telephone.

Any infrastructural programmes are just done by the government of Uttaranchal.

#### Industries

10 weed grinders of which 4 use diesel and 6 use electricity

8-10 tailors which use human labour

10 general stores which use human labour

2 potteries which use human labour

7 blacksmiths which use charcoal

1 shoe polisher using human labour

5 barbers which use human labour

7 telephone shops which use electricity

6 knitting shops which use human labour and electricity

8 carpenters which use manual labour

4 cycle-repair shops which use manual labour

1 photography shop which uses electricity

2 electricity shops which use electricity

15 restaurants which use gas and firewood

3 sugar cane mills which use electricity and firewood (medium-sized enterprise)

1 brickmaking factory (large enterprise)

2 government ration shops

Total: 94

Only the grinders pay taxes to the district panchayat. The rest of the village is not

95% of the households is electrified

There are 2 non-educated doctors which used to work at a doctors office for two years and now call themselves doctor.



## Chhwel1

Chharba

Enterprise 8, enterprise which uses iron welding for making doors, grills, fences, gates. They use one welding machine, one drilling machine and one pressing machine on electricity and manual labour. One entrepreneur and four workers..

Entrepreneurs name: Javed Khan, the entrepreneur lives in Horawala, where he is deputy prathan.

Interview with Dadajee and Karlijn on 25-03-2006. During the interview, approximately 8 people are surrounding the site where we are interviewing.

### **Production process:**

Iron is bought from one suppliers in Vikas Nagar and one supplier in Sahaspur. The iron is transported to the enterprise by a hired car. With a welding machine, a drilling machine and a pressing machine they make doors, grills, gates and fences. The customers pick up the products at the enterprise. The enterprise consists of one entrepreneur, one skilled labourer and three learners.

### **Location:**

The enterprise is located at 400 meters from the National Highway, on the main road of Chharba.

### **A. Adoption, rejection or no knowledge**

Entrepreneur has always been using electricity in his enterprise. Other modern energy sources like diesel and LPG are more expensive. He uses the electricity eight hours a day. 2-3 days a week the electricity is off for 1-2 hours. If this happens the workers and the entrepreneur do manual work. If work cannot be finished in the eight hours than they work after ten at night because they are not allowed to use electricity from 5-9 pm. He has this enterprise for the last 10 years and he uses electricity since the beginning. His electricity bill is 600-700 Rs. a month, he does not require electricity constantly.

### **B. Vulnerability context**

The prices of iron do constantly fluctuate, no seasonal fluctuations but a trend of increasing iron prices. The demand for his finished products decreases from June to August, during the rainy season. People do not build at these times. During this time, the demand decreases by 30%.

### **C. Human capital**

The entrepreneur finished primary, secondary and inter-college. He does not have any education in welding. He finished inter-college by the age of 24. After that he worked as a labourer in a similar enterprise for five years, where he learnt all the operations he is doing in the enterprise. The management skills he learnt from his brother, who has a similar enterprise in Dehradun. The entrepreneur taught the workers in his enterprise how to do this work. He has one skilled labourer who he taught all the jobs, he then examined him. The other three workers are still learning. The entrepreneur would like to learn other skills regarding iron appliances or work with other materials. Due to poverty he cannot (*poverty can be questioned with this man!*). He would like to get one lathe machine and another pressing machine.

### **D. Financial capital**

The entrepreneurs total sales are 1 lakh Rs. per month. His profit is 13000-15000 Rs. per month (*I think more, as Neeraj explains afterwards that people do not like to show off their earnings, especially in poor areas, because they are scared that they might get into problems because others tell government on them. For example, when they are not paying income tax there have been occasions that others in villages informed the government. Especially since a lot of other people are surrounding*

*the interview*). The costs he deducts are electricity, material costs, transportation costs and labour costs (which is 4000 per month for the skilled labourer and 500 Rs per month for the learners). He does not save money in the bank, he only has one account with approximately 40.000-50.000 Rs which he uses when he has to pay for materials (As Neeraj explains, people who are not paying taxes or licenses, like this person, do not save in the bank because the bank may present a list to the income tax government department, so it is possible that this person is saving money but only cash money). In Horawala he has a house, a motorcycle. He has no land and no cattle.

#### **E. Social Capital**

The entrepreneur is a ward-member and the deputy prathan in Horawala. The ward-members and the prathan are directly chosen by the public through an election for a period of five years. The panchayat members then select the deputy-prathan from the other ward members. At the installation they have a meeting with all panchayat members. They prepare a project for the village which they send to the Block Development Office. If the BDO allows the work they send money to the prathan. The ward members have to take care that the division of the money is done according to the criteria. The ward members go around in their ward to inform the people about the project and check if the activities are being performed. The entrepreneur meets people in groups when they have problems in the wards. First a meeting is arranged with the panchayat members and after that a meeting is called with the people in the ward where the problems are. The entrepreneur has acquaintances in Horawala, Chharba and the neighbouring villages. When there is a problem in the block there will be a meeting with all the prathans and deputy prathans in the block, which is the Sahaspur block. He has friends and relatives in other states, in Himachal, Uttar Pradesh and Delhi. He speaks to them a few times a year, 2-3.

#### **F. Natural Capital**

Iron.

#### **G. Physical capital**

For transporting the iron from the suppliers to his enterprise he uses a hired car. He has a motor cycle for going from Horawala to Chharba and back. Electricity used is supplied by the grid and the drops 2-3 times a week, sometimes an hour. He has a mobile phone, a tv and he reads the paper every day.

#### **H. Influence on and access to transforming structures and processes**

The market for his suppliers are on a distance of ten kilometres for Vikas Nagar and three kilometres for Sahaspur. For getting the materials he hires a truck. The skilled labourers he has had for five years and the learners for about six months. He hired them for them to learn the business and because they could help in increasing production. He states that the demand in the market is bigger than he can supply but he does not hire more workers because he is faced with financial problems concerning the investment in raw materials. His customers come from Chharba and neighbouring villages up to 15 kilometres from the enterprise. All customers come to the enterprise to get their goods. The iron is obtained from two contracts with suppliers in Vikas Nagar and Sahaspur. One of them provides goods on a loan, that is why he has two. The entrepreneur does not have a loan. He is not registered. He does not have any licenses. He pays tax to the district panchayat and he pays no income tax because he (says) he is under the tax income level. *(The income tax level is around 1 lakh Rs earnings a year. If the entrepreneur earns 13000-15000 Rs per month he can never be under the tax income level, when I check this is not surprising. First of all the government does not implement the policy properly because they do not have the assets. They do hardly check people. Second, if you want to apply to income tax you have to go to several institutions to fill out forms. The only way the government does checks is by checking all people who buy a house and checking people who are told on by others.)*

#### **I. Perceived Attributes of Innovation**

The entrepreneur has his enterprise for profit because he is having a mobile phone, a tv and he earns 13000-15000 a month. In an area with so many people BPL *(check later with data from BDO)* this is a high earning. He is also a panchayat member for which he requires time. The entrepreneur knew that this energy source would be beneficial because it is cheaper than diesel,

LPG or kerosene. He had the possibility to experiment with the energy source because he worked for five years in a similar company, also do engineering.

**J. Innovation-decision**

The entrepreneur decided about the use of the energy source

**K. Communication-channels used**

The entrepreneur learnt about the energy source through interpersonal channels. He learnt about the application of it through the job he used to work in where he learnt the operations he is performing.

**L. Extent of change-agents promotion efforts**

Nobody ever promoted the energy source to him

*What it looks like now he panchayat members have a lot of advantages. The entrepreneur has a recently good income compared to all the other entrepreneurs I have been talking to. Neeraj explains that the advantages of the panchayat members are that can get proper coordination and contacts and assistance, you are able to build a large network. Friends of the pradhan are also involved in this.*

## **Chhobser**

### **Chharba**

- Mudhouses are an important indicator for wealth. People mention very often that they used to have a mud house and since X years they have a concrete house. The poorer people in the village, for example the 2 pottery families still live in a mudhouse.
- Another important indicator in these villages is that the Muslim community is generally living in mud houses. There is a group of Muslims living together in the village. All the houses are mud houses. (This is similar in Sahaspur. Most people who have an enterprise have a concrete house on the road. When going into the Muslim community you will generally find mud houses.)
- Dadajee, ADOPT: Chharba is a village which very large amounts of land, more than 50.000 biga's. 30% of the land is irrigated but most of the people are able to eat all year from their own crops. The average amount of land is 10.000-15.000 biga's.
- Most people have a concrete house with more than 2 rooms. TV is not an indicator for wealth, DVD-players and fridges are. Most of these houses have stone floors with a room for receiving guests or a sitting room. The other rooms are than sleeping rooms for the family members.

### 1.1.3 Village Kotra

#### Kotward

Kotra

Interview with wardmember Mr. Santram

Interviewed by Neeraj and Karlijn on 27-03-2006. During the interview there are a few children, his wife and a neighbour woman present.

##### 1. Introduction to village

Kotra panchayat consists of four villages: Jakatpur, Bilseni, Nahar and Kotra Kalyanpur. Kotra panchayat has a total population of approximately 2500 (*from now on when referring to Kotra, the entire panchayat of Kotra is meant*). Kotra Kalyanpur is a big village and the other villages are small. In Kotra there are 150 families. Of the 2500 citizens approximately 1200 live in Kotra Kalyanpur. All the villages in Kotra can be found within a radius of 2,5 kilometer from the central point. (*The total area will than be 20 kilometres when calculation,  $\pi * 2,5 * 2,5$* ). The nine wards are almost evenly spread over the four villages. The prathan lives in Kotra Kalyanpur, approximately 500 metres from their house. (*I have heard from locals that the prathan is a really bad prathan, I haven't been able to find out yet through talking to them, when asking:*). Politicians are not good, they first wear a necklace of flowers, than they wear a necklace of shoes and than they wear a necklace of bullets. (*When stating that the interview is confidential and nobody will get to read the interviews that are from the area, they grap their chair and come closer*). The prathan has cut many eucalyptus and popular trees. Nobody has taken any action. Prathan has divided the money from the government in a wrong way and one night, when the people in Kotra woke up, he had suddenly built a big house. He has arranged a marriage within his family-members and that is considered a shame in Hinduism and he does not have the right information to really do the things that are needed in the village and he also does not care. He does not have the psychology to take action against any illegal activities in the village. When I ask who do all the work they say that the ward members do all the work (*Neeraj knows the man and he claims that it is true that Mr. Santram does a lot of good work. When ADOPT is working on a toilet or is requiring any help in the village he is always available to help out*). Other effects is that basic needs are not fulfilled, for example education and there is a high unemployment rate of 95% of people (*I question this because later I asked if people work as labourers they claim that in the off-farming season 45% of the total population, almost all men, go to work*). People are also not interested in education any more because there is so much corruption that education is not important to fulfil life needs in Kotra. When asked for the literacy rate they claim that it is 95%, only people of the younger and the coming generation are literate.

##### 2. Vulnerability context

Corruption is a problem, drought is a problem. Especially that there are no proper irrigation facilities. In 1978 there was an enormous landslide which covered a large part of the village. There is a water problem and they really want to buy a water tank. There is also no gathering place in the village for any social events. To stop flooding they used to use a grade-wire. The government of UA always used to do that but it doesn't happen anymore.

##### 3. Livelihood assets

Only the younger generation is literate. Most people of the older generation cannot read. The main source of income is farming and there are a few enterprises in Kotra. There are only a few months in farming, April and May, and November and December. The other months most men work as labourers. Approximately 90% of men. Only three people in the village earn more than 4000 Rs. per month, the prathan and two others. There is a requirement of 30.000 units of grain but they are only getting 15.000 units of grain from the government ration shop. The total population of Kotra is Hindu,

of which 55% is general caste and 45% is scheduled caste. There are not any problems in Kotra based on the caste system. The zamindars during the British rule caused the differences between the castes. At that time you could not just go to the zamindar to pay for something.

#### 4/5 Enterprises and Energy sources

Most households in Kotra have been electrified.

- 4 tailors of which only the one at the bus stop uses electricity, the others use manual labour
- 1 bakery which uses coals and wood
- 4 general/retail stores
- 4 grinders on diesel and depending on the amount of water
- 2 or 4 grinders which use the watermill as energy source.
- 1 blanket factory, which also uses diesel
- 1 shoe maker using manual labour
- 2 blacksmiths using wood and charcoal
- 2 teashops
- 1 chemist
- 2 carpenters using manual labour
- 1 decorator of marriages

Total: 25 enterprises

ADOPT is active in the village. They have been building toilets and addressing social problems. The water is too deep for getting wells. They really want a tank to store water in. They can get it from down and carry it to the water tank. Due to financial problems they can not invest in a tank and the infrastructure for the water. They also have a problem with not having a bank. They have to keep all the money in their house. There is a system where streaming water comes down from the mountains into the village. This water flows through a stone, built gutter. In the gutter there are walls so people can let the water stream to their house. If a lot of people are using this than there is only water for 1-2 hours a day in the house.

## Kotbl1

Kotra

Enterprise 12: Blacksmith using charcoal and iron

Entrepreneur's name: Babu Lal, 58 years old

Interview by Neeraj and Karlijn on 27-03-2006. Surrounding his oven there are a lot of ready-made products: hammers, sickles. (In comparison to the Enterprise number 11, also a blacksmith, who had no finished products in his enterprise).

(When we walked over to the enterprise and Neeraj asked for an interview the man was very reluctant. He did not want a photograph and he did not want to do an interview. He claimed that he had some problems concerning the division of land and that was why he did not. I did want to interview this entrepreneur because his enterprise was really remote and he seemed quite poor. This is the second enterprise on a long distance from a 'begaanbare' road where the customers come to the enterprise to get their products. Therefore we went back to wardmember Mr. Santram who was laughinh and said he was probably scared. When Mr. Santram arrived with us the entrepreneur was very willing to help out)

### Production process

The entrepreneur goes to Sahaspur and Vikas Nagar to get iron. He has an enterprise outside of his house where he has a little stone-built oven and a blower. There he first burns the wood and after it has become coal he lets the coals smother to heat up the iron. He than hits the iron in the required form.

The entrepreneur works on order.

The entrepreneur has always been living in Kotra and has been a blacksmith for 16 years.

### Location

The enterprise is located in Kotra, 30 minutes by bus from Chharba. When getting of the bus in Kotra you have to walk half an hour to reach the enterprise.

### A. Adoption, rejection or no knowledge

The entrepreneur has the enterprise for 15 years. Before that he used to be a carpenter but it became prohibited to cut wood from the forest. This meant that he could only buy it and that was too expensive for him. Therefore he chose to become a blacksmith. The entrepreneur uses wood which he burns to get charcoal. He is not allowed to burn large quantities of wood for creating charcoal because the government does not allow the storage of charcoal. The entrepreneur can only burn wood which is required for the heating up of the iron he is going to work on. The entrepreneur explains that he is too poor to buy charcoal. He has never bought charcoal from the market before.

### B. Vulnerability context

The demand of his products increases during the farming season in April-May and from September-December. The demand is twice as high compared to the demand in the off-farming season. Currently he has no work. The iron prices fluctuate and he goes to Sahaspur or Vikas Nagar to get the iron. There he searches for the lowest price of the iron. The entrepreneur has 3 biga's of land which they use for their own nutrition. He tells that a problem is that the monkey's eat their crops.

### C. Human capital

The entrepreneur is illiterate, he can only sign a signature, that is it. He only completed the second and the third class. He started at 9 years old and stopped 12 years old. He stopped because his father was not able to provide expenses such as clothes and books and he had to work for meeting the family's expenses. He had to take the cattle out, took them grazing. The entrepreneur says he learnt himself

how to do be a blacksmith by looking at other blacksmith's in Kotra. He claims it is a God's gift and it took him a long time to learn it. The ten years before he became a blacksmith he was a carpenter. He learnt carpentering from his father. When his wife died he had to stop carpentering for the sake of his children because he could not go out anymore, he had to stay at home. Now he can't start it anymore because he is too old to get the wood and the job is too heavy. The entrepreneur would like to install a machine to sharpen materials. These machines run on electricity. He has electricity in his house for lighting but he does not have a meter from the electricity company to calculate the units.

#### D. Financial capital

It takes 30 minutes to one hour to make a plough. It takes 3 hours to make a hammer and it takes half a day to make a sickle. Per week he produces and sells 14 products. He works on order and gets approximately 1-2 orders a day. With high demand he hires workers which he pays a daily wage. For a hammer he asks 300 Rs. For a big sickle he asks 50 Rs. For a small sickle he asks 25 Rs. For a plough he asks 40 Rs. His total sales are 15 products per week of approximately 50 Rs. per piece. Monthly he sells 15-20 new products of 50 Rs. (Amounting to 750-1000 Rs. per month) in addition he earns 400-500 Rs. per month out of repairing. Out of 50 Rs. he earns 50% are costs. This work is the only source of income for the entrepreneur. He has 3 bigha's of land. He does not have any transportation. He does not have any stocks. He owns a cow, one goat and a dog.

#### E. Social Capital

Entrepreneur knows people in neighbouring villages, he has no relatives living elsewhere. The entrepreneur knows a few people in Vikas Nagar and Sahaspur which he meets when he goes there. He meets them once per week or per two weeks. He does not go to weddings and festivals. His children do go to weddings and festivals. He has two boys and 2 girls. His eldest son has married. They all live at his house. His sons don't work, they are studying in the school. He does not know people in other districts and other states. The entrepreneur is Hindu and scheduled caste.

#### F. Natural Capital

The entrepreneur has 3 bigha's of land which they use for their own nutrition. He tells that a problem is that the monkey's eat their crops. The entrepreneur gets the wood he needs from the forest. According to forest law he is not allowed to take wood from the forest. Therefore he takes wood which is down and floating in the river. Occasionally he finds trees which have fallen down of which he cuts what is required. *(It is possible that he does cut wood from the forest but he does not want to say so because he is scared of getting caught).*

#### G. Physical capital

He has electricity in his house for lighting but he does not have a meter from the electricity company to calculate the units. The entrepreneur does not have any transportation possibilities. The electricity he has he uses for the lighting in the night. He does not have a TV, a telephone, a radio. He can't read so he doesn't read the paper. His eldest son does read the paper when he goes down to the village to get something.

#### H. Influence on and access to transforming structures and processes

It takes the entrepreneur 30 minutes walking and 30 minutes by local bus to reach either Sahaspur or Vikas Nagar. When I ask if he could get a higher profit from carpentering he says that he could but that he is too old and he is not working for profit but for sustaining his children. He does not pay any money to district panchayat, village panchayat or income tax. He has no licenses. He is not confronted with any regulations. He gets 1-2 orders a day and he cannot work according to demand, he sometimes has to say no to his customers. When demand increases he hires workers. They get daily wages. His customers are from Kotra and surrounding villages. He has about 25 families who are his customers. The entrepreneur has applied for an electricity line for the poor (subsidised) at the provider but he did not get it yet. He applied 4-5 years ago. He applied with the name of his brother and that is why he did not get it yet. He is willing to apply for a Janta connection but he has not done it yet because he has to work in his enterprise and is not able to go there. The entrepreneur knows the wardmembers in his ward *(when we went to the wardmember to ask if he could talk with the entrepreneur, the started*



*laughing and explained that the man is a bit crazy)*

#### I. Perceived Attributes of Innovation

The entrepreneur has the enterprise not for profit but for coping as he stated that he is not working for profit. The entrepreneur knew that this source would have the most beneficial outcomes according to his living conditions because this energy source is the cheapest energy source the entrepreneur has access to. The benefit was for the entrepreneur and his joint family. The entrepreneur could experiment because wood is readily available to experiment with.

When the entrepreneur changed from carpenting to blacksmith he had to change his production methods. He had to change his materials, get a blower, change his input and give up his father's tradition. When asked about his experience with having to give up the tradition he responds that he just had to provide food to take care of his children.

#### J. Innovation-decision

The entrepreneur decided on his own about this innovation.

#### K. Communication-channels used

The entrepreneur learnt about the possibility of becoming a blacksmith from another blacksmith in Kotra whom he observed. This person used charcoal. The entrepreneur knew that he could also use wood for making charcoal so he did this.

#### L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the entrepreneur

## Kotfocus1

Interview with brother of ward member

Interview done by Dadajee and Karlijn, 23-03-2006

Name Dani Ram

He is also E4, the entrepreneur which grinds weed by a watermill

The total population of Kotra is 2500 with 150 families. Kotra is a panchayat in the Sahaspur block, with three villages of which the total population is 2500:

- Kotra Kalanpur
- Birseni
- Nahad

The total size of panchayat Kotra is 25 square kilometres. There are seven wards and one prathan. The wardmembers and the prathan are elected by the electorate population of Kotra.

Vulnerability context

Dani Ram is worried about the drugs which the youth uses. They mainly drink local wine which causes degradation of the youth. In the rainy season they are confronted with landslides and a vulnerability before the rainy season is the possibility of drought.

Industries:

- 1 barbershop which uses manual labour
- 6 general stores
- 1 decorator of marriages
- 1 bakery which uses charcoal
- 2 tailors which use manual labour
- 1 blacksmith which uses charcoal
- 4 weed grinders by watermill
- 1 weed grinder which uses a diesel generator
- 1 retailer of fabrics
- 2 telephone shops which use electricity

Total: 20 enterprises

The main source of income is agriculture. A few people have an enterprise and work as daily labourer or permanent labourer. There are only a few people which get remittances.

In Kotra there are three primary schools and two junior high schools up to class eight (the age of 12-13). For secondary school they go to Horawala which is five kilometres from Horawala.

Literacy rate is 30% in general. Of the women less than 15 % is educated.

The entire population of Kotra is Hindu, 45% is scheduled caste, 45% is general caste, the rest is Brahmin. Enterprise-ownership is by people from all castes, there are no problems arising from the caste-system. Even Brahmins buy products from the scheduled caste.

There is no LPG, diesel or kerosene used in enterprises in Kotra except for one weed grinding enterprise at the main road in Kotra. Households do use these for example for cooking.

## Kotmil1

Kotra

Enterprise 4 (E4) Flourgrinding with watermill. In Hindi the watergrinder is called 'garad'.

Name entrepreneur: Dani Ram

Interview done by Dadajee and Karlijn on 23-03-2006

### **Production process:**

Customers bring weed, corn and herbs to the entrepreneur's house or to the enterprise. The entrepreneur lets the water stream to the watermill. It goes down a gutter, into the mill to make it turn. Inside the mill there is a really big stone grinder which turns to grind the weed. After grinding it falls down and they collect it. They then take it by horse up to the entrepreneurs house or to the main road in Kotra. In eight hours he can grind 2 quintile (which is 400 kg). At the location of the enterprise there are four garads of which two are the entrepreneurs. With he can, on a eight hour day, produce minimum two quintile and maximum 4-5 quintile, depending on the waterforce.

### **Location**

Kotra can be reached from Sahaspur and Chharba by bus. The bus goes every few hours. From Chharba it takes 30-45 minutes to reach Kotra, on its main road where a few other enterprises are located. From the busstop it is a 20 minutes walk to the entrepreneurs house and another 30 minutes walk to his enterprise.

### **A. Adoption, rejection or no knowledge**

The watermill is the energy source of the weed grinding machine. Electricity is costly, every month he has to pay for the electricity he uses while the watermill offers free energy. *(When comparing the production of the weed grinding machine in Chharba with this one the efficiency is higher in this one. The weed grinder on diesel can produce 50 kg per hour. In four hours this would be 200 kg. In the watermill weed grinder the entrepreneur can produce 400 kg, if the waterflow is small. In this case he closes down one enterprise but he can still produce 400 kg of flour on an eight hour day. This would mean 200 kg. in 4 hours. Taking into account that this is his production with one enterprise on a small water flow, the garad is more efficient.)*

Another advantage of the garad is that the weed does not heat up while with electricity grinders or generator grinders it does heat up. The flour is a lot healthier when it is not heated up, it does not loose nutrients that way.

### **B. Vulnerability context**

Every summer, before the rainy season, the waterflow is less. Two of the four enterprises close down because the waterflow is insufficient. At days like that he produces 400 kg because all the waterflow is used for just one enterprise.

### **C. Human capital**

The entrepreneur finished primary school, secondary school and higher secondary education (inter-college). He finished school at the age of 22, now he is 48. He is also working as a laboratory-assistant in a inter college near by. When he was studying there he was really interested in this work. He works there 48 hours a week. When he is working his wife and two sons do the grinding. The children go to school first and in the afternoon they do the grinding work. Therefore the enterprise produces only 4 hours a day. Only on Sundays they produce from the morning until the evening. The entrepreneur built the whole system himself, including the watermill and the weed grinder. He has been working in the enterprise since he was a kid and since 1988 he has the two watermills, with both a weed grinder. The knowledge has been in his family for centuries, also the knowledge concerning management skills. He

has got the two enterprises for eighteen years. He taught his children how to do the work. He has two sons. One is doing a masters degree, the other son is in secondary school.

#### **D. Financial capital**

Entrepreneur earns out of grinding approximately 3000 Rs. per month. At the college he earns 7000 Rs. a month. Therefore he is able to save 1500 Rs. a month. He has two cows for milk, one horse and two buffalo's and a motorcycle which he uses to go to the inter-college.

#### **E. Social Capital**

He meets groups of people at his job at the inter-college. His customers come to his house or to the main road in Kotra, by that way he supplies them their flour. Because his customers come from his village, villages in the area and also from Dehradun, he knows people there. He does not know any people outside the district. Entrepreneur is from scheduled caste.

#### **F. Natural Capital**

Entrepreneur strongly relies on the water flow and the difference in height. Kotra is located at the border region between the hills and the plain and has a little difference in height. He also grows some weed for themselves.

#### **G. Physical capital**

The flour is transported from the mill, by horse, to the road. The flour is transported in bags. The entrepreneur gets electricity in his house which he uses for his telephone and lighting. He pays an electricity bill of 300 Rs. a month. Everybody, close or far from Sahaspur (where the powerhouse is for Sahaspur block) pays the same rate. In Kotra all houses have been electrified. He has a motorcycle with which he goes from Kotra to the intercollege where he works. He has no TV but he does have a telephone and a radio. They read the newspaper.

#### **H. Influence on and access to transforming structures and processes**

Most of the Kotra villagers come to his enterprise to get their weed grinded. There is one other weed grinder with a diesel generator in Kotra. Most of the villagers do not know that the flour which has been grinded up without heating is healthier. Also the people from the surrounding villages use his watermill for grinding their weed. Some people from these villages come especially to him because he produces the flour in this way. From his total customers, 75 % comes from other villages and 25% come from Kotra. This is due to the fact that the population in Kotra is small. The total population is 2500, with 150 families. He also supplies people in Dehradun who come to him because he grinds without heating the weed. He has no customers outside the district. He does supply to Dehradun and than from Dehradun his flour is transported elsewhere.

If he would be able to produce more he could transport it himself to a bigger market. But he cannot produce more (*In my opinion because he is working at the intercollege and his sons go to school*). There is a bigger demand in the market for the product.

He uses the bank in Sahaspur for depositing funds. He does not have a loan. There is no license he requires for his enterprise. He does not pay tax because he is below the tax level (*Dadajee thinks that people who produce more than 150,000 Rs. a year have to pay tax.*). He requested a check-up from the government for his grinder and enterprise but nobody came. His enterprise is unofficial.

His brother is a wardmember and therefore he has influence on the way things are organized in Kotra.

#### **I. Perceived Attributes of Innovation**

He has the enterprise in addition to his work at the inter-college because he wants to think of the future of his children. (*He gets a newspaper in which an article is published*) This article states that all the watermills in Uttaranchal can produce one lakh KW electricity. The total amount of watermills in Uttaranchal are 15,000 and one garad can produce 500 W of electricity per second. The government of Uttaranchal is thinking about supporting them so that the entrepreneurs can supply other people in rural areas with electricity. The entrepreneur claims that if the government would provide him with the necessary infrastructure he could produce electricity and keep grinding the weed.

He knew that this source would have beneficial outcomes because he knew that for the energy use in

his enterprise he would not have to pay for any energy source and because his family tradition had learnt him that by using a garad, or watergrinding the flour does not heat up and that this sustains the nutrients in the flour.

The entrepreneur had the possibility to experiment with the energy source because he had been working in this industry since he was a child. There he learnt how to built the watermill, how to arrange the production, maintenance and operation. Entrepreneur did not have to change anything except for building his own enterprise.

**J. Innovation-decision**

The entrepreneur decided about using this energy source and this enterprise.

**K. Communication-channels used**

The entrepreneur learnt about this type of enterprise and this type of energy creation from his father as a family tradition.

**L. Extent of change-agents promotion efforts**

Nobody ever promoted any other energy source to the entrepreneur

## Kotmil2

### Kotra

Enterprise 13 Two/three enterprises which are all from the entrepreneur. One enterprise with a oil-grinder, weed-grinder, spices-grinder and rice grinder. This enterprise is also used for grinding materials (partly cotton) for making blankets and pillows. All the machines are running on diesel. This is done outside. The other enterprise is a retailshop of clothes and fabrics for clothes.

Name entrepreneur: Laksmi Belwal. She lives together with her husband, her mother in law and one daughter and one son.

#### Production process

The input of weed, rice, spices and plants for oil are mainly from the customers. They just bring the input over and pay for the grinding. The entrepreneur also has some input from her own land for grinding. When the grinding is completed the products are retrieved by the customers in the enterprise. Some off the grinded material is sold. The entrepreneur has two workers who help in any of the three enterprises, where required.

#### Location:

The location of the enterprise is directly at the only busstop in Kotra.

#### A. Adoption, rejection or no knowledge

They use diesel because electricity has a lower cost compared to diesel (All the other entrepreneur's explained that diesel is more expensive so I confront her with the fact that other entrepreneurs have told me electricity was cheaper, she explained the following:;) It depends on your use and your status as an electricity-user. First of all, diesel can be purchased for exactly the amount which is required, also for small amounts. With electricity you always have to pay a minimum bill for the service. Second, diesel you can buy when you require and pay accordingly. With electricity you have to pay a monthly bill at a fixed. Third, entrepreneurs who are BPL get other rates and might have a lower minimum they have to pay. This she does not know but she clarifies that this might be. The grinding enterprise they have for 10-12 years now. The retailshop and blanket making shop for 5 years. (She does not explain but it might be that at the time they got the enterprise diesel was cheaper than electricity.

When asked why they do not use a watermill (like the other person in Kotra using a watermill for grinding weeds and herbs) to create the required energy they explains that their family needs a lot and that they need the three enterprises to sustain and the oil grinding wouldn't work with a watermill. There is no availability of water at the place where she lives, and exactly at the spot where they live there is no difference in height. In the enterprise where they are now they are at the road and they have their own land here and there they have not.

#### B. Vulnerability context

They grind their own crops the whole year through. Demand is high in oktober, November and December. That is the season of farming. The rest of the year it is low. The demand for the blankets increases in the winter months. In summer it is almost nil.

#### C. Human capital

Both she and her husband have done 12<sup>th</sup> grade, which is senior secondary. Which means that they have both finished primary and secondary school. She stopped because she got married and both her and her husband had to work in the enterprise. She is now 28. Her father-in-law used to be in the forest department. Her husband started the enterprise and bought all the machines. Her husband had taken some money from his parents home and they also had some money coming from outside, meaning that they had a loan. Her husband learnt himself how to do this job by looking at other enterprises. He

learnt the management skills himself as well. They would like to get a big rice-mill which is running from electricity. The demand was never there, that is why they did not get it before. Now they are trying to get it but due to financial problems they have not got it yet (later I found out that they took a loan only two months ago for 50.000 Rs with which they are planning to get other machines and do business investments for their enterprise. She claims that she would be willing to learn a lot of things but she would not know what at the moment because she is busy with her enterprise.

#### D. Financial capital

With the grinding enterprise they have sales of approximately 5000 Rs. per month. The investment they have to make is 3500 Rs. in the labourers (they pay both of them 1800 Rs. per month) diesel, maintenance of machines. With the retail enterprise she has approximately 1000-1200 Rs. sale per day. When she sells for 1500 Rs. she has 250 Rs. of profit. That means she has a profit between 165-200 Rs. per day. That amounts to 4125-5000 Rs. profit per month. Her costs for this enterprise are the cost of the products and transportation cost. The blanket enterprise only sells from Oktober to March. During these months they sell 400-500 Rs. a day. They make 60 Rs. profit on it. The costs are materials, input, diesel, maintenance. The total profit per month will amount to approximately 1350 Rs. They save money in the bank, 200-300 Rs. per month. They have no big amount of money in the bank. They pay income tax but she doesn't know how much. They have 12 bigha of land. They recently have taken a loan, one month ago, of 50.000 Rs. They are going to invest in machines and the upgrading of their businesses.

#### E. Social Capital

She used to be attached to a group of women who save money from their income. When anybody from the group required a loan they would provide them with it. She is not in this group anymore. She meets groups of people in their enterprises (during the time I am doing the interview there are a lot of people dropping buy, and also a few customers who come to buy things in the retail enterprise. A policeman is a friend of the family, her mother is there, and occasionally some others stop by). They meet groups on marriages and festivals. They products which they sell in their retailshop they get from a wholesaler in Dehradun. The materials they require for the making the blankets and pillows they get from Vikas Nagar. They haven't got any other friends or relatives in other states. She has one relative in Haryana, whom she meets at weddings and at festivals.

#### F. Natural Capital

The enterprise requires water for cooling the machine. When asked she does not know how much it requires but there are never problems during the drought.

#### G. Physical capital

They get diesel when they go to Vikas Nagar and Sahaspur. Only occasionally they go especially for the diesel to Sahaspur. They do not have a car. If they require transportation they either take the local bus or they go with their scooter. They have a TV, a telephone, a mobile phone, a CD-player. They read the paper daily.

#### H. Influence on and access to transforming structures and processes

They go to Dehradun, Vikas Nagar and Sahaspur. By scooter this takes respectively 45, 20 and 20 minutes. By local bus this takes respectively 1,5 hour, 30 minutes and 30 minutes. The customers are coming to the enterprise to bring the input for grinding and after the grinding has been done they also come to pick it up. Their rates for flour are 1,25 Rs./kg. For corn 2 Rs./kg. For spices 5 Rs/kg and for oil 2,50 Rs./kg. If they could produce more they would be able to get more customers. Also for the blanket enterprise this is true. When I ask why they do not she explains that if you want to produce more you have to invest in materials and machines. They do not do any publicity. They do not face any competition here. The customers from all enterprises are from Kotra and neighbouring villages. There are no customers in villages further away. They have a license for two enterprises, she is not sure but she thinks that they pay 500 Rs. per year for them to the district panchayat. She is not confronted with any regulations concerning her workers, health regulations, environmental regulations. A government official of the government of UA comes once a year to check the grinding

machines for a special label which they have. They know the prathan and the wardmembers. Sometimes they have work with the prathan, than they go to his house. In other instances they just say hello. Work at the prathan's house is work for retailing materials, fabrics and clothes from the retailenterprise

#### I. Perceived Attributes of Innovation

They have their enterprises for making a profit which I conclude because they are investing, they want to expand. They have three enterprises with which they make a monthly profit of approximately 7000 Rs. per month. They have a TV, a CD-player, a telephone, a mobile phone.

They knew that diesel would be more beneficial because they can use it according to demand, with electricity they always have to pay a minimum bill. And they have to pay regularly and with diesel they can pay when they require. The advantage is in the costs for the entrepreneur and her family. They did not experiment with the energy source because they saw it at other enterprises and then implemented it immediately.

When they implemented the energy source they bought the enterprise, bought the machines in it, they learnt the new way of working.

#### J. Innovation-decision

The decision was made with her husband's parents and with her husband and her. The decision was made quickly because the decision involved only the conclusion that diesel would be cheaper.

#### K. Communication-channels used

They saw the use of diesel in a grinding enterprise at another enterprise using a grinder. That is how they learnt. This is interpersonal

#### L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to them



## **Kottl1**

### **Kotra**

Enterprise 16; tailoring enterprise using 3 sewing machines using manual labour, a piko-machine using electricity and an iron working on electricity.

Interview done by Neeraj and Karlijn on 31-03-2006. During the interview one of his workers was present and other people stopped by the enterprise during the interview.

#### **Production process**

With 3 sewing machines, one piko-machine and the iron the entrepreneur sews shirts, pants and suits. The entrepreneur has four workers excluding himself. One of the workers is a woman. One of the sewing machines is standing at another location. The entrepreneur also has another enterprise, a retail shop for milk. The entrepreneur collects the milk from the people in the village and then sells it to others in the village. The entrepreneur has had the tailoring enterprise for 20 years. People come with fabrics to the enterprise, they are being stitched and afterwards the people come to pick up their finished goods from the enterprise. The entrepreneur goes to Vikas Nagar twice a month to get the thread.

#### **A. Adoption, rejection or no knowledge**

The entrepreneur has one machine running on electricity, the piko-machine. This machine only works on electricity. The entrepreneur does not change the other sewing machines into machines running on electricity because they can be damaged by using electricity and these machines were made for manual labour. If he would want them running on electricity he would have to invest and the entrepreneur does not have the money for this. Initially the entrepreneur had one machine and he used to rent the shop. He collected money for buying the other machines and for buying the shop. At the location there was no tailoring enterprise before, he started the enterprise. He has the electricity-machine for two years. Before that he only used electricity for ironing. The entrepreneur's electricity bill is 300 Rs. per two months. After acquiring the electricity-machine his electricity bill increased with 50 Rs.

#### **B. Vulnerability context**

There are fluctuations in demand. There is a low demand in March but the rest of the year the demand is high. According to Hindu religion there is not supposed to be a wedding in March. People stitch clothes for marriage parties and festivals. In the month of March the entrepreneur does work which has been waiting for him or he does repairing work. The demand in March is 10% of the normal demand. There are no fluctuations in the price of thread. The entrepreneur has a fixed supplier. Since five or ten years the demand for garments has increased because the population has increased. He has no competition from ready-made garments because the people who wear ready-made garments don't live in Kotra. There are 15 tailors in Kotra panchayat. There is competition in quality, not in work.

#### **C. Human capital**

The entrepreneur passed eight class. Which is primary school. He was 13 when he passed. He is currently 30. The location of the enterprise used to belong to another person. He used to pay a rent of 100 Rs per month. He started to learn tailoring from another tailor who was from Nepal but was living in Dehradun. At that time the entrepreneur was 12 or 13 years old. He was still going to school at that time. At the age of seven or eight he started to rent the shop from the owner (This seems very strange. After checking he confirms that this shop never belonged to his father or other family members. They were all doing farming. He really started renting the shop on his own at the age of seven or eight.) The entrepreneur learnt his management skills, like accounting and marketing, himself. All the four workers work 8 hours a day, every day of the week. When they require a holiday or they want to leave for other purposes they do. The workers were skilled labourers when they started working in the enterprise. He would not like to get other or additional machines because he does not have the financial capital to invest in them. If he could purchase them he would be able to work quicker and

more sophisticated. He would also like to learn about the workings of these machines. He would also like to get knowledge on doing more types of appliances but eh does not have the time to learn all these things because he has to work in his two enterprises. Next to this he would have to pay fees to learn this and he does not have the financial capital to pay for these fees. The four workers are working in the enterprise. The entrepreneur himself is working in the milk-retail-enterprise.

#### **D. Financial capital**

The total profit of the tailoring enterprise is 3000 Rs. This depends on the amount of products that he sells. His total sales are 10.000 Rs. Costs are thread, labour ( $210 * 30$ ), electricity and maintenance. The workers are paid according to the amount and type of products they stitch. Approximately they get 70-80 Rs. for one item. The approximate pay-check per day for all of the workers is 210-240 Rs. His brother works in farming at their land. This cultivation is for the use of the family. They do not sell any farming products. Both brothers support the family.

With selling the milk the entrepreneur does hardly earn any money. He thinks about 200 Rs. per month. He does not do this work for profit but for assuring the distribution of milk to all the people that require the milk. He does not save money, also no cash money at his home. He cannot due to the requirements of his family. He has 10 biga's of land and he has 2 buffalo's, 7 goats, one dog, one cat and a cow.

#### **E. Social Capital**

The entrepreneur lives with his joint family. His wife, his parents, his brother, his sister-in-law. Both the brothers have 2 girls and one boy. He lives at the only busstop in Kotra and he distributes the milk in the village. In the village he knows almost everybody. He meets groups of people at Holi, festivals and marriages. He goes to Vikas Nagar twice a month to do business. He goes to Vikas Nagar, Dehradun, neighbouring villages and Sahaspur to meet friends. He talks to them approximately once a month. He is not involved in any organization. His children go to school. One is in the fifth class and the other in the fourth class of kindergarten. He knows people in Himachal Pradesh and Uttar Pradesh. He speaks to them occasionally, at marriage parties, a few times a year. Or at any Hindu function. The entrepreneur is Hindu and is from the scheduled caste. His enterprise is located opposite to a school so they children, with parents always visit his enterprise.

#### **F. Natural Capital**

Does not apply.

#### **G. Physical capital**

The entrepreneur is connected to the grid. The electricity drops only when there is a storm. This happens approximately 5-7 times per month. He has a scooter and when he goes to Vikas Nagar he either takes his scooter or the bus. It takes the entrepreneur 1,5 hour to reach Vikas Nagar. The entrepreneur has a TV, radio, CD player. He has no DVD, no mobile phone and no landline. He does not read the paper because he does not have the time for reading it. He is able to read and write.

#### **H. Influence on and access to transforming structures and processes**

It takes the entrepreneur 1,5 hour to reach Vikas Nagar. The customers come to his enterprise to bring raw materials and pick up the finished goods. The entrepreneur goes either by local bus or by scooter to Vikas Nagar. If the entrepreneur would get machines on electricity he would be able to sell more. If he had more knowledge about differing appliances, for example embroidering, he would also be able to sell more. The entrepreneur does not have a loan because it is easy to take a loan but the monthly payment is really high (monthly). The entrepreneur is not confronted with worker regulations, health regulations or any other kind of regulation. He pays 50 Rs to the district panchayat every year for his shop. This is the only time a government official come to the enterprise, for collecting this yearly fee. His enterprise is not registered. Electricity is always available, there are no restrictions.

He knows the prathan and wardmemembers. The exchange an hi or hallo. He knows them all but he has not friends with wardmembers or prathan.

He has only customers from Kotra panchayat. He has fixed and new customers. Approximately 50% is

fixed and 50% are newcomers. Delivering quality to customers is his means of marketing. The entrepreneur would like to expand his enterprise but he does not have the financial capital to make investments.

He learnt about the machine which is running on electricity, the piko-machine, from the tailor in Dehradun where he used to work. It is a machine for piko. Before that he didn't do piko so when he got the machine he differentiated the appliances of his enterprise. Because of this machine, he estimates that demand has increased with approximately 10%.

#### **I. Perceived Attributes of Innovation**

The entrepreneur has the enterprise for coping. The reason why he has the enterprise is for sustaining his family. He would like to invest to increase his sales and profit but he does not have the financial capital to do this. The entrepreneur had been using electricity for ironing from the beginning that he obtained the enterprise. He knew about using electricity for piko from the enterprise where he had been working. He also knows about the possibility for sewing machines running on electricity but he does not have the financial capital to invest. According to the entrepreneur piko machines can only work on electricity. The advantage of this new source was for the customers and also for the entrepreneur. The demand for piko was there amongst his customers so he wanted to deliver a better quality by also doing this appliance. This has increased the demand for garments. The entrepreneur experimented with the electricity in the enterprise where he was taught.

He did not have to change anything because he had already been using electricity for ironing. His electricity bill increased with 50 Rs. per month from 250 to 300.

#### **J. Innovation-decision**

The entrepreneur decided about the innovation in energy source by using this machine

#### **K. Communication-channels used**

The entrepreneur heard about the possibility for this innovation from his former employer. He used to work in the enterprise and there he learnt how to use electricity for ironing and electricity for the piko machine

#### **L. Extent of change-agents promotion efforts**

Nobody ever promoted an energy source to the entrepreneur.

### **1.1.4 Village Langhaf**

#### **Lanch1**

Village Langha, Langha Panchayat

Enterprise 18; The entrepreneur uses either wood for his oven or kerosene for his kerosene gas heater to produce chai and some simple dishes

Name entrepreneur: Babu Ram

Interview done by Neeraj and Karlijn. At arrival in the enterprise the entrepreneur was sleeping. Somebody else was also lying outside sleeping. Dipak woke up the entrepreneur. During the interview there was only an entrepreneur of a retailshop present who is a good friend and next-door neighbour.

#### **Production process**

The entrepreneur buys milk, tea, sugar and food in the local market in village Langha. Kerosene he also buys at the government shop in Langha village. For chai making he boils water, milk, sugar and tea and for the food he boils or fries the foods.

#### **Location**

The entrepreneur is located at the bus stop in the main market in Langha.

#### **A. Adoption, rejection or no knowledge**

For his stove he uses kerosene and for the furnace he uses wood. He can only make small investments and he only has a small demand that is why he does not use LPG or electricity. If the demand would be higher he would be using LPG. At home he has an LPG furnace with oven for cooking. He uses kerosene because the demand is low. LPG is costlier compared to kerosene. It has the advantage of being more efficient but this would only apply if demand was high. Then he could produce quicker so he could meet the high demand. Then he could make more money and earn more money after paying for the cylinder and the stove. The efficiency of LPG is higher when burning it. LPG costs 20 Rs per liter. Kerosene 10 Rs. per liter. LPG is not easily available. You have to travel 30 km. After that you have to get into a queue of half an hour. Kerosene is available in the government fare-price shop in the village. Kerosene cannot be sold in general, private stores. He has always been using both the energy sources. He normally uses wood but when it is not available he uses kerosene.

It is really hard to burn wood, it takes a long time. Dry wood is not always available in the wood. If he cuts green wood from trees people from the forest department will punish him. In 60% of his production he uses wood, in 40% he uses kerosene.

Kerosene is not easily available either because bus drivers use kerosene in stead off diesel for the energy sources of their buses. So the subsidised rate of kerosene goes into the buses. The drivers have contacts in the markets in a store in Vikas Nagar. From there they can take the kerosene. In Uttaranchal the buses are run by private sector people, a group of people have made a union. They are running the buses. It is completely upto the drivers to decide either to use kerosene or diesel. In his shop he uses electricity for lighting. When he got the connection he shared it with his brothers. At the moment he still shares it. The total amount is 300 Rs. per 2 months.

#### **B. Vulnerability context**

Supply is low, demand for kerosene is high. Raw materials for the chai are tea, water, milk, tea, ginger, sugar. The entrepreneur buys the things from local shops in the market of Langha. Water he gets from the pipeline. Price of milk is always high. There are small fluctuations, there is always an increase in price, never a decrease. In winter demand for chai is higher than in summer. In winter demand is twice as high. The entrepreneur has been running the enterprise since 1982. Over all these years demand has been gradually decreasing because the price of raw materials have increased and he had to increase the price of tea and meals to reflect this increase. The entrepreneur never experiences

problems with getting water during the drought.

#### C. Human capital

The entrepreneur has passed the eight class, he finished primary. He stopped because he was not concentrated enough. His parents also thought it would be better if he would start working. When finishing the eight class he was 14 years old. Now he is 41. He started the enterprise at 17 after he had worked for a doctor. He cooked food for him. He did this work for 3 years. Initially he got the enterprise from his parents. It used to be a mud house. When he started earning some money he made a concrete building. He learnt how to run an enterprise by himself. He decided to get a chai-shop because at that time they were building the road at which his enterprise is located. There were a lot of workers at that time. That is why he thought it would be a good business. At that time he also had an accident and he can only work when he can sit. He would like to buy a fridge for cooling his products but he does not have the financial assets to buy one. He would like to learn driving so he could be a driver. There are a lot of people who have a car but no driver. If he had a drivers-license he would be able to earn more money.

#### D. Financial capital

The entrepreneur's total sales are approximately 2000-2500 Rs. per month. During the summer season it is less, approximately 1500 Rs while in the winter it is more, approximately 3500 Rs. His costs are 50% of his total sales. His costs are for kerosene, ginger, sugar, milk, tea and products for the dishes. He makes pochorie and he uses potatoe's, spices and oil. The entrepreneur also works at the post office, 6 days a week from 10.00-15.00. With this job he earns 3000 Rs. per month. The entrepreneur is able to save 500 Rs. per month at an account at the post office. His nuclear family has 2 bigha's of land. He is the only person in the nuclear family supporting the family. The entrepreneur has given the land to somebody else for cultivation. He receives 50% of the profit. He has been saving money for the last four years. In total there is 3000 Rs. in that account. He has taken out some money a few times. He does not have a loan because he fears that he will get into trouble if he gets a loan.

#### E. Social Capital

The entrepreneur used to be part of a joint family together with two brothers. The brothers all live with their nuclear families now. The entrepreneur is member of a band which plays at marriage and religious parties for free. He performs with his band approximately 1-2 times a month but he practices every week. He meets groups of people at marriages and festivals. Also when he performs there. He practices once a week in the night hours in the temple. He made some statues for this temple. For his job at the post office he goes to Dakpathat every day on his bicycle, this is 14 km away. He brings the letters to the post office in Langha. The entrepreneur knows people in the neighbouring villages of Dokri, Chandpur, Chharba, Vikas Nagar, Herbertpur and Sahaspur. Most of these are between 10-15 kilometres away. He only talks to them at marriage parties or if he is in need of them. Sometimes this is twice a month, sometimes this is twice a year. They are relatives and friends. He also knows people in Saharanpur in Uttar Pradesh, Hardiwar in UA, in Himachal Pradesh and in Haryana. These people are relatives and he only sees them at marriages and functions (the man seems very social, a lot of people sneak in his enterprise even though we are sitting inside and they cannot see us from outside. After we had finished the interviews with him we did another 2 interviews in Langha. Afterwards we went to the electronics shop, we interviewed, and after that we wanted to interview a shoemaker. This person was not there so we walked up again and came across his enterprise again. He invited us in for another glass of lemonade. We did and we were talking for 20 minutes. After that we walked down and 20 minutes later he showed up at another interview, he sat down, to listen.)

#### F. Natural Capital

The entrepreneur relies on water which is always readily available through the water line. Dry wood is not always available in the forest. If he cuts green wood from trees, people from the forest department will punish him.

#### G. Physical capital

The entrepreneur uses kerosene. Kerosene is available in the government fare-price shop in the village.

Kerosene cannot be sold in general, private stores. Kerosene is not easily available because bus drivers use kerosene instead of diesel for the energy sources of their buses. So the subsidised rate of kerosene goes into the buses. The drivers have contacts in the markets in a store in Vikas Nagar. From there they can take the kerosene. In Uttaranchal the buses are run by private sector people, a group of people have made a union. They are running the buses. It is completely up to the drivers to decide either to use kerosene or diesel. Therefore the demand for kerosene is high but the supply is low. LPG is not easily available either. You have to travel 30 km. After that you have to get into a queue of half an hour.

The entrepreneur has not got a tv, a radio or a phone. He has a bicycle. He reads the paper daily, mostly in the evening hours.

#### H. Influence on and access to transforming structures and processes

The entrepreneur is located at the main market in Langha. For Vikas Nagar he has to go by bus which takes him one hour.

The demand is not higher than what he can supply. The entrepreneur could be making more tea but the demand is not there.

The entrepreneur saves money at the post office because he goes there every day and therefore it is easier to submit money there. By this way he does not have to move to the bank. In recent years he has sometimes paid tax to the district panchayat. It depends on them because they have to come to the village. If they come, which is at least not more than once a year they compel him to pay the tax. He explains that the financial year has just ended so they will probably be coming soon (Later that day when we were interviewing enterprises a man of the district panchayat arrives who came to collect the tax.) The entrepreneur is not confronted with any regulations or policies. The entrepreneur knows the ward members and the prathan. He says: "You could say that this is the prathan's office, this is a social gathering place for the villagers. The prathan comes every day for a cup of tea. They talk about superficial things and also about the development of the village. The entrepreneur is aware that the village Passoli has no water. Most of the entrepreneur's customers are from neighbouring villages. They come to the State Bank of India at the busstop in Langha. His enterprise is across the street so they come and drink tea in his enterprise.

#### I. Perceived Attributes of Innovation

The entrepreneur is having the enterprise for coping. If he can earn his meal with his business he is satisfied. He doesn't think there is a more profitable business in Langha. The entrepreneur knew that kerosene would be more beneficial because it is easier to make it burn. When there is an immediate requirement for his product he can supply it. The advantage is mainly for the customers because burning wood to a high temperature is difficult. If customers have to wait for this they might not have the tea.

The entrepreneur did not experiment with the kerosene. At the time he got the enterprise in Langha there was nothing there. He also did not have electricity at that time. Kerosene and wood were the only two energy sources available which he could use for cooking. A kerosene stove costs 250 Rs. At the time he got the enterprise it was 100 Rs. which was a big amount of money. The entrepreneur thought it would be the best possible business.

The entrepreneur did not have to learn any new skills concerning the production process. He had learnt at his job with the doctor how to make chai and cook food. He did have to learn how to manage an enterprise.

#### J. Innovation-decision

The entrepreneur himself decided about the innovation. His parents supported him at that time because he had to get a location for the shop.

#### K. Communication-channels used

He had learnt about using kerosene for making tea by seeing other enterprises use it.

#### L. Extent of change-agents promotion efforts

Nobody ever promoted the energy source to the entrepreneur

## Lane11

Langha village in Langha panchayat

Enterprise 19, electronics shop using electricity

Name entrepreneur: Pavin Kumar

Interview done by Neeraj and Karlijn on 7-4-06

Production process:

The entrepreneur repairs Tv's, CD's, DVD's, radio's, music system's, DTH (special kind of TV) and irons. The appliances he uses are screwdrivers, multi-meters on batteries and a soldering iron on electricity.

Location:

The enterprise is located at the main market in Langha village.

### A. Adoption, rejection or no knowledge

In the shop they have a fan and lighting. They use electricity for the soldering iron because it requires a big heat to melt the soldering wire. For that electricity is the best energy source which can be used. Batteries can also be used but electricity is much cheaper compared to batteries. When asked why his multi-meters don't work on electricity he replies that the multi-meters are just 3V. This can only be used on batteries because electricity is 220 V. The entrepreneur rents his shop with electricity for 300 Rs. per month. He has had the enterprise for five years and since the start of the shop he has been using electricity.

### B. Vulnerability context

The entrepreneur gets his raw materials from Vikas Nagar or Dehradun. He goes there once a week or once every two weeks. He goes by bus. He has a few fixed shops where he gets his products. He always buys there. He does not only buy from one shop. He compares the prices in several shops. Where the price is the lowest he buys. There are fluctuations in the prices. There are some raw materials which cost 35 Rs one time and 45 Rs. another time. These price fluctuations are caused by fluctuations in demand. In summer the demand for his products is high while in winter the demand is lower. The entrepreneur explains that this is because the days are longer in summer and people use therefore more electrical appliances in their home.

Since the entrepreneur has started his enterprise demand has increased. People had less electrical appliances at the time when he started his enterprise. During the rainy season the demand for repairs for the DTH is high during the rainy season because they cannot get a clear signal from the satellite's. April is the month with the highest demand. It is 1,5 times as high as in winter.

### C. Human capital

The entrepreneur finished the 12<sup>th</sup> class, which is primary, secondary and inter-college. After that he did ITI. This is the Industrial Training Institute which is a college. In 1992 he finished the 12<sup>th</sup> class and in 1994 he finished ITI. He finished it with an exam for which he received a diploma. He is currently 32 (so he had finished by the age of 20). After the institute he did one year of apprentice to get experience in a factory. After this he started working with other electronic shops until he had collected sufficient money to start his own enterprise. He received the money for opening the enterprise from his father. He invested 25.000 Rs. in audio-cassettes, furniture, appliances and other basic requirements in the enterprise.

He learnt about running an enterprise while he was working in other enterprise. He learnt by seeing them do the work. He has one worker of whom it is the second day of working in the enterprise. He is a learner and the entrepreneur is going to teach him the job.

The entrepreneur would like to get a computer and the knowledge of how to use it. He would like to expand his business by getting in the photography business and by doing mobile repair work. This would increase his income. He has the worker not for meeting a high demand but to teach him.

#### D. Financial capital

The total sales of the enterprise is 8000 Rs. per month. This is the sales when there is high demand, in summer. The total costs are 3500 Rs. These costs are invested in his monthly rent and combined monthly electricity bill of 300 Rs. He invests in integrated circuits, wires, motors etc. His worker is just new but he pays him 300 Rs. per month. He pays the district panchayat 300 Rs. per year. He makes a profit of 4500 Rs. He has 7 bighas of land of which he sometimes sells. The annual profit he makes from it is approximately 20,000-30,000 Rs. if there is a good crop. The entrepreneur also owns one cow and one buffalo. He is the only person supporting his family of his mother, wife and three children.

The entrepreneur is able to save 500-1000 Rs. per month in a saving account in the bank. He now has approximately 40,000 Rs in the bank. When confronted with this amount he is explaining that he is really thinking about investing it in buying a computer.

#### E. Social Capital

The entrepreneur lives with his wife, mother, one boy and 2 girls. The entrepreneur meets groups of people at marriages, festivals and religious parties. He has these occasionally. He meets these people sometimes twice a week, sometimes only once a year. April is the season of the marriages so currently he has to go twice a week.

When he goes to Vikas Nagar and Dehradun for getting raw materials he only talks about business. He talks to other electronic entrepreneurs as well. He has learnt a lot from them. For example he learnt from one of them how to repair the DTH Tv's.

He knows people in neighbouring villages. People from all the neighbouring villages, within the panchayat and outside come to Langha for electronic-repairs. There is another electronic repair shop in Langha.

The entrepreneur also has friends and relatives in Dehradun and Vikas Nagar. He speaks to them once every six months.

(During the interview a person from the District Panchayat comes to the enterprise to collect the taxes. The entrepreneur and him have a short talk. The entrepreneur's uncle is in the district panchayat that is why he did not pay when the man arrived (I doubt if the entrepreneur pays at all)). He only knows people in Himachal Pradesh, he speaks to them once in half a year to once a year.

#### F. Natural Capital

The entrepreneur has no natural capital on which he relies for his business.

#### G. Physical capital

Electricity is gone sometimes. When there is no rain and storm it does not create any problems but during the rainy season and during storms it creates does. He cannot work then. He has taken a connection to the generator from the state bank. If the electricity is gone he uses that. He does not pay for that when he uses that. He also repairs electronics at the bank, therefore he does not have to pay for it. He can only use the generator when the bank is opened. When it is closed and the electricity is off he cannot work. If there is a storm trees can break the wire. It takes two days for repairing. There is nothing he can do at these moments. He can only make a phone call to report the problem.

For transport he only uses the bus. He owns a mobile, TV, radio, DVD-player, CD-player, stereo. The entrepreneur works eight hours a day. He reads the paper daily.

#### H. Influence on and access to transforming structures and processes

The entrepreneur lives in Tikri, when he goes to his enterprise he walks. If he goes to Vikas Nagar it takes him one hour by bus. If he goes to Dehradun it takes him two hours. If the entrepreneur could repair more he could produce more. The higher production does not depend on the possibility for increasing the amount of repairs but on a financial problem. The entrepreneur does not have the money to invest in buying new raw materials. He has not learned how to repair mobiles because he is



located in a rural area and not many people have a mobile phone. When the market for mobile repairs increases he is planning to learn how to repair them. There is an institute in Vikas Nagar which provides a three month training in mobile repairing. He would have to leave his job and invest money in this but he is planning to do so. Since he cannot invest in raw materials because of a lack of money he really has the worker for teaching him the electronic profession.

He pays the district panchayat 300 Rs per year but his uncle is in the district panchayat. When the district panchayat accidentally stopped by when we were interviewing he did not pay and the entrepreneur said something vaguely about the fact that he didn't pay now because his uncle is in the district panchayat.

The entrepreneur is not faced with any health regulations, safety regulations, worker regulations or electricity regulations.

The entrepreneur knows the prathan and the wardmembers. They meet once a week or once in every two weeks. He talks to the prathan if he needs a credit card. The prathan is required from this because he is the only one who can confirm if people live in the village and if they have land.

His customers are 60% fixed and 40% new. Approximately three times a week he goes to people's houses to repair things. He goes by motorcycle which he then hires.

#### I. Perceived Attributes of Innovation.

The entrepreneur has the enterprise for the survival of his family. He wants to expand his business though. He has 40,000 Rs in the bank and he has a tv, a mobile, TV, radio, DVD-player, CD-player and a stereo. He is thinking about investing in a computer so he can expand his business. He is considering to learn mobile repairing when the market requires this, also for expanding his business.

#### J. Innovation-decision

The decision about the innovation was made by the entrepreneur.

#### K. Communication-channels used

The communication channels through which he learnt about electronics are through the ITI and through his experience with working in other electronics shops. These are all interpersonal channels.

#### L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the entrepreneur

## Lanmil1

Passoli, Langha panchayat

Entrepreneur: Bau Singh

Interview done by Neeraj, Karlijn and Dipak. Dipak was driver and local from Langha. He could speak the local language and was a familiar face making it easier to get contact in the village with the locals. I chose this enterprise despite the fact that it was not in use. I chose it because I had heard that there were water problems in the area and I saw the enterprise and I was very surprised that it was not running. I figured this would probably have to do with factors related to the energy source. A decision to adopt but impossibility to apply seemed very interesting to me. Next to this there were 20 villagers of Passoli present at the enterprise so I thought it would be a good opportunity to find out more about the problems in the village, the amount and type of enterprises in Passoli and the energy sources.

Enterprise 17, grinding enterprise with a diesel generator. This enterprise is currently not in use because there is a problem with the water infrastructure. There is currently a water problem. Currently there is no water running and for running a diesel generator water is required for cooling. The entrepreneur has bought the grinder a year ago. He could get the water from the river but it is too heavy to get the required amount. The government has dug a well with a hand pump but it is not working. In the total Langha panchayat there is a single water canal. The population is high and the water is used in the other villages. For Passoli there is no water canal. The prathan belongs to BJP and right now there is a Congress government in Uttaranchal. Therefore the water department is not responding to the request of the prathan. (A woman explains that it is really difficult to put water on your head and transport it from the river. There is a water canal but the government is not providing any connections of households to the water canal. The prathan also lives in Passoli but he is connected to another water canal so he has got water. The panchayat approached the Minister of the Legislative Assembly, he is from Congress and he is the only one who can settle this dispute. He was approached but he is not doing anything. The panchayat does not have the money to solve this problem. Last time they received money they built a road. This prathan has been assigned four years ago. The prathan used to have a mud house, before he became prathan he got his current house (This is a very big concrete house). The entrepreneur still has hope that he will get a water connection. The elections are coming he hopes that this will help him. That is why the entrepreneur hasn't sold the grinder yet. There is also a problem with water irrigation. If there is no water they can't take water to the land.

### Location

The enterprise is located on the main road running through Passoli, it is in the centre of the village. Passoli is 2 kilometres from Langha village.

### Production process

The entrepreneur had made plans to go to Vikas Nagar for diesel by local bus and then walk to the petrol pump. Going by bus to Vikas Nagar would have taken him one hour. At once he would have been able to take 20-30 l of diesel. He would have to go back every 2-3 days.

### A. Adoption, rejection or no knowledge

The machine cannot work on electricity because it is made for running on a diesel generator. Electricity is too costly. People who used to have a grinder running from electricity do currently change it into grinders running from diesel. He has electricity at home for household use. If he would use electricity for the grinder it would be for commercial use and he would have to pay a separate bill for commercial use. At the time he got the grinder he thought that he would get a connection from the water canal going to Rudrapur. He decided to start a grinding enterprise because the Passoli villagers used to go for grinding to the garad which is 3 kilometers from his current grinding enterprise. He thought that he would get into business that way. Especially because the garad gets dry during the

summer and at that time people would go to Rudrapur. Rudrapur is on a distance of 5 kilometres which is too far for a daily requirement which grinding is. He was planning to start the enterprise because he was thinking of the future of his children.

#### B. Vulnerability context

People in Passoli are faced with

#### C. Human capital

The entrepreneur did not go to school. He is illiterate. He did not go to school because there were no schools at that time in hilly area's. All his children go to school, only one has left. The eldest son has left school after the fifth class. He learnt about the possibility of starting a grinding enterprise because he has seen it in other villages. He also has a relative who has a grinder. They discussed the possibilities for grinding within the entrepreneur's village. The concluded that it would be working. The entrepreneur is not in good health, he has some kind of disease which has caused him to loose his fingers. He has gone to Dehradun hospital to get medical help. The entrepreneur bought the grinder a year ago. The enterprise has not been running since then.

#### D. Financial capital

The entrepreneur invested 50,000 Rs in the grinder. He has taken a loan from people in neighbouring villages. He feared that if he would have taken it from the bank he would have been thrown in prison. This year he hasn't paid back any of the loan which he has taken. He has taken the loan on interest so the amount is growing. The entrepreneur was hoping to earn a profit of 500 Rs. a month with grinding. He had planned that customers would come to his enterprise to bring the weed, he would grind it and then they would pick it up at the enterprise. The only costs which he would have to make were diesel and maintenance of the generator and the grinder. He didn't think of selling grinded weed coming from his own land. The family uses all the cultivated land for their own use.

The entrepreneur works in the fields and also as a labourer. Currently there is a school under construction. He is currently working there. With that he earns 80 Rs. a day. Most people in the village, also the entrepreneur are unemployed. He just works for 5-12 days at a job and when it finishes he goes looking for another job. He works approximately 2-3 days a week. In total he earns approximately 800 Rs. per month. His brother also does farming and labour. His elder brother is weak because of his age. The two incomes of the two brothers serve the entire family. His sons and his brother's sons do not work because they go to school. They do work on the land. They only work as labourers during holidays.

The family has one buffalo, two oxes, 12 goats, one cat and one dog.

The entrepreneur is BPL so he received the instalment of the electricity-connection for free. He does pay the normal electricity bill.

#### E. Social Capital

The family consists of two brothers and their wives. His brother has 5 boys and 3 girls and he has 4 boys and 2 girls. The entrepreneur has started the enterprise for the sake of his children.

The entrepreneur has only gone outside his village when he went to Dehradun to go to the hospital. He explains that he has not been going on any other occasions because for going outside you need money. The entrepreneur does have relatives in Rudrapur, Tikri, Langha and other neighbouring villages. He speaks to them occasionally. On weddings and if he requires them for something. This is a few times per half year. The entrepreneur has been living in Passoli for the last 40 years.

#### F. Natural Capital

There is a water problem in Passoli. The water canal running through the village was damaged. It has not been repaired and people have no connections to it. If they require water they have to walk 1,5-2 kilometres to the river and carry it back. Due to the lack of water there is also a food problem. There is no irrigation possible causing problems with crops. Due to the lack of water the entrepreneur can not make his grinder operating because it requires water for cooling.

#### G. Physical capital

The entrepreneur and his family own one bike but the entrepreneur has never learnt to ride a bicycle. Only his sons use it. The entrepreneur has an electricity connection at his house which he received on a BPL subsidy. He only uses the electricity for lighting. He pays 120-130 Rs per two months. There is a regular electricity drop at eight in the evening. Sometimes it only takes 5-10 minutes. Sometimes it takes a few hours. When the villagers are asked for the reason they say that it cannot be to save electricity because in 5 minutes you cannot save electricity. They think that at that point of time the electricity for household use and the electricity used for industrial use are both required. They think it is a problem in the powerhouse.

The entrepreneur owns a bicycle but he does not ride it because he never learnt. His sons use it.

The entrepreneur used to have a phone. It had been closed for the last ten years because he had a telephone bill of 2200 Rs. He never paid for it until he recently submitted his bill. He hasn't received a bill since then.

He has a radio but he is not interested in it. He cannot read the paper but his children do daily in the evening.

#### H. Influence on and access to transforming structures and processes

The main market within a radius of 5 kilometers is Langha village. That is about 2 kilometres away from Passoli. The entrepreneur generally reaches the market by bus because there is a road through Passoli to Langha village. Langha village is the main bus station in the region. The road has been built from the money that was given to the panchayat the last period. The entrepreneur explains that the demand for his grinded goods would be there because the garad is 3 kilometres away and in the summers the operation of the garad is insecure because the water may not be sufficient. The financial investment for the grinder have been provided by people from neighbouring villages because the entrepreneur thought he would be thrown in prison if he would get a loan. He took the loan on interest and he has not started paying back because his enterprise has not been running since he bought the grinder. The entrepreneur has not paid the district panchayat tax because his enterprise has not been working since the beginning. The entrepreneur knows the prathan and the wardmembers. There his people so he talks to them about problems in the village. The prathan always listens and says yes to everything but nothing ever happens. The rest of the villagers also explain that there is a lot of corruption. The central government is paying but the politicians are corrupted. They eat the money.

#### I. Perceived Attributes of Innovation

The entrepreneur had decided to invest in the enterprise because he was thinking of the future of his children. The entrepreneur is coping because he does not have any financial capital. He has a mud house. He knew that this source would have beneficial outcomes because for electricity he would have to pay commercial rates and pay for the instalment and a minimum bill has to be paid every two months. Entrepreneur also claims that electricity is more expensive than diesel and people are therefore changing their grinders from running on electricity to running on diesel. The entrepreneur did not have the possibility to experiment with the energy source because he had heard from his relatives and seen at other enterprises about the diesel generator. He had realized that water would be required but at that time they had told him that they would be connected to the water canal running to Rudrapur. The entrepreneur had to learn the production method of grinding weeds. He also had to learn how to run an enterprise because he had never done that before.

#### J. Innovation-decision

The entrepreneur himself decided about the innovation, together with his family but there were no plans for his brother to work in the enterprise because his brother is weak because of his age.

#### K. Communication-channels used

The entrepreneur learnt about the possibility for using a diesel generator from a relative and by watching other grinding enterprises.

#### L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the entrepreneur.

## Lanprathan

Interview with brothers of prathan of Langha panchayat.

Interview done by Neeraj and Karlijn on 06-04-2006. At the interview the two brothers Langha panchayat consists of four villages. The central village is Langha. On 1 kilometer distance from village Langha there is Tikri. On 2 kilometers distance there is Passoli and on 1 kilometer there is Dungakheet. Vikas Nagar is the closed rural town on a distance of 20 km. By car it is 30 minutes and by bus 45 minutes hour. Sahaspur is also on a distance of 20 kilometers but by car it takes 45 minutes to reach and by bus an hour. Dehradun is on a longer distance, 1 hour to 75 minutes by car and 2 hours by bus. Langha is the central village of Langha panchayat and the surrounding villages. It has a Indian state bank, inter-college and is the busstation.

The population of Langha panchayat is 1400. 600 people are in Langha village, approximately 40%. The political organization is such that there are 11 wards and one prathan. Passoli has two wards, Tikri has two wards, Dunghakeet has two wards and Langha village 5. The panchayat comes under the Vikas Nagar block. 50% of the people is from the BJP party and 50% is from the Congress party. The politicians only come when there are national elections. The geographical area of Langha panchayat is a little hilly. It is situated on the border between the plains and the mountains. There are differences in heights.

### Vulnerability context

The success of the farming season depends on the success of the monsoon. If the monsoon is not good both farming seasons are not successful. The farming season are from April-May and from September-November. They have sources of water which could be used for irrigation but due to financial problems of the panchayat they cannot make the infrastructure to distribute the water. They also depend on the mango showers. These mango showers are Western disturbances. . These are the rains before the rainy season and they happen in June and July. If the monsoon is not good the crops during both farming seasons are bad. During the monsoon there are threats from landslides. These are also caused by small earthquakes, 4-5 on the scale of Richter. 3 years ago there was a landslide. The landslide before that was 10 years before that. The effects of these landslides are that houses get destroyed, there are cracks in the fields and there are problems with infrastructure. Electricity lines are destroyed, roads are destroyed. The destruction of infrastructure also takes place during monsoons and storms. During the monsoon the prices of food and basic needs goods do not increase. People do not leave Langha panchayat or the surrounding villages because the people have large amounts of land, generally between 5-10 biga's. The men leave the panchayat only during the seasons that there is no farming. After that they return to work on the land.

### Livelihood assets

The main sources in the panchayat are farming during april-may and sept-nov. the other times they work as labourers, in the neighbouring villages or in the cities or rural towns. Women do not work as labourers. The population of Langha panchayat is 100% Hindu. Approximately 25% is from the scheduled tribe, 40% is from scheduled caste and 35% is from general caste. Among the general castes there are a few Brahmins. All the people have land, of all the castes. Approximately 60% of the people is literate. 50% of the women is literate and 70% of the men is literate. The literacy rate is high because the panchayat has been having a school for 25 years. The inter-college is the oldest inter-college in the region. Currently there are 5 schools: two government primary schools, 1 private primary school, 1 secondary-school and one inter-college. 3-4 kilometres away there is a health centre in Rudraput. In his panchayat there is a sub-centre of his health centre but it is not working properly because there are no medicines. It is actually a herbal health centre. There is a qualified doctor in Rudraputh. The most common health problem is people who fell down trees. When this happens it is really difficult to transport them. Small kids do not get vaccinated in the panchayat because they have to go to the centre to get it done. A lot of people do not do this.

40% of the people in Langha are BPL. 20% is from the scheduled caste, 20 % are from general caste

and scheduled tribes.

All villages have a phone and electricity. There is a problem with drinking water in Passoli. In Passoli there is no pipeline. It used to be there but it is damaged now. It can be repaired but the panchayat and the government of India do not have any money currently. They transport water from the river which is approximately 1,5 – 2 kilometres walking.

Industries:

Langha panchayat:

- 2 retailshops
- 2 chai shops, both using wood and kerosene
- 1 barbershop
- 1 shoemaker
- 1 blacksmith using wood
- 2 tailors using manual labour and electricity for ironing
- 2 electronics shops
- 1 chemist
- 1 musicshop
- 2 grinders

Tikri:

- 3 garad

Passoli:

- 1 grinder using diesel
- 2 retailshops
- 1 blacksmith using wood

Dungakheet:

- 1 retailshop

Energy sources

Electricity is provided by the powerhouse in Sahaspur. BPL's get subsidies on installation. They get the installation free of cost but they have to pay the regular electricity bill. The villagers do not go to Sahaspur to pay their bills. There is also a camp in Rudrapur for this. They get electricity from the same powerhouse as Chharba. There is a daily electricity drop. In May and June there are problems with braking grids due to storms. In the off-rainy season there are only problems caused by problems in the powerhouse. Because the electricity line has to come from Sahaspur it takes a long time before it gets repaired, generally 3-4 days. There are no other sources such as invertors or diesel generators. 75% of the households of Langha panchayat is electrified. The area's which have not been electrified are mostly toks. These are habitations where a few families live, on a distance from the village.

Table 1: Langha panchayat

Village	Total amount of households	Households unelectrified
Tikri	45	5
Dungakheet	34	2
Passoli	86	6
Langha	200	12
Total	365	25

## Lansw1

Langha village, Langha panchayat

Enterprise 20, sweetshop using wood as energy source.

Name entrepreneur: Mahin Drasingh

Interview done by Neeraj and Karlijn on 07-04-2006. When we arrived at the shop there were 3-4 other people, younger boys, present in the enterprise, they were friends of the entrepreneur. Later on the entrepreneur from the Chai-shop, enterprise 18 arrived and sat down next to us in the shop.

Production process.

The enterprise produces sweets such as ludho, balu say, rastugula and jelly bean. The entrepreneur uses wood and when there is unexpected or high demand he uses the kerosene stove. He also uses kerosene to initiate the wood fire. The entrepreneur has had the shop for approximately 1, 5 year. He works alone, he has no workers.

Location

The entrepreneur is located at the former busstop in Langha. This is a five minute walk from the current bus stop where the chai-shop was located. The bus used to stop at the place of the sweetshop but now it has changed. The shop of the entrepreneur is attached to the rest of his house

A. Adoption, rejection or no knowledge

The entrepreneur uses wood. He uses wood because it is cheap. If demand is high he uses LPG gas because it is more efficient. He has a kerosene stove and he also has a stove on LPG gas. In emergencies of high demand he uses LPG gas. In other instances he uses kerosene and wood. Most of the time he uses wood but if there is instant production required he uses the stove. The entrepreneur does not use electricity. He already pays a two monthly electricity bill of 200 Rs. for his house. Electricity is costly because than he would have to take a commercial connection. Initially he was using wood but since there sometimes was no wood available he started using kerosene. He doesn't have a lot of time to bring the wood from the forest to his enterprise.

B. Vulnerability context

The entrepreneur depends on weed flour, sugar, oil, chemical colours and water. There is never a shortage in the products and the prices do not fluctuate extremely. He buys all of the products locally. Sometimes there are higher prices, sometimes lower prices. These fluctuations are caused by the prices the wholesalers set. In April the price of weed is 14 Rs/kg. When it comes to the market it costs 10 Rs./kg. Another example the entrepreneur gives is that prices of sugar are normally similar if the sugar cane mills are working but if one of them breaks down the prices of sugar increase.

The demand for his finished products is higher during the festival season which is in August and October. The difference in demand is an increase of approximately 200-300%. Normally he sells approximately 2 kg's per day. Than he sell 5-6 kg's per day.

Looking over the last 1,5 year, since he started his enterprise, he has seen a decrease in demand. At the time he opened his shop it was at the main point of the bus stop. Now the bus stop has changed to the location up the road (where the chai-shop is located).

C. Human capital

The entrepreneur finished the 7<sup>th</sup> class. He finished primary and he did two years of secondary. He stopped because at that time school was not important. The people who only passed the first and second class then are government officials now. He was 15 years old when he stopped. After this he started doing farming at his home. At the age of 56 he started working at home. He is now 58. He started this enterprise because he is old now. He can not do any hard work to earn money and support

his family. The entrepreneur is literate.

The entrepreneur learnt how to make sweets in another enterprise where he worked. He worked with a sweetshop in Punjab. He worked there for one year at the age of 22. At that time he lived with his joint family so he was not required for farming. For two years he did the sweets making.

The entrepreneur would like to get a fridge but he does not have the financial capital to invest in it.

The fridge would help for cooling products and drinks. Then he could expand the amount of products he sells and store his sweets for a longer time. The entrepreneur is not interested in learning anything new at his age.

#### D. Financial capital

The entrepreneur has approximately sales of 3000 Rs. of which 2200 Rs. are costs. He pays for kerosene, oil, weed flour and sugar. He gets kerosene at 10 Rs./ liter in the government fair price shop. He has 20 bighas of land. The entrepreneur has no cattle.

The entrepreneur has an income of 20,000 Rs per year from farming. His sons also work and they also do farming. They are not labourers they just work on the land. The entrepreneur does not save any money, he has no account. As a way of speaking he says: "He digs a well every day, drinks the water...and digs another well the following day."

#### E. Social Capital

The entrepreneur lives with his wife and two sons who are not married. They all stay at home with him. The entrepreneur meets groups of people at marriage parties and religious parties and condolences. It depends very much how often he meets these groups. Sometimes 7 a week, sometimes 6 a month. When confronted that this is very often compared to other people he states that his sons are in the marriageable age and that he needs a partner. He knows relatives in the neighbouring villages within 3 kilometres. He speaks to these once a month. The entrepreneur does not have contacts in other states, only in Himachal Pradesh. He speaks to them once every 6 months.

#### F. Natural Capital

The entrepreneur uses wood as energy source. He looks around for it. There is no restriction on dry wood. The entrepreneur does cut wood sometimes because dry wood is not always available. During drought he does not experience lack of water. It is always available within 15 metres.

#### G. Physical capital

The entrepreneur can only get kerosene at the government fair price shop for 10 Rs./liter. People can get kerosene if they get a card from the pradhan or the Block Development Secretary. (girls at HESCO: BPL can get a yellow card, APL can get an orange card. It is a subsidy policy from the government to provide the poorest people with an energy source. They can get 5 L a month against subsidized rate and this is arranged through the BDS or pradhan. It is possible to get kerosene in the market against market prices but then you would have to pay the higher price.) People can get a card for one month for 5 litres. When asked why the kerosene use is restricted they claim that they don't know and that it is sufficient for one person to use it. The entrepreneur stated that he does not need more. They do not know why this is arranged this way. (Neeraj explains that he thinks it has to do with the fact that the product is highly inflammable and it would be dangerous to get it at normal stores. Maybe if it could be provided by petrol pumps it would be safe).

The entrepreneur sometimes uses LPG. The village has a service of gas agencies. They come to the village weekly to refill people's gas requirements. If you require gas at any other time you would have to go to Vikas Nagar. The entrepreneur goes to Vikas Nagar once per week or two weeks. He normally goes for other commodities, for example polyethylene bags for packaging of his sweets. Sometimes he goes especially for LPG. Gas providers do not always come. Normally they come weekly but sometimes they don't show. Since last October there have been restrictions on the use of LPG or the demand in other places is why. For this reason they did not come since then.

The entrepreneur uses his bicycle or the bus. The entrepreneur also has a house in Langha and a house in Barotiwala. Most of the time the entrepreneur lives in Langha. Sometimes he goes to his other house. He has a TV, radio but no telephone. He sometimes reads the newspaper. When sometimes visits him and takes a newspaper he reads it but he does not read it on a daily basis.



#### H. Influence on and access to transforming structures and processes

The entrepreneur reaches Vikas Nagar either by bus or sometimes by bicycle. It takes the entrepreneur 1 hour to go to Vikas Nagar. If the demand would be higher he could be producing more, especially if he was using kerosene and eventually with really high demand LPG because these are respectively more efficient than wood. The entrepreneur does not have a loan. The entrepreneur pays the district panchayat 80 Rs. per year. There are no regulations or policies he is confronted with. In rural areas nobody is going to check. The entrepreneur does use chemicals. (Neeraj explains that officially these chemicals are forbidden but Neeraj has a bakery and they also use them there for colouring. When confronted with the fact that they are unhealthy they claim that they are both still living and have not become ill.) The entrepreneur knows the prathan and the wardmembers. Prathan sometimes comes to his enterprise when he is walking around. They exchange hi, hello. The entrepreneurs customers are people from neighbouring villages. The entrepreneur hardly has fixed customers, he always sees new faces. The entrepreneur has the only sweetshop in the Langha panchayat and the neighbouring villages.

He does not have a higher demand so he has never thought of ways to sell more. He claims that if he would still be at the busstopn he would sell more. When asked why he does not rents a shop there he claims that this would be to costly and the reason why he started the enterprise is because he wanted to earn a little bit of extra money. That is why he is still located there

#### I. Perceived Attributes of Innovation

The entrepreneur claims that he does not want to be located somewhere else even if he would sell more because he is satisfied. The entrepreneur has learnt about using wood and kerosene for making sweets in the enterprise in Punjab. He knew that kerosene would be easier and quicker in use but would be more expensive compared to wood. LPG is even more efficient compared to kerosenen but LPG is also more expensive and the entrepreneur stated that the demand is not such that LPG use would be beneficial in costs. The entrepreneur had the possibility to experiment with wood and kerosene in the enterprise in Punjab. He has an LPG stove at home so there he has experimented with the use of LPG. The entrepreneur introduced his kerosene heater and the wood furnace together with the introduction of wood and kerosene in the enterprise. The entrepreneur did not have to learn any new skills except for the skill of how to run an enterprise.

#### J. Innovation-decision

The entrepreneur himself decided about the innovation

#### K. Communication-channels used

The entrepreneur learnt about the possibility for making sweets and using kerosene and wood as energy sources in the sweetshop in Punjab. He learnt from that entrepreneur.

#### L. Extent of change-agents promotion efforts

Nobody ever promoted energy sources to the entrepreneur

## **1.2 Village cluster Ambiwala**

### **1.2.1 Village Ambiwala**

#### **Ambcp1**

Ambiwala

Enterprise 26, carpenter using electricity

Name entrepreneur: Vijay Kumar

Interview done by Riga and Karlijn on 20-04-2006. During the interview Kala Bisht is also present because we had asked here to show us the carpenter in the interior of Ambiwala, instead of one on the road. She remained present during have the interview. Also his wife and his mother and a few of the children were present

Production process:

There are four people working in the enterprise. The entrepreneur and three other workers. They make furniture, f.e. sofa's and beds and tables and they also make doors and windows. They have four machines which are running from electricity. They have a polisher, a cleaning machine, a cutting machine and a machine for design.

Location:

The enterprise is approximately 15 minutes walking from the market in Ambiwala. In settlement of houses. The entrepreneur has the enterprise with his house.

A. Adoption, rejection or no knowledge

When they are using electricity the production takes a lot less time. Without a machine one finished product which used to take two months will now take 15 days. The electricity supply is not good. Sometimes it is gone for 2 hours a day, sometimes it is gone for 4 hours a day. Normally the electricity is gone for a whole day only once a month. In the rainy season the electricity supply is even worse. Than it can be gone for 2-3 days. In the rainy season it happens once a week. They than have to do manual labour. They can make the machines run from a generator running from diesel or LPG and they currently do not have the money to pay for that and when the electricity goes they still have manual tools so the work does not stop. He does not have an invertor ( a machine for storing electricity) Again he explains that he invested in his house and they are building a new fence. The entrepreneur started using electricity approximately 5-6 years ago. At that time they had made some money shich they could use to invest in the machines which are running from electricisty. When they took up electricity in the enterprise they did not only have to pay for the installation of the electricity connection, they also had to start paying the monthly electricity bill and the investment had to be made for the machine. Intially they had the polisher. Than one year later they invested in the cutter. The cleaning machine and the machine for design they only have for 1 year.

B. Vulnerability context

The customers come according to relation. Some are fixed and some are new. The customers which are new pay when the product is finished but the fixed customers can pay whenever they want. He has enough money to pay for the wood. Most customers pay for the raw material and than he can get it. The entrepreneur goes to Dehradun to get the wood and he transports is back by a loading vikram. The price of wood is constantly increasing and they than have to increase the price of their finished product. The demand for his products is increasing. He is the eldest carpenter in the village so all the villagers no him. It happens very often that his customers come to his enterprise and that he has to say no.

#### C. Human capital

The entrepreneur is now 48. He has passed the ninth class. He failed English in high school and therefore he could not finish it. He finished school by his 19<sup>th</sup> and he started when he was 7. He tried to finish the tenth three times but he never succeeded. His father is also a carpenter and the job is inherited from generation to generation. Immediately when he stopped school he started working on the field of his family. When he was 30 he started to learn carpentry. Before that he only worked on the fields of his family. His father taught him and one of the workers has been with them for 12 years. His father and him taught him. The other workers were also taught by him. The entrepreneur finds wood work really important and he can make anything. He would like to get a big polishing machine but due to a lack of money he cannot. He has the enterprise for the last 18 years.

#### D. Financial capital

The total sales of the enterprise are 1 lakh Rs. per month. 75% is raw material for wood. The 25 000 he has to invest in the labour which leaves him 17 300. Another 500 Rs. go off for the electricity bill per month. He used to rent his house but now it is his. He used to rent a location but now he has opened the shop in his house. The shop has been in the house for 1,5 years. Before it was at the main market in Ambiwala. HE moved to his house because there is a school next to the shop so he was not allowed to work between 8 and 12 am.. The wage of the workers depend on the experience they have. A new person gets a low pay and an experienced person gets a higher pay. The worker which ahs been with them earns 3500 Rs. per month. The other two started two years ago and they get 2100 Rs. per month. His total profit is about 15 000 Rs. They have five biga's of land. The entrepreneur works on the land for his own cultivation. He does not sell any of this because it would not be sufficient to sell.

#### E. Social Capital

The entrepreneur is Hindu and he is scheduled caste (!!!! This is surprising to me. He has a concrete house, quit big, he seems very forward to people, he is wardmember and he has a large network and he makes a lot of money. His profit is approximately 15.000 Rs). His family is joint. He lives with his wife, 3 children, his father and mother. The children are 16,12 and 10. They all go to school. He meets groups of people in his enterprise. He meets groups at marriages, he has approximately 30-35 marriages in a year from people in Ambiwala and from people in neighbouring villages. The entrepreneur is a wardmember. He is a open supporter of the Congress. He knows people in Ambiwala, Chandpur, Umedpur, Parwal, ELio. These are all villages with a circle of four kilometres away from them. He also knows people in Dehradun, where he goes every week. He knows people in Mussoorie, Haridwar, Roorkee. These people come here and he goes there. Once every 2/3 months he goes there. He has never learnt any work from other carpenters or other people except for his father. There are people who come to visit him to learn from him.

#### F. Natural Capital

The entrepreneur uses wood as a raw material. Because wood has become very expensive he decided to make less furniture and more doors and windows. He used to use sanmaica for the furniture but he always had to throw away large parts. Now he makes doors and windows he never throws away wood because the shapes can be used much more efficiently.

#### G. Physical capital

The electricity supply is not good. Sometimes it is gone for 2 hours a day, sometimes it is gone for 4 hours a day. Normally the electricity is gone for a whole day only once a month. In the rainy season the electricity supply is even worse. Than it can be gone for 2-3 days. In the rainy season it happens once a week. They than have to do manual labour.

The entrepreneur has a scooter, a cycle and a bicycle. They do not have a TV but they do have a radio, a CD-player and a stero-installation. He reads the newspaper everyday in the shop.

#### H. Influence on and access to transforming structures and processes

The entrepreneur goes to Dehradun twice a week. It takes him half an hour but with the cycle or

scooter it only takes 15-20 minutes. He usually takes a loading vikram when he is buying the raw materials for his enterprise, on his way back.

He used to pay a license to the district panchayat. He used to pay 250 Rs. per year. Now he is not paying anything because since he closed it nobody has been in his enterprise. It happens very often that his customers come to his enterprise and that he has to say no. The demand is larger than the supply and when I ask why he does not produce more he explains that he can not get more workers because when they are working he has to be present and he also has to do work on the field and he has had glass in his foot.

He does not want to take a loan because business has been going very well for him and he thinks that when he takes a loan that: "When happiness comes, also sadness comes". He would like to expand his enterprise and he would like to get a factory but he does not want to take a loan for it. With which he has now they will do. He will not take any help from others.

The entrepreneur is a wardmember. He has to built the roads and the canals. He explains that being a wardmember doesn't mean anything. It is just a name. He pays the development of these kinds of infrastructure from the money from the government. The wardmembers meet with the entire panchayat once a month.

Most of the entrepreneur's customers are fixed. Some of them are enterprises and constructors. About 50% is company and 50% are private customers.(I think he has been able to use the fact that he is a wardmember for this, especially when we ask him later to explain about the village of Ambiwala we find out that his information is not really correct. To me this gives a feeling of un-interest)

He does not have a lot of competition because he is the oldest carpenter in the village, he has electrical machines which the others in the village do not. He can produce a lot faster.

#### I. Perceived Attributes of Innovation

It is difficult to say if the entrepreneur has the enterprise for profit or coping. He wants to grow and he has hired 3 workers to increase his production but he does not want to take a loan to do more investments. He wants to do with what he has. It is also difficult because he explains that the demand for his products is higher than what he can supply. If he would get more workers than he would sell more but he cannot work more. I think he is quite satisfied....but he is also making a profit of 15 000 Rs. per month.

The entrepreneur knew that the machines running from electricity would have beneficial outcomes because he had seen it in another enterprise in Dehradun. He knew through observation that it would shorten the time for finishing a product. The entrepreneur explains that this is more beneficial for him because he can make more products and earn more but also for the customer because the customer gets his/her product faster.

The entrepreneur did not have the possibility to experiment because he had to pay for the installation of electricity before it was supplied. He also had to buy the machines without getting the chance to experiment with it.

The entrepreneur had to change a family old tradition of doing carpentry manually. He did not have a problem with it because he knew that it would increase production.

#### J. Innovation-decision

The entrepreneur decided on the innovation towards electricity together with his father. The decision was immediately made.

#### K. Communication-channels used

The entrepreneur knew about the possibility for this innovation from the time he saw it in another enterprise in Dehradun.

#### L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the entrepreneur.

## Ambfocus1

Ambiwala

Talk with locals

Interview done by Riga and Karlijn on 20-04-2006

At the group of locals there were 2 women in the age group of 30-40, one man in the age of 50 and one woman in the age of 70 present.

The older woman has been living in the village of Ambiwala since she was 17 and she has seen a major change in the last five years. Ambiwala used to be very remote. There was no road going to the village and there were no local means of transport. Ambiwala is a very mixed village. There are some areas where the people are really rich and some areas where the people are really poor. There is a concentration of people according to their wealth. Some BPL people are living together in one area and some wealthy people are living together. In comparison to other villages in the region there are a lot of wealthy people in Ambiwala. The village has a lot of land and there are many enterprise in the village compared to the amount of people living in the village. Since the formation of Uttaranchal as a separate state there has been a quick increase in development.

There are 766 voters and a total of 1400 people in the village of Ambiwala. The amount of families is approximately a hundred. There are no problems due to drought in Ambiwala because there are tube wells for almost everybody. Most of the land is irrigated (When viewing this land it is obvious that the productivity is high. The density of grain on the land is very high. In comparison to Bautha this is extremely noticeable. There is a large difference in the quality of the crops). The total land of the village is 9000 biga's. The people who have land have approximately 10-15 biga's of land. Some have 2-3 biga's of land. Most of the people have sold their land because the rate is high and they want to earn money. The rate has risen especially since Dehradun became to be the capital of Dehradun. Most people have sold the land to outsiders.

Some people in the village have cattle which is a source of income because of the milk they produce. Some people have jobs in the army. The literacy rate is very high in the village. Almost everybody can read and write, there are only 1 or 2 people who can't. 25 families in Ambiwala are BPL. There are no Muslims in the village. Of the total amount of families approximately 12% is scheduled caste, 12-14% is Brahmin and the rest is Rajput or general caste.

Industries in Ambiwala:

- 3 welding shops which are all using electricity
- 4 tailors which are using manual labour and electricity for ironing
- 10 PCO stands which are using electricity
- 5 carpenters of which 3 or 3 are using electricity
- 1 sweetshop which uses kerosene and LPG
- 1 fruit-processing shop
- 5 general stores
- 3 chai shops
- 1 restaurant/chai shop using wood, kerosene or LPG
- 2 cycle repair shops which are using electricity
- 1 wedding point using electricity
- 1 hardware shop

Ambiwala is not a typical village because it is rich in comparison to other villages in the region. There

is no fear for stealing, there are a lot of entrepreneurs and most people are educated. Most people are connected to the grid. The electricity supply is not very good. The electricity is gone everyday. Sometimes for 2 hours, sometimes for four hours. In the rainy season and when there is storm the electricity can be gone for 2-3 days. During the off-rainy season the electricity is gone for a whole day, approximately once in a month. In the rainy season it is gone once a week

## Ambfr1

### Ambiwala

Enterprise 24, fruitprocessing unit which is supported by HESCO. The enterprise sells lemon-, orange-, rodondendron-, and bala-squash, nine kinds of honey, dahl, green chilly, pickles, bamboo products. The enterprise is built in front of their house and on their land they are growing, medicinal plants, fruits, appletrees, mangotrees, strawberry's, peachtrees, onions. They have a nursery where they are sprouting plants. They do worm composting. They have 30 beehives on top of their roofs. They cultivate mushrooms.

Next to the entrepreneur there are four workers in the enterprise. Two of them are staying permanently with the family. Two others are staying in their own houses and they arrive in the enterprise in the morning. All the four workers start at 9.00 in the morning and they finish by 17.30 in the evening.

Interview done by Riga and Karlijn on the 20-04-2006. During the interview there are two workers present. Mor Singh Tariyal and Mamta.

Name entrepreneur: Kala Bisht

*Before the interview with the entrepreneur started I had a chance to shortly talk to the two workers without the entrepreneur being there because the entrepreneur was getting prepared for the interview. One of the workers, Mor Singh Tariyal, stays in the enterprise 24 hours. He gets 1000 Rs. a month, just like the other three workers. He is not satisfied with this because he is staying in the enterprise 24 hours a day. He does not have to pay for his accommodation and his food though. Mor Singh explains that if he would work as a labourer he would get paid more than what he is getting for this work. Mor Singh explains that the Kala Bisht is in charge of the organization. All the products which are sold in the enterprise are made in the enterprise. Mor Singh learnt everything from an organization which teaches processing of food, named KEYAR. A friend of him send him there. Another worker is Mamta (She is more reluctant to talk, realizing that we might have contact with HESCO. It seemed that she was scared to tell information). Her husband passed away and she learnt all the skills from Kala Bisht*

### Production process

For every product the production process is different. Depending on the harvesting period of different fruits and vegetables the products are taken out of the garden. They use grinders, juicers, sealing machine, pulper and they also use a computer. The products are processed and contained in large buckets. When the supply of the products is shrinking bottles and pots are filled with a supply of the product.

The harvesting work is only seasonal. The enterprise is always open. The harvesting period for apples is in October and November, the rest of the fruits are harvested in June and July. The rest of the year they do the processing. Sometimes, during harvesting periods they hire additional labourers but most of the time there are only five workers in the enterprise.

### Location:

The enterprise is located on the main road going through Ambiwala. Ambiwala does not have a real market but when coming from the direction of Dehradun there is a concentration of enterprise on this main road. This enterprise is not located in this 'market'. Her enterprise is about 1 kilometre away from this 'market'

### A. Adoption, rejection or no knowledge

Electricity is used in the enterprise for grinding, juicing, sealing, pulping and for the computer, the fan and the lighting. They use the computer for official work. Together with HESCO they have started biofarming for which they will use the computer. HESCO has given them this project.

LPG gas is used for cooking jams, squash drinks. They don't use electricity for this because LPG is cheaper. She would like to use a boiler because this would not make the utensils and the product burn. Now they are using aluminium which is not as healthy and also tastes less good. With the boiler the utensils would not get dirty and this would be better for the product. Next to this advantage a boiler is faster compared to using a LPG-run appliance. This appliance is called a bhati running from LPG gas. This produces a large amount of flames. They are not getting a boiler because they do not have the money to buy it. Buying the boiler would cost 30 000 Rs. This is a high investment. The investment is not the only problem. They would also have to get the supporting infrastructure and they would have to buy LPG gas. In comparison to the bhati the boiler uses more gas which makes it even more expensive.

The entrepreneur has never seen a grinder, juicer or pulper running from gas or diesel, only on electricity.

Their monthly electricity bill is 2000-3000 Rs.

Kala Bisht opened the enterprise five years ago. The sealing machine is always used. The pulping machine and the juicer are only seasonally used. They have always been using LPG and electricity in the enterprise

#### B. Vulnerability context

July and August is the period with low demand. In rainy season people don't eat pickle because and don't drink squash. April, May and June is the season of selling their products. During the rainy season the sale is 50% of what it normally is. People leave their pickle in the sun because they believe it will get fungus if it is kept in a wet place. This is not true according to the entrepreneur. Another factor causing the low demand is the fact that June is the picking season for mango's and a lot of people buy make mango pickle in their home. Since they have started the enterprise there has only been an increase in the demand for their finished products. The land is irrigated through a tube well. There is a good supply of water. They decided that the villagers all get assigned a day on which they can get water. She has the water on Thursday.

She has never had a problem with getting workers during the harvesting period.

#### C. Human capital

She has completed inter-college. She has a bachelor degree of arts. After this she got married. She was 26 when she got married. Now she is 35. She started working after her child was born. In the mean time she worked as a housewife.

When she started working she first went to a horticulture institution. She thought it was very dirty so she stopped there. Her neighbour told her about HESCO. She doesn't know how they knew about HESCO. She then went to the HESCO office. HESCO sent her to Tunwala where she got training for 15 days of preserving fruit and vegetables. She then got a loan through the Women's Initiative for Self Employment (WISE). After this she got a loan from the government of 4 lakh. She then completed the building in which she is located now. First she was selling from the back of her house but HESCO advised her to get an enterprise at the road. Now she is thinking about a 10 lakh loan for building a factory.

The entrepreneur wants to increase the product quality and she wants to use superior technology.

When she gets the loan and the factory she wants to get a good trainer. She thinks that all the women in Ambiwala should collect money and pay for a trainer.

Dr. A.P. Joshi has sent her to a fruit processing unit in Maisoor and Lucknow to get trained. To Maisoor she went for 15 days and her husband went to Lucknow for 12 days.

#### D. Financial capital

When she started she had a loan of 10.000 Rs. After one year she got a loan from the government of 4 lakh Rs., with HESCO as an intermediate. Now she wants to get a loan of ten lakh Rs. for building a factory. Profit has been increasing and the work is becoming more and more.

During the season she gets 15 000 Rs sale, In July and August the total sale is approximately 8000 Rs. *(I think it is more but because her workers are there she might not be telling the real amount. When we get the chance to ask her workers when she is out of the room, getting us a drink, they also claim it is about 15 000 Rs. Because they say exactly the same amount I think they say this because their boss*



*has said it.*). The entrepreneur says that her monthly profit is 3000-4000 Rs. Her husband also earns 4000 Rs. a month with his government job. They do not have any other sources of income. They have a total of four biga's of land. One biga's is located elsewhere. The three biga's at the back of her house are used for growing the fruits and vegetables. The other biga they use for growing corn. They don't save money. If they can increase their production by getting the loan and building a factory she thinks that she can start saving. The costs go into maintenance and investments. For example, they used to have 12 beehives but they have recently purchased another 20 beehives for which they needed to invest. (So the profit is indeed higher but she is putting new investments for her enterprise under the heading of costs.) When both her workers are outside I ask her again about her total sales and she admits that it is indeed about 2000 Rs. more than she mentioned before. This would make the sales 15000 in the season and 10 000 Rs in the rainy season. Her profit also increases with 2000 she claims.

#### E. Social Capital

She is a member of Women's Initiative for Self Employment (WISE) through which she also is a member of HESCO. Once a month they have a meeting with the Uttarakhand fruit processing association. This is for the entire Uttarakhand state. They import and export products together. Last time it was arranged it was in Uttarkashi. The entrepreneur bought apples because they are not available in Dehradun district. She sells her strawberry's there. This scheme was HESCO's idea and they have arranged for it. The presidents are two people from HESCO. The entrepreneur knows people in Ambiwala, Premnagar, Shayanpur, Thakirpur. To her relatives in Dehradun she speaks once a day. She knows people in Delhi to whom she speaks once or twice a month and she also speaks to people she knows in Bombay once or twice a month. When asked if she has ever learnt from them she explains that they do take honey and squash from her but through the phone it is difficult to learn things about fruit processing.

#### F. Natural Capital

She uses water, fruits and vegetables as a natural resource in her enterprise. She is never faced with problems of drought because she has good irrigation. They have agreed that once a week one person from the village gets the water. This amount of water is sufficient for a good harvest.

#### G. Physical capital

The electricity supply is not really good. Sometimes it is gone during the day, sometimes it is gone during the night. In one day it is gone for about 4-5 times. Sometimes for four hours, sometimes for twelve hours and sometimes just for a few minutes. She gets losses because of this but there is no way that these are going to be repaid. She gets power from the Sahaspur powerhouse. She thinks that there must be a central lighting problem. In the rainy season there are more problems because the grid breaks. Most of the rainy season the light is gone. She gets LPG from one or two petrol stations on the way to Premnagar. Sometimes there is the problem of shortage in gas. Nowadays there is too much supply and insufficient demand. They use the bus or the vikram for transporting goods but they also have a scooter and a car. The car they also use regularly. They also have a cycle, telephone, TV, computer and a CD-player. They read the newspaper every day.

#### H. Influence on and access to transforming structures and processes

When she got the loan the loan provider used to have stalls at fairs and the enterprise also made a stall at this place. HESCO is a customer and her husband is working for the government so the government is also her customer. She doesn't go to markets, she sells in stalls.

Most customers come to the enterprise for the finished products. When somebody wants a larger quantity of the goods than the enterprise will deliver this by car. They also transport honey and squash. About 10% of her products she sells through the Uttarakhand Fruit processing association. During one of the meetings she told the other people attending that she had three types of honey. These people had never heard of it so they sold it there.

The government department of her husband and to bankers they mostly supply in their home which is in Dehradun. When they bring products to the home it is mostly a larger quantity. When people pick up a larger quantity in the enterprise they get a discount but when they deliver the goods the people do not get a discount.

They do not pay money to the district panchayat. They use a HESCO license which they have received. They do pay income tax and this enterprise is a formal enterprise, it is registered. They know the prathan. He is the prathan of 14 villages so they don't know him by name, only by face. He only comes to Ambiwala in election time. There is no restriction on the use of energy. It takes 30 minutes to reach Premnagar from Ambiwala by Vikram or bus. By car it is 10-15 minutes. Dehradun takes approximately one hour. Generally deliveries are done by car but the entrepreneur also uses vikram or local bus to get to Dehradun. HESCO has provided financial capital and now she has a loan from the bank and she is trying to get another loan from the bank. The entrepreneur has a lot of fixed customers through the Uttaranchal Fruit processing Association and through the government connection through her husband. The largest part of her income is through these fixed customers. She can influence policies through her contact with HESCO.

#### I. Perceived Attributes of Innovation

The entrepreneur has her enterprise for profit. They have a TV, CD-player, a car and a computer. She is aiming for a 10 lakh loan to build a large factory. She knew that using electricity and the machines would help her create the enterprise through HESCO. She did get the possibility to experiment with it because she was given training by HESCO on how to make all the products. Before she could start this enterprise she had to get the knowledge on how to make all these products. HESCO helped her to get this knowledge and skills.

#### J. Innovation-decision

The decision to start the enterprise was made by her and her husband together. The decision to take electricity for the pulping, grinding and juicing was because they don't know about other possibilities of using these machines.

#### K. Communication-channels used

She heard about it from HESCO, because their neighbour put them in contact with HESCO.

#### L. Extent of change-agents promotion efforts

Nobody ever promoted an energy to the entrepreneur.

## AmbHESCO

### Ambiwala

Interview with Manmohan Singh and Manoosh. Manmohan Singh is a local from Mehuwala who has been living in Mehuwala for the last ten years. He is working in the projects with the villagers. He has been directly realizing the watermills with the people in the villages and he has been developing enterprise in the different villages. He has also helped to develop the fruit-processing enterprise in Ambiwala. Manoosh has been living his whole life in Dokwala which is very close to Ambiwala. Ambiwala is the basic needs market for Dokwala.

Interview done by Riga and Karlijn on 20-04-2006

Ambiwala panchayat consists of 6 villages: Shuklapur, Shaynpur, Sanjay Colony, Raj Vihar, Umedpur and Ambiwala.

	Ambiwala	Shuklapur	Shayampur	Sanjay Colony	Raj Vihar	Umedpur
Nr. of families	60+	40-45	80+	35	13	100+
Electrified	yes	Yes	Yes	Yes	no	yes
No. of enterprises	20	5	25	-	1	50

In Raj Vihar there is one shop which serves both tea and Chinese food. All the other persons are mason's and labourers. Most of the people are BPL and belong to the scheduled caste.

In Ambiwala there are approximately 50 shops.

Among these villages there is not a central place where the other villagers go for their basic needs. Most villages have a basic needs market except for Sanjay Colony. All the villagers go to Budhi on Sundays for their basic need products. There is a market there. For their basic needs they go to this market because this market has low prices. For differentiated needs they go to Prem Nagar or Dehradun.

*Now it is the crop harvesting. In many places in Dehradun district there are problems with the irrigation of fields. Food is not available because the crop cannot be watered properly. Many people have to go to markets to supply themselves with sufficient amounts of food. Dehradun is now the centre of the district. Most people who were living close to Dehradun have sold off their land. Because of this some people are very rich. The cost of land is very high. In Ambiwala some people have a lot of land. Some people don't have jobs but they are landholders.*

*Light is available everywhere in district of Dehradun. There are some villages of 20 families of which 10 have light and 10 don't have light. In these partly electrified villages there are no enterprises. Ambiwala is typical for the plains of Dehradun, especially for the areas which are close to Dehradun. Bhauta is a typical village of the foothills. Bhauta is not a very big village. Most villages in the foothills are bigger than Bhauta. The typical amount of families would be 100-150 families. According to district of Dehradun, Chharba is not a typical village according to Manmohan Singh's definition. He would call a village a smaller unit. Most villages in Dehradun district do have a road going to them or through like Chharba has.*

*Typical characteristics of villages in the district of Dehradun are that they don't have much land. They don't go to the market everyday because their location is such that there is no easy access to markets. They don't have many facilities. They don't have a phone and typical enterprises are milk production and blacksmithy work.*

People from Ambiwala go to Premnagar or Dehradun for differentiated needs, for basic needs they go to Ambiwala or Budhi. The prathan of Ambiwala panchayat lives in Ambiwala village. The village has approximately 2-3 wardmembers. There is no evident political orientation in the village. Some people are supporters of the BJP and some people of the Congress and this has caused some friction between people in the village but no direct effect on the services and facilities in the village. 60% of the people in Ambiwala have land and 40% of the people don't have land. If they have land it is mostly a small amount.

The entire village of Ambiwala is Hindu while the entire village of Bhuti is Muslim. In the villages of Tiparpur, Sahaspur and Mehuwala there are a lot of Muslims. 15% of the people in Ambiwala are scheduled caste, 10% is Brahmin and the rest is general caste. There are some problems between the caste's. Brahmins don't eat food from the scheduled caste people while the scheduled caste do eat from the Brahmins.

The amount of BPL families is 15%. The village used to have a lot of land the people who haven't sold it still do. Quite a few people in Ambiwala have a good job. Ambiwala is also a village on the road which is also an explaining factor.

Maldipvta is poor compared to Ambiwala and Maldipvta is quit a small village. In the Ambiwala there is a large variety of people while in Maldipvta the people are very much the same.

Ambiwala has one primary school which is a government school. It has one English-medium public school and one secondary school with an intercollege.

- 4 welding shops which are all using electricity
- 8 tailors which are using manual labour and electricity for ironing
- 10 PCO stands which are using electricity
- 7 carpenters of which 3 or 3 are using electricity
- 1 sweetshop which uses kerosene and LPG
- 1 fruit-processing shop
- 8 general stores
- 3 chai shops
- 1 restaurant/chai shop using wood, kerosene or LPG
- 2 cycle repair shops which are using electricity
- 3 electronics shops which are using electricity of which one is planning to close
- 1 wedding point using electricity
- 1 hard ware shop

Total: 49 enterprises

In Ambiwala there is no electricity 3-4 hours a day

## Ambwel1

Ambiwala

Enterprise 25: Welding enterprise making cupboards, fences, tables, rags, chairs and bookshelves.

Name: Karam Chand

Interview done by Riga and Karlijn on 20-04-2006. During the interview 2-3 customers were present and two of his workers.

Production process:

The entrepreneur uses a drill, a welding machine, iron-scissors, a oxygen-gas welding machine, a pressing machine and as raw material he uses only iron. He has two workers plus himself working in the enterprise. The workers are approximately 12 and 16 years old and they work in the enterprise as learners. The raw material is bought from Dehradun, the finished goods are made in his enterprise and then the customers come to pick them up.

Location

Through Ambiwala there is a main road which goes. On this road, in the beginning of Ambiwala when coming through the bypass road from Mehuwala there is a concentration of enterprises. There is also a concentration of enterprises on the side of Ambiwala where the road to Premnagar goes. On the side of Mehuwala, at the concentration of enterprises this enterprise is located, across the street of the Chinese restaurant.

A. Adoption, rejection or no knowledge

Oxygen-gas and carbide are used for the welding. Only the drilling machine is running from electricity. The oxygen-gas the entrepreneur gets from Dehradun. For a 1,5 metre high bottle (1,75 is quantity) it costs 300 Rs. Depending on his demand he has to get a new one once a month. He pays the owner of the location 500 Rs a month and he pays 300 Rs. for electricity. Welding is not possible with electricity. A thin layer of iron can only be welded with oxygen-gas. The day we are there there is no electricity and there are approximately 2-3 days a month that there is no electricity. Most of the time the electricity supply is bad. Sometimes it is gone for 4-5 hours a day. He works only during day hours. When the electricity is not there he uses manual labour to drill holes. It takes a little bit more time. With electricity it takes 1-2 minutes while without electricity it takes double time.

B. Vulnerability context

The entrepreneur gets the iron from Dehradun. He goes twice per 2 weeks. He takes the iron from Dehradun with a loading vehicle. This is a vehicle especially for transporting materials. If the rates of the iron fluctuate he will go to another shop. Price fluctuations are 40 +/- 9 Rs. per kg. The entrepreneur has the enterprise since six months so it is difficult for him to say anything on seasonal fluctuations. Iron price is always increasing.

C. Human capital

He has passed the eighth class. He went to school until he was 16. He can read and write. He stopped going to school because he was not interested. At the age of 16 he started working. He started working in a welding enterprise in Dehradun. He worked there for seventeen or eighteen years. He is now 38. He learnt all the things in Bandari Bagh in Dehradun, which is neighbourhood. He started his enterprise by getting a loan from the bank of 30 000 Rs. This he has invested in the enterprise. He started the enterprise in Ambiwala because this is where he lives. He had to buy all the machines himself. He is also teaching two other workers, they both came 1,5 month ago. He can't do all the work alone, especially with welding it is more effective to work together.

The demand is equal, with the two boys working in the enterprise or without. If he gets more demand

he will make more. Since the two boys are in the enterprise the speed is faster but he does not make more products because there is no more demand. The demand is not higher than the supply. Therefore he wants to learn new items of different varieties. He does not have sufficient materials and tools to do this.

He does not want to learn more because he thinks that he can already do everything. If he gets more and different work his creativity will increase. There is a machine which can be used for support-welding. He would very much like to get this but he first wants to repay his loan.

#### D. Financial capital

The workers he pays 500 Rs. each per month. He started his enterprise by getting a loan from the bank of 30 000 Rs.

The main product which he makes are cupboards. He sells about 5-7 a month. The total amount of money for his sales is approximately 15 000 Rs. His costs, which are only for the raw materials are 10.000 Rs. This would mean a profit of 5000. Out of this he also has to pay 1000 Rs. for his workers, and he also pays a 1000 Rs. for his loan per month. In addition he needs to pay 800 Rs. for his shop and for the electricity. Leaving him a profit of 2200 Rs. his wife also has a general shop. With this she earns approximately 400 Rs. a month.

They don't have land and no cattle. They do have a house. They would like to save but the money is hardly sufficient for sustaining the family needs.

#### E. Social Capital

He is Hindu and he is general caste. His family exists of a single family of him, his wife and four children. Two girls which are going to school. He also has two boys which are too small to go to school.

On Sundays he meets people in the shopping centre where they go. He also goes to marriages and festivals, 10-12 times a year. When he goes to Dehradun he also meets with other welders. Since the time he has his enterprise he has never learnt something from other welders. He has worked with different welders in Dehradun.

The entrepreneur has friends and relatives in Dehradun, when he is there they meet and talk. This is approximately once a month. He also knows some people in Calcutta but he hardly speak.

#### F. Natural Capital

#### G. Physical capital

The day we are visiting the enterprise there is no electricity and there are approximately 2-3 days a month that there is no electricity. Most of the time the electricity supply is bad. Sometimes it is gone for 4-5 hours a day. He works only during day hours. The oxygen gas and the carbide are always readily available but they are expensive.

He has a scooter but when he goes to Dehradun to get materials he uses a loading vikram.

HE sometimes goes to Delhi just for visiting the city or for getting materials or appliances which he can not get in Dehradun. He did find it in Delhi.

The entrepreneur has a TV, a mobile phone and a CD-player. He reads the newspaper when he gets some time during the day. He then crosses the street to the chai-shop and there he gets five minutes time to read it. This happens every day.

#### H. Influence on and access to transforming structures and processes

It takes the entrepreneur one hour to get to Dehradun. Either by local bus or by vikram.

The entrepreneur does not pay any license fees and he does not pay the district panchayat yet because he has his enterprise for only 6 months.

The entrepreneur is always allowed to use electricity but in the total day he uses it for maybe 15 minutes.

The demand is equal, with the two boys working in the enterprise or without. If he gets more demand he will make more. Since the two boys are in the enterprise the speed is faster but he does not make more products because there is no more demand. The demand is not higher than the supply.

If a finished good costs 3000 Rs. the customers pays him already 200 Rs. in advance. From this money

and a contribution of himself he can buy the raw materials. After completion the customers pay the rest of the amount.

People from the neighbouring villages are his customers. Most of them are new because he has only been there for 6 months and he makes cupboards and they don't need replacement very often. Only occasionally he goes to a person's house. The customers generally come to his enterprise.

There is no cupboard-competition in Ambiwala but the competition is in Premnagar. Because Premnagar is a city they are cheaper. But he delivers better quality

#### I. Perceived Attributes of Innovation

The entrepreneur has the enterprise for coping. He has taken a loan and his profit is so low that he has difficulties of sustaining the basic needs of his family. He has a TV but not a cycle or a car.

The entrepreneur had learnt to use oxygen-gas, carbide and electricity for the different appliances from other entrepreneurs doing welding in Dehradun. For welding only oxygen-gas can be used. So he had to use that for the work he does. Electricity can only be used for a drilling machine because else the amount of rotations are not high enough.

The entrepreneur had the chance to experiment with this energy source in the other welding-enterprises in Dehradun.

#### J. Innovation-decision

The decision to start the enterprise was taken by the entrepreneur after he had taken a loan from the bank. This he wanted to invest in his own enterprise.

#### K. Communication-channels used

The entrepreneur learnt through interpersonal channels from the other welders.

#### L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the entrepreneur.

## **1.2.2 Village Donkwala**

### **Donfocus1**

Dokwala

Interview with three residents of Dokwala. One of them is working for HESCO. Their names are Manoosh Kumar Kashyap (male), Mrs. Santoosh (female) and Bovindar Kumar Kashyap (male).

Interview done by Riga on 12-04-2006. At the interview only the five people were present.

Location of the interview: At the HESCO office when Manoosh mother and brother came to visit.

#### **1. General information**

There are approximately 80 people living in Dokwala, there are 11 families. Dokwala is one of the three villages part of Nathuwala Peliu gram panchayat. The other villages are Kesuwala and Peliu. Peliu has a population of 200 people while Kesuwala has a population of 150 people. The total diameter of Dokwala is about one kilometre. Nathuwala Peliu gram panchayat comes under Sahaspur block.

The prathan of the panchayat lives in Peliu. Peliu consists of three wards. Kesuwala consists of two wards. Dokwala is not a separate ward and has not got a wardmember living there. The prathan of Dokwala is a member of Congress.

Dokwala is a village which has been electrified through water-energy four years ago. Three Gharat are producing sufficient electricity for the electrification of the whole village.

#### **2. Vulnerability context**

The people explain that they have a good family because everybody in their family works but a trend in a lot of families is that some familymembers do not work. If there is only one familymember working for the provision of basic needs for the family members they have problems with providing these basic needs. Especially in the cold season the prices of vegetables increase which becomes problematic for some families.

Some people in the village have land. The main farming season starts after the 15<sup>th</sup> of November. They then spread the seeds and in April the wheats are harvested. From April onward the field will be open for two months and after that the entrepreneurs grow rice. Sometimes they grow mustard.

There are never problems with water. Some districts, like Poorie, have no water, but in the area of Dokwala there is sufficient water.

The area of Dokwala is in the plains.

There are some alcoholic problems.

Over the last years the population of Dokwala has increased.

#### **3. Livelihood assets**

Dokwala is 15 kilometres from Dehradun. It is possible to go by bus. The busstop is 2 kilometres walking from Dokwala, to a road where the bus stops. Then they have to travel another 13 kilometres to Dehradun.

The main sources of income in Dokwala are labour. Some people work inside the village, for example on the land of the landowners in Dokwala. Some other people go to work outside the village. 3-4 families in the village have land. The three families which have the gharat have land and there is also another family in the village which has land. The amount of land of these families is approximately 2-3 biga's. The rest of the families in the village don't have land. The other people in the village work as labourers.

They buy wheat outside the village and get it grinded with the gharats which are in the village. Some people have their cattle as a source of income. They sell the milk.

Generally speaking the elderly people in Dokwala are illiterate and the children are literate. The



villagers state that out of the 80 people in Dokwala 50 people are literate. Women are less literate than men. Out of the 50 people that are literate, 60 % is men and 40 % is women. 15 women are literate and 35 men.

Most people are educated up to class 4, 5 or 6, a high level of education is the tenth level. People have to work and can therefore not finish their education.

All people in the village are Hindu. One family is Brahmin, they are not very rich, they have 1,5 biga of land. They do act superior to the other villagers but according to these three locals they are not.

They do take food from the other people in the village. The other people are Rajput, this is a clan (When checking later I find out that they are general caste but quit high.

There is no PCO/STD phone boot in the village. Some young people have a mobile but very often the cards are not recharged.

A health institution is located 2-3 kilometres from Dokwala, in Premnagar or Ambiwala. All people from Dokwala go there for health services.

A problem in Dokwala is the lack of transportation. There is no main road in Dokwala. The government says that the road will be developed. Currently the transportation is a big problem. They have to walk 2 kilometres to reach the road

For providing their basic needs the people go to Premnagar. Premnagar is situated 2-3 kilometres from Dokwala. They go by cycle or they go walking. They go there for vegetables, clothes, spices, basic needs, bank, small general shopping.

Most people in Dokwala have a TV.

The villagers go to Dehradun when they want to buy something special, for example things for weddings or functions such as a sari.

#### 4. Enterprises

The three Gharat are a community-based but private organization. All the families pay 1 Rs. a day to the three Gharat-family which provide them the electricity.

Gharat 1 has three connections so they earn 90 Rs. a month

Gharat 2 has three connections so they earn 90 Rs. a month

Gharat 3 has two connections so they earn 60 Rs. a month.

The Gharats also grind wheat . The customers come to the enterprise of the Gharat-family and they pay 0,75 Rs. for having one kg. of wheat grinded. They also sell dome flour from wheat which derives from their own land.

The three gharat using water for producing electricity and for grinding wheats are the only enterprises in Dokwala.

#### 5. Energy

Dokwala village is a very remote village in the forest. It has not been electrified by the Uttaranchal government because it is located in the forest and the Forest Department does not allow the pillars and the grid lines which are required for electrification to run through the forest. So even though Dokwala is really close to Dehradun it is not electrified through the central government grid.

Before Dokwala became to be electrified through gharat there was already a gharat in the village which used to grind flour. People from the neighbouring villages would come to Dokwala to have their wheat grinded but it would take two weeks before it could be returned because the demand fro grinding was so high and tha gharat was not really working efficiently. Dokwala is a village which has been electrified through water-energy four years ago by upgrading the gharat which used to be used for grinding wheat. The gharat grinds much faster than before so there are no problems with long waiting times for the people frokm neighbouring villages and they still come to Dokwala. Three Gharat are producing sufficient electricity for the electrification of the whole village. All households are connected to the grid which is connected to the turbines of the gharats. All families have been electrified within 2 months after the gharats had been upgraded four years ago. The three Gharat are a community-based organization. All the families pay 1 Rs. a day to the Gharat-family which is providing them the electricity.

Gharat 1 has three connections so they earn 90 Rs. a month

Gharat 2 has three connections so they earn 90 Rs. a month

Gharat 3 has two connections so they earn 60 Rs. a month.

The electricity which is produced by the gharat is not always available. Sometimes the water supply is disturbed. During the rainy season there is too much water, the infrastructure which transports the water to the gharat is not sufficient for directing the water in the right way. Another problem is that the big amount of water destroys the pillars which support the infrastructure. There are no people in other villages more uphill which change the water infrastructure.

In the rainy season there are sometimes 4-5 days that there is no electricity. This happens only a few times during the rainy season. When confronted with the fact that the electricity provided by the government they claim that they still want electricity from the government because during day time the gharats are not producing electricity when wheat is grinded. Therefore they want electricity from the government during daytime and they want electricity from the gharat in the evening because the electricity from the government is unstable in the evenings.

When confronted with the fact that for electricity provided by the government they would have to pay instalment costs and a minimum electricity bill they explain that the entire village is BPL. They would get the installation for free and of the minimum electricity bill they are not aware.

Most people use wood for cooking. Some people have a kerosene stove and some people have LPG stove. When wood is not available they use kerosene, when kerosene is not available they use LPG. The villagers collect wood and then they store it under a cover because when it rains it gets wet and then they can not use it. If they want to make a quick tea in the morning they use kerosene. 7 families have a stove and four families have an LPG stove.

## **Donfocus2**

### **Dokwala**

#### **Talk with local who does not receive electricity from the gharat**

Interview done by Tulika, Anshu and Karlijn on 13-04-2006. During the interview the NGO-member deliberately did not come in because he knows that there are some problems between the gharat-owner who is producing the electricity and the villager. I did not select this family on the base of this information. When I told that I wanted to talk to a local family the HESCO-member took me to a big, wealthy house. I refused and we went to a small mud-house, located behind all the other, bigger houses. The head of the family was not reluctant to talk to us.

Name: Ram Singh

During the stay in Dokwala I proposed to talk to another villager to find out from somebody else about the electricity provision.

He explains that electricity used to come to his enterprise but that the production of electricity is not sufficient to provide the entire village with electricity. Sometimes it comes but mostly it doesn't. Even in the evenings, after they stop grinding, it doesn't come. The villager explains that the reason is that the entrepreneurs consume so much that there is nothing left for the other villagers.

The villager would like to get a government connection. When asked why they do not have it yet the villager responds that they (the panchayat) has tried but they didn't get it yet. This is causing problems for the villager and his children because the children cannot study in the evening.

The gharat owner has not been to the villager's house to ask for money. The villager explains that only the gharat-owner's house and the house of the other gharat-owners plus an additional 1,2 families get regular electricity supply.

The villager goes to one of the entrepreneurs to have his wheat grinded. The payment is done by a system in which for every 20 kilo's of production the gharat-owner gets a kilo and a half. The ones who own the gharat do have 3-4 biga's of land. The other villagers lend land from the zamindar who has approximately 20 biga's of land. They cultivate the zamindar's land. They people lending this land do not work on the land. They hire labourers. The villager also works as a labourer. He works for the big landowner's.

The villager's family uses firewood and kerosene for cooking. They get the kerosene from the ration card. The family is BPL. They show me their BPL card. The kerosene they get from Premnagar.

The entrepreneur does not receive electricity from the gharat-owners. Occasionally he used to get some electricity but for the last year this has been very rare. The entrepreneur claims that the gharat-owners do not produce sufficient electricity to provide the whole village. Their own consumption is so large that they can only provide their electricity-need.

There have never been problems due to lack of payments by the villager. The gharat-owner has never come to his house for payment for the electricity.

The villager explains that only the three gharat-owners and another 1-2 families are provided with a stable electricity supply. The other families do not receive electricity on a regular basis.

It causes problems for the children of the entrepreneur because they cannot study in the evenings.

The villager explains that generally people in the village do not have land. Only the three gharat-owners have land of approximately 2-3 biga's. There is a zamindar who owns 20 biga's of land. These twenty biga's he lends to the villagers. They use the land for cultivation and then pay him the share.

The villagers who rent the land from the zamindar do not work on the land themselves, they hire daily labourers.

The villager works as a daily labourer on the 20 biga's of land which are surrounding the village.

The villager also has his wheat grinded with the gharat-owner. Of every 20 kilograms of grinded flour the gharat-owner takes 1,5 kilograms.

The villager is BPL. He shows me the BPL card. This villager only has a small room with 3 beds. He does not have a TV, telephone and he does not get electricity. He has a lamp but this is not working. He uses candles for lighting. If the villager could get electricity from the government he would like to. They (the panchayat) have asked for it but it has not come yet.

### **Talk with NGO-members who lives in Dokwala**

Interview done by Tulika, Anshu and Karlijn on 14-04-2006

Dokwala is located very close to Dehradun but there is no connection to the central grid in Dokwala. This is because the village is in the forest and the forest department did not allow the grid to go through the forest, even though they are very close to Dehradun.

Others say that the village has not been electrified because it has only 12 families and the electrification would be very costly, the government cannot pay for all of this.

In Dokwala there are three gharat. There is one gharat-family which buys raw materials and packaging material from the market. The grind this wheat into flour, package it and sell it on the market again. They sell it in Premnagar and Dehradun. The price of the marketed good is 7 Rs./kg. Out of this the total cost of transportation is 0,50 Rs. In the off-harvest season they do this but in the harvest season they get it from their own land.

Villagers from the surrounding eight villages get their wheat grinded with the gharat's. In these other villages there are some enterprises which grind wheat by using diesel or electricity but most people want flour which is grinded by a gharat because the other flour doesn't smell as nice because it has been heated up and also because the nutritional value of flour grinded with a gharat, without heating up, is higher.

Only one family does selling on the market. The other families don't have time to do this. Initially they had bought raw materials from the market and they grinded it and sold again on the market but then the villagers would become upset because there would not be sufficient time to grind their flour. That is why they stopped doing this.

There is a problem in the villagers of family-members who do not work. The rich family (Manoosh his family) are the first who started to sell flour on the market because they have three boys which are all working. Some of them are mason's. Manoosh works with HESCO.

The drains for the water infrastructure used to be bags and cloths. Resistance and friction caused the efficiency of the water to be a lot lower than it is now. Now canals have been built from stones. Earlier the water supply wasn't high enough to make all the three gharat run. Now there is less friction it is possible. All the gharat are made of steel now because using wood is not allowed anymore. The steel is also more efficient because of its shape.

The villagers rent land from a large zamindar who does not use the land. This zamindar says  $\frac{3}{4}$  of the total production is mine,  $\frac{1}{4}$  is yours.

In the past women used to be involved in all the activities in the village, working on the land, taking care of the children, cooking. Now men go out for service outside of the village and most of the time women go with them. They then take their children to give them better education. A large part of the households are only women because the men work outside of the house, in the army. Dowries are not a problem. If jewellery is not available furniture or something else is given to the family of the man. It is not a problem to the extent that they are given. It goes without saying that they should be given though. Openly nobody will ask for dowries but it goes without saying that they should be given.

Women beating does happen in the village. Alcoholism is part of the social problems in the village.

Compared to the plains the hills have a better culture.

### **Talk with NGO-members who have been building the gharat in Dokwala**

Interview done by Riga and Karlijn on 18-04-2006

Manmohan Singh (Bourkee) has up gradated the gharats in Dokwala. He has been working with the villagers and he has been also trying to solve some social problems which the people in Dokwala have been experiencing after the up gradation. Based on the talk with the villager who did not get electricity I decided it was important to find out the problems in the village after the up gradation.

2 families in Dokwala don't have light according to Bourkee. The main problem is that only three families have a watermill. They supply themselves and another 6 families with electricity through a grid. At installation of the grid the people were told that they can only have 2 bulbs per family but now there are families which have three rooms so they will burn three bulbs. Because of this the voltage is too high and the distribution of the light is not constant. HESCO has provided one of the gharat families with an improved alternator which produces 3 kW instead of 1 kW. He helped the family of Manoosh, who is also a member of HESCO, and later on he will also provide such an alternator to the other two gharat families.

The 2 families which do not get electricity don't get this due to poor management. There is a fight between the families and at least one of the heads of the two families is an alcoholic. He gets into fights with the other villagers when he is drunk so the gharat-families said that he was not going to get more light.

To solve this problem HESCO arranged a meeting with the villagers, Dr. Joshi and Dr. Rakesh. They told the gharat families that they have to provide the other two families with electricity. They claimed that they don't pay for the light. The payment is done by the users providing the maintenance costs. The 2 families told them that they don't want to because they only get some electricity in the evening and they only want to pay if they get light the whole day.

There is no road construction possible to Dokwala because the only way would be through a tea estate which the owners don't allow. The villagers only get electricity in the evening because the gharats are running during the day, continuously. When I confront them with the fact that in Rudraprayag the gharat is running and producing the grinding and the electricity at the same time he explains that the difference in height is more in Rudraprayag and the amount of water is larger. Therefore the water produces sufficient energy for both running on the same time.

There are two reasons why the government did not provide electricity in the village yet. First, they have to make 50 poles to reach the village through the grid and they would have to run through the tea estate which the owners do not allow. The other possibility is to make it run through the forest which the forest department not allow.

The prathan told the people in Dokwala that he will try to get a government connection through another path but so far nothing has happened there.

The up gradation of the gharats has led to the following advantages for the villagers of Dokwala:

- Next to the three gharat families there are now 6 other families which are provided with electricity.
- Their children can study in the evenings.
- Villagers don't have to buy kerosene anymore.
- There is income generation for the three families with the gharat. First they had a small house, now they have a big house.
- They also have TV and radio.
- They used to provide small amounts of grinding but now they can produce a lot more.

Bourkee explains that all the families used to be at the same level, before the gharats were up graded. When I confront him with the fact that they were the only three families in the village with an enterprise and all the other families are labourers. Next to this the other villagers depend on these families for their wheat. They must have had a little bit more power and money. He confirms that they did have a little advantage.

For example one of the families now has a big house, a TV and a cell-phone.

The social problems in the village are present but HESCO does not try to get involved. One is a bad drinker and always makes problem. He wants electricity if the provision will be increased.

**DonHESCOfile**

Project No. 38-10-Ind-

Format No. 11

End of project report Canada fund for local initiatives

Project title: "Turning the watermill for multiple application

## Donmil1

Dokwala

Enterprise 21, Enterprise producing electricity and grinding wheat.

Name entrepreneur: Hira Lal

Interview done by Tulika, Anshu and Karlijn on 13-04-2006. During the interview a member from the NGO HESCO and the mother of the entrepreneur were present. During the interview there was a neighboring villager who walked into the house where the interview was done.

### Production Process:

The entrepreneur has a gharat, which has been upgraded four years ago by HESCO. His family used to have a gharat for centuries. Before that the enterprise was only producing wheat through a home-made gharat. Four years ago the man heard of HESCO and the possibility HESCO offers for upgrading gharats and connecting them to turbines so they can produce electricity. Since four years the entrepreneur produces electricity and grinds wheat. Customers come to his enterprise with the flour they want to be grinded and then during daytime the entrepreneur grinds it and the customers pick it up the same day or next morning.

### Location:

Dokwala is located two kilometers from the road. Behind a tea-estate there is a forest which a little difference in height. In this forest Dokwala is located.

### A. Adoption, rejection or no knowledge

They started producing electricity with the gharat 3-4 years ago. The prathan, who lives in another village of the panchayat didn't care much about providing electricity to the village. The entrepreneur's mother was married into the family and when she arrived (she is now old), it had already been running for more than three hundred years. The total amount of families in the village is 12. Of these 12 only two don't get electricity. The entrepreneur claims that the main reason for these houses not to get electricity is because there is nobody living there.

The entrepreneur uses water as energy source. The entrepreneur uses this energy source because his family is in this business for 200 years. Before the efficiency of the energy source was lower but due to up gradation of the gharat by HESCO the efficiency was increased.

The entrepreneur explains that he could be using another energy source but that using diesel or electricity heats up the wheat, which decreases the nutritional value of the wheat. The most important reason is that the water is for free.

### B. Vulnerability context

In April they earn less money because they grind corn. The price they charge customers for corn is lower than the price they ask for wheat.

There are no landslides, not even during the rainy season.

In November they plant the wheat and in April-May they harvest it. In June they grow corn which they harvest after three months. Sometimes during the rainy season they grow rice long with the corn. Rice only takes 1,5 month. Not everybody does this. In the summer season they grow the corn and in the rainy season they grow the rice. Drought causes problems for agriculture because there is insufficient water. The amount of water is always large enough for producing electricity.

Sometimes during the monsoon the large amounts of water affect the channel-infrastructure which transports the water. The entrepreneurs and other villages have been taught how to repair this and do this immediately after they get damaged.

The population of the village is increasing over the last 5-10 years because children have increased the population. There is no migration. No families have left the village and no families have entered the

village.

Only a few families in the village have land. In addition to the wheat they get from inside the village they go outside of the village to buy raw material, grind it and sell it again on the market. The people only own the land where houses are, they don't have land for cultivation so the wheat which they require for their nutrition they buy from outside. A large zamindar has 20 biga's of land. The villagers rent the land from him and cultivate it and pay him back the rent. The ancestor's of the village used to have land but due to financial problems some part of the land was sold off and due to fragmentation of land among the brothers of the family the total amount became less and less because they would sell it.

#### C. Human capital

The entrepreneur has finished the fifth class so he has finished primary school, he can read and write. He did this from the age of six until the age of 12. He stopped because he had to work for the family. He went into daily waged labour as a harvester in the village of Dokwala. He has learnt how to run the gharat from his father since he was very young. This has happened in the same way that the entrepreneur has taught his sons. He also learnt how to run the business from his father. The entrepreneur explains that they can go to Himachal and built it there. The entrepreneur is currently 40. He and his family have been running this gharat for generations. When the entrepreneur was approximately 20 years old his father passed away so at that time he became to be the head of the family and in charge of the gharat. He has been working with the gharat all his life but for the last twenty years he has been running it as the head of the family.

The entrepreneur would like to learn other things like carpentry and he is also considering other things. He currently has a beehive of which he is considering to make honey and market it. He would like to do other things but he does not have the financial capital to invest in it. He also does not have the time to learn something new because all the time goes into his gharat. He would like to get knowledge on other things he can do.

#### D. Financial capital

From grinding the entrepreneur gets 1500 Rs a month. His total costs out of this are 200 Rs. Next to this he does daily labour. Out of this labour he gets 80 Rs. a day. Per month he works between 5 days and 10 days. His monthly income is between 400 and 800 Rs. He gets in contact with the people needing labour because they come from surrounding villages and they now that they can get labourers from Dokwala. Sometimes the villagers go looking for a job, in the agricultural season the contractors come to them. The 200 Rs. of the costs he collects from the people that he supplies with electricity. The entrepreneur gives electricity to two houses. Everybody is free to take electricity from him. The entrepreneur has just started bee hiving through which he hopes to earn a livelihood. Currently he is not getting an income from this yet. 6-7 months a year he also earns some money from distributing milk. Per day he earns approximately 50 Rs. with this. On a monthly basis this would be 1500 Rs. The other months the cows don't give milk. Labouring is not always possible, for example when the harvesting period has started. The up gradation was paid by HESCO but the maintenance he pays for himself. The entrepreneur was told that the other village members also had to get benefits out of the up gradation. The entrepreneur does not have land and does not have cattle.

#### E. Social Capital

The entrepreneur supports his wife, his mother and his three sons. The entrepreneur knows people in his village and in neighbouring villages. People from eight different villages come and have their wheat grinded in the gharats. The entrepreneur meets people at festivals and marriages.

The entrepreneur knows people in Premnagar and Dehradun. He goes there 4-5 times a month. He talks to these people about the gharat, about the higher nutritional value of wheat grinded with a gharat and about the fact that he is thinking about other activities. The entrepreneur knows other gharat-owners in Dehradun and he has gone to Rudraprayag and Roorkee for training on the installation of the gharat. Two people in Fathpur and Herbertpur have taken the idea from the entrepreneur. He had gone to his sister in one of these villages. He knew that she had a gharat in that village so he went there to inform them about the possibility for up gradation of the village. They then contacted HESCO.

#### F. Natural Capital



The entrepreneur relies on water as an energy source. Sufficient electricity can be produced from the water and there are never problems with the production of electricity due to lack of water. During the rainy season too much water sometimes lead to a break in the water infrastructure. They have to repair this. At those times there is no electricity.

#### G. Physical capital

During daytime there is no electricity because the energy produced from the water is used for grinding. In the evening the electricity is produced from the gharat. Only during weddings and functions the electricity is working during daytime. During the rainy seasons there are sometimes problems because the high amount of rains cause damage to the water infrastructure. A problem with the electricity provision is that the people to whom they provide electricity want electricity provision all day. If electricity would be provided through the central grid he would not want it because the entrepreneur can provide it's own but the others would. He would like that to happen because then he can get another machine which runs on his own-produced electricity.

Sometimes there are grid problems but if this happens the entrepreneur knows how to fix this. When asked why other people don't repair the grid if it is broken he answers that the central grid is government property and they can't touch this.

The entrepreneur has a bicycle of his own. He hardly ever takes the bus only when his son has taken the bike and disappeared. The bus stand is two kilometres from the village.

The entrepreneur's son has a cell phone. He has taken it from somebody.

The entrepreneur has a TV and a music system. The entrepreneur does not read the paper. Nobody in Dokwala does according to the entrepreneur.

#### H. Influence on and access to transforming structures and processes

It takes the entrepreneur one hour to cycle to Premnagar and by bus it also takes him one hour. He always goes to Dehradun by bus. This takes him 1,5 hour. The entrepreneur would be able to sell more if he could produce more. If he cannot sell more in the neighbouring villages he will sell on the market.

There is no institution providing financial capital.

Nobody has ever come to ask for tax, also not the district panchayat. Only in the case that he would have a gharat, which uses canals, provided and maintained by the government than he would have to pay. The entrepreneur knows the prathan and the ward members. Once a month or once every two months there is a meeting in the village Dokwala or the go to the other villages in the panchayat. He only talks to the prathan if he has wok there. These are formal talks.

The entrepreneurs customers are the people from the neighbouring villages. Currently he does not buy raw materials in the market to sell wheat in the market again because he is to busy. Most of his customers are fixed and come regularly to his enterprise.

#### I. Perceived Attributes of Innovation

The entrepreneur has the enterprise for coping. He is struggling to meet the basic needs of his family through the gharat, the electricity production and through the milk selling. He is even trying to expand his activities through bee keeping.

The villagers had heard from Latchiwala village that it had been electrified through gharats. They went to the village to see and inquire about the gharats and understood it was done with the help of HESCO. They than approached HESCO. The entrepreneur has already seen the benefits in the other village.

The entrepreneur did not experiment with producing electricity for other village-members but he did have experience with grinding. When asked if he wasn't scared that producing electricity would threaten his grinding activities the entrepreneur replies that he did not fear this because he had seen and had been taught through the other up graded gharat he had visited.

#### J. Innovation-decision

The decision about the up gradation of the gharat was made with the entire village. They decided to do this as a community. From the time they saw the gharat in the other village until the time they made the decision was 2-4 weeks.

K. Communication-channels used

The entrepreneur learnt about the possibility for up gradation by seeing it in another enterprise in Latchiwala village. There they talked about it. Then they contacted HESCO whom advised them, provided the raw material, helped them built it and taught them maintenance.

L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the entrepreneur.

Primary : first to fifth class

Secondary: sixth to twelfth<sup>th</sup> and 12<sup>th</sup>

Bachelor of arts:

Bachelor of science:

Bachelor of Business administration

Bachelor of commerce:

Professional courses: IIT, B-tech,

Masters

## 1.3 Village cluster Fatehpur

### 1.3.1 Village Fatehgram

#### Fatmil1

Fatepur

Enterprise 27, gharat enterprise which is also producing electricity through a turbine when it is not grinding. The waterflow is insufficient for the gharat to both run the grinding and run the electricity production. The electricity is produced in the evening while the grinding is done during daytime.

Interview done by Tullika, Anshu and Karlijn on 26-04-2006. During the interview only his wife and his two daughters are present. Only in the end of the interview do a old man and an old woman come to sit with us.

Name entrepreneur: Rangi Lal

#### Production process

The entrepreneur has a gharat with which he grinds corn and wheat. Now, on the 26<sup>th</sup> of April 2006 the corn season is over and the wheat grinding starts. The wheat has been harvested in The last two weeks of April. The entrepreneur also produces electricity for two houses and his own house. Before they had electricity through the gharat they were using oil lamps for their lighting. The villagers from the village come to the gharat-owner to have their corn and wheat grinded. People from the entire area come to the enterprise for getting their wheats grinded.

#### Location

This part of the village Fatehpur considers itself to be separate from the rest of the village. The rest of the village is electrified through the central government grid. The part of Fatehpur which I am visiting is electrified partly through the two gharats which HESCO has upgraded there. The village also used to be separate because there was no road going there. Since one year there is a road going there. Before there was a road nobody used to come in the village. Now sometimes people are coming. Now the road is there they are 10 minutes away from the rest of Fatehpur. The entire village is Fatehpur but the part where they live is Fatehpur-poorie because they have a spring here.

Fatehpur starts from a little bit after the road where the bus stops. This is a two lane big road. It looks like a national highway.

Dehradun is 1,5 hour away by local bus. To go to Sahaspur, where most of the work is it takes him 2 hours by Vikram. Herbertpur is where the general market is and this is only 15 minutes walking.

#### A. Adoption, rejection or no knowledge

The family of the entrepreneur has had the gharat for more than 80 years. For a year the villagers have been working on creating the up graded gharat for it also to supply them with electricity, but only since 4-5 months they are receiving electricity from the gharat. Usually he grinds the wheat and the corn during day time and the gharat is running for electricity during the evening and the night. If he has a lot of materials to grind he also has to let it run in the evenings. The people of the village do not get any electricity than. The villagers don't pay money for the electricity. They help out when the water infrastructure breaks. The villagers are providing the labour. They currently use bulbs for lighting but now they have asked HESCO for tube lights because tube lights require less electricity. Since the gharat has been up graded the production of the grinding has doubled because the water infrastructure and the wheel are much more efficient. Another problem which has been solved is that the wooden wheel used to break down. Since the new wheel it doesn't break any more so often. Now

the production is continuous.

Before he used to go to his work and his family would grind the wheat. When he used to come back and it was not finished yet. Sometimes he had to sent people home empty-handed. Now he doesn't have to because the efficiency has increased. Because his product is always ready the amount of customers have increased.

Before the gharat was up graded he sometimes used to grind but the wheel would break very often.

#### B. Vulnerability context

The corn season stops by April. Than the wheat grinding starts because the wheat is harvested in the last two weeks of April. There is no problem of drought in the village. Fatepur-poorie is called that way because it has a spring. There is sufficient water. In April and May there are some problems for the grinding because the water pressure is really low than. The grinding goes slower than. The biggest problems arise during the rainy season. The water infrastructure tends to get broken because of to large amounts of water. There are some problems during May and June, just before the rainy season. There are sand storms than which cause difficulty for working.

#### C. Human capital

The entrepreneur was born in the village. His family has had the gharat for approximately 80 years, for several generations.

The entrepreneur has finished fifth class. He can sign his name and more. He started school when he was seven and he stopped when he was 12. He is forty now. His father had learnt him how to make and use the gharat just like he has taught his sons. He stopped school because his father passed away. There were his elder brothers but they were working outside. He stopped because he had to provide his family with their basic needs. The family situation at that time was that he only had one shirt which he had to share with his brother. He started doing daily waged labour. The entrepreneur has taught his wife how to operate the gharat so she can operate it when he is out working.

#### D. Financial capital

The money that the entrepreneur gets from grinding is very different. During the season he will get 40 Rs. a day. The season for maise is from August to December. From January onwards there is wheat. It varies, some days there is nothing, some days there is 20 Rs. and some days there is 40 Rs. On average there is 20 Rs. This makes a monthly sales of 600 Rs. He does not have any costs because the wheat is supplied by the customers and the maintenance which needs to be done is paid by HESCO. When a bearing needs to get repaired it will cost 200 Rs. A belt will cost 650 Rs.

He is currently working for HESCO as a mason. The entrepreneur approximately 15-17 days per month. For one day of work he gets approximately 90-100 Rs. This will make a total of 1350 Rs. per month. He than works 8-9 hours. In this area there is a high need of workers. There is a lot of labour work available. He managed by labouring. There is always work in Sahaspur. Although the productivity has increased since the up gradation he is still not able to provide his family with their basic needs.

The entrepreneur does not save.

The last 3-4 months have been a bit difficult. There are windy storms and they cause a lot of sand and the workers can't work much. Also the coming two months are rainy season. They will not be able to do a lot of work during those months either. The grinding is quit good because it is the season. He earns approximately 40 Rs. a month now.

The entrepreneur has a little bit of land, just for his house to stand on and for his kitchen garden. This is 1,5 biga. He has two cows.

#### E. Social Capital

The entrepreneur is Hindu and of general caste, the name of their caste is Kashab. The entrepreneur lives with his wife, two daughters and two sons. Their parents have passed away. His brother also lives in this part of the village but they live separate.

The villagers got to now HESCO in 2002. One of the gharat-owners met Dr. Joshi in Dokwala. He attended a meeting which HESCO had called for all the watermillers in the district of Dehradun. A message was given to all the villages that there was going to be a meeting. HESCO had done a survey

to find out how many villagers had gharats. There was a form in every village which they had to fill out. Since then he started working for HESCO. Dr. Joshi also started visiting him. After a year HESCO started the work in Fatepur.

The entrepreneur is a member of HESCO. He works people with his work as a mason. HESCO comes in the village regularly. HESCO is his platform for exchanging information about the gharat or about grinding.

He hardly ever goes to marriages and festivals. They only go for Rishikesh sometimes, to the family of his wife. The last two years they only went twice. She calls her relatives once in a month. They only have acquaintances in Uttaranchal. He has contact with people he worked with in Himachal. He visited these people for HESCO. He helped them build something. He has visited them because he still had work that remained there. He did build a relationship with these people.

#### F. Natural Capital

The entrepreneur relies on water for energy source. There is never drought so he can always produce but in April May there are sometimes problems of a low water pressure. He produces less than.

#### G. Physical capital

The entrepreneur goes by the local bus to Dehradun, to the Shimla road, close to the ISBT, and to the places where he works. He goes to Dehradun approximately 2 times a week. It takes him 1.5 hours. When he goes to Sahaspur he uses a vikram. This almost takes him two hours. Herbertpur is where the general market is and this is only 15 minutes walking. Their basic need products they get from Herbertpur. There is a doctor there who they can reach even at 12.00 o'clock. He also goes there for masala and shampoo.

There is a weekly market on the paonta road in Herbertpur where they get their vegetables and masala. The entrepreneur has a radio and since he has electricity he also has a TV. If the water pressure is not high enough they cannot watch TV. They don't watch TV very often because the TVF requires 200 W and he only produces 150 W. When the gharat is running he produces just as much electricity that every family can use one bulb (Three families in total).

They want the light at night because there are a lot of snakes. They also come in the house. To see the snakes at night he wants the light. There are water snakes which are not poisonous and there are other snakes which are poisonous. It has happened a few times that somebody was bitten and that they had to run to the hospital. They have a vehicle to transport them. This is a big investment but it hardly ever happens.

Generally he goes for a stroll in the evening and then he sometimes reads the paper.

#### H. Influence on and access to transforming structures and processes

Together with HESCO he has developed a plan in which HESCO gives him grains which he then grinds and then HESCO will market it. Currently he has blades which are not really efficient yet. When he gets blades with a bowl shape the efficiency will be even higher and he hopes to start this program by then. Currently the water gurgles around the blades.

Before they used to have a tax system and they had to pay the government for running the gharat. This has been removed.

He knows the pradhan on a friendship level. They are from the same economic background so they sit down and talk. They have conversations.

There is a lot of competition from gharats running from electricity and from diesel. Therefore he is not able to increase that much. Because of this he is looking into the possibility for getting into a scheme with HESCO where HESCO provides the grains and he grinds it.

The entrepreneur explains that grains grinded by a gharat are much healthier. Some old people know this and they come especially to him for this. Some people don't come to his enterprise because it is too time consuming and there are also people who don't know this. When I confront him with the possibility of 'advertising' for this he claims that he is thinking about this and he can maybe use the elders to spread this news.

#### I. Perceived Attributes of Innovation

The entrepreneur has the enterprise for coping. They can hardly provide their basic needs and their

monthly income is about 2000 Rs. They do have a TV but they only watch once in a week. They do not get a electricity connection from the government because they are too afraid that the electricity bill will be so high that they cannot pay for it.

The entrepreneur is not really using a new source for his grinding but his source has been up graded. From a traditional gharat his enterprise was running from an up graded gharat with improved and more efficient water canals. A more efficient wheel etc. He knew that this had a beneficial outcome because all gharat owners were called by HESCO for a meeting in Dokwala for gharat owners. There HESCO showed the possibilities of an up graded gharat. The advantage was for the entrepreneur because he would be able to sell more because the efficiency could increase and it was for the customers because before they had to wait for the grinded grains really long and sometimes he couldn't finish so the customers had to leave empty handed.

He only had the chance to experiment with it in Dokwala, where he came to view the up graded gharat.

The entrepreneur did not have to change a lot. His infrastructure was improved so he had to learn how to repair the infrastructure but because HESCO had taught him how to build it he also new. He also had to learn the new skills concerning the turbine for creating electricity and for the wires of the connection.

#### J. Innovation-decision

Everybody in the village immediately agreed because he had seen it in Dokwala. He decided to get it by himself.

#### K. Communication-channels used

The entrepreneur heard about the possibility for up grading the gharat because HESCO had sent a form to all villages. The gharat owners had to fill out the form so HESCO could identify the amount of villages with gharats. Then HESCO called a meeting for all gharat owners in Dokwala. There they were informed about the possibilities. The entrepreneur got to know Dr. Joshi and he started working for him. After a year Dr. Joshi started visiting the village and one year ago the building for the gharat had started.

#### L. Extent of change-agents promotion efforts

HESCO promoted the energy source water to the entrepreneur by approaching them in their village and by inviting them to Dokwala

## **Fatfocus1**

### **Fatepur**

Focusgroup with people from Fatepur. There are 11 people present. Two men, two children, two adolescent girls and 5 women. These are women from 4 different families. One of the women is approximately 70 years old. The others are in their forties.

Interview done by Tullika, Anshu and Karlijn on 26-04-2006.

### **Population size, density and location**

There are none families in Fatepur, approximately 50-60 people. The total area of this part of Fatepur is four biga's. There is only the land on which the houses are built. There is no land for cultivation. There are just some kitchen gardens.

### **Village boundaries**

This part of the village Fatepur considers itself to be separate from the rest of the village. The rest of the village is electrified through the central government grid. The part of Fatepur which I am visiting is electrified partly through the two gharats which HESCO has upgraded there. The village also used to be separate because there was no road going there. Since one year there is a road going there. Before there was a road nobody used to come in the village. Now sometimes people are coming. Now the road is there they are 10 minutes away from the rest of Fatepur.

The entire village is Fatepur but the part where they live is Fatepur-poorie because they have a spring here.

Fatepur starts from a little bit after the road where the bus stops. This is a two lane big road. It looks like a national highway.

### **Main sources of income**

No one has cultivatable land. All of them are daily wage earners. They work for whatever work is available. In the harvesting season they work in other people's fields. Currently the work is less because there are sandstorms and there is the heat which makes working difficult. They do go out for work but it is really difficult. In a few months the rainy season starts. During the drought and the sandstorms the roofs fly off due to the wind. This also happens in the rainy season. During the sandstorms the women go out early in the morning at 6 am to collect firewood. The rest of the day they stay inside, at least until 3-4 pm.

The people in this village are definitely BPL but they say that they have never been qualified as BPL. The panchayat of Fatepur should have given their status and this should have led to the villagers receiving a BPL card. This has never happened. The villagers explain that this is because there have been some issues between this part of the village and some people from Fatepur. With most people the villagers have a good relationship. They mostly think that the fact that HESCO is helping them is a good thing. There is a person from the government distribution of oil and granes who as to speak: "Is putting the oil in his own car and is not bringing it over to them." This person is a distribution person and he has some influence because he knows some people from the government. Because of this they also have not been given BPL cards but with

HESCO is looking into the development of some non farm income producing activities for the village. Nothing has happened yet but there are plans for a fishery.

### **Physical capital**

All the houses except for two are mudhouses. If it rains too much they sometimes get destroyed. Every house has one or two cattles. Most families have one or two cows for their own household use. The cattle is kept in sheds. If they collapse.....they are just fixed again.

### **Social capital**

Whenever there is something wrong with the infrastructure of the water canals all the villagers help out to repair for these. HESCO has supplied them with the up graded gharats and therefore the villagers do not pay for the maintenance. When the gharat needs maintenance HESCO pays for this. The belt sometimes breaks, which costs 60 Rs.

The people in this village are definitely BPL but they say that they have never been qualified as BPL. The panchayat of Fatepur should have given their status and this should have led to the villagers receiving a BPL card. This has never happened. The villagers explain that this is because there have been some issues between this part of the village and some people from Fatepur. With most people the villagers have a good relationship. They mostly think that the fact that HESCO is helping them is a good thing. There is a person from the government distribution of oil and granes who as to speak: "Is putting the oil in his own car and is not bringing it over to them." This person is a distribution person and he has some influence because he knows some people from the government. Because of this they also have not been given BPL cards.

From Fatepur-poorie there is a temple. They explain that work in Fatepur is done upto the temple. After that only HESCO is doing work.

The villagers got to now HESCO in 2002. One of the gharat-owners met Dr. Joshi in Dokwala. He attended a meeting which HESCO had called for all the watermillers in the district of Dehradun. A message was given to all the villages that there was going to be a meeting. HESCO had done a survey to find out how many villagers had gharats. There was a form in every village which they had to fill out. Since than he started working for HESCO. Dr. Joshi also started visiting him. After a year HESCO started the work in Fatepur.

#### Markets

The main close market is Herbertpur. There is a general store there. In the rest of the village Fatepur there are two carpenters, three lohar and there are a few women working at home doing tailoring. There are no chai-shops, no general stores, no restaurants, no PCO's etc.

There is a weekly market in Fatepur where vegetables and fruits are sold. This is where they get their weekly supply of fruits and vegetables. If they have unsuspected guests they go to Herbertpur to buy vegetables. The rest of their daily needs, like wheat and rice they get from the village.

#### Human capital

The adult women are all illiterate. Most men have received education. Currently the situation is that the girls go to school until class five because there is a primary school in Fatepur where they can go. The boys continue studying. When the girls stop going to school they help out in the house. The women say that the girls have to stop because the expenses are too high. Tullika tells them that most of the schools have special programs for BPL families or poor families. When Tullika tells them they say it is true. They then explain that because this village is a village which will be upgraded by HESCO and is adopted by Doon school they are going to get a school. After the monsoon the building of the school will start. This village is going to be a model village and if this program works they want to do another 999 villages for up gradation.

In the monsoon there are a lot of watersnakes but they are not poisonous. There are some poisonous snakes but it has been years since anybody got bitten by one and had to be rushed to a doctor.

Child deliveries are most of the time done in the village, when there are no complications. There is a Muslim woman in the village who knows how to deliver babies.

#### Ethnicity

All the families are Hindu and they are all Kashab caste. This is not a dalit caste or a tribal caste. The village has been there since anybody of the villagers can remember and the gharats have both been there for more than a hundred years. (When comparing this village to Dokwala it becomes very evident that there are no caste issues here and therefore all the people live in harmony. Everybody interacts with everybody and there is a really nice atmosphere in the village. In Dokwala there were problems between some of the villagers. Of course they did not admit that this was caste related but the people who had the gharats were general caste and the two families who did not get the electricity from the gharats were scheduled caste.)



### Political organisation

In their village the wardmembers and the prathan are elected by the electorate in the village but each time there is somebody from a different caste in this position. This person only works for the people from his caste. Earlier there was the problem of the road. The children used to have difficulty getting across to the other side of the village. During the monsoons the children never used to go to school.

### Electricity

In the village there are two gharats. Both gharats give electricity to two houses. There are a few families who steal the light from the government central grid through a self made connection. Before the gharat was there they used to use an oil lamp for their lighting. For a year the villagers have been working on creating the up graded gharat but only since 4-5 months they are receiving electricity from the gharat.

The main reason why the people in this locality of Fatepur did not get electricity was because it was never supplied by the government and they don't have the money to pay for it. There are two families in this locality which are stealing light. They have made their one connection line from the other side of Fatepur and the other family has connected from their house. They are too scared to get the light because they have heard many times that the bill was very large. They are too scared to get the light because they are afraid that they will not be able to pay the bill.

Another villager explains that there was no electricity because there never used to be a road. The villagers have worked to increase the quality of the road. Government has never come here. Government only comes during election time. The government has never got it done. Before the village was electrified through the gharat they have asked the government. They had managed to get it pole close to the village but the panchayat took it back.

The political people are telling him it is not their time yet. They say that next time they will get it. The villagers are happy with the connection through the gharat. They don't have to pay for it and they get electricity which they never used to get before.

They also like this way of getting electricity because it is in their hands. During daytime they used the light which has been stolen from the central government connection. During the evenings they get the electricity from the gharat. Tullika and Anshu explain that this is also a way for the government to manage the problem. They do not want to invest in making connections for these small settlements. They tell these people to electrify themselves by stealing the light. These people do not have large appliances and don't use a lot of electricity because they do not own machines which use large amounts of electricity this is also beneficial for the government. In case the pole doesn't work they get it from the gharat.

One villager explains that he is satisfied with this way of electricity supply. With HESCO they are currently looking into solar tube lights so they also have some light in the nights. In the monsoon the electricity lines will get broken really often. The issues is that even if they are able to get an electricity connection they will not be able to pay for it. Other people he knows who get a connection are not able to save any money. They are able to survive like this so they don't want to get electricity during daytime.

Whenever there is something wrong with the infrastructure of the water canals all the villagers help out to repair for these. HESCO has supplied them with the up graded gharats and therefore the villagers do not pay for the maintenance.

The villagers have never paid anything to the gharat owner for the electricity they receive. Sometimes a belt gets broken which is 60 Rs.

## **1.4 Village cluster Maldivpta**

### **1.4.1 Village Bautha**

#### **Baubl1**

Bautha

Enterprise 23, blacksmith making agricultural equipment.

Name entrepreneur: Surendar Suriram

Interview done by Riga and Karlijn on 18-04-2006. At the interview Annan from HESCO and a local from Maldivpta were present and the blacksmith's children. During the interview his brother and wife arrived and also joined the interview.

#### **Production process**

The entrepreneur purchases iron from a junk dealer in Dehradun. The customers come to his house to order the product, he then makes it and they come to pick it up in the enterprise.

#### **Location:**

The enterprise is located in Bautha, which is 5-6 kilometres from the road uphill. It takes approximately one and a half hour to reach the place from the road. The road is connected to Maldivpta and the distance is 2 kilometres. In Maldivpta there is a bus going to Raipur and Dehradun. His enterprise is located just outside of the inner circle of Bhauta. In the center there are 17 families which do get light. On the outside of the village there are another 25 families which are spread over a large area. These families do not get light.

#### **A. Adoption, rejection or no knowledge**

The family has had an electricity connection. They took a connection two to three months ago and since then they did not get a bill. At the moment the connection is not working anymore. The entrepreneur does not know why and there is nobody from the government who came to check. They were planning to try the connection and see how much they would have to pay because he only wanted electricity if he could pay a low bill. Without the electricity they used to live in the dark. They thought the electricity would give them light and now they again live in the dark. They decided to take the electricity connection because they always had to get kerosene oil. A few months ago kerosene oil was not available. They used to buy kerosene oil from the government fair price shop. When they asked why there was no kerosene the shop claimed that there was no kerosene left.

The entrepreneur uses wood as energy source for his blacksmithy work. He gets the wood from the forest. There is no lack of wood in the mountains, there is a sufficient amount available. The Forest Department does not reach Bautha to check. In the rainy season there is also no problem with wet wood. He lets it dry. In the mountains there is a lot more grass and wood. He doesn't get charcoal because charcoal would be too expensive.

The entrepreneur would like to have machines running on electricity or he would like to use charcoal. Wood takes a lot of time, charcoal goes much faster than wood. Before 5 or 6 months ago he used to use charcoal. The army would come to his village and they used to give him charcoal. The soldiers used to come there for training. Now they don't come anymore because a commander fell down the mountain.

#### **B. Vulnerability context**

The entrepreneur purchases iron from a junk dealer in Dehradun. He goes there 2-3 a month. He goes walking to Maldivpta and takes the local bus in Maldivpta. He leaves at seven in the morning and he

returns from Dehradun at four in the afternoon. The total time he takes is 12 hours. The price of iron increases during the rainy season because just before the rainy season there is an increase in demand for iron. Just before the rainy season, in May and June, there is a lot more construction work so the price of iron will increase shortly after this. The entrepreneur makes agricultural equipment, small pans and door posts. During the harvesting season the demand for agricultural products is higher, while when there are no crops to be harvested and during the rainy season the demand is low. A doorpost costs 50-60 Rs., a sickle costs 22 Rs. In harvesting season he increases his prices, the sickle than costs 22, while in the off-season it will cost 14-15 Rs. Normally he sells 35 sickles in a month while in the harvesting season he sells 60-70. He sells 35 door posts in a month. The demand for pans and door posts doesn't fluctuate that much. The demand for his products has been increasing but the competition has also been increasing. The demand is also increasing, there are many shops in Maldivpta, Raipur and Dehradun who also do other appliances with iron. The price of iron always increases. The demand for agricultural products is high during April and May and in October and September because this are the harvesting periods.

#### C. Human capital

The entrepreneur went to school for two or three classes of primary school. He started looking for his certificate in the house. He brought out some papers which he had received from his school. He started school when he was ten and he finished when he was 15. The entrepreneur is illiterate, he can only sign a signature. He stopped school because his parents were very old and nobody in the family could work so he started working. His father was also a blacksmith and he started working with his father. His older brother is also a blacksmith. He learnt also the skills relating to selling and accounting from his father. He would like to expand but he does not have any money to invest in raw material. He could sell more if he would invest in raw material. If somebody wants to teach him new things he would like to learn these he does not have the time to go somewhere to learn these things.

#### D. Financial capital

Two of his brothers are living with their family in the other part of the house. The entrepreneur lives with one brother and his family in this part of the house. The brother living with him is a mason. They are both supporting the family. The two separate houses are not sharing money. He does share money with the brother he is living with. The two families do share the land. They have approximately 2 biga's of land.

The entrepreneur has sales of approximately 1200-1300 Rs. per month. The profit is about 500-600 Rs. a month. The costs are for raw materials. The entrepreneur only pays for raw material which is iron. The entrepreneur doesn't have enough tools. He does not have a hammer but they don't have the money to invest. His brother whom is living with him earns approximately 200 Rs. per month. He works as a daily labourer, as a mason.

The have one buffalo, 2 cows and 1 goat. They do not have any other sources of income.

#### E. Social Capital

The entrepreneur is scheduled caste. He is approximately 53 years old. The house is a house consisting of two parts. In the one part him, his wife, one of his brothers and three boys and two girls are living. In the other part there is his brother, his sister-in-law, his other brother and wife girls and one boy living.

The meet groups of people during functions in the village. They sometimes go to his wife's mother home in Chamroli in the district of Dehradun. When his mother-in-law invites him they go there. This is approximately twice in a year. His sister lives in Mussoorie. They talk once in a year when they go there. She lives in a village so they can not go there and they cannot call there.

The entrepreneur knows haircutting, he learnt from his sister's husband who is a haircutter. The blacksmiths generally learn from each other. He has taught other how to do the work. A relative came to his enterprise to learn the work. He does not go to other blacksmiths because he does not have the time to do this.

#### F. Natural Capital

The entrepreneur uses wood as energy source for his black smithy work. He gets the wood from the

forest. There is no lack of wood in the mountains, there is a sufficient amount available. The Forest Department does not reach Bautha to check. In the rainy season there is also no problem with wet wood. He lets it dry. In the mountains there is a lot more grass and wood. He doesn't get charcoal because charcoal would be too expensive.

#### G. Physical capital

The family has had an electricity connection. They took a connection two to three months ago and since then they did not get a bill. At the moment the connection is not working anymore. The entrepreneur does not know why and there is nobody from the government who came to check. They were planning to try the connection and see how much they would have to pay because he only wanted electricity if he could pay a low bill. Without the electricity they used to live in the dark. They thought the electricity would give them light and now they again live in the dark. They decided to take the electricity connection because they always had to get kerosene oil. A few months ago kerosene oil was not available. They used to buy kerosene oil from the government fair price shop. When they asked why there was no kerosene the shop claimed that there was no kerosene left.

The family used to use electricity only for lighting. The government didn't provide an electricity pole to him. Now they don't get the electricity anymore. When they had it most of the time there was no light. Other people in the village have electricity but he doesn't.

The other villagers do have electricity because they have poles. The other villagers do have electricity because they have poles. Light connection is not good there.

The family has a radio, they do have a telephone, TV and they also don't have a means of transportation. The radio was brought by his brother for the whole family. It runs from cell-batteries.

#### H. Influence on and access to transforming structures and processes

The entrepreneur has to walk downhill for 5-6 kilometres and he also has to walk an additional 2 kilometres to get to Maldivpta. In Maldivpta he can take a local bus which goes to Dehradun. In Maldivpta there is a bus going to Raipur and Dehradun. Raipur takes about half an hour and Dehradun takes about 1,5 hour.

The prathan has told the man that he was going to fix the pole but he didn't do anything. The prathan took all the villagers to the electricity office. Electricity office still doesn't do anything. Prathan is a middle man. When the prathan got his position 2-3 years ago one of the brothers of the entrepreneur told the prathan that he needed a CT-scan because he was having a headache. The prathan doesn't do anything: How can he say the prathan is good or bad.

They have never paid any fees or have never been confronted with any legislation.

The demand is not larger than the entrepreneur can supply, he has not got the time. If he would have more time he would be able to sell more.

Most of the villagers come to his enterprise to buy. These are fixed customers and they pay with food, wheat and rice. Some of them pay. The 500-600 Rs. which he gets is not taking into account the food, wheat and rice. There are also customers from another three villages. They also have other blacksmiths there but he makes very good things. He has a lot of competition from other blacksmiths. In his villages there are another 12 blacksmiths. Sometimes he also gets new customers but he mainly gets fixed customers.

#### I. Perceived Attributes of Innovation

The entrepreneur has the enterprise for coping (There was no need to ask, he does not have a TV and by looking at the children you can see that they have a swollen stomach and very skinny arms, legs and faces. Definitely malnutrition.)

The entrepreneur knew that charcoal would have a better outcome because it burns faster so he can increase his production. Because he used to get this from the army and the army was not coming anymore he had to stop using charcoal because it is too expensive for him to buy.

He knew that it would have beneficial outcomes because he had learned from his father.

He did not have to change anything in his production process when implementing either charcoal or wood.

#### J. Innovation-decision

The decision to innovate to charcoal was made by the entrepreneur.

K. Communication-channels used

The entrepreneur learnt from his father how to do black smithy work.

L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the entrepreneur.

## Bauprathan

### Interview with prathan of Maldivpta and Bautha

I decided to go to Maldivpta because I had heard from HESCO members that electricity supply was not very good there and half of the village was electrified and half of the village wasn't electrified. Upon arrival in Maldivpta we (Riga, Annan and me) started talking to some locals and we came to the conclusion that the whole village was electrified. Maldivpta is a village which is located at the foot of the mountains and is about 10 minutes driving by car from Raipur. Raipur is about 15 minutes driving from Dehradun. The village is a basic needs market for surrounding villages which are a bit up in the mountains. Maldivpta had the same characteristics as Langha. It has a sweetshop, vegetable shop, lantana furniture shop, chai shop, restaurant, PCO, welding shop, etc. The surrounding villages which are a bit up in the mountains go to Maldivpta for their basic needs. Because I already have Langha it would be a shame to take a village with exactly the same function. We started looking for the prathan of Maldivpta to get some more information.

Maldivpta has an electorate of 1000 people and the total population is 2000. Maldivpta panchayat contains of one village and everybody has light except for two families. The prathan of Maldivpta, Sri Pancham Singh Rawat is also the prathan of another panchayat in which there are three villages:

- Sirgi
- Bautha
- Jholnala

Jholnala is a village where some people don't have light. 11 families don't have light and 70 families do have light. (When referring to light here is meant that these people do have electricity. This is referred to in this way because if people get electricity the first thing they use it for is for electricity).

In Jholnala there are:

- 3 chaishops of which one is combined with a restaurant
- 2 tailors
- 1 carpenter
- 4 blacksmiths
- 2 grinders on diesel
- 2 general stores

Bautha is a village which does have enterprises. The prathan tells that there are

- 3 families who are doing blacksmithy
- 3 families in which one of the family-members does tailoring
- 5 families in which one familymember is a carpenter.

Jholnala and Sirgi share 4 wards, Bautha has 3 wards.

Bautha has 42 families, approximately 250 people. The people are spread over a large area. Most families have a couple of biga's land. Every family has land. The average amount of land is about 10 biga's for every family.

In Bautha there is no apparent political organization. Only in election time parties come into the village and political orientation plays a role. The prathan is not a supporter of a specific party. In rainy season there is a lot of rain in the village and because the only way to reach the village is by climbing uphill for 5-6 kilometres this causes problems. Landslides cause problems of roadblocks which causes difficulties for transportation. In case of landslides all village work to clean up the road. If this happens it is difficult to shift things from one place to another. Sometimes it takes 2-10 days to clean up the road. Then they do can not supply themselves with goods and raw materials. There is a primary school in the village so this can always be reached but in case of landslides the roads are blocked and the children can not go to secondary school or inter-college.

The biggest problem in the village is a lack of water. During the drought the villagers have to walk 4-5 kilometres to get the water. This happens only in May and June. The rest of the year there is sufficient

water. They have a spring in the village.

Most of the people in a family migrate outside the village or work outside the village because there are no facilities and possibilities for earning an income. There is a lack of transportation, a lack of medical facilities and a lack of transportation. Most men go to towns and cities to work as a labourer. To get to Maldivpta you have to walk downhill for six kilometres to the road. The road needs to be followed for 2 kilometres. Then you reach Maldivpta.

The main sources of income in the village are agriculture. Every family has approximately 10 biga's of land. (When we arrived in the village it became clear that there are problems with irrigation. The current quantity of wheats on the lands is very low) Next to this the people have cattle of which they sell milk or which they sell as a whole. There are no people who send home remittances. They work outside and then they return to the village once in a while.

There is one primary school from class 1 to 5 and there is one secondary school from class 6 to 8. The teachers sometimes come and sometimes they don't come. The teachers live in the city and it takes a very long time for them to reach Bauhta.

Out of the 250 people in the village approximately 50% is literate. The prathan estimates that 70% of the men are literate and only 10% of the women can read. The younger women who have been going to school or are going to school are able to read. The women from elder generations can not read or write.

The total village is Hindu. There are one or two Brahmin families, 8 scheduled caste families and the rest of the families is general caste. This is about 30 families. Out of all families 9 families are BPL. & of these families are scheduled caste and 2 families are of general caste. There are no problems between the castes. The Brahmins take products from the scheduled caste.

There are three telephones in the village which everybody uses. There is no PCO. They don't want a PCO. All villagers use these three phones. There is no pay for these phones. They don't pay because they have a good relationship in the village (This was confirmed when Annan, Riga and me spoke to one of the villagers and he walked with us to a poor general caste family with which he communicated in a friendly way and he also informed us about the scheduled caste blacksmith. Another thing which seemed like the villagers supported each other was that they were all aware that this woman is 'stealing' electricity through a home-made electricity-line. They didn't report this.

In the first house in the village there was a woman living whose husband had died. She did not seem to be very involved in the village and she also looked very scared. We tried to get information from her through sitting down and asking about enterprise, tailoring, blacksmith. She didn't know exactly where they were and what we meant in the beginning. After explanation she confirmed the following enterprises:

- 2 blacksmiths
- 1 carpenter
- 4/5 girls who work as a tailor in their house)

It takes one and a half hour to reach Maldivta from Bauhta. From Maldivta there is a local bus going through Raipur to Dehradun. Raipur is about 20 minutes by bus and Dehradun is approximately one hour.

25 families in the village have no electricity. Most of the houses are situated in different places. Government has done a survey there. Nothing has happened until now. 17 families which do have electricity live in the centre of the village. These families are electrified. The 25 families living outside this 'central circle' do not have electricity. The supply of electricity is not good. In the rainy season the grid gets destroyed. Sometimes it takes 3,4,5 days to repair this. If there has been a storm yesterday then there is no light today. Enterprises are spread over the 'central circle' and the 'outer circle' with the 25 unelectrified families.

## Bautl1

### Bautha

Enterprise 22. Woman who has four sons. One of her sons is a carpenter. One of her sons is a tailor. One of her sons is a cattle-keeper and one of her sons goes to school. In the beginning of the interview it was assumed that there were two enterprises involved here. A tailoring enterprise and a carpentry enterprise. After getting more information it becomes clear that the carpenter is not paid according to the finished products he delivers but that he is paid based on an hourly wage. The carpenter therefore does not qualify as an enterprise because increasing productivity will not increase his total income. It will decrease. The tailor can be considered as a enterprise because he is paid according to the finished product. The tailoring enterprise is than a home-based enterprise. The machine is inside the home.

Interview is done by Riga and Karlijn, with the support of Annan on 18-4-06. During the interview the next door neighbour, another villager, a local from Maldivta who is guiding us because he knows the village and a few young boys and girls are surrounding the interview. Riga and me are sitting on the staid with the woman so not everybody can hear us.

The woman's name is Chandra Dewi and her sons have the following names:

- The tailor is Sanju and he is 22 years old
- The carpenter is Govind and he is 20 years old
- The cattle-keeper is Jagdish and is 18 years old
- The son who goes to school is 16 years old

#### Production process

The carpenter buys wood from Maldivta. He takes the wood on his head and walks up 5/6 kilometres up the hill. He produces the finished goods in his home with a cutter, grinder etc. He makes beds, sofa's and fences. The tailor sometimes works for his relatives shop. Sometimes the people of the village bring him fabric with which he produces garments in his home. He buys the thread from Maldivta, Raipur or Dehradun.

#### Location

Bautha is located 5-6 hours walking up a mountain. From Maldivpta, the main market for the surrounding villages it is another 2 kilometres. From Maldivpta, which is a larger villages on the foothills there goes a local bus to Raipur and Dehradun. Raipur is approximately half an hour away and Dehradun 1,5 hour.

#### A. Adoption, rejection or no knowledge

The tailor has a sewing machine which works from manual labour, by hand. The tailor does not have a sewing machine on foot labour or electricity because he has a relative in Sahas Dhara who has a tailoring enterprise. He also goes there sometimes to do work. They do not have a sewing machine on electricity because they can not pay for the electricity bill. They currently don't have an electricity connection because they cannot pay for it but they 'steal' light from the central grid through a home-made connection. They are a BPL family which means that they could get a Janta connection. This means that the installation of electricity is paid by the government. The took this but because they still had to pay the monthly bills and they did not have the money they had to stop it because they could not pay. When they steel the light they use it for watching TV and for having light in the evening. They do this once or twice a week (When she is telling about steeling the light she is whispering. To me this implies that she is very willing to tell the truth even though the other villagers are very close by and could overhear. I get the feeling that they now and that the woman knows that they know but that she is ashamed that she has to do this.). Government employees do not come in the village so they have never checked this but it is punishable so she is scared. The rest of the village shows unity so they don't complain about it but support it.



The carpenter uses only manual hand labour. She shows all the tools and there are about 8-10 manual tools which he uses.

#### B. Vulnerability context

Her family has problems with drought. They have some biga's of land but they have to walk 1-2 kilometres to get the water from a spring in the village for irrigation. For the cattle this is not a problem because they bring their cattle to the water. The house is not in a good position because it gets flooded in the rainy season.

The tailor and the carpenter buy raw material in Maldivta. During the rainy season this causes problems because the path is blocked. Sometimes her sons stay at home but sometimes they have to climb over the landslide to go down and up again anyway. Both the carpenter and the tailor make less finished goods in the rainy season. The carpenter purchases wood from Maldivpta, he puts the wood on his head and then walks 6 kilometres up the mountain with this wood. The wood is really expensive so in advance the carpenter takes money from the customers for buying the wood. Wood prices are increasing and the demand for the finished wood products is therefore also increasing. In the rainy season the demand for wooden finished products is also lower but their family gets work from the land as well during this time. During the rainy season there is no transportation of wood from the market because the transportation is impossible. Over the last years the demand for the tailors products has been increasing but during the rainy season and the winter season the demand is low.

#### C. Human capital

The carpenter finished eighth class. He started school when he was nine and he finished when he was nineteen. The tailor went to school until the tenth class. He finished secondary school. The tailor is the eldest brother, he went to school from the age of five until the age of eighteen. Both boys stopped their education because they have two sister's who used to do the field work but because they got married the boys had to start working on the field. They also used to have their parents-in-law of which they had to take care, they have now passed away. Carpenter used to go to a carpenter shop in Maldivpta where he learnt how to do carpentry. Sometimes he just went there to watch and learn, sometimes he used to go there for work. Currently, when there is no demand for his finished products and there is no work on the fields he goes there to do work. The tailor was sent to learn tailoring in a shop in Kesuwala. They sent their son there to learn in a tailoring-enterprise. He has worked there for one year. Now he works for himself and for his relatives' tailoring shop. When asked about new machines they would like to get them but they do not have the money to invest. The carpenter has had his enterprise for one hour. He gets paid on the basis of an hourly wage. The tailor has his shop for about four years. He gets paid according to the finished product.

#### D. Financial capital

The profit of the carpenter is about 2000 Rs. in a month while the profit of the tailor is only about 200-400 Rs. in a month. Her husband used to do mason work but he does not work anymore because he is too old. He left his job 2-3 years ago. They don't get any money from their work on the field. They purchase grains in Maldivpta to supply themselves with their need for food. They have cattle. 5 cows, 1 bull and 60 goats. They sell the smaller goats for which they get 2000-3000 Rs. a month when there are small goats. This differs a lot but during the spring and summer, approximately six months a year they get an income from it. The woman also sells cigarettes and matches. She is the only person selling these in the village and approximately 5 customers come to her enterprise every day. She gets 100 Rs. per month from doing this. During the rainy season and the winter season the demand for the tailor's products is low. He then works on the land for their own cultivation. During the rainy season the demand for the carpenter's products is low. He then works on the land. The family has 15 biga's of land. There is not much wheat on the land because there is a lack of water. Although they cultivate the field they have to go to the market to supply themselves with sufficient food.

#### E. Social Capital

The family is general caste. (The woman is very slow in picking up the questions and a lot of times she doesn't understand. She does not seem to be educated.). Her husband and her and her four sons are living there. One of her sons is married so she also has a daughter-in-law living there. During marriage

parties they meet groups of people. She goes approximately 1,2 or 3 times a year but her sons are invited to approximately 4-5 marriages a month. The sons also go to festivals in other places. The know people, friends and relatives in neighbouring villages. Her sons go to Maldivpta every day. Her sons go to Raipur and Dehradun once in a month. The family does not go in other districts and other states. They have some relatives outside of Dehradun but they don't go there, the woman says she is scared. They do have relatives in Dehradun and Paurie district. Her sons go there once a year.

#### F. Natural Capital

Not appropriate

#### G. Physical capital

There is electricity available in the village. They currently don't have an electricity connection because they cannot pay for it but they 'steal' light from the central grid through a home-made connection. They are a BPL family which means that they could get a Janta connection. This means that the installation of electricity is paid by the government. They took this but because they still had to pay the monthly bills and they did not have the money they had to stop it because they could not pay. When they steal the light they use it for watching TV and for having light in the evening. They do this once or twice a week (When she is telling about stealing the light she is whispering. To me this implies that she is very willing to tell the truth even though the other villagers are very close by and could overhear. I get the feeling that they know and that the woman knows that they know but that she is ashamed that she has to do this.). Government employees do not come in the village so they have never checked this but it is punishable so she is scared. The rest of the village shows unity so they don't complain about it but support it.

During the rainy season or during storms there are problems with electricity. Sometimes it is gone for 2-3 days and this happens quite a few times a month. During the off-rainy season the electricity is there. They don't use electricity for the machines for carpentry and tailoring because they do not have the money to invest in these type of machines and they also don't have the money to have an electricity connection.

The family has one bicycle standing on the foot of the mountain where the road goes to Maldivpta. The carpenter uses it to go to Maldivpta. The other son walks to Maldivta. They have no telephone, no radio but they do have a TV which they watch occasionally when they steal the light.

#### H. Influence on and access to transforming structures and processes

It takes the carpenter and tailor approximately 1,5 hour walking down the mountain and another 2 kilometres, either by foot or by bicycle to reach Maldivpta. This is their main market for buying raw materials. The customers come to the enterprise in Maldivpta for the tailor's finished products. The carpenter has some customers in Bautha, his village and he also has customers in the neighbouring villages, until approximately 10 kilometres from Bautha. He goes to his customers house to collect money for the wood. He gets the wood and makes the products either in his own home or in the home of the customers. The tailor only works for villagers. The carpenter goes everywhere where he can get a job. Sometimes he visits villages in a circle of 10 kilometres around him.

If they could produce more they would be able to sell more but they don't have sufficient time.

The family does not have a loan and they don't pay any licenses or fees. They are not confronted with any policies or legislation. The only thing related to electricity is that they can get an electricity connection with free instalment because they are a BPL family but they don't have it because they cannot pay for the electricity bill.

The family knows the prathan but he is the prathan of a few other villages and he does not go to the village very often so they only say hi, hello.

The carpenter gets new customers as well as has a few fixed customers. The tailor has a fixed set of customers.

Both the carpenter and the tailor feel competition from inside the village and from the enterprises in Maldivpta. There are a couple of other tailors in Bautha and there are also other carpenters in Bautha.

#### I. Perceived Attributes of Innovation

The family does this work for coping. They cannot pay the electricity bill and they do not have the

time to work more. They try to get little amounts of money from selling the goats, selling cigarettes and from tailoring and carpentry.

Using manual, hand labour is the only possibility for them because they don't have an electricity connection because they do not have sufficient money for it and they don't have the money to invest in other machines.

J. Innovation-decision

Does not apply

K. Communication-channels used

Does not apply

L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the entrepreneur

## **Baufocus1**

Talk with locals about Bautha

Interview done by Riga, Karlijn and Annan from Hesco on 18-04-2006.

There was a group of locals present so I decided to do a focus group at that point in time. There were 10 adult men, two adult women and 5 adolescent boys present

In Bautha there are 42 families. The total population is approximately 300 people. The density is very high. All the families own biga's of land. It is difficult to give an approximate number because some families have 20 biga's and some families have two biga's but it would be approximately 10 biga's.

The village is a typical village in the region except for the fact that it is a small village in comparison to other villages. Most villages in the Raipur block on that side of the mountains are a bit bigger and consist of 100 families, approximately. The access to roads differs, depending on the height of the village but there are a few other villages which are located on such a big difference from the road. When I ask if most villages have better access to roads they reply that the distance is most of the time larger. They are very far from the road.

The prathan has taken the villagers to the electricity department once because a large part of the village is unelectrified. Other villages in the region of this size are mostly electrified. When I ask why all the other families in the village are not electrified one man explains that the village is very far and the villagers live apart from each other. A lot of poles would have to be put there to reach everybody. Approximately 50% of the villagers have electricity and 50% doesn't have electricity. The people who do have electricity are the people who are living quite central in the village. The other families, who are living outside of this group of families do not have electricity.

There is a big problem with water in the village. During the drought there is difficulty with getting water. This causes problems for the wheat. The problems with the water already start from February onward. There is a spring in the village but from then on it does not supply water. For the cattle this normally doesn't cause problems because they are taken to another spring where there is water but this is more than 5 kilometres away. To bring the water to the land for irrigation would be really difficult.

Most men go outside of the village to work. Some return at night but there is also a large part of the men who leave the village for some time to work and return only after a long time. There are a few young men who are with the army. Agriculture is an important source of income but because the water supply is very bad the efficiency of the land is not very high. Most of the land is not very productive. Most men work as labourers.

In the rainy season there are a lot of problems with landslides. Transportation is already difficult because you have to go down the mountain for 5-6 kilometres to reach a road. In the rainy season the small road down the mountain gets covered by landslides and then it is really difficult to get down the mountain.

There is also no health facility in the village and education is bad because teachers don't come very often.

Two boys don't have electricity and one of the women doesn't have electricity. The other people tell that the electricity supply in the off-rainy season is quite good. Sometimes it is gone for sometime every day but only for a short time. Sometimes this is a few minutes, sometimes this is 2 hours. During the rainy season and during storms there are a lot more problems. Sometimes the electricity is gone for 3-4 days. The landslides make it even more difficult, especially when there is a problem in the village with the grid.

The villagers supply themselves with their basic needs such as vegetables, wheat etc. There is no grinder in the village so they have to go to Maldivpta to supply their basic need of flour. There are a few phones in the villages but there are no medical facilities. They go to Maldipvta if they need some specific products, , medicines, cloths, furniture, batteries, washing powder or any products required from a general store.

For more specific needs, if they need things for a wedding or for a function they go to Dehradun.

The entire village is Hindu. There are 2 Brahmin families and 8 scheduled caste families. The rest is general caste. When I confirm that this must be 32 families they confirm as well. When I ask if this is a typical village they say that these things differ very much. There are some villages where most families are scheduled caste, some families where there are only general caste people.

## **2. District Almora**

### ***Block Tarikhet***

#### **Livelihoods in Almora district**

##### **A. Adoption, rejection or no knowledge**

(P.C.Joshi, HOPE:) There are no villages in the area which have not been electrified. In villages there are some habitations which live a bit outside the village and there is no electricity there but there are no whole villages which are not electrified.

(Mr. Kelesh, HOPE:) There are not villages in the region of Pilkholi that have no electricity.

(family members of Tara Bisht, local, driver:) They don't know a village in the area which has not been electrified.)

##### **B. Vulnerability context**

(Suresh, HOPE:) There are many water problems in Pilkholi area. In Pilkholi the problem is even smaller than it is in the surrounding villages because Pilkholi is on the road and the other villages are off road.

(P.C. Joshi, HOPE:) There are many water problems. In the summer, during the drought most villagers have to walk 1,5 kilometre to go to a hand pump to get water.

(Focusgroup of locals in Pilkholi:) There are many water problems

(Sunjee, member grassroots, has been with Grassroots for four months:) There is a serious water problem, specially in the off road villages. The most difficult period is during summer's. Generally women have to walk 2-3 kilometres to fetch the water for differentiated water needs. Most of the time these off road villages have natural sources for their water supply and there are no hand pumps and wells. These natural water sources do not produce water all day but only at specific times. This water supply is sufficient for drinking water but for bathing and irrigation they have to walk this 2-3 kilometres. Agriculture is all rainfed. Only kitchen gardens get watered by the people.

(Kalyan Paul, Grassroots, manager, has been in area for 20 years:) There is a waterproblem in every village. This causes problems for irrigation, the food security is low, the livestock doesn't get water. Generally people can only rely on their own cultivation for food for 3-4 months. The rest of the year they have to go to the market to buy wheat or flour. Landslides do not cause problems in Almora.

(Sunita, member Umang, has been with Umang for 7 years, also local, visits villages for job:)The main problems in the villages in Uttaranchal are unemployment problems. There is no work in the villages, there is no good agriculture, there is no irrigation. The villages are so far off road there is no use for them selling in the villages because outsiders do not come there and the people inside the village can get the things they need cheaper from the road head villages. The roadside villages are doing good business.

##### **C. Human capital**

I had noticed that compared to Dehradun there were many families who had lost brothers or fathers. These are people able to earn a livelihood for the family.

(P.C. Joshi, HOPE in response to this:) Before 25 years ago there were traditional medicine men. At that time there were no public dokters. Only private dokters who were very expensive. The traditional medicineman did not pass on their knowledge but the private doctors remained very expensive. Since

25 years there are better public doctors. Another issue is that people in the mountains are generally poorer than people in the plains so when they have to pay for a doctor it is comparatively more expensive.

In the plains the people always have had good access to doctors. First of all the people have good access to Dehradun. Dehradun has always had good doctors and transportation to these places is easier.

(Kalyan Paul, Grassroots, manager, has been in area for 20 years:) There is lack of access to medical facilities. The institutions are present but people have no resources to pay for it. There are also government civil health centres in Ranikhet but the same problem exists there. These civil health centres started in colonial times. It has been largely increased since then. It used to be one in the whole district. Now there are ten in the whole district.

(Sunita, member Umang, has been with Umang for 7 years, also local, visits villages for job:) 80% of the people in villages are educated. They say 100% in the BDO but the real data are lower says Sunita. The government gives training to the women for making a signature or for some basic reading and writing but then they have to get back to their daily activities such as agriculture and they forget.

#### **D. Financial capital**

#### **E. Social Capital**

#### **F. Natural Capital**

#### **G. Physical capital**

#### **H. Influence on and access to transforming structures and processes**

##### **Markets:**

(P.C. Joshi, HOPE:) There are hardly any villages in the area which are off road villages but do have enterprises. These villages are mostly so close to a road head that they get their basic needs in these road heads. The maximum distance of an off road village to a road head is 5 kilometres. Mostly it is 2-3 kilometres.

(Husband Tara Bisht and Tara, locals as well as respectively driver and teacher in HOPE school) There are no villages which have enterprises and are off-roads. This is too close to markets. Tara explains that the village where she is from, where her parents live, is 15 kilometres away and there is a lohar there. There are also some other small enterprises or non income generating activities.

(Prathan of Pilkholi:)

There are villages which are off road but do have markets.

- Tana: There is a general store, a chaishop, a biscuitshop, a lohar. It is 1,5 kilometre walking from Pilkholi. Tana has 130 families. The village is electrified. In this village there is the minister of Uttar Pradesh and a Member of the Legislative Assembly living there. It is a rich village. 30% of the people from Tana have land in Ranikhet and work in Ranikhet.
- There are some scheduled caste villages but they are not poor. The prathan explains that Pilkholi is a poor village.

Many BPL families does not mean that the village is really poor. BPL is just a political thing, it is not defined and checked by law. It is only for pressure. There is a leader, mostly the prathan who decides on the status of BPL of villagers. He can give a BPL card to everyone he wants to give it to.

Before five years there was a prathan he was not very literate and he didn't understand completely how and when he should give people a BPL card. He gave the BPL card to everybody that told him he was BPL.

- Chobotia: Is a Christian village. (By talking to Suresh I found out that there is a road going to Chobotia)

- Kotar, in Tarikhet block, is a village which is not yet electrified. There is only a tailor and a lohar present there. By foot it is 7 kilometres to reach, by bus it is 32 kilometres because it goes all around. The village is 1 kilometre walking from the bus stop.

(Tara Bisht, local from Pilkholi and school teacher HOPE school:) Jaijori is the village of her parents. It is an off road village. The village is half an hour walking from the road. It is 15 kilometres from Pilkholi. First you have to take a jeep to Ranikhet and then a second jeep from the Kemu station. The jeep has to go in the direction of Khilkeet. The village is two parts, Malikarchuli and Tullikarchuli. There is a lohar in the village, there are small shops in the village, one person has a poultry farm (Jaman Singh Bisht) People go to Khilkeet for basic needs and to Ranikhet for differentiated needs. From Khilkeet to Malikarchuli is one hour walking.

(Sunjee, member grassroots, has been with Grassroots for four months:) Most villages are off road villages. A rough estimate would be 80% of villages are off road and 20% of villages are road heads. The main non farm income generating activities are mason, daily labourers, milk-selling, lohar, carpenters, sometimes tailoring. In every area in Almora there is one village, a road head which is the central basic needs market for villages 4-5 kilometres away. Sunjee has not come across a closed market. A closed market is a village where people produce for their own consumption and there is no linkage with main markets. The furthest distance from off road villages to markets is about 10 kilometres. Still in these villages there are no non farm income generating activities.

(Sunjee, member grassroots, has been with Grassroots for four months:) Bohra is a village 3 kilometres off road which is 30-50 kilometres from Kalika. In this village the male population has migrated and the women are running the houses. Another village like this is Loot. In this village Grassroots has started knitting, the village is 1,5 kilometre from the road.

(Kalyan Paul, Grassroots, manager, has been in area for 20 years:) when Kalyan has to make an estimate of road heads : off-road villages he thinks that maximum 30% is road head. There is a lot of construction on roads so within a few years it will increase up to 50%.

The main non-farm income generating activities are black smithy, masonry, carpentry, basketweaving (They only sell a few of their products in their village, most is transported to markets such as Ranikhet, even if they have to walk for twenty kilometres they do this), people making electrical fittings, repair and maintenance shops, mechanics, grinders, tyre/puncture repair shops, bakery's, chai shops, sweetshops, meat shops, retail shops. Of these villages the non farm income generating activities which are found in off road villages are only lohar, masonry, carpentry, grinders.

- Walking up from the school of HOPE there is the road head Chobotia. There is a whole cluster of villages one hour walking from the road.
- Another whole cluster of villages is in the valley between Pilkholi and Mandelkoot. There are 10-15 villages between these two roads.

Kalyan Paul doesn't know any villages which produce only for their local consumption and hardly have contact with outside markets. Every 20-30 kilometres there is a market in Almora. This distance can be reached in one day by walking so all villages will go to a market in their area. Pilkholi is one of the characteristic markets in Almora

There are a few loops of roads in Almora:

Loop 1: Khana

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Loop 2: Ranikhet  
Dwarahat(BDO)

Loop 3: Kanikhet

Loop 4: Ranikhet



There is a bakery further down the road from Bumsia. There is an old man with a cart and every day at 4:30-5:00 am he goes down the hill on his cart to sell his buns. He has been there since 1992.

(Sunita, member Umang, has been with Umang for 7 years, also local, visits villages for job:) 20% of the total villages is roadhead and 80% of the total villages in off-road. Everywhere there is access to a roadhead. Sometimes off road villages are 13 kilometres away but in general the distance is 2,3 or 4 kilometres. Out of the total off road villages 20% have small enterprises like lohar, carpentry. Typical industries in the villages are lohar, carpentry, bamboo making. Knitting is not common. Grassroots has started this but it is not done traditionally as a means of non-farm income generation. Other industries are masonry, flourmill, animal keeping, farming, poultry, cattle, tailors. There are not many tailors left in off-road villages they also move to roadside like other non farm income generating activities have done the last few years.

Villages before Ranikhet and after Ranikhet are the same. Hill villages are all the same.

Bageshwar has tribals, they have good land for agriculture. There are two good rivers, the Goomti and the Sarju.

### **Population**

(Sunjee, member grassroots, has been with Grassroots for four months:) Most villages have a population of less than 50 families. Most of the time this is the maximum.

(Kalyan Paul, Grassroots, manager, has been in area for 20 years:) Most off road villages have a population of 40-50 households.

(Sunita, member Umang, has been with Umang for 7 years, also local, visits villages for job:) The average amount of families in villages is 50 families while there are also villages to be found with 180-200 families.

### **Ethnicity**

(Sunjee, member grassroots, has been with Grassroots for four months:) Generally there are no Muslims in the villages. During the British colonial period a few have been put in Kumaon but they are spread over the villages. The Muslims are in worse living conditions because they have no land and they have no stable income supply. In the villages all the castes are mixed. Within one village there are different habitations where the people from different castes live together but these habitations are combined as a village. The SC invite the Rajput and the Brahmins but then they have to eat separately. There may be a few scheduled caste villages and Rajput villages but generally they are mixed.

(Kalyan Paul, Grassroots, manager, has been in area for 20 years:) There are hardly any Muslims in Almora. There is only a handful. There are hardly any SC villages, Rajput villages or Brahmin villages. Most are mixed but the people from different castes live in different hamlets. These are clusters of 15-20 homes. This is possible because of the geographical area. Separate areas can be created here. The villages are mixed because the separation of work through the caste system required all castes to be close to each other because they needed each other.

(Sunita, member Umang, has been with Umang for 7 years, also local, visits villages for job:) There are some villages where a few Muslims live but there are not any Muslim villages with a majority or totality of Muslims. Most villages are mixed caste. In every village all the work has to be done so all the castes have to be there. In the villages there has to be a lohar, a mason etc.

### **Energy sources**

(Sunjee, member grassroots, has been with Grassroots for four months:) Has not come across villages which are unelectrified. Generally speaking the supply is bad during day time and during the evening it is good. During daytime the electricity is sometimes there, sometimes it is not. Approximately 12-15 hours a day (24) there is electricity. Most hours when there is no electricity are during daytime. There is hardly any difference in the energy supply that road heads have as compared to off road villages.

When the grid is broken towards off road villages it might take some more time to repair. For daily use like cooking, heating water and making chai the people mostly use wood. In 75% of the cases they use wood. Kerosene is only for small daily things when there is only an energy source needed for making chai. When I ask about kerosene and LPG he replies that kerosene is cheaper. (That is what most people say but actually kerosene costs 12 Rs. per bottle and LPG 290 Rs. per cylinder. When comparing efficiency LPG takes a lot longer and than LPG is cheaper. This is not the case for households though because they require only very small amounts and they don't have money to invest for 290 Rs. while they can for 12 Rs. Kerosene is distributed by the Public Distribution System and there is a large black market for kerosene. Hotels and shops have made deals with the wholesalers through where the kerosene is distributed to government fair price shops. Therefore the supply of kerosene to the people whom it is made for (The BPL(4<sup>th</sup> category) and the even poorer category(5<sup>th</sup> category)) do not get sufficient amounts.

(Kalyan Paul, Grassroots, manager, has been in area for 20 years:) Almora has almost been 100% electrified. Kalyan Paul does not know any villages which have been electrified through gharats or solar energy. There are some villages in which some households use solar energy for their energy. In these villages there are many households which are not connected to the grid because they can not pay for it. It takes time to develop these connections, also for the involved families because they need to save money.

LPG is used a lot. There is the LPG distribution office in Ranikhet. This office distributes the LPG to all of the villages in Almora. They will now the exact number of people using LPG. (I can contact this office and refer to Kalyan. Beena, a member of Grassroots, has been a tenant of the manager of the office. I can reach her through him 9412162306)

Kerosene is used extensively for lighting and cooking. It is made available through the government's Public Distribution System. The demand for kerosene is too high for supplying everybody who requires it. Kerosene is only directed to the poor. The government identifies five kinds of economic classes. The last two classes the BPL, and even a lower class get a card. With this card they can get kerosene through the subsidized rate. When I ask for difficulties with other people using kerosene who do not have a card Kalyan Paul replies that there is definitely a black market in kerosene

(Sunita, member Umang, has been with Umang for 7 years, also local, visits villages for job:) There are villages without electricity, Sunita knows two. Chamni is a village on the road without electricity. It is approximately 15 kilometres away from Ranikhet. Bhenali is a village which is 10 km to a roadhead on one side and 20 km to another roadhead on the other side. Sunita explains that even in these villages there are some income generating activities. Kerosene is used in every village. All the villages have access to a roadhead, generally within 4 kilometres from the village. In these roadheads they can get ration, sugar, kerosene

### **Indicators for rich and poor**

(Sunjee, member grassroots, has been with Grassroots for four months:) If there is an off road village with approximately 20 families the male members of the family are working in the cities. This may be 2-3 families. These people send remittances home to their wives who run the house. These families will have a TV. A TV is an example of wealth in most off road villages. Mud houses are not a question of off road or road heads. When people live in an off road village and a road is being built to their village they will remain living in the mud house. The road head will give them better opportunities though and over a period of a couple of years, when they get money, they will start building a concrete house.

(Sunita, member Umang, has been with Umang for 7 years, also local, visits villages for job:) Rich people have everything for enjoyment. They have a TV, good facilities, LPG, good cloths, good food, jewellery. The house of rich people can be recognized because they are in a good style, they are cemented, big, they have a latrine, they have a water tank, they have light, they have a CD-player. Poor people do labour, they have no good system. They have a small house which mostly has two rooms, one for the cattle and one for the people. They don't have good food. Mud house is not a sign of poorness. Some people like a mud house because it is cool in summers and

warm in winters. It is more important to look if the house is in good or in bad condition, if the house is small or big.

A good condition house is a house which is clean, where the animals live separately. They have a kitchen garden.

Poor people have very little land. Rich people have a lot of land. Normally, the rich people can eat from their land for 6 months. The poor people can only eat of their land for 15 days to 2 months.

### **Main sources of income**

The main sources of income in Almora are farming because people can supply some of their need for food through this. People sell fruits and vegetables (horticulture). A lot of people do service like carpentry, masonry, black smithy. Army is just a main source of income in the Ranikhet area.

(Sunita, member Umang, has been with Umang for 7 years, also local, visits villages for job:) When considering income in the villages 8000-12.000 Rs. per year is a low income, a medium income is 20.000 Rs. per year and a high income is 50.000 Rs. These are people with government jobs. When considering the family income the average is 30.000 Rs. Sunita thinks.

(Prema's sister (16) did a small research for her highschool on income generating activities in villages.) She tells me that another income generating activity which is not farming is the processing of ghee out of milk.

### **I. Perceived Attributes of Innovation**

#### **J. Innovation-decision**

#### **K. Communication-channels used**

#### **L. Extent of change-agents promotion efforts**

## **2.1 Village cluster Pilkholi**

### **2.1.1 Village Pilkholi**

#### **Pilch1**

Pilkholi

Enterprise 28, chaishop combined with a general shop. In the general shop the entrepreneur sells some cookies, biscuits, breadrolls, chips and nuts.

Name entrepreneur: Digam Ber Singh

Interview done by Suresh and Karlijn on 29-04-2006. During the interview there are 5-6 of his friends present in the age of 18 and 24. The entrepreneur himself is 22 years old.

Production process:

The entrepreneur prepares approximately 60 chai's on a day. As raw materials he uses chai, milk, sugar and water. He also sells cookies, biscuits, breadrolls, chips and nuts.

The entrepreneur has the enterprise for 1,5 years. He opened it after he had finished the 12<sup>th</sup> class. He got the enterprise from his father. The land where the enterprise is located is theirs. When he started he had 5000 Rs. Before that his father rented off the enterprise. His father used to have a chai shop in the enterprise approximately 10-12 years ago. The entrepreneur uses LPG and a gas-stove. The gas-stove was already there because the former entrepreneur who rented the shop had it. They bought it from him.

Location:

Pilkholi is located 10 kilometres before Ranikhet, when coming from Haldwani or Kathgodam. The main road to Ranikhet runs through Pilkholi. All the enterprises are located in a row on the main road. So is this chai-shop. The chai-shop is located in the middle of the village.

A. Adoption, rejection or no knowledge

The entrepreneur uses LPG. He cannot get enough wood in the area because it is restricted to cut the wood. People are only allowed to pick up wood which is lying around. He doesn't use kerosene because kerosene is not there. Local buses are owned by private owners. Government fair price shops are supposed to sell kerosene but the bus drivers use kerosene in stead of petrol because it is cheaper. They have made deals with wholesalers of the kerosene to provide it to them. The subsidized kerosene is used for the busses and the people who are supposed to get it do not get it. Kerosene is also more expensive. When demand is very low kerosene is cheaper but this entrepreneur has to use 2-3 bottles of kerosene if he would use it. Now he uses LPG. LPG costs 290 Rs for a cylinder but he only needs one a month. The kerosene costs 12 Rs but he needs 2-3 a day. LPG is more efficient.

Another advantage of LPG is that LPG is transported by a truck who drives to and from Ranikhet every two weeks. They pick up the empty cylinders and they bring new ones. The kerosene is very often not available at the government fair price shop.

The entrepreneur does not use electricity because he does not have a connection. He could get a connection but this work is temporary. He is also studying. He is doing his bachelor of commerce in Ranikhet and after this he doesn't want to continue this enterprise. Electricity is a big investment because they are not BPL and they have to invest first for the pole and for getting the connection and then they have to pay the monthly bill. When he goes to school his brother is in the enterprise. He has to go to school for 3-4 days a week.

The entrepreneur has always been using LPG.

His father had this enterprise before 10-12 years. At that time he used kerosene because LPG was not available. Kerosene was available and the sale was not that high for LPG to be efficient for use.

#### B. Vulnerability context

The raw material of the entrepreneur are tea, milk, snacks and biscuits. He buys all of them in the market of Ranikhet. There are not many fluctuation in the prices of the general products which he sells. Water is also always available so that never causes problems. There are fluctuations in the prices of LPG. After every financial year the prices of LPG increase. Before election the price goes down and after elections the prices go up again.

The demand for his products is higher in winter compared to his demand in summer. In winter the demand is twice as high.

#### C. Human capital

The entrepreneur finished the 12<sup>th</sup> grade so he finished primary, secondary and inter-college. He did his secondary and inter in Ganoli, which is 2 kilometres from Pilkholi. He is now in his second year of his Bachelor of Commerce in the university in Ranikhet. He has never worked before, not as daily labourer and not in any shop. His father had a chai shop before 10-12 years ago. He then rented the shop to somebody else. 1,5 year ago the entrepreneur started the enterprise with the help of his father. He has never worked in the chai shop because he was too small 10-12 years ago. Him and his brother learnt the work from their father. They learnt from him how to make chai and how to make arrangements with the supplier and how to sell. So they learnt also the management skills from their father.

He would like to get a new and efficient cooker but he cannot get one because of money problems. Another issue is that there a lot of chai-shops and the competition is big. The demand for chai is not so high that it would be beneficial to get the new cooker. There is nothing which he could learn which could increase his production. If he could make other products, so diversify, for example if he would make and sell bread pachora, he could sell more but because this is just temporarily it is not worth investing.

#### D. Financial capital

3000-4000 Rs. is his profit during the winter season, which is the season of high demand. The total costs are for LPG, 290 Rs. per year and for paying the price to the wholesaler of the chips, cookies, biscuits, nuts, eggs and the raw materials for chai. He invests 5000 Rs. per two months for these. Which means 2500 Rs. per month. During the summer season his profit would be 1500-2000 Rs. His father is the only other income source for the family. His father works as a labourer and he earns 2000-3000 Rs. profit per month. They save money in the local bank in Pilkholi. They save 2000 Rs. per month, collectively with the whole family.

The family has a house and they have approximately one hectare of land. They have one buffalo and two bulls.

#### E. Social Capital

The entrepreneur lives with his father, mother, 2 brothers and 1 sister. In the enterprise he meets groups of people. His friends hang around there constantly and it is also kind of a meeting place for the younger people, because the entrepreneur is also one of them.

The entrepreneur goes to marriages in the wedding season. The wedding season is from January to April and from April to June. In this period he goes once a month. He doesn't go to many festivals and functions. Only a few in a year. When asked a few is 2-3.

The entrepreneur knows people in Ranikhet, his college friends and also some retailers where he picks up the products which he sells in his general store. His relatives are in Delhi and in Lucknow. He speaks to them once in every six months.

He started the enterprise because his friends from Pilkholi encouraged him to get the enterprise.

The entrepreneur is Hindu from the Rajput caste. He is not BPL.

#### F. Natural Capital

The entrepreneur doesn't use wood because it is difficult to get sufficient wood for his enterprise.

Especially since he sells 60 chai's a day he would need a lot of wood.

He uses water as raw material. Even though there are problems of water shortage in the village he never experiences problems because he is on the road and there is a hand pump for water really close

to his enterprise.

#### G. Physical capital

LPG he gets from a truck which passes by on the road from and to Ranikhet. This truck come every two weeks. He gives them their empty cylinder of LPG and he pays for a new cylinder of LPG. This costs 290 Rs. Sometimes there is a shortage of LPG. This happens when demand increases, for example during election times. When there is a shortage he sometimes buys kerosene from the government fair price shop in Pikholi. There the kerosene costs 12 Rs. per litre but he has to use 2-3 bottles a day to provide him sufficient energy. One cylinder of LPG is more costly but it provides him with energy for a month. Kerosene lasts only less than one day.

Electricity is provided by the central government grid. He doesn't get it because he has to invest a lot of money for the connection and after that he has to pay the monthly bill. Because he will not remain in business after he finishes his bachelor he thinks it is a bad idea to invest.

The entrepreneur has no transport. He takes the products for his general store by local bus.

The entrepreneur has a TV but no telephone. He reads the paper daily in the morning.

#### H. Influence on and access to transforming structures and processes

Ranikhet takes 30-45 minutes to reach by local bus. He has no other way of transportation. He can take a shared jeep but this costs 10 Rs. while the bus costs 30 Rs.

On Sundays and on holidays the entrepreneur has a good sale but there is a lot of competition from the other 9 chaishops in Pikholi. He cannot increase his production of chai because he would not sell it. The demand in the market is not larger. He can sell more if he would start making bread pachora or something else to sell but he does not want to invest and he does not have the time because he is also studying.

Another issue is that there a lot of chai-shops and the competition is big. The demand for chai is not so high that it would be beneficial to get the new cooker.

The entrepreneur does not have a loan because the interest rate from the bank is really high and he does not want to continue in this business. They don't pay income tax because they are below the income tax level.

He does pay money to the district panchayat. He pays them 100 Rs. per year.

This enterprise is an informal enterprise because as the entrepreneur says, nobody with an enterprise is registered. (When I asked the question of registration he doesn't even now what is meant by this and with which institution he can register.) He claims that registering is too much of an effort. Especially since he will not remain in this type of business after he finish his university.

He knows the prathan and the wardmembers. They have good contact and his aunt is also a wardmember. The prathan comes to his shop to drink tea and they have superficial contact. They just say hi and hello. The prathan also goes to drink tea in other chai shops.

His customers are partly fixed and partly new. 67% of his customers are fixed customers. These customers mainly go to his enterprise to drink chai. The other 33% are new customers. These people go to Ranikhet and stop at his enterprise to drink tea. There are also ladies from the nearby villages among these new customers. They come from their village to get water and they stop to drink a tea. He sets his prices by the market competition. Everybody in the village asks 2 Rs. for a tea. The other products he sells in his general store are partly set prices. On the packets of chips and nuts the prices are written. On these products he only makes a profit of 10%. On the bakery products and the eggs the profit is higher, about 40%. This is also according to prices in the market. If he would increase the price nobody would buy it.

#### I. Perceived Attributes of Innovation

The entrepreneur has this enterprise because there is a lot of unemployment. His father earns 2000-3000 Rs. per month which is not sufficient to support the entire family. He has this enterprise for coping because he is planning to stop the enterprise when he finishes his bachelor of commerce or when he finishes his master. This is just temporarily and he does not want to invest any money in it. The entrepreneur knew that this energy source would be beneficial because it is cheaper than kerosene and other chai shops used it. By observing them and talking to them he found out that kerosene would be cheaper per unit but would be much less efficient.

The outcome was more beneficial for him and the customers. LPG is a little bit quicker so the customers get their chai a little bit quicker. The main advantage is for the entrepreneur because it is cheaper.

The entrepreneur did not experiment but the stove was already there and because LPG needs no investment before use the only investment is the cylinder. He could have used one cylinder and bought kerosene after that if the LPG would not be good for his requirements.

The entrepreneur had to learn the whole production process of making chai and of having an enterprise.

#### J. Innovation-decision

The decision about the entrepreneur getting the enterprise was made by his father. He used to rent the shop to somebody else and now he decided to give it to his son. It was the son's idea but his father immediately thought it was a good idea.

#### K. Communication-channels used

The entrepreneur learned about having a chai shop from his father but he used to use kerosene so the entrepreneur heard about using LPG from the other chai-shops in Pilkholi. He observed and talked to them.

#### L. Extent of change-agents promotion efforts

There is no direct promotion effort but indirectly there is. The truck which sells the LPG drives from and to Ranikhet every two weeks. It stops at every house to convince people to buy the LPG. They also pick up the empty cylinders as a service to promote the sale of LPG. (On one of the days I was in Pilkholi and the LPG truck came by in Pilkholi in the enterprise where we were doing the interview, the grinding enterprise. That was at approximately 16.00 o'clock. When we finished the interview I had to go for some groceries and after that we went back. At that time it was six o'clock. In the timespan of two hours the truck had only moved 3 kilometres. The houses are not really dense because this is a steep mountains area. This indicated me that the use of LPG is very extensive because on the way down to HOPE I saw a lot of people exchanging their LPG)

## Pilfocus1

### Pilkholi

Focusgroup with 3 men, one aged 58, one aged 70, one aged 48, and 1 woman, aged 65.

Interview done by Suresh and Karlijn on 29-04-2006. During the interview there were also a few children present, approximately five. They also joint in to the extend that they did no about electricity and problems in the village

### Population and electrification

The village was electrified in 1964 by the central government grid. Only a few people received electricity at that time. In 1964 there were approximately 100 families in Pilkholi. Now there are about 200 families. In 1964 there were 8-10 families who received electricity out of the hundred families there. After 6-7 years all the families had electricity. The 8-10 families who received electricity in the beginning were the rich families of the village. They were not only Brahmins, they were also Hindu Rajput, which is general caste. The current total population is about 1000 people.

### Main sources of income

In 1964 nobody needed to do jobs. A few generations ago there was sufficient land because they population was a lot smaller. Everybody could cultivate their land and live from this. When the population grows there is not enough production for all the children to have a job. Than the children start looking for other jobs such as jobs in enterprises or daily waged labour in other places. In 1964 everybody could get a job in the army. The labour work started because there was an engineer (of who all the elders now the name) who came to the village and started selecting labourers. He checked everybody's hands. If the hands were rough and hard he selected the people as labourers. When the hands were soft he did not select them as labourers.

### Vulnerability context

The people in the village are confronted with a lot of drought. Especially during the months of May and June there are problems of water because people have to walk for a few kilometres to get the water. Therefore emigration out of the village started. In places where the families don't have sufficient water for irrigation they migrate. In the places where there is enough water they stay. They need sufficient water for irrigation to cultivate vegetables.

Another problem is the nutritional value of food. People don't have sufficient vegetables to grow on there on land because there is not sufficient water.

There is no employment in the village. There are a few contractors but there is not enough for all the villagers.

Another thing that the villagers really want is a playground for the children.

### Ethnicity

The total population of the village is Hindu. 70% is Rajput, 20% is Brahmin and 10% is scheduled caste.

### Typical/Special

Pilkholi is the a main spot for tourists to stay when they are coming from Haldwani or Kathgodam to Ranikhet. Haldwani is about 90 kilometres away and Ranikhet is about 10 kilometres away.

Pilkholi is similar to other roadheads. There are many enterprises because the people in Pilkholi are rich. Most of the rich people in Pilkholi were living in the plains before independence. They sold their property in the plains and moved into the mountains. In the plains there was thunder and lightning which killed their cattle. They sold their property and this made a lot of money in comparison to the money people had in the mountains. Another reason why they are rich is because they work very hard. The village of Pilkholi was already there. There were people living in the village but the rich people



moved into the village.

#### Education

The education in the village has always been high because the people are rich. They have been able to send their children to the army schools in Ranikhet and there always have been schools in Pilkholi. There were jeeps to bring the children to the schools. The poorer people went to schools in Pilkholi.

#### Physical capital

90% of the people have a TV. 50% has a telephone and 20% of the people have a car, bus or truck.

## PilHOPE

### Pilkholi

Interview with P.C. Joshi and Suresh from Himalayan Organization for the Protection of Environment (HOPE). Both Mr. Joshi and Suresh are living in Pilkholi. P.C. Joshi for most of his life while Suresh is originally from Pilkholi, he has lived for some years in another nearby village but since nine years he has been living in Pilkholi again.

Interview done by Karlijn Morsink on 29-04-2006

### Location of interview

At the HOPE office in P.C. Joshi's room

### General info

Pilkholi is a gram panchayat and Pilkholi is the only village. HOPE's activities in Pilkholi have been directed to a poultry farm for the SC community. This was the second activity of Hope in the village. The poultry farm started in 2005. Since 1995 there has also been awareness programs for getting women empowered. HOPE has tried to educate them their rights as villagers. In this light HOPE has arranged meetings and training programs for gender. They provide them with the poultry chicks, medicinal facilities and food and they give the keepers training and they supervise the project. Next to the poultry farm HOPE organized training for women empowerment in the village. There are 11 Self Help Groups which save some money collectively so that there is a person who can, for example not pay for the school of the children, than they can support her.

### Industries and their electricity use

- 2 grinders, one using electricity and one using diesel
- 8 general/retail shops
- 1 barber
- 4 sweetshop which use LPG
- 10-12 chai-shops using LPG
- 1 welding shop using electricity
- 1 bakery using wood
- 1 poultry farm
- 3 tailors using wood
- 2 PCO/STD stands

There is no blacksmith in the village. There are carpenters but they work as daily labourers.

### Population size, density and location

There are approximately 250 families in Pilkholi. There are more than a thousand people. The total area of the village including agricultural land is 500 ha's. The agricultural land is approximately 150 ha's. Land land is suitable for agriculture. In comparison with other villages in the region the production is normal or even a little bit on the better side. Many villages in the region have less water. There is a water problem in Pilkholi but because they are on the road the problem is less. They have springs and wells. Village of the road have even less water.

### Political situation and organization

There is one prathan and there are four wardmembers. There are no struggles between the villagers and the prathan and there is no evident orientation among the panchayat members.

### Vulnerability context

There is a problem of water in the village, especially in May and June. The villagers who live a bit outside or are less wealthy have to walk for 2 kilometres to get water. In the village there is one spring

and a waterpump. They get water from the water pump. People far way from the roadside really get into problems. Also for their cultivation. The production of crops is normal. In the rainy season there are some landslides but they don't cause trouble because the people can remain going to Ranikhet. There is emigration out of the village because there is insufficient work in the village. Therefore people move to Delhi and other bigger cities.

#### Markets.

Ranikhet is the main big town in the area. There are no other markets for satisfying differentiated needs. Basic needs, general store, masala, shampoo, dahl's, books, are all available in Pilkholi. They go to Ranikhet for clothes and fuel for vehicles.

#### Main sources of income

The main sources of income in the village are agriculture. Every family has small amounts of land. The land size is very small. The forefathers used to have large amounts of land but due to family fragmentation the amounts of land have become smaller and smaller. Outside of the village is community land so the area of the village cannot be expanded. Community land means that this is land for forestation and for animal grazing. 100% of the families do agriculture.

Almost every family has one driver. These drivers work in the tourist side and outside off the tourist season to transport people from and to Ranikhet. Some people are in the army. Of every 2-3 families there is one family member in the army. Nobody has sufficient land to sell from their land. They just use it for their own cultivation. Women also work, they work on the land which is only for the provision of food.

25 % of the people in Pilkholi are contractors. They either do building or they are contractors on vegetables and fruits.

#### Education and literacy

The educational level is very high in the village. 100% of the men are literate and 70-80% of the women. There is one government primary school. There is a secondary school 1,5 km away in Gamoli. This secondary school also has inter-college.

#### Typical/special

Of all the villages in the region 10-12% are roadhead villages. The characteristic of a roadhead village is that there is no problem of anything. Everything is available in the village. All road heads provide their villages with basic needs. Both NGO members claim that in the villages which are really off road, there are not many enterprises. Mostly a blacksmith, a carpenter and a tailor but nothing else. Pilkholi is a rich village. First of all because it is close to Ranikhet and it is the last village with a market before Ranikhet. 25% of the people in the village are contractors. 70% has a government job. There is the army and the horticulture department of Uttaranchal in Ranikhet which are both providing government jobs.

Most of off road villages use road side markets. Up the hill from Pilkholi is Bhargaum and Kunellakheet. There are some general stores and some barbers there. It is difficult to go there by car because the road to the village is really bad. It is a sandy road. In the monsoon season you can't go there.

In Mandelkheet HOPE also has a school. This is also a on the road village where you can't go by car during the monsoon.

According to P.C. Joshi and Suresh there is not a village which is not electrified which has enterprises. In Pilkholi there has been a lot of influence from the English. There are 7 villages surrounding Pilkholi which depend on Pilkholi for their basic needs. They are not more than 5 kilometres away.

#### Ethnicity

All the people in the village are Hindu's. There are no Muslims. Most are Hindu rajput.

Approximately 70%. 15% is Brahmin and 15% is scheduled caste. The scheduled caste people generally do black smithy work or carpentry. The Brahmins go for the products of SC's to their enterprise but they will not eat food from the SC people. Maximum 20% of the people is BPL.

### Energy sources

According to the NGO members the electrification of the village was done before independence, before 1947. Occasionally there is no electricity. The electricity is gone due to seasonal problems. When there are rains and during the monsoon there are problems. In those times there is no electricity for 2-3 times a week for 2-4 hours. In the monsoon period, when a line breaks, the electricity can be gone for a whole day. Also when branches fall on the lines. This doesn't happen everyday but more than 2-3 times a week. More than 90% of the families are connected to the central government grid.

## Pilmil1

Pilkholi

Enterprise 29, grinding enterprise using electricity

Name entrepreneur: Bhagwat Singh

Interview done by Suresh and Karlijn on 29-04-2006. During the interview a lot of people are present. His father, who is used to be in charge of the enterprise. A few men and a few boys. In total 10 people are present.

### Production process

The entrepreneur has two grinders. They both run on one motor, which running on electricity. One of the grinders is for wheat grinding and one of the grinders is for rice grinding. His customers come to the enterprise to bring their wheat or rice. He grinds it for them and they pick it up in the enterprise again. The entrepreneur also buys wheat in the market which he grinds and sells again. From the customers coming to his enterprise for having their own wheat grinded he pays the electricity bill. From the flour which he sells in the market he is able to earn a profit. His electricity bill is 2500 Rs.

### Location

Pilkholi is located 10 kilometres before Ranikhet, when coming from Haldwani or Kathgodam. The main road to Ranikhet runs through Pilkholi. All the enterprises are located in a row on the main road. The grinding shop is located in on the side of the market of the village which is closer to Ranikhet.

### A. Adoption, rejection or no knowledge

He uses electricity because the diesel engine is really heavy and it has many problems. The engine he uses is very small. The diesel engine gets into problems when there is too much dust. The diesel engine also pollutes the air and the wheat. The price of his motor is only 15 000 Rs while the price of the diesel engine is 50 000 Rs. The electricity engine is always running and it needs lesser time to grind the grains than the diesel engine. When I confront him with the fact that the electricity is gone very often and that with diesel they can let it run all the time he explains that when it is necessary he will make the engine run during the night. It doesn't matter for him. (I get the feeling that they just bought this machine because it was cheaper and that they don't care much because it is running and it is providing them their income.

He doesn't use a gharat because there is no water or no spring in the area. They don't even have enough drinking water.

### B. Vulnerability context

During the time of festivals and during the marriage season, from January to April and from April to June the demand for grinded wheat is high. The wheat which he sells in the market is pure wheat and is not mixed with maida, like a lot of other grinders do. Without maida the taste of the flour is sweeter and this makes it better. His customers know that he doesn't mix it with maida and also therefore they come to his enterprise. During the festival and marriage season the demand is higher than in the other season. In the season it is approximately 5000 Rs. During the off season the profit is 2000 less, 3000 Rs. Demand is less during the drought, the demand increases but there is insufficient supply so the prices increase.

### C. Human capital

The entrepreneur finished primary and finished secondary until the ninth class. He tried to do the tenth class but he never finished it. He started school when he was five, in 1980, and he finished school in 1989. His current age is 31. He never got good marks in the tenth grade and that is why he stopped. He entered the enterprise of his father. His father had the enterprise, also running from

electricity. The location of the shop is their ownership. The entrepreneur inherited the enterprise from his father, with all the machines in it. He started working in the enterprise when he was 14. At that time his father did not work in the enterprise. His father is a contractor. He had opened the shop and the entrepreneur's cousins were working in it. The enterprise has been the property of the entrepreneurs father for 20 years. The enterprise is the entrepreneurs property since 10 years. The entrepreneur learnt from his cousins how to do the work. Only when the entrepreneur started working in the enterprise he started buying wheat and selling grinded flour in the market. The marketing skills and the knowledge about how to approach suppliers he learnt from his father. The entrepreneur would like to get more efficient grinders but the main problem is that he would need more space if he starts producing more. He has nowhere to put all the grains and flour. Another problem is the lack of money for investing in these machines.

#### D. Financial capital

The profit during the off-season is 3000 Rs. During the season it is 5000 Rs. The sales are respectively 5000 and 7500 Rs. The cost of the electricity bill has to be paid and for every two to three months he has to pay approximately 1000 Rs for maintenance of the machines, for grinding stones and oil. His family is a family of six and this is their only income source. They do agriculture for their own cultivation. They own approximately one biga. They also have to buy additional wheat from the market for their food. In Pilkholi they have a house and the enterprise. In Chamoli they also have a house. The one biga of land is there. In CHamoli they also have one buffalo, 2 bulls and 2 goats. The entrepreneur buys his wheat for 9 Rs/kg and he sells the flour for 12 Rs/kg. The grinding he does for 1,25 Rs/kg

#### E. Social Capital

His family is him, his wife, his father, his mother and 2 children. They meet groups of people in marriages. In the marriage season they go to 1-2 marriages a month. During the other season they don't go to marriages. They also meet groups during festivals and functions. This only happens once in every 3-4 months.

The family has relatives in Nainital and Delhi. They speak once in a week but they visit each other once a year. The people from Delhi come over to Uttaranchal during the summer season.

The entrepreneur meets with the other grinders. They discuss grinding and he has learnt from them about the machinery, about the most efficient way to work. How long machines can run. He has never taught others. He tells them: "Don't do grinding", because he doesn't want to get competition.

#### F. Natural Capital

The entrepreneur does rely on wheat and rice for his profit. During the drought the supply of the wheat decreases and therefore the prices increase. The total profit is less because there is insufficient grains to be grinded.

#### G. Physical capital

Electricity is continuous. Sometimes there is a big problem in the lines. The entrepreneur claims that once every two weeks the electricity is gone. When there is a problem the electricity can be gone for 2-3 whole days in the month (I doubt if this information is correct. When we are there the electricity is gone, the day before the electricity was gone for a short period and on the 30<sup>th</sup> of April the electricity was gone for 4 hours) The rest of the time the electricity is continuous. From March onward there is an electricity problem. From April-June the electricity is gone for 2 hours a day. During the monsoon the problems are less (!!!!!!!????). Only for 2-3 hours a week. Sometimes with heavy rains it is gone. They have a scooter. The entrepreneur has a TV and a landline phone, a radio and a CD-player. The entrepreneur reads the newspaper twice to three times a week.

#### H. Influence on and access to transforming structures and processes

The main market for basic needs for the entrepreneur is Pilkholi. For clothes and electronic products he goes to Ranikhet. By scooter it takes him 20 minutes to get there.

When asked if demand is larger than supply the entrepreneur responds that this depends on the season. During the season of marriages he has a lot of work. He sometimes has to sell his customers no

because there is no electricity and he cannot produce. Generally, demand is not that large that he can sell more if he produces more.

The entrepreneur does not have a loan. When I confront him with the fact that it would than be possible for him to get a bigger place and more efficient machine he responds that there is no land on the road where he could get another, bigger shop or where he could expand his own.

The entrepreneur pays the district panchayat 250 Rs. per year.

He is not registered and when asked he does not seem to no what is meant by formal or registered. He says he is only registered with the district panchayat.

There are restrictions for using electricity. In the summer season he can't grind from 6-9 pm and in the winter season he cannot grind from 5-8 pm. There are never checks by the government but if he would want to grind it would be difficult because the voltage is very low at that time. He has never done this though.

The entrepreneur knows the prathan and the wardmembers. The prathan and the wardmembers are his customers. They just say hi and hello.

There is a lot of competition. There is another grinder in Pilkholi. One which grinds with diesel and there is another one in Ganoli, which is 2 kilometres away.

The entrepreneur buys wheat and grinds for the people in the neighbouring villages. There are no people in the villages that can supply themselves with their own cultivation. Every family has to buy additional flour from the market. He therefore sells to people from neighbouring villages. Directly, without selling to a shop first. He doesn't supply to Ranikhet because than he would have to sell larger quantities. He hasn't got the money to invest in sufficient wheat for grinding larger quantities. They would also need labour and transportation.

The entrepreneur does not go to wholesalers for selling the flour. He only sells to villagers. Some customers are permanent customers.

He does customer binding by doing a good job and by customer satisfaction. The flour should not be dusty and the people should get their product on time.

The entrepreneur buys wheat from contractors in Haldwani. He buys from different companies. These big retailers bring the wheat to his enterprise. He never goes there. He has a phone with which he can reach them. Than he grinds it and sells it to the people from Pilkholi and surrounding villages.

The entrepreneur sets prices with the other grinders in the area. They have group meetings on the occasions when electricity or diesel prices increase. This is yearly. Individually he adjust his prices when he does not have enough customers. The one in Ganoli charges 1,50 Rs/kg. The one on diesel in Pilkholi 1,00 Rs/kg and he 1,25 Rs/kg.

#### I. Perceived Attributes of Innovation

The entrepreneur has the enterprise for coping/profit. He wants to invest but he cannot because of money and spatial problems. He has a TV, CD-player. He has taken up the selling to the market which makes him the profit. When looking at his profit which is between 3000-5000 he would have the enterprise for coping because he has to sustain a family of 6, but he also has a house in Ganoli. When asked he claims that he has the enterprise for sustaining his family.

The entrepreneur came into the enterprise when it was already running and the machines were already there. He did not have to make a decision and the energy source was never changed.

#### J. Innovation-decision

The father of the entrepreneur took electricity when he got the enterprise because the motor running from electricity and the electricity were cheaper and easier to get when he started the enterprise 30 years ago.

#### K. Communication-channels used

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#### L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the entrepreneur

## **Pilobser**

### Pilkholi

- The houses on the road are mainly concrete. There are a few mudhouses. This is not always associated with poor people. Some older people live in a mudhouse because of comfort. Most young people live in concrete houses.
- 90% of the people have a TV. 50% has a telephone and 20% of the people have a car, bus or truck. When people have a car, bus or jeep they are generally richer but for most of them it is also their source of income. There are many drivers in the village.
- TV's are generally not an indicator of wealth, CD-players are not eathier. The families which are wealthier have a DVD-player.
- Most people have a few hectares of land. Approximately 1,45 biga's. None of the people has sufficient production of their land to eat the whole year. Only for half a year they can eat from this. The rest of the year they have to buy from the market. This year the crops have been very bad because there was no rain and no snow in the winter. Now they can't even eat for six months.



## Pilprathan

### Pilkholi

Interview with prathan of Pilkholi, he has been the prathan for the last 3 years. The prathan is a businessman and he ploughs his fields. He has a shop for ready-made garments and woollens in Pilkholi. For the village the prathan is currently working on increasing the water availability. With the district panchayat he is working on soil conservation.

Interview done by Suresh and Karlijn on 1-5-06 in the house of a friend of the prathan. The prathan was attending a wedding but when Suresh contacted him to ask for an interview he told us that he was waiting for us.

Prathan's name: Mr. Kirpal Singh Jeena

### Population size, density and location

There are 185 families in Pilkholi. The total amount of people is 1000. The total area of the village is 245 ha. Out of this 80 ha is agricultural land and the other land is used for houses and shops. The road through Pilkholi is the National Highway. Within the 245 ha there is no community land included. The average family has 1,45 ha of land. The length of the village is 2 km and the width of the village is 200 metres on the right side of the road and 200 metres on the left of the road.

### Political situation and organization

Pilkholi is part of Tarikhet block. There is one prathan and there are seven wardmembers. Both the prathan and the wardmembers are elected by the people. The government sets no standards for the selection of the prathan except for the fact that sometimes the prathan has to be a woman. There are BJP and Congress supporters in the village. The prathan is not a member of either one of the two.

### Seasonality's, shocks and trends

There is an unemployment problem. Young people are going to Delhi, Gujarat and Bangalore for employment. 10% of the men in the village are contractors. When I ask why they not employ the villagers the prathan explains that they employ Nepali's because they are cheaper. There are also water problems in the village. In the summer season everybody in the village (really meaning everybody, also the rich and the Brahmins) have to walk for 1,5 kilometre to get water from a spring.

### Main sources of income

The main sources of income in the village are government service for the army. Most families depend on people working outside of the village sending remittances home. Approximately 50% of the people have government jobs. Another 30-45% of the people work as labourers. Either in Ranikhet or Haldwani or outside of the state. Women mainly work as housewife's and they work in the field or herd the cattle, for the families cultivation.

### Education and literacy

100 % of the men is literate and 100% of women is literate. When I confront them with the fact that this is extremely high they explain that an NGO has made an education plan so everybody can sign a signature. When I tell them that I would also like to know how many people can read and write they tell me 100% of men and 70% of women can read and write. In this village the educational level is really high. The village is surrounded by primary, secondary and inter-colleges and there are good educational facilities in Ranikhet ( I think the high educational level is also a heritage from the English period, with the Ranikhet army school and a convent school).

### Ethnicity

5% of the village is Muslim. They come from other villages in the area. In Pilkholi there are 3 families which are Muslim. All of them have an enterprise. They do welding, shoemaking and barbering. Of the total population 15% is scheduled caste, 40% is Brahmin, 5% is Muslim and 40% is Rajput. 18 families are currently BPL. Another 18 families are on the waiting list for BPL classification. The families which are BPL don't have enterprises. They are mostly widows and poor people. Not all scheduled caste people are BPL but of the BPL families most are BPL, four families are Brahmin.

### Markets

Pilkholi is a basic needs market. Everything is available in the village. For differentiated needs the people go to Ranikhet which is 10 km away or to Haldwani which is 95 km away. For clothing or for marriages people go to Ranikhet or Haldwani.

### Energy sources

In Pilkholi many people use LPG compared to villages in Dehradun or in Almora. The prathan explains that this is because Pilkholi is a road side village. The roadside village don't have problems because there is a truck passing by every 15 days which collects the empty cylinders and supplies them with new cylinders. The off road villages have difficulty transporting the cylinders to and from the road so they don't have LPG that much. The truck comes here because Pilkholi is a centre for tourists. On one kilometre distance there are the Chabotia gardens and there is the Jula Devi temple. The people in the village don't use kerosene because they have LPG. They have difficulties with using kerosene because it is more difficult to operate the stove on kerosene. They have to pump. Many people also don't know how to use it.

The electricity supply causes problems in the winter because of snowfall. Most of the time the snowfall lasts for 3-4 days and during that time there is no electricity. In one month there is no electricity for 3-4 days during winter months.

From March to June the electricity is gone almost every day. The last few days the electricity has been gone for more than 2 hours a day, sometimes four hours. When I ask the prathan if this is normal he replies that this is not normal for this season. Normal is when the electricity is gone for 2 hours a day. In the rainy season the electricity is gone when there is heavy rainfall. There are more problems in the rainy season compared to the period from March to June. There are many days when there is no electricity at all.

From September to December the electricity supply is the best. It is better than March to June. It is only gone very occasionally.

About ten families in the village don't have electricity. When there are eight families living outside the village but with each other they get electricity supply from the government because the government installs a pole. When the people are not living close they have to pay for the pole themselves. Out of the ten families 3 families are BPL. Even though BPL families get the connection for free, they still have to invest in buying the pole. This is too expensive for them.

### Typical/special

Pilkholi is famous because it is the centre with the basic needs market of at least seven villages. It has the Chabotia gardens on 1 kilometre distance and the Jula Devi temple. This is a typical Tarikhet roadhead village. There is another village exactly like this named Machkali. Manchilla is a famous villages in Tarikhet because of its vegetables. The total amount of road heads is about 50. Of all villages 35-40% is a roadhead village.

There are villages which are off road but do have markets.

- Tana: There is a general store, a chaishop, a biscuitshop, a lohar. It is 1,5 kilometre walking from Pilkholi. Tana has 130 families. The village is electrified. In this village there is the minister of Uttar Pradesh and a Member of the Legislative Assembly living there. It is a rich village. 30% of the people from Tana have land in Ranikhet and work in Ranikhet.
- There are some scheduled caste villages but they are not poor. The prathan explains that Pilkholi is a poor village.

Many BPL families does not mean that the village is really poor. BPL is just a political thing, it is not defined and checked by law. It is only for pressure. There is a leader, mostly the

prathan who decides on the status of BPL of villagers. He can give a BPL card to everyone he wants to give it to.

Before five years there was a prathan he was not very literate and he didn't understand completely how and when he should give people a BPL card. He gave the BPL card to everybody that told him he was BPL.

- Chobotia: Is a Christian village
- Kotar, in Tarikhet block, is a village which is not yet electrified. There is only a tailor and a lohar present there. By foot it is 7 kilometres to reach, by bus it is 32 kilometres because it goes all around. The village is 1 kilometre walking from the busstop.

- There are many people who use LPG. Most of the enterprises which are cooking (chai-shops, sweetshops) are using LPG and people also use LPG in their homes. The LPG is provided by a truck which drives from Ranikhet and stops in all the villages to sell LPG and to pick up the empty tanks. The tanks are 40 cm's long and are heavy to carry. The truck stops everywhere at all the houses. The LPG is more efficient. One of the chai-shops buys one tank for 290 Rs. and this remains for a month. If he uses kerosene he needs 2-3 bottles a day. The bottles cost 12 Rs. The kerosene is hardly ever available because the local buses use the kerosene. The kerosene is provided by the government fair price shops and BPL families can even get it cheaper. The local bus drivers are private owners and they have made deals with the wholesalers of the kerosene to buy it up. The kerosene they use in stead of petrol. You can smell it but nobody does anything about it. The truck which brings the LPG comes once every two weeks.

## Pilobser

Survey of enterprises

done by Suresh and Karlijn on 29-04-2006

- 1 primary government school
- 2 primary public schools
- 1 postoffice
- 1 government fair price shop

Enterprises

- 1 carpenter
- 6 sweetshops using LPG
- 13 general/retailshops
- 1 shoemaker using manual labour
- 1 bakery using wood
- 2 grinders, one using electricity and one using diesel
- 10 chai-shops, using kerosene and LPG
- 2 welding shops using electricity
- 1 barber
- 2 PCO/STD
- 1 service station using electricity
- 1 electronics shop
- 2 tailors
- 1 beauty parlour using electricity for curling
- 1 poultry farm
- 1 chemist

Total 47 enterprises

The bakery is the only enterprise which is not directly on the road but is down a stairs. The rest of the enterprises are all located at the road.

Electricity gone:

27-04-2006: For five hours during daytime

28-04-2006: For 1 hour during daytime

29-04-2006: For 1 hour during daytime

30-04-2006: For 4 hours during daytime

LPG use and distribution

On one of the days I was in Pilkholi and the LPG truck came buy in Pilkholi in the enterprise where we were doing the interview, the grinding enterprise. That was at approximately 16.00 o'clock. When we finished the interview I had to go for some groceries and after that we went back. At that time it was six o'clock. In the timespan of two hours the truck had only moved 3 kilometres. The houses are not really dense because this is a steep mountains area. This indicated me that the use of LPG is very extensive because on the way down to HOPE I saw a lot of people exchanging their LPG

English influence

The English influence in Ranikhet area is very apparent. Most entrepreneurs do not give the size of their land in biga's but they give it in hectares. There are many houses, even in the smaller villages, which have been built by the British.

Road from and to Ranikhet is National Highway.

## Pilsw1

Pilkholi

Enterprise 30, sweetshop using LPG for production and a general store

Name entrepreneur: Laxman Singh

Interview done by Suresh and Karlijn on 1-5-06. During the interview his 2 year old daughter and his worker were present. Occasionally a few customers stopped by his enterprise and there were two people who came in and attended the interview for a while

### Production process

The entrepreneur sells sweets from his general store. He has one worker who makes the sweets in another room which is the entrepreneur's property. He rents the location of his general store. He has had the enterprise for 1,5 year. He first opened the general store and after 6 months he opened the sweetshop.

### Location

The enterprise is located at the end of Pilkholi on the side of Ranikhet. There is a toll stop where every bus and jeep which are not local have to stop to pay tax. When asked why the entrepreneur does not have his enterprise in the room which he owns a little bit back toward Haldwani he replies that all the people have to stop at the toll post and that he gets many customers from these people

### A. Adoption, rejection or no knowledge

The entrepreneur uses LPG gas for making sweets. He has a gas stove and he only uses LPG, not kerosene. He doesn't use kerosene because it is costlier. When I confront him with the fact that kerosene costs just 12 Rs per litre he replies that he would need to buy much more kerosene to supply himself with the same amount of energy that he would get from one cylinder of LPG. LPG is much more efficient. Another thing is that to keep up production they would need extremely large quantities of kerosene. 1 cylinder of LPG gas lasts him for one week.

He doesn't use electricity because it is costlier than LPG. He has always been using LPG. Before he had this enterprise he used to be unemployed.

### B. Vulnerability context

The entrepreneur uses milk, sugar and coconut powder for making the sweets. There are fluctuations in the prices of the raw materials. In summer the prices of milk are high while in winter they are low. They are high in summer because there is the drought and the animals have less to drink and it is hot so the animals loose a lot of liquid too. This is also related to the water problems.

There are also fluctuations in the prices of sugar. These fluctuations depend on the availability of sugarcane but they fluctuate randomly. The prices of both sugar and milk are always increasing.

In October or November there is a three day festival which is called Deepawali. During this time the demand is 50% higher. In summer season and in the marriage season, from March to July the demand is also 50% higher than normal. There is always an increase in the demand.

### C. Human capital

The entrepreneur has finished inter-college. He started at the age of six and he finished at the age of 21. He is now 38. He didn't get an exam because in graduation he detained. He didn't pass the exam. He does not have a graduation diploma. He didn't try again because his heart didn't tell him to do this. After stopping school he got goods from Delhi and he started selling them in Pilkholi and the surrounding villages. He walked around with a cart and was standing with this cart on markets of surrounding and this village. He continued doing this until he got this enterprise. With this former job he used to earn a profit of 2000-3000 Rs. per month.

He decided to get this enterprise because he had a lot of competition and he wanted a place to sit down.

The entrepreneur has never learnt how to make sweets. He has employed his worker who knows how to do this. He can make every sweets he wants. The entrepreneur does not know how and where the worker has learnt how to make the sweets.

The entrepreneur stotters.

The entrepreneur saw that all the vehicles were stopping at the toll place so he wanted to have a sweetshop there because it is Indian culture to bring sweets when you visit people. Especially many people who go to Ranikhet visit people.(I don't think it was his idea. Within 20 metres from his shop there are another four sweetshops).

The entrepreneur learnt about management skills, selling to market, buying from suppliers, accounting from talking to other people.

When asked if there is a machine which he would like to get which could help him produce more he replies that everybody would want that but that he doesn't know a machine which he would like to get now. He would like to learn how to make sweets but when I ask him why he doesn't learn this from his worker he replies that he has no time to learn.

#### D. Financial capital

General store: The entrepreneur gets sales of 4000 Rs. per month. From this he gets 1000 Rs. profit. 3000 Rs. are the costs. The electricity bill of 120 Rs. and the 400 Rs. per month for renting the shop are included in these costs.

Sweet shop: He sells approximately 20 kg per day in the off-season. The average price of a kg is 80 Rs. His profit for one day is 1600 Rs. He is always open so his monthly profit will be 48 000 Rs. The costs are 1160 Rs. per month on gas, 1500 Rs. for the worker, 20.000 for raw materials, 5000 for packaging, 1400 for packaging. This leaves him a profit of 18940 Rs. per month.

During the season his average sale is 40 kg. The profit will be double than. 37.880 Rs.

The entrepreneur has no other income source.

The entrepreneur has to pay 1400 Rs. per month as a payback for his loan. The entrepreneur pays his worker 1500 Rs. per month. He is the only person supporting a family of seven.

The entrepreneur doesn't save any money. From the money he earns he is increasing the amount of goods in his shop. He also has an STD boot but his profit for this is included in the profit of the general store. He also has the STD boot to attract customers for the sweetshop.

He also doesn't save any money in his house.

The entrepreneur has his house in Pilkholi, he has no land and he has cattle, he has two cows.

#### E. Social Capital

The entrepreneur lives with his joint family which is himself, his wife, 2 girls, his mother and his sister-in-law and her daughter. In total seven people.

The entrepreneur is a member of SAHAR- India. This is an institution which provides insurance. He pays 12 000 Rs. per year for insurance. He is the only one in his family who is insured. He meets with this group of people once a month, on the sixteenth. They meet for the formation of their policies.

1-2 a month he goes to marriages. To festivals he goes only once in every 2-3 months.

He knows only local people. He has friends in Ranikhet whom he meets once in every 8-10 days. In Haldwani he has relatives to whom he speaks once or twice a month. He sees them when they come to Haldwani. Every six months they meet, most of the time they come here because since he has his enterprise he cannot leave. He has a close friend in Delhi. They talk once or twice a week. His friend comes to meet him every two or three months but he does not go there because he has his enterprise.

He has never learnt anything about producing sweets from other people because people don't talk about their recipes for sweets. With the other sweetshop entrepreneurs he also doesn't talk, only hi, hello. He has learnt about management skills and marketing, especially with his friend from Delhi he takes about these things very often.

#### F. Natural Capital

#### G. Physical capital

There is always LPG, he has never had the occasion that it was not there. The truck comes twice a month. This is sufficient. The entrepreneur has no transportation possibilities. He only goes by jeep and local bus.

The entrepreneur has a telephone in his shop and in his house. He has a TV and a radio. He receives the newspaper in his shop so he reads it daily.

#### H. Influence on and access to transforming structures and processes

It takes the entrepreneur 30 minutes to get to Ranikhet by a shared jeep.

Demand increases only when he makes a new kind of sweet. His worker is only producing a few hours per day. The demand is not as high that he could be producing the entire day. The demand is fulfilled in 3-4 hours working per day.

The entrepreneur does not pay income tax because he doesn't earn enough (I think that he earns enough)

Before the entrepreneur had this enterprise he used to be unemployed.

The entrepreneur took a loan of 40,000 Rs for starting this enterprise. He got the loan from the local bank. He has invested the whole amount in getting the products for his general store and for buying the stove and getting the raw materials for his production of sweets. Per month he has to payback 1400 Rs.

After stopping school he got goods from Delhi and he started selling them in Pilkholi and the surrounding villages. He walked around with a cart and was standing with this cart on markets of surrounding and this village. He continued doing this until he got this enterprise. With this former job he used to earn a profit of 2000-3000 Rs. per month.

He decided to get this enterprise because he had a lot of competition and he wanted a place to sit down.

The entrepreneur has the general store because the other general store is 2 km down in the beginning of Pilkholi. He started it because he thought that it would also attract more people for the sweet shop. The enterprise is registered with the district and block panchayat. He is registered as a general store. They come yearly in April and he has to pay 300 Rs per year.

The products for his general store he gets from Ranikhet.

The salesmen come to his enterprise to sell him the products for his general store. The raw materials for sweet making are also brought to the enterprise by suppliers from Haldwani or Barrilli. He phones them and they come to bring the materials. He has a fixed supplier because this man has reasonable prices. He also has good quality.

The entrepreneur knows the wardmembers and the prathan. The prathan is his friend. They visit each other daily (When Suresh called the prathan to ask if he had time for an interview the prathan was in the sweetshop)

The entrepreneur's customers are mainly bypassers who stop to pay toll tax on their way to Ranikhet. 50% of his customers are people who pass by and 50% are local fixed customers. He has a deal with bus drivers: He gives them free pan masala (some kind of tobacco) and therefore they stop in front of his enterprise and advise the people to get their sweets in his shop. There are also other sweetshops which have this deal with busdrivers.

The entrepreneur does meet with the other owners of sweetshops to set the price of sweets. This happens when there is a change in the prices of sugar or LPG.

#### I. Perceived Attributes of Innovation

The entrepreneur has the enterprise for profit. He has taken a loan of 40 000 for investment in the enterprise. He has also made deals with bus drivers to stop in front of their enterprise and he is trying to attract other people through his general store and phone boot. It seems like he has an eye for business. According to his profit during the season and during the off season you would conclude that he is making a good profit but he does not have any means of transportation, large amounts of land or any other capitals. By talking to the entrepreneur I tried to find out where this gap between profit and lifestyle was created. The entrepreneur just replied he has a lot of expenses. (When talking to Suresh



later he explains that the man has two problems where most of his money is invested. First of all he has to take care of his wife, his mother, his 2 children and also his sister-in-law and her daughter because his brother has passed away. Second of all Suresh explains that the man has a serious drinking problem where a lot of his money is invested.)

The entrepreneur did not have the possibility to experiment with the energy source before it was implemented but his worker worked in a sweetshop which used LPG in Almora. His worker did have the chance to experiment. The stove they had bought but if the LPG would not have been sufficient they could have bought kerosene.

#### J. Innovation-decision

The decision was made by the entrepreneur, based on the experience of the worker and based on the fact that all the other sweetshops used LPG.

#### K. Communication-channels used

The entrepreneur learnt about the use of this energy source through seeing that all the other sweetshops also used LPG. He learnt this through interpersonal channels.

#### L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the entrepreneur.

## Piltl1

Pilkholi

Enterprise 32, tailoring enterprise using 2 sewing machine on manual foot labour, 1 interlock machine from electricity and one manual hand labour piko machine.

Entrepreneur's name: Mohammed Papu

Production process:

The customers come to his enterprise with fabrics. He stitches them and then the customers come to pick up the finished products in the enterprise. He stitches shirts, trousers, sari's, suits, jeans. The entrepreneur is 22 years old and working alone in the enterprise. The entrepreneur has had the enterprise for 2 years.

Location

The enterprise is located on the National Highway towards Ranikhet when coming from Haldwani and Kathgodam. The enterprise is located at the far most end towards Haldwani.

A. Adoption, rejection or no knowledge

The entrepreneur is connected to the central government grid. He pays 100 Rs. per month. His sewing machine are not running from electricity but from manual foot labour. He has a piko-machine which is running from manual hand labour and he has an interlock machine running from electricity. He doesn't have the sewing machines running from electricity because the electricity bill would be too high for him to pay. It is not possible to make the interlock machine run from manual labour. The entrepreneur interlocks the rims of products (what in Holland we will call 'omzoomen'. In Dehradun district I have not seen a tailor doing this which surprised me because quality remains much longer when this is done.). He does this because his demand increases. The piko-machine he uses for sari's and dupatta's. When he started his enterprise he bought the inter-lock machine, the piko machine and one sewing machine from the former owner. After 2 years he got another sewing machine.

B. Vulnerability context

The customers come with their cloths. He only buys thread and oil for the machines. He does this in Pilkholi. The prices of these products always fluctuate. He can get the thread and the oil cheaper in Ranikhet. When he goes there he picks up these but when he has an emergency he buys it in Pilkholi. He has fixed suppliers where he goes to in Ranikhet. He doesn't look for the cheapest price. In the rainy season the demand is really low. They have a festival in March and April which is called Chetow. During this festival everybody has to wear new clothes. In these two months the demand is 50% higher than normal. During the marriage season from March to June the demand is 30% higher than normal. In the rainy season the demand is low, sometimes only 2-3 a week. Since the entrepreneur started the demand has always been increasing. The price of thread and oil has not increased since he started.

C. Human capital

The entrepreneur never went to school. He learnt Urdu, the Muslim language in a musk. He does not know and writing and reading of Hindi. In the musk he passed the sixth class. He stopped going to this school because his parents took him out because he needed to work. He was then approximately 10-12. He immediately started working in another tailoring enterprise in Uttar Pradesh. He worked there for 8 years. Then he opened an enterprise in Kathima, Uttaranchal. He had the enterprise for one year. He stopped there and started in Pilkholi because his brother's friend had the enterprise before him. This person wanted to stop. The entrepreneur worked for this man for 15 days and his parents helped him to make an investment. With this money he paid the former shopowner. This man also sold him the interlock machine, the sewing machine and the piko machine.

The entrepreneur was trained in Biheri, UP, which is his village. Then he had the enterprise in Kathima. In Kathima his brothers were working with him. His brothers went back to Biherso he was alone there and he wanted to leave. Now he is in Pilkholit because he has to earn money. His brothers work now as carpenters in Ranikhet.

He knows simple maintenance but when it is something big he goes to Ranikhet.

The entrepreneur knows already a lot, suits, sari's, jeans, trousers and shirts but he would like to learn more about tailoring. He would like to learn how to make coats. He knows embroidery but he doesn't have demand in Pilkholi for embroidery. He doesn't want to get an embroidery machine because there is no demand.

#### D. Financial capital

In the off season the entrepreneur has sale of 2000-3000 Rs. per month. In the season he has sale of 10.000-12.000 Rs. His normal sale is approximately 7000-8000 Rs. He rents his place for 800 Rs, which is both the shop and the room where he sleeps. He pays 100 Rs. for electricity. When his sales are 2000 his profit is 800. When his sale is 10.000-12.000 his sale is 5000 Rs. During this season there are workers, he pays two workers 1500 Rs. each. From March to June when the sale is a little bit higher than normal he sells 7000 and has a profit of 2000 Rs. Every month he sends money home to his family, depending on his profit this is 1000-1500 Rs. There are six brothers in the family. Of these four are working and they send back money to the family. The entrepreneur has an account with SAHAR India where he saves 20 Rs. per day. In total 600 Rs. per month and he has been doing this for eight months. In total he has 4000 Rs. on the bank. After 3 years and 4 months he will get back the money with an interest of 4%.

#### E. Social Capital

There are six brothers off which four live outside of the house to work somewhere else. The family consists of six brothers, one sister-in-law and his father. He has to sisters but they got married.

The entrepreneur is a member of SAHAR India. There he saves. He met these people because they were coming in the village to meet entrepreneurs and ask if they wanted to open an account (remember the sweetshop in Pilkholi. This man is a member of SAHAR and he is also insured there and he has monthly meetings to set policies).

The entrepreneur is not a member of any other groups. He goes to the musk on Fridays but he never meets friends. As he says: "I never make friends". The entrepreneur meets groups of people in festivals and in marriages. He also goes to Hindu marriages. In the village he goes only to marriages in the marriage season from March to June. He goes 1-2 a month. He sometimes goes to Biheri for marriages. This happens only 1-2 a year.

The entrepreneur knows people in Pilkholi, Ranikhet, Kathima, Biheri, Chaubotia and Delhi. He meets his brothers in Ranikhet 1-2 a week. He never goes to Kathima anymore, the enterprise where he used to work, they never talk. To his relatives in Biheri he speaks 1-2 a week and he goes there once in every 2-2.5 months. He has cousins in Delhi. They talk only on the phone, once in every 1-2 months but he never goes there and they never come here. He never learnt anything concerning his enterprise from these people. Not about tailoring techniques, he never got contacts through them.

#### F. Natural Capital

#### G. Physical capital

The entrepreneur uses the inter-lock machine daily for about 30 minutes to one hour. He can't use it when the electricity is gone. This causes problems because then he has to leave the cloth on the machine and he cannot continue other work. Sometimes he cannot finish the product on time. The electricity is mostly gone when he has high demand and when the demand is low he has good electricity supply.

He doesn't know how often the electricity is gone during the rainy season because his demand is very low than. From March to June the electricity is gone daily. In the past it never used to go so often but now it does because the electricity department is replacing old electricity metres with new ones. When they do this work the electricity is shut down. After five o'clock in the evening the electricity is good again.

The entrepreneur does not have a means of transportation. He no bike, no phone, he has a CD-player and he listens to Hindu music.

The entrepreneur is not able to read or write Hindi and there are no magazines or books he reads in Urdu.

H. Influence on and access to transforming structures and processes

The entrepreneur only goes to Ranikhet to buy oil and thread. When he goes there he takes the jeep or the local bus. Ranikhet by jeep is 20 minutes, by bus is 30 minutes. The entrepreneur goes to Ranikhet 1-2 a week, mainly when he visits his brothers.

When asking him if he would work harder he would sell more he replies that he would sell more.

When I ask him why he does not get workers he says that he used to have them but that he taught them the work. They worked for a while and when they got the cheque they didn't come back. When I ask him why he doesn't get a local he says that everybody knows him and they don't want to work for him (Very vague story. There is unemployment in the village so people would be willing to work for him.)

When I ask him if he ever has to say no to one of his customers he says that this doesn't happen. Only when the customers demand from him that he does it immediately he sometimes has to refuse.

During the off season the entrepreneur works for seven hours, during the season he works 12-13 hours.

The entrepreneur pays a license to the district panchayat of 75 Rs.

He knows the prathan and the wardmembers. They just say hi, hello.

Most of his customers are fixed. He has 60-70 customers out of which 50 are his fixed customers. They always go to him.

The entrepreneur has a lot of competition. Not very much from ready made garments because the people here don't wear that very much but he does have competition from other tailors. He has the advantage that he can make everything. He makes clothes for ladies and for gents, varying from sari's to jeans. Other tailors do either men's clothes or women's clothes. The other tailor in Pilkholi gives competition but some of his customers came to this enterprise because the other one didn't finish the clothes on time (This can just as well be true the other way around)

The entrepreneur sets the prices himself. He doesn't not have a discussion with other tailors. When he started in the village everybody just used to come and they would give him some money. In the village of his family there was never a fixed price so he was not used to that. Here he made it fixed after people gave him money. Some people pay him a little bit less and than he just takes but most people pay a fixed price. If he increases the price the customers will not come to his enterprise because he has competition (So the prices are set by market demand)

#### I. Perceived Attributes of Innovation

The entrepreneur has the enterprise for coping. He does not have any luxuries or transportation. He sends money home as remittance. He does not have the money to invest in machines which run from electricity and the electricity bill would be too high. He is saving some money.

He knew that manual labour would be beneficial because he had been working in another tailoring enterprise where he had learnt that using electricity all day for sewing is really expensive.

The advantage of this energy source is that there are no costs for electricity and there is no investment machines running from electricity.

The entrepreneur did have the advantage to experiment with the energy source in his former enterprise and the enterprise where he had learnt tailoring.

#### J. Innovation-decision

The entrepreneur decided to get the enterprise together with his father since he also invested some money in the enterprise. He did not implement a new energy source because he had the enterprise in Kathari where he was also working with manual labour sewing machines. The decision to get them again was related to the price of electricity.

#### K. Communication-channels used

The entrepreneur learnt about using this energy source in the enterprise where he has learnt tailoring.

#### L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the entrepreneur.

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## **Pilpu1**

### **Pilkholi**

Enterprise 31, service station replacing auto parts of 4 wheeler cars and of 2 wheeler cars. He has an electrical machine for car washing. No other machines which he is using. His raw materials are spare parts, oil, filter cartridges, grease, wax and filters.

Interview done by Suresh and Karlijn on 2-5-06. During the interview a lot of villagers were present. Approximately 10. The entrepreneur was absolutely not cooperative and absolutely unfriendly. It seemed like he was not taking the interview serious at all. When coming to the financial capital the answers were so ridiculous and also not correct because costs were higher than profit etc. When I confronted him he just started laughing with some other people. Than I decided to stop the interview because the rest of the information would probably also not be correct.

### **Production process**

The entrepreneur does small replacements on cars, like spare parts, oil, filter cartridges, grease and wax and he cleans cars. He does the work himself.

### **Location**

Pilkholi is located 10 kilometres before Ranikhet, when coming from Haldwani or Kathgodam. The main road to Ranikhet runs through Pilkholi. All the enterprises are located in a row on the main road. The service station is located  $\frac{3}{4}$  of the village when going to Ranikhet from Kathgodam or Haldwani.

### **A. Adoption, rejection or no knowledge**

He uses electricity for his machine because he cannot get a profit if he would be working with diesel. Diesel would be more expensive. He would have to get a diesel generator if he would be working with diesel and the minimum cost of this would be 50.000 Rs. Even if he had invested money in a generator he would have to pay more a month for running on diesel than for running on electricity.

The monthly cost of electricity is 1000 Rs. per month. HE has the enterprise for 3-4 years. He has always been using the machine. The machine is a pressure machine for water.

### **B. Vulnerability context**

When government has any policies or programmes the prices of his replacement products fluctuate. There is always sufficient water. In the summer season he has problems. The water is not there. If there is no water he can't do any work. At those times he closes the shop and he has no income than. This happens only in the month of June for 5-6 days a month.

There are fluctuations in the demand for his service. Sometimes there is no vehicle for 2-3 weeks, sometimes there are vehicles coming continuously. It depends on the season. In April and June the demand is high. In these months people don't have water for washing cars so they come to his enterprise. In the rainy season the demand is low. In the winter there are only 1-2 vehicles coming per month (He is talking only about month of December). Since the entrepreneur has opened the enterprise the demand has increased. The prices of spare parts always increase.

### **C. Human capital**

The entrepreneur has finished the ninth class. He has a diploma for class nine and he detained in class ten. He didn't have any interest in finishing. He tried to finish tenth but he detained a few times. He stopped when he was 21. He doesn't know when he went to school (Suresh points out that the entrepreneur also detained in earlier classes). When he stopped he started helping his father who is a contractor of roads. The entrepreneur is now 26. He helped his father for four years. The entrepreneur works himself in the enterprise, he has no workers. He used to help his father by visiting sites to see

the jobs that labourers were doing. He stopped doing this because these sites are very far away from Pilkholi.

He learnt how to do management skills himself. His father taught him how to buy products and how to clean cars.

The entrepreneur has a problem with one of his eyes. He can't see properly and the colour is almost white.

#### D. Financial capital

The entrepreneur starts telling us that from September to November his monthly sales are 500 Rs. (From then on: see below) The entrepreneur pays 2000 Rs. payback and interest for the loan.

#### E. Social Capital

#### F. Natural Capital

#### G. Physical capital

Before there was somebody else working in the shop. The shop is the families property.

#### H. Influence on and access to transforming structures and processes

The entrepreneur has a loan from the local Pilkholi bank of 1 lakh Rs. to invest in his enterprise. He has invested the money in construction and products and in goods from the market.

#### I. Perceived Attributes of Innovation

#### J. Innovation-decision

#### K. Communication-channels used

#### L. Extent of change-agents promotion efforts

*Entrepreneur is a very annoying 'boy'. He is not seriously trying to answer the questions. He is constantly laughing to the people which are surrounding the interview. Than he picks the paper up and starts reading during the interview. When I ask him friendly if it is possible to pay some attention he puts it away. He is not willing to tell anything. His answers are really short. When getting to the sales he claims that during the normal season he has a sale of 500 Rs while he has to pay the spare parts from that and the electricity bill and the payback for the loan. He is laughing about it and it seems to me that he is just making up some answers. It seems like he tries to be cool to his friends by not cooperating with a foreigner.*

*Suresh explains that the boy has a serious drinking and drugs problem. He is always like this. His father is a contractor and that is why he didn't get into trouble yet. His father has sufficient money and contacts.*

## **2.1.2 Village Chamoli**

### **Chafocus1**

#### **Chamoli**

Interview with Kailash Singh Phartiyal (works as daily waged labourer and supports five people in his family; his father, mother, himself, his wife and his girl) who is approximately 40 years old and Mr. N.S. Phartiyal who was born in 1929 so who is 77 years old now. They are both Rajput caste.

Interview done by Suresh and Karlijn on 8-5-06. During the interview the wife of N.S. Phartiyal is also present and the three year old daughter of Mr. Kailash Singh Phartiyal.

#### **Location**

The interview is done in Chamoli, which is 20 minutes walking down a paved road from Pilkholi.

#### **Population size, density and location**

There are 65 families in Chamoli and approximately 1200 people. The total area of the village is 500-600 biga's of which 300 biga's is cultivatable land.

#### **Village wise information**

Chamoli is the gram panchayat and the prathan is living in the village. There are 9 wards in Chamoli

#### **Political situation**

There is no political orientation of either the villagers or the panchayat members for as far as both persons know.

#### **Vulnerability context**

There is a large water problem in the village. They have tanks in the village but they have dried up. There are no handpumps and no wells. The government has made lines to the village but they don't work because there is no water available to run through the lines. The people (and from my own observation I conclude that these are the women) have to walk down 2 kilometres to get the water. There is a natural spring there but the water pressure is very low. In 15-30 minutes only one gallon fills up. In total there are 2-3 places where there is a spring but also here the water pressure is really low.

Many people migrate from the village. Not only the men migrate but the whole family migrates. The population of the village remains equal because so many people migrate from the village and the population growth through births keeps it equal.

The prathan is doing good for 50% (I ask what this means and by the impression on his face I can tell that this prathan is just like every other prathan. Doing a few things but not sufficient.) The man explains that there is not much the prathan can do because there is no water. When I ask if he makes the BPL cards properly he confirms this.

There are no problems with landslides in the village.

#### **Sources of income**

Every family has a minimum of 1 biga of land. Most people have land between 2-5 biga's. K.S. Phartiyal has 5 biga's. He can't eat much from it because he is going to keep the seeds for the cultivation for the next year. Normally, when there is rain, he can eat for 3-4 months by cultivating his land.

Everybody from the village is doing labour. There are some people which have enterprises in Pilkholi but the rest is labourer. The labourers earn approximately 50-60 Rs. per day (When I ask K.S. Phartiyal what he does he replies that he mainly does agriculture on his own land. He also is a labourer. He claims that the daily waged labour is done for 50-60 Rs. per day. I think he either is not a daily waged labourer or that he does not know the exact rate of daily labour. The normal wage in this

area for daily waged labour is 80 Rs. This is at least what most labourers answer.) The main labour activities that men are doing in the area are road building and construction.

#### Human capital, Education and literacy

There is a primary government school in the village since 18-20 years, since 1983. The secondary school where the villagers go is in Ganoli. In Chamoli only the elderly women can't read and write. Most of the old people are illiterate, also the men. 50 % of the women can't read and write and 15-20% of men can't read and write.

There is only a doctor in Ranikhet, not in Pilkholi or Chamoli.

#### Ethnicity

The village is total Hindu. There are no Brahmins in the village. 10% of the population is Scheduled caste and 90% of the population is Rajput. The scheduled caste people are in a good condition because they live next to the stream where the water is. The SC's also drink the water so they have sufficient water for drinking, cattle, washing and agriculture. The Rajput don't drink the water because the SC's drink it and K.S. Phartiyal explains that it is polluted on the way when it is coming from Pilkholi.

#### BPL

15 families in the village are BPL. There are SC's and Rajput among these people. There are 10-12 habitations in the village. There is one Phartiyal habitation and there are Taragi's, Negi's, they all are Rajput. There is only one SC habitation

#### Infrastructure

There are 15 landlines in the village and 7 or 8 mobile connections. The people who don't have a phone use the other people's phones without paying.

There are no plans for roads to the village. They have given an application but no survey has been done (In Malikarchuli a survey has been done as a follow-up to the application. In Malikarchuli a road is going to be constructed. The survey has not been done in Chamli so I don't think that there are any plans for a road like K.S. Phartiyal explains.)

#### Markets

People go to Pilkholi for their basic needs like masala, dahl, products for washing, tailoring. For clothes and other differentiated needs they go to Ranikhet.

#### Energy sources

Most families have electricity. 2-3 families don't have electricity. They are very poor so they can't pay for electricity. There are poles everywhere in the village so there are no families which don't have electricity because they don't have poles. The electricity has been introduced in the village in the year 1971/1972. N.S. Phartiyal explains that he was the one who introduced electricity in the village because he had a friend who was concerned with the distribution of electricity. Mr. Phartiyal requested his friend to bring electricity in the village and this happened consequently.

The electricity is gone only when there is work in the poles or the transmitters. Normally this is 3-4 times a week. During the summer there is a lot of wind so it happens more often, everyday for 1-2 hours.

Kerosene is used by 100% of the villagers. They use it when there is no light for kerosene lamps. It happened only a few times that kerosene was not available says Mr. N.S. Phartiyal.

Most people also use LPG for cooking. Wood is not available in the village so people use LPG for cooking. When the LPG cylinder is empty they bring it to a shop in Pilkholi. When the LPG truck comes the people from the shop make sure that the cylinder is refilled. The shopkeeper pays the amount for the villagers and they pay him 5 Rs. for handling the matter. Either the women or the men take the cylinder on their head and carry it to the village.

#### Typical

The families which have electricity, which is almost 100% do also have a TV. 2 families in the village have a fridge. 25% has a CD/VCD/DVD player.



## **Chamil1**

Chamoli

Enterprise 36, grinding enterprise using diesel as an energy source

Interview done by Suresh and Karlijn on 7-5-06. During the interview there was nobody constantly present. There were customers coming. In the total time we were there, 1-1,5 hour there were 3-4 customers. The customers were young ladies and women.

Name entrepreneur:  
Vinod Singh Phartiyal

Production Process:

The entrepreneur has a rice grinder and a wheat grinder for normal wheat or madua. They run from one diesel generator. The customers come to his enterprise with their wheat or rice, he grinds it and they come to pick it up and pay money for the grinding.

Location

The enterprise is located in the beginning of CHamoli, when coming from Taswad and Tana. From Taswad and Tana people have to climb upward to reach Pilkholi, their basic needs market. The entrepreneur is located on the main paved road going up. From Tana it is approximately 30-45 minutes walking and from Taswas approximately 15-30 minutes.

A. Adoption, rejection or no knowledge

The entrepreneur uses diesel because there is no heavy electricity connection to the village on which the grinders for wheat and rice can grind. In Pilkholi there is a big transformer which can make these grinders run. The entrepreneur can not use a gharat for grinding because there is no water in the village. Not even within 30 minutes walking from the village would there be a stream with sufficient water pressure.

B. Vulnerability context

The diesel is always available. The demand for the grinded flour is higher during festivals which is approximately once a month. In the marriage season the demand is high. The marriage season is from January-March and than from 15 April-June. During this season and during festivals the demand is twice as high. Since he started the enterprise a year ago the demand has increased.

C. Human capital

The entrepreneur has gone to school. He was born in 1976. He is now 30. He was born on 15-6-1976. He went to school at the age of 5, in the year 81 and he has finished school in 1993, then he was 17. He finished and passed inter-college. He stopped because his heart didn't tell him to continue studying. He started looking for jobs after he had finished but he didn't find a good job anywhere. He had been searching for seven years. He has done driving. His father is in the Central Industrial Security Force in Madhya Pradesh. He stayed with his father all the time. After that he came to Chamoli where he learnt driving. He went to Chamoli because this is his village. His father used to live here before. He has done driving for five years as a truck driver. He stopped because the owners of these truck drivers are not good. The entrepreneur got the idea to start the enterprise himself. He learnt from the owner of the dieselgrinder in Pilkholi (name= Khushel). He came to his enterprise and taught the entrepreneur how to do it. He gave money to him.

Currently his knowledge is sufficient and there is nothing he would like to learn or machines he would like to get.

The entrepreneur has had the enterprise for one year and he has always used diesel

#### D. Financial capital

The entrepreneur has a profit of 100 Rs. per day when it is the season. During the off-season he has a profit of 70-80 Rs. per day. He is running the grinding machines everyday when it is the season. During that time every day he gets 100 Rs. During these months he then gets 2800 Rs. per month profit. During the off-season he sometimes gets days where he doesn't make the machines run or when he gets only a little profit. Therefore the total profit during the off-season months is 1400 Rs. per month. Per kg his price is 1,25 Rs. Everyday, when he has a profit of 100 Rs. he uses 5 l diesel. The price of diesel is 33,10 Rs. per litre. The total per day cost is then  $5 * 33,10$  Rs. The entrepreneur has not had any maintenance costs yet. The entrepreneur supports himself, his wife, his brother and his sister, no children, he just got married. His brother also supports his family. His brother is a school coach for children. His brother earns 5000 Rs. per month. They do not support their parents. The entrepreneur took a loan 57.000 Rs to invest in the enterprise. He has to pay a monthly payback of 1200 Rs. for his loan. He has a house which is just behind the house which is next to the grinding enterprise. (His house is a well kept house, rich, nicely painted, At least four rooms). He has 72 Nahli's of land. Normally they can eat 5-6 months from this land but this year only one month. He also has cattle, 1 cow and two calves.

#### E. Social Capital

The entrepreneur supports himself, his wife, his brother and his sister, no children, he just got married. These people live here in Chamoli. His entire family consists of 3 brothers, 1 sister and his father and mother (his father and mother are in Madhya Pradesh). The entrepreneur is not a member of any groups. He meets groups of people in marriages and festivals. In the marriage season he goes 1-2 a month. He meets groups of people in Ranikhet. His friends and his relatives are there. He meets them once or twice in a week. The entrepreneur knows people in Pilkholi and Ranikhet whom he meets once or twice a week. He knows people in Delhi to whom he speaks once or twice a month. To his father and mother in Madhya Pradesh he speaks every week or every month. He has no other friends outside the area. He has gotten ideas on marketing from his father. He has gotten customers through his friends who send customers over to his enterprise. He does not deliberately go out to talk to people to convince them to come to his enterprise.

#### F. Natural Capital

There is no problem with water. He needs a large amount of water but it does not need to be refreshed very often. He gets water from the stream nearby, which is one kilometre away.

#### G. Physical capital

The entrepreneur gets the diesel from Ranikhet. Sometimes the entrepreneur goes there to take the diesel, sometimes his brother takes the diesel. Each time they go they take a jerry can of ten litres. He has to go every third day. When the entrepreneur has to go the market he has to close the shop. He goes early in the morning and it only takes two hours so it is not a problem. The entrepreneur goes to Ranikhet by jeep. The cost of the diesel is 33,10 Rs. per litre. He gets it from the petrol station. The entrepreneur gets light in his house. Sometimes the electricity is gone for 2-3 hours a day. Sometimes it doesn't go for the whole day. The electricity is gone 4-5 times a week. The entrepreneur doesn't have any means of transportation. The entrepreneur has a TV, fridge, VCR, no DVD, he has a landline phone. The entrepreneur reads the paper in Pilkholi when he has time. This is not daily.

#### H. Influence on and access to transforming structures and processes

When the entrepreneur has to go the market he has to close the shop. He goes early in the morning and it only takes two hours so it is not a problem. The entrepreneur goes to Ranikhet by jeep. The entrepreneur's customers are locals from the neighbouring villages of Tana, Taswad, Chamoli. There is competition for the entrepreneur from the grinders in Pilkholi but he does not have a lot of competition from the grinder in Tana. This grinder runs only for 2-3 hours a day, in the morning or in the evening. During daytime the entrepreneur in Taswad works as a labourer in other places. The entrepreneur's grinder grinds according to demand. This is approximately 6-7 hours a day.

The entrepreneur has taken a loan of 57,000 Rs to invest in the enterprise. He has taken the loan from the State Bank of India in Ranikhet. He invested this money to buy the diesel generator and the grinding machines.

For his basic needs like dahl and chawal the entrepreneur goes to Pilkholi. He goes to Ranikhet for marriages, clothing, also he sometimes goes to Haldwani for this. From Chamoli to Pilkholi is ten minutes and from Pilkholi to Ranikhet is 30 minutes. From Pilkholi to Haldwani is 2-3 hours by taxi and 3.5 hours by bus.

The entrepreneur is producing at demand. If he would produce more hours a day he would not sell enough because the demand is not larger than supply.

The entrepreneur pays to the district panchayat 500 Rs. per year.

The entrepreneur knows the pradhan and the ward members. He speaks to them daily. They say hi and hello and sometimes they talk about business.

All the customers of the entrepreneur are fixed.

The entrepreneur sets prices by discussing with the grinders in Pilkholi. They meet when he goes to Pilkholi. When there is an increase in the prices of diesel then they increase the kilo price for the product. Together they agree on the new price.

#### I. Perceived Attributes of Innovation

The entrepreneur has the enterprise for coping but when taking into account the money that his brother makes they are quite well off (They have a house which is in good condition, they have a fridge, a phone, a TV, a VCD. Their house has four rooms which is quite big compared to other houses in Chamoli. They have a garden and a terrace where they can sit outside, they have a large amount of land. According to this it seems more like profit).

The entrepreneur knew that this source would have beneficial outcome because he knew that a grinder on electricity would not be possible from Chamoli because the electricity lines are not made for this. A gharat would also not be possible because there is no water to make the gharat run. The beneficial outcome would be that else it would not run, not for the customers and not for him.

The entrepreneur did not have the possibility to experiment with the new energy source because he first took the loan and invested in the machines. Then he asked Kushel to come over to his enterprise to teach him. He did not try in the enterprise of Kushel.

The entrepreneur had to learn from Kushel how the whole grinding business works.

#### J. Innovation-decision

The entrepreneur decided to set up this enterprise on his own.

#### K. Communication-channels used

The entrepreneur heard about using diesel for grinding by seeing people in road heads use diesel for grinding.

#### L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the entrepreneur.

### **2.1.3 Village Tarswad**

#### **Tarfocus1**

##### **Tarswad**

Focusgroup with five locals from Taswad. One is the former sarpanch, Kondan Singh, who is about 40 years old, Bhatam Singh (50 years old), Puran Singh (70 years old), Gopal Singh (40 years old) and Batesh Dem Ki (a fifty year old lady).

Interview is done by Suresh Phartiyal and Karlijn on 7-5-06. During the interview almost all the village children are present, approximately 20. There is also another woman sitting next to the place where we are who is listening. She didn't say anything.

##### **Location**

The interview is done in the house Batesh Dem Ki. (They are a rich family in the village. They have a TV, a concrete house. They are all quite fat. They have a water tank. They have a nicely painted house.) When walking down from Chamoli to Taswad it immediately appears that Taswad has a lot of houses on a very small area.

##### **Population size, density and location**

There are 82-85 families in Taswad. There is a problem of land and that is why the families are all living so close together. The total electorate of Taswad is 609 and the total population is about 1000-1200 people.

The former Sarpanch goes to his house to get an application form on which the exact measures of the village are noted when I ask him about the total size of the village. On the application form it is written that the total size of the village is 114,66 ha and that out of this 43,815 ha is cultivatable land.

##### **Ethnicity**

The village is a mixture of Rajput and SCST. In total 22 families are SCST. The SCST live a bit outside from the rest of the people. The Rajput families are Phartiyal and Bisht. The SCST families are Chandra and Ram.

##### **Village wise information**

Taswad is the gram panchayat. There are five wards in the village.

##### **Political orientation**

There is no apparent political orientation in the village. Also not amongst the panchayat members. The man jokes: "Most people are Congress and that is why the road is not coming" (I ask him to explain this because currently Congress is in charge. You would think that the road would be coming if the political orientation in the village was Congress. The man explains that the road would only be coming if the village was an optional new electorate. If they would have been BJP it was possible to gain new voters by bringing a road to the village in exchange for the people's change of vote.)

##### **Vulnerability context**

The main problem in the village is that there is no road and there is a water problem. They have a stream by the side of the village where they get water. It is enough for the whole village to drink from. In the summer it dries up but the villagers do not have to go outside the village to get water. There is still sufficient drinking water for all the villagers.

##### **Main sources of income**

20-25% of the members of a family move out to work outside. Some people move to cities with their whole family. Others remain living in the village and they send money home to their wife's. The families which have moved out with their wife and children generally don't send money home. Life in

the cities is also hard and if families live in the city they don't have enough to send home. It is already difficult to pay electricity or other bills from that money.

The average amount of land per family is 0,45 ha – 1 ha (This is a very small amount in comparison to the amount of land the people in other villages approximately have. Out of this amount families can not even eat for one month. It depends on the rain. If there is a lot of rain it might be sufficient for 2-3 months.

The main sources of income are labour and agriculture. There are no carpenters in the village and there are two masons. There are no other skilled workers. The masons get 150 Rs. per day. Labourers get 80-90 Rs. They go wherever they can get work, in Pilkholi, surrounding villages, Ranikhet.

10-15% of the families in the village are women's families where the women stay home in the house and take care of the family and the men go out for work and they come back occasionally.

#### Industries

There are no industries, enterprises or any non-farm income generating activities or women or men making an additional income by producing or selling some products. Nobody is selling general products, nobody is doing tailoring, nobody is doing grinding.

#### Education and literacy

There is a government primary school in the village. In 2001-2002 it has opened. Before they went to Chamoli for primary school and to Ganoli for secondary school. All the children can currently read and write. Of the men 50% can read and write. Of the women 25% can read and write. The girls all go to school. Everybody wants to teach their girls. This has been happening for the last 15 years.

*To find out the function of the sarpanch and the prathan I ask for their activities: The prathan is only concerned with the village, the sarpanch is concerned with the forest. The sarpanch is also elected by the people from the village to look after the forest.*

#### BPL

10-12 families in the village have a BPL card in the village.

#### Infrastructure

There are five families with a landline in the village. 2-3 people have a mobile phone. When people from the village need a phone they use the phones of the neighbourhood. The people pay for this. They have no meter. They just measure the time. Mostly for one call they pay three Rs.

#### Markets

The people go to Pilkholi for their basic needs like masala, dahl and washing products. It takes 45 minutes to get to Pilkholi. Taswad is 2,5 kilometre away from Pilkholi. For differentiated needs they go to Ranikhet. They walk to Pilkholi and from Pilkholi they take a jeep.

#### Energy sources.

There is electricity in the village but 15-20 families do not have a connection. Some are Rajput, some are SCST. Nobody steals the light by attaching a wire to the central grid. The people who don't have electricity don't have it because they are poor and it is too expensive. Everybody has access to poles so the distance from poles is not a determining factor.

The electricity is gone due to problems in the transferers and if there is work on the central grid. 1-2 hours a day the electricity is gone. In the night it is gone for 2-4 times a week.

Kerosene is sometimes used for cooking but mainly for lamps when there is no electricity. They get kerosene from the government fair price shop in Pilkholi. They always get the kerosene. There are never problems with supply. They pay 11,50 Rs. per litre. BPL people pay less. They get 5 litres a month. This is sufficient.

They also use LPG. Approximately 15-20 people use LPG for cooking. They get the LPG from Pilkholi. There is a shopkeeper where they deliver their empty cylinders. He makes sure the empty cylinders get refilled when the LPG truck from Ranikhet comes. He warns the people that their cylinder has arrived and they then pick it up from Pilkholi. They pay the shopkeeper 5 Rs. for it.

They also use wood. Wood is available only in Chobotia which is 5 kilometres away. They can't go to the forest which is close to the village because this is community forest and the people are not allowed to take wood from there. When I ask them if they really never do that they reply that the sarpanch is there to protect the forest.

Typical

Out of the 60 people who have electricity, 40 have a TV.

There are two families which have a fridge

There are 10-12 families which have a CD/VCD/DVD

People who are wealthy generally have a tank for water.

People who are rich have a business and vehicles. In the early morning they go to the market and late in the evening they come back from their business.

There are no people with a mud house in Taswad. The soil is not good in the area. When it starts raining the soil flows down with the water.

## **2.1.4 Village Tana**

### **Tanbl1**

Tana

Enterprise 37, black smith using the bark of pine trees as energy source

Interview done by Suresh and Karlijn on 9-5-06.

Name entrepreneur: Prakash Kumar

Production process:

The entrepreneur makes new products from iron and he repairs products. He uses iron as raw material. For making complete new tools the entrepreneur receives money. For repairing he gets wheat and rice. The entrepreneur gets his raw materials from Ranikhet. The customers who want new materials do not pay in advance. He buys the raw material from his own money.

Location

The entrepreneur is located 0,5 kilometre from Panjali. From the roadhead you have to walk down to the SCST habitation of Tana. This habitation is another 45 minutes walking from the rest of the village Tana. The entrepreneur lives in a group of 5-10 houses with other SCST people.

A. Adoption, rejection or no knowledge

The entrepreneur uses bark as energy source. Wood is not available because there is no wood lying around and it is not allowed to cut the trees. The forest department come to check. Charcoal is expensive, it costs 3 Rs. per kilo. They also can't work properly with charcoal because it burns really fast. They have never used wood and they have never used charcoal. (I don't think the real reason is that the entrepreneur does not have sufficient money, He does this work next to masonry, which he does 20-25 days a month. They would be able to use charcoal and pay for it but it seems that they have always been doing it like this and it works sufficiently for the activities they have to perform. He therefore does not feel a need to change it.)

B. Vulnerability context

There are fluctuations in the prices of iron. The fluctuations happen according to the supply in the market. The price of iron has always been increasing.

The demand for his repairing and finished products are high during the months when the crops are ready for harvesting. The demand is double during these months. These months are April-May and Oktober-January.

C. Human capital

The entrepreneur has learnt how to do black smithy work from his father. The entrepreneur is now 31. He has been doing this work for the last 16/17 years. He used to work together with his father but his father has stopped one year ago.

The entrepreneur has gone to school. He started at the age of 5. He completed and passed the exam of primary school, the fifth class. He stopped because he didn't want to continue at that time. He didn't go to school for the 6<sup>th</sup> and the 7<sup>th</sup> class. He filled some forms and did an examination for entering the eighth class. He passed these and did the eighth class. He passed eighth class but after that he stopped because he wanted to help his family. He was then 22.

When he was 22 he was already working as a lohar. He would like to learn how to make other things but then he would need new machines but he doesn't have the money to buy these, for example welding machines.

When I ask him why he hasn't taken a loan he replies that he has a document which is an application for a loan but he didn't get it. Whenever his father is alive he can't do this because he doesn't have the

property of the land, it is still in his father's name. If the bank doesn't see the land in his name they will not give him the loan.

#### D. Financial capital

When he makes new tools he gets money for this and for repairing tools and finishing he gets wheat and rice. From January until March he sells 100-150 tools for the total three months. Per 5 tools he gets a profit of 100 Rs. So he gets 2000-3000 Rs. profit for the total period. This is 677 Rs. per month. In April and May he makes 20 new products for the total 2 months, so he gets 400 Rs. profit, per month 200 Rs. From May to September he also sells 10 articles per month which is also 200 Rs. per month profit. From October to January he sells 33-50 articles per month which is 600-1000 Rs. per month.

I confront him with the fact that he had said that the demand was twice as high in April-May and October-January and that this is not the same as the above figures. Then he explains that the demand for repairing and finishing is really high in April and May. For this he doesn't get money though.

In the whole year he sells 200-250 articles. This is 4000-5000 Rs. per year profit in money.

The entrepreneur also works as a mason. He earns 150 Rs. per day and he sometimes works 20-25 days a month. Sometimes there is no work. Approximately he works 10-15 days a month.

The family also has horses and the entrepreneur's brother supports the family with this. They do this for 10-15 days. The monthly profit is approximately 3000-4500 Rs. The horses transport load and his brother earns 300 Rs. per day with this. His father has taken a loan of 50,000 Rs. to buy the horses. Per month they have to pay back 650 Rs.

The don't save money. They have 22 Nahli's. Normally they can eat for 3 months from this but this year they can't eat from this at all.

#### E. Social Capital

The entrepreneur meets groups of people in the marriage season. HE goes to marriages 1-2 a month.

The marriage season is from January-March and then from April 15<sup>th</sup> to June. He knows people in Ranikhet. These are the people he works with in his masonry job. He visits there when he doesn't have work, approximately once a week. His sister is living in Delhi. They phone 2-3 times a month. He also has cousins in Haldwani, he talks to them also 2-3 times a month.

The entrepreneur lives with himself, his wife, their three small daughters, his brother, his wife and their three daughters and his father and his mother.

#### F. Natural Capital

#### G. Physical capital

They have electricity from the central government grid. The last bill they had was 1300 Rs. for 2 months. Normally it is 60-65 Rs, sometimes 200-250 Rs. The bill fluctuates very much, between 60 and 1300 Rs. The government just makes up something. Now electronic meters are being installed, this might change everything. The fluctuating bills are the reason why people are scared to take electricity.

Sometimes the electricity is gone for one whole week when there is a break in the lines. In summer season it happens more often. It can last sometime before problems are solved because nobody comes to this habitation to see.

Sometimes during the summer season the light is gone for the whole week (April-June). This happens once or twice in the summer season. The other seasons it happens 1-2 times a day, sometimes for 15 minutes, sometimes for 1,2 or 3 hours.

They use kerosene for lamps. They can always get the kerosene. His father and him have a different ration card. His father is BPL but the entrepreneur is not. For the kerosene they pay 12 Rs. per litre. They don't use LPG.

They have a TV, no telephone, no fridge.

They read the paper but not daily, only sometimes when he goes to Panjali. He goes to Panjali almost every day when he goes out working.

#### H. Influence on and access to transforming structures and processes

The entrepreneur gets raw material from Ranikhet. He goes to Ranikhet by jeep.



They get their basic needs like masala, chawal and dahl from Panjali. For grinding he goes to Pilkholi. They go to Pilkholi instead of Tana because the road to Tana is very difficult and they have to climb and the road to Pilkholi is flat. They also go to Pilkholi for kerosene and ration.

For tailoring they go to Ranikhet.

They have no means of transportation.

The demand is not larger than the supply.

The entrepreneur does not pay the district panchayat, he doesn't have a license.

He has the loan from the bank in Pilkholi.

The entrepreneur knows the prathan and the wardmembers. He knows them as another villager. They talk to each other 1-2 a month.

His customers are mostly from Tana, the customers for the repairing are all fixed. Sometimes he gets new customers for complete finished products. He doesn't get a lot of competition because he has his fixed customers (Like before here also I get the feeling that there might be competition but the entrepreneur doesn't consider it to be this because he is not depending on this job, he would not want more customers because he would not have the time to make more because he is also doing the masonry job.

The entrepreneur sets the prices by hearing if the other lohar has increased his prices. He then also increases his prices. His customers don't go to the other lohar because he has the same prices.

#### I. Perceived Attributes of Innovation

The entrepreneur has the enterprise mainly for coping. He could live out of his salary of his brother and him without doing the masonry work but he explains that they do not have a large amount of land to provide the entire family with their food. The black smithy work causes them to be able to have reliable food supply. (They do have electricity and they have a TV so they are not in the poorest condition. I think it is just a way of coping. They could do without it but then it would be difficult to get sufficient food for the whole family.)

The entrepreneur has always been using this energy source because it is cheaper than charcoal and wood is not available. His father has also always been using this energy source.

The entrepreneur had the chance to experiment with the energy source because he had learnt from his father. There is also no problem with making an investment without having the chance to reverse. The bark is free.

#### J. Innovation-decision

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#### K. Communication-channels used

The entrepreneur learnt through interpersonal channels. He learnt in a young age from his father.

#### L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the entrepreneur.

## Tanfocus1

### Tana

Focusgroup with three men, Anand Singh Rhana (61), Bhadur Singh Mehra (36) and Hukum Singh Mehra (74). When I arrive the men are sitting down on their doorstep talking. (This gives me the idea that there is hardly a separation between the Rajput Mehra's and the Rhana's.

### Population size, density and location, ethnicity

There are 66 families in the village. 51 are Mehra, 4 are Rhana and 11 are Kumar or Ram. The total amount of land is 2000 Nhali and out of this 1500 Nhali is agricultural land. Out of the cultivation that the families do they can normally eat 2,3,4 months. This year it is not even sufficient for food, only the seeds are kept for the next years cultivation. All the Rhana's live in the layer habitations. In the habitation where we currently take the interview there are four Mehra families living. The SCST habitation is 30 minutes to 45 minutes walking from the village. In total the village has approximately 10 habitations.

### Vulnerability context

There is a problem of water in the village, there is no infrastructure to bring the water to the village while there is a stream close by. The government does not work for the village. They don't bring pipelines into the village. If the stream dries up they have to go to the temple which is 0,5 kilometres away. From the place where we are this is approximately 5 minutes walking.

Another problem in the village is that there are no toilets in the village. Out of the 65 families only 15-20 families have a toilet.

There is money-problem in the village. Although the minister has lived here there is no path to the village.

There are some problems with the panchayat activities. The prathan is doing work, for example he got a pipeline from the temple to the village but the problem is that the villagers are not active. It is not only the fault of the prathan, the public is also responsible.

### Main sources of income

The main source of income in the village is agriculture. Agriculture is only done for the people's own cultivation. There are people doing government service and army labour. In total approximately 15%. The other people do labour.

### Education and literacy

25% of the old people can read and write. Of the total male population 90% can read and write. Of the total women population 50-60% can read and write.

### Industries

In the village there are 2 lohars using wood in the SCST tok in the upper village. There are no tailors in the village and there are no general stores (in contradiction to what the other focus group has mentioned).

### BPL

10 families are BPL in the village

### Infrastructure

When the people in Tana need to make a phonecall they go to Pilkholi. For emergencies they use the mobile phone of villagers.

### Markets

The villagers go to Pilkholi and Ranikhet for respectively their basic and their differentiated needs. To

Pilkholi they go for food items. For clothing and medication they go to Ranikhet. From Tana to Pilkholi is one hour walking. If they go to Ranikhet they first have to go to Pilkholi and from Pilkholi they take a shared jeep. The people who don't have any money go by foot to Ranikhet.

#### Energy sources

Out of the 66 families 35 have an electricity connection. The electricity bills fluctuate very much. Anand Singh Rhana has a BPL electricity connection for one bulb and he got a electricity bill of 865 Rs. for two months and another time he got an electricity bill for 150 Rs. The amount is sometimes really high. They think this is because they have a meter but nobody from the government comes to check the metre. The government just makes up an amount. When I ask Anand what he does when this happens he replies that he doesn't pay the whole amount and that the electricity department counts it to the next month.

14 people use LPG. They get the LPG from Pilkholi or Panjali. They leave their empty cylinders at the shopkeeper in either one of the villages and when it is empty the shopkeeper fills them when the LPG truck comes. They pay the entrepreneur of the shop 10Rs. for it. The cylinder costs 300 Rs. The people go once in 1-1,5 month.

Kerosene is used for lamps and stoves. Everyone uses kerosene.

## Tanfocus2

### Tana

Focusgroup with seven locals from Tana. In the focusgroup there are 6 men, Bisan Singh Mehra (Is 81 years old and has always been living in the village), Pradeep Singh Mehra, Narender Singh Mehra, Bheem Singh Mehra, Shoba Singh Mehra and Mohan Singh Mehra and one woman, Deepa Devi Mehra. The woman is 40, the rest of the men are between 40-50 except for two local adolescent boys, one eighteen and one twenty.

The interview is done by Suresha and Karlijn on 7-5-06.

### Location

The village is divided in different layers which are the separate habitations. There people all live on the lowest level which is closest to the stream down in the village. When coming from Pilkholi, Taswad or Chamoli you enter the village at this side. Tana is located approximately one hour walking from Pilkholi very steep downhill. There is not a paved road going down. There is only a path which has been created because people were walking on it. The SCST families used to live inside the village of Tana. The others have given them land more up so now they are living in a tok outside.

### Population size, density and location

There are approximately 60 families in the village. There are 120 houses in the village but half of the families have moved out to other places. Their cousins or brothers are than living in the house. The village is divided into several layers on a hill. Every layer is a habitation. The layers are located above each other and the people living on the lowest layer are closest to the stream which runs in the bottom of the village. Despite the fact that many people leave the village, either with their whole family or only the man for labour the population is increasing in the village.

### Village information

The village Tana is a gram panchayat. The prathan is living in the village. For the coming few days he is not present because he has gone for a marriage in Delhi. There are five wards in the village. People from Pilkholi, Tana and CHamoli have been telling me that Tana is a rich village. When I confront the villagers with this they explain that everybody thinks so and indeed 25% of the villagers are quit rich. There used to be a minister in the village: Mister Govind Singh Mehra. He used to be a cabinet member when Mr. Maraji Dehai was the prime minister. Everybody still recalls this and therefore everybody thinks the village is rich. They say there is a normal distribution of richness in the village. (It doesn't seem to me that the village is rich. Two out of the people I have been talking to have no electricity and quite a few more don't have electricity. There is no income creation in the village. There is the advantage that the villagers are close to a stream so they can irrigate their land easily and get water for their cattle easily. There is a natural spring at the temple, 1 minute walking from the lowest level of the village. The people are able to provide themselves with a proper cultivation of the land. There are approximately 20 families who do not have light and there is no extreme richness in the houses or large use of water tanks. Only a few houses look rich. Judging by the main sources of income the amount of people involved with government and army is very large in comparison to the rest of the villages. There is also large availability of vegetables which is important for their own food supply and is also a source of income.)

The village of Tana has three times as much land as Taswad. In Tana the villager count in Nahli's. In one Nahli they can seed 2 kg of seed. Families'land varies between 3-100 Nahli's. The total village size is approximately 1000-1200 Nahli's or even more. When there is a good rain the people can eat from it for approximately 6-8 months. This year they can only eat for fifteen days or save the amount as seeds for the next year.

### Political orientation

One third of the villagers is Congress and approximately 2/3 is BJP. The prathan is in favour of the Congress. There is no effect of the political orientation on the activities in the village.

#### Ethnicity

The whole village is Mehra family. There are 2 Rhana families in the village which are also Rajput. 9-10 families are SCST. They live in a tok quite far from the rest of the village (The day after I walked down from this tok to Tana and it takes approximately 20 minutes to half an hour.)

#### Small industries, enterprises, non-farm income generating activities

- 2 small general stores (selling goods from inside their house)
- 2 lohar who use wood roadhead Panjali
- 1 tailor using manual labour through a hand machine (part-time from her house)
- 4 masons working as labourers
- 1 grinder using diesel

#### Vulnerability context

There is a water problem and a road problem in the village. In the summer season they have a problem for drinking water. In the summer the stream dries up and they have to go walking to a temple on 0,5 kilometre distance (which is actually only 1-2 minutes). They always get drinking water from the temple and they get water for bathing and for the cattle and for washing from the stream. They do not drink from the stream because most of the upper villages like Chamoli and Pilkholi have pipelines and sewer running down from the village into this stream

#### Market

The basic needs market is Pilkholi. This is about 2 kilometres away and it takes them 45 minutes to one hour walking by foot. If they have to go to Ranikhet they either go to Panjali or Pilkholi. Panjali is also 45 minutes to one hour away.

#### Main sources of income

For jobs most young people go into cities. 15-20% families are women families of which the man is out working and returns only sometimes to see his family.

Most people migrate to Ramnagar, Ranikhet and Haldwani. Out of the total 120 families there are approximately 60 in the village.

Because there is a lot of water in the village there are many people growing vegetables which they sell. At the time of the English the village was known for having a lot of vegetables. Especially in the rainy season they have a good crop.

There used to be 7 gharats decades ago but over time the water pressure in the streams has become less and the gharats didn't work anymore.

The most important sources of income are labour, government service and army. Out of total families 20% has one or more persons working in the army or the government. Another 15% of the families has retired members who used to be in the army or in the government.

#### Education and literacy

There is one junior high school from the government in the village up to class eight. This has been there since 1981. From 1964 there is a government primary school. Govind Singh's father was a contractor in the time of the British and he contacts which caused the primary school to come to the village in 1964. At that time he had children himself so he wanted the school for his children.

Only 5% of the elderly women are literate. The people younger than 40 years old are all literate, also the SCST. Amongst the women above this age 5% are literate and the men above this age 50% is literate.

#### BPL

14 families in the village have a BPL card. Both Rajput and SCST people have it. Everybody in the village gets a number according to which it is determined if you are BPL. A higher number means that

you get a higher chance to get the card. Out of the BPL families 6-7 people do not have electricity.

#### Energy sources

There is electricity in the village but out of the total of 60 families only 40 have electricity and 20 families do not have electricity. They do not have light because they are poor. There are no families which have no light because they are too far away from a pole. (During all the questions the people take a really long time to answer the questions compared to other focus groups, they are really counting, piece by piece, and assisting each other in this.)

Kerosene is used for kerosene lamps when there is no electricity or for the people who do not have electricity. It is rarely used for cooking. They get the kerosene (in Hindi Mithiteel) from the government fair price shop in Pilkholi. There are some problems with the supply of kerosene because there is a black market. Some truck come with army members and they use kerosene in stead of petrol. That is why there is not enough supply. The kerosene costs 11,50 per litre. Kerosene is only available in the government fair price shop.

LPG is used by 20 families. They get it from Panjali and Pilkholi. They bring their empty cylinder to a shop and this man fills up the cylinders when the LPG truck comes. He alarms the villagers and they come to pick it up. Both women and men carry the cylinders back to the village.

#### Typical

- The families which have light also have a TV
- One person has a fridge. They have cold water because the temple has a natural spring with cold water.
- 90% of the people with electricity have a CD-player
- None of the people has a DVD player
- There are no mud houses in the village.

You can't recognize wealth by seeing people. Everybody in the village is well-dressed. Wealthy people have well painted houses, big houses and well maintained houses. When people do not have electricity they are poor.

#### Infrastructure

There is one landline phone in the village. Six people have mobile phones. If people in the village need a phone they use the mobile phones and they check before and after their balance enquiry. The difference between these two amounts the people have to pay. This only happens in the case of emergencies. When people need a phone for other purposes they go to the PCO's and STD's in Pilkholi or Ranikhhet.

## Tanmil1

Tana

Enterprise 39, grinding enterprise using diesel

Interview done by Suresh and Karlijn on 9-5-06.

Name entrepreneur: Purn Singh Mehra

### Production process

The entrepreneur has one wheat grinder and one rice grinder. The customers come to his enterprise, he grinds the wheat and the rice and then the customers come to pick it up again in the enterprise. The entrepreneur only grinds one hour a day. He is thinking about closing the enterprise. The entrepreneur does not sell to the market by buying wheat from the market, grinding it and then selling it on the market.

### Location

The entrepreneur is located in a habitation outside the village, a Mehra habitation with 4 houses. The entrepreneur has the enterprise underneath a plastic zeil next to his house. Pilkholi is one hour walking and Ranikhet is also one hour walking, according to the entrepreneur.

### A. Adoption, rejection or no knowledge

He doesn't use electricity because he can't pay that amount of money. If he takes electricity he has to pay a commercial bill and for the one hour alone that he grinds on a day that would not be beneficial. The demand is not larger than electricity would be beneficial. He gets diesel from the petrol pump in Ranikhet. He goes there once a week and he then takes 10 litre in a jerry can. The cost per litre diesel is 33,75 Rs.

### B. Vulnerability context

When people cut their crops the demand is higher. In May the demand is high. It goes to 30/40/50 kg's more than normal, this is almost double his normal demand. Since he has started the demand has decreased. He is thinking about closing. He says that people don't like this flour which comes from his mill. They want flour from the market. They don't have their own wheat grinded, they want to get the wheat from the market. (I don't believe this is the case. First of all this year people's crops failed. There is hardly any wheat so there is also no demand for grinding the wheat. Second of all, people don't have the money to buy wheat from the market. Another strange thing is that the grinder in Chamoli is grinding 6-7 hours a day, even this year. This entrepreneur also gets customers from Tana. It is strange that the people from Tana go to Chamoli if they have a grinder in their village.) The entrepreneur doesn't buy wheat from the market because it is too expensive.

### C. Human capital

The entrepreneur has gone to school. He started at the age of 5 and he has finished the ninth class. He passed. In the tenth class he detained. He stopped school because there was one bad mark for mathematics. He didn't feel like continuing, even though his parents told him to finish. He was 15 when he stopped. From his fifteenth to his eighteenth he went to Khanpur. In Khanpur he worked at the Goldi Masala Factory as a peon. His job was to bring water to the office etc. After that he sometimes helped his father in cultivation. In 2000 he started the enterprise, his brother helped him to get the two grinders and the diesel generator. He learnt about getting customers and setting prices from the period he was working in Khanpur.

When he started the enterprise he hired a mason who knew about grinding. This person taught him everything. He stayed for 3-4 days and the entrepreneur had to pay 5000 Rs. for it.

The entrepreneur has had the enterprise for the last 4-5 years.

There is no knowledge and there are no machines which could help the entrepreneur increase his production (I think he is right, it is not of any use if there is no demand. The entrepreneur comes across a bit strange, he is not answering the questions but he is telling a lot of other, also interesting things but not the things we ask. It seems like he doesn't understand completely. Either there is really no demand or the entrepreneur doesn't get customers for another reason)

#### D. Financial capital

The grinding is the entrepreneur's only income source.

Per day he grinds 50-70 Rs sale. Of this money he has to deduct the price of diesel which is 33,75 Rs/litre. He uses approximately 1 litre a day. His profit varies between 16-36 Rs. per day. This is his income when demand is high. During the month of May. The profit is twice as small 8-16 Rs per day in the off-season. His rate is 1,25 Rs per kg. He grinds one hour every day so he gets 240- 480 Rs. per month when it is off-season and he gets 480-960 Rs. in the month of May.

His costs are for engine oil. In one week he uses half a litre, his monthly costs are 70 Rs. In 3-4 years he has to get a new belt which is 1000 Rs. He has to get a bearing once a year for 300 Rs. A grindingstone which costs 800 Rs. per year. These costs have to be deducted from the yearly profit.

The entrepreneur has to support himself, his wife, 2 sons, one daughter and 1 nephew.

The entrepreneur doesn't save any money.

The total family has inherited 50-60 Nahli's from his father. Everybody has gotten 10 Nahli's. The entrepreneur also has other land which he cultivates and he then pays the landowners. In total he cultivates 20-25 Nahli's. 10 is his and 10-15 he pays for. Per 5 Nahli's he pays 300 Rs.

They eat all the crops from the land. Normally they can eat for 5-6 months from this, this year only for 2-3 months.

The entrepreneur has 2 oxes, 2 buffalo's, 1 cow and 2 goats. This is both his and his brother's property.

#### E. Social Capital

The entrepreneur has three brothers. Two are doing government service, two look after the fields of themselves and their two brothers. They are not a joint family, the house is the property of them four but only two of them are living in it currently.

The entrepreneur is not a member of any groups. He meets groups of people in village marriages. If it is outside of his village he doesn't go. Only in the marriage season he goes to marriages. He goes 1-2 times a month. He knows people in the neighbouring villages.

He has a relative in Rudrapur, he speaks to this person once a year. He has relatives in Delhi, to them he speaks once or twice a month.

One of his brothers is in Rudrapur. The other is in Rampur. He speaks to them 2-3 times a month.

They have never given him an idea for his enterprise to increase sales, get new customers. One of his brothers did help him with making the investment for the machines.

#### F. Natural Capital

He never gets problems with water, he always gets water from the stream which is a little bit down.

#### G. Physical capital

He gets diesel from the petrol pump in Ranikhet. He goes there once a week and he then takes 10 litre in a jerry can. The cost per litre diesel is 33,75 Rs.

He has electricity in his house. Normally he gets an electricity bill of 150-200 Rs. per 2 months. Once he had an electricity bill of a 1000 Rs. He didn't use more electricity than normal in that period. He has a meter but there is nobody who comes to read from the meter.

Sometimes the electricity is gone for four hours, sometimes it doesn't go at all. It doesn't happen everyday but a few times a week. During the summer season and the rainy season it is gone everyday. The entrepreneur says that this is caused by the windstorms during the summers and the storms during winters.

The entrepreneur uses kerosene. He gets it from Pilkholi. He pays 11,50 Rs. per litre. He sometimes uses it for grinding. When the amount of money he has is less he uses kerosene. Kerosene on the black market is 15 Rs/litre. He uses it 2-3 times a month (he says with a laughing face, my interpretation is



that he uses it more often than this.)

The entrepreneur uses LPG for making tea. He uses wood for cooking. Every 5-6 months he has to get a new cylinder. He pays 287 Rs. + 40 Rs. for the cost of transportation.

He has a black and white TV, CD-player, VCD-player. No radio, no phone, no fridge. (The house is big. It is concrete and in good condition. It is nicely painted. It must have at least 4 rooms. On the ground floor the cattle stay. They have a terrace for sitting.)

He has no means of transportation.

He doesn't read the newspaper. He hears the news on the TV. (He says because it gives a short summary)

#### H. Influence on and access to transforming structures and processes

It takes the entrepreneur one hour to go from Tana to Pilkholi and than another 30 minutes to go from Pilkholi to Ranikhet.

The entrepreneur goes for his basic needs, masala and dahl to Pilkholi. He goes to Ranikkhet for clothing. Normally he goes to Ranikhet by foot. Only if he is getting a cylinder and if he gets diesel he goes by jeep. Walking to Ranikhet also takes him an hour by shortcut.

The entrepreneur pays a license fee of 500 Rs. per year to the district panchayat.

He knows the prathan and the wardmembers. They say hi, hello, nothing more. They don't visit.

He has competition. This competition is the reason he is not having more customers. The customers which come to him are fixed. They all pay in money.

He doesn't grind more because he does not have more demand. He thinks the reason for him not having more demand is that he is not on the road side.

The entrepreneur's customers are from Tana and from nearby villages, not from Taswad and Chamoli

He sets the prices for grinding together with the other grinders in Chamoli and Pilkholi. When the prices of diesel or electricity increase they have a meeting to set the prices.

#### I. Perceived Attributes of Innovation

According to the entrepreneur's income it seems that he is doing this for coping but the house looks really big and good. I think that the brothers of the entrepreneur send money home and he lives from that. If this is true he does not have a motivation for increasing production...and it really seems like he doesn't have this. He is not trying to increase his demand while the entrepreneur in CHamoli is grinding 6-7 hours a day.

The entrepreneur knew that this source would have beneficial outcomes because he had seen the diesel grinders in Pilkholi. He decided to get one of those too.

The entrepreneur did not have the possibility to experiment because he first purchased the generator and the grinder and than he got somebody to train him how to do the work.

#### J. Innovation-decision

The decision was made with his brother who supported him with the investment.

#### K. Communication-channels used

-

#### L. Extent of change-agents promotion efforts

-

*I find the whole story of this entrepreneur very strange. He has only the grinding as income source but he will never be able to sustain his whole family from this money. Although he does agriculture he pays for the land. Either he is doing a job and he is not telling or his brothers give him financial support.*

*Later I talk to some locals. Nobody goes to him because he doesn't satisfy the customers. He does not finish the flour on time and he has strange behaviour. He is not permanently in his shop. They say he doesn't drink and doesn't use drugs.*

## Tanobser

- The entrepreneur from enterprise 37 has a father who has always been living in the village. He is about 60. When he was born he was already in this house in this habitation. The year before this the SCST people were moved to this location. The father of Govind Singh Mehra used to be a zamindar. He had put all the SCST people close to the land he had, on the other side of Tana. After that he had a good communication with the English and he was able to put the SCST people in the habitation where they are living now.
- The father of entrepreneur E37 does not think that the village is a rich village. There are many people in government jobs. There people are rich. There are no fights between the SCST and the Rajput but the Rajput don't eat food of their hands and they never drink water from them.
- Everytime when talking to the Rajput people in Tana they seem to need a reminder that the SCST habitation also belongs to their village
- When walking into the village of Tana for the first time it is noticeable that it is very humid at the stream. There are many plants growing and also vegetables crops at the side of the stream, are doing good. The people living in the layers live quite close. Closer to the stream they have their kitchen gardens.

## Tantl1

Tana

Enterprise 38, tailoring with manual handlabour and teaching tailoring

Interview done by Suresh and Karlijn on 9-5-06.

Name entrepreneur: Deepa Devi Mehra

### Production process

The entrepreneur does tailoring for the villagers of Tana. They come to her enterprise and she makes clothes for them. She makes blouses, soots, petticoats. She also teaches sewing to people from the village in the winter season. They take their own sewing machine. She does this only in the winter season because in the other seasons she and the other women in the village are too busy with their crops. She does this as a part time job, only when she has time she makes clothes.

### Location

The entrepreneur does the tailoring in her house in Tana. This house is located at the lowest level of the Tana habitations. Tana is one hour walking from Pilkholi.

*(These people are poor. They have three rooms on the first level. One sitting area, the kitchen and one room for sleeping. Downstairs is the room for the cattle. They do not have electricity, therefore no electrical appliances. They cook with wood. The room is nicely decorated with wall papers. They don't have a water tank. Inside of the house is mud. In comparison to other houses in Tana the house is quite small.)*

### A. Adoption, rejection or no knowledge

She has never practiced on a foot machine and there is no space for a foot machine. It could be beneficial for her if she was working regularly but she doesn't have the time to work regularly (One thing I wonder about is that her husband is doing some work on the land. We walked by the enterprise 3-4 times and half of the times he was working, the other half he was sitting. If he would do more cultivation than Deepa could do more tailoring and they could earn some livelihood. The tailoring is their only income source.) She has heard about a sewing machine on electricity but she has never seen it. She has not got electricity in her house so it could never run.

She had gotten the sewing machine from her parents in her marriage.

### B. Vulnerability context

She sometimes makes 15-20 blouses in a month, sometimes only 2-4. There is no particular season where the demand is higher or lower. The entrepreneur herself has more time in the winter so she makes some more. The amount of work is not related to the marriage season.

8-10 years ago the demand for her clothes was high. At that time nobody wanted ready made clothes. Now they do want this. She gets the main competition from the market where they are doing tailoring and from the ready made clothes.

She teaches tailoring during the winter because then the agriculture is less. She does this in the months of November, December, January and February. Sometimes 2,3,5,6 people in a year.

### C. Human capital

She came from a village named Khilkoot. She has been in this village for 25 years.

She has had education for six years. She started at the age of six with her primary education. She did this for five years. In the fifth class she detained so she didn't pass her exam. She stopped for one year. Then she did an exam to get in to the sixth class and she passed. Then she did the sixth and the seventh class. In the year after she had passed seventh she got married. She was then 16.

She learnt tailoring from a book she had bought in Ranikhet. It was her idea to buy this book. She took the book home and she started learning. She had started after she had passed seventh class. She has always done tailoring next to her normal activities. She also teaches tailoring to the other villagers. She would like to learn how to make pants but she doesn't have the time for learning. She could do that with this machine.

#### D. Financial capital

The price of a blouse is 25 Rs. The price of a soor for children is 40 Rs. The price for a soot for adults is 50 Rs. A petticoat is 20 Rs.

For teaching she gets a 100 Rs. per month. She then teaches one hour a day for the whole month. She only teaches villagers from Tana.

In one year she gets 1000 Rs. profit by sewing clothes and 400 Rs. a year with training. A few years ago she bought a box of thread for 150 Rs. She is still using that. If she doesn't have matching thread she has to go to the market.

This is their only income. They have a joint family and his brothers help him.

They have two bulls, one calve, one buffalo and two goats. The buffalo and the cow are young so they don't get milk.

Normally they can eat for six months from their land. This year they only use their production for seeds for the next year.

#### E. Social Capital

She lives with her husband, three children, 2 daughters and 1 son. Her son has passed inter and he is not going to study. He is also not working. Her husband does agriculture. Her husband has a husband in Khanpur, one in Berilli, one in Gaziabad. They live with their nuclear family there. They have a joint family and his brothers help him. She is a member of an APL and BPL group. They have women welfare groups in the village. The members give 20 Rs. a month. 2 members have one pass book in the bank and they collectively saved in 2 years 2400 Rs. They don't have any plans for the money, there is no NGO helping.

Mr. Prathimbadi is from an NGO and he came in the village to tell about these SHG groups. At that time they did not start the group.

She knows people in Khanpur, Birilli and Gaziabad. They have relatives in Pilkholi and Ganoli. They go there only on festivals. They speak to her husbands's brothers sometimes 10 times a month, sometimes 2-3 times in six months. They also have relatives in Nainital and Haldwani. They speak once or twice a year.

The brother from Khanpur is asking if he should pick up cloths from Khanpur and bring them to her so she can make them. She has a money problem so she can't invest in these cloths.

#### F. Natural Capital

#### G. Physical capital

She reads the paper sometimes, when her children buy it.

They get kerosene for 11,50 Rs, 5 litres a month. Sometimes they get it, sometimes they don't get it.

The supply of the kerosene is sometimes limited because it is sold on the black market. There are trucks from the army who use the kerosene.

They don't have electricity because it is too expensive therefore they do not have any electrical appliances. They don't have a phone.

They use wood for cooking.

They have no means of transportation.

#### H. Influence on and access to transforming structures and processes

She gets the main competition from the market where they are doing tailoring and from the ready made clothes. She is the only person doing tailoring in the village.

She is a member of an APL and BPL group. They have women welfare groups in the village. The members give 20 Rs. a month. 2 members have one pass book in the bank and they collectively saved in 2 years 2400 Rs. They don't have any plans for the money, there is no NGO helping.

They do not have a BPL card. They have an opposition to the prathan, he only gives things to people he favours. In the village of Tana they people having a BPL card also have a TV and a fridge. These people also have sons who are earning money from other cities. They have an income of 25.000 Rs. per year and they have a BPL card.

Deepa explains that she doesn't want the BPL card but that she wants the families which are poor and have small children to get it.

From the government they are supposed to get good food through the ration cards. The prathan is responsible for the ration distribution. The prathan than takes the food and sells it in the market (name prathan = Jagdish Singh Mehra, he lives in Tana).

It takes them 30-45 minutes to get to Pilkholi. To Pilkholi they go for their basic needs. They go once a week to Pilkholi. For differentiated needs they go to Ranikhet, they go 2-3 times a month.

Some of the customers are fixed, some of the customers are new.

She sets her prices by getting information from Pilkholi. When the tailors in Pilkholi increase their prices she also increases her prices.

She only makes as many products as she has time. During the agricultural season she doesn't have time and she has to say no sometimes.

#### I. Perceived Attributes of Innovation

She does this for coping. I ask what she uses the money for and she explains that without the money she would not be able to get food.

#### J. Innovation-decision

-

#### K. Communication-channels used

The entrepreneur learnt how to do tailoring from the book she bought in Ranikhet. She had seen a sewing machine before in her village.

#### L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the family.

## **2.2 Village cluster Mandel Kote**

### **2.2.1 Village Mandel Kote**

#### **Livelihoods in village cluster Mandel Kote**

Markets:

(Siam Singh Bisht, Watchman in HOPE school in Mandelkoot, living in Mandelkoot for 1,5 year:)

Market in Mandelkoot

- 3 general stores
- 2 chaishops included in 2 general stores
- 1 lohar
- 1 woman doing tailoring in her house'
- 1 grinder using diesel

Market in Nagar

- Same size and style of market as in Mandelkoot

Market in Seema

- PCO
- Coldrink shop

Market in Navalli

- sweetshop
- shoes
- 5 chai shops

For basic needs people go to the above mentioned villages because in every village there are some needs fulfilled. For other basic needs like a bank they go to Tarikhet. For differentiated needs like cloths, electric appliances and utensils they go to Ranikhet. Tarikhet and Ranikhet are on one side of the villages. Kairana is on the other side of the villages. Kairana is also a main market. When they have marriages they also go to Haldwani.

(Survey done by Mumta, Suresh and Karlijn on 14 May 2006:)

Survey is done by observation by walking through the villages. Realizing that some shops might be closed we also inquired with locals if they could give us information on the amount and type of enterprises.

Mandelkoot (0,5 km)

Nagar: Total families: 23 families

- 2 general stores and 1 small general store
- 3 chaishops using kerosene
- 1 lohar which is located up in the village, not on the road
- 1 dieselgrinder
- 2 tailors in their house, 1 man and 1 woman
- Off summer season there is sometimes dairy
- In rainy season there are fruits and vegetables
- There is one carpenter which is a labourer

Seema: Total families: 20 families

- 1 government hospital
- 3 general shops
- 1 PCO/STD
- 1 tailor in house
- 2 chaishops using LPG

- 1 electronic shop

Navalli:

- 6 general stores
- Of which 2 are also sweetshop using wood for sweetsmaking
- And of which 3 are also chaishop using wood, kerosene and LPG
- 1 tailor using manual labour in a shop on the road
- 1 dairyshop
- 1 carpenter who is a labourer.

The LPG truck doesn't come To Mandelkoot and the region so if people use LPG they have gotten it from Ranikhet where they generally go by jeep and than bring the cylinder back by jeep.

There are a few off-road villages which depend on Navalli: Chishua(12-13 families), Uni (45 families) which has a gharat, Teelgaun (0-15 families).

Village Mandel Kote

## **Manfocus1**

Focusgroup with three people from one family who are among the richest people in the village. They have a concrete house. Four rooms upstairs, 2 rooms downstairs for the cattle. They have 100 Nhali's of land while the average is about 5 Nhali's. They are also the owners of the grinder. They have electricity, a TV, VCD-player, carpets on the floor, coaches, chairs, wall decoration in the form of paintings and posters.

Names: Diwan Singh Bisht (68), Ranjeed Singh Bisht (23) and Bhagwati Bisht (51)

Population, density and location, ethnicity

The total amount of families in Mandelkoot is 23-25. There are 10 SCST families, the rest are Rajput. The Rajput families are Bisht and Mehra, the SCST families are Bharti. The SCST people have a different habitation. They are located downward from the village

Village wise information

The total area of the village is 300-350 Nhali's. Out of this 50% is agricultural land.



## Manmil1

E44, flourmill using diesel, he has one diesel-engine and one wheat-mill in his shop

Name entrepreneur

Ranjeed Singh Bisht (23)

District

Almora

Village

Mandelkoot

Industry

Flourmill

Enterprise category

OAE. The Enterprise is not always operating. Only when the demand requires. He does not run the mill on demand but only when sufficient flour has been collected to make the mill run for a while. The production is not continuous, when he has sufficient demand it runs from 15:00-18:00. He runs approximately 12 hours per week. He is not present in the enterprise all the time but his house is on a distance of only 50 metres from the house and most of the time he is sitting outside playing a game with friends.

Enterprise location

The enterprise is located on the main market in Mandelkoot, across two general stores. There is a jeep stop in front of the shop.

Enterprise ownership

The enterprise is owned by the entrepreneur's father and they have had the enterprise for the last 5 years.

Enterprise sector

The enterprise is a flourmill.

Enterprise staffing

The enterprise is owned by the entrepreneur's father but he does not receive a wage for the work. With his wife he lives with his parents and they share their profit among the whole family. So the staffing is family informal.

Product costs

Flour: 1,50 Rs/Kg

Diesel: 33,50 Rs/litre

A. Adoption, rejection or no knowledge

He uses diesel because they have to pay 2800 Rs. Per month to get a commercial electricity connection from the electricity department. His demand is not high enough for this investment to be beneficial for him.

They decided to start a flourmill because there never used to be a grinder in the village. The father of the worker decided to buy one because the other villagers requested him to buy one. They have also been thinking about installing an oilgrinder but they haven't done this yet because they do not have the space to place the oilgrinder. Money is not the problem.

#### B. Vulnerability context

The demand is always comparable because everybody always needs food. During the marriage season, when additional flour is required people go to the market, they do not have sufficient flour for grinding their own weeds.

The price of diesel fluctuates a lot, it is always increasing. There has been an increase of 20 Rs. Per litre since five years ago. The father of the boy remembered that the prices increased really fast at the time of the New Orleans flooding. (Remembering and noticing this comes across to me as the are informed people).

#### C. Human capital

The entrepreneur has finished inter-college and the first year of his BA. He stopped because he had work to do in the house. He is now 24. He finished inter when he was 21. He started to work immediately with flourmill and in the fields.

He learnt the grinding from the mason who came to his shop to install the engine and the grinder. He had to do this because he does not know much about machines. He paid the mason 4000 Rs. For installment and training. He never had any knowledge in how to with customers or with accounting issues.

#### D. Financial capital

The total sales per month is approximately 2000-2500 Rs. Per month. Out of this the total profit is 500 Rs. The costs are diesel, oil and the belts he has to replace. This is included in the costs. Every 1-1,5 month he has to replace the belts running from the engine to the mill. The cost of the belt is 35 Rs. Per feet. It is about 3 metres. The money from the flourmill is his only income but from this he has to support his mother, father and wife. He has a brother working outside, they are a joint family and do not receive money from him. The entrepreneur does not know how much money this is. They do not save any money in the house or in the bank.

He has 100 Nhalis of land. When I ask why he doesn't grind his own weed and sell it on the market he states that he has never thought about the possibility of doing this and that it would be possible for him. They have 2 oxes, 3 cows, 5 goats and 2 buffalo's.

#### E. Social Capital

The entrepreneur is not a member of any groups. He meets groups of people every day in Mandelkoot (I have spent one week in Mandelkoot and I find the entrepreneur is always sitting with his friends in front of an old building playing the pool game with fiches. He seems to have a large group of friends). Once in a year he goes to Katima for a reunion and in the marriage season he goes to marriages, approximately 2 per week, these marriages are in the nearby villages. Outside of this area he goes only once every six months, for example to Katima, Haldwani, Ranikhet, Nainital. His father has friends in Kathmandu, Nepal. To the acquaintances in Katima and Haldwani and Nainital he speaks once a month, the friends in Ranikhet he speaks to once a week. He has relatives in Delhi. He never goes there but he speaks to them once a month.

He has never gotten an idea for his enterprise from outside but his father has lived in Katima for 40 years and used to have an enterprise there.

#### F. Natural Capital

Water never causes a problem for him. The water used for grinding is recycled. Outside their house they have a storage tank where they store the rainwater.

#### G. Physical capital

They have a truck in Katima. Katima is 200 km from Mandelkoot. It takes them 6 hours per bus to go there. They have a scooter here which they sometimes use for getting diesel because sometimes the jeepdrivers forget. They also use the scooter for getting daily needs from the local market from Khairana. It shows that in comparison to the other people in the village they have sufficient money because their interior is largely decorated with carpets, tables, couches, chairs, TV, VCD, paintings. They have 2 rooms downstairs, a kitchen and 3 rooms upstairs.

The entrepreneur reads the paper daily.

#### H. Influence on and access to transforming structures and processes

He gets the diesel from Khairana and Ranikhet from the petrol pump. He pays 33,50 per liter. Per week he needs 15 litres. He gives a jerrycan of 5 litres to the jeep drivers and they bring back a filled up jerrycan. If he runs the diesel engine for three hours a day he needs new diesel after three days. SO he can run for 9 hours. If he grinds 12 hours a week he produces 300-400 kg of flour.

His father used to be a contractor and from that he had the money to buy the materials.

They pay a license fee of 600 Rs. Per year for the machines they have.

They do not pay any tax

The enterprise is not formal.

They are registered with the district panchayat.

They know the pradhan as a friend. They visit each other in their homes.

The customers are always the same, fixed customers.

The gharat in Uni, which is approximately 20 minutes walking, offers no competition. Only 1% of the people go there. The people who go there have a money problem and the gharat is cheaper. There they can give an amount of flour in stead of money. The entrepreneur claims that the flour of the gharat is not healthier at all because both is done with the same movement.

When there is an increase in prices of the diesel he talks to 2-3 other grinders in the region to set the new prices. They do not have a meeting, they just talk about it when they meet.

#### I. Perceived Attributes of Innovation

#### J. Innovation-decision

#### K. Communication-channels used

#### L. Extent of change-agents promotion efforts

## **Mantl1**

E43 Tailoring using manual labour

Name:  
Hema Neghi

District:  
Almora

Village:  
Mandelkoot

Industry:  
Tailoring of blouse, petticoat, sari, soot

Enterprise category:  
casual labour. She only does tailoring when she has time. She makes approximately 10-15 pieces of cloth per month

Enterprise location:  
On the main road running through Mandelkoot. The main market of Mandelkoot exists of a small amount of enterprise, less than 10, next to each other. The enterprise is not a shop but she works at home. Her home is located 1 minute walk from the main market and above a general store.

Enterprise ownership:  
Sole proprietor. She works as the only one in the family as a tailor and she is the only worker doing the tailoring work

Enterprise sector:  
Tailoring.

Enterprise staffing:  
Only entrepreneur is the worker

Product costs  
A blouse costs 20 Rs. A soot 60 Rs. A petticoat 20 Rs. A sari 15 Rs.

A. Adoption, rejection or no knowledge  
The entrepreneur has been sewing since 4-5 years and has been doing well for the last 2-3 years. She got the handmachine when she got married and has since been using the machine on manual labour. She is aware that the machine can be changed into a footmachine but she does not know how to do that. She says that she has never thought about the fact that it would work faster if she does this (Clearly it is not so important for her to increase her productivity. She only works on the machine when she has time and it seems like the money is not very important for her). She has heard about sewing machines on electricity but she has never seen one.

B. Vulnerability context  
She buys the buttons, hooks and thread and there are fluctuations in the prices for these. These fluctuations depend on the availability of the material. She tells that there are no seasonal fluctuations. There are fluctuations in the demand for the finished goods. She has good demand in the marriage season. This is in November, December and February and from 15 April to July. During these months the demand is twice as high as normal. Since she started working the demand for her finished goods

had increased. She says the reason for this is that she is getting better and the people know this and therefore come to her. She also attracts people because she finishes the products on time and she refuses when she knows that she will not make it on time.

#### C. Human capital

She has a problem with her eyes and therefore she gets a headache when she sews too long. When she is free she sews from 7:30-10:30. She is a member of a Self Help Group supported by HOPE.

She started school at the age of five and she continued until she passed intercollege. She got married at the age of 19, when she finished school. When her children were small she didn't have time to sew but when they started to go to school she did get time. She started this because in this manner she could get some money.

She learnt tailoring herself by trying. She cut up old clothes and started to learn from this. If there was something she didn't know she used to talk to the other girls and the ladies to find out what to do.

#### D. Financial capital

In the season her profit is 300-400 Rs. The costs are then 100 Rs. Off season the profit and costs are less than half. So 200 Rs. Profit and 50 Rs. Cost.

Her family consists of her, three children and her husband. Her husband is a government teacher.

(Later I find out through Sonu that the government teachers earn 10,000 Rs. Or even more, this is a large income in comparison to most people in the villages in this area). (She is a little bit hesitant to speak about the income of her husband probably because he earns so much and she does not fully trust the situation and the questions I ask her)

One of her sons is handicapped.

Her family does not have any land except for the land where their home is located on. They don't have any cattle. Only one hen.

She says the family does not have any other sources of income. She only tells that she saves money through the SHG. She saves 10 Rs. Per month and with the group they have a total of 13,000 Rs. They can use this for training. They have received a training for making pickle through HOPE. The money is also used for members of the group who need it for schoolbooks for the children or for food.

#### E. Social Capital

She is a member of the SHG. Not of any other groups.

She knows people in the neighbouring villages. She knows people in Almora, Bageshwar and Pithoragarh. These are all relatives and they meet in marriages but they don't talk on the phone (There is no phone in Mandalkoot, the one in Sema hardly works). She goes to 1-2 marriages in a year.

She has a brother in Haldwani. They meet him 1-2 a month. When he has time to come to Mandalkoot. She also has family in Delhi. They don't speak to each other. She doesn't have any other people she knows. She has never gotten an idea from the above-mentioned people.

#### F. Natural Capital

#### G. Physical capital

They have electricity, the electricity bill is approximately 400-500 Rs. When it is very cold they go inside and the lights are on and then they get higher bills.

The light is gone more in summer time, it depends on the weather. Sometimes once a week. (I notice that people here have more problems with saying how often the light is gone than in the Pilkholi area. It seems to me that this has to do with the fact that people live more from day-to-day here than in Pilkholi and therefore live day by day and know less when the electricity is gone.

She says in summer time the light is gone 1 hour a day and then she comments again that it is not that different in other seasons in the year. (obviously she does not exactly know)

The family uses gas for cooking. They get the gas from Ranikhet. The costs for going to Ranikhet and coming back are 70 Rs. But she gives money to the jeep-drivers. The jeep drivers take back the gas cylinders for them. They pay the jeep drivers 330 Rs for the transportation and the cylinders. The gas use is 1 cylinder per month. The gas is always available and they use it for making tea or cooking the food.

The family does not use kerosene.

They have no transportation, no TV, no mobile phones, no CD-players, no fridge, no DVD. The entrepreneur reads the paper daily.

#### H. Influence on and access to transforming structures and processes

She has competition from the ready-made garments. Because people buy their fabrics in Ranikhet they also bring their clothes to the tailors in Ranikhet. There are tailors in Sema, Nagar and Vishankoot but she hardly has competition from these tailors because the people from Mandelkoot know her and come to her when they need stitching.

The customers come to her home to bring their own clothes. She never goes to the homes of the customers. She buys the required thread buttons and hooks.

The family goes for their basic needs to the general store in Mandelkoot. She goes to Mandelkoot once every two months. The cost for this is 70 Rs and it takes 2-2,5 hours one way. She does not go to any other bigger cities, towns.

She has to say no to customers sometimes because she doesn't have time but the demand for her products is not that high that she wants to increase the production.

She knows the prathan and the wardmembers (she immediately says the name of the prathan). She says that she knows him as a villager but they do not visit each other.

Mostly she has fixed customers. It happens very often that they do not pay immediately but only after some time. She tells that that sometime very often doesn't come.

She sets the prices for her products according to the market. The women in the village talk about the prices and accordingly she sets them.

#### I. Perceived Attributes of Innovation

She does not experience a need to increase or improve her production because this money is her pocket money. She uses it for guests, to buy them biscuits or to take guests out. She uses it for her children, to buy them pencils, chocolate or rubbers.

#### J. Innovation-decision

#### K. Communication-channels used

#### L. Extent of change-agents promotion efforts

The house is very big in comparison to the other houses in the village. It is a two story, large, concrete building, nicely painted and well-kept. It shows that rich people live here. When verified with my translator he agrees.

## **2.2.2 Village Navalli**

### **Navalli**

Navalli

Enterprise 42, black smith using bark of trees for repairing agricultural tools like sickles.

Interview done by Suresh and Karlijn on 15 May 2006. During the interview the entrepreneur's brothers and their families are also present.

Name entrepreneur: Shambu Ram

#### **Production process**

The entrepreneur does repairing work only. He uses bark of trees for heating. This is the entrepreneur only work. He is currently 64. Approximately he gets 3-4 Rs. for repairing, for knives he gets 3-4 Rs. For axes he gets 10 Rs. Some people pay in food, some people pay in money.

#### **Location**

The entire habitation is Ram. Four out of the 5 families which are SCST are living here. The other SCST family is not from the same family. The people living in this habitation are four families which are four brothers and their families.

The habitation is quite far outside the village. It is approximately 10 minutes walking from the central market place in Navalli and then it takes another 5-10 minutes to climb up a hill. There the habitation is located.

#### **A. Adoption, rejection or no knowledge**

He uses bark of trees. He doesn't use wood because it is forbidden to use wood and the forest department and the sarpanches in the villages check this. There is not enough dry wood available. He doesn't use charcoal because it is really expensive. He has no idea about the price of the charcoal. When I ask if it is 5 Rs. per kg or 100 Rs. per kg he has no idea (Here it is obvious that the entrepreneur has never tried to work with charcoal. It think he feels no need to use another energy source because his demand is so low that he can manage with tree bark.). Most of the time he uses bark but sometimes it is not available because it is too wet, then he uses wood. When they use wood they don't cut trees. The prices of the trees are according to size. Approximately they are 500 Rs. They generally only use trees which are dried up or destroyed by fire.

#### **B. Vulnerability context**

The demand is highest when the crops are standing in the field and at the season when the people cut grass for their animals. In September and October the demand is high. In March the demand is low and in April and May the demand is high. The entrepreneur explains that the lohar who builds new tools is getting a high demand. When I ask the entrepreneur why he is not doing this he replies that these people have to do really hard work. They will need at least four men and the amount of money which would be earned would not be sufficient for the input of work.

There are too many lohars in the neighbouring villages. People don't have so much land that they need to do so much farming that they need so much tools.

Demand has always been decreasing. The last five years the demand has been very low because there was not enough rain so people don't have so much need for the products. (To me it seems like this is part of the problem. I have seen lohars making complete finished product but this was in district Dehradun where the people are richer and there is more water available. The entrepreneur seems to be not very motivated though to try to increase his production.)

#### **C. Human capital**

The entrepreneur went to school. He has finished private education up to the fifth class. He passed the

fifth class at the age of 11-12. At that time he had a big family with four brothers and four sisters. Only his father was earning money and he is the eldest brother so he had to start earning money as well. He started working with the cattle in the forest and after that he started doing agriculture. He did this until the age of 40. Then he started doing lohar work. He started by doing it for his own family. He didn't want to go to somebody else for the work, he thought he could do it himself. He learnt how to do it by trial and error. The entrepreneur has been doing this work for the last 20-25 years. He is now 64. His father was not a lohar. After 1-2 years he started doing it for others. (The reason that he doesn't make finished products might be that he has no knowledge of how to make these.) He started doing it for others because they would come to him to ask him to do it for him. He never goes out to get customers. Whoever comes, comes. He says there is nothing he wants to change. He is already 64 so what should he change.

#### D. Financial capital

This year the entrepreneur has hardly made any money because there are not many crops in the field. Normally he earns 500 Rs. for the total period of April and May and also 500 Rs. for the period of October and September. When he started doing the lohar work he had a loan of 10,000 Rs at the block office in Tarikhet. The total amount has been paid back.

All the families living in this family are brothers but they are not joint. The entrepreneur is joint with his sons. His sons are not working, they are all in school.

His other income source is agriculture. He, his wife and their children have 8-10 Nhalis of land. In years of normal rain they can eat from this for 2-3 months. The entrepreneur has a stone house, inside from mud. It is a well kept house with in total four rooms, 2 upstairs and 2 downstairs of which one is for the cattle. The rims are painted and the door and the windows are also nicely painted. The interview is done in his brothers house which is a concrete house with couches, table, nice wall decoration, electricity. When asked why the interview is done in his brothers house he replies that this is because it looks nice for people from outside. (It is indeed true that his brothers house looks richer because it is concrete and the entrepreneur does not have couches etc.)

The entrepreneur, his wife and their sons have 2 oxes, 4 goats and 2 cows.

#### E. Social Capital

The entrepreneur is not a member of any groups. He meets groups of people in marriages or functions in the family. In the marriage season, which is May and June, he goes 1-2 a month to a wedding.

The entrepreneur knows people in Uttarakhand, all his relations are in Kumaon region. He has family members in Ranikhet. He only speaks to them in marriages. He doesn't phone them.

The entrepreneur has never gotten an idea through these family members.

(The entrepreneur does not have any contacts which give him access to markets. His family is not helping him in the activities in his enterprise. This is someone who has a very small network. Only within the habitation and he goes sometimes outside of the habitation to get his basic needs. He does not strike me as a person who can make contacts for his enterprise and who gets customers because he is working on his network)

#### F. Natural Capital

The bark of the trees he uses as energy source. They are always available. He only uses wood on rare occasions, if he has some in the home and he can't go out to get bark.

#### G. Physical capital

There are four houses in the habitation and only the rich one with the concrete, nicely painted house has electricity. The entrepreneur's family does not have electricity.

The entrepreneur reads the paper sometimes but not daily.

He uses kerosene from the government fair price shop for making tea or for the kerosene lamps. They use wood for cooking. The pay 11,50 Rs. for the kerosene. The kerosene is always available. It has happened only a few times that it was not there because there was a road block. His family uses 3-4 litres per month. One of his cousins I also ask and she replies that whenever she went for kerosene she always got it.

They go to Seema or Lachina for phoning.



The entrepreneur does not have electricity so he doesn't have a TV, a radio, a CD-player, a fridge, a VCD or a DVD.

#### H. Influence on and access to transforming structures and processes

For their basic needs, like dahl, masala and chawal they go to local markets. He only goes to Tarikhet when he has work there, for example if he has to go to the BDO or when he has to buy clothing. When he goes to Tarikhet he goes on foot. It takes him 2 hours. His main markets are Ranikhet and Tarikhet. Sometimes he goes once in three months and sometimes he goes 3 times in one month.

The entrepreneur does not pay to the district panchayat. He is not a registered enterprise. (He is of the road, in the village. I think the district panchayat has no idea of the existence of the lohar)

The entrepreneur works according to demand. One some days he works some hours. There is not more demand to work more.

When he started doing the lohar work he had a loan of 10.000 Rs at the block office in Tarikhet. The total amount has been paid back.

The entrepreneur knows the prathan and the wardmembers. He knows the prathan as a villager. He only goes to the prathan if he has panchayat work. For example a stamp on an application. The prathan always does these things ( The other family members confirm). All the four families who are living here are BPL. (This means he cannot reach markets through the prathan because he is not a friend).

The entrepreneur has given an application for the electricity but they haven't got it yet.

He doesn't have fixed customers. He doesn't see their faces again and again. They sometimes come to his enterprise and they sometimes go to the other lohars. (The entrepreneur doesn't come across as a social person who can do customer binding.)

The entrepreneur has a lot of competition. All the local lohars have the same price. They don't have meetings. They listen to what they local people say and than they adjust their price.

#### I. Perceived Attributes of Innovation

The entrepreneur has the enterprise for coping. He has no other sources of income and he has no luxuries. He is not willing to learn new things or try to increase his production by making finished products or by doing some mouth-to-mouth advertisement. This is coping and not aiming for profit. The entrepreneur knew that this energy source would have beneficial outcomes because he rolled into the job not because it was a deliberate decision but because he started doing it because he did not want to pay others to do it. Because he did not pay others to do it he used bark of trees because it was for free. After the entrepreneur had been doing the work for 1-2 years other people came to him to ask him if he wanted to do the black smithy work for them. Gradually the amount of people increased. The entrepreneur explains that there was never such high demand that it was necessary or required to use a more efficient energy source.

The entrepreneur did have the chance to experiment with the energy source because he first did the work for his own family. After 1-2 years the black smithy work came to be commercial, meaning that he started earning money with it.

When the entrepreneur started using the energy source he also started doing black smithy work.

Therefore at the time of introduction he had to start all the new skills.

#### J. Innovation-decision

The entrepreneur decided himself to start doing the black smithy work for his family.

#### K. Communication-channels used\

Nobody ever taught the entrepreneur how to do the work. The entrepreneur started doing the work first for his own family. Later he started doing for commercial purpose. He saw other people do the work in other black smiths where he used to go before.

#### L. Extent of change-agents promotion efforts

Nobody ever promoted the energy source to the entrepreneur.

## Navfocus1

### Navalli

Focusgroup with 4 local men in the beginning and 10 local men in the end. When we started there were 4 men: Anoop Singh Mehra who is 55 years old and has always been in Navalli. A few times he went out to work in Ranikhet for another sweetshop. Gopal Singh Nhegi (55) who has always been living in the village. Shiv Singh Bisht (27) and Navdeep Singh Nhegi (19) have always been in the village. During the interview many other men arrive. Two of them are really helpful. One is really old and has the attitude that they don't want any help, no road, no phone, no electricity. Another man who arrived seems to be quite rich. He has a big stomach and he has a mobile phone. Only 4 people in the village have a mobile phone. He does know a lot about the village but he is not the prathan.

Interview done by Mumta, Suresh and Karlijn on 14 May 2006 at one of the sweetshops in Navalli.

#### Population size, density, location and ethnicity

There are 40-45 families in the village. 40 are Rajput and 5 are SCST. The scheduled caste families are Ram and Devi. The Rajput families are Nhegi, Mehra, Bisht, Gordella. There are no habitations in the village. All the people are mixed in the village. There are no groups of houses in the village. Four SCST families live on the outside of the village. There is one family which is SCST which lives inside the village. They do not have an idea about the total size of the village. They do know that the minimum amount of land that families have is about 5 Nahli's.

#### Village wise information

Lachina is the gram panchayat. There are three villages in the gram panchayat. There is Navalli, Lachina and Karadura. The prathan lives in Navalli. The total amount of wards in the village is five of which Navalli has two.

When I ask about the prathan they claim he has a very big stomach (which means that he has a lot of food and he is very wealthy. This relationship I also identify in the other man who arrived later. He has as the only one of the people a big stomach and he is also the only one with a mobile phone.). They do say that the prathan performs every task that he gets from the Block Development Office.

#### Vulnerabilities

Seema has a lot of rain and therefore it is very green. The villagers of Navalli claim that they don't have a lot of water (I have to mention here that the village is greener compared to Ganoli, Pilkholi, Tana, Taswad and Chamoli. There are also many fruit trees when we walk from Mandelkoot to Navalli.). In summers they have a problem with getting sufficient drinking water. They have to walk to kilometres in the summer to a natural spring. After the rainy season they rely on streams for their drinking water. In summer it takes one hour to fill an entire bucket and after the rainy season it takes only 5 minutes. There are no hand pumps and no wells in the village but there are sufficient taps. There are problems with landslides in the rainy season. At the places where the mountain is cut for making a road the water is so much that it causes landslides. This is sometimes dangerous for the houses but the last time that this happened was 12 years ago.

#### Market

The main market is Ranikhet which is 12 kilometres away. It takes 2-3 hours to walk to Ranikhet from Navalli. When there are no landslides there is no problem for getting to Ranikhet. They then go by jeep or somu. During the rainy season when there are landslides they have to go by foot because the road is covered with mud, they can't drive at that time. They go to Ranikhet once in a week or once in 15 days. From Navalli

Development Office and basic needs and State Bank of India. Ranikhet is their wholesale market.

The main sources of income.

The main sources of income in the village are agriculture and labour. This year people can only eat for 1 month from their land but normally they can eat for 6 months. The labour people do is mainly the construction of roads and buildings. Daily wage is 80 Rs. There are no skilled labourers in the village. If people need labour they go to nearby villages, not to Ranikhet and Tarikhet because then they would have to rent a room. 50% of the families are women families. Their husband has gone out working and they run the household. The men have left for Haldwani and Delhi for labour.

#### Education

There is a junior government school in Lachina. There is no primary or secondary school in Navalli. The closest secondary school is in Tarikhet. In Mandalkoot there is a primary public school until the fifth class.

#### Non farm income generation

- 2 sweetshops, one using wood and one using gas
- 3 general shops
- 3 chaishops all using wood
- 1 tailor using manual labour on the road

#### Energy sources

There is no LPG truck coming to Navalli. If the people want to get LPG they need to go to Ranikhet. The costs of going to Ranikhet and coming back by jeep are 70 Rs. The cylinder costs 290 Rs. There are never problems with the supply. The cylinders are always available.

Kerosene they get from the government fair price shop in Navalli. One litre costs 11,50 Rs. It is always available. They claim that there is no selling of kerosene on the black market.

The electricity came to the village in 1990. A member of the parliament and a member of the legislative assembly came to the village. They asked the villagers for support and in exchange promised electricity if they would get elected. They got to be elected and so the electricity came. In the beginning only 2-4 people got electricity. Now 24 families have electricity. The other people do not have it yet. A few of them gave an application but it still hasn't been introduced for these people.

The electricity bills of the people in the village who have electricity fluctuate very much, sometimes it is 500 Rs, sometimes it is 1000 Rs. When it was really high they went to the office with their reading. The electricity department checked it and then the bill was corrected. They do have an electronic meter but they say that the computer makes mistakes. (In Pilkholi the electronic meters have just been introduced.)

#### BPL

In the gram panchayat Lachina 95% of the population is BPL. Most of the SCST people have a BPL card. There is one BPL family who doesn't have it while they need it. The man in the family is physically disabled. This family doesn't have anyone who can go into the Block Development Office for them.

#### Infrastructure

Four people in Navalli have a mobile phone and there is one landline. For phoning they have to go to Ranikhet. There is a PCO/STD in Seema but that phone often doesn't work. If they need to phone they normally wait until it is working. If they need to make an emergency phonecall they go to Ranikhet.

They do not use the phone from the family which has the landline because they are BPL. One man claims that the people don't want a phone because they are busy.

The Public Work Department has plans to do construction on the road. The gram pradhan filled out an application and they came to do a survey. They were not informed about any planned activities for the road since.

#### Typical

- 5-6 families have a TV
- 1 family has a fridge
- 5 families have a CD/VCD

- Nobody has a DVD
- 1 landline
- 4 mobile phones
- 2 families have a car (1 sumo, 1 Marshal)
- Most people have a house built from stones. The people who are rich have a concrete house.
- Nobody has their own water tanks in the village.

## Navfocus2

### Navalli

Focusgroup starting with three locals. One woman named Bhagwati Devi (40), Kisan Singh Mehra (25) and Digar Singh Nhegi (28). During the interview more and more people gathered together and helped in explaining the problems and characteristics of the village. The interview started because I was told that there was one scheduled caste family who had not gotten a BPL card and who had a handicap. The people I had been talking to said the prathan was very good. I thought it would be smart to talk to some people in worse conditions.

Interview done by Mumta (Ngo-member of HOPE in Mandelkoot), Suresh and Karlijn on 14-05-06. The interview was done at the house of the SCST family inside the village. There are another four SCST families living on the outside of the village. I was told that they were quite rich.

### Population size, density and location

There are 40-45 families in Navalli. Out of these five are SCST and the rest is Rajput. The total village is somewhere in the range of 200-300-400 Nhali's. Out of this approximately half is agricultural land. Every family has at least 10 Nhali's. Every family does different agriculture so it depends how long the can eat from their land. This year people can eat for maximum one month. Normally maximum 2-3 months.

### BPL

Bhagwati Devi has a BPL card. One of her sons is handicapped and he has never gotten his pension for handicapped people. He doesn't get it because the family does not do enough paperwork to arrange the pension. Another problem is that they have to go to Almora and fill an application and they don't have enough money to go.

One of the men who arrives later is saying that he has the BPL card for three years and that he never got the ration. The government shop has never given it to them. (Probably it is sold on the market for higher price.

New BPL card owners do not get their ration.

### Energy sources

Some have an electricity connection. (Mr. Devi has arrived): Mr. Devi says that he doesn't have a connection. He gave an application 2-3 times but there has not been any action by the Energy Department yet. He went to the electricity department 2-3 times but he still didn't get it and he does not have the money to go again.

A member of the Legalslative Assembly came to visit the village. Some people gave an application to him in exchange for them casting a vote to him. Mr. Devi was not at home that night so he didn't get the electricity connection.

22-24 families in the village have an electricity connection. There are people in the village who have applied for a connection but they didn't get the connection yet and there are also people who can't pay for it. For example a widow who has children and has no income at all. She can't pay for it.

The bills do not fluctuate very much. The charges are always in the same range.

Kerosene is always available in the government fair price shop in Lachina. The rate is 11,50 Rs per litre.

4-5 families in the family use LPG.

### Markets

For basic needs they go to Navalli, for masala, dahl and vegetables. They sometimes go to Ranikhet and Tarikhet. It takes 2 hours to go to Ranikhet by foot and 1 hour to go to Tarikhet by foot. When they go to Tarikhet or Ranikhet they only go for clothing.

### Typical

The people who are rich in the village have a concrete house, well painted, 2 storey. They have a TV. The house is big and the cattle is living separate from the people. The poor people have a stone house. The roof is also constructed by stones. They generally have a one storey or two storey house but the house is much smaller. The inside walls are generally not painted but covered with mud. The door generally does not have a doorpost. There are not always doors and window posts. People generally have a cloth to sit on the ground while the richer people have couches and chairs to sit on.

Talk to SCST people from the village (Enterprise 42, 15 May 2006):

- The electricity is gone very often in the summer season. Sometimes 4 hours in a day and sometimes 7 hours a day. In this season, the summer, the light is gone every day. In normal season the light is good. If they have a connection they have light the whole month.
- When there are landslides on the roads going to Navalli they have problems with getting sufficient food. If the removal of the landslides takes a few days it might be that they do not have flour and rice.
- If there is rain they do not go to work because they mainly work in construction which is not possible in the rain.
- Everybody in their habitation has a food problem. If they have a good crop they have enough for 2-3 months. This year they have to buy all the wheat from the market. For the unemployed people this problem is really big.
- There are some problems between the Rajput people and the SCST. They don't drink, eat and have tea here (Luckily they offer us a tea and I am very happy to be able to say yes. You can tell they like it very much.)
- One of the people we are talking to has a sister who is a widow. She doesn't have anyone and she has an APL card, which is higher than an BPL card which does not give her right to cheaper ration. The former gram prathan made these cards and he is not good.
- When I ask to tell me how I can see if somebody has money they can't explain but they have taken us to the house of the brother who is the richest. This is very visible. He has a concrete house, no cattle in the house, electricity, a TV, a radio, nicely painted house, photographs on the wall etc. The other houses are stone houses, inside is covered with mud. When I ask why they have taken us to this house they reply that it looks good when outsiders come to take them to this place.

## Navsw1

Navalli

Enterprise 40. Sweetshop, chaishop and general store using kerosene and LPG as energy source

Name entrepreneur: Shiv Singh Bisht

### Production process

The entrepreneur uses LPG for making sweets in the room next to the general store. He sells the sweets in the general store. He uses kerosene for making samosa and chai. Outside of his shop there is a bench which is protected from rain. There people can sit and have tea.

In the general store the entrepreneur sells cookies, biscuits, pens, cosmetics, stationary, soap. The entrepreneur is the owner of the enterprise but he rented the shop for 500 Rs. per month. His brother is 19 and he also works in the enterprise but they are a joint family so the money from the shop is shared. The entrepreneur lives in Uni.

Interview is done by Suresh and Karlijn on 15-05-2006. During the interview a few local customers are sitting on the bench outside. His brother is cooking the sweets and the samosa. He serves the clients who come to the general store. During the interview there is a group of 4-5 ladies who go into the shop.

### Location.

The enterprise is located at the beginning of Navalli when coming from Karaina. It is located on the corner so it is very visible for the people in jeeps passing by the enterprise.

### A. Adoption, rejection or no knowledge

The entrepreneur uses LPG for sweets making. When he doesn't have LPG he uses kerosene. There is no LPG when the road is blocked or when there is a strike. The road is blocked during the rainy season when there is heavy rainfall. In the rainy season, July and August, this happens 3-4 times a month. The rest of the year this doesn't happen. There is a strike when there is an increase in LPG prices. This happens a few times in a year, approximately two times. The entrepreneur has enough money for buying LPG. He doesn't use kerosene because kerosene has a lot of pollution.

The entrepreneur uses one cylinder of LPG once in every 10-15 days.

The entrepreneur uses kerosene for kerosene lamps when there is no electricity. One litre kerosene costs 11,50 Rs. He uses the kerosene for making tea and samosa. He uses 15-20 litres of kerosene per month which he gets in the government fair price shop. Some people don't use kerosene so he can always get the required amount from the government fair price shop.

The entrepreneur doesn't use electricity because than he would need a commercial connection. He doesn't use a commercial connection because than the cost would be higher than using kerosene and LPG.

He doesn't use wood because there is not sufficient dry wood available. The entrepreneur doesn't want to cut the trees. He says that if one man cuts 4-5 trees in a year than in one year the whole forest will be gone.

### B. Vulnerability context

Kerosene and LPG are always available. In Ranikhet there is no problem of getting LPG.

The raw materials he uses are maida, basain, sugar, suji. He gets the raw materials from Ramnagar there are many very big wholesalers in Ramnagar and the price is cheaper there. It is possible to get it in Haldwani and Ranikhet but it is more expensive there. He always goes to the same wholesaler. He goes to Ramnagar 1-2 times a month. In Ramnagar all the wholesalers have the same rate. His wholesaler has good and bad quality. He checks it before he takes it.

There are fluctuations in the prices of the raw material. He goes there every 15 days and than the



prices have increased or decreased.

IN the marriage season the demand for the sweets is higher, in the months of April, May and June. He sells more sweets than. He has a 50% increase in the demand for sweets. Every jeep passing by stops in front of his enterprise to take samosa and tea. He claims that he is famous for it. In winter the demand for samosa and chai is higher. The increase in winter is approximately 30-40%.

The entrepreneur has had the enterprise since three years. Demand increased since he started the enterprise. In before there were 2 marriages out of which none would come for his sweets, now one of them will come to his enterprise.

#### C. Human capital

The entrepreneur has gone to school from the age of 5. He went to school and finished intercollege in 1996. He was born in 1976 so he passed when he was 20. He went to primary school in the government school in Uni . To secondary and intercollege he went in Ranikhet. He did one year of Bachelor of Arts in Ranikhet but he stopped because he needed employment. After that he went to Delhi for five years. He left in 2001, when he was 25. From 1996-2001 he learnt computers and typing. In Delhi he started his education as a flight operator but the education was really bad so he stopped. After that he went working for Mr. Cook, a catering and restaurant. There he learnt about delivering good quality.

He learnt making sweets from his brother in Delhi. His elder brother had opened a sweetshop in Delhi and had learnt how to make all the sweets. The elder brother taught the two younger brothers. The entrepreneur has had the enterprise for three years. After having worked at Mr. Cook the entrepreneur had a sweetshop himself but it didn't work in Delhi. He returned from Delhi after having lost a lot of money there.

The entrepreneur wants to learn whatever there is to learn. Every product in his shop should be excellent. HE would like to learn sweets from dried fruits and normal fruits but he has never learnt. He would also like to learn how to make cookies. He hasn't learnt these things yet because he can learn this at PHUSA. This is an institute for hotel management. When I reply that he could be going to another sweetshop who do knows how to make these things he replies that there is no sweetshop in the area which knows.

The entrepreneur would like to have a grinder and a mixer because that could increase his production but he didn't get it yet because he doesn't have the money for it. When I confront him that he can get a loan he claims that after getting a loan he would not have sufficient money for paying the installemtn plus the interest. He replies that a loan is only beneficial for rich people.

#### D. Financial capital

The entrepreneur explains that normally he has 500 Rs. sale and out of this 400-425 Rs. is cost. His daily profit is 75 Rs. In the high season he has a sale of 1000 Rs and the costs are 700 Rs. The monthly cost of LPG is 600 Rs and the monthly cost of kerosene is  $15 * 11,50 = 165$  Rs. He has to pay a monthly rent of 500 Rs.  $75-100$  Rs per day  $* 30 = 2250-3000$  Rs. is profit. The entrepreneur has ten people in his family out of which three are earning. His elder brother in Delhi and him and his younger brother in this enterprise. His elder brother in Delhi has a privat job and he sends home 2000 Rs. per month to his family here in Navalli. His younger brother works with him so they share the profit.

They don't save any money.

They have total land of 20 Nhali's with the joint family. His elder brother is not profiting from this.

The family can eat from this land, normally, for 3-4 months but it depends on the rain. The

entrepreneur has 3-4 calves but they don't give milk yet.

#### E. Social Capital

The entrepreneur is not a member of any groups. He meets groups of people when there is a marriage or a festival. He meets groups in festivals twice a year in Holi and Dhivali. He also meets groups of people when they have a jagar. That happens a few times a year, 3-4 times. HE also meets groups of people in marriages. This happens in the marriage season in April, May and June and from November to January. On average he goes to marriages 3-4 times a month but sometimes he goes 10 times.

His brother is in Delhi, he takes to him 1-2 in a month. He still has friends in Delhi from the time

when he stayed there and he speaks to them once in a month. He goes to Delhi twice in a year. His brother comes back to the village when there is a marriage.

The entrepreneur is not married.

The entrepreneur has relatives in Bangalore. He speaks to them once in 2-3 months. In Ramnagar he has relatives. He speaks to them when he has time left when he goes to Ramnagar. He has relatives in Haldwani to whom he speaks once in every 2-3 months.

The entrepreneur got the idea for the shop himself. He tried at Delhi but there it didn't work. At that time he had the money for it and had bought the enterprise with the materials from relatives who used to have an enterprise like that. His brother in Delhi supports him only in monetary terms. He gets ideas from his brother whenever his brother learns new things. This doesn't happen very often after he has learnt to make sweets from his brother.

#### F. Natural Capital

The entrepreneur has no problems for getting water. During the summer it is more difficult to get the water because the taps don't run. There is a natural spring in Seema on the road and there is one natural spring in Navalli. This spring is up in the village so the entrepreneur mostly goes to Seema because the road to Seema is flat.

#### G. Physical capital

Some people don't use kerosene so he can always get the required amount from the government fair price shop. The allowed amount is 5l but he can get the amount he needs in his shop which is 10-15 l. The entrepreneur gets the kerosene from the government fair price shop in Navalli.

There is no LPG when the road is blocked or when there is a strike. The road is blocked during the rainy season when there is heavy rainfall. In the rainy season, July and August, this happens 3-4 times a month. The rest of the year this doesn't happen. There is a strike when there is an increase in LPG prices. This happens a few times in a year, approximately two times.

In his shop there is no electricity. The entrepreneur doesn't use electricity because he would need a commercial connection. He doesn't use a commercial connection because the cost would be higher than using kerosene and LPG.

For getting LPG the entrepreneur goes by jeep to Ranikhet. This costs him 55 Rs. to go and get back. The cost of the cylinder is 280 Rs.

The entrepreneur has no means of transportation.

The entrepreneur lives in Uni and there he has a TV and a radio. He does not have a phone, CD and a fridge.

The entrepreneur reads the newspaper daily.

#### H. Influence on and access to transforming structures and processes

Ranikhet is 36 kilometres from Navalli. It takes the entrepreneur 1,5 hour to go there by jeep and when he goes walking it takes him 2 hours. Usually he goes walking to Ranikhet. To Ramnagar the entrepreneur goes by bus. It costs him 75 Rs. and it takes him 2,5 hours. He goes to Ramnagar 1-2 times a month for going to the wholesaler.

The demand is not larger than the entrepreneur can supply. The entrepreneur is not constantly producing sweets. The entrepreneur explains that he thinks he would be able to sell more if he would be able to make different things like also sweets with dried fruits, normal fruits and cookies. He does not have the money to learn this.

The entrepreneur pays the jeela panchayat 300 Rs. per year.

There are no restrictions on the entrepreneur having his shop opened.

The entrepreneur knows the prathan and the wardmembers. He sometimes visits the prathan and the wardmembers when there is a problem with water. They are not friends.

His customers are both passers-by and locals. The locals are fixed. About 80% of his customers is local and 20% are passing by.

He does not have a lot of competition. Both of the enterprises (there is one other sweetshop in Navalli) have specific customers which are different. The entrepreneur is located at the corner and his shop is more visible and he has written on his shop: BISHT SWEETSHOP.

The prices of the sweets are 60 Rs/kg. The price of one chai is 2 Rs. The price of a samosa is 2,50 Rs.

The entrepreneur sets prices by talking to other sweetshop owners. They all have the same price. They hear when the other shopkeepers change their price so he also changes his price when he hears this. The next sweetshop from Navalli is in Jalikani, which is 8 km away.

#### I. Perceived Attributes of Innovation

The entrepreneur has the enterprise for coping. He only has a TV, no other luxuries. The income of the entrepreneur is not really high considering the fact that they have to share the profit between the two brothers. The entrepreneur would like to learn more to increase his production but he does not have the money to invest in training.

The entrepreneur knew that LPG would be more beneficial than wood because wood is difficult to get in the area and he doesn't want to destroy the forest. Using LPG is more efficient because the price of the cylinder might be higher than kerosene but of LPG there is much less needed in comparison. The advantage is for the entrepreneur because the price is lower. The entrepreneur also explains that kerosene causes more pollution compared to LPG. This is an advantage for the customers and the entrepreneur.

The entrepreneur had the possibility to experiment with the energy source in the sweetshop which he had in Delhi.

#### J. Innovation-decision

The entrepreneur himself decided about starting the sweetshop and using this energy source.

#### K. Communication-channels used

The entrepreneur learnt about making sweets from his brother in Delhi. His brother has a sweetshop in Delhi and he new how to make all the sweets.

#### L. Extent of change-agents promotion efforts

Nobody ever promoted the energy source to the entrepreneur.

## Navsw2

### Navalli

Enterprise 41, sweetshop, chaishop and general store. For chai he uses kerosene and for making sweets he uses wood. The entrepreneur sells cookies, batteries, bulbs, cosmetics (but there is less differentiation and less quantity of his products compared to the general store of the other sweetshop in Navalli.)

Name entrepreneur: Anoop Singh Mehra

Interview done by Suresh and Karlijn on 15 May 2006. During the interview there was only one man constantly present, the priest of the village. He only added a view comments during the interview. There were some other people stopping by. The sat down for a short time. Some of them started to intervene but when told that the interview was to be done with the entrepreneur they stayed for a little while and than left.

### Production process

The entrepreneur uses sugar, milk, maida, suji etc to make the sweets. He has a small fire place outside his shop, which is covered by a roof. Here he uses wood for making sweets. Under this roof there are a few benches where people can sit down for a chai. Inside his shop there is a general store and there he also has the kerosene stove for making chai.

### Location.

The enterprise is located at the beginning of Navalli when coming from Khairna. It is located 20 meters away from E40, which is located on the corner so it is very visible for the people in jeeps passing by the enterprise. This enterprise is less visible and the entrepreneur has not done any advertisement on the outside of the shop like E40 has done

### A. Adoption, rejection or no knowledge

The entrepreneur uses wood because he doesn't have the money to use LPG. He gets wood from his own field. This is not causing any problems with the forest department because he grows trees on the field, takes care of them and than cuts them. In the forest it is forbidden to get wood so he never does. There is also charcoal lying in the shop. This he gets from burning the wood. He always has enough wood in the field and the charcoal is expensive so he doesn't get charcoal for this reason.

The kerosene he gets from the government fair price shop. He uses 10-15 litres per month for making the chai. With his ration card he can get 5 litres in the shop. The rest he gets from the black market and than it costs him 12,50 Rs. When I ask where this black market is he replies that this is also in the government fair price shop.

The shop is his and he has no electricity in the shop. He does have electricity in his house.

### B. Vulnerability context

The entrepreneur gets the raw materials from a wholesaler in Haldwani. This person comes in the village with his truck and the entrepreneur buys it from him. When I ask why he doesn't go to Haldwani himself because than the prices might be cheaper he replies that his demand is not so high that he needs to go to Haldwani or Ramnagar. That would not be worth the cost for travelling there. He only buys raw material of approximately 20 kgs a month. His total sale is 100 Kg in a month. The selling price of one kg is 60 Rs.

There are fluctuations in the prices of raw material. When it is the marriage season the prices of the raw material increase with 10%. The price of sugar increases with 2%. The marriage season is in April, May, June, Nov, Dec and Jan. During these months the demand for sweets also increases by 20% (in comparison to other sweetshops this is a low increase).

The entrepreneur has had the enterprise for only one year. Since than the sale has increased.

### C. Human capital

The entrepreneur has passed the seventh class. First he explains that his heart didn't say he should continue after that he explains that it was due to family problems. His father passed away when he was 11 years so he couldn't continue going to school. After stopping school at the age of 11 he started working in a sweetshop from 1967-1980. The entrepreneur was born in 1957. After that he went to Ganjadoli, a village nearby Ranikhet (3 km). He worked there in a sweetshop for five years until 1985. After this he worked in a sweetshop in Tarikhet for 10 years. After that he came to Navalli in 1995. He opened the shop one year ago.

He learnt to make the sweets in the other sweetshops where he worked. The management skills like selling from a wholesaler and marketing he learnt from the sweetshop where he worked in Ranikhet. When I ask him if there is something specific that he would like to learn he replies that he wants to learn and that everybody wants to learn. When I ask him for something in specific he replies that there is not anything in specific. He isn't learning anything right now because he doesn't have the power to work more and he has less interest.

There are no specific machines that he would like to get which could help him increase production.

### D. Financial capital

He only buys raw material of approximately 20 kgs a month. His total sale is 100 Kg in a month. The selling price of one kg is 60 Rs.

The entrepreneur has a profit of 3000 Rs. per month. The entrepreneur sells 6000 Rs. per month in sweets ( $60 \times 100$  kg). Out of his total sales he gets 20-25% from selling chai. He gets 10% from his general shop and he gets 65% from his sweets. The sales of 6000 Rs. are for the season which is in total 5 months a year. Out of 6000 Rs. in sales he gets 4500 Rs. in costs. Per month he gets 1500 Rs. profit from the sweets. Per month the profit from the general shop is 200 Rs. For the chaishop his sales are 400 Rs. and his costs are 435 Rs. (????? When I ask him if he is then losing on the chai he replies that this is the case. It could be right because the percentages above are from his total sales).

Off season he has a sale of 60 kg of sweets. The sale of chai remains the same.

The entrepreneur has to support him, his wife and their four children. All his four children are in school.

For the family this is the only income source

The family has 10-12 Nhali's. They can eat for 4-5 months from this. The entrepreneur has 2 oxes, one buffalo. He has a house but this is up in the village of Navalli.

### E. Social Capital

The entrepreneur is not a member of any groups. He meets people in marriages. In the marriage season he goes 2-3 times a month. This is approximately 5-6 months in a year. He also goes to festivals where he meets groups of people. He goes to such a festival once in every 1,2,3 months.

The entrepreneur has relatives in Ramnagar, Kitcha, Haldwani and Delhi. The people in Ramnagar and Haldwani he sometimes talks once in every ten days, sometimes once a month. The people in Kitcha he speaks to 2-3 times in a year. To the people in Delhi he speaks every month. In marriages he goes to Delhi and they come here. This happens 3-4 times a year. He has never gotten an idea from them for his enterprise.

### F. Natural Capital

There is not a problem of water. His children get the water from the natural springs, they are approximately 1 km away. On 100-200 m away there is a tap. The tap doesn't work during summer. The rest of the months he gets the water from the tap which is on the road, 50 m away from the enterprise at the shop of E40.

### G. Physical capital

The entrepreneur has electricity in his house. For 2 months he pays 150-200 Rs. He got the electricity through a BPL connection so he got the connection for free and he only has to pay the bills.

The kerosene he gets from the government fair price shop. He uses 10-15 litres per month for making the chai. With his ration card he can get 5 litres in the shop. The rest he gets from the black market and

than it costs him 12,50 Rs. When I ask where this black market is he replies that this is also in the government fair price shop.

The entrepreneur does not use LPG because he can't afford it.

The entrepreneur does not have a TV, no radio, no fridge, CD-player, no phone, no mobile.

The entrepreneur reads the paper daily

#### H. Influence on and access to transforming structures and processes

The entrepreneur goes to Ramnagar once in every 5-6 months. He goes to Ranikhet twice a month and he goes to Tarikhet 2-3 times in a month. He goes to Tarikhet because the Block Development Office is there and he goes there because there are schemes in the block in which he is taking part. He also goes to Tarikhet if the wholesaler from whom he gets his raw material does not show up. He normally comes every Saturday but sometimes the road is blocked so he cannot come. This happens only sometimes in the rainy season. Approximately 1-2 in the rainy season. To Ranikhet or Ramnagar he goes to get shopping for marriages.

He goes to Tarikhet by jeep, this costs 25 Rs. for one way. To Ranikhet by jeep it costs 35 Rs. and to Haldwani or Ramnagar it costs 80-85 Rs.

To Tarikhet it takes the entrepreneur one hour. When he used to work in Tarikhet he would go walking which used to take him 1 hour. If he goes walking now it takes him 1,5 hour. By jeep to Haldwani and Ramnagar it takes him 3 hours. To Ranikhet it is three hours walking and 1,5 hour when going by jeep.

The entrepreneur has a loan from the cooperative bank in Tarikhet for 15.000 Rs. He got it when he opened his shop and he invested all the money in his shop. Every two to three months he makes a payment but there is no fixed instalment. Than he pays approximately 2000-3000 Rs. The loan he has is an agricultural loan. This means that you can pay back the money when you get it and that after six months it is possible to get a new loan.

The demand is not higher than what the entrepreneur is currently supplying.

Yearly he pays 235 to the district panchayat for his weighing machines and he pays another yearly payment of 50 Rs.

Somebody (the entrepreneur does not know who) came to check the quality of the sweets. The entrepreneur had to pay 300 Rs. for a quality license which he now has.

The entrepreneur knows the prathan as a villager. If he has work they speak but they are not friends.

The customers are fixed customers from the surrounding villages and also people who stop when they are in the jeep. The largest part of his customers is people who pass by but the entrepreneur can't say this in percentages.

The entrepreneur does not have a lot of competition he says. He is on the road so people see his shop. He says the other entrepreneur (E40) has more sale than him. The entrepreneur says he is also new, he has been here for a year so his sale is not so high. When I ask the entrepreneur if he does anything to attract customers he explains that he doesn't. When I confront him with the fact that nobody can see that he has a sweetshop because the sweets are in the dark inside his shop and that the other man (E40) has written on his shop that it is a sweetshop. I ask him why he has never done this and he replies that he has never thought of it and that he is going to do it now (If this is through I don't know but the fact that he says he has never thought of it might be true).

The entrepreneur is BPL.

The sweets cost 60 Rs. per kg and the chai cost 2 Rs. When I ask why he doesn't increase his prices he replies that the people who come in his shop have a money problem. If the other sweetshop increases his prices this entrepreneur will also increase his prices. He says that the entrepreneurs of the sweetshops don't have meetings.

#### I. Perceived Attributes of Innovation

The entrepreneur has the enterprise for coping. It is obvious that he is not actively trying to increase his sales and he does not have any luxuries, no TV, no radio, no fridge. His demand is not very high but he is not doing anything for marketing. When asked if he wants to learn anything or why he hasn't done advertisement on the shop he replies that he has never thought of it.

The entrepreneur knew that using wood would be beneficial because it is cheaper than using LPG. The entrepreneur cannot pay for this.

The advantage is for the entrepreneur because else he would not be able to make a profit at all. The entrepreneur had the possibility to experiment with wood and LPG in the sweetshops where he worked from 1967 until 1995. The entrepreneur did not have to change anything but in his last job he was working with LPG. LPG is more efficient and is easier to use. The entrepreneur had to give this up for working with wood.

J. Innovation-decision

The entrepreneur decided about the use of wood in his shop.

K. Communication-channels used

The entrepreneur learnt about using wood in his shop in the other enterprises where he used to work.

L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the entrepreneur.

## Navtl1

Navalli

Enterprise 45, tailor using manual labour as energy source

Name entrepreneur: Ramesh Ram

Interview done by Suresh and Karlijn on 16-5-06. During the interview Mamta of HOPE is present and the entrepreneur who owns the general shop is present and there are 4-5 men sitting in the shop in the benches which are there.

Production process:

The entrepreneur makes shirts, pants, blouses, soots, petticoats. A blouse costs 20 Rs. A shirt costs 40 Rs. A pant costs 80 Rs. A soot costs 60 Rs. The entrepreneur works sometimes three hours a day, sometimes 2 hours a day. The customers come to his enterprise with their cloths and the entrepreneur than sews them for them.

Location:

The tailor doesn't own or rent the shop in which he is located. The shop is the ownership of somebody else who owns a general store. In the general store the other entrepreneur sells biscuits, namkeen, bulbs, matches and cigarettes. The general store is located on the main road through Navalli. After a few minutes walking in the direction of Tarikhet from the two sweetshops this general store is located.

A. Adoption, rejection or no knowledge

The entrepreneur uses a machine on hand labour. He doesn't have a machine on foot labour because these machines are much more expensive. The entrepreneur's main job is cultivation of his own land so the sewing job is just part time. He says that he doesn't have time to increase his production but it also never happens that he has to say no to customers because he has no time for stitching. The entrepreneur is working up to demand. His demand is not such that it is worthwhile to invest in a foot machine.

The entrepreneur has seen a foot machine before but he has never seen a sewing machine one electricity but he knows that they exist because he has heard other people talk about it.

B. Vulnerability context

The entrepreneur buys thread, hooks and buttons in the local market. There are no fluctuations in the prices for thread, hooks and buttons. The demand for his finished products does have fluctuations. In summer he has more demand than in winter. In March/April to August the demand is higher. The increase is only 10% though. The entrepreneur has been doing this work for 20 years. He is now 42 years old. The demand has not increased or decreased since the entrepreneur started doing this work. When I ask him if he faces competition from ready made garments he replies that this hardly happens in this area because people have no money for ready made garments.

C. Human capital

The entrepreneur has gone to school. He started going to school when he was five. He has finished the first and the second class. He had to stop because of family reasons. When he was ten his father died and he started working on the land. The entrepreneur did not go to school before his father died because his father was very old and wasn't able to work. At that time his father did not have sufficient money to sent the children to school.

The entrepreneur got training in tailoring for two years within the village at another tailor. He worked for the person and had saved some money from that work. At that time he bought a second hand machine from the money he had saved.

In 2004 the entrepreneur took a loan of 20.000 Rs. and invested it into a new machine and some



cloths. For the loan he pays an instalment of 300 Rs. per month. He took the loan in the Punjab National Bank in Galikan.

The entrepreneur knows nothing in specific which he would like to learn.

#### D. Financial capital

The entrepreneur does not pay for using a small part of the shop of the other entrepreneur for his sewing activities.

In the season, from March/April to August, the entrepreneur has a sale of approximately 400 Rs. In the off season his sale is 300 Rs. The costs out of the 400 Rs. are 50 Rs. and the cost out of 300 Rs. is 30 Rs.

Next to this he is working on his own land. The entrepreneur has 10-12 Nhali's. Normally he can eat 1-1,5 months from this. His total family consists of him, his wife and their 4 children. Out of these 3 are going to school. One is doing work in Delhi. He doesn't send money home. The entrepreneur has 2 oxes, one young buffalo and one cow.

#### E. Social Capital

The entrepreneur lives in an off road village Manari.

The entrepreneur is not a member of any groups. (In the shop there are benches, when we come in 4-5 men are sitting on these benches so the entrepreneur definitely meets groups of people in his shop which can help him in getting customers.)

He meets groups of people in marriages of friends and relatives. He goes to a marriage only 1-2 times in a year.

His son in Delhi he speaks to once a week. The entrepreneur calls his son from the PCO/STD in Seema. The entrepreneur does not visit his son. His son visits him. The entrepreneur went to Delhi once, eight months ago.

He never learnt anything from his son. He never learnt anything after he had worked in the tailoring enterprise. The entrepreneur has never taught anybody about tailoring. He is scared to get competition. The entrepreneur knows people in the neighbouring villages

#### F. Natural Capital

#### G. Physical capital

The entrepreneur has a BPL card. He does not have an electricity connection because he does not have the money for it. Even though he can get a free connection he does not have the money to pay the two monthly bill. (The entrepreneur has only the tailoring enterprise as income source and he earns 300-400 Rs per month. There is nobody else in the family earning any money. I really think the entrepreneur cannot pay for an electricity connection)

The entrepreneur uses kerosene, 5 litres a month. He can always get the kerosene from the government fair price shop in Lachina. The costs are 11,50 Rs.

Through his BPL card he gets ration. For wheat he pays 5,50 Rs./kg and for rice he pays 7 Rs./kg.

The entrepreneur does not have electricity so he does not have a TV, radio, fridge, CD-player.

The entrepreneur can't read and write but he can sign his name.

#### H. Influence on and access to transforming structures and processes

The entrepreneur goes once a month to Ranikhet. HE goes to Ranikhet when he has a problem with his sewing machine and he goes for cloths, medicines and when he has to see the doctor. The entrepreneur knows a few things about the main tenancy of the machines but he still has to go to Ranikhet for maintenance. HE goes twice a year and the costs are 300-400 Rs. each time. If the entrepreneur has to go to Ranikhet with his machine he goes by jeep. The rest of the time he goes sometimes walking and sometimes by jeep.

The entrepreneur knows the prathan as a villager. They say hi and hello and the entrepreneur sometimes goes to him because he does not have a good house. The prathan does not do anything about this.

In 2004 the entrepreneur took a loan of 20.000 Rs. and invested it into a new machine and some cloths. For the loan he pays an instalment of 300 Rs. per month. He took the loan in the Punjab

National Bank in Galikan. The entrepreneur still has 10.000 Rs. from the loan left.

The entrepreneur has a BPL card.

The entrepreneur's customers are mainly fixed. He gets paid in wheat and rice. 50% of the times he gets paid in food and 50% of the times in money. He explains now that he faces competition from ready made garments. This competition has increased. His sale has decreased due to this. The entrepreneur explains that he does not have a lot of competition. The other tailors are in Lachina. (It seems to me that the entrepreneur thinks that competition is a bad thing. When asked before he also replied he had no competition). His customers sometimes go to Lachina and sometimes come to him so there is a lot of competition.

The entrepreneur sets the prices himself. He hears in the market if other tailors increase their prices but most of the tailors make different kind of products. He sets the prices himself he claims but the prices are set by the market.

#### I. Perceived Attributes of Innovation

The entrepreneur explains that if he would not do this tailoring in addition to the cultivation of his land he would not be able to do other work and will affect the possibility for getting sufficient food for his family. The entrepreneur definitely does this work for coping. He does not have any luxuries. The entrepreneur did take loan which he has invested in buying a new machine but the demand is not such that the entrepreneur could work for a profit.

The beneficial outcome is mainly for the entrepreneur because he can't pay for a foot machine or an electrical machine. The advantage is not for the customers because the demand is not higher than he provides. Therefore he would not be able to do more work.

The entrepreneur did have the possibility to experiment with the sewing machine which works by hand because he had worked in a tailoring enterprise before which used a manual hand sewing machine.

#### J. Innovation-decision

The entrepreneur himself decided about starting the enterprise and therefore also decided to use the manual hand sewing machine.

#### K. Communication-channels used

The entrepreneur learnt about the use of a manual hand sewing machine from the tailoring enterprise where he used to work before he started his own enterprise. The entrepreneur has seen a foot machine before but he has never seen a sewing machine one electricity but he knows that they exist because he has heard other people talk about it.

#### L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the entrepreneur.

### **2.2.3 Village Uni**

#### **Unimil1**

Village UniE46, Flourmill using watermill as energy source

Name entrepreneur  
Kundan Singh Bisht

District  
Almora

Village  
Uni

Industry  
Flourmill

Enterprise category  
OAE. Own account manufacturing. The entrepreneur

Enterprise location  
Off-road, 30 minutes walking down the mountain to a stream in the valley. There is a foot path but the last 5 minutes are unpaved and we have to walk over stones across the water.

Enterprise ownership  
The owner is the main man working but the children are present in the house, they also help out so it is the family owning the enterprise.

Enterprise sector  
Flour mill

Enterprise staffing  
Only owner working

Product costs

#### **A. Adoption, rejection or no knowledge**

He has had a gharat for his entire life. He built this one in 1989 after big floods destroyed all the gharats in the area. They do not use diesel or electricity because of monetary problems. They do not have a BPL card

#### **B. Vulnerability context**

He has his current gharat since 1989. At that time all the gharat's were destroyed by a flood. There used to be 18 of them, now there are only two left. The change from 18 to 2 gharats has not increased the demand for the entrepreneur and ever since the cluster of gharats has disappeared the demand has been decreasing and decreasing

#### **C. Human capital**

He has had a gharat for his entire life and his family has been having gharats for generations. He has never gone to school. He is now 62. He learnt to run the gharat at a young age. (He stotters). He started doing the gharat work in 86. Before this he was doing contracting work for the forest department. He had a contract and trees in Bhutan. He had labourers working for him but they ran away after he had paid them money in advance.

After he had lost his money he started doing this work. He learnt from his father and his elder brother.

#### D. Financial capital

The entrepreneur admits that the gharats at the road or in the villages are more viable but he does not have the money to buy land or get an enterprise near the roadside. His ancestors have always been living at this place and therefore he does not want to leave (I get the feeling this is an excuse and he does not want to admit that he really does not have sufficient money for moving).

In the rainy season he grinds 50-100 kg's per day. In one quintel he gets 5-10 kg of flour. He does not get paid in money but in flour as a percentage of the total amount a customer gets grinded. In the summer season he does not grind at all because there is no water. When the crop is harvested he has high demand, this is done in August-October. From Nov-February they have normal demand, which is about 50 kg per day, from July until October the demand is 100 kg per day. They have to grind for approx 10 hours to grind 100 kg.

If they would have to buy the flour for their own consumption they would have to pay 15 Rs/kg.

His family consists of him, his wife, two sons with his daughters in law and another son with his family lives in Delhi. His sons living with him don't work and his son in Delhi does not send money home. One of the sons is present and explains that he has not a contract based job but he works when there is a job somewhere. He works approximately 25 days a month and he gets 100 Rs. Per day. This means that his monthly income is approx 2500 Rs. Per month. In total he only works 6 months in a year.

They don't save money, they have a loan with the Cooperative Bank in Tarikhet. They have used it for building a house. The total loan is 50.000. He has paid back 30.000 Rs. They pay back when they have money

They have cattle, a buffalo and his baby.

#### E. Social Capital

The entrepreneur's wife is member of an SHG. They have a loan of 4000 Rs. From the SHG and they have paid back 1000 Rs. When he went to pay them money than the SHG did not except the money because there were some problems in the SHG, now they have made a compromise (strange story, very unclear, seems to me that he is afraid that I have something to do with the NGO and he is scared to tell that he has a loan from the SHG)

He meets groups of people when he goes to Tarikhet or Ranikhet. In Tarikhet he meets the people in the market and he knows the people there. Once or twice a year he goes to Tarikhet and once or twice a year he goes to Ranikhet.

He does not go to marriages but healthier he meets people in festivals once or twice a year.

He has a relationship to someone in Dwarahat to whom he speaks once in every 2-4 years.

At Navalli, Mandalkoot and Pilkoli everybody knows him. He knows Mr. Joshi. Mr. Joshi came in the nearby villages and from there he met him.

#### F. Natural Capital

The main reason for the decrease in demand is that there is insufficient water. In the rainy season they have a lot of demand. They grind 50-100 kg per day.

#### G. Physical capital

The entrepreneur has electricity. He has a two monthly bill of 90 Rs. They only use it for the light bulb. They have a TV but no channels, he has a CD player but never uses it. They don't have a phone. They use kerosene. They get it in the government control shop in Navalli. They get it for 11,50 Rs./litre. They don't use more than 4-5 litres a month and they can always get it.

The electricity is sometimes gone but they only know when it is gone during the night because they only use it then. Sometimes it is only 30 minutes or one hour, sometimes it is the whole night. In every season it is like this, there are no fluctuations due to seasonal changes.

#### H. Influence on and access to transforming structures and processes

The change from 18 to 2 gharats has not increased the demand for the entrepreneur and ever since the cluster of gharats has disappeared the demand has been decreasing and decreasing. There is

insufficient water for the gharat to always grind. In the rainy season the demand is high. But normally the customers go to the grinder in Nagar or Lachina. When there is water they come to him. He says the conclusion is that they like the flour from the gharat more. The flour coming from the gharat is healthier because the vitamins are not burnt.

The other gharat-owners did not rebuilt their gharat here because their ancestors did not. The entrepreneur admits that the gharats at the road or in the villages are more viable but he does not have the money to buy land or get an enterprise near the roadside. His ancestors have also had their enterprise here and he also does not want to leave the place (I get the feeling this is an excuse and he does not want to admit that he really does not have sufficient money for moving).

They do not have a BPL card

They have 25 Nhali's of land of which they can eat for 2-4 months per year.

For their basic needs they go to Navalli or Tarikhet. In Navalli they get sugar, tea and rice and in Tarikhet clothes and utensils. Tarikhet is 4 km's walking and a healthy person ccan go in one hour. It costs the entrepreneur 30-45 minutes to reach Navalli. He does in one hour and thirty minutes to Tarikhet. He always goes walking.

He used to pay a tax for the gharat, this was approximately 20-30 years ago.

The know the prathan and the wardmembers as villagers but they do not have conversations with them.

He always has the same customers.

He does not have more to grind so he has a lot of competition. If he would tell the customers to give him more share of the flour they would not come back the next time.

#### I. Perceived Attributes of Innovation

#### J. Innovation-decision

#### K. Communication-channels used/L. Extent of change-agents promotion efforts

Mr. P.C. Joshi, the director of NGO HOPE came down to Uni to tell the gharat-owner that up gradation would happen but it never happened until now. I ask if it has something to do with insufficient water he replies that the waterflow is sufficient, even for electricity production.

## 2.3 Village cluster Khilkeet

### 2.3.1 Village Karchuli

#### Karbl1

Malikarchuli

Enterprise 33. Blacksmith using bark of pine trees as an energy source

Name entrepreneur: Devi Ram

Interview done by Tara Bisht and Karlijn on 5-5-06. During the interview Tara's brother was present who has always been living in the village. He is now about 40. He knows the blacksmith. Tara's husband was present and a few children from the village.

Production Process:

The entrepreneur works three hours a day. The rest of the day he works as a mason. He has been a lohar for fifty years. He has a little stone hut where he has always been doing the black smithy work. There is a wheel which, through manual labour is turned to make the blower blow. There is a pile of bark and a little oven. The entrepreneur mostly repairs people's tools. He hardly ever makes a finished product.

Location

Malikarchuli starts on a distance of 30 minutes walking down hill from the basic market of Khilkeet. The entrepreneur is located another ten minutes downhill from where Malikarchuli starts. The enterprise is located in a stone house next to his house made from stones and mud house. He has always been doing the black smithy work from there.

A. Adoption, rejection or no knowledge

The entrepreneur uses tree bark as an energy source. He has learnt to use this from his father, who also used to be a lohar. He has been using tree bark since he started black smithy work. He doesn't use charcoal because he claims it is too expensive and it is not supplied from Khilkeet and it would be too far to get it from Ranikhet. (It seems indeed that the entrepreneur would have difficulty with paying for the raw material. He has no electricity, no other income except for 110 Rs. per day for 10 days a month. He has to take care of his daughter and his wife. On the other hand I think that there is no need to use charcoal because the entrepreneur earns only 1000-1200 Rs. per year from black smithy work. The masonry is his main income source. It seems that there is no need for him to be more productive. Another thing is that the entrepreneur is the only lohar in the village and the demand is not higher than what he does now). He doesn't use wood because the wood which grows in the area is soft wood and when it is burnt for making charcoal it doesn't heat up sufficiently to heat the iron.

B. Vulnerability context

The iron he uses comes from Ranikhet but he hardly buys iron. He does not have the money to invest in the raw material and he is too old (He indeed is somewhere between 60/70 and he seems to have some physical problems). Sometimes customers come and bring raw material of which he has to fabricate a finished product but this happens only once or twice a year. The customers buy ready made tools from the market in Ranikhet and he does finishing (making the product sharp) or repairing. The entrepreneur never goes to the market for raw material.

The entrepreneur has only demand during the time when farmers need materials and shortly after this when they give them for repairing. During September and September the Kariff crops need to be harvested. In April-May there is the harvesting of the Rafi crops which are wheat and mustard seed. In May the women seed the land. For this they use a 'cuto'. In June he does finishing again.

He has always only been doing finishing. When he was young there used to be a lot of demand and people did a lot more cultivation. Many men and boys have left the villages and the demand decreased.

The weather has changed, there is not enough rain and therefore there are not enough crops. People's interests have also changed.

The market for ready made tools never used to be there but this market is not a threat for him because people only need to buy a tool once. The rest of the time he does the finishing or the repairing.

#### C. Human capital

The entrepreneur has never gone to school. He is illiterate. He has learnt in his childhood how to do this from his father. He started working after he had learnt all the work. When he was somewhere between 15 and 20. At that time his family had 7 members, he had no brothers. His father and him were the only people who were earning a livelihood. One of the entrepreneur's sons he has taught the work but he went outside the village, to another city, to do another type of job.

The entrepreneur would like to learn how to make a chain for chaining the animals. When I ask him why he does not try to learn this he replies that village lohars do not know how to make these things and that he would not know where to go to learn this (I think he really would not have an idea because he hardly ever leaves the village)

#### D. Financial capital

In April and May the entrepreneur finishes/repairs 100 tools per month. For one toll he gets 5 to 10 Rs. depending on the weight of the tool. In June, September and October he finishes/repairs 200 tools for 5 Rs. per tool. He doesn't get paid for all the tools. Some people give him crops, dahls, masala, whatever he requires. The people who don't have money give him crops. Some rich people in the village also allow him and his family to come to their house to eat the vegetables from their garden (The nice thing is that I am staying with Tara's family and that her father used to be in the army. He is one of the richest people in the village but that afternoon when I walked out of the house I found the entrepreneur together with Tara's father and mother pick up some saag from the garden for the entrepreneur and his wife and daughter to eat.)

The entrepreneur only gets 1000-1200 Rs. per year from the black smithy work, the rest is paid in crops.

The entrepreneur works as a mason. He gets paid 110 Rs. per day for this. He then works the whole day and he works approximately 10 days a month. In the summer and the rainy season there is hardly any construction because in the summer there is no water and in the rainy season there is too much water.

People come to him to ask if he wants to work. He sometimes works in the village and sometimes he works outside the village but only really close by. He doesn't go to Ranikhet to work. Later he explains that he is old now and that he can't go outside of the village anymore. When he could he used to go out only by foot.

The entrepreneur has 5 ha of land but this is only sufficient for providing the food for his family for 2,3,4 months.

The house is a two storey house like most houses in the village. He has two rooms upstairs and two rooms downstairs. One is for cooking, one is for the cattle.

#### E. Social Capital

The entrepreneur never goes outside the village. He has relatives outside and they come to his house only when there is a special ceremony or a sad thing like a cremation. There are villages respectively 20 and 32 kilometres away. He sees these people only once a year.

The entrepreneur goes to marriages in this village and surrounding villages. These are only during the marriage season in April, May and June and November, December and January. In every marriage season of three months he goes to 3/4/5 marriages.

The entrepreneur is scheduled caste.

#### F. Natural Capital

The entrepreneur uses bark as energy source and the area is covered with pine trees of which he gets

the bark. He is the only blacksmith in the area so there is no problem with availability.

#### G. Physical capital

The entrepreneur does not get electricity because he is poor. He is BPL, he has a BPL card. When I confront him with the fact that if he is BPL he can get a free electricity connection and the only thing he would have to pay would be the monthly electricity bill. The entrepreneur replies that the government has not given a connection to everybody yet. Some people have gotten a connection, some people haven't. When I then ask if he would want a connection he replies that he would want it. (I strongly get the feeling that there is no strong need for the connection. His daughter is not studying so she does not need the light in the evening and the entrepreneur has never really tried.). When I confront the entrepreneur with the possibility of stealing the light he immediately responds: "no, no, no, I am too scared. The other villagers would not want him to get free electricity if he would have to pay for it (Remember Bautha village in Dehradun. There were people who knew about the family stealing the light but they were ok with it. Later I also talk to the rich family, the family where I am staying and they also say: "Why should they get the light for free while we are paying for it?") The entrepreneur uses wood for cooking.

#### H. Influence on and access to transforming structures and processes

The entrepreneur goes for his basic needs to Khilkeet. It takes him one and a half hours to get there by foot (He is old, he goes slow). For cloths, for example sari's, he goes to the market of Ranikhet. This takes him 1.5 hour to walk to Khilkeet and then another 12 kilometres by jeep which takes him another 30 minutes (plus the waiting time for a shared jeep to get full).

The entrepreneur's daughter is unmarried.

The entrepreneur does not do more black smithy work because he can't do so much work. He is old and his eyes are weak. He doesn't have much energy. There is not so much demand either. All the villagers who need black smithy work go to him for having finishing/repairs done. There are not more people who request it.

The customers come only from this village. He has 20% customers which pay and 80% customers which give him crops and products. (If the entrepreneur earns 1000-1200 Rs. per year and he sells 100 products in April and May of 5-10 Rs and 200 products of 5 Rs. in June, September and October then he earns total approximately 4500 Rs. Approx 1/4 is paying, the rest is fixed customers which pay in crops and goods.)

The entrepreneur knows the prathan and the wardmembers. He talks to them about electricity problems, problems related to the lack of water and about the BPL card and the facilities given to him through the BPL card. When I ask why the prathan hasn't helped him yet he replies that there are many people like him. He is registered through a number and when his number is there the prathan will help him. According to his application he gets a number and according to the number he gets helped.

The prices he has always had. He has tried a few times to increase them but then the customers would boycott him and they would not give him any products to finish/repair. Then he would have no food.'

#### I. Perceived Attributes of Innovation

The entrepreneur has the enterprise because it helps him with get the food that his family requires. He doesn't want to improve his production because he is old and he can't work much more. He also does masonry work.

The entrepreneur knew that this energy source would have beneficial outcomes because his father had taught him how to work with it. His father had taught him to use bark in stead of wood because this would heat the iron better. The entrepreneur knew that bark would be more beneficial than charcoal because the price needs to be as low as possible and the entrepreneur cannot get the charcoal anywhere close (the closest is Ranikhet).

The entrepreneur had the possibility to experiment with the energy source because he had learnt as a child from his father and he knew how to use it. Only after that he started producing himself.

#### J. Innovation-decision

The entrepreneur decided to use bark (Was not really a decision as much as it was a conditional factor.



At that time the black smithy work was also the only income of his family, 50 years ago, and they did not have the money to get the charcoal.

K. Communication-channels used

The entrepreneur was brought up with his father using bark as an energy source.

L. Extent of change-agents promotion efforts

Nobody ever promoted an energy source to the entrepreneur.

*The entrepreneur really seems poor. He is very skinny, like his daughter and his wife. They have a simple, small two storey house which almost everybody has in the village. When I later visit other houses of scheduled caste people, a similar setting can be found. Some have electricity, some don't. The houses of the families which don't have electricity look a bit better since there is more furniture and room inside and there is more decoration on the wall.*

*Tara, a local, later explains that this family is one of the poorest in the village. Her mother always gives him vegetables because he can't pay for them. He lives with his wife and daughter. He also has sons but they work outside the village and they don't send money home.*

## **Karfocus1**

### **Malikharchuli**

Focus group with seven women respectively in the age of approximately 50,30,40,20,50 and 50. All the women are from the Ram habitation and are therefore scheduled caste.

The interview is done by Tara and Karlijn on 5-6-06. During the interview the men are asked to move away and so Tara's brother, Tara's husband and two local men from the Ram habitation are sitting separately but on a distance of five metres. On the other side all the children are sitting. Approx 15 children.

The women explain that there are approximately 15 families in this habitation. In total there are 110 families living in Kharchuli.

The electricity came in the village 17/18 years ago. Only in the upper part of Malikharchuli the families got electricity (With upper is meant the richer: see observations). At the time when the electricity came there were only 10 families who got it. Now there are only 10/12 families which don't have electricity. The 20 year old woman has gone to school. At the time the primary school in Malikharchuli was there. The other women have never gone to school. They can not read and write.

The problems in the village are that there is no road and there is no water. There is a tap in the Ram habitation and all families go there. The water coming from this tap is only running shortly on a day so it is really difficult to get water for cooking and bathing. Currently there has not been any rain so there is also no work on the field.

The gram prathan doesn't do anything where the villagers go for. One of the women should get widow pension but she doesn't get it.

None of the women do any activities to get extra income. They want to learn but there is no facility to learn them such knowledge. When I explain that there are several NGO's in the region which they can approach for such training they say the NGO doesn't come in the village. When I explain that they can go to the NGO, collectively, and ask the NGO to come and help them they reply that some of the women want it and some don't. If they can not go as a group than how should they do it?

## Karfocus2

Malikharchuli

Focusgroup with three men from the Ram family. They are scheduled caste. I speak to them when we go to a construction site in the village. All the village men and women are out working. The women are on the fields or fetching water and the men are out working. At the construction site we can get half an hour to talk to some labourers.

Interview done by Tara and Karlijn on 6-5-06. During the interview the people who gave the assignment for the construction are present, a family, and the constructor. We get the chance to talk to the three men separately. On the stairs of the house. The others are at least 6 metres away and can't hear anything. Tara's husband is sitting closer and her brother is also present but he is further away.

Names: Jagdish Ram, Mohan Ram and Reb Ram

The main problems in the village are the water problem, the unemployment problem, bad housing and electricity.

The three men are currently working for a contractor. One is mason and earns 110 Rs. per day and the other two are labourers and they earn 80 Rs. per day. The work a week or ten days a month. They don't work outside the village. Nobody asks them. When I ask why they don't go lookinf for work outside the village they claim that there are also sufficient labourers in other villages so they will not be employed. They are not asked to work. Bihari people are asked to work because they are trained. They know how to make houses from bricks. These people don't know how to do this.

They all have only one hectare of land and they can only eat from this for 15 days.

For vegetables and masala they go to Khilkeet. Khilkeet is half an hour walking. For differentiated needs like cloths they go to Ranikhet. Ranikhet is another 2 hours walking from Kilkeet.

One of the man has two children above eighteen. They work in Delhi and sent money home. The other two have young children which all go to school.

The following non-farm income generating activities are in the village:

- 1 lohar
- 4-5 masons

Labour is the main source of income. Some do labour, some work on the fields. Most labourers work in the village. The labourers which are staying in the village mainly work in the village

According to them 35% of the total population is SC and 65% is Rajput.

When they need a phone they go to Khilkeet. They have used the phone of people from the village only once or twice.

During the rainy season they get water in the village but during the summer season they have to go 2-3 kilometres outside the village.

All three don't have electricity. One has a BPL card, the other two have not got a BPL card. They are registered in the Block Development Office as being BPL. They say that they don't have a BPL card because the prathan does not give them one. They don't go to the prathan because he will not listen. They don't do anything to get electricity. When I ask them why they don't steal the light they explain

that they would not do that because the other villagers would not accept that. When I ask why they say that they are paying for it.

The three use kerosene. They can get 5 liters in a month and they use it for a kerosene lamp. They never have problems with getting the kerosene. There is a government fair price shop in Khilkeet where they go. They always get it. It has never happened that the kerosene was finished.

### **Karfocus3**

Malikharchuli

Talk with Umed Ram, an 84-years old villager who has been living in the village since his birth.

Interview done by Tara and Karlijn on 6-5-06. During the interview Tara's husband and Tara's brother are present.

Location

The house of the entrepreneur is located separately from the rest of the habitations. It is one house of which part has been rebuilt and part is very old and not used anymore. There are some women present but they stay away. They don't attend the interview.

The entrepreneur was born in 1923. He remembers the period when the British were in India. They didn't stay in the village and they did not do anything in the village.

At independence there were about 15 families in the village from the Bisht family (Rajput), the Ram family (SC), Aria family (SC), Lal family (SC) and Chandra family (SC). They are still in the village. The population gradually increased

The road to Khilkeet was made in 1972. This increased livelihood possibilities because the transport from products from Ranikhet to The village was only possible in small amounts because everything needed to be done on foot. Heavy things were difficult to transport such as cloths, shoes. Things which they cannot make in the house. Also the acquirement of wheats and grains was a lot easier. People's wealth increased after the road was built.

The walkable road from Kharchuli to Khilkeet was made 10-12 years ago. People went more easily to Khilkeet and Ranikhet

The man explains that in 1936 wheat flour cost 1 Rs. for 11 kgs. Now it cost 13 Rs. for one kg.

Electricity came in the village in 1983. He still doesn't have electricity but the others in the village who got it at first got it then. He doesn't have electricity. He had never heard about it and he has never asked anybody about it. His family would like to have electricity. He has a BPL card. When I ask him why he has not gotten a connection he explains that there is no pole there. They would have to pay for the pole themselves and this would be too expensive. The man has applied for a pole and the pole is sanctioned. The sanctioning was 2 months ago so he hopes to get it.

He has three sons. They are all three labourers. They do a lot of work

## Karfocus4

### Kharchuli

Interview with 2 locals who are rich in comparison to the other people in the village, done by Tara and Karlijn. They have a fridge, TV, DVD-player, one storey house with several rooms, a lot of decoration. One family is building an additional house in the back of their garden where they grow many vegetables. They have two watertanks. They are also building a mandir. The other family has quite a few cattle. The interview is done on 6-5-06.

#### Village information:

The village name is Kharchuli and consists of two parts. One part is Tullikharchuli and the other part is Malikharchuli. 30 years ago there was a fight between some villagers. There was a fight between the Rajput families and the SC families. This has not led to the creation of a SC-village and a Rajput village. In both the villages the distribution is equal because some people chose sides for the Rajput and some for the SC's. Kharchuli is the gram panchayat and the population size is equally distributed over the two villages. The prathan lives in Tullikharchuli and his name is Hukm Singh Bisht. All of the Rajput families are Bisht and all of the SC-families are Lal and Ram.

There are seven wards and there is one prathan. There is no political orientation apparent in the village, not among the villagers and no among the panchayat-members. Kharchuli belongs to the Tarikhet block.

#### Population

The total population of Kharchuli is 1200. In total there are 109 families of which 50% lives in Tullikharchuli and 50% lives in Malikharchuli.

The total size of the village is like a square, 6 km<sup>2</sup>. Most families live in separate habitations. These groups consist of a maximum of 15 and a minimum of three families. Out of the 6 km<sup>2</sup> approximately 3 km<sup>2</sup> is cultivatable land and the other 3km<sup>2</sup> is for the people's houses. There is a big variation in the amount of land that people own. Most people own somewhere between 5-10 ha's. There are no families which cultivate for selling the crops. They all cultivate for their own food. Most families cannot eat for longer than 2-3 months from their own crop. It depends on the rain. This year it is really bad, there has been no snow and rain during the winter.

#### Vulnerabilities

There is a water problem in the village. There are no wells and no hand pumps. There is a natural spring. There are some government pipelines. There is one going into Tullikharchuli and one into Malikharchuli. There are several taps outside in the village. There taps supply 5-12 houses. The taps sometimes work 30 minutes, sometimes even less. 2 kilometres away there is a natural spring. In summer this natural spring gets dry because everybody takes water there. They use it for bathing, for washing and for the cattle.

Landslides damage the mud houses in the rainy season. During the rainy season it happens 10 times a month. The road is then cut off. This causes no problems for the people to reach the road in Khilkeet. Most men work outside the village. In Dehradun, Delhi. Therefore most households are women households. The men send remittances home. Over the last 5-10 years the population has increased despite the fact that many people leave the village. The amount of children which are born is higher than the amount of people leaving the village.

#### Main sources of income

Women don't work as labourers. They only work on the fields. People do mostly farming. This is all rain-fed. The farming is part-time for the men. They do labour. Most work outside the village, 95%. Only 5% gets a job inside the village. One of the persons whom is interviewed explains that he is building a small house in the back of his garden. He hires labourers from the village. Some of the men come back in the evening but this is only 10%. The other 85% send remittances home and return only

once in a while. Most men work in other big cities like Lucknow, Dehradun, Khanpur.

#### Human capital

There is one primary school from the government in the village. This was established in approximately 1982. The secondary and inter-college where children go is in Khilkeet. This is also a government school. Khilkeet is the roadside village from where you walk down to reach Kharchuli. 25% of men can read and write and 10% of men can read and write. All the children go to school now so they can all read and write but they do not all go to secondary and inter-college.

There is no doctor in the village and also not in Khilkeet. They have to go to Ranikhet if there are health problems.

#### Ethnicity

The whole village is Hindu. Approximately 80% is Rajput and 20% is scheduled caste. There are no Brahmins in the village. They live in another village.

#### BPL

60% of the families have a BPL card. 40% doesn't have a BPL card. Out of the 109 families in the village 65 families have a BPL card. The prathan gives the cards to the families who require it. Eight years ago a survey was done for BPL registration. All these people were registered as BPL. The new prathan saw the list and gave them the BPL card. (Not all families which were registered at the survey have a BPL card now. One of the entrepreneurs I interviewed does not have a BPL card while he is registered. Later on I find out that he is supposed to get it but he lives in the house of his brother and he drinks and Tara explains that therefore the prathan does not want to give him the BPL card.)

#### Telephone

15-20 people have a phone, including both mobile phones and landlines. The people who do not have a phone go to the families which do have a phone to make a phonecall (when I speak later to some scheduled caste people who do not have a phone I find out that they go to Khilkeet when they need a phone, there is a PCO/STD there. It has happened only once or twice that they have used the phone of the villagers)

#### Infrastructure

A survey has been done a year ago by the Public Work Department for making a road to the village. This department has sent the survey and the application form to the government.

#### Energy sources

The electricity has come in the village in 1984. At that time 5-10 families were connected to the central government grid. These families got the electricity because they had the money. It had nothing to do with the distribution of the poles in the village (like in Bautha). Poles were put everywhere in the village. Not everybody was able to pay for it.

60% of the families has electricity now and 40% hasn't. The people who don't have it yet can't pay for it. The people who don't have it are both scheduled caste and Rajput.

For cooking approximately 25% use LPG, 10% use kerosene and 65% uses wood but the people who use LPG and kerosene do not always use it. They also use wood for cooking. The only use LPG and kerosene occasionally.

There is a vehicle for LPG which comes to Khilkeet. The truck comes approximately once a week. The villagers take their empty cylinders to a shopkeeper in Khilkeet. He changes the cylinders and tells the people from Kharchuli that their LPG has arrived. They take it from the shopkeeper and the women carry the LPG cylinder on their head down to Kharchuli.

The government is not sending out sufficient kerosene. Only 5 l per family. Everybody can get kerosene. If they want to buy kerosene they can get it for 13 Rs. per liter. The government sends out the kerosene but there is only one government fair price shop which supplies the people. How can this shop supply all the villagers, 109 families, from Khilkeet and also supply the people from other villages.

When I ask if kerosene is also a blackmarket product Tara's husband, who is a private taxi driver,

replies that there are buses in Ramnagar which are using kerosene in stead of petrol. The bus drivers have made deals with the wholesalers of kerosene. He replies that it does not happen in Ranikhet.

#### Non-farm income generation

- 1 lohar who uses the bark of pine trees as energy source
- 5 masons, but they are daily labourers
- There are no carpenters.
- Sometimes Tara's mother stitches cloths for the villagers but she doesn't get anything for it. Sometimes somebody gives her a present for it.

#### Typical in Kharchuli

Most people which have electricity have a TV, which is about 60%. Lack of electricity is therefore a indicator for poorness in the village.

There are five people in the village which have a fridge, this is an indicator of wealth.

75% have a house made of stones and mud. Concrete houses are a sign of prosperity.

2-3 families have a DVD-player, this is also a sign of wealth.

There are no people in the village which have large amounts of land compared to others. Having land is not a sign of wealth because what do you do with the land if there is hardly any rain.

People who are rich in the village have done or mostly do government jobs. Like serving for the army.



## Kargen1

Malikharchuli

Enterprise 34, general store selling goods from a box which is 1 by 0,5 by 0,5 metres.

Interview done by Tara and Karlijn on 6-5-06. During the interview Tara's brother and Tara's husband. The entrepreneur's children. The blacksmith and a lot of children from the village are present.

### Production process

The entrepreneur sells prachaat, cigarettes, matches and toffee's from a box. He gets the products from the market in Ranikhet.

### Location

The entrepreneur lives amongst a habitation of scheduled caste people from the Ram family. From the road in Khilkheet it takes approximately 45 minutes to reach from the road to his house.

### A. Adoption, rejection or no knowledge

Entrepreneur does not use energy source. He is retailing products from his house and he buys the products in Ranikhet. He puts in some manual labour to transport the products to his house.

### B. Vulnerability context

### C. Human capital

The entrepreneur used to go to school. He failed in the tenth class. He tries once. He was twenty years when he finished. In between he has also failed many classes. He started going to school when he was five. He learnt how to run an enterprise when he was in Delhi. He used to work in the University Library in Delhi where he sold books. He is now 50 but he went to Delhi when he was 30. He stayed in Delhi for 14 years. He sent money home to his wife.

He got the idea to do this from the market in Ranikhet. He was the first one in the village who was selling products from a general store. He has been doing this for five years.

### D. Financial capital

Entrepreneur is also a labourer. He dips stones in the village. He says: "I am a very poor man, I have five children and a big money problem. He works 5-10 days a month and for this he gets 80 Rs. per day. The monthly profit out of selling the products from his shop is only 50 Rs.

The entrepreneur has 3 ha of land and he can eat for approximately 2 months from this when it rains. This year he got less because it has not been raining.

The entrepreneur has one buffalo and he works on the land of his brother and him which is shared, 3 ha. He lives in his brother's house, there is also no light in his brother's house.

### E. Social Capital

The entrepreneur does not have any contact with the people who he used to have as friends in Delhi. He never talks to them anymore.

The entrepreneur's brother is in Kasepur where he does service for the government. He is a labour inspector. (Later on I ask if I can see his house and he shows me a small stone house with four rooms. The house has two floors. There is nothing in the upper room and there is a room for the cattle and the kitchen in the two lower rooms. The entrepreneur explains that he lives in the other house, the house of his brother. There he has a lot more luxuries. It is bigger, there is furniture. I get the feeling that this man is trying to pretend to be very poor and his is not really serious about the things he says. I think all the money he is explaining is more in reality).

The entrepreneur knows people in other villages. They are relatives. He knows people on distances of

20-50 kilometres from his village. He only meets them in special ceremonies and when sad things happen. This is mostly once a year.

The entrepreneur's family are him, his wife, 3 boys and two girls.

#### F. Natural Capital

#### G. Physical capital

I ask if I can see his house and he shows me a small stone house with four rooms. The house has two floors. There is nothing in the upper room and there is a room for the cattle and the kitchen in the two lower rooms. The entrepreneur explains that he lives in the other house, the house of his brother. There he has a lot more luxuries. It is bigger, there is furniture. (I get the feeling that this man is trying to pretend to be very poor and his is not really serious about the things he says. I think all the money he is explaining is more in reality)

The entrepreneur has no electricity. Out of the 15 families in his habitation there are four families which have electricity. All people in the habitation are BPL but some do not have a BPL card. They are all registered at the Block Development Office. When I ask him why he has no card he replies that the prathan has not made it. He has no idea why only 5 people in his habitation have a BPL card and the others have not. These people who have the card have a similar economic status (I find this a strange story....When I ask Tara later she explains that the man drinks a lot and that he is living in the house of his brother and that his conditions are not as bad as the conditions of the entrepreneur from E33. Tara: "Why should the prathan give him a BPL card if he has a house from stones, all his children go to school and if he has a drinking problem?")

The entrepreneur says that he wants to have electricity and that he has applied for it at the Block Development Office through his BPL registration but he hasn't got it yet. He doesn't steal the light because he is scared for the other villagers. The people are jealous if they have to pay and others don't have to pay.

For cooking the entrepreneur uses wood.

The entrepreneur reads the newspaper when he goes to Ranikhet, approximately 10 times a month.

#### H. Influence on and access to transforming structures and processes

The entrepreneur goes to Ranikhet by foot, approximately 10 times a month. It takes approximately 2-3 hours to go to Ranikhet by foot. He also buys his basic needs and his differentiated needs products in Ranikhet like rice, flour, masala, dahl and clothes.

The entrepreneurs customers are from this villages and from villages more down from Malikarchuli.

The entrepreneur explains that he has no fixed customers. There is competition from four other general shops. They sell the same kinds of products. He says he has no fixed customers, he always sees new faces. No people who regularly come to his enterprise.

The entrepreneur doesn't have more differentiation in his products because he cannot invest in the raw materials. When I ask him if he has a loan he replies that he doesn't like loans. If he has to pay for interest, how would he do it? When I explain that if he would invest a small amount he might be able to increase his profit. (Later I understand from Tara and her brother that the man has loans from the bank but that he hasn't repaid any of them)

#### I. Perceived Attributes of Innovation

#### J. Innovation-decision

#### K. Communication-channels used

#### L. Extent of change-agents promotion efforts

*Man has loans but he didn't say so. One of the other villagers confirms that he has loans but he hasn't paid them. He has a stone house i.s.o. a mudhouse. A mud house is a sign of poorness. He also lives in the house of his brother. BPL cards are only for people earning less than 700 Rs per month. Tara: Why should the prathan give him a BPL card if he has a concrete house? The prathan also has to live.*

*The government gives him money but he also has a house to take care of. The entrepreneur's children also go to school (I think Tara's view is not completely fair. Her brother in law is the prathan of the village where her husband's family lives. I think that she thinks that I think that all prathan's are bad and therefore explains that this is not true and she defends the prathan's. I will not take this too serious!)*

## Kargen2

Malikarchuli

Enterprise 35, general store selling nam kee, masala, biscuits, incense sticks, toffee's, noodles, soap, washing products, cigarettes, matches from cupboard and shelf's in the back of her house.

Name entrepreneur: Nhima Bisht, 30 years old

Interview done by Tara and Karlijn on 6-5-06. During the interview Tara's brother and Tara's husband are present. The entrepreneur's mother-in-law and a sister-in-law are also present. Her three children are also there. Her husband is not there

### Production process

The entrepreneur sells nam kee, masala, biscuits, incense sticks, toffee's, noodles, soap, washing products and cigarettes from cupboard and shelf's in the back of her house. She gets the products from Ranikhet.

### Location

The entrepreneur lives amongst a habitation of Rajput caste people from the Bisht family. This habitation contains 20-25 families among which the richest families from the village belong. ( I can see because they have a TV, fridge, DVD, watertanks, large kitchengarden, concrete, one story house, large outside sitting area. The house is well kept.) From the road in Khilkheet it takes approximately 4-5 minutes to reach from the road to his house.

*I have a strong feeling that the woman has not done any of the business activities. It seems like her husband brings the materials, arranges the shop, does the financing. It seems to me that her husband just left her the house and the cupboard and the shelves and when she is home she has to sell these for the prices her husband has given her.*

A. Adoption, rejection or no knowledge

B. Vulnerability context

C. Human capital

The entrepreneur has gone to school. She has passed the fifth class in the primary school in the village. She stopped because there was a lot of work in her house. She can read and write but she hardly ever reads. She doesn't read the paper and she rarely reads Hindi books. She has no time for this. Her husband has opened the shop and told her how to run it. She has been doing this general shop for the last 2 months.

D. Financial capital

The last 2 months she has been getting a profit of 15-20 Rs. per month. The money for the investment in the product is given by her husband and it is the money her husband earns. Her husband is a small constructor like Tara's brother. She doesn't know how much money her husband makes. Her husband comes home every evening.

They have land. The joint family had 8 ha but now the four brothers each have 2 ha. Normally they can't eat from this for longer than 2 months but this year it is even less.

They have one cow and two oxes.

E. Social Capital

The family consists of 7 people. Her, her husband, 3 girls, one boy and the mother-in-law. They know people outside if the village. She knows that her husband knows people 20 km from the village but she

doesn't talk to them, only her husband does. They also have family in Delhi. They have visited them once and they speak to them 2-3 times in a month.

The idea for starting the general's shop came from her husband. He got the idea from himself.

#### F. Natural Capital

#### G. Physical capital

The house has electricity from the central government grid and they have a meter. They pay an electricity bill of 400 Rs. for two months. They have a TV and a fan but no fridge and no radio. They also have a tape-recorder and an iron.

For cooking they use wood, sometimes LPG. They get the LPG from Ranikhet. Her husband brings it from Ranikhet to Khilkeet and she takes it from Kilheet on her head down to the village.

They have a scooter and her husband brings the cylinder with the scooter to Kilkeet.

They don't have a loan.

They don't save any money.

She says she knows who the prathan is (by the look on her face it indeed seems that she knows who the prathan is but that is it. She doesn't seem to interact with him.). She doesn't know the wardmembers.

Her customers are fixed. They always come to her shop. They are mostly small kids. She doesn't have a lot of competition

#### H. Influence on and access to transforming structures and processes

The entrepreneur gets her products for the general store from Ranikhet. She goes there approximately 1-2 times a month. She goes by jeep or by local bus but always with a vehicle.

Her basic needs she gets from Kilheet. She goes there by foot 3-4 times in a month. She goes by foot which is one hour walking. For her differentiated needs like clothes, utensils and jewellery she goes to Ranikhet.

Her husband has opened the shop and told her how to run it. He tells her how much money she has to ask for the products.

#### I. Perceived Attributes of Innovation

She has the enterprise because she hopes to get a small profit from it in the future. She says she also does it for the customers (in my opinion it is not for the customers but for the money and her husband wanted it that way. She doesn't seem to be very social. She hardly speaks to others and also not to Tara who used to be a member from the village)

#### J. Innovation-decision

#### K. Communication-channels used

#### L. Extent of change-agents promotion efforts

*When talking later to another village he tells that her husband is a government contractor. His salary is irregular but he sometimes gets a job of 10,000 Rs. on which he works 4 months. Sometimes he gets nothing for a couple of months (2-3 months)*

## Karobser

### Observations Karlijn

- 
- Khilkeet is the closest market to Malikarchuli. Khilkeet is a road head village. From there a stone path goes down by which people can reach Malikarchuli and Tullikarchuli and also some other villages. It is impossible to drive on this path. Khilkeet has all the basic needs which people from the off road villages require such as a vegetable shop, masala shop, general shop, tailor, grinder. There is no local bus going to Khilkeet, there are shared jeeps but generally people have to wait really long before the jeeps are full. It takes 15 minutes to reach Ranikhet by shares jeep and it costs 10 Rs.
- When Tara's grandfather was young he used to walk from Karchuli to Almora in 2 hours by short cut. Now it takes 30-40 kilometres to go there by car.
- It seems that there are some problems between the villagers. Especially between the SC's and the Rajput population. The SC's who don't have electricity don't want to 'steal' the light because they are afraid that the other villagers will cause problems, E33, E34 and the men from the focusgroup said it. The people who do have light indeed say: Why do they not have to pay for the electricity if we do have to pay? There was also the fight, 30 years ago, between the SC population and the Rajput population which resulted in the formation of Tullikharchuli and Malikarchuli.
- Poor in the village is not having electricity, not being able to pay for the children which should be going to school. Being rich means that people have a DVD-player, a fridge. Medium in the village is having a TV, concrete house and a fan.
- Description of a rich house: Nice wall paint, curtains, sofa and chairs for sitting, carpets, TV, video player, CD player, fan, five rooms, kitchen from 4 by 3, fridge, 2 tanks for storing water, a gas stove, photo's on the wall, paintings for decoration
- Description of poor house: 1-2 rooms, room for cattle, no chairs, only a bed to sit on.
- Within Malikarchuli there is a separation between the upper habitations and the lower habitations. When people refer to up they mean the richer (generally speaking the Rajput families) families and when referred to down they mean the poorer families (generally speaking the scheduled caste families).
- People hardly seem to use LPG. Even the richer families cook outside with wood. These richer families could easily afford to cook with LPG everyday. I don't think the price is the problem for these people but the transportation of LPG cylinders to the village is. Another thing is that they are used to it and in the village there is not much to do so maybe cooking with wood takes a bit longer but why would they want to do it quicker. There is nothing else to do anyway.

# An innovation's perceived advantage

A combination of adopter characteristics and innovation attributes

Appendices 2 - 7



Hengelo, 8 February 2007  
Karlijn Morsink  
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## Appendix 1: Operationalization, questionnaire

Table 1: Questionnaire

	Questions
A. Did the entrepreneur adopt, reject or have no knowledge of modern energy sources?	<ul style="list-style-type: none"> <li>- What energy source does the enterprise use?</li> <li>- Why does the entrepreneur use this energy source? Why not another?</li> <li>- What energy source did the entrepreneur use before?</li> <li>- What other energy sources does the entrepreneur know?</li> </ul>
B. Social participation	<ul style="list-style-type: none"> <li>- What formal/informal groups is the entrepreneur a member of?</li> <li>- In which cases does the entrepreneur meet groups of people?</li> <li>- Is the entrepreneur a member of any organizations?</li> <li>- Where does the entrepreneur travel to?</li> <li>- How often does the entrepreneur travel?</li> </ul>
C. Demand for the enterprise's products	<p>Is the demand larger than the entrepreneur can supply?</p> <ul style="list-style-type: none"> <li>- Does the entrepreneur sometimes say no to his customers?</li> <li>- Why?</li> <li>- Is there an increase or decrease in demand?</li> <li>- If you would produce more than would you be able to sell it?</li> <li>- institutions provide financial capital?</li> <li>- Which policies and licenses exist for running an enterprise?</li> <li>- Which policies affect energy access?</li> <li>- How can the entrepreneur influence legislation and policies?</li> <li>- Who are the entrepreneurs' customers?</li> <li>- How does the entrepreneur pay for modern energy sources?</li> <li>- How do people's castes influence the use of energy sources?</li> <li>- How do gender issues impact energy access?</li> </ul>
<p>I. What is the value of the perceived attributes of innovations in energy sources for the entrepreneur?</p> <ul style="list-style-type: none"> <li>o What is the relative advantage for the entrepreneur?</li> <li>o How is the innovation compatible to the norms, values and beliefs of the entrepreneur?</li> <li>o How complex is the innovation for the entrepreneur?</li> <li>o How did the entrepreneur try the innovation?</li> <li>o How was the innovation observed by the entrepreneur?</li> </ul>	<ul style="list-style-type: none"> <li>- Why does the entrepreneur have an enterprise? <ul style="list-style-type: none"> <li>o Profit?</li> <li>o Tradition?</li> <li>o Coping?</li> <li>o Status?</li> </ul> </li> <li>- How did the entrepreneur know that this new source would have beneficial outcomes?</li> <li>- What was the advantage of this new energy source compared to the former energy source?</li> <li>- Did the entrepreneur have the possibility to experiment with the new energy source before it was implemented?</li> <li>- What did entrepreneur have to change when he implemented the new energy source? <ul style="list-style-type: none"> <li>o production methods</li> <li>o knowledge</li> <li>o traditions</li> <li>o skills</li> <li>o norms</li> </ul> </li> <li>- What new skills and knowledge did the entrepreneur have to learn?</li> </ul>
J. How was the innovation-decision made?	<ul style="list-style-type: none"> <li>- Who decided about the innovation in the energy source?</li> </ul>
K. Through which communication channel did the entrepreneur get knowledge of the innovation?	<ul style="list-style-type: none"> <li>- How did the entrepreneur hear about this innovation?</li> <li>- From whom did entrepreneur hear about the innovation?</li> </ul>
L. To what extent did change agents promote the innovation to the entrepreneur?	<ul style="list-style-type: none"> <li>- Did somebody ever promote energy sources to the entrepreneur? Either collectively in the community or personally?</li> </ul>

## Appendix 2: Overzicht dorpen

**Table 2: Village wise information**

Village	Total house holds H	Total population I	On road/off road, type of road	Nearest town DF (distance to nearest town, km DG)	Geography. (steep/non-cultivable or medium steep/cultivable/plain)	Travel time to nearest town, means of travel	Type of market	electrification	LPG truck	Area G, ha	Total irrigated area EH	Cultivable area, irrigated + non-irrigated
District Almora												
Block Tarikhet												
Village cluster Pilkholi												
Pilkholi	209	1038	On road; national highway to Ranikhet, paved road <sup>1</sup>	<i>Ranikhet (10)</i>	Medium steep/cultivable <sup>2</sup> very dry	30 minutes by jeep to Ranikhet. <sup>3</sup>	Basic needs market for Tana, Tarswar, Chamoli. Bus and jeep stop. Toll stop for entering Ranikhet cantonment area. <sup>4</sup>	+/- 10 families don't have electricity <sup>5</sup>	On the road the truck drives through	138,39	0	99,33
Chamoli	58	284	Off road, paved foot path <sup>6</sup>	<i>Ranikhet (10) Pilkholi (1)</i>	Medium steep/cultivable <sup>7</sup>	To Pilkholi 15 minutes walking <sup>8</sup>	Only one flourmill, basic needs market is Pilkholi <sup>9</sup>	2/3 families don't have electr	Pick up for gas in Pilkholi	87,89	0	

1 Observation Karlijn Morsink

2 Observation Karlijn Morsink

3 Observation Karlijn Morsink

4 Interview with prathan of Pilkholi, 01-05-2006 and Observations Karlijn Morsink

5 Interview with prathan of Pilkholi, 01-05-2006

6 Observation Karlijn Morsink

7 Interview with 2 locals from Chamoli, 08-05-2006

8 Observation Karlijn Morsink

9 Interview with 2 locals from Chamoli, 08-05-2006

					very dry			icity <sup>10</sup>				
Tana	75	343	Off road, mud/stone foot path	Ranikhet (12) Pilkholi (2)	Medium steep/cultivable <sup>11</sup> very dry	To Pilkholi 30 minutes walking <sup>12</sup>	Few basic needs available but main basic needs market is Pilkholi	+/- 20 families don't have electricity <sup>13</sup>	Pick up for gas in Pilkholi	209,29	3,79	140,91
Tarswar	69	355	Off road, mud/stone foot path	Ranikhet (12)	Medium steep/cultivable <sup>14</sup> very dry	To Pilkholi it takes 45 minutes to walk <sup>15</sup>	No enterprises at all, basic needs market is Pilkholi	15-20 families don't have electricity <sup>16</sup>	Pick up for gas in Pilkholi	114,6	0	43,8 <sup>17</sup>
Village cluster Mandel Kote												
Uni	57	281	Off road, mud/stone footpath	Ranikhet (9) Tarikhet (4) <sup>18</sup>	Medium steep/cultivable <sup>19</sup> very dry	To Navalli 30 min. walking. To Tarikhet 1 hour. <sup>20</sup>	One flourmill. For basic needs Navalli or Tarikhet			90,65	0	0
Mandal kote	49	263	On road, mud road/paved road. Road going from Khairana, main jeep station in Almora to	Ranikhet (14)	Medium steep/cultivable <sup>21</sup> very dry	To Khairana 1 hour by jeep	Jeep stop between Khairana and tarikhet/Ranikhet. Basic needs market. For differentiated needs they go to			109	0	45,73

10 Interview with 2 locals from Chamoli, 08-05-2006

11 Observation Karlijn Morsink

12 Observation Karlijn Morsink

13 Focusgroup with locals from Tana, 07-05-2006

14 Observation Karlijn Morsink

15 Focusgroup with locals from lowest habitation in Tarswar, 07-05-06

16 Focusgroup with locals from lowest habitation in Tarswar, 07-05-06

17 Focusgroup with locals from lowest habitation in Tarswar, 07-05-06

18 Interview with flourmill using gharat from Uni

19 Observation Karlijn Morsink

20 Interview with flourmill using gharat from Uni

21 Observation Karlijn Morsink

			Tarikhet (BDO block Tarikhet)				Khairana or Tarikhet					
Nawali	43	212	On road, mud road/paved road. Road going from Khairana, main jeep station in Almora to Tarikhet (BDO block Tarikhet)	Ranikhet (14)	Medium steep/cultivable <sup>22</sup> very dry	2/3 hours walking to Ranikhet.	A jeep stop. A basic needs market but differentiated needs is Ranikhet. To BDO and SBI in Tarikhet	24 families have electricity, so 19 don't have electricity <sup>23</sup>	No gas truck going to the villages.	66	0	49
Village cluster Khilkeet												
Karchuli	105	578	Off road	Ranikhet (15)						235	2	80
District Dehradun												
Block Raipur												
Village cluster Maldivpta												
Bautha	42 <sup>24</sup>	250 <sup>25</sup>	Off road, no footpath		In mountains, agriculture possible in pastures <sup>26</sup>	From Maldivpta a 2 km on mud road, 5 km uphill. Walking 2 hrs. <sup>27</sup>	Only black smithy, tailoring and carpentering. Maldivpta as basic needs market <sup>28</sup>	Out of 42 families, 17 have been electrified. <sup>29</sup>				
Maldivpta		2000 <sup>30</sup>	On road, paved road, jeep and bus stand		In plains on the edge with	25 minutes by jeep to Dehradun.	Basic needs market and jeep and bus stop for villages up	Almost every family				

22 Observation Karlijn Morsink

23 Focusgroup with locals from Nawalli, on the road in chai and sweetshop, 14-05-2006

24 Interview with prathan of Bautha, 18-4-2006

25 Interview with prathan of Bautha, 18-4-2006

26 Observation Karlijn Morsink, 18-4-2006

27 Interview with prathan of Bautha, 18-4-2006

28 Interview with prathan of Bautha and Observation Karlijn Morsink, 18-4-2006

29 Interview with prathan of Bautha and Observation Karlijn Morsink, 18-4-2006

30 Interview with prathan of Bautha, 18-4-2006

					the hills <sup>31</sup>	10 minutes by jeep to Raipur <sup>32</sup>	in mountain. <25 shops. Sweetshop, restaurant, lantana shop, welding, PCO, vegetable shop, chai shop	electrified except for 2 families.				
Block Sahaspur												
Village cluster Ambiwala												
Ambiwala	185	926	On road	Dehradun (5)						62	38,74	51,46
Donkwala	13	84	Off road	Dehradun (10)						47	35,6	36,6
Village cluster												
Chharbha	1023	5609	On road, close to national highway, < 1 km	Herbertpur (6)						2763,1	600,6	1646,6
Kotra Kalyanpur	108	584	On road	Vikas Nagar (14)						175	48	80
Sahas Pur	1134	6568	On road, national highway from Dehradun to Herbertpur	Herbertpur (8)						425	111,6	172,91
Langha f (part of Vikas Nagar block)	256	1466	On road	Vikas Nagar (10)						312	34	183
Village cluster Fatehpur												
Fatehpur	389	2052	On road, close to national	Herbertpur (1)						402	20	27

31 Observation Karlijn Morsink, 18-4-2006

32 Interview with prathan of Bautha, 18-4-2006

			highway, < 1km								
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**Table 3: District wise population characteristics**

District	Dehradun		Almora
No. of villages	746		2267
No. of villages electrified	734		1855
Total population	1.282.143		632.866
% of population living in rural areas	47		91
Population density/sq km	406		171
laborers engaged in agriculture %	36		
Total agricultural land in ha	52.667	Hills 13.559	86.378
		Plains 39.108	
% of irrigated agricultural land	46	Hills 12,9	8
		Plains 57,5	

#### Maldivpta, Bautha

Village is spread. 17 families in centre of village have electricity. People living outside don't have electricity <25 shops. Sweetshop, restaurant, lantana shop, welding, PCO, vegetable shop, chai shop<sup>33</sup>

#### Pilkholi cluster, Tana, Pilkholi, Tarswad, Chamoli

Pilkholi cluster, big fluctuations in electricity bills because there are no metres. They think this is because they have a meter but nobody from the government comes to check the metre. The government just makes up an amount.<sup>34</sup>

The main sources of income in the village are government service for the army. Most families depend on people working outside of the village sending remittances home. Approximately 50% of the people have government jobs. Another 30-45% of the people work as labourers. Either in Ranikhet or Haldwani or outside of the state. In Pilkholi many people use LPG compared to villages in Dehradun or in Almora. The prathan explains that this is because Pilkholi is a road side village. The roadside village don't have problems because there is a truck passing by every 15 days which collects the empty cylinders and supplies them with new cylinders. The off road villages have difficulty transporting the cylinders to and from the road so they don't have LPG that much.<sup>35</sup> There are many people who use LPG. Most of the enterprises which are cooking (chai-shops, sweetshops) are using LPG and people also use LPG in their homes. The LPG is provided by a truck which drives from Ranikhet and stops in all the villages to sell LPG and to pick up the empty tanks. The tanks are 40 cm's long and are heavy to carry. The truck stops everywhere at all the houses. The LPG is more efficient. One of the chai-shops buys one tank for 290 Rs. and this remains for a month. If he uses kerosene he needs 2-3 bottles a day. The bottles cost 12 Rs. The kerosene is hardly ever available because the local buses use the kerosene. The kerosene is provided by the government fair price shops and BPL families can even get it cheaper. The local bus drivers are private owners and they have made deals with the wholesalers of the kerosene to buy it up. The kerosene they use in stead of

33 Interview with prathan of Bautha, 18-04-2006

34 Focusgroup with locals from Tana living in outside habitation, 07-05-2006

35 Interview with prathan of Pilkholi, 01-05-2006

petrol. You can smell it but nobody does anything about it. The truck which brings the LPG comes once every two weeks.

1.

Total 47 enterprises

The bakery is the only enterprise which is not directly on the road but is down a stairs. The rest of the enterprises are all located at the road.

LPG use and distribution

On one of the days I was in Pilkholi and the LPG truck came buy in Pilkholi in the enterprise where we were doing the interview, the grinding enterprise. That was at approximately 16.00 o'clock. When we finished the interview I had to go for some groceries and after that we went back. At that time it was six o'clock. In the timespan of two hours the truck had only moved 3 kilometres. The houses are not really dense because this is a steep mountains area. This indicated me that the use of LPG is very extensive because on the way down to HOPE I saw a lot of people exchanging their LPG

1. 2 small general stores (selling goods from inside their house)
2. 2 lohar who use wood
3. 1 tailor using manual labour through a hand machine (part-time from her house)
4. 4 masons working as labourers
5. 1 grinder using diesel

**Table 4: Distribution of sectors per village**

	bak ery	chai/ dhab a	car- penter	elec- trician	flour -mill	Genera l store/ other shops	Fruit proce s-sing	Metal - works	pot- tery	shoe- make r	sweet- shop	tailo r	Tire repair	weaving
Pilkho li	1	10	1	1	2	13	-	2 buildi ng	-	1	6	2	1	-
Cham oli	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Tana	-	-	-	-	1	2	-	2 blacks mith	-	-	-	1	-	-
Tarwa r	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uni	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Mand al Kote	-	X	X	-	1	X	-	X	-	X	X	1	-	-
Nawal i	-	3	-	-	-	3	-	-	-	-	2	1	-	-
Karch uli														
Bauth a														
Maldi														

vpta														
Ambi wala														
Donk wala														
Chhar ba														
Kotra Kalya npur														
Sahas pur														
Fateh pur														
Langh af														



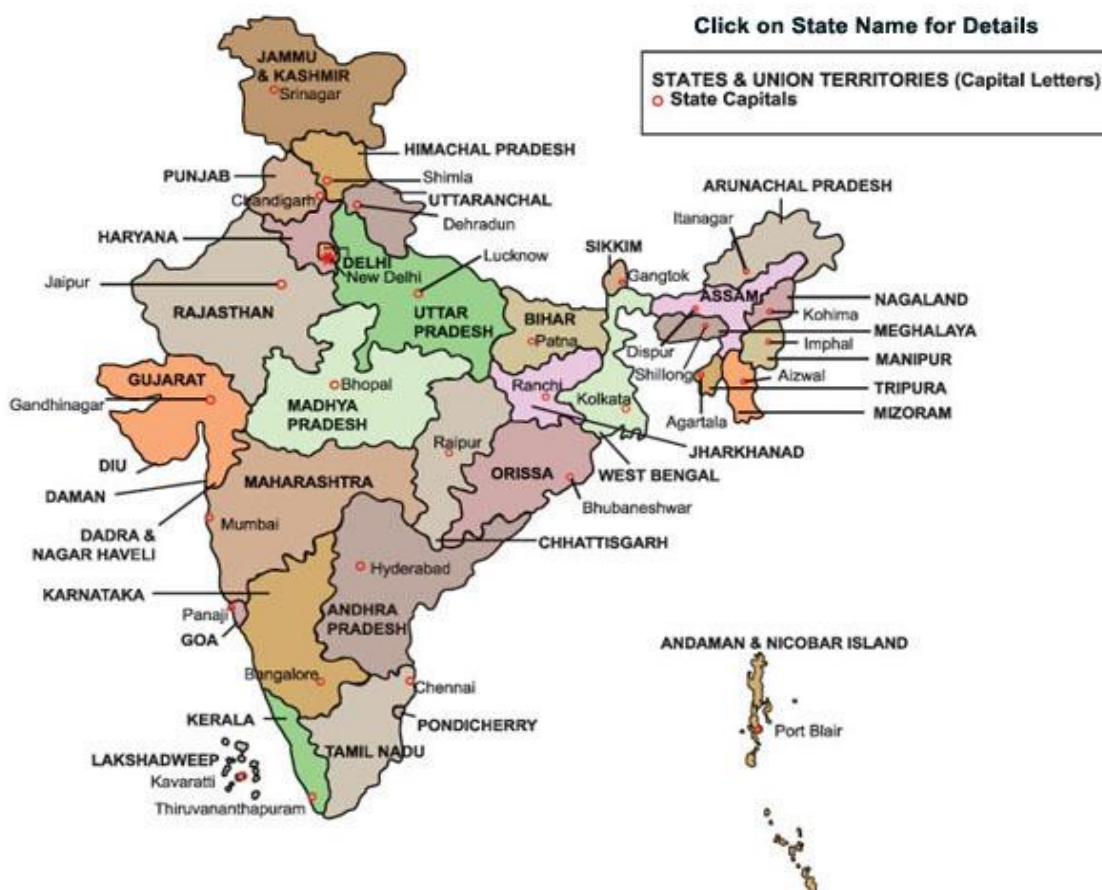
## Appendix 3: Country study India

### Chapter 1: Introduction

India is a country in South-Asia and shares borders with Pakistan, Afghanistan, China, Tibet, Nepal, Bangladesh, Myanmar and Bhutan. In 2001 India's estimated total population is 1,027 billion of which 52% is male and 48 % is female. The average population density is 274 persons per square kilometer but the unequal distribution is reflected in the following figures: 2 persons per square kilometre in the districts of Lahul and Spiti to 23 783 persons per square kilometer in Calcutta 489 349. Of the total population 74% live in rural areas and 26% in urban areas. In India the average literacy rate is 52% consisting of 45% of rural people and 73% of urban people being literate. Of the total male population 64% is literate and of the total female population 39% is literate. 37% of Indians are workers to which 52% of the male population and 22% of the female population contribute. Of Indian workers 68% are working in the primary sector, 12% are working in the secondary sector and 21% in the tertiary sector.

Of the total population 82% are Hindu, 12% are Muslim, 2% are Christian. Other religions are Sikhism, Buddhism and Jainism. 24% of the Indian population are members of scheduled castes or scheduled tribes<sup>36</sup>.

Figure 1: Map of India



36 <http://www.censusindia.net/> on 08-01-2006

## Chapter 2: General information

### 2.1 General information on India

Important to keep in mind, in describing the history of India, its demography and its political, economic and social development, is in relation to what characteristic of the country a description is going to be made. Stern explains that this characteristic can never be viewed as fixed but is always under the influence of a certain pattern of change. Stern offers a possible way of viewing the current pattern of change in relation to political and economic development in India. Stern describes this pattern as 'bourgeois revolution' by which he means both the development of capitalism as the development of parliamentary democracy. The development of these two factors have mainly brought political, economic and social change for the growing middle classes. These classes are not incorporating all Indian citizens but their number is very large and they are the ones directing the pattern of change in India<sup>38</sup>. Important historical developments, in relation to the view of bourgeois revolution, start with the British imperialism because the British empowered the Indian middle class. Important follow-up developments were the period of Indian nationalism and Muslim separatism. To describe these it is important to first address characteristics of Indian society that Stern considers to be important for the bourgeois revolution: the Hindu caste system, the class divisions and the Islamic influence. Everett also addresses these issues as important pillars of Indian society<sup>39</sup>.

#### 2.1.1 The Hindu caste system

The Hindu caste system consists of a hierarchical order of castes in which different rituals and norms guide the lives of their members. Membership of a caste is inherited. According to the Hindu ideology the higher castes are more religiously pure than the lower castes<sup>40</sup>. *Varna Dharma* ideology is the ideology underlying the Hindu caste system. *Varna Dharma* consists of *Varna* which divides people into four categories and *Dharma* which prescribes proper and rewarding behaviour for the members of every category. After death, people can become members of a higher caste or be released from reincarnation if they live their life according to the prescriptions of their caste. The four castes derive from *Purusha* which the Hindus consider as the Cosmic Spirit<sup>41</sup>. The *Brahmin*, who maintain the order of *Varna Dharma* through functioning as a priest. *Varna Dharma* derives from *Brahmanical* ideology and therefore the *Brahmins* are at the top of the caste system. The *Kshatriya*, who maintain the order through his warrior/ruler function. The *Vaishya*, who generate wealth for the priests and rulers and the *Shudra* who serve the other categories. Next to these four castes there is the category of the untouchables, Dalits. The people belonging to this caste have no relationship to *Purusha* and the people from the four, above-mentioned, categories regard them not pure because, in theory, the Dalits have unclean living habits. In practice the *Dalits* mainly do agricultural work and live their lives separated from the touchables<sup>42</sup>. The implications of these castes are that they are the most important institutions for India's rural life. Indian society is a segregated society where activities are directed by caste associations. Certain professions belong to membership of certain castes. In state politics caste-activity is present within political parties, welfare institutions and in formal and informal interest groups<sup>43</sup>.

#### 2.1.2 The class divisions

Stern describes that class, in rural India, can be considered as a collection of households which are similarly situated economically or in other words as sharing a 'market situation'<sup>44</sup>. In India classes derive from two basic differences in society. The first difference is the castes or religious communities people belong to. The second

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37 [www.lbassociates.com/.../page/abridge\\_india.htm](http://www.lbassociates.com/.../page/abridge_india.htm) on 08-01-2006

38 Stern, 2003

39 Everett, 1979

40 Everett, 1979

41 Stern, 2003, p. 59

42 Stern, 2003

43 Stern, 2003

44 Stern, 2003, p. 89

difference is caused by ownership of land and capital which leads people to respond in certain ways<sup>45</sup>. In addition Stern names some specific relationships which have led to classes, for example employer-employee relations or patron-client relations<sup>46</sup>. Although caste and class are very often intertwined there is considerable economic difference between people of a caste. Stern describes that they are both part of villagers' identities and that class becomes more important and caste becomes less important in people's relationships<sup>47</sup>. A consequence of the growing importance of class in comparison to caste is that people have relationships according to class status with people from different castes. Formerly, people of different castes did not become interrelated. These new kind of relationships based on class have led to discrimination of people of lower castes although they are members of similar class. For example, women who marry men of similar class but higher caste get discriminated against by the members of the men's caste.

### **2.1.3 The Islamic influence**

Big parts of India, especially the Northern part, has been under Muslim rule, roughly from 900 A.C. to 1700 A.C. This caused many people in India to convert to Islamic religion. Although Hindu religion remained very prominent, the Islamic traditions have also been incorporated into Hindu religion and are still present. This interrelation between Hinduism and Islam can be found in the development of people believing in Sufi saints. Some of them consider themselves Hindu, some Muslim and others neither of both<sup>48</sup>.

The existence of both religions in India have led to conflict and muslim separatism in the twentieth century. This will be further explained in section 2.1.6.

### **2.1.4 British imperialism**

The aim of the British colonial rule over India was to use Indian resources to serve the British economic and political interests. The British government in India, Raj, was characterized by the pursuit of a dual purpose therefore lacking legitimacy. On the one hand there were people in the Raj who were serving British interests and on the other hand there were people serving Indian national interests. Under the Raj India industrialized and modernized. According to Stern this led to British systems of law and administration, an illegitimate government using coercion and repression, nascent capitalism and services like tertiary education, modern transportation and communication. In general the Raj led to bad living conditions for the Indians. The British approached middle class Indians from the educated castes because they needed collaborators with knowledge of the country to operate the British regime. The Indian middle class founded the Indian National Congress in 1885 as an interest group demanding their representation at higher political positions. In 1935 the British the India Act to satisfy the Indian middle class. The content of the act was responsible parliamentary self-governance. The act led to the 1937 elections which the Congress won. The representation of educated middle-class Indians in the Congress advanced the bourgeois revolution in India<sup>49</sup>.

During British rule the educated middle class was able to enhance their skills through education. To control land ownership, the British started to divide land and assign responsibility over land to middle-class families experienced in cultivation. This caused the development of capitalism in agriculture<sup>50</sup>.

In part because of Britain's free trade policy, the Indian business class was able to flourish because of their commercial skills. They aided the British through arranging services like money changing, labor contracting and arranging the supply and distribution of Indian resources and British manufactured goods. Indian entrepreneurs started the Indian cotton textile, jute, munition and cement industry. After the First World War Britain restricted the free trade policy. The Indian entrepreneurs could benefit less from the market situation making them turn to Congress<sup>51</sup>.

### **2.1.5 Indian Nationalism**

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<sup>45</sup> Stern, 2003, pp. 94-95

<sup>46</sup> Stern, 2003, pp 100-105

<sup>47</sup> Stern, 2003, p. 90

<sup>48</sup> Stern, 2003

<sup>49</sup> Stern, 2003

<sup>50</sup> Stern, 2003

<sup>51</sup> Stern, 2003

From 1920 onwards Gandhi was the leader of the Indian National Congress. According to Stern he fostered the bourgeois revolution in India because he used a strategy of conflict and conflict resolution towards the Raj. His coalition alliance in the Congress fostered capitalism and parliamentary democracy and the Congress was able to use the British institutions in India to let this development continue. To achieve this Gandhi used an ideology of satyagraha. This was a non-violent strategy of conflict, conflict resolution and reassurance to the middle classes. Stern describes that the Congress used this strategy to ensure that the congress could inherit a bureaucratically structured India on which they could build a bourgeois democracy<sup>52</sup>.

### **2.1.6 Muslim separatism**

The Muslim rule and its subsequent Muslim governments were taken over by the British East India Company. The Company brought their Christian beliefs and institutions to India. The British were mostly collaborating with the Hindu's. Mainly the lower Muslim classes reacted with hostilities while the higher Muslim classes managed to use their position to gain benefits. The British Raj discovered a way to use the backward position of the Muslims to rule the Muslim and Hindu community in India. The started stressing the backward position of the Muslim community in relation to the Hindu community. As a consequence the British were able to reserve special places for the Muslims on political positions. Stern explains that this development led to the development of two nations within India: the Hindu and Muslim nation. In provinces where Hindus were outnumbered by Muslims the Muslims became a electoral majority. During the period that the British secured political representation of the Muslim community the Muslim League developed as an organization in which the Muslim community was organized. According to Stern only from the 1930's onward this organization was a disciplined party. In the elections of 1937 the Muslim League received only small amounts of the votes. From the 1940's onward the support for the Muslim League grew. Stern explains that an important cause of this development was the claim that the Muslim League made for 'Pakistan'<sup>53</sup>. While the Muslim League had mainly been an organization for Muslim elite and businessmen until the 1940's. The idea of a separate Muslim country, that arose during 1940's, also attracted Muslim peasants and labourers. As a consequence of the growing political support for the development of 'Pakistan', both from Muslims and from the British, Pakistan was declared a separate state in 1947. This separated India, divided Punjab and Bengal and led to enormous conflict, death and displacement of Muslims and Hindus<sup>54</sup>. The tensions between Hindus and Muslims in India remained and were stirred up at several occasions. Dietrich describes an example of conflict that was stirred up during the the eighties. Administration of justice, undermining Muslim law, caused muslims to strive for Muslim beliefs. A development, that should be seen in th elight of this is the process of communalism in India. People in communities hanging on to more fundamentalist religious ideas causing these communities to turn either Hindu or Muslim<sup>55</sup>.

### **2.1.7. The Indian Union**

The Indian National Congress was the governing party from India's independence onward. After the assassination of Mahatma Gandhi in 1949 Nehru became the leader of the Congress in 1950. The Congress remained in power of the government until 1977. In 1977 the Janata government ruled India for a period of only three years. According to Stern India was able to remain a parliamentary democracy because of three assumptions. First, it was acceptable to the people with power, wealth and status. Second, the people without power, wealth and status were not able to develop an alternative. Third, there was a large political fragmentation in India existing of mainly minority groups who where unable to cease power<sup>56</sup>. The people with power, wealth and status, mainly landowners and industrialists had to serve the Congress to remain their position while the peasants understood that they were able to accumulate power, wealth and status through forming alliances which guided local elections. From 1989 the fragmentation in politics caused coalition governments to succeed each other quickly and in 1998 The Bharatiya Janata Party(BJP)-led National Democratic Alliance gained power<sup>57</sup>.

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<sup>52</sup> Stern, 2003

<sup>53</sup> Stern, 2003, p. 144

<sup>54</sup> Stern, 2003, pp. 158-170

<sup>55</sup> Dietrich in: Bhasin, Menon and Khan, 1994

<sup>56</sup> Stern, 2003

<sup>57</sup> Stern, 2003

When India gained independence in 1947, the British left behind a badly developed economy. In 1950 only 10% of the people was working in manufacturing in cottage and small-scale industries. The British did leave behind an industrial base and a powerful bourgeoisie. In combination with India's large and various territory and the big and growing population this did offer possibilities for India to develop their economy<sup>58</sup>.

From Independence until the 1990's India was a government controlled country characterized by central planning, controls of the activities of privately owned industries and competing private and public enterprises. From 1950 onward economic development was arranged by five-year plans. The government controlled export and import, restructuring, innovation and investment with the aim of making India self-sufficient<sup>59</sup>. To reach this the Indian government started investing on a large scale and they allowed foreign capital to be imported into the country. The legacy of Gandhi also played a role in these five-year plans. Gandhi's philosophy was that industrialization on small, local scale would be desirable. The policy-makers incorporated into the five-year plans the plan for production of consumer goods in rural areas, where cottage and small-scale industries had been producing until then<sup>60</sup>.

Until 1977, when the Janata government gained power over India, the manufacturing economy was characterized by big business houses. In these big business houses permits and licenses were easier to acquire because of their established name. They had an advantage because access to resources was easier acquired and they also offered the possibility to get in contact with decision-makers, other politicians and businessmen because of the network they served. From 1977 onward small-scale modern industries developed, in part as a reaction to the stimulation of government policies. These small-scale enterprises produced anything from food and clothing to electronic goods. Because these small enterprises were mainly capital-intensive this growing economy was not able to offer a solution to the growing unemployment.

The Congress re-entered the government in 1980. The 1979-1980 oil shock had its effect on the Indian balance of payments causing the Congress to change its policy. Small enterprises were linked to large industries, excess production was allowed, India became more present in international trade and the government invested in the industrial development of backward areas. In practice, Indian districts started investing in promising enterprises, not in enterprises in underdeveloped areas<sup>61</sup>. A consequence of international trade was the growing demand for technically and scientifically trained people. Indian industrial markets became more diversified<sup>62</sup>.

During the eighties export grew but import grew even more making India a large debtor<sup>63</sup>. In 1989 the World Bank reported that the Indian economy needed restructuring, liberalization and globalization<sup>64</sup>. In 1991 India faced a fiscal crisis following the oil shock of the Gulf War. The large debt and the threat of an economic downfall caused Indian politicians and businessmen to stress the need for economic liberalization. They were frightened to lose their own economic position and the accompanying power. From this realization onward, gradual reforms were introduced to assist this liberalization. Until 1997 India's economy grew with an average annual rate of 7.5 percent. The bank sector was opened to private and foreign banks, big business were allowed to take part in international competition and Indian economy was opened to foreign competition<sup>65</sup>. In 1995 the WTO agreements changed Indian industry through the GATT, GATS and TRIPs agreement. These agreements were supposed to affect only those involved in international trade but in practice they affected all enterprises in India<sup>66</sup>. In 1997 its economy stopped growing due to declining exports, low industrial investment and declining consumer demand. The Indian government took some measures to stimulate the economy mainly benefiting the middle-class while undermining the importance of the contribution that rural consumer demand can make to the growth of consumer demand of India as a whole<sup>67</sup>.

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58 Chadha, 2003

59 Stern, 2003

60 Chadha, 2003

61 Chadha, 2003

62 Stern, 2003

63 Stern, 2003

64 Chadha, 2003

65 Stern, 2003

66 Chadha, 2003

67 Stern, 2003

### 2.1.8 The political organisation of India

Since independence in 1947 India has been a democracy. The power is divided into the executive power, to which the president of India, Manmohan Singh, the prime minister, the ministries, the independent departments of atomic energy and space and a series of independent offices belong.

The legislative body in India is made up by the Indian parliament which consists of the Rajya Sabha, the Council of States, and the Lok Sabha, the House of the People<sup>68</sup>.

The Rajya Sabha is the upper house of the Parliament of India. There is a maximum of 250 members. The majority of them is elected by the state and territorial legislatures. On the 18th of March 2006 the Rajya Sabha, the council of states has 185 members representing 19 political parties of which the Indian National Congress with 73 members and The Bharatiya Janata Party with 47 members are the biggest<sup>69</sup>.

The Lok Sabha is the lower house in the Parliament. Its members have been directly elected by the Indians. The maximum size of the Lok Sabha is 552 members. Each Lok Sabha is formed for a period of five years, after which the elections will determine the members of the new Lok Sabha<sup>70</sup>.

The judicial body consists of the State Courts, the High Courts and finally the Supreme Court of India, to which the Indian population can appeal respectively<sup>71</sup>.

Something on the relationship between the National government and states

### 2.2 General information on Uttaranchal

Uttaranchal is a state in the North of India and was formerly a part of Uttar Pradesh. Uttaranchal became the 27th state of the Republic of India on the ninth of november 2000. The main reason for this separation was that it required other government-policies for its economic development because it is a mountain area, in contrast to the current areas of Uttar Pradesh<sup>72</sup>. Uttaranchal shares borders with Tibet and Nepal and the states Uttar Pradesh and Himachal Pradesh. Uttaranchal has thirteen districts of which 6 are in the Kumaoni region and 7 are in the Gharwal region of Uttaranchal<sup>73</sup>. The Kumaoni and Garwhal region have always been in conflict. The Kumaoni region is represented by a large percentage of Brahmin Indians who were able to travel and import and exported products. The large variety in fauna has caused the fruit-processing industry and handloom industry of the Kumaoni region to prosper. The Garwhal region is represented by descendants from tribal people who traded more amongst themselves and exported less. The consequent difference in wealth of the two regions was stressed even more by the British rule because they invested largely in the Kumaoni region. The conflict became even more pronounced during the formation of Uttaranchal and the decision to appoint Dehradun as the capital. The Kumaoni objected despite the fact that Dehradun is closest to Delhi (250 kilometers) and has the best accessibility of all towns in Uttaranchal<sup>74</sup>.

The region is traditionally referred to as Uttarakhand in old literature and scriptures. Tourism is an important industry in Uttaranchal and the most important vesicatories are the Corbett National Park and the Tiger Reserve. The government of Uttaranchal is largely investing in this industry<sup>75</sup>.

At the 2001 census Uttaranchal's total population is 8 489 349, of which 26% live in urban areas. The male-female distribution is equal. In Uttaranchal 5105782 are literate and 3383567 are illiterate. Of the illiterate people 81% live in rural areas and approximately 61% of illiterate people are women. The total amount of workers is 36,9 % of the total population of which 80% are rural workers. 46,1% of men work and 27,3% of women work. Of the total population 58,4% are workers in the agricultural sector. Of all working women 83,9% work in the agricultural sector and of all working men 43,8% work in the agricultural sector<sup>76</sup>.

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68 <http://goidirectory.nic.in/> on 17-03-2006

69 [http://en.wikipedia.org/wiki/Rajya\\_Sabha](http://en.wikipedia.org/wiki/Rajya_Sabha) on 18-03-2006

70 [http://en.wikipedia.org/wiki/Lok\\_Sabha](http://en.wikipedia.org/wiki/Lok_Sabha) on 18-03-2006

71 <http://goidirectory.nic.in/> on 17-03-2006

72 <http://www.laghu-udyog.com/policies/state/uttran/utran.htm> on 25-01-2006

73 <http://www.ua.nic.in/> on 18-03-2006

74 Interview met mevrouw Banerjee on 17-03-2006, former resident of both Gharwal region and Kumaoni region

75 <http://en.wikipedia.org/wiki/Uttaranchal> on 08-01-2006

76 [http://www.censusindiamaps.net/page/India\\_WhizMap/IndiaMap.htm](http://www.censusindiamaps.net/page/India_WhizMap/IndiaMap.htm) on 08-01-2006

In 2001 there are 41216 small scale enterprises in Uttaranchal. In the small scale industry the reported total investment in 2001 was 30.558 million Rs (570 million Euro's<sup>77</sup>). In the medium and heavy industry there are 191 enterprises, of which the reported total investment in 2001 was 269.466 million Rs (5 miljard Euro's<sup>78</sup>).

The Ministries which are part of the central Indian government have departments in Uttaranchal and most of them are situated in Dehradun. Next to these ministries, 19 semi-private organizations have the responsibility to execute government policies and programmes. Together with the chief executive officer of the state, Mr. Ramashandran they form the state government. The state of Uttaranchal is divided into 13 districts and the government is represented at this level by the district officer. A few other institutions can also be found on the district level, for example the district industries centre<sup>79</sup>. Every district is divided into blocks with at the head of the block the block development officer. The block is divided into panchayats which in some case consists of one village and in some cases of more villages. Every panchayat or village is divided into wards. The panchayat is made up by the prathan, the head of the panchayat, and the head of the wards. Within a village there is often a sarpanch, which is the village leader. At the state level of Uttaranchal,

Figure 3: Districts of Uttaranchal



bron: Wikipedia

### 2.2.1 Dehradun

Dehradun is a district which is mainly in the plains of the Garwhal region, in the western part of

<sup>77</sup> <http://in.finance.yahoo.com/m5?a=1&s=EUR&t=INR&c=0> on 25-01-2005

<sup>78</sup> <http://in.finance.yahoo.com/m5?a=1&s=EUR&t=INR&c=0> on 25-01-2005

<sup>79</sup> <http://www.ua.nic.in/> on 19-03-2006



Uttaranchal. At the 1991 census approximately 80 percent of the population was Hindu and 10 percent of the population Muslim. The languages which are mainly spoken are Hindi and Garhwali. Dehradun district can be divided into two regions according to its topographical characteristics. The mountain area covers the Chakrate tehsil and consists of mountains and comprises Jaunsar Bhabar. The plain area is bounded by the Shivalik hills in the South and the Himalayas in the North. Dehradun is for more than 40% covered with forest, there wood processing is an important industry in Dehradun. Dehradun is well-known for the Ganga river which is considered sacred in Hindu religion<sup>80</sup>. The district of Dehradun is divided into 13 blocks.

#### 2.2.2. Almora

Almora consists of eleven districts.

State (Uttaranchal), district (Almora) 11 blocks in Almora (with block development officer) in that are panchayats (with gram panchayats) and than in those the villages with the village leaders.

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80 <http://dehradun.nic.in/history.htm#TOPOGRAPHY> on 18-03-2006



### *chapter 3: Rural non-farm sector*

#### **3.1 Rural non-farm sector in India**

When urban areas started to get industrialized and were economically developing development economists thought that the development of rural areas would be a logical consequence. They thought labour would transfer from rural to industrialized areas to serve the industrial industry. The development turned out to be different because the amount of labour needed in urban areas was insufficient to employ all people needing jobs. In addition to this, the contribution that agriculture delivers to developing economies is declining. Therefore non-farm income generation, improvement of employment, poverty reduction and increasing productivity became important issues in rural development<sup>81</sup>.

The tiny and small industry and the rural industry are inseparably linked and can therefore not be described as separate concepts. Rural industry is characterized by tiny and small enterprises but the tiny and small industry can also be found in urban areas.

To define the classification of tiny and small rural industry according to measurable variables Chadha refers to industrial surveys that have already been performed. These classify enterprises according to their status as organized or unorganized. For this classification the definition for establishment is used. An establishment is an enterprise run with the assistance of at least one hired worker, employed on a fairly regular basis. Organized industry consists of registered establishments (Chadha, 2003: 61). Because of the requirement for registration organized industry can be considered formal. Unorganized industry consists of establishments which are not registered, these can be considered informal.

Establishments which employ ten or more workers and use power and establishments which employ twenty or more workers, without using power, are required by law to register. Unorganized industry consists of three classifications. The first classification is the own-account manufacturing enterprises (OAME's). These enterprises are owned and operated without the help of any hired worker, employed on a fairly regular basis.

Second, an establishment which employs a total of not more than five workers is known as non-directory manufacturing establishment (NDME). Final, an establishment which employs a total of six to ten workers is categorized as a directory manufacturing establishment (DME) (Chadha, 2003: 53). Chadha classifies the OAME's as tiny rural industry and the NDME's and DME's as small rural industry (Chadha, 2003: 53).

The European Commission uses a definition in which it defines micro enterprises as having less than ten employees, small enterprises as having less than 50 employees and medium-sized enterprises as having less than 250 employees<sup>82</sup>. This definition is not workable in the tiny and small industry in India. The micro-definition of the European Commission would incorporate the tiny- and small-definition used in India. Chadha explains that an important difference between the tiny and small industry in India is the use of technology, the organization, market-coverage and production volume (Chadha, 2003: 51) It also appears from the following numbers that there is a significant difference between the tiny and small industry in India.

81% of total employment in the unorganized sector was accounted by the tiny rural industry (Chadha, 2003: 61).

The National Sample Survey Organization (NSSO) of the Government of India has researched non-agricultural enterprises in the unorganized sector in India and estimates that 6% of enterprises belongs to the small rural industry and 94% to the tiny rural industry<sup>83</sup>.

The definition of rural industry in India can be based on different variables. The first variable is the differentiation between enterprises. Chadha explains that the differentiation between enterprises in rural areas is similar to the differentiation in urban areas. Just like enterprises in urban areas, enterprises in rural areas are characterized by the same variation in size, technology and production volume (Chadha, 2003: 40).

Saith explains that the most common criterion to judge 'rural-ness' of an area is by location in or linkage with rural areas (Saith, 1992: 16). Chadha explains that the problem with judging 'rural-ness' by location is that the definition of rural industry is often used in India for accounting or policy reasons. Rural areas are re-named as urban areas and urban areas are re-named as rural areas because of beneficial outcomes for the Indian government (Chadha, 2003: 40). Judging 'rural-ness' of an enterprise by its linkage with rural areas mainly uses

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<sup>81</sup> Chadha, 2003

<sup>82</sup> [http://europa.eu.int/comm/enterprise/enterprise\\_policy/sme\\_definition/sme\\_user\\_guide.pdf](http://europa.eu.int/comm/enterprise/enterprise_policy/sme_definition/sme_user_guide.pdf) on 06-02-2006

<sup>83</sup> [http://mospi.nic.in/rept%20%20pubn/456\\_final.pdf](http://mospi.nic.in/rept%20%20pubn/456_final.pdf) on 29-01-2006

the criterion of employment of rural people in the enterprise. Chadha explains that judging 'rural-ness' by employment-linkage with rural areas undermines the importance of technology-linkage, market-linkage and ownership linkage with rural areas (Chadha, 2003: 40). Defining all these different combinations of linkages would result to an unworkable definition.

Ir. Kooijman-van Dijk offers a possibility for defining rural industry based on local definitions. Both Eisenhardt (1989) and Yin (1989) stress the importance of using local definitions for concepts, selection of cases and indicators. Kooijman-van Dijk explains that the concept of rural areas and rural industry depends strongly in different areas. For example in the area of Nainital, Uttaranchal, India, a district with approximately 1 500 000 inhabitants<sup>84</sup>, the definition of *urban centre*, *roadhead* and *offroad village* are used. These are not defined by their size but by the function they perform in access to products and services. *Urban centres* are the largest villages, *roadheads* are villages situated next to roads where people in *offroad villages* go to supply themselves with their daily need for products and services. Inhabitants of *roadhead* and *offroad villages* only visit *urban centres* for irregular need for products and services. Inhabitants of *offroad villages* may consider both *roadheads* and *urban centres* as urbanized while *roadhead* villagers consider only *urban centres* as urbanized and *offroad villages* as remote areas.

### 3.1.1 Policies, programmes and activities in the rural non-farm sector

In 1948, industrial policy included the development of small-scale and rural industries with the aim of using local resources, reaching local self-sufficiency and creating employment. In the first five year plan the cottage industry was supposed to provide employment in remote rural areas because it could be operated manually. Small-scale industries existed in more urbanized areas. In the second five year plan these industries were protected by the government but were pushed to increase their competitive position. During the third five year plan the Rural Industries Projects (RIP) programme was developed for balancing regional development and reducing urbanization<sup>85</sup>. During the fourth five year plan the Backward Area Development (BAP) Programme was supposed to support rural industry through giving financial, fiscal and other support. The government, at district and regional level, was responsible for the distribution. Instead of investing in the most underdeveloped areas they invested in areas with positive prognoses<sup>86</sup>.

The fifth five year plan continued this development but was ended with the arrival of the Janata government in 1977. They developed the SIP, focusing on employment in villages and small-scale industries. In 1980, when Congress ceased government again, the sixth five year plan stressed attention for rural employment. District Industry Centres were developed to promote the rural industry through the provision of products and services. The Seventh five year plan had to improve product-quality, reduce costs, upgrade technology and modernize rural industry<sup>87</sup>.

When the Congress ceased power again in 1991, changes in industrial policy were introduced. Separate policies for small, tiny and village industries developed addressing their specific needs. The banking sector was expanded to rural areas, better infrastructure was developed and product-quality checks were introduced. In practice these policies were only introduced when they were driven by market demand. Another part of the policy was to end subsidies. This caused the development of rural markets to be the responsibility of private investment and left rural entrepreneurs very vulnerable to shocks<sup>88</sup>. The WTO-agreements and the economic liberalization policy caused the revision of the definition of small scale enterprises. The ceiling on investment became Rs. 5 lakh<sup>89</sup> to Rs. 25 lakh for tiny enterprises and Rs. 60 lakh to Rs. 300 lakh for small scale enterprises with the aim of making them more competitive. Credit, under priority sector lending, was created for small-scale industry. Duty exemption for the small scale sector and for tiny units was set at the ceiling of Rs.100 lakh. Timely payment, by larger industries to small-scale industries, was guaranteed through arranging penal interest by law if companies exceeded the 120 days period. In 2000 priority lending was extended by creating the possibility for non-banking financial companies to lend to the tiny sector. In 1999 it was decided to set up 100 rural industrial clusters per

<sup>84</sup> <http://www.languageinindia.com/march2003/uttarpradeshurdu.htm> on 07-02-2006

<sup>85</sup> Chadha, 2003

<sup>86</sup> Chadha, 2003

<sup>87</sup> Chadha, 2003

<sup>88</sup> Chadha, 2003

<sup>89</sup> A lakh is a unit in the traditional number system of India and is equal to a hundred thousand, <http://en.wikipedia.org/wiki/Lakh> on 08-01-2006

year to aid the creation of rural markets because of the threat of the WTO multilateral free trade agreement<sup>90</sup>.

### 3.1.2. Performance of the small scale industry

The small scale industry plays an important role in the gross industrial value added in India. In 2001 it amounted to almost 40% of the total. The growth rates of small scale industry have increased until 1996 but since has been declining (see

Figuur 4: growth of small scale industry

Year	Targ et	Achieveme nt
1991-92	3.0	3.1
1992-93	5.0	5.6
1993-94	7.0	7.1
1994-95	9.1	10.1
1995-96	9.1	11.4
1996-97	9.1	11.3
1997-98	*	8.43
1998-99	*	7.7
1999-00	*	8.16
2000-01 (P)	*	8.90

bron: <http://smallindustryindia.com/ssiindia/performance.htm> on 25-01-2006

### 3.1.3 Problems and issues in rural non-farm sector in India

The institutional support for tiny rural enterprises is insufficient. Formal institutions can guide entrepreneurs by starting and sustaining tiny enterprises through training, network building, providing financial capital, providing market knowledge, marketing and distribution. Chadha explains that these entrepreneurs have to rely on informal institutions or there are no institutions at all. Public institutions do not aid in supply of enterprise-input or distribution and marketing of enterprise-output. NSSO research points out that most tiny rural enterprises have only one supplier or customer<sup>91</sup> which might contribute to artificially high supplier prices and artificially low customer prices, possibly affecting their competitive position<sup>92</sup>.

Another issue, causing problems for the tiny rural industry, is the failure of separating them from other rural industries such as village industries and small-scale industries. Their specific needs are therefore hardly met.

Many tiny rural enterprises are not registered at local government institutes making them unrecognizable. This,

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<sup>90</sup> Chadha, 2003

<sup>91</sup> NSS report: Non-agricultural enterprises in the informal sector in India, 1999-2000

<sup>92</sup> Chadha, 2003

in part, causes the lack of institutions for supporting the industry because there is no registration of the scale of the industry<sup>93</sup>.

Another problem for tiny rural enterprises is the difficult relationship they have with the government. First, they are reluctant to expand because of corrupt field officials. Second, before starting an enterprise and during entrepreneurship, operations are inspected by state-institutions. Third, when enterprises want to expand over Rs. 100 lakh, they are subject to a heavy increase in tax burden. Fourth, the Indian labour policy does not stimulate employment by tiny rural enterprises. A difficult resignation-law and high standards for working conditions makes entrepreneurs reluctant to hire labourers. The labour policy hampers expansion<sup>94</sup>.

The lack of infrastructure is also a problem in the non-farm sector. This refers to economic infrastructure, electric infrastructure, communication and IT support. A lack of knowledge and skills, politics and physical impossibilities for transportation have been fostering this<sup>95</sup>.

Financial capital is provided to tiny and small-scale enterprises by private and public institutions but credit is not sufficient to support many expansion plans. The need for collateral, small loans and high transaction costs are obstacles<sup>96</sup>.

Technological development is an important prerequisite if tiny enterprises want to remain their competitive position. The development of new production equipment, new raw materials, new products or designs and more efficient working methods depends both on the entrepreneur as on supporting institutions. These supporting institutions do hardly exist and many tiny rural entrepreneurs are not aware of possibilities for technological advancements<sup>97</sup>.

Chadha describes that one of the most important problems in the tiny rural industry is the lack of human capital in the workforce. In India, education is a state matter causing a very big difference between educational levels of states. Women's educational levels are generally considerably lower than men's and rural people's educational levels are considerably lower than urban people's educational levels. Advancements in rural educational systems are introduced at a very slow pace. As a consequence the quality of the workforce will not increase much the coming 15 years<sup>98</sup>.

A number of problems in tiny rural industry arise because the Indian government was unable to implement law concerning these problems. First, there is the problem of child labour. Although child labour has been declining, there are a few sectors in which child labour is still evident. For example in food processing, wool and silk textiles, garments, jewellery and sports goods. Second, there is the problem of occupational diseases and injuries<sup>99</sup>.

Rural tiny and small-scale industries have been polluting the environment and decreasing the natural resource base. This has had an adverse effect on the quality of living conditions, for example the quality of water and the ability to produce sufficient food<sup>100</sup>.

Another problem is the high rate of enterprise closure. The percentage of enterprises which close increases substantially when the age of the enterprise increases. Chadha offers the following explanations for this development: declining enthusiasm of the entrepreneur, increasing capital requirements after the start-up years, technological obsolescence and increased market operations. This development is expected to increase with the growth of the global economy because of more fierce competition, domestic and foreign<sup>101</sup>.

In general the supply and demand markets of tiny rural industry are small industries. In these small markets demand fluctuates and people with low income are customers. The general pattern in these markets is a

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93 Chadha, 2003

94 Chadha, 2003

95 Chadha, 2003

96 Chadha, 2003

97 Chadha, 2003

98 Chadha, 2003

99 Chadha, 2003

100 Chadha, 2003

101 Chadha, 2003

decreasing demand because rural people move to urban areas or their increasing income makes them buy on urban markets.

A final problem for tiny rural industry is the presence of the WTO. The total effect of the WTO agreements cannot be measured yet but some the effects are starting to be noticed by The removal of qualitative and quantitative restrictions, the arrival of substitute products, cheaper foreign raw material, expensive advancements in technology, China's dumping of products might all cause problems for tiny rural industry.

### **3.2 Rural non-farm sector in Uttaranchal**

#### **3.2.2 policy for the rural non-farm sector in Uttaranchal**

In 2001 the government of Uttaranchal has formulated its new industrial policy. They have defined the following issues in their strategy. The government wants to develop infrastructure with private sector participation. They want to identify special areas, based on raw materials and inhabitant's skills for the creation of comparative advantage. These areas will be supported by integrated development plans. They want to attract foreign investment, develop better marketing facilities, develop human resources and protect the environment. To make the implementation of this strategy possible, the government will provide the required institutional arrangements for support<sup>102</sup>.

Specific attention will be paid to small scale industries in rural and backward areas by implementing The Government of India Scheme of Integrated Infrastructural Development. This scheme has the objective of creating employment opportunities, develop exports, promote linkages between agriculture and industry, provide services and create or improve infrastructure like power, water and communication<sup>103</sup>.

The government of Uttaranchal is aiming for the development of traditional industries by using a cluster approach incorporating private sector participation. This means that facilities will be provided for quality improvements, technology and design, market promotion and the development of skills. They also aim for the development of a Master Plan. This plan will focus on the development of traditional industries in the hill areas. This plan will focus on providing the needed resources for the production process such as raw materials, marketing facilities and training of employees<sup>104</sup>.

The department of rural development of the government of Uttaranchal has developed a policy, named SGSY, to aid poor families. In this statement some indications for developing the rural non-farm sector are given. These indications are: "They want to create a sustainable level of income. They aim to reach the objective by organising self help groups through social mobilisation, training, capacity building and provision of income generating assets. This will lead to strengthening their socio-economic position and increase their collective bargaining power. Enterprise activities should be based on local resources and people's skills and should follow market-demand."<sup>105</sup>

#### **3.2.3 performance of rural non-farm sector in Uttaranchal**

Uttaranchal has only been an independent state since 2000 so numerical facts about its rural industry are hardly available. Therefore reference will be made to Uttar Pradesh. Over the period from 1984-2000 states' shares in enterprises in Uttar Pradesh changes from 33% in 1984, to 18% in 1994 and 15% in 2000<sup>106</sup>.

In Uttar Pradesh the growth of employment has become less negative from 1984 to 1994 it was -7,5% and from 1994 to 2000 it was -1.3%. The general pattern in India was a decline in the smallest enterprises which employed five or less than five people but an increase in bigger rural enterprises which employed six to ten enterprises. Total annual employment growth turned out to be positive. This development also took place in Uttar Pradesh<sup>107</sup>.

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102 <http://www.laghu-udyog.com/policies/state/uttran/utran.htm> on 25-01-2006

103 <http://www.laghu-udyog.com/policies/state/uttran/utran.htm> on 25-01-2006

104 <http://www.laghu-udyog.com/policies/state/uttran/utran.htm> on 25-01-2006

105 <http://www.uard.gov.in/english/sgry.htm> on 08-01-2006

106 Chadha, 2003

107 Chadha, 2003

The growth of productivity per worker In Uttar Pradesh decreased from a growth, between 1984-1994 of 5.7% to a growth, between 1994-2000 of 3.4%. The general pattern in India of productivity per worker increased from a growth between 1984-1994 of 2,1% to a growth from 1994-200 of 6,4%<sup>108</sup>.

## *Chapter 4: Rural Energy Sources*

### 4.1 Energy sources

Energy sources refer to the adoption by an entrepreneur of an energy source on which the enterprise relies for production. The entrepreneur has not used this particular energy source before. Barnett (2000) explains that different classifications are used to distinguish between forms of energy. A first distinction can be made between animate and inanimate energy. In poorer societies the main forms of energy are animate energy provided by animals and human labour. Inanimate energy will also be used. Inanimate energy is also referred to as biomass fuels. Examples of inanimate energy is wood fuel, crop residues and dung. These forms of energy are usually considered traditional energy. Barnett (2000) describes that traditional energy sources can be distinguished from modern energy sources such as electricity, coal, oil and gas. The characteristics of modern energy are that they are in some senses more convenient. Barnett describes this convenience as more energy per unit volume, easier storage or distribution or are more efficient at doing useful work. Traditional biomass energy sources can be converted into more useful forms of energy and are then referred to as modern biomass fuels.

Currently energy sources are often classified according to their degree of renewability. Renewable energy sources are compared to non-renewable sources such as fossil fuels. The difficulty with this definition is that it is difficult to make a distinction. Barnett give the example of wood and other biomass fuels. They are only renewable if they are replaced by new planting (Barnett, 2000: 5). This is very difficult to assess when trying to classify the source of energy used in an enterprise because it is difficult to check if planting occurred. Another example of working with this definition is classifying hydraulic energy sources. On the one hand they can be considered renewable but because of the environmental and human damage in building the dam it is often considered non-renewable (Barnett, 2000: 6).

In this research the classification between traditional and modern sources of energy will be used.

Karakezi, Lata and Coelho refer to traditional biomass energy sources as being immediately ready for combustion. Examples are wood, charcoal, leaves, agricultural residue, animal waste and human waste. The use of these sources is often very inefficient (Karakezi, Lata and Coelho, 2004: 3)109. Modern biomass energy sources have been converted from biomass sources into advanced sources as gas, liquid fuels and electricity (Karakezi, Lata and Coelho, 2004: 3).

#### 4.1.1 Policies, programmes and activities in the rural energy sector in India

The responsibility for the energy sector in India is divided between the Ministry of Power, the Ministry of Non-conventional Energy Sources and the Ministry of Coal. The implementation of programmes and policies is done by semi-public organizations110.

The rural energy sector has been mainly targeted by the rural electrification programme, aiming for the electrification of villages. A village is said to be electrified if electricity is used in the inhabited locality within the revenue boundary of the village for any purpose whatsoever. In 2004 this was complemented by the following criteria:

- Basic infrastructure such as a distribution transformer and distribution lines are provided in the inhabited locality as well as the dalit/ hamlet where it exists.
- Electricity is provided to public places like schools, panchayat offices, health centres, dispensaries, community centres etc.

The number of households electrified should be at least 10% of the total number of households in the village111. The first mentioning of rural electrification in government plans can be traced back to the fifth Five Year Plan in India, under the Minimum Needs Programme. Funds were provided to states which were partly grants and partly loans. The target areas were remote villages with difficult access. This programme has been followed up until 2004, when it was merged with the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY). The Kutir Jyoti programme, which was launched in 1989 had the aim of providing single point light connections to households of rural families below the poverty line, including harijans and adivasi families. This scheme has also been merged with the RGGVY.

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109 <http://www.renewables2004.de/pdf/tbp/TBP11-biomass.pdf> on 17-02-2006

110 Annual report 2005-2006 of the Ministry of Power of India, p.1

111 Annual report 2005-2006 of the ministry of Power of India, p. 25

Dr. Banerjee explains that rural household electrification is important in understanding the use of electricity in the tiny and small rural industry. The general pattern of adoption of electricity in enterprises is that electricity is first used in the household for simple applications. This adoption in the household is then followed-up by the use of electricity in the enterprise<sup>112</sup>.

In 2004 the Accelerated Rural Electrification Programme and the Accelerated Electrification of One lakh villages and One crore households provided 40% subsidies for rural electrification programmes.

The Gandhi Gramin programme is part of the National Common Minimum Programme (NCMP) goal for providing access to electricity to all households in the country in five years. The organizations which is responsible for rural electrification and the implementation of this scheme is the Rural Electrification Corporation.

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<sup>112</sup> Interview with Kedar Banerjee and Madulika Banerjee on 16-03-2006



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## Appendix 5: Terminology for coding

**Table 4: Enterprise categories**

Casual		Casual Enterprise: Enterprises that were run occasionally, for at least 30 days in the last 365 days, were called 'casual enterprises' (NSSO <sup>113</sup> ) Income generating activity which is irregular or only performed part of the year (less than 100 days)
OAE		Own Account Enterprise: an enterprise which is run without any hired worker employed on a fairly regular basis is termed an own account enterprise. If such an enterprise is engaged in manufacturing and/or repairing activities, it is termed as Own Account Manufacturing Enterprise (OAME) Source NSSO <sup>114</sup> Family staff or irregular apprentice or irregular commission. Under OAE either only owner or owner and family informal or help only in season or irregular, less than 100 days per year.
Establishment		An enterprise run with the assistance of at least one hired worker, employed on a fairly regular basis. Paid or unpaid apprentices, paid household member/sevrant/resident worker in an enterprise are considered hired workers. Establishments have been further categorized into 2: directory and non-directory Source NSSO <sup>115</sup>
	Non-directory Establishment (NDE)	5 or less workers. Source NSSO <sup>116</sup>
	Directory Establishment (DME)	6 or more workers. Source NSSO <sup>117</sup>

**Table 5: staffing**

Owner only	Owner is only worker for the largest part of the year ( so this category includes enterprises with commission or day wage work only in peak season, less than 100 Days).
Family informal	No formal payment
apprentice	An apprentice is 'learning on the job', receives a small pay or none.
Commission or daywage	Paid per piece, or contract per day, or seasonal work less than 1000 days per year. Pay depends on amount of work available, Not that this can be in OAE.
Salaried	Paid per period, with assumed substantial duration of work agreement( a year or longer). Implied is that the staff members have a fixed contract which gives a certain income security independent from

113 Official definition NSSO, Unorganized Manufacturing Sector in India 2000-2001, characteristics of enterprise NSS 56<sup>th</sup> round (July 2000-June 2001, NSSO, GoI, 2002

114 [http://mospi.nic.in/mospi\\_nssso\\_rept\\_pubn.htm](http://mospi.nic.in/mospi_nssso_rept_pubn.htm) on 15 januari 2006, Unorganized Manufacturing Sector in India 2000-2001, characteristics of enterprise NSS 57<sup>th</sup> round (July 2000-June 2001, NSSO, GoI, 2003

115 [http://mospi.nic.in/mospi\\_nssso\\_rept\\_pubn.htm](http://mospi.nic.in/mospi_nssso_rept_pubn.htm) on 15 januari 2006, Unorganized Manufacturing Sector in India 2000-2001, characteristics of enterprise NSS 57<sup>th</sup> round (July 2000-June 2001, NSSO, GoI, 2003

116 Official definition NSSO, Unorganized Manufacturing Sector in India 2000-2001, characteristics of enterprise NSS 56<sup>th</sup> round (July 2000-June 2001, NSSO, GoI, 2002

117 Official definition NSSO, Unorganized Manufacturing Sector in India 2000-2001, characteristics of enterprise NSS 56<sup>th</sup> round (July 2000-June 2001, NSSO, GoI, 2002

	small or temporary fluctuations in availability of work.
Partner	Joint profit or loss
Owner not worker	Owner either does not work in enterprise at all or is involved only in management or sales, not in production.

**Table 6: Ownership**

Sole proprietor	Although ownership was often not explicitly asked, sole proprietorship is assumed when an enterprise has only one owner-worker
Family	Family members have shared or have contributed to investment and are involved in decisionmaking, for example on investment and operation. If enterprise is in-house and sole proprietorship is not stated assume family enterprise.
Partnership	Non-family members in joint ownership and decisionmaking positions.

**Table 7: Location of enterprise**

Onroad	On road that functions as main access road or through road for at least 200 households. Small roads connecting hamlets only are coded as offroad. Center of hamlets are counted offroad.
In center	The location that functions as cluster center for shops/market for surrounding village. There is only one cluster center but according to local definitions several centers can exist within a village cluster.
Off road or outside center	Small roads connecting hamlets are coded as offroad, less than 1 hour walking from an all-weather road.
Remote	No all-weather road within an hour walking from the village
No fixed location	Enterprises who work at customers' or on the street without own accommodation.
Industrial estate	Defined by state government with special tax benefits, infrastructure etc.

**Table 8: Sector**

Bakery - bk		Bread and or cake which is baked in an oven
Chai/Dhaba - ch,dh		Selling chai, additional snacks (factory or simple homemade such as traditional sweets such as jalabi. Small restaurant serving local Indian food
Carpenter - cp		Processes wood, from logs to planks. Making furniture, windows, doorposts, doors.
Electrician - el		Does repairing in enterprise of CD-players, DVD players, TV's, VCR's, radio. Sometimes mobile phones. Goes to houses to do wiring.
Flourmill - mil		Grinding wheat and maize to flour. Sometimes for sale in the market but

		mostly directly for customers who grind their on crops. Sometimes oil grinding or spice-grinding
General store or other store - gen, sto		General stores offer basec needs products as fruit, soap, biscuits, candies, flour. In small villages m ostly the only shop. All other shops also without production. Note the shops available because it gives an indication of the type of market. Availability of ready-made clothes, DVD's, computers.
Fruit processing – fr		Producing jam, squashes, pickles usually with grinders, pulpers etc.
Metalworks	Blacksmith - bl	Producing only agricultural tools from iron. Local term is lohar.
	Welding - wel	Welding iron or other metals to produce gates, fences, stairs, doors but also parts of machines
Pottery - pot		Making pots, jugs, plates, earthenware by using a turning table and heating them.
Shoemaker - sh		Cobbler, making and or repairing shoes and sandels
Sweetshop - sw		Selling packed or unpacked home made sweets. Usually made from milk and sugar with additional colourings, nuts, dried fruits.
Tailor - tl		Men's, women's and children's clothes. Nearly always on order, sometimes repair. Mostly in enterprise, sometimes at home.
Tire repair - pu		Puncture repair and/or recovering tires
Weaving - wv		Usually handloom weaving. For categorization weaving of carpets/rugs has also been included

## 2. Customers and markets

***Table 9: Customers and markets***

Local markets	including surrounding villages within upto 5 panchayats, otherwise large area local market and/or nearby town
Local passers through	Local passers through (tourists, people on route, customers from outside the local market who come to visit the enterprise especially.
Distant markets	Customers are outside district. Including sales to middlemen and traders
Large area local market	more than 5 panchayats, but within district
Nearby town	According to GoI definitions
competition	

Fixed customers	mainly fixed, only occasionally new passer by. Fixed can mean that the same customers come to the enterprise again and again, for example according to religion or caste or network. It can also mean that customers come according to traditional caste system where artisans get paid a fixed amount (in food) for services to higher caste farmers etc. Nowadays still practice. Payment may be in food or money.
New customers	
Both fixed and new customers	
Member of traders association	

**Table 10: Urban and rural**

Rural	Non-urban according to CoI, Source census of India, 2001
urban	All places with a municipality, corporation, contonment board or notified town area committee. A place satisfying the following three criteria simultaneously: - a minimum population of 5000 - at least 75 per cent of male working population engaged in non-agricultural pursuits - a density of population of at least 400 per sq. kilometre Source: Census of India, 2001
city	Towns with population of 100.000 and above are called cities. Source: Census of India, 2001
town	Some villages with population <5000 officially have town status. For this research town status should be mentioned. Source: Census of India 2001
village	Geographic grouping of houses with village name used by local population. The size may range from hamlet to small town. The presence of a panchayat system is an indication for village.
Census village or revenue village	Administrative unit used in elections and for census data
panchayat	Administrative and political unit. Often different from census village because the panchayat is based on the local definitions of a cluster. This reflects geographical proximity as well as access to markets. The panchayat shifts its definition regularly. Comparisons between years is therefore difficult.
ward	Section of panchayat, head of ward is ward member. Wards are not used in this research, but wardmembers have been used as informants.

**Table 11: Roads**

All weather road	May be turmac or stones. Driving at 30 km/hour is possible. If some parts are mud due to landslides this should be commented.
Mud road	Accessible by jeep or by car in the season. Large putholes, driving possible at 10 km/hour
Paved Footpath	Footpath made by stones, turmac or wood

Unpaved footpath	Sand footpath, developed by people walking on it.
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**Table 12: Geographic location**

Plains	No differences in altitude. Is possible at the south of the Himalayas but can also be found in between the Himalayas (for example Garud in Bageshwar)
Foothills	Location in foothills or first slopes of the hills but close to the plains. Referred in local context as shivaliks. <500 metres.
Mid hills	The term mid hills and high hills varies and are used to locally describe geographic position and climatic zone. Midhills are from 500-1500 metres. Agriculture includes rice
High hills	The temperate climate allows agricultural products like apples and off-season products (other harvesting times compared to plains). High hills range from 1500 metres.
Remote village	Panchayat located in hills where road locations either all-weather or mud road are accessible over more than one hour travel.
Offroad village	Village between 15 minutes and 1 hour walking from an all-weather road or mud road that is accessible by car
Roadhead village	In the context of the study a road head is considered a village on an all weather road or mud road.
Offroad cluster centre village	Sometimes cluster centre villages are not on the road, for example because schools, government offices etc are in off-road villages.

## Livelihoods

## Human capital

**Table 13: Education and training**

Education	primary	Class 1-5
	secondary	Class 6-10, having finished at least class 6
	intercollege	Class 11-12, having finished at least class 11
	bachelor	One year of bachelor or more
	master	One year of master of more
	Other professional	Training in professional institute but not related to current core-processes of enterprise.
	No education	No education in any institute
Training in similar sector		Training in enterprises working in the same sector or with similar machines
Training in professional institute		Training in professional institute and related to current core-processes of enterprise.
Family inherited		Core processes are inherited

age	<25	Age where people mostly do not have children
	25-40	Age when people have children
	>40	Age where children have grown up
Hiring of installer		Hiring a person for teaching the principles related to the core-technology
No training		
Physical disability		
Government certificate		

## Financial capital

**Table 14: Financial capital**

Financial starting position	Good from landholding	See land size and cash crops: large land
	savings	previous job estimated income higher than 7000 Rs. per month, either from family or from entrepreneur.
	Family non-farm income	side-activities producing income
	External support	loan or NGO
Financial status	Poor	only if small land and no other source of income
	Common	common unless the family was explicitly mentioned to be poor or one of the richest in the community
	High	referring to government salaries such as teachers, army people, paying insurance, saving. >10.000 Rs.
Land size and cash crops	Small land, no cashcrops	Small land, no cash crops, food insufficient for supplying the family with their nutritional needs. Less tha 6 months eating from the land <10-12 Nhali's = 2000m <sup>2</sup> -2400 m <sup>2</sup> <2-3 biga's = 1600 m <sup>2</sup> -2400 m <sup>2</sup>
	Medium land, no cash crops	Eating for more than 6 months from the crops
	Large land	large land including crops for cash
	No Land	No land for cultivation
	1 Biga	12,5 biga is one hectare. 1 biga is 800 m <sup>2</sup> .
	1 Biswa	20 biswa is one biga. 1 biswa is 40 m <sup>2</sup>
	1 Nhali	50 Nhali is one hecater. 1 Nhali is 200 m <sup>2</sup> .
Loans	Loan for investing in enterprise	loan has been used or will be used for investment in the enterprise
	Loan for other	

	Does not want loan	
	Wants to take loan	
	Cannot get loan	
Saving	Savings	
	No savings	

***Table 15: Social capital***

Local network		only surrounding villages, less than 5 panchayats
State network		Network with villages, towns within the state
National network		Indian network, cities outside the state, Delhi, Calcutta, Bombay where they have either worked or they have contacts for the enterprise outside. So relatives in Delhi with occasional visits is not national
(Relation to) Panchayat member		
Working for/with NGO		
Religion	Hindu scheduled caste	
	Hindu Rajput	
	Hindu Brahmin	
	Muslim	

***Table 16: Physical capital***

Basic needs goods	
Luxury goods	only code when they have a CD-player, DVD-player and stereo. TV and radio too common. Using LPG for cooking. Means of transportation (except for bicycle)
Transportation	Means of transportation public transportation

***Table 17: Innovation***

Adoption process		
Demand vs. Supply	Not enough workforce/ investment for technology & raw material/space	
	Not more demand	
	Both	

***Table 18: Perceived attributes of innovation***

Relative Advantage	efficiency	
	Customer satisfaction	
	Efficiency and customer satisfactio	
	other	



	cheaper	
	Efficiency, cheaper, customer satisfaction	
	Comfort for entrepreneur	
	No other option	
Trialability		
Complexity		
Reason for having enterprise	coping	
	profit	
	unknown	
compatibility		
Observability		

***Table 19: Innovation-decision***

owner	
With partners	
With family	
With village	

***Table 20: Extent of change-agents promotion efforts***

change-agent	
No change-agent	

## Appendix 6 : Research planning

Within each district, NGOs have been selected which support non-farm income generation. In Almora this is the Pan Himalayan Grassroots Development Foundation (Grassroots) and Avani and in Dehradun this is ADOPT and HESCO. These NGOs will function as a base of operation. The two NGO's in Almora have been selected because they work in different area's in the Almora district. In comparison to Grassroots, Avani is performing activities in a more remote area. In Dehradun ADOPT and HESCO have also been selected because their area of operation has contrasting geographical characteristics.

The total period for research will be 17 weeks. Incorporating travel and illnesses the effective research time will be 13 weeks. Based on the experience of Kooijman-van Dijk 1-2 interviews can be done per day. The maximum amount of interviews will be 6 per week. If the average is 3 the total amount of entrepreneurs, whom will be interviewed, is 39. Based on the experience of Kooijman-van Dijk with the amount of enterprises in each area, approximately five weeks will be needed in Ranikhet with Grassroots, 2 weeks with Avani, 3 weeks with ADOPT and 3 weeks with HESCO.

### *5.2.3 Inventory of districts*

Upon arrival in the districts an inventory will be made of the area in collaboration with the NGO (data source 1). This will be done by accompanying the NGO in the activities it performs in supporting rural non-farm income generation, by interviewing NGO-members, by observation and by conversation with entrepreneurs. During this period it is important to identify characteristics of the tiny and small industry, energy sources used and which areas are, according to local definitions, rural and which urban. In both districts an appointment will be made with the district commissioner or district deputy to give permission and support for doing research in the district. The district statistical officer will be approached for official data about the district (data source 2).

All the state, district and village level will be analysed but the energy characteristics of villages will be used for the selection of cases. The percentage of electrification in villages, the use of LPG, kerosene, alternative energy sources will be used to understand the maximum variation in energy sources among villages.

Upon arrival in Delhi, the Office of the Registrar General will be visited for acquiring the latest census data (data source 3) on livelihood indicators, population size, density and location and the electrification. Preferably on district and village level. The Teri (energy and resource) institute (data source 4), the Ministry of Power (data source 5) and the Rural Electrification Company (data source 6) will be visited for acquiring information on rural electrification (use and distribution), energy sources and institutions, policies and programmes on energy.

The temperature in Dehradun will rise quickly from March onward. Therefore Dehradun will be visited first. Dehradun is the capital of Uttaranchal and the central government for Uttaranchal is situated here. The chief secretary Mr. Ramachandran is approached for a recommendation on acquiring data in the state. During the first week appointments will be made with the Rural Development Commissioner of the government of Uttaranchal (data source 7). Hopefully specific data about Almora and Dehradun can be obtained and a comparison can be made with other districts in Uttaranchal concerning the tiny and small rural industry and the use of energy sources.

The Uttaranchal Power Corporation Ltd. (UPCL) (data source 8) will be interviewed to get information on rural electrification (use and distribution), energy sources policies and programmes (progress). The District Industries Office of Dehradun (data source 9) will be approached to get information on policies and programmes for enterprises, industries and characteristics of markets and enterprises.

In the first week in Almora an appointment will be made for an interview with the district official in Almora. The aim of this interview is to identify the blocks in the district, to get data about rural and urban enterprises and to identify the characteristics of energy sources in the blocks and villages in Almora.

An appointment will also be made with the director of Power Development of Uttaranchal (data source 10), whom is located in Almora for information about energy sources. He also in charge of the implementation of the Kutir Jyoti Programme. This is a national programme of the government of India for enhancing the provision and distribution of energy.

The District Industries Office of Almora (data source 11) will be approached to get information on policies and programmes for enterprises, industries and characteristics of markets and enterprises.

When the locations have been selected appointments have to be made with block development officers, the gram panchayat and the panchayat secretary to acquire data about the locations, villages and enterprises. Official data about villages is generally not available. To acquire information about villages locals, the *sarpanch* (village leader) and other natural leaders which have lived in the village for a long time will be interviewed.

Different categories of enterprises (manufacturing, services, sales) and enterprises with different markets (local, distant), as well as different energy services (heating, lighting, heavy mechanical work, small appliances) can hopefully be identified on the basis of this information. Information about local vulnerabilities, livelihood assets and structures and processes will also be acquired.

The rate of adoption is determined by people adopting, rejecting or not knowing about an innovation in energy sources. In the selected cases this variation has to be reflected. In selecting cases it is not possible to know, in advance, if people have adopted, rejected or have no knowledge of an innovation in energy source. Therefore enterprises will be selected according to the energy source they use in the enterprise. Following the definition of an innovation in energy source, enterprises which use the following modern energy sources will be selected: gas, oil or electricity. For explaining why entrepreneurs reject or have no knowledge of an innovation, enterprises which use the traditional energy sources: wood, animal labour, human labour, agricultural residue, leaves, charcoal or dung will also be selected. The selection of the enterprises have to give a reflection of the variation in energy sources used in the villages as to achieve saturation

Upon arrival in a village the first day will be an observation-day. The purpose of this day is to get an overview of the village, the enterprises in the village and the energy sources which are used. During this day I will walk around the village, talk with locals and entrepreneurs and try to get an appointment with the village leader.

**Table 21: Information required on district level**

Elements	Information	Data source
1. Introduction to state and district	Map for geographic overview	Dehradun in local shop
A	Population size, density and location	1,2,3
B	Political situation and organisation	1,2,3,7
C	How are selected case districts typical or special compared to other districts in the state (but also in India?)	1,2,3,7
2. Vulnerability context	Important seasonality's , shocks or trends that influence livelihoods	1,2,7
3. Livelihood assets		
A	Human development indicators (income, literacy, education, health, skills etc)	1,2,3
B	Main sources of income	1,2,3,7
C	Distribution of wealth, literacy etc.	1,2,3,7
D	Gender differences, differences between cultural or ethnic groups	1,2,7
E	Infrastructure: <ul style="list-style-type: none"> <li>roads</li> <li>telephone: location (MAP!) and distribution</li> <li>programmes on infrastructure: payment and access</li> </ul>	1,2  7
4. Enterprise		
A	Policy and legislation relevant for enterprises	1,2,3,7,9,11
B	Programmes and projects and NGO's relevant for	1,2,3,7,9,11

	enterprises (skills, microfinance, technology etc)	
C	Most common sectors/products of small scale enterprise	1,2,3,9,11
D	Characteristics of enterprises	1,2,3,9,11
E	Characteristics of markets of enterprises	1,2,3,9,11
5. Energy		
A	Policy relevant for energy supply	2,4,5,6,8,10
B	Programmes and projects and NGO's relevant for energy supply	2,4,5,6,8,10
C	Current energy situation- electricity: extent of electrification, electricity use, number of connections, commercial or household connections and distribution of these	2,3,4,5,6,8,10
D	Current energy situation- LPG, kerosene, oil products: use and purposes	2,4,5,6,7,8,10
E	Current use of woodfuel or charcoal and purposes, policy on use of woodfuel, distribution	2,3,4,5,6,7,8,10

**Table 22: Planning**

Stage	Location	NGO	Activities	Status
Stage 1:	Delhi		<ul style="list-style-type: none"> <li>Flight</li> <li>Buy salwaar kameesh and books</li> <li>Visit Energy and Resource Institute for data on:               <ol style="list-style-type: none"> <li>Rural energy use and distribution</li> <li>Pattern of rural energy use</li> <li>Involved institutions</li> </ol> </li> <li>Visit Office of the Registrar General for census data about Uttaranchal</li> <li>Visit Ministry of Power for data on:               <ol style="list-style-type: none"> <li>Uttaranchal energy use and distribution, preferably on district and village level</li> <li>Relevant policies and programmes</li> <li>Programme: Kutir Jyoti Programme</li> <li>Progress on Kutir Jyoti Programme</li> </ol> </li> <li>Visit Rural Electrification Company for data on:               <ol style="list-style-type: none"> <li>Uttaranchal energy use and distribution, preferably on district and village level</li> <li>Relevant policies and programmes</li> <li>Policy: Rajiv Gandhi Grameen Vidyutikaran Yojana, rural electricity infrastructure</li> <li>The progress of above-mentioned policy in Uttaranchal</li> </ol> </li> <li>arrange ticket for night train to Kathgodam</li> <li>take night train to Kathgodam</li> </ul>	<ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul>
Stage 2: - get acquainted - make an inventory of district - select locations	Ranikhet, Almora	Grass-roots	<ul style="list-style-type: none"> <li>picked up by driver from Grassroots in Kathgodam</li> <li>travel to Ranikhet</li> <li>attend international women's day conference about women in enterprises (organized by Grassroots) on the eight of March</li> <li>Meet members of NGO</li> </ul>	<ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul>

			<ul style="list-style-type: none"> <li>• Orientation in NGO</li> <li>• Contact HESCO</li> <li>• Discuss research proposal with Dr. Kalyan Paul</li> <li>• Adjust research proposal</li> <li>• Adjust plan of action</li> <li>• Select an NGO member who can be translator</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul>
Because of increasing temperature and free-transport the research will first be performed in Dehradun				
Stage 3: - get acquainted - make an inventory of district - select locations	Sahaspur block, Dehradun	ADOPT	<ul style="list-style-type: none"> <li>• travel to Dehradun</li> <li>• Buy maps of the districts Dehradun and Almora</li> <li>• Arrange a local who can be a translator</li> <li>• Make a planning with the translator</li> <li>• Interview Uttarakhand Power Corporation Ltd in city Dehradun</li> <li>• Interview rural development commissioner of government of Uttarakhand in city Dehradun</li> <li>• Interview District Industries Centre of Uttarakhand in city Dehradun</li> <li>• Make appointment with and interview district statistical officer in city 'Dehradun'</li> <li>• Travel to ADOPT</li> <li>• Meet members of NGO</li> <li>• Orientation in NGO</li> <li>• Interview NGO-members</li> <li>• Make an inventory of the region</li> <li>• Selection of locations</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul>
Stage 4: - make an inventory of location - selection of enterprises	Sahaspur block, Dehradun	ADOPT	<ul style="list-style-type: none"> <li>• Travel to locations</li> <li>• Observation day</li> <li>• Make appointment and interview block development officer of location.</li> <li>• Make appointment and interview panchayat by talking to pradhan and ward-leaders</li> <li>• Talk to and interview locals, sarpanch (village leader) and other natural leaders of location.</li> <li>• Organize a focus group</li> <li>• Selection of enterprises</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul>
Stage 5: - selection of respondents - interview respondents	Sahaspur block, Dehradun	ADOPT	<ul style="list-style-type: none"> <li>• Visit enterprise</li> <li>• Get general information about enterprise (nr. of workers, energy source used, type of industry, type of energy service)</li> <li>• Review the choice to select the enterprise according to need for representative selection of units</li> <li>• Select respondents</li> <li>• Interview respondents</li> <li>• Photograph respondents</li> <li>• Document the interview</li> <li>•</li> </ul>	
Stage 6: - get acquainted - make an inventory of district - select	Dehradun	HESCO	<ul style="list-style-type: none"> <li>• Travel to HESCO</li> <li>• Arrange a local or NGO member who can be a translator</li> <li>• Make a planning with translator</li> <li>• Travel to HESCO</li> <li>• Meet members of NGO</li> </ul>	

locations			<ul style="list-style-type: none"> <li>• Orientation in NGO</li> <li>• Interview NGO-members</li> <li>• Make an inventory of the region</li> <li>• Selection of locations</li> <li>•</li> </ul>	
Stage 7: - make an inventory of location - selection of enterprises	Dehradun	HESCO	<ul style="list-style-type: none"> <li>• Travel to locations</li> <li>• Observation day</li> <li>• Make appointment and interview block development officer of location.</li> <li>• Make appointment and interview gram panchayat and panchayat secretary</li> <li>• Talk to and interview locals, sarpanch and other natural leaders block development officer of location.</li> <li>• Organize a focus group</li> <li>• Selection of enterprises</li> <li>•</li> </ul>	
Stage 8: - selection of respondents - interview respondents	Dehradun	HESCO	<ul style="list-style-type: none"> <li>• Visit enterprise</li> <li>• Get general information about enterprise (nr. of workers, energy source used, type of industry, type of energy service)</li> <li>• Review the choice to select the enterprise according to need for representative selection of units</li> <li>• Select respondents</li> <li>• Interview respondents</li> <li>• Photograph respondents</li> <li>• Document the interview</li> <li>•</li> </ul>	
Stage 9: - make an inventory of location - selection of enterprises	Ranikhet, Almora	Grassroots	<ul style="list-style-type: none"> <li>• Take the train from Dehradun to Kathgodam</li> <li>• Drive to Almora with a cab</li> <li>• make an appointment with and interview district official in Almora</li> <li>• Make appointment with and interview director of Power Development of Uttaranchal</li> <li>• Interview the District Industries Centre in Almora</li> <li>• Interview NGO-members</li> <li>• Make an inventory of the region</li> <li>• Contact Avani</li> <li>• Take part in activities supporting non-farm income generation</li> <li>• Make a planning with translator (also for visiting Avani)</li> <li>• Selection of locations</li> <li>•</li> </ul>	•
Stage 10: - selection of respondents - interview respondents	Ranikhet, Almora	Grass-roots	<ul style="list-style-type: none"> <li>• Travel to locations</li> <li>• Observation day</li> <li>• Make appointment and interview block development officer of location.</li> <li>• Make appointment and interview gram panchayat and panchayat secretary</li> <li>• Talk to and interview locals, sarpanch and other natural leaders block development officer of location.</li> <li>• Organize a focus group</li> </ul>	

			<ul style="list-style-type: none"> <li>• Selection of enterprises</li> <li>•</li> </ul>	
Stage 11: - make an inventory of location - selection of enterprises	Ranikhat, Almora	Grass-roots	<ul style="list-style-type: none"> <li>• Visit enterprise</li> <li>• Get general information about enterprise (nr. of workers, energy source used, type of industry, type of energy service)</li> <li>• Review the choice to select the enterprise according to need for representative selection of units</li> <li>• Select respondents</li> <li>• Interview respondents</li> <li>• Photograph respondents</li> <li>• Document the interview</li> <li>•</li> </ul>	
Stage 12: - get acquainted - make an inventory of district - select locations	Almora	Avani	<ul style="list-style-type: none"> <li>• Arrange travel to NGO</li> <li>• Meet members of NGO</li> <li>• Orientation in NGO</li> <li>• Interview NGO-members</li> <li>• Make an inventory of the region</li> <li>• Take part in activities supporting non-farm income generation</li> <li>•</li> </ul>	
Stage 13: - make an inventory of location - selection of enterprises	Almora	Avani	<ul style="list-style-type: none"> <li>• Travel to locations</li> <li>• Observation day</li> <li>• Make appointment and interview block development officer of location.</li> <li>• Make appointment and interview gram panchayat and panchayat secretary</li> <li>• Talk to and interview locals, sarpanch and other natural leaders block development officer of location.</li> <li>• Organize a focus group</li> <li>• Selection of enterprises</li> <li>•</li> </ul>	
Stage 14: - selection of respondents - interview respondents	Almora	Avani	<ul style="list-style-type: none"> <li>• Visit enterprise</li> <li>• Get general information about enterprise (nr. of workers, energy source used, type of industry, type of energy service)</li> <li>• Review the choice to select the enterprise according to need for representative selection of units</li> <li>• Select respondents</li> <li>• Interview respondents</li> <li>• Photograph respondents</li> <li>• Document the interview</li> </ul>	

*and customers and markets*

## Appendix 7: Electricity tariffs

Table 23: Tariff for domestic and commercial category of electricity users of Uttaranchal

**Table 6.3: Tariff for Domestic Category**

Category	Existing			Proposed			Approved	
	Fixed Charges	Energy Charges	Minimum Charges	Fixed Charges	Energy Charges	Minimum Charges	Fixed Charges	Energy Charges
	Rs./month	Rs./kWh	Rs./month	Rs./month	Rs./kWh	Rs./month	Rs./month	Rs./kWh
1) Domestic Metered								
1.1) Lifeline consumers								
Below Poverty Line and Kutir Jyoti having load upto 1 kW and consumption upto 30 units /month	NIL	1.50	30/-	NIL	1.65	35/-	NIL	1.50
1.2) Other Domestic Consumers								
Up to 1 kW	NIL	2.00	30/-	NIL	2.20	35/-	NIL	2.00
Single phase above 1 kW	NIL	2.00	150/-	NIL	2.20	165/-	NIL	2.00
Three phase	NIL	2.00	300/-	NIL	2.20	330/-	NIL	2.00
2) Domestic Unmetered (Rural)	120/-	NIL	NIL	-	-	-	120/-	NIL
3) Single Point Bulk Supply	Nil	1.95	30/kW	Nil	2.15	35/kW	Nil	1.95

**Table 6.5: Tariff for Non-domestic Metered Category**

Category	Existing			Proposed			Approved	
	Energy Charges		Minimum Charges	Energy Charges		Minimum Charges	Energy Charges	
	Without ToD	With ToD		Without ToD	With ToD		Without ToD	With ToD
	Rs./month	Rs./kWh	Rs./kW/month	Rs./kW/month	Rs./kWh	Rs./kW/month	Rs./month	Rs./kWh
1) Education Institutions, Hospitals & Charitable institutions.								
Upto 4 kW	3.00	3.00	200/-	3.20	3.20	210/-	3.00	3.00
Above 4 & upto 25 kW	3.50	3.00	200/-	3.75	3.20	210/-	3.50	3.00
Above 25 kW	3.50	3.00	200/-	3.75	3.20	210/-	-	3.00
2) Other Non Domestic Commercial users								
Upto 1 kW	3.50	3.50	150/-	3.75	3.75	155/-	3.50	3.00
Above 1 & upto 25 kW	3.50	3.50	200/-	3.75	3.75	210/-	3.50	3.00
Above 25 kW	3.50	3.00	200/-	3.75	3.20	210/-	-	3.00

*\*With ToD rebate/surcharge*

**Table 6.6A Tariff for Non-domestic Unmetered (Rural) Category**

Category	Existing Fixed Charges Rs./Month	Proposed Fixed Charges Rs./Month	Approved Fixed Charges Rs./Month
3) Non Domestic Unmetered (Rural)	185/-	-	185/-

Source: Order in retail tariff for Uttaranchal Power Corporation Ltd for 2006-2007 ordered by the Uttaranchal Electricity regulatory Commission on 12<sup>th</sup> July 2006.



## Appendix 8: Selection of districts, villages and enterprises

### *Selection of districts*

The first stage of the multi-stage purposive sampling consists of the selection of two districts within the state of Uttaranchal. This is a form of area sampling where political or administrative geographical units are used as sampling units for a first stage (Fortuijn, 2004: 4).

Uttaranchal, the 27<sup>th</sup> state of India was separated from Uttar Pradesh and became a separate state because it required other government-policies for its economic development because it is a mountain area, in contrast to the current areas of Uttar Pradesh<sup>118</sup>

Uttaranchal has two main ethnical area's, the Kumaoni and Garwhal region. Traditionally the Kumaoni region is represented by a large percentage of Brahmin Indians who were able to travel and import and export products. The large variety in fauna has caused the fruit-processing industry and handloom industry of the Kumaoni region to prosper. The Garwhal region is represented by descendants from tribal people who traded more amongst themselves and exported less<sup>119</sup>. Since the nature of the social system is an causal variable one district will be selected in the Kumaon region and one in the Gharwal region.

Uttaranchal is divided into the plains and the mountaineous area's. Plain areas offer an easier access to resources and a higher degree of organization and interdependence is possible (XXXX). As Barnes (1998) stated the importance of availability of markets and access to finance this research will select a mountaineuous district and a district in the plains.

Almora is selected as the mountaineuous area. Almora is situated in the Kumaoni region. Almora has access to the plains by road. There are no trainstations in the district. The closest trainstation is in Haldwani, 2-6 hours travelling by road. According to local definitions (see Appendix 3, 4.3 geographic location) Almora's geographical area is located as mid hills and high hills with an altitude of 500 metres and more.

In contradiction to Almora, Dehradun is selected as the plain area situated in the Gharwal region. Dehradun city is the capital of the district and the state and all the government facilities are located there. This might have its effect on the rate of adoption of energy sources. Dehradun's geographical area is characterized by the plains and the foothills with altitudes less than 500 metres. (see Appendix 3 4.3 geographic location).

To represent Uttaranchal as a state these have been selected as a stratified purposive sample to facilitate comparisons and illustrate characteristics of particular subgroups (Fortuijn, 2004)

An important source of information input for the selection of units has been the knowledge and social network of Non Governmental Organizations (NGO's) specialized in non-farm income generating activities and energy sources. In Dehradun district NGO ADOPT and NGO HESCO have shared their local knowledge and in Almora district NGO HOPE.

Table 1: population indicators Dehradun and Almora

District	Dehradun	Almora
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118 <http://www.laghu-udvyog.com/policies/state/uttran/utran.htm> on 25-01-2006

119 Interview met mevrouw Banerjee on 17-03-2006, former resident of both Gharwal region and Kumaoni region

No. of villages	746	2267
No. of villages electrified	734 (98%)	1855 (82%)
Total population	1.282.143	632.866
% of population living in rural areas	47	91
Population density/sq km	406	171
% of irrigated agricultural land	46	8
	Hills 12,9 Plains 57,5	

### ***Selection of village clusters***

The second stage of the multi-stage purposive sampling consists of the selection of village clusters within both districts. Porter (1998: 78) defines clusters as geographic concentrations of interconnected companies and institutions in a particular field. Village clusters are identified based on the function of the markets according to local definitions. In the center of a village cluster is a roadhead village. In Uttaranchal these are defined as a village with an all-weather road which is accessible by car and functions as a meeting and trading point for surrounding villages. An interdependent relationship exists between several villages and the roadhead. The roadhead itself also has a relationship to a larger town. By mapping the interconnectedness between the villages in the clusters and their relationship to external markets possible explanatory variables such as access to markets, finance but also social capital can be better understood.

For selecting the village clusters it is important that they represent the theoretical possible variation in the phenomenon under research (Glaser and Strauss (1967)). The variables Rogers (1995) and Barnes (1988) describe are used for the formulation of theory-based selection criteria.

- near regional centres and remote
- difficult or easy access to markets (Kooijman-van Dijk, 2004):
  - § Remote: 5 or more km from road (more than 1 hour walking)
  - § Off-road: 5 or less km from road (less than 1 hour walking)
  - § On-road: on all-weather road, less than 1 hour from large rural town or city.
    - § On-road, small local market: people living mainly on subsistence level with few extra sources of income (not extreme poverty- this has been excluded from research)
    - § On-road, existing local market: people are able to spend money for comfort, amusement or status (in Uttaranchal indicators are DVDs, clothes, glass windows)
- include one best case for energy access (good quality access to modern energy for all)
- energy supply through central grid (good quality is best case)
- energy supply through diesel for one or more enterprises
- energy supply through LPG for one or more enterprises
- energy supply through micro-hydro energy

- energy supply mainly through traditional energy sources

Other characteristics of village clusters which may explain the rate of adoption cannot be assessed before the data-collection.

For the selection of the village clusters several sampling methods are combined. The sources of information for the selection are interviews and informal talks with NGO's and other locals and observations (see Appendix 4, typical villages in Dehradun and Livelihoods in Almora district). In addition the following electronic government data are used.

- The primary census data from the Census of India 2001, Office of the Registrar General, India
- The additional census data on village level for Uttaraanchal, Census of India 2001, Office of the Registrar General, India
- Database of un- or de-electrified villages from the Uttaraanchal Power Corporation Ltd.

The village data per village cluster and village are summarized in table one in appendix 1.

### Village clusters in Dehradun

The village cluster Sahaspur is selected as a typical case sample of a rural town to illustrate what is typical, normal or average (Patton, 1990: 182-183), (Appendix 4 Interview with prathan of Sahaspur). Sahaspur is located on the National Highway, 20 minutes from Dehradun city. A side road starts from the National Highway, going through village Chharba the first 5 kilometres. 30 minutes away from Sahaspur, on the same road going through Chharba, village Kotra starts. 1 hour away, by local bus from Sahaspur, Langhaf starts, following a different road (Appendix 4, informal talk with ADOPT members).

Selection based on intensity sampling (Patton, 1990: 182-183) was used to select the village cluster Ambiwala. In contradiction to Sahaspur Ambiwala is located less than 5 kilometres away from Dehradun city but not on a National Highway. Difference in access to markets and roads is represented in this sample. Extreme sampling is used for the selection of the village Donkwala in the Ambiwala cluster (Patton, 1990: 182-183). Donkwala lies close to Dehradun, does not get electricity from the central grid and has no road going to the village. Donkwala is electrified through a watermill.

Village cluster Maldivpta was selected for its location at the border between the plains and the foothills (Appendix 3, Terminology 4.3). The road leading to Maldivpta is not a through-road leading to other markets. While the village cluster centres of Ambiwala and Sahaspur are existing local markets, Maldivpta is a small local market. Even though Maldivpta is a village cluster centre its market function can be compared to Langhaf village, within the village cluster Sahaspur (Appendix 4, Interview with prathan of Maldivpta and Bautha. Together with the Sahaspur and Ambiwala cluster a stratified purposive sample is taken based on characteristics of markets (Patton, 1990: 182-183). Maldivpta cluster was also chosen because villages in the cluster are partly electrified and partly unelectrified.

The village cluster Fatehpur was chosen as a homogenous sample (Patton, 1990: 182-183) in combination with Donkwala village as Fatehpur is also electrified through a watermill. HESCO informed about the difference in performance of this way of electrification between the villages. This sample might shed light on the influence of the social system on adoption of energy sources by reducing variation in the energy source.

## Village clusters in Almora

Pilkholi cluster was selected as a typical case sample with close access to a large rural town. Pilkholi is an existing local market, located 10 kilometres before Ranikhet at the border of the cantonment area. The road through Pilkholi is a National Highway leading to the tourist attractions and military cantonment of Ranikhet (Appendix 4, livelihoods in Almora). Within the village cluster village Tana was chosen as an extreme case since several NGO members and locals from other villages informed about the high financial status of the village (Appendix 4, livelihoods in Almora).

To form an intensity sample village cluster Mandel Kote was selected as a small local market on a mud road (Appendix 3, terminology, 4.2). Most village in the cluster are located on the mud road and serve the basic needs of the villagers. Several small local markets can be found in Mandel Kote cluster. To reach an existing local market they have to travel by jeep for at least an hour. The construction of the village cluster is thus different from other clusters. In comparison to Pilkholi and Khilkeet cluster the trucks providing villages with LPG does not go to Mandel Kote cluster (Appendix 4, village cluster Madel Kote). These characteristics make Mandel Kote cluster an extreme case which can shed light on characteristics of markets and importance of energy supply (Appendix 4, livelihoods in Almora).

Village cluster Khilkeet was taken up in the sample of village clusters because Kharchuli is a remote village on a distance of more than an hour walking to Khilkeet, which is a small local market (Appendix 4, livelihoods in Almora district). Many villages in Almora district are remote and therefore the sample of the three clusters can be seen as a typical case sample when referring to distance and access to markets.

The third stage of the multi-stage purposive sampling consists of the selection of enterprises within the village clusters. For selecting the enterprises it is important that they represent the theoretical possible variation in the phenomenon under research (Glaser and Strauss (1967)). The variables Rogers (1995) and Barnes (1988) describe are used for the formulation of theory-based selection criteria. Enterprises will be selected according to the following criteria:

- Size, tiny and small, including formal and informal
- Sectors at least in service and manufacture, sectors representative for rural enterprise, sectors in which modern energy services are expected to make a large impact.
- Enterprises with different access to markets (remote, off-road, on-road)
- Different types of energy sources, traditional and modern
- Enterprises which use different energy services (heating, lighting, heavy mechanical work, small appliances)

Other characteristics of enterprises which may explain the rate of adoption are difficult to assess before the data-collection.

### Selection of enterprises

To serve the purpose of triangulation several methods of sampling, as stated by Patton (1990: 182-183), are used. Since the description of the selection of all enterprises would be too

elaborate a few examples will be given here.

In the Sahaspur village cluster in the market of Sahaspur, Universal Engineering Works (metalworks enterprise) was interviewed. An entrepreneur with an official enterprise name and a business card. The customers of this entrepreneur reached as far as Bombay. NGO ADOPT explained (Appendix 4: Sahwel1):

*“This enterprise is highly innovative. 4 years ago the man was in extreme poverty but since he took a loan to invest in his enterprise he accumulated a lot of technology and has grown fast. The entrepreneur even managed to get a certificate from the government of Uttaranchal for the quality of his work.”*

This is an example of both snowball sampling and extreme sampling. NGO ADOPT informed me about the fact that this enterprise was unusual and information-rich (Patton (1990: 182-183)).

By stratified purposive sampling a metalworks enterprise with a lower but more common level of technology was selected In Sahaspur to make a comparison and illustrate characteristics of welding enterprises (Patton (1990: 182-183)).

On the basis of maximum variation sampling a metalworks enterprise in Sahaspur was selected using coal, a hammer and a blower with the purpose of documenting unique or different adaptations to different conditions (Patton (1990: 182-183)).

All these enterprises are located at the main market in Sahaspur and were selected as a sample to eliminate the influence of access to markets and to look at other explanatory variables. This is a theory-based sample (Patton (1990: 182-183)).

In village cluster Pilkholi in village Pilkholi the following enterprises were selected:

- A chaishop using LPG (See appendix 4, Pilkholi, E28)
- A flourmill using electricity (See appendix 4, Pilkholi, E29)
- A sweetshop using LPG (See appendix 4, Pilkholi, E30)
- A tailor using manual energy and electricity. (See appendix 4, Pilkholi, E32)

These enterprises were chosen as a typical case sample after a survey of enterprises was conducted in Pilkholi (See appendix 4, Pilkholi, survey of enterprises). This method of sampling sheds light on what is typical normal or average (Patton (1990: 182-183)).

The method of evolving sampling ( Patton (1990: 182-183)) was used when a lead from the flourmill using electricity (See appendix 4, Pilkholi, E29) in Pilkholi was followed up. In this interview the entrepreneur described that his main competitor as a flourmill using diesel in Chamoli, 20 minutes walking off-road from Pilkholi. This offers an opportunity to look into differences in market access and energy source.

Intensity sampling ( Patton (1990: 182-183)) is used in Nawali for the selection of two sweetshops, E40 using LPG and E41 using wood. The enterprises were located next to each other on the main road through Nawali. E40 had advertisement on the front of his shop, making his core-process visible. E41 was completely inside the shop without any indications of his activities. They are chosen because they represent the phenomenon of interest because of an obvious difference in business strategy and energy use.

A stratified purposive sample ( Patton (1990: 182-183)) is done by comparing tailor E10 in

Sahaspur with tailor E16 in Kotra. Tailor E10 uses electricity for his sewing machine while Tailor E16 uses manual labour. was found to use electricity for a sewing machine

## Appendix 9 Scoring on indicators of social participation

Indicator	Frequency of marriage and religious functions, per year			Frequency of going to bigger cities			Membership of government organization	Membership of private organization
category	< 10	10-20	>20	weekly	monthly	Few times per year		
score	0	1	2	2	1	0	1 org. = 2 2 orgs. = 4 etc	1 org. = 2 2 orgs. = 4 etc

Table X shows the score which is given to every entrepreneur. The frequency of going to marriages or religious functions is divided into less than 10 times per year, 10-20 times per year and more than 20 times per year. These are scored, respectively 0,1,2. The frequency of going to bigger cities is divided into: on a weekly basis, on a monthly basis and a few times per year. These are scored respectively 0,1,2. Every government or private organization an entrepreneur is a member of is scored as 2 because this engagement is seen as a regular interaction with groups of people and is valued in the same manner that visiting more than 20 marriages or religious functions per year and as going to a bigger city every week.

Enterprise	Frequency of attending marriages and functions	Frequency of going to bigger cities	Membership of government organization	Membership of private organization	Total score
Ambcp1	2	2	2	2	8
Ambfr1	2	1	2	2	7
Ambwel1	1	2	0	0	3
Baubl1	0	0	0	0	0
Bautl1	1	1	0	0	2
Chamil1	1	2	2	0	5
Chhml1	-	2	0	2	-
Chhml2	-	1	2	0	-
Chhpot1	-	0	0	0	-
Chhwel1	-	-	2	0	-
Donmil1	-	2	0	2	-
Fatmil1	0	2	0	2	4
Karbl1	0	0	0	0	0
Kotbl1	-	2	0	0	-
Kotmil1	-	2	2	2	-
Kotmil2	-	2	0	0	-
Kottl1	2	1	0	0	3
Lanch1	2	1	2	2	7
Lanel1	1	1	0	0	2
Lansw1	2	1	0	0	3
Manmil1	2	2	0	0	4
Mantl1	0	0	2	2	4
Navbl1	1	0	0	0	1
Navsw1	2	1	0	0	3
Navsw2	1	0	0	0	1
Navtl1	0	0	0	0	0
Pilch1	1	2	2	2	7
Pilmil1	0	-	0	0	-
Pilsw1	0	1	2	0	3
Piltl1	0	2	2	0	4
Sahbk1	-	2	0	0	-
Sahbl1	-	2	0	0	-
Sahel1	-	2	0	0	-
Sahsh1	-	2	0	0	-
Sahtl1	2	-	0	0	-
Sahwel1	-	2	2	0	-
Sahwel2	-	2	0	0	-
Sahwv1	-	1	0	0	-
Tanbl1	0	2	0	0	2



Tanmil1	0	1	0	0	1
Tantl1	-	1	0	2	-
Unimil1	0	0	0	0	0

