# ROLES OF INFORMAL KNOWLEDGE IN TWO CASES OF PARTICIPATION IN RESEARCH PROJECTS IN GHANA

and the evolution of Knowledge, Research and Innovation Systems

Master Thesis
Philosophy of Science, Technology and Society

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## ABSTRACT

The Ghana-Dutch Collaboration for Health Research and Development (GDC) was an innovative programme in development assistance. It was essentially a funding programme, through which 80 health research projects were funded, that applied principles of local stewardship by involving various non-scientific actors in the Ghanaian health sector contribute in setting the priorities for research. In some of the projects, such non-scientists were even involved in the actual research process. Such non-expert participation in the production of scientific knowledge brings about specific dynamics.

One of the program's aims was to enhance Ghana's capacity for health care development. This raises important questions: on the one hand, of where such capacity resides in a nation, and how it can be made visible; and on the other, how research projects of such as those funded through the GDC programme can have an influence on this capacity. The analysis presented in this thesis provides insights to help answer these questions. It involved two projects that both incorporated non-expert participation in their respective research design.

I investigated concepts from the philosophy and sociology of science and knowledge to gather insights that would be useful to my analysis. The analysis required characterization of different dimensions of knowledge itself and of different dynamics of participation in research; it also required to conceptualize how actors become involved in a project and how knowledge, through a network of actors, can have influence outside of the project. To make visible how such influence could add up to the development of capacity, all actors, institutionalized and non-institutionalized, that contribute to production and dissemination of knowledge for the delivery of health care were conceptualized as parts of a single evolving Knowledge, Research and Innovation System (KRIS) in Ghanaian health care.

From the data collected, through analysis and reflection additional insights have been gathered on three specific issues: the dynamics of participation in a research project; specific contextual influences that are highly influential to the KRIS (decentralization, donor dependency, community education perspective) ; and general assessment of a KRIS.

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# ACKNOWLEDGEMENTS

I would like to express my deepest gratitude to my direct supervisor, Arie Rip. The idea to spend a life-changing three months in Ghana came from him in one of the first meetings we had on the project; in the year that followed, he provided me with the inspiration and guidance I needed to keep me going to the very end.

I would also like to thank Barend van der Meulen, for accepting the responsibility to be chairman, for helping me define my research interests by filtering the words 'development assistance' out of my ideas, and for prompting me to discuss these interests with Arie Rip.

Many thanks also go out to Joost Ruitenberg, for approving my project for institutional support to my project from the Ghanaian-Dutch Collaboration, and for providing me with feedback on my proposal and my case reports.

Thanks to John Gyapong, for discussing my selection of cases with me and for approving institutional support from the Health Research Unit. Many thanks to Esther Vordzorgbe, for taking care of me in Accra, especially shortly after arrival when I most needed her help. She helped me start off in Accra by helping me find a space to live and a space to work, helped me in planning my trips, arranged meetings with the principal investigators of the two projects I had selected, and helped make my time in Accra very enjoyable.

Many thanks to Richard Basadi, for taking care of me during my stay in Wa as well as setting up all the interviews I conducted there. Thanks also to Albert Gemegah for taking me along on his two trips to Kintampo, and for arranging my meeting with Mr. Darkwa of the National Health Insurance Council.

Thanks go out to my interviewees for the time they gave me. I have the following people to thank for introducing me to one or more of my interviewees: Mercy Abbey; Dr. Addo at the National AIDS Control Programme; Dr. Ato Selby, who also provided me with medical support; James Akazili; and Joan Bloch Jensen.

Thanks, finally, to my family for supporting me throughout the whole process.

Johan van Schagen, January 2008

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# 1 INTRODUCTION

Given my interest in knowledge production and developing countries, I welcomed the opportunity to look in detail at projects carried out as part of the Ghanaian-Dutch Collaboration for Health Research and Development. To profit from this opportunity I developed a set of research questions that could be addressed by investigating this donor programme.

## 1.1 The Ghanaian-Dutch Collaboration for Health Research and Development

The Ghanaian-Dutch Collaboration for Health Research and Development (GDC), started in August 2001, was an innovative programme in development assistance. The programme was financed by the Dutch government and focused on research to support Ghana's health care; over the five-and-a-half years of its running time, 80 such projects were funded and coordinated. The programme had the unique approach of incorporating principles of local ownership and equal partnership. The implementation of these principles in the programme's policy had required a significant amount of work to develop the many innovative elements required in organizational structure, procedures, and goal-setting.

The programme was supervised by a joint programme committee consisting of three Ghanaian and three Dutch members, while the execution of the programme was facilitated through the Health Research Unit of Ghana's Ministry of Health in Accra. Aim of the programme was to attract and fund demand-driven research by facilitating the identification of knowledge gaps in the health sector. This aim was established to have the programme facilitate the development of appropriate relevant information to help Ghana's health sector in ensuring better health and health care development for the people. An additional goal of the programme was to build capacity for research in Ghana.

Determination of the knowledge gaps in the health sector was done through an annual stakeholders meeting where many representatives from Ghana's health sector were invited to participate; local policy makers, hospital representatives, non-governmental organizations (NGOs), amongst others contributed to the research agenda that was the result of this annual meeting. Based on this agenda, an annual call for proposals was issued in Ghana; the project proposals that the Health Research Unit received upon this call were reviewed by a scientific review committee that consisted, in majority, of Ghanaian researchers.

In this review process, project proposals were ranked on several factors, one of which was the involvement of the stakeholders in the research process. This encouragement of stakeholder participation led to more than just discussions of relevance and application between researchers and end-users of the knowledge they were to gather from the projects; it even led to them contributing knowledge to the actual execution of the research projects.

Because of this deep involvement of non-researchers, as well as the programme's emphasis on the development of national capacity, my study of projects in the Ghana-Dutch Collaboration speaks to two connected broad issues in national development assistance: capacity in a national system, and the role of informal knowledge within this.

The first issue, where capacity for development is situated within a country, has been a major subject of discussion in national-level development assistance since it started in the 1960s. Views on the issue have changed turbulently alongside the development of new approaches to development assistance. A brief overview of the history of these approaches shows how national-level development assistance has been a learning process since its inception, and how the GDC has incorporated quite a lot of its lessons into its design.

## 1.2 Capacity building at the level of national systems

### *1.2.1 The evolution of donor approaches to development*

From the 1960s on, Northern development assistance initiatives have aimed at sustainable development, having the ultimate aim to help construct self-reliant Southern[1] nations. Ideas on how to reach this goal however, have almost continuously been in change over the past forty years, both in view and in leading concepts. During the 1960s programmes on cooperation with national governments were set up, meant to help establish strong public institutions modeled after Northern proven concepts and provide training in Northern institutions to Southern nationals. The attitude was to provide help at the highest national level – both politically and intellectually – that would then spread through organizations, to the benefit of the rest of the country. The focus of development assistance shifted from the building up and strengthening of institutions in the 60's and 70's, to sector-wide capacity building in the early 90's. Health care, education and agriculture have been the prominent sectors supported through these efforts. New groups and institutions, predominantly NGOs and community-based organizations have obtained greater involvement in policy and policy formulation (Whyte, 2004).

This has led up to the current development context, which is the most complex it has ever been. Northern concepts, solutions, and knowledge have been found only in part adequate in dealing with many of the local problems standing in the way of Southern development. Media for knowledge transfer have grown in numbers, in applicability and in accessibility. More and more data on developing countries has become available. Targets for capacity building interventions have broadened from capital and resources and included human and social capital, and increasing the accessibility of knowledge through strengthening knowledge networks in developing countries. These networks are increasingly becoming dependent on newly developed ICTs providing new media types for the transfer of knowledge. This means that apart from the individual knowledge carriers and institutional components, technological infrastructure has become one of the key components of a strong knowledge network, and a sector for development in its own right.

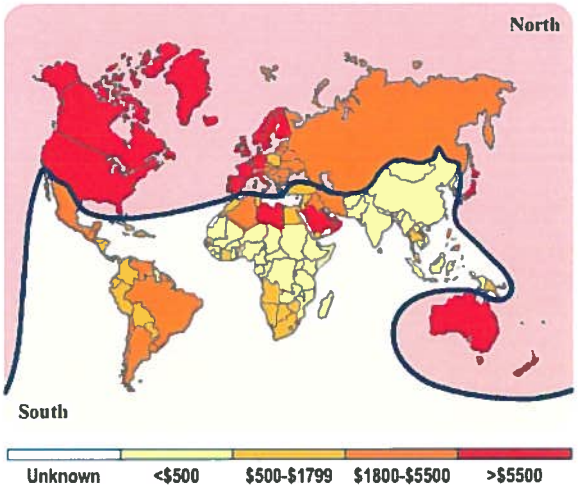


**Figure 1: Mapping of the North-South gap**

### *1.2.2 The need for a systems approach*

During the past half-century of organizing international development assistance, donors and recipients have had to come to terms with renewed realizations of the complexity of national development. The relevant dynamics and capacity have therefore become conceptualized in increasingly abstract terms: from institutions, to networks, to sectors, to currently systems approaches. From this overarching perspective of systems insights can be gained about where

[1] In literature and in public debate, the global division between more- and less-developed countries is based to a large extent on economic productivity. A line can be drawn upon the world map, depicting this divide [Figure 1], with majority of less-developed countries situated to the north of the line. Hence, the metaphor of the 'North-South-gap' has emerged to describe the differences between groups of nations constituting development issues.

capacity-building interventions would be most effective; for example, when capacity building goals are set in the development of a national higher-education system, these could be assessed from this perspective. It must be noted systems operate, in turn, within an enabling (or disabling) environment, which can highly influence outcomes.

There have been systems approaches developed in the North that assess the competitiveness for development of a nation. These approaches have shortcomings in covering the full range of contributions to this competitiveness, which become especially clear when applied to countries in the South. In the Southern context, there is for example a relatively high prevalence of expertise started from social demands through numerous non-governmental organizations that through formal expertise add to the competitiveness (Neubauer, 2005). In addition, there are many sources that contribute more informal knowledge and expertise - a topic in its own right, which is discussed in the next subsection – amongst which systems of indigenous knowledge, that have recently attracted a lot of attention. Therefore the specification of a system to the actual dynamics taking place in less-developed countries, is a puzzle of who and what to include in the system, as well as how reduce the complex workings of reality to a simpler yet complete abstract description of the system dynamics.

The approach of a knowledge, research and innovation system (KRIS), used in this thesis, aims to overcome the limits of older system concepts by including all these sources of informal knowledge. This concept requires further clarification, which is given in Chapter 2. Analysis of the GDC from a KRIS perspective provides insights in the dynamics that such a system has, while it can also be reflected upon the appropriateness of systems approaches in general and the KRIS concept specifically. The final two subsections of this chapter show such an analysis can be done.

### *1.2.3 The role of informal knowledge in national development*

As noted in the previous section, a major issue in national development is the role that informal knowledge and the people that have this knowledge should have in it. Robustness of knowledge is dependent on the emphasis that is put on its validity across space and time – research as published in articles, is an example, but not the only example. Knowledge does not necessarily have to be formal – produced in institutions dedicated to the production of knowledge, such as universities – to be robust. Recently a lot of attention has been drawn to a specific type of informal knowledge: indigenous knowledge, which exists around specific conditions and communities in a particular geographic area. The World Bank, for example has a programme on indigenous knowledge because it considers it as a valuable resource that can be utilized in national development.

The GDC is innovative in its participation of stakeholders. Not only did non-experts get to have a say on the research agenda; they also got to discuss the aims of specific projects and in some projects were even involved in the research process itself by contributing knowledge. This knowledge can probably be characterized as informal when compared to scientific knowledge, because its validity in a multitude of places and times is less underlined.

By analyzing this participation in the research process, non-expert actors and their informal knowledge can become visible as important influences on Ghana's health care development: this warrants their inclusion in a system that has this development as a goal. When they are included, an additional point of interest is the dynamics through which they effect this influence: in the case of the GDC, the dynamics that occur when people from non-expert background participate in scientific research. These dynamics have been characterized from analysis of particpation in the Northern context and have been generalized into three models by Michel Callon; my thesis is the first documented use of these three models both in an analysis of participation in individual projects, and in the Southern context. As a result, a large part of my analysis is devoted to a reflection of the findings upon the models, with the purpose of enriching them.

### *1.2.4 The GDC projects influence a knowledge, research and innovation system*

The specific dynamics within a single research project do not explain the developments at the collective level. The GDC projects are part of, and are funded by, institutions with a variety of goals and pursuing different strategies to meet these goals (Bozeman and Rogers, 2001). Therefore the GDC projects have had an influence stretching beyond the goals of individual projects; these influences can be made visible through analysis.

In an exemplary study Bhola (2000) managed to make visible how an educational intervention, a community-level literacy programme in rural Ghana, impacted beyond the programme's literacy percentage targets: through learning how to read, women adopted new aspirations for their lives, feeling empowered from the learning experience and, in turn, helped develop better family planning and health care facilities in the community.

In my case, through analysis of these types of 'second-order'-impacts, the research projects can in principle be assessed in terms of their influence in Ghana. In practice, it turned out that actual tracing of such impacts is difficult, also because they occur in the longer term.

## 1.3 Research question

### *1.3.1 Main research question*

"What influence does participation in knowledge production in the Ghana-Dutch Collaboration have on its projects and on the evolution of Ghana's health care knowledge, research and innovation system (KRIS)?"

### *1.3.2 Subquestions*

1) How is knowledge produced in the Ghana-Dutch Collaboration's research projects and disseminated beyond them?
2) How does Ghana's health care KRIS, through expectations of actors involved and affected, co-evolve with these knowledge production and dissemination processes?
3) Does a varying degree of participation in knowledge production lead to different processes influencing the KRIS?

### *1.3.3 Thesis approach and structure*

Based on the brief introductions of some of the key concepts, the research questions and subquestions can be understood in relation to each other. Deepened understanding of the concepts can be gathered from the conceptualization presented in the Chapter 2, which is required to explain the application of the concepts in the research method in Chapter 3. Chapter 4 provides a brief profile of Ghana as context for the two case studies that were done; Chapter 5 and 6 contain the actual reports of these studies. Analysis and reflection of these case reports are presented in Chapter 7, and the thesis is concluded with general considerations and an epilogue in Chapter 8.

# 2 CONCEPTUALIZATION

## 2.1 Philosophical and sociological perspective on the production of knowledge

### *2.1.1 Introduction – the production of knowledge*

An important term in this thesis is 'knowledge production'. The term applies to a broader range of processes in society than just science, because there are more sources of knowledge than scientific knowledge production alone. Gibbons et al (1994) underline this notion by providing a characterization of knowledge production in which institutionalized scientific knowledge production is called Mode 1, alongside which a different Mode 2 has emerged. The differences between the two respective modes concern the application, the organization in society, and the quality assessment of the production of knowledge.

Mode 1 production of knowledge is divided over disciplines (such as physics and chemistry), and within these disciplines, knowledge produced is strictly categorized in applied and fundamental knowledge. In Mode 2 production of knowledge on the other hand the boundaries of disciplines are crossed, and the focus of knowledge production flows back and forth between the fundamental and applied context. Mode 2 production of knowledge is spread out over the landscape of science and technology because many individuals and institutions were already carrying out research outside of the boundaries of disciplinary research. Connection of these micro-productions of knowledge brought about a form of knowledge production that does not undergo quality assessment within disciplinary structures as does Mode 1 knowledge production. Knowledge produced through Mode 2 is therefore assessed through its own set of quality criteria, which are grafted on the quality control of Mode 1 to include value of the knowledge for application. In addition, knowledge is produced by a larger diversity of institutions than it is in Model 1. When applying Gibbons' two modes to a national innovation system approach, this system can be characterized as a as a dispersed set of resources for knowledge production, which can be organized through problem-oriented hubs.

Gibbons' analysis shows that there are more sources of knowledge than disciplinary institutionalized science, and that the production of knowledge can be characterized – in two distinct modes, in his analysis. Besides characterizing the production of knowledge, for which other concepts will be discussed in subsection 2.1.3, the product of these processes, the knowledge itself, can also be characterized in different ways. The research question already implied and underlying characterization of knowledge, as it states the influence of knowledge with the characteristic of being 'informal' is as a topic for analysis.

### *2.1.2 Knowledge characterization*

There are several typologies of knowledge in the literature of knowledge management as well as the philosophy of knowledge, yet these typologies do not convey the same meaning in every source. Three typologies were drawn from literature and insights on them gathered to synthesize the characterizations presented in this subsection: scientific and non-scientific, 'tacit' and 'codified', and formal and informal knowledge. These typologies are not interchangeable, but represent different dimensions of knowledge characteristics.

'Scientific' knowledge is knowledge that was produced in a scientific 'practice'. The concept of practice, in this statement, is based on Lave and Wenger's concept of 'communities of practice', which refers to groups of people that are connected by shared activities on a subject or problem, and learn from this (Wenger, 1998). When analyzed from this perspective, scientific research is a patchwork of quite diverse practices; physics research and social sciences, for example, are two very different practices yet both part of science. As was argued in the previous subsection, there are also many 'non-scientific' practices of knowledge production.

The 'formality' of knowledge is determined by the origin of the knowledge: the more dedicated the institution is to producing specifically knowledge on a specific subject, the more formal the knowledge is. Formality of knowledge must be understood as a spectrum, in which examples of extremes are disciplinary scientific knowledge on the formal side and indigenous craft knowledge. Examples of knowledge that are in between are knowledge produced in institutions outside of disciplinary scientific practice, an issue discussed in subsection 2.1.1, on the formal side; and discussions between farmers on their practices, on the informal side.

'Tacit' knowledge is a well-known characterization in the field of knowledge management (Polanyi, 1966). Tacit knowledge is a local piece of know-how that resides in a person's head. The counterpart of tacit knowledge is 'codified' knowledge, an explicit form of knowledge that is easier to communicate. Since tacit knowledge is know-how, it can be seen as the basis for thinking and acting in a way aimed at accomplishing a certain goal. Tacit knowledge can be transferred through training/learning interactions between two people. Know-how can also be codified, the resulting codified knowledge then functions as an explicit rule for accomplishing goals, but this codification requires effort and might not do justice to all components of tacit knowledge. In addition, there is a basis of tacit knowledge required to guide the process of codification of tacit knowledge, as well as the interpretation of this codified knowledge.

Some codifications of knowledge will stay codified because they are referred to by a large variety of people; research as published in scientific articles in a database, for example. Where codified knowledge functions as a specific rule, however, like in the case of industrial production, it can be referred to as a means to guide actions to control processes. These actions of control, in turn, can become internalized in the processes themselves, which means the codified knowledge is no longer referred to and loses its explicit character. Although research as published in a scientific article is a strong example of both formal and codified knowledge, it must be understood that formal and tacit knowledge are not necessarily opposites. Knowledge on conducting laboratory experimentation is very much formal, but certainly not all of this knowledge is made explicit.

Knowledge is produced in such a specific context or 'site', and therefore is informal when it is just produced. To make the knowledge formal, then, effort has to be made to decontextualize the knowledge by reducing complexity of the site. After decontextualizing the knowledge can be moved, be it in the heads and/or hands of the knowledge producer, or in some sort of carrier for codified knowledge (such as explicated theories). When specific elements are recognized in another context, the knowledge can applied there after recontextualizing it to the complexity of the context of application. The process of decontextualizing, moving and recontextualizing that occurs when knowledge is produced and reapplied reveals another key characteristic of knowledge: its localness.

### *2.1.3 The localness of knowledge production*

The concepts of Mode 1 and Mode 2 production of knowledge, discussed in subsection 1.2.1, can be seen as an attempt to reconcile new-found complex dynamics and their quality criteria of knowledge production with older, more familiar dynamics. The notion that there are other criteria for quality of knowledge in society however, can also serve as a starting point to deconstruct the socially constructed practice of scientific knowledge production. This deconstruction can be carried out to such an extent that it describes Northern scientific knowledge as a form of local knowledge that can be compared to indigenous knowledge in the dynamics through which it was produced. A prerequisite for this type of deconstruction is the admittance that there are other ways of knowing the world, than through the views represented by modern science.

From a closer look at the workings of science, then, it can be seen that the paramount virtues that give science the claim to 'true' knowledge, objectivity and universality, are both

ideological concepts. These concepts have come to guide scientific practice through their use in the discourse on what can be considered 'good' science as well as their application in research methodologies, but they have to been as what they are: social constructs.

With this in mind, theories in scientific practice cannot be objective and universal; they can only be successful in convincing people assessing the quality of the theories. To meet these needs of quality assessment, theories have to be 'plastic enough to fit to local needs, yet robust enough to maintain a common identity across sites' (Turnbull, 2000). Theoretical knowledge therefore is as local as the site where the events supporting the knowledge took place, the construction that was required for producing these events, and the specific social environment of the investigators. Knowledge is produced by the assembly of these elements, and is specific to the assembly that is created. The practice of scientific knowledge production, therefore, is as locally situated and as messy as the process of its assemblage. Other varieties of knowledge production can similarly be described as processes of assemblage, and can therefore be compared to practices of scientific knowledge production as equally worthy of seeking understanding of the world.

Although science is a local, messy practice of knowledge production like any other, it has been the most successful practice in the production of robust formal knowledge over the past centuries. This notion warrants an evolutionary perspective in which science is regarded an intricate part of an ongoing social and cognitive co-evolution (Rip, 2002). The 'scientific method' is an important part of this co-evolution and is constitutional to the production of robust knowledge in the Northern scientific context. It is at the same time a tool for proving a direct link between the produced knowledge and the understanding of reality, and on the other the final means of settling differences in convictions and heuristics arise between scientists or groups of scientists, thus determining actual progress in knowledge production. (Rip, 2001).

Assembled knowledge is inherently local, but it can be moved to other locations by creating a new assemblage there. The mobility and robustness of this knowledge depend to a large degree on tacit knowledge present in the assemblage. A major part of knowledge produced in an assemblage is tacit, situated in the heads and hands of the actors, meaning actors have to re-localize themselves in order to move the knowledge. Some components, however, can be made explicit through knowledge representations such as images and texts, and in that way become formal knowledge. These representations are, or can be made, mobile, but mobile representations are not enough to be able to move formal knowledge: an additional requirement is that interpreters of any specific representation know how to acquire the knowledge it represents. To this end, representations are shaped according to a set of socially constructed rules on its form that guide the tacit process of interpretation. Robustness of knowledge, finally, is not just a matter of how it is assembled and moved, but also requires that people having the knowledge also have the tacit skill of recognizing and/or effecting similarity between the old and new knowledge assemblage.

### *2.1.4 Local and cosmopolitan knowledge, and different modalities of knowledge production*

As was discussed in the previous subsection, robust knowledge is, and has been, produced not just in scientific practices but in many different practices. Taking an evolutionary perspective on these practices, three different modalities can be made visible to have emerged over time. These modalities are applied in both scientific and non-scientific practices of knowledge production. The first modality is circulation of embodied knowledge, which happens, for example, in medical practice, where symptoms or groups of symptoms are fit into one disease profile because they are sighted repeatedly by medical practitioners. In the second modality, 'natural history', a set of data is collected with the aim of recognizing patterns in this data that stretch over time and place. The third modality of knowledge production happens under controlled circumstances: the most recognizable example of this modality is the production of knowledge in a scientific laboratory. This last modality has become ideologized as the premier source of objective, true knowledge.

In all three forms of robust knowledge production, knowledge claims are created in a local context, under local circumstances, and transformed into claims of abstract, 'cosmopolitan' knowledge. This abstracted knowledge can be re-specified with another step of translation to have 'some validity for other places and times'. Cosmopolitan knowledge gives insight into the background dynamics of the subject of knowledge claims, but requires local complexities to be ignored, reducing the opportunity for finding new phenomena (Rip, 2002).

Robustness of knowledge is determined by the degree to which the knowledge is considered to be applicable to different places and times. This must be understood as a spectrum: farming expertise, for example, can concern only one farm, can concern a set of farms in the same mountain pass, or it can concern any farm. Although the cosmopolitan status of knowledge is often explicated with the help of codified knowledge, this is not a requirement for robustness; personal claims on worldview, for example, have universal application but do not need to be based on codified knowledge. Neither does codified knowledge have to be robust: a set of rules based on tradition to guide children attending a boarding school, for example, have strong meaning but only in the specific context where the rules were originally produced.

The practice of science happens and has happened in protected spaces to perform the practice in. These spaces are defined by material, socio-cultural as well as institutional boundaries and decrease both the variety and interference with the work carried out. The emergence of disciplines, as well as institutionalization of these disciplines (including media) has been a crucial factor in the successful creation of protected spaces in sciences. In Northern societies these protected spaces were originally set up in agreement with society; the actor group responsible for representing society in this agreement, however, shifted from national governments to a more diverse group of actors. Scientific knowledge production increasingly became dependent on industrial actors, who wanted a larger role of influence in the assessment of quality of the knowledge produced.

The quality of knowledge is best served when knowledge is produced through a patchwork of different modalities and assessment of its quality is done from a perspective overseeing these modalities. This promotes openness to input from new stakeholders. Examples are NGOs in the Northern context and bearers of indigenous knowledge in the Southern context. This openness should not be confused to glorify indigenous knowledge; rather it appreciates indigenous knowledge as a new potential source of robust knowledge.

### *2.1.5 Insights useful to analysis of the GDC and Ghana's health care*

The previous subsections provided insights in how knowledge is produced and how its quality is assessed. This subsection discusses how these insights can be of use in the analysis of the Ghana-Dutch Collaboration and its influence on Ghana's health care. The concept of Mode 1 and Mode 2 provide a perspective that allows for characterization of production of knowledge. From this perspective, it is also interesting to characterize the knowledge production practices that are involved in the projects in the Ghana-Dutch Collaboration.

The research question specifically states interest in the influence 'participation' – the contribution of knowledge by non-experts – has on scientific research projects in Ghana. Two major factors, then, problematize use of the characterization as Mode 1 or Mode 2 production of knowledge. Not only are these concepts argued from historical developments of science, technology and industry in the Northern context; also, the two modes have a very general range of application (either institutionalized disciplinary science, or not) that does not allow for adaptation in characterizing knowledge production in the Southern context, and in Ghana's health care specifically.

Treating knowledge production as a process of local assemblage where knowledge is assembled that only applies within the local context of this assemblage does justice to the uniqueness of produced knowledge. This perspective allows for analysis of knowledge production by researchers in the projects of the Ghana-Dutch Collaboration, by professionals in

the Ghanaian health care sector, and by traditional healers in Ghana. No opportunity is left, however, for assessment of knowledge in the characteristics (such as those presented in subsection 2.1.2) that make them ***robust***. The robustness of the knowledge produced, and the influence that different types of knowledge have in bringing about this robustness, are a major influence of participation on the projects in the GDC.

The perspective that knowledge is produced with meaning only in a local context, but can be abstraction to cosmopolitan knowledge, does less justice to the uniqueness of practices of knowledge production, but in return allows for their analysis and comparison. From this perspective, the local/cosmopolitan aspect of knowledge is an additional characteristic to the characterizations of knowledge previously presented in subsection 2.1.2. This means interactions between knowledge from the different sources of robust knowledge in Ghanaian health care can be analyzed.

Such interactions can take place in practices of knowledge production, because production of new knowledge is done based on knowledge that is contributed to the process. The aggregated knowledge contributed to the knowledge production process can come from a single practice – this can be the case in scientific laboratory research practice, for example – but can also come from a variety of practices. When non-experts participate in knowledge production, the knowledge that is contributed certainly comes from more than one practice. The bridge between practice of origin and the new practice of knowledge is made by actors, through their effort to contribute knowledge.

The outcomes of a practice of knowledge production can not be explained in terms of knowledge contributed and produced alone. The dynamics of knowledge production are also influenced, to a large degree, by the interactions between the respective actors that contribute knowledge.

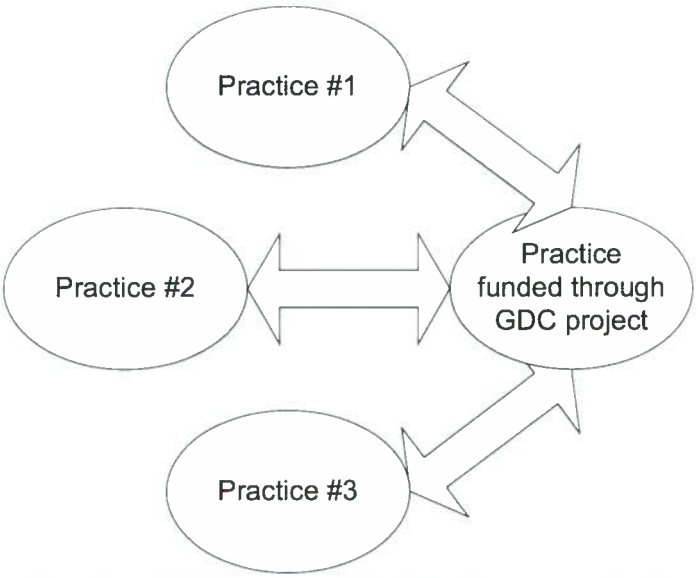


**Figure 2: Knowledge is contributed from a variety of communities of practice through actor efforts**

## 2.2 Actors involved in knowledge production

### *2.2.1 Introduction*

The previous subsection argued that an analysis of knowledge production should not be limited to characterizing the knowledge that is contributed to the process and the knowledge that is produced. Such an analysis should also include the actors contributing to the practice of knowledge production, allowing for richer analysis of the dynamics that determine outcomes and influences of knowledge production. This subsection discusses the issue of how to identify the actors that make contributions to a practice of knowledge production.

### *2.2.2 Approaches from research evaluation*

Literature on research evaluation that does not focus on the output of programmes and projects is rare. Bozeman and Rogers (2002) oppose this typical focus in an article that pleas for broadening of the scope of research evaluation. They strongly claim that only part of the impact of research can be made visible through assessment of the goals set for the individual research

projects and capacity building efforts; much of the work done by researchers and others in the course of the projects will simply go unnoticed when its output is measured only by the formal outcomes of the project. In addition, analysis based on output only gives a distorted picture of the process of knowledge production in scientific research.

The goals of an individual project are not just approved by the researchers carrying out the project, but also by the institution(s) they are part of and the institution(s) funding the research. For these institutions, the involvement in a project is part of larger strategies pursued to accomplish larger goals than just those set for the individual projects. The process of knowledge production thus involves a diversity of actors, goals and strategies. In their article, Bozeman and Rogers introduce two concepts to define the boundaries for identifying the actors involved in a particular practice of knowledge production.

The first concept is the 'knowledge value collective' of which all members use the same body of knowledge, make transformations to the body of knowledge, and all pursue the same knowledge goal, be it with a variety of uses. For example, a knowledge value collective can contain scientists and manufacturers both pursuing the understanding of superconducting materials; the one group might want intellectual satisfaction or scientific prestige from this knowledge while the other is looking for a new type of design to produce and sell. The second concept is the 'knowledge value alliance', a more specific segment of the knowledge value collective, which is bound by a shared institutional framework. This institutional framework is established through a formal agreement of the actors that are to be part of the alliance.

Bozeman and Rogers present an attempt to define the boundaries of inclusion of actors in determining impacts of knowledge production, and show that this definition can be given on different criteria. In other words, they try to adapt boundaries of their analysis to a renewed realization of complexity and variety in (scientific) production of knowledge. As was argued in subsection 2.1.3, every practice of knowledge production is unique: the group of actors involved in a process of knowledge production is so as well, and can even change through time. From this perspective, actors can only be identified as contributors to a practice of knowledge production, because they make these contributions on a 'site' that is specific to this practice of knowledge production.

### *2.2.3 Network of actors contributing on a site of knowledge production*

The term 'site' is useful to emphasize the localness of assembled knowledge: in presenting a deconstructed perspective on knowledge production, Turnbull (2000) uses the example of Chartres Cathedral to this end, a physical construction site where a dozen work crews led by various master masons over several centuries assembled knowledge on the building of a cathedral of unprecedented size and complexity.

Turnbull also presents a practice of turbulence research as an example of assembled knowledge: in this case, actors in the practice of knowledge production are bound more by institutional network arrangements than by the locality of their respective laboratories in being part of a knowledge assemblage. Thus, the concept of a site of knowledge production needs not be limited to one geographical location, and as such, can be applied to a scientific research project as well. In this case the term is not used to emphasize localness of knowledge assemblage, but rather the openness of knowledge assemblage: openness in the sense that it is not predetermined to involve a limited set of actors, but in principle anyone could contribute knowledge.

After identifying individuals, groups and institutions that make contributions on a site of knowledge production, these actors can be identified and analyzed as a network of actors in their interactions, dependencies and alignments. These interactions, dependencies and alignments are effected through social and technical infrastructure of the 'production network'. By analyzing actors in a network, shared arrangements can be made visible that provide opportunities for individual and collective action (Sismundo, 2004) as well as constrain these opportunities (Rip, 1999).

### *2.2.4 Insights useful to analysis of GDC research projects*

Bozeman and Rogers argue the complexity of the influence knowledge production has. The two concepts they introduce to identify actors that contribute to a practice of knowledge production, however, are problematic in broad application. The knowledge value alliance, because of its requirement of having an explicit institutional framework, is only applicable to institutionalized practices of knowledge production. As such, it is not applicable to projects with non-institutionalized participation of non-experts. The requirement of having an institutional framework is not part of the 'knowledge value collective' concept, which only demands 'loose coupling' between actors. Another shortcoming of the concept remains: an actor becomes a member of a knowledge value collective by making a visible transformation to information; this can only be the case in codified knowledge[2], which means the concept does not include any actors contributing tacit knowledge.

Analysis of processes of knowledge production, and the role of different types of knowledge within them, starts by locating the 'site' of the practice in which knowledge is produced. From the above perspective, the GDC's research projects can be analyzed as sites for knowledge production in Ghana's health care on which people from expert and non-expert backgrounds alike can contribute knowledge. These actors can be mapped as part of a 'production' network of a project. Analysis of the 'production' network of actors that can make the shared arrangements visible influence the actors in this network. Such shared arrangements (an institutional strategy, for example) is in place to coordinate actions of actors by enabling and constraining their actions in such a certain goal is served; this goal was established in agreement of several actors and cannot be reduced to the goals of a single actor. A shared arrangement can affect any number of actors in the 'production' network, from two actors to all actors in the network.

## 2.3 Dynamics of participation in a research project

### *2.3.1 Introduction*

The previous section discussed how to identify the network of actors that will be analyzed to trace the dynamics of knowledge production. The projects investigated in this thesis involve participation by non-experts in a practice of scientific knowledge production, which is a specific arrangement and is expected to have specific dynamics, with specific roles and strategies taken up by the different actors involved in the participation. An analysis to characterize these dynamics has been made by Michel Callon (1999).

### *2.3.2 Three modalities of participation between non-scientific and scientific actors in knowledge production*

Callon picks up this analysis from the public debates that surround science and the increasing involvement of non-specialists in these. Because of this increased involvement, the traditional boundaries between scientists and non-specialists are beginning to fade. This boundary was not just institutional, it also acts as a model ascribing roles to both actor groups. Callon distinguishes three modalities that are differing in the degree of influence of non-experts in the formulation and application of knowledge.

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[2] Bozeman and Rogers (2002) explicate their use of the terms 'information' and 'knowledge' in a footnote of the article. In terms of the characterization presented in subsection 2.1.2, 'information' is understood as codified knowledge and 'knowledge' as formal codified scientific knowledge (a more specific type of 'information').

Model 1 is characterized by the ideology of science as universal and objective. Science therefore requires protection from potential contamination with lay knowledge, which is provided through institutionalized 'protected spaces' for scientific knowledge production. In the dissemination of scientific knowledge in society, there is nothing to learn from non-experts and therefore any 'superstitious' views that object science's claims to truth must be eradicated through intense educational efforts.

The second modality, Model 2, is considered to be a result of prior invalidation by non-experts of assumptions underlying such claims of scientists to objective truth. This is exemplified in Brian Wynne's (1987) analysis of the Cumbrian shepherds, who proved to know more about the uptake of radioactive fallout in the fields their sheep grazed, than did the radiation experts advising them. The controversy was concluded with the experts admitting the partiality of their knowledge.

As a result, practices of scientific knowledge production have emerged where scientists open up their formal cosmopolitan knowledge to enhancement with local knowledge that non-experts gather from personal experience. The openness leads to a mutual need for processes where, through exchange, local and cosmopolitan knowledge are able to enrich each other. Because of this need, there is room for negotiations between scientists and non-experts both on the contents of knowledge and on the respective roles or identities, in the issue concerned in the knowledge production practice.

The first two modalities are different in the influence that non-experts have in the practice of scientific knowledge production, but the institutional boundary is visible. The final modality moves beyond this boundary. In Model 3, participative efforts bring together, on the one hand, scientists conducting research that is to a large extent explorative as it concerns subjects they have practically no previous knowledge on, and on the other hand the non-experts that through experience have gathered local knowledge on such a subject. Callon gives scientific research into 'orphan diseases', diseases previously overlooked or ignored by science because too little relevance was attributed to them, as an example of a practice in which Model 3 participation takes place.

In Model 3 participation, scientific and non-scientific knowledge are co-produced through a process of mutual learning, without a hierarchy making the one dominant over the other. This process of learning allows for construction of an identity to be recognized both by society and by the non-experts involved: in the case of patients of orphan diseases, patients constructed an identity for themselves as victims of an error in genetic coding, but otherwise similar and certainly equal in worth to fellow human beings.

### *2.3.3 Insights useful to the analysis of the GDC projects*

The modalities presented in the subsection 2.3.2 characterize three different dynamics of participation irrespective of the institutional arrangements within which these dynamics take place. My research however focuses specifically on participative efforts embedded in a program of scientific research projects. The different hierarchies of scientific and (non-scientific) informal knowledge that characterize the respective modalities can be translated to the individual project context. The dynamics of identity negotiation and construction[3] – in Model 2 and 3 respectively – can be conceptualized more specifically.

Participation of non-experts has to be initiated by the research team, which will always be done through some form of proposal. The (initial) identity or role of the non-expert actors in

[3] A whole body of literature exists on social identity with various conceptualizations. Most fit to the applications in identity negotiation and construction, respectively, are Swann's (1987) concept of identity negotiation as a result of tension between behavioral confirmation and self-verification; and Ricoeur's (1984) concept of narrative identity, which is composed by telling the story behind the identity – a story that develops throughout identity construction.

the view of the research team is included in such a proposal, as well as the role of the scientific actors themselves. In Model 2, where lay people are sought out to fill gaps, scientists position themselves as ***inter-local experts***. After non-expert actors agree to participate, scientists benefit from participation in two ways. First, it gives them the opportunity to promote their expertise as applicable and useful to the lay participant. Second, they obtain context-specific information requiring specific application of their expertise. This strengthens their position as inter-local experts with the local establishment. A successful participative effort not only establishes the researchers as inter-local experts with the local establishment, but also provides experience and a success story to strengthen their position as inter-local experts in inter-local arrangements. The outcomes of the project are disseminated to the non-expert actors.

The proposal to participate and the influence of this proposal on the respective identities of scientific and non-expert actors are different in Model 3 participation. In this modality, researchers position themselves as pioneers in the production of specific and local scientific knowledge on a subject that has not been explored from science before. This means that the non-experts start a participative practice with more knowledge on this subject than the scientific actors, because they have had more personal experience with it than any scientist has. Because scientists obtain local scientific knowledge from the project, they can position themselves ***local experts*** after or even during the project. In addition, all or part of the local knowledge produced can be abstracted to a cosmopolitan form, creating space for the emergence of a new type of inter-local expertise.

## 2.4 Influence of knowledge production dynamics beyond projects

### *2.4.1. Introduction*

My thesis not only examines the influence that participation has on the projects (in terms of knowledge produced and actors influenced) but also looks at the broader influence on Ghana's capacity for development of health care, of which the project is part. As was argued in the introduction this is the domain of 'second-order effects', such as those that Bhola (2000) traced in the case of an educational intervention. This tracing was done by post-hoc interviews with people involved in the intervention. Bhola did not analyze the dynamics leading to such second-order impacts in order to capture them; he used 'insight and imagination' to determine the questions to ask his interviewees.

This section, in contrast, does discuss such a conceptualization of the dynamics that lead to second-order effects. It attempts to cover the whole dynamics by looking beyond processes of dissemination and (different types of) utilization of 'packaged' knowledge in society, and also including the changing expectations of actors throughout processes of knowledge production, dissemination and utilization. Packaged knowledge is knowledge that is codified with the intention of disseminating it.

### *2.4.2 Knowledge dissemination and utilization*

Packaged knowledge is distributed from one actor to the other during and after knowledge production. In understanding dissemination of such knowledge it is important to note that processes of knowledge production and dissemination do not take place in a strictly linear fashion (Rip, 2001). From shortly after establishing a project on to its final stages in the form of publications and presentation, there are interactions with a variety of actors, of scientific, institutionalized, and non-institutionalized backgrounds. During these interactions, early results are disseminated that already possess a certain degree of robustness. Dissemination of developing results continues while knowledge production takes place and stops once there is agreement that the knowledge is an accomplishment of the project's goals. Upon this point, the

knowledge is presented in certain media, some of which are temporary (such presentations), while others are permanent (such as publications and manuals). The permanent packages of knowledge can be stored in a 'knowledge reservoir' (such as a database) from which other actors can obtain the knowledge later.

These media provide the means for planned dissemination, but unplanned dissemination can also take place through them. Planned knowledge dissemination is targeted at a recipient audience and where possible moulded to the expectations of the target group, to maximize chances of uptake. Unplanned dissemination can occur as well, when an actor that is not a member of the target group for dissemination obtains packaged knowledge. Be it planned or unplanned, through these mechanisms packaged knowledge spreads beyond a site of knowledge production.

After actors 'take up' packaged knowledge, they are at liberty to use it. Utilization of knowledge can be characterized in different ways. In instrumental use, knowledge is means to an end, used to predict effects from input factors and conditions. The comparison of a set of such predictions can be used as a basis for making the decision that contributes most to a certain goal. Conceptual use of knowledge contributes to the understanding of a problem context and to general enlightenment rather than applying knowledge as a means to a certain end. Strategic use, finally, occurs when knowledge is not used for its content but instead is used to strengthen one's own strategic position. A simple example is how companies, in promoting their products to the general public, refer to test results ranking their product as best of its kind as part of a marketing strategy.

Apart from potentially being used in a strategic way, packaged knowledge can also be an important input in processes of decision-making, and have broad influences through such utilizations as well. Attribution of a decision to a specific piece of packaged knowledge is problematic, however: when a decision is based on several packages of comprehensive knowledge the decision cannot be localized in time and space, as it is the resultant of a process in which many shifts in position were made based on small packages of knowledge accumulating to a decision-making authority. This process is characterized as 'knowledge accretion'.

### *2.4.3 Expectations creating prospective structures*

Packaged knowledge can be assembled in a practice of knowledge production, disseminated from there and finally utilized in a way that contributes to broad influence. An indirect process through which a practice of knowledge production and the dissemination of knowledge can have broad influence is by creating the notion in the heads of actors affected by these practices, that a new arrangement guiding future practices of knowledge production and dissemination can make them more productive or competitive. When this notion is underlined by enough actors, it becomes a need, and the need for coordination of implementing the new arrangement arises. This coordination is shaped by the developing arrangement through a multitude of actions that cannot be traced back to individual actions, while at the same time the coordination influences the construction of the new arrangement: analysis of the development of the arrangement and the practices it guides pose a problem of duality.

This issue of duality is overcome by shifting focus to the rhetorical force that comes from statements of ***expectation***: both by actors seeking to uphold a new arrangement, as well as by actors seeking to work within this arrangement. This rhetorical force is aggregated in a 'prospective arrangement', a pattern for the actual development of this new arrangement by assigning specific roles to the various actors within it. The social construction of a prospective arrangement is not enough to effect the actual development of the pattern, though: this requires a lot of effort from the actors guided by it.

Expectations have their effect through two cooperating mechanisms. During the construction of an initial prospective arrangement by a set of actors, these actors express their position on the arrangement through statements; actors affected by the prospective arrangement

are forced to respond to the role ascribed to them in the expectations: this first mechanism is called 'mutual positioning'. At the same time shared 'agenda building' takes place, which guides actions of actors in the prospective arrangement – these actions are dependent on the positions they take. Through these mechanisms, the actions of actors involved in a practice of knowledge production and dissemination are analyzed as co-evolving with the new arrangements that these actions create.

### *2.4.4 Insights useful to the analysis of broad influence of the GDC research projects*

The previous subsections presented two types of processes through which a practice of knowledge production can have broad influence: directly, through creating packaged knowledge that is utilized strategically or in decision-making; and indirectly, through creating or changing expectations on arrangements that guide the practices of knowledge production and dissemination.

Section 2.2 concluded with an argumentation why it is important to include the network of actors that contribute to a site for knowledge production in an analysis of the influence of (non-scientific) informal knowledge on the outcome of such a practice of knowledge production. This 'production' network of actors is also the entry point for analysis of the dynamics of expectations; in addition, the 'communication' network of actors that obtain packaged knowledge that is disseminated should be included in such an analysis, because their expectations can change as well because of this knowledge.

Expectations in the heads of these actors, and acting upon these expectations, can cause new arrangements to stabilize in the 'production and communication' network (and old arrangements to destabilize). Some arrangements, when they stabilize, have enabling and constraining influence on actors in networks beyond this production and communication network, but this influence is not visible to the actors themselves. To analyze such broad influences a ***systems approach*** is useful, which will be discussed in the next section.

## 2.5 System-level analysis of broad influence

### *2.5.1 Introduction – the level of systems*

The previous section discussed how practices of knowledge production and dissemination can create expectations of a new arrangement to coordinate their action that is considered needed by enough actors to start creating this new arrangement (because it allows for actors in the network to work together more productively, for example). This could concern an arrangement, for example a new standard for the dissemination of packaged knowledge that has influence outside of the production and communication network. This broader influence is invisible when looking only at the production and communication network, so the use of a ***systems approach*** is appropriate: both to trace the broad influences of existing arrangements, and to predict the influence of emerging arrangements.

The arrangements in a system, that coordinate the actions of actors in a certain way, characterize the mutual dependencies between actors in the system. Through these dependencies, the various actors and practices that are part of a system that have their own respective capacities, but also add up to a capacity at system level.

In addition, because of these dependencies, the evolution of the system has a certain coherence so that a trajectory or path can be recognized. The subsequent states, and their various features, can be more or less productive. With the scope of knowledge dissemination through the GDC being at the national level through the national Health Research Unit of Ghana's Ministry of Health, the effects of expectations influencing system development must also be considered at the national level. There are several system concepts at the national level that can be used to capture

the actors that are part of the knowledge production and/or dissemination that happens through the GDC projects.

### *2.5.2 Sector-specific knowledge, research and innovation system (KRIS)*

Typical systems approaches in the North are of sectoral systems of research and innovation (RIS), like in agriculture and health, and national systems of innovation (NIS). Such systems are not just of value to the actors that are part of them, but more importantly, they translate the need for knowledge and innovation in the context of the system – sector and national level, respectively – to innovation and production of knowledge. These needs for knowledge in this context change as the context evolves, and in order to meet these needs, a system evolves to new states of productivity – by taking up new practices and arrangements for producing new types of knowledge, or by making existing practices more productive. The system, through this evolution, provides new innovations and knowledge, altering the context. Therefore, system and context co-evolve (Nelson, 1993).

The application of either NIS or RIS approach is problematic in developing countries because they both presuppose strong inter-institutional relationships (between industry and academia, for example) that guide the actions of the various elements of the system to accomplish the system level goals. This strong institutionalization is not present in the Ghanaian context (or sub-Saharan African context, for that matter). A coherent problem is that actors producing knowledge at sub-national level can have goals that do not fit any agenda at the national or sector level: knowledge production in developing countries is hightly fragmented. A similar situation was encountered in South-Africa and prompted Rip and Mouton (2006) to develop a more inclusive system concept.

The national Knowledge, Research and Innovation System or KRIS concept includes the broadest possible range of producers and disseminators of robust knowledge, ranging from actors from the nation's higher education system to traditional community health practitioners. This inclusion not a more complete picture of the knowledge production efforts in a country and allows for a better analysis of the arrangements influencing specific actors in their behaviour. My assumption is that the national KRIS approach can also be applied at the sector level. In particular, that a sector-specific health care KRIS can be analyzed isolated from other segments of Ghana's KRIS.

### *2.5.3 Broadening of KRIS with context*

An important issue in my analysis is that evolution of a KRIS is not just guided by expectations of actors within the KRIS, but also by institutions and dependencies that have their place in the context of the KRIS. Especially in the Southern context, where research and innovation systems are extremely fragile (Rip and Mouton, 2006), the sensitivity of a KRIS to changing political, socio-economic and cultural system dynamics is high.

An analysis of a developing KRIS, and the dynamics that facilitate this development, cannot solely be based on expectations of actors in relation to the KRIS, but also in relation to other systems that affect the KRIS: local responsibilities in health care practice and large inter-local political, socio-economic and cultural systems. For empirical analysis, this means a detour has to be taken into the context, in terms of practices and arrangements in which the participative research projects are situated, to get a complete picture of the influence participative research projects have and can have on Ghana's health care KRIS. Broadening of the analysis to contextual aspects provides insights on the mechanisms and structures that characterize the dynamics of co-evolution of the KRIS and its context.

## 2.6 Conceptual framework for empirical analysis

The previous sections presented perspectives and concepts that all contribute to a further understanding of the (potential) broad influences of the GDC's research projects, both in underlying dynamics and in the system the projects can influence. A conceptual framework can be constructed for the empirical study of these influences. The framework depicted in Figure 3 was used for the analysis of two different GDC projects.

Both projects constitute a site (circle) for knowledge production, which is characterized by Model 2 and Model 3 participation, respectively. The research team responsible for a project (rectangle) contributes a lot of knowledge on this site and has a large influence on knowledge production in the project. Non-expert actors contributing knowledge on this site (triangles) to the furthering of the project are analyzed as part of the production network of actors (straight lines). Recipients of packaged knowledge (squares) from the production process are analyzed as the 'communication' network of actors (dashed lines). In Model 2 participation, the research team is more distanced the non-experts because of an institutional boundary (thick line), while this boundary is crossed in Model 3 participation. The sites and networks are all part of Ghana's health care KRIS and evolve as a part of it; the KRIS, in turn, co-evolves with its context.

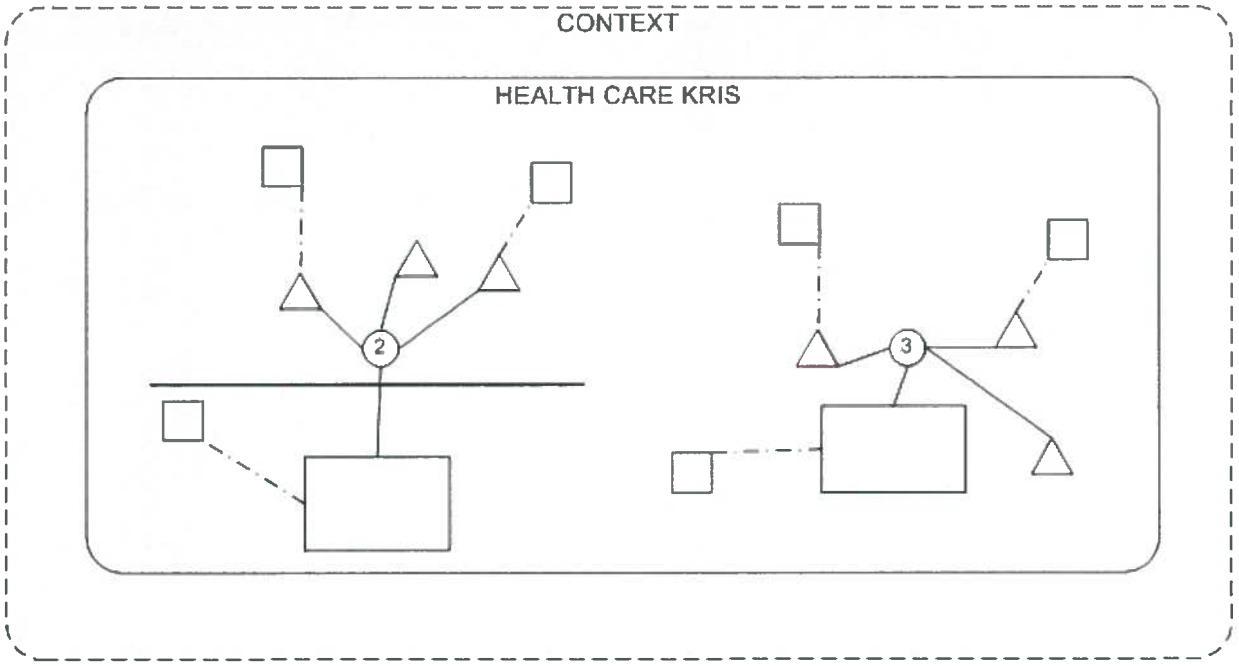


**Figure 3: Conceptual model**

# 3 RESEARCH METHOD

## 3.1 Method for empirical analysis

The empirical analysis was carried out comparing two research projects. The projects were selected on the basis of a preliminary characterization of their mode of participation. The method for this characterization is described in the next section. Two projects were identified to start analysis from, the one characterized as Model 2 and the other as Model 3.

The conceptualized research question and its subquestions were reformulated into a subset of empirical questions. A full list of the subquestions and the types of conclusions that were expected prior to the data collection can be found in appendix D. These empirical questions required the identification of actors, of media used for knowledge communication, and the collection of expectations. These requirements were met through collecting observations as well as statements. These statements were gathered from project working documents and from in-depth interviews with people with involved in the project and/or in the KRIS.

The KRIS, and the influence of the projects on it, was not analyzed as a whole, because of the enormous amount of actors in the system. Therefore, a ***bottom-up approach*** was used. This means that expectations on the development of the KRIS were sought out in the actor-network of ***prospective*** knowledge communication of the two projects analyzed. The label prospective is appropriate since the projects were not yet completed at the time of data collection, meaning most communication of knowledge produced was still to take place. Because of this problematic, and the limited amount of time available for data collection in Ghana, (prospective) stakeholders were identified. The interview instruments used for data collection with project participants and project stakeholders are attached as appendix E and F respectively.

## 3.2 Case selection

During preparation for data collection in the Netherlands, a list of projects of the final year of the programme was obtained. The goal of case selection was to select two projects, one that would allow for Model 2 participation in knowledge production, and one that would allow for Model 3 participation. The projects selected were still active in the period of data collection (April through June 2007), so that debates in the participation could be observed rather than have to be reconstructed. From the list of 35, a first selection of eighteen was made. This selection can be found in Appendix D.

Upon arrival in Ghana, the projects were investigated through the proposals that had been handed in for funding. Six of the research projects had been aborted, leaving twelve projects to be selected from. These were categorized based on involvement of non-experts and the way the knowledge they would contribute would be used by the researchers. When knowledge contributed was used as input data (for example the gathering of opinions), the participation was classified as Model 1. When knowledge contributed was used to fill gaps in the knowledge of researchers (with management and clinical experience, prominently), the participation was classified as Model 2. When knowledge contributed was in fact constitutive to a new framework or perspective, participation was classified as Model 3. Of the twelve projects subjected to selection, six were classified as Model 1, four as Model 2 and two as Model 3.

After categorization, a final selection of projects was made from the two sets classified as Model 2 and Model 3 respectively. Two criteria played a role in this selection. The first criterion was the number of actors involved, because a more diverse and bigger set of actors was expected to translate into more and more different participative debates. The second was geographical orientation: since both Model 3 projects were situated a 14-hour drive from Accra, a logistic advantage for conducting my interviews was that research team of the Model 2 project selected was situated in Legon, near Accra.

The feasibility and appropriateness of both projects selected was discussed with one of the Health Research Unit's research managers, as well as with its director, and agreed upon. The project selected as enabling Model 2 participation was titled "A framework for determining the insurability of health risks in rural Ghana – the case of Kintampo-North district". Selected as enabling Model 3 was the project titled: "Factors affecting the formation of and participation in associations of people living with HIV/AIDS (APLWHAs) in the Upper West Region: a study of the Wa and Lawra districts". Places of interest, to both the projects and to my investigation, can be found on the map in [ appendix A].

# 4 COUNTRY PROFILE

## 4.1 General facts on Ghana

### *4.1.1 Political history*

Before its independence, Ghana was known as the 'Gold Coast Colony' of the British Empire. On March 6, 1957, the nation declared independence, being the first African country to do so. Its first president was Kwame Nkrumah, who with the goal of developing Ghana as a modern, unitary socialist state, had big aspirations for the independent development of both the country and Africa: he organized the first pan-African talks, and had a large influence on the founding of the African Union in 1963. Striving for higher stability in the country to increase its productivity, Nkrumah's party enforced strict control through a number of controversial laws limiting press freedom and providing for detention without trial for up to five years.

In 1966, Nkrumah lost power of presidency through in a coup. The following fifteen years were characterized by political instability (through a series of coups), government corruption and economic depression. In 1979, Flight Lt. Jerry Rawlings led a violent coup to depose of the government and introduced a constitution based on Northern democracies which led to the installment of a new cabinet. This cabinet failed through corruption in times of economic decline, and Rawlings staged a second coup in 1981; this time banning political parties afterwards, and basically placing the country under military rule of the Provisional National Defense Council (PNDC).

Under PNDC rule, that lasted over ten years, the government was decentralized to regions, districts, and communities starting 1983; participatory democracy was introduced at the district level through establishment of district assemblies; and finally, the ban on political parties was lifted in 1992, the year that the first national governmental elections were held.

The PNDC and its supporters had founded the National Democratic Congress (NDC); this party won the elections by a landslide, leading to the inauguration of Rawlings as president in 1993, with a parliament that had 92% of its seats filled with NDC members. Although the major contesting party, the National Patriotic Party (NPP), gained popularity over the years following, Rawlings was re-elected in 1996 with 57% of the votes. In the 2000 votes, power was handed over to the NPP and its leader, John Kufuor, was inaugurated as president. Kufuor was re-elected in 2004.

### *4.1.2 Economy*

Hopes for Ghana were high in the years after independence - the country is considered to have been on an economic par with Malaysia in 1957 – but two decades of political instability and economic decline took a major toll on the country's development. Its current per-capita gross domestic product is about $600; Ghana's policies are aimed at attaining middle-income country status in 2015 by surpassing $1000 per capita. This is an ambitious yet achievable goal, as the country has experienced steady economic growth of about 5% for twenty years now.

Ghana derived its former name, 'Gold Coast', from the large quantities of gold that its inland harbors, and to this day, mineral exports continue to be an important part of its economy. Other major exports are natural resources, prominently cocoa, gold and timber. The Ghanaian currency was the 'cedi' but was recently denominated and therefore renamed 'Ghana cedi'(GH¢).

These exports and the Ghana cedis they bring contribute only to a minority of Ghana's 22 million inhabitants, as a vast majority of its workforce is part of the country's informal economy, which is not regulated by economic and legal institutions. In urban areas, the majority of informal economic activities are retail trade, while in rural areas, the majority is involved in (subsistence) agriculture – 60% of Ghana's total workforce. One in every three Ghanaians lives below the absolute poverty line, so there is a large divide in development between rural and

urban areas; the least densely populated regions, both situated in the north of the country, are the poorest and the least developed.

### *4.1.3 Socio-cultural*

Ghana's unity as a nation is young and externally applied; the Ghanaian people is made up of a large number of tribes. These tribes developed mostly isolated from each other over the past centuries, and as a result, many of the various traditional social and cultural practices and arrangements are still highly influential in everyday life. This includes governance and leadership in the community, where chieftaincy structures are highly influential, making visible the 'dual system of governance' (Donkoh, 2005) that is at work in the country.

The coverage of formal education over the country is limited by barriers of (human) resource. This is especially the case the rural areas, where both incomes are low (or non-existent) and the access to road infrastructure is minimal. Without formal (Northern-developed) educational influences, many people in rural Ghana maintain traditional world views and learning, indigenous to their community.

## 4.2 Health care in Ghana

Institutionalized health care in Ghana is governed by the country's Ministry of Health. The ministry oversees the Ghana Health Service (GHS) that was established in 1996 to coordinate service delivery is for government funded hospitals, clinics and health centers. Being a public body, GHS is decentralized and executes policy at regional, district, sub-district and community levels. The Christian Health Association for Ghana coordinates service delivery at missionary hospitals and clinics, and is also overseen by the ministry. There are about 200 missionary health care institutions in total, and about 1000 government institutions.

The government of Ghana is able to execute health programmes through this institutional infrastructure; the biggest is the National Malaria Control Programme, as eight in every ten diagnoses is malaria, and the disease is the country's largest cause of both mortality and morbity: in rural areas, eight in every ten cases diagnosed is malaria. Another important programme is the National AIDS Control Programme: the prevalence rate of the disease is about 4%.

Separated from public bodies coordinating service delivery, is a Coalition of NGOs at that coordinates delivery at about 80 clinics and hospitals set up by NGOs. Other NGOs are not involved directly in the service delivery, but fund and supply the health care providers and the communities with preventive measures, such as insecticide-treated bed nets. Private biomedical clinics are the last group of institutions providing health care service, and are estimated to be responsible for 40% of total patient care. Together, the institutions harbour little under 20,000 nurses, which is less than one to every 1000 Ghanaians (compared to 1 to 100 in developed countries).

Institutional medicine is therefore limited to a minority of Ghanaians. Travel and service cost for biomedical consultation are too high for many people, which means many drugs are sold 'over-the-counter' after a diagnosis based on lay knowledge. Half of the Ghanaians do not have the means or the preference to access any form of medicine. Therefore, a large number of Ghanaians seek health care services with traditional healers in their respective communities. Such traditional healing practices are an issue of controversy: some remedies are assumed as being at least complementary to modern biomedical treatments, while others are considered useless or even dangerous.

## 4.3 Health care research in Ghana

The Health Research Unit (HRU) has been established in 1990 under the Ministry of Health to support and coordinate health research and the dissemination of health research results, as well as to set the national priorities in health research. It has its own work offices to facilitate a number of research projects. In addition, HRU coordinates three field research stations, corresponding with three ecological zones in the country: Navrongo in the northern savannah, Kintampo in the central forest and Dodowa on the southern coast.

Health care research is also carried out at universities in their respective schools for public health, clinical studies and health systems, prominently the University of Ghana in Legon, the Kwame Nkrumah University of Science and Technology in Kumasi, the University of Cape Coast and the University of Tamale. In addition there are two teaching hospitals where research is carried out: Komfo Anokye Teaching Hospital and Korle Bu Teaching Hospital. Finally, a number of NGOs also facilitate health care research.

# 5 CASE I – RISK ASSESSMENT FRAMEWORK IN GHANAIAN HEALTH INSURANCE

## 5.1 Introduction

This case report presents findings on the participative research project classified as Model 2. It will start off with an overview of the historical context for the rest of the case report. Situated within the context are the key actors in the KRIS and the dynamics between them and the KRIS. Situated within the same context are the particular issues being faced by the actors. These three elements give the background for data on the project's specific context, the dynamics of participation in it, and finally its results and the relevant expectations on future developments.

Before starting with the historical developments, it is important to emphasize a matter on two of the sources that provided the data for this report. The project constituting the KPS that was investigated used the Kintampo-North district in Brong-Ahafo Region as a case study for their work. Amongst others, the project's research team interviewed the manager of the scheme in this district. The data presented in this chapter bases its district scheme management perspective on an additional source. Besides making observations and asking two questions during the interview session the research team had with the Kintampo-North scheme director, an in-depth interview was held with the Jirapa-Lambussie district scheme director in Upper West Region.

## 5.2 Summarized historical context of Ghana's National Health Insurance Scheme

Ghana's national history is as turbulent as it is short, and its history in health care financing is no exception to this rule. After the country gained independence from the United Kingdom in 1957, Kwame Nkrumah's socialist regime immediately applied a policy of refunding the direct cost of health care in public facilities to all citizens, financed solely through the government's tax revenue. Over the following decade rapid population growth caused increasing pressure on this system's financial viability. This finally forced the government to make a radical shift to implementation of an out-of-pocket payment policy in 1969 dubbed 'cash-and-carry'. Cash-and-carry demanded patients themselves pay fees at the point of service delivery. The new system dramatically decreased access of the general population to health care services, hitting the poorest the hardest (Aikins, 2003).

In an effort to restore this level of access, research projects were carried out to explore the opportunities for establishing a national health insurance system in the country as far back as the 1980s. Notably researchers came from the United Kingdom, Ghana's former colonizer, which had developed the world's first national public universal health service in 1948 with its National Health Service. (Atim and Sock, 2000).

In 1995 a newly developed design for a National Health Insurance Scheme (NHIS) was analyzed in a major research project, and subsequently a pilot launch in four districts in the Eastern Region was planned. These were aborted however due to squabbles over the strategic direction and in particular the role of the Ministry of Health in the NHIS. The government directed the Ministry of Health to limit itself to a promoting and facilitating, rather than an implementing role (Atim et al, 2001).

During this time, local health insurance initiatives were already operational in some of Ghana's communities, categorized in policy at the time as Mutual Health Organizations (MHOs). In 2000, over 30 MHOs all over Ghana were in the process of starting up. The coverage of health insurance in Ghana at that time was minimal: according to a study concluded in September 2001, there were approximately 14 fully functional public mutual health MHOs providing health insurance services to less than 87,000 Ghanaians. Additionally, private insurance companies covered insurance for 60,000 workers in the private sector (Atim et al, 2001).

2000 was also the year the National Patriotic Party came to power. Following their electoral victory, a team nominated by the new Minister for Health started drafting a policy for the provision of health insurance under the government. The policy borrowed ideas from several MHOs that were being piloted in the country with the support of international donors. With elections looming at the second half of 2004, the government wanted to get the NHIS underway, against the wishes of a number of stakeholders that wanted to see more work to put into the draft before adoption. The government's wish resulted in the adoption of the National Health Insurance Act in August 2003 after passing the country's parliament. The Act demanded that all districts in the country – at that time 110, and currently 138 – have a District Mutual Health Insurance Scheme (DMHIS) in place and under management by January 2005. The NHIS package laid out in the Act covers claims for 95% of all diseases in the country (Interview: Gemegah).

Since implementation, Ghana's citizens can become members of the National Health Insurance Scheme by signing up at the DMHIS office in their district. The DMHIS's management is nominated and established through the district assembly, the local branch of state government. To be accountable to the various stakeholders, every DMHIS management is required by law to have a representative from the District Health Directorate of the Ghana Health Service in it, as well as a representative of the district assembly. The district assembly is established through elections at the local level every four years, in which political parties compete, just as they do at the national level, and consists of 120 parliament members (Interview: Akanzinge). The DMHISs can be considered to still be starting up in their operations. Coverage is already substantial: by May 2007, 38% of the Ghanaian population had been enrolled in the NHIS (World Bank, 2007).

An aspect about the NHIS worth emphasizing is the lack of experience the majority of Ghanaians have with such an arrangement. The unfamiliarity is there firstly because health insurance, in general, can be understood as a system of financial redistribution based on the solidarity principle. Systems of redistribution have without doubt been around in Ghana but are more likely to involve goods, mostly, food and not around financial means, as money is very scarce to the majority of the population. Since subsistence agriculture is the occupation of half of the Ghanaian workforce, half of the population only has access to financial means through selling excess provisions twice a year, after harvest season – depending fully on the success of the harvest. A second unfamiliar attribute of the NHIS is the national scope of operations. Prior health insurance schemes were in operation in Ghana before the introduction of the NHIS, but these were all operating on a community level; the newly introduced scheme covers all of Ghana through offices set up in all of the country's 138 districts. Summarizing, health insurance in Ghana is by far not as stabilized, both institutionally as well as socially, as it is in many countries in the North, which is something to keep in mind while reading further.

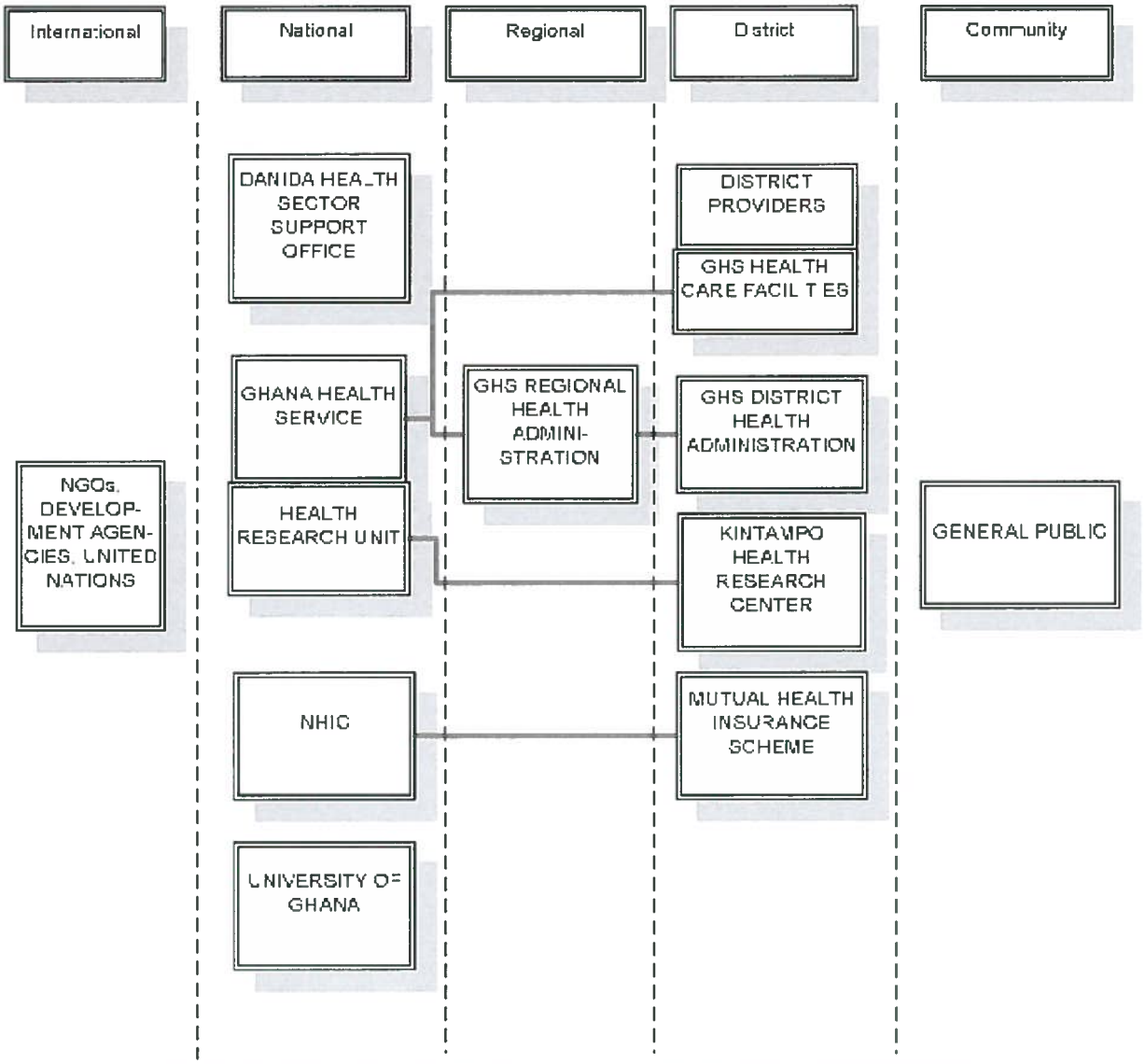


**Figure 4: Overview of actors involved in the case, with institutional links**

5.3 Actors in health care KRIS influencing development of the National Health Insurance Scheme

Although district mutual health insurance schemes are supported with a limited amount of financial means from the Ministry of Health, and sometimes from local government and/or donors, the majority of funds required to operate a scheme have to come from fees paid by the insured. (Interview: Bomba). Because of the decentralized structure of operation of the NHIS, this means in principle every scheme's management has to ensure its own financial health. To this end, every management has to determine its own policies within the framework the National Health Insurance Act has put in place, and find and implement solutions for the operational problems they face.

Many of these problems are, to some extent, common amongst schemes. This enables the exchange of possible solutions between different schemes, and even the implementation of solutions coordinated over different districts. To this end, district scheme directors meet with their collegues of other districts in one region. In Upper West Region, for example, this is already taken up in arrangements: directors have monthly meetings to discuss issues, and there are three-monthly peer reviews of all staff of every scheme's management in the region (Interview: Bomba).

In addition to these meetings, there are arrangements that are being or have already been put in place from the national level. With the adoption of the National Health Insurance Act, not only the establishment of schemes in all districts was demanded, but also of a National Health Insurance Council (NHIC), tasked with regulation of all health insurance in Ghana as well as draft and execution of strategy for the NHIS. The NHIC's responsibility is to support all schemes in their operations.

This support includes distribution of the government's funding amongst the district schemes. When a scheme's management applies for extended financial support because the scheme is in distress, the NHIC will assess the scheme management's operations and provide training to improve them. The NHIC also provides general training support to all district scheme management teams, but this is not much (Interview: Akanzinge).

They also play a role in coordinating efforts to deal with issues in the operations of the district schemes. To find and implement common solutions to common problems, the NHIC organizes a six-monthly national level meeting with representatives out of every region. They are in the process of opening regional offices for monitoring to institutionalize this arrangement, and have further plans for increasing coverage of support offices to one per five districts. In addition, there is an institutionalized annual conference of schemes called Ghana network of mutual health organizations. A final institutionalized support mechanism is the recently established research and development department of the NHIC (Questionnaire: Acheampong).

Functional improvement of the NHIS is not limited to the efforts of district schemes and the NHIC. The success of the NHIS's operations is also very dependent on the health care providers in the country. The new system of financing changes how health care providers obtain the payments for their services, because instead of being paid over-the-counter, they have to file claims for a significant portion of their revenues. The new system also changes how health care providers are held accountable for the quality of these services, because they will have to do their best to conform to the standard guidelines that have been negotiated with the NHIC. Finally, the new system introduces a risk of fraud, both from outside facilities, by people simulating diseases, and from the inside, from the filing of false claims.

To guide the implementation of the NHIS in its facilities, the country's public health care provider, the Ghana Health Service (GHS), has established a coordination body at the national level. The office's efforts will be organized sub-nationally through regional offices, through focal persons in the districts and at the individual provider level. At the regional level the GHS occasionally meets with non-GHS providers and brings them together to share experience on insurance issues; there are similar meeting taking place at the local level between individual providers (Interview: Akanzinge).

Implementation of most of the innovations required to handle the issues facing the NHIS requires coordination of efforts from both insurance schemes and providers. The team responsible for the coordinating body at GHS also set up a national provider/insurer platform with non-GHS health care providers in the country for the implementation of information and communication technology, and the NHIC has been included in this network. Discussion of coordinated efforts is also taking place at regional and district levels, between different schemes, district health providers, district chief executives (of local government) and heads of the clinics: for example a meeting was held with all health care facility superintendents in one region to discuss how to prevent the implementation of the NHIS from raising hospital attendance levels. Most of these district and regional meetings are initiated by providers who worry about the payment of their bills (Interview: Akanzinge). In the NHIC's vision however, the NHIC should be taking this leading role in discussing issues of the NHIS's operations and will have to work towards attaining this role (Questionnaire: Acheampong).

## 5.4 Donor involvement in the KRIS influencing development of the National Health Insurance Scheme

Donors have played a significant role in the development of the NHIS and continue to support it in various ways. A prominent donor is the Danish Development Agency (Danida). Danida does not support the NHIS at the national level, because nowadays negation of large national level projects takes an amount of time that is unacceptable to them. The World Bank was the last donor willing to sit out this wait to get a national-level support project on implementation of information and communication technology approved by the government (Interview: Dzikunu). Danida instead prefers support at the local level, and has emerged as a major donor to community health insurance in Ghana. In Danida's Health Sector Support Office, there is one full-time staff member responsible for the health insurance support programme. Danida owes its current role to efforts starting in 2000, when they were one of the first international donors to provide logistical, financial and technical support to MHOs. One of the key goals of their Health Sector Support Office is to improve access to health care for the poor, and MHOs were and continue to be seen as means to this end.

In the late 1990s, Danida co-funded an evaluation study of two MHOs, including the pioneer Nkoranza district scheme in Brong-Ahafo Region that had been fully functional since 1992. Apart from highlighting areas for improvement, the evaluation gave Danida and its partners a detailed view of the support that is necessary to start up an MHO. Based on this experience, Danida was able to facilitate the establishment of twenty-five pilot districts all over Ghana in 2001. The Jirapa-Lambussie DMHIS started as one of these twenty-five schemes. Besides providing financial support, Danida established the means for providing technical support by facilitating the education of trainers in Ghana on insurance scheme management, and by developing training materials. The draft of the district mutual health insurance schemes in the NHIS is to a large extent similar to the pilot schemes. (Interview: Helen Dzikunu).

Since the NHIS launch, there has been a total of four weeks in training provided to district level scheme management from the national level, and most of this training has been provided by external donor parties – Danida and the United States Agency for International Development, prominently – while official training from the government only covered three days. (Interview: Akanzinge). Danida allocates an equal budget is allocated to each region for training sessions, which are on topics chosen by either scheme managers or Danida. In a recent example Eastern Region managers requested training for dealing with the government's new law on procurement. Danida does not execute strict policy for accepting or rejecting such a request as they are discussed and judged based on whether they are in line with the programme's goals (Interview: Dzikunu).

Apart from these types of support, Danida conducts research to help health insurance in Ghana function better. The projects are contracted out to consultants in Danida's professional network in Ghana, most with ties to Ghana's universities. A research budget is allocated annually, and most of the research projects are on cost and utilization of services. Finally, Danida functions as a knowledge resource for researchers from outside Ghana who seek documentation of what happened in health insurance before the NHIS (Interview: Dzikunu).

## 5.5 Issues in the development of the NHIS in Ghana concerning the general public

### *5.5.1 Enrollment*

Marketing for the NHIS is well underway. Intercity buses, billboards, and signs in every town along the highway attempt to convince the population to contribute to a "healthy happy nation for all". The growth targets set at the national level (55% at the end of 2007) make maintaining membership and recruiting new members a key issue at the local level. The last peer

review meeting in Upper West Region actually was on the schemes' public relations managers raising community awareness of the use of health insurance and mobilization of membership. (Interview: Bomba).

Currently most of Ghana's insured are households whose breadwinners work in the formal sector of the economy. The biggest growth potential, consequently, is in getting subscriptions from the informal sector. While for households provided for through the formal sector the contribution fee demanded per person ranges from 7,20 to 48,00 GHc based on the amount of registered income, the NHIS lacks a system for determination of a fair amount of premium for households provided for through the informal sector. (Interview: Akanzinge).

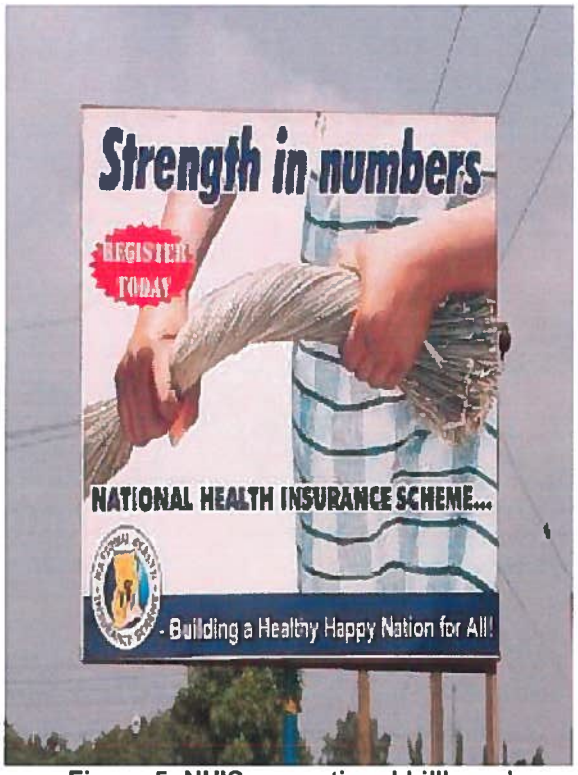

**Figure 5: NHIS promotional billboard**

The solution that is envisaged at the NHIC, is to use recognizable properties to determine premiums from them (Quest: Acheampong). Local level experience, however, points out how hard this is in practice: assessing people's scattered acres of land, and other possessions, is very difficult. That notwithstanding, at Jirapa-Lambussie it is considered a viable solution to map a wealth ranking so that it is clear who should pay more than the other (Interview: Bomba). Several schemes have attempted to create procedures for these classifications using objective criteria of ownership, such as of house, shop, workshop and car. The result was a relatively crude method, which is not being transplanted by other schemes (Interview: Akanzinge).

### *5.5.2 Control and prevention of fraud and unnecessary use of services by insured*

The number of facility attendances per insured member is not limited by law, which makes the NHIS sensitive to fraud. At the GHS's coordinating office for NHIS implementation, fraud control is considered weak at both the scheme and provider level. Additionally, insurance is believed to result in an increase in patient attendance. In the near future several private facilities might have to become NHIS-accredited to still have sufficient patients, but they fear a run on its services because of these beliefs (Remark: Gemegah).

To prevent fraud and unnecessary use of services, the Jirapa-Lambussie scheme has put a desk up at the district hospital where people have to validate themselves. In addition the scheme's management has periodic meetings with providers where they discuss the handful of individual people that have reported in three or four times a month and are suspected of simulating diseases in order to get drugs. A common solution is to offer the person hospital admittance rather than the drugs s/he intended to obtain. Other schemes, such as the Kintampo-North scheme, have employed a 'gatekeeper' system, in which each NHIS member is given an identity card and three corresponding facility cards (one to be used for every hospital visit) to be able to control attendance. To be able to implement this system nationwide system a discussion has to be started up by the NHIC but this has not happened. (Interview: Akanzinge). Some schemes take harder measures, as a survey of regional health services proved that in one district, the three facility attendance cards were being withheld from insured until it was verified at the DMHIS's office that the insured actually need attendance (Remark: Agyei).

Additionally, the risk of unnecessary use of services in Jirapa-Lambussie is approached through public education efforts, because some insured have traveled to hospitals thinking they have to make use of the services before the year runs out or test if the card really allows them services (Interview: Bomba).

## 5.6 Technical and management issues in the development of the NHIS

### *5.6.1 Claim handling capacity*

The NHIS is facing some basic administrative problems. a severe backlog in the production and distribution of the ID-cards (Interview: Bomba), leaving over three million subscribers cardless (World Bank, 2007). In addition there are a lot of complaints from providers and pharmacists of delayed payment of the claims they send to the insurance scheme in their district (Remark: Vondee). The situation is reported to have led to questionable behaviour on the side of health care staff. Examples found were the moving cash-paying individuals to the front of the queue at the expense of NHIS-insured (Remark: Tetteh), and the denial of granting an official referral for expensive treatment, losing the NHIS coverage for the treatment (Remark by community member in Nante).

The cause of the problems is insufficiency of organizational capacity in some of the districts due to limited training and rushed introduction of the NHIS. Even though the Jirapa-Lambussie scheme are one of the more successful ones in Ghana and are benefiting from a computerized system for registration of claims that was put in place with the support of Danida, they emphasize the need to further develop data management (Interview: Bomba).

#### *Control of follow-up on treatment procedures and provider fraud*

The Standard Treatment Guidelines have always been in place at the Ghana Health Service, but with the implementation of the NHIS, a significant portion of the bills is being processed by the DMHISs. Compliance to these guidelines of facility staff in the provision of health care services has become an issue that affects both insurers and providers. In rural areas where the medical prescribers are very close to the communities, there have been reports of honored requests to put drugs for unregistered on the bill of registered members; currently there is no way to prevent this from happening. Many providers use pen-and-paper administration which makes them more sensitive to fraud (Interview: Akanzinge).

The GHS coordinating body for NHIS implementation functions to help providers work in compliance with the Act, and to internally control fraud, so as to keep the GHS members out of legal issues with the NHIC and the respective DMHISs. Facility staff is being educated to know what practice is in conflict with the law, making sure treatment guidelines are followed, preventing excessive prescription. This educational support is underway and being monitored, but there are more issues in working with the system: when the guideline number of attendance days for surgery is exceeded, for example, there are no sanctions to the provider, but the health insurance will not pay for more. Another issue is that DMHISs might suspect a decline of quality of services under the NHIS. To handle this problem quality assurance teams in every clinical unit of the GHS are operational and coordinated nationally to make sure quality is up to standards and provable to be as such (Interview: Akanzinge).

At Jirapa-Lambussie claims and charges are validated to be on guard against people cheating in claims filing at the service provider, and when there is reasonable doubt they can have a case made and researched by a vetting committee established for this. The committee is filled by the scheme's board members plus one or several additional experts (a pharmacist for example) that would be able to detect prescription fraud, for example a drug claimed to be given to an adult that is supposed to be given to children. Since price differences at different providers

in the district also cause fraud risk, the Jirapa-Lambussie DMHIS is looking at getting a standard price list together and will present it to the medical doctor's association in the district (Interview: Bomba).

### *5.6.2 Exemptions*

The guidelines in the Act only stipulate a flat rate based on income and additionally exempts a number of groups from payment (Remark: Gemegah): children under 18 provided the parents enroll at the same time; seniors of 70 years or over; and 'indigents', that is, somebody who has no family, has no real source of income or regularly receives support otherwise. Taken strictly, only mental patients walking the streets qualify for this exemption. The Act expects people to register an entire household at once, and some people with large households cannot afford this full 72.000 per household member that. (Interview: Akanzinge) . There is pressure from donors such as Danida to solve this problem of people that want to register but cannot afford the full fee, but the minister's directive to effect policy solutions is quite limited. For example, even a solution to exempt any 0-5 year old child irrespective of insurance status of the parent requires the Act to be changed, meaning the Act will have to pass Parliament again. (Interview: Akanzinge). Guidelines for proper distinction, and fees to be paid subsequently, are limited (Interview: Dzikunu). A research project on community identification criteria for implementing exemptions in a district of Upper East Region has actually been carried out with GDC funding this year.

In many schemes there are already lots of poor people exempted and the cost of service is increasing, so there is also pressure to increase premium charged from the insured, while the rate is limited by the Act. Some schemes creatively stretch this limit to meet financial needs, for example by adding charge on top of the flat enrollment fee for the NHIS identification cards that are dispensed as proof of membership after subscription (Interview: Bomba).

## 5.7 Project

Claims management at Ghana's 138 District Mutual Health Insurance Schemes consists of administration, control and payout. The data being processed has not been used to predict cost in any of the DMHISs. In many districts opportunities for this application are limited because claims administration is done with pen and paper (Quest. Acheampong).

The object of the Model 2 project was quite technical in nature, as it aimed to develop a new analytical tool for predicting the cost of health insurance for an insurance scheme in a district of about 100,000 people. This tool is a framework for determining the insurability of health risks. Such a framework can help any district mutual health insurance scheme management to get a statistical estimate of the expected occurrence of all diseases relevant to them over, say, a period of one year. Additionally, the framework groups the disease occurrence estimates into different categories of age and gender, so that the framework can be used in more than one district, since the composition of the population is different in every district.

The framework provides scheme management with an estimate of the total cost made over a fixed period of time, which can be of help in ensuring their financial sustainability. Additionally, the categorization of the estimations in age and gender groups can help determine sound premium rates, should the National Health Insurance Act be changed to allow for changing these rates.

The goal was not just the development of a theoretical framework to be able to conduct risk assessment. The framework would also be given a 'test run' in one of Ghana's districts to research how data can be gathered to enter into the framework, and to determine what statistical certainty on the set of estimates is attainable. In the project, a 'rural' district was sought, because of the high extent of variation in disease patterns between Ghana's rural and non-rural districts.

The research team, which consisted of four persons, is connected to the University of Ghana in Legon, near Accra. All team members have a background lecturing at its School of Public Health. Building upon their experience in health insurance and risk assessment abroad, they saw an opportunity to make an interesting contribution to health insurance in Ghana.

Apart from their work at the University, the research team's members all have additional responsibilities elsewhere in Ghana's health and/or insurance sector. The PI does consultancy work on the side; one of the members works at the National Census Administration; another is in charge of the State Insurance Company's Bob Freeman Clinic; the last team member works at the works at Ghana Health Care Company.

The researchers set out to gather as much data as possible on disease occurrence and cost from medical facilities and health administration in a single rural distict. After the project proposal was admitted for funding, the director of the Health Research Unit (HRU) urged the research team to contact the HRU's research centers in Kintampo and Navrongo. Since Kintampo is closest to Accra, and the team was content with the first communications with the health research center there, they chose to collaborate with Kintampo Health Research Center. This meant the district selected for study was chosen to be Kintampo-North, the district the center is situated in.

The center at Kintampo is one of three research centers under the HRU, established to provide a rural base for field epidemiological and other health research. All three centers operate a Demographic Surveillance System meaning every household is labeled, and every six months updated statistics are collected on several variables within the households (level of education, socio-economic status, etc). The three centers are located in different ecological/cultural zones.

Kintampo Health Research Center was established in the forest-savannah transitional ecological and cultural zone of the country in 1994. and has since then been involved in several projects, the biggest of which a trial of vitamin A supplements in reducing maternal mortality with funding from the British development aid. The Center has been expanded with a laboratory and offices for the research activities solely through overhead funding of the projects carried out there. and has become established as a site for quality research, proof of which is the awarding of clinical trials for a malaria vaccine to the center. The center had never before been involved in a project on health insurance.

To the project's advantage, the center has more to offer than a system for mapping demographic data. The center has also become a recognized establishment within its social environment: there are good relations with the district assembly, with the medical practitioners both in the district's private clinics as well as in the public Kintampo District Hospital, and with members of the local community, not only by knowing them through previous research but also through experience with the local language (Interview: Gemegah).

In preparation for the field work, the research team had already conducted a literature review on (health) insurance to construct the framework, including the data parameters required for input. An additional review of medical literature was done to put together the list of diseases for assessment. There is a list of nationally determined major health risks in terms of incidence, but 'major' from this research's point of view is determined by ranking frequency and monetary risk, so the scope is wider. Documents used came from Ghana Health Service and local work prior to the establishment of the NHIS. (Interview: Gemegah). To get an appropriate estimate for the cost, Ghana's Standard Treatment Guidelines were reviewed and perfect adherence assumed.

Two field trips from Accra to Kintampo were undertaken in the course of the Model 2 project and observation data was gathered on both of these trips by accompanying the team members. In preparation for the fieldwork, the team had already developed a set of interviews tools and processed a first round of feedback from researchers at the KHRC on these.

The first trip encompassed a total of two working days in the district. On the first day, the interview tools were revised together with several members of the KHRC research staff and the Center's director.The second day was reserved for interviews. The survey that field workers contracted by the center were to conduct at 250 randomly selected households was piloted on two occasions in the village of Nante. It involved requesting the most 'important' diseases, to get an overview of the community perception of health risks and biomedical health care in general. Apart from the survey, additional data on the households interviewed was gathered from the Demographic Surveillance System. Unfortunately, the DSS data is not linked to hospital card and/or outpatient registers. (Interview: Gemegah).

Apart from the two pilot surveys, the data parameters in the outpatient and inpatient register at Kintampo District Hospital, the only hospital facility in the district, was checked for compliance with the format that was required for input into the framework. From this pen-and-paper outpatient department register, data on coupled disease diagnosis and on hospital bed attendance for the list of diseases was captured later by workers at the KHRC. The general data on disease occurrence would be gathered from the district's health administration, which is part of GHS.

The last person to be interviewed during the field trip was the director of the Kintampo-North DMHIS. Questions were on technical insurance issues, and the interview session appeared to be more about raising awareness for the need of implementing some of these technical measures, than about getting vital information out for the project. The research team did however get a better view of the current developments and constraints to these at the scheme management.

The second field trip was undertaken by only the PI two weeks later and was solely intended to administer the interviews at medical prescribers. At the time of the interviews, there were nine medical prescribers on duty in Kintampo district, all of whom were engaged through KHRC. Five worked at the Kintampo District Hospital, one at a private clinic, and three in smaller rural clinics and maternity homes.

Apart from inquiring for every disease in a large list the relative frequency of occurrence, on a scale from 1 to 4, the prescribers were also asked to estimate the relative degree to which insured can have influence (through reckless behaviour) on this frequency of occurrence. Also per disease the relative risk of contamination and the influence one can has on this risk were estimated; finally, the relative degree of influence one can have on the cost of treatment was inquired from the prescribers. Prescribers were also interviewed on their knowledge of general health insurance issues.

The PI appeared happy that the interviews with the medical prescribers provided data that was expected, and that would probably be confirmed by the data from the district health administration. Data collection was now complete, providing the research team with the raw data for their analysis of health risk distributions.

### 5.8 After the project

The results of the project will be shared with the Kintampo-North DMHIS to serve as initial framework for the risk analysis there. Its management currently does not allocate claims in types and frequencies/cost of these types, and it is unclear whether they will implement risk assessment in the data management of the scheme in the near future, certainly while premium diversification over age, gender and geographic location is not allowed by the Act.

Premium distinction based on risk rather than socioeconomic status, with regards to chronically ill, was already discussed by the Kintampo-North district scheme director at a meeting of all scheme managers in Brong-Ahafo Region. He hopes this will be allowed from 2008, but this requires a proposal to change the National Health Insurance Act which will have to be made by the NHIC. The NHIC's operation manager does not see this as a likely development, as he considers NHIS a poverty reduction strategy and basing a person's premium on risk may

cause a large segment of the population to be excluded from the benefits of NHIS (Quest. Acheampong).

The NHIC does however consider offering additional services at additional cost a feasible way to ensure sustainability of the NHIS. Its operation manager prefers the service package should focus on health improvement programs instead of including more expensive treatments. The NHIC regards itself the party that should be responsible for the design of additional packages (Quest: Acheampong). Coincidentally the Ghana Health Care Company[4] of which one of the research team's members is part, will possibly be developing these designs.

The coverage of the ICT infrastructure over Ghana that is necessary for implementing risk is currently being increased through installation of a uniform technology platform, which is coordinated by the NHIC. Through the platform for data management, claim handling capacity is increased and risk of fraud is reduced (Quest: Acheampong). At GHS there is skepticism on this solution: the national coordinator for NHIS implementation does not expect to have nationwide coverage within five years, because the more remote districts have power supply problems, as well as unfeasibly high costs of maintaining bandwidth (without landline coverage) for data transport. An inter-agency steering committee initiated by GHS has started in July to implement an ICT system for the NHIS at the providers, but is less ambitious: its short-term aim is to have ICT coverage at major hospital facilities at the district level and above (Interview: Akanzinge).

While from the national a uniform platform for fraud control is envisaged, different types of fraud countermeasures are being implemented by the management of individual schemes. The measures encountered during this research were both coordinated between all schemes in a single region of the country. The scheme managers in Brong-Ahafo Region have recently collectively decided to install claims handlers at major district facilities to control fraud, very similar to what was already developed and implemented in hospitals in Upper West Region, but have developed their own system of monitoring attendance. (Remark: Amoako)

The report will be sent to HRU, and the GHS can then disseminate the report to other DMHIS management teams in rural areas, who can in turn decide whether they want to adopt risk assessment in their operation. The results of the project will also be disseminated at the School of Public Health of the University of Ghana through seminars (Interview: Gemegah), and a course including part of the research methodology is likely to be integrated into the Health Economics curriculum (Remark: Aikins).

The research team has also planned a follow-up research project. This time, a framework will be set up for assessment of health risks in an urban setting, most likely to be in Accra. Funding for this project will be sought from the Ministry of Health and the School of Public Health of the University of Ghana (Interview: Ghana).

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[4] The GHCC's mission is up to this day undetermined, being a 'company that develops ways of providing health care to the people' (Interview: Gemegah). This uncertainty is caused by the GHCC's political history. It was set up in 1999 under Ghana's Social Security National Insurance Trust (SSNIT), the state company that manages the pension savings of approximately one million Ghanaians. The GHCC was given a guarantee by the Government of Ghana (GoG) at that time on the enrollment of the 180,000 public sector workers. After the presidential seat went from the National Democratic Congress (NDC) to the National Patriotic Party (NPP), this guarantee was withdrawn, leaving the GDCC adrift (Remark: Vondee). As the NHIC has been installed under the NPP, it might be hard to unite the NHIC and GDCC on several issues.

# 6 CASE II – ASSOCIATIONS OF PEOPLE LIVING WITH HIV/AIDS

## 6.1 Introduction

The second report is about the research project that was selected as a Model 3 case example from the conceptualization. The research project was carried out by a team connected to the regional directorate of the Ghana Health Service in Upper West Region. Its aim was to find knowledge to help the regional response to the HIV/AIDS epidemic improve through associations of people living with HIV/AIDS. Knowledge sought for improvement involved both operations of existing associations and facilitation of the establishment of new associations.

The facilitation of starting up associations by the Upper West GHS directorate is a new approach, since historically associations of people living with HIV/AIDS have started as community- or hospital-based initiatives. Promotion of formation of associations was usually done through hospitals and through association members from one village attending a gathering in the next village to inform on the benefits of having such an organization. (Interview: Tuo).

Currently there are hundreds of these community-based support groups all over Ghana. Associations of people living with HIV/AIDS are formed to meet common needs of members. Their meetings function as platforms for discussion of common issues amongst the members, for providing counseling services, and for rallying and distributing support.

This support is granted in kind, through provisions of mainly food and clothing, and in money for provision of medical treatment (Interview: Atuahene). Some associations facilitate micro-financing schemes so the members can generate income to pay for the treatment themselves. People living with HIV/AIDS have two common medical treatment needs. They are susceptible to opportunistic infections, which can be treated, and, once a person's HIV develops into AIDS, anti-retroviral therapy can be administered to inhibit the de-immunization and thereby limit the risk of contracting diseases that the infected person will not be able to recover from.

The local perspective presented in this report is based on information on the two first associations in the Upper West region, one in Wa and one in Nandom, and was gathered through in-depth interviews. While these two were the only operational associations during the draft of the research project proposal, currently there are associations in six of the eight districts in Upper West (Interview: Santaa). The association in Nandom is one of many associations that are linked to a supporting hospital. Because of this link the association also facilitates group counseling and group anti-retroviral treatment services. Since the need for counseling outstrips the availability of nurses in many districts in the country, some members of associations of people living with HIV/AIDS work as lay counsellors to encourage adherence to anti-retroviral therapy.

While people living with HIV/AIDS are supported at the district level through the associations and health care facilities, they have little to expect in terms of support within their communities, where traditional chieftaincy structures are very influential. Chiefs consider themselves responsible for the welfare of the people in the communities, but not all chiefs are literate, so knowledge on HIV is partial, and chiefs that do know of the disease limit their efforts to urging sick people to go to the hospital to be tested (Interview: Santana). Volunteers in the community that have been educated about the disease to share their information with the general public also limit themselves to urging people to go to the hospital, because they only know very few people living with the disease personally (Interview: Victoria/Sule).

Because of the limited support within the communities, the associations are fully dependent on organizations operating outside of their livelihood. This report will give an overview of the support structure to the associations, and the major issue that is faced in the AIDS response, as a context for the research project that was carried out.

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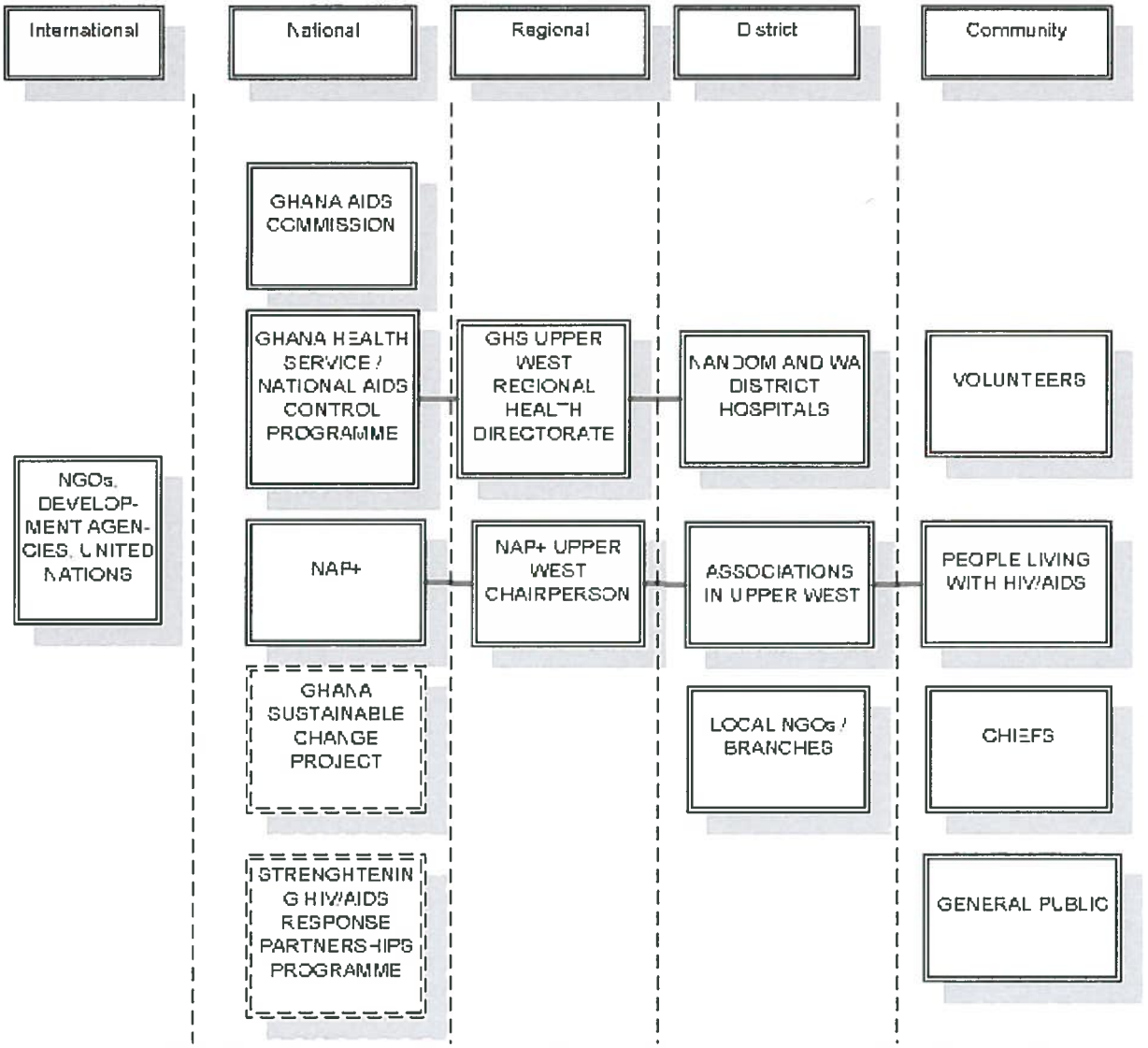


**Figure 6: Overview of actors and programmes involved in the case, with institutional links**

## 6.2 Actors involved in KRIS influencing development of associations of people living with HIV/AIDS

Care and support to associations of people living with HIV/AIDS are part of the Ghanaian AIDS response, which is guided by a national HIV/AIDS strategy framework that stipulates priority areas and actors over a 5-year period. The strategy is drafted and agreed upon by governmental, non-governmental, and donor actors. The first of these frameworks was used from 2000—2005, and the current one will be used until 2010. Based on the strategy a programme of work with concrete interventions and activities is created annually. Some of these activities are facilitated by associations of people living with HIV/AIDS.

The Ghana AIDS Commission (GAC) is the national public coordinating body for the AIDS response. GAC was established in 2001 and operates directly under the Minister for Health of the government, and is responsible for monitoring and evaluation, formulation of policy and mobilization of resources for the national response. Support is given to provide care and food to the associations (Interview: Tuo), to train nurses as well as members to provide counseling services, and to establish micro-financing schemes. Apart from acknowledging the need of providing care and support through the associations, GAC sees the associations as important

partners in the fight against HIV (Interview: Atuahene). The associations, according to the GAC, will have to engage in prevention activities, so they want to promote responsible behaviour through the associations as well as use them to raise community awareness on both the risk people have of contracting AIDS and the possibilities of clinical testing for the disease.

The Ghana Health Service, being the provider of health care services to the majority of people living with the disease, also has a major responsibility in the AIDS response. GHS coordinates its support to the response through its National AIDS Control Programme (NACP). Through the NACP, training is provided to nurses for administering anti-retroviral treatment, clinical testing, and counseling (Interview: Faakang). After the virus is detected through blood testing in either voluntary counseling and testing for HIV/AIDS or ante-natal care services, people have a need to be counseled in living with the disease. Apart from this aspect of counseling, nurses are trained to promote the associations by explaining the benefits of joining, and in some GHS hospitals such as the Wa Regional Hospital they are trying to make being part of an association mandatory in order to have anti-retroviral treatment (Interview: Santaa). The NACP underlines the importance it attributes to the associations by providing financial support to them (Interview: Asante).

To be eligible for the support GAC and NACP provide, however, associations have to formulate proposals and fill out complex registration forms (Interview: Kanzie). Because of this arrangement, the associations are highly dependent on literates. Since most literates are richer members of the community that prefer exposing their status as infected as little as possible, not many of them join in the associations. Sometimes the nurses help formulating proposals (Interview: Faakang); nurses also advocate at the community level in discussing with the supporting NGOs (Interview: Tuo).

GAC not only takes responsibility for the coordination of the activities in the AIDS response, but also for the ongoing need of increasing its effectiveness. The GAC sees its research agenda as an important part to meet this need, and as a result knowledge generation, dissemination and utilization are a key aspect of their strategy. This view is based on GAC's strategic assumption that its success in bringing down the epidemic depends largely on its knowledge of the dynamics of the epidemic, the factors responsible for the growth in prevalence of the disease in the country and getting a good hold on these issues. Therefore, GAC wants to have the national response to be evidence-based, which means that implementing organizations should found their work on scientific proof that their interventions work. An example is an assessment planned for this year of the programmes implemented by the individual associations which will give deeper understanding of what they are doing and what they are supposed to do (Interview: Atuahene).

Research is also being conducted under the GHS to improve care in the AIDS response. Some of their research projects benefit from the associations, because they provide entry points for involving people living with HIV/AIDS, for example in focus group discussions. Knowledge on starting up associations is not materialized into documentation or guidelines, it rests in the experience the people have at NACP in dealing with them. Every now and then, meetings are had with associations on how to improve their value to the members, and documents will be held of these meetings (Interview: Asante).

GAC is responsible for coordination of research activities supporting the AIDS response at different places in Ghana, including the GHS,. They implement monitoring & evaluation and knowledge management, and provide the protocol and eligibility criteria for access and funding for research purposes. National-level knowledge dissemination of the research is also overseen by GAC. They have developed an HIV/AIDS research database which will be put online soon. Additionally GAC disseminates through web publications, national and international scientific seminars and conferences, and dissemination forums specific to recently conducted projects. Furthermore GAC has a role of governing research practice in HIV/AIDS in the country, ensuring ethical standards and procedures are followed.

Improvement of the AIDS response is done with close involvement of people living with HIV/AIDS. GAC has integrated people living with HIV/AIDS into its decision-making structures: they serve on the commission itself and on their various committees and are involved in strategy formation and planning. The Joint United Nations Programme on HIV/AIDS has established a best-practice standard for this involvement of people living with the disease which has been adopted by GAC (Interview: Atuahene).

National level representation has only just been institutionalized in 2006 with the establishment of the national association of people living with HIV/AIDS (NAP+). NAP+ is designed to function as an umbrella organization for all associations, coordinating their work, providing capacity building activities, sharing information and providing advocacy at a national level (Interview: Collins).

NAP+ opens policy dialogue at several national forums based on the needs they gather from people living with HIV/AIDS. This is done through branches in the regions that coordinate meetings between leaders of individual support groups. Additionally there is a national representative council with all regional NAP+ chairpersons in it that has met once in the first year (Interview: Collins).

Most of NAP+'s first year has been spent gaining credibility with the associations, as well as with the government and donor organizations they want to represent people living with the disease at (Interview: Collins). Information dissemination is also starting up, but is limited by the fact that there is only one technical staff member nationally. The first capacity building efforts have been in training for adherence counseling and in creating local platforms between associations and health care facilities to improve quality of health care delivery.

## 6.3 Donor involvement in the KRIS influencing the development of associations of people living with HIV/AIDS

A significant portion of the financial means to provide support to the Ghanaian AIDS response comes from outside the country. The bulk of material support (food and clothing) to associations of people living with HIV/AIDS comes from small local NGOs as well as big international NGOs such as Catholic Relief Services. Support granted varies highly from association to association across the country as well as through time; in Wa, for example, both food support and transport reimbursement for attending the meetings are ceasing soon, so it is likely a lot less people will attend the meetings there in the near future (Interview: Kanzie). NGOs also provide prevention activities at the community level, in schools and marketplaces (Interview: Santaa).

GAC and NACP, too, are supported by several large international donors. Sometimes a donor will earmark budget for specific purposes: NACP attributes their good relationship with a large number of associations of people living with HIV/AIDS to the fact that the Global Fund earmarked funds for association support in 2002 (Interview: Asante).

There are also large donor-funded programmes in the AIDS response being carried out at the national level. A prominent example is Strengthening HIV/AIDS Response Partnerships (SHARP), funded by the United States Agency for International Development. The efforts of SHARP, GAC and NACP are cross-coordinated. SHARP focuses on strengthening partnerships with high risk groups in the epidemic spread of the virus, including people living with HIV/AIDS. Based on the density of the respective risk groups, they have appointed 57 focus districts.

Four research projects were carried out under SHARP to the benefit of associations of people living with HIV/AIDS. Most influential was the first national mapping of associations and NGOs providing support, which was carried out in 2003 under the SHARP programme. Reading the report made the people at GAC realize that there were many associations under

supported or not supported at all (Interview: Atuahene). Additionally, the mapping led to the establishment of NAP+, which was set up with support of SHARP. The programme also supported NAP+ in developing a format for local platforms for quality of health care delivery (Interview: Akanlu).

In the field of care, the World Bank has started their Treatment Acceleration Programme to drastically increase anti-retroviral therapy coverage over the country. The programme responds to the limited availability of equipment and drugs, that is causing high workload for the few nurses trained to use it (Interview: Santaa). Once the additional coverage is there, two major problems with the roll-out of treatment will still remain, however. The first issue is patient adherence to the treatment; the second is people not knowing whether they are infected or not – currently less than 10% of nationals know their HIV/AIDS status. Both issues can be attributed to the same cause: people living with HIV/AIDS or even testing for it are stigmatized against in their communities. The next segment will further discuss the issue and give an overview of what is being done to deal with it.

## 6.4 The issue of stigma

Stigma is not just a problem in countering the epidemic; it is also destructive to the quality of life of many people living with HIV/AIDS. The stigma is worsened by infected people self-stigmatizing, believing they are indeed contagious through shaking hands or even just social contact. This makes them keep themselves away from their community members who respond by keeping their distance as well. International studies of best-practice confirm that self-destigmatization is a very important factor to look at when attempting to scale up prevention activities and increasing uptake of treatment and testing services (Interview: Atuahene).


**Figure 7: Ghana AIDS Commission website banner[5]**

The issue of stigma is approached from the national level as an issue of education; at NAP+ it is seen as a result of the lack of quality information (Interview: Collins). The GAC intends to conduct nation-wide research both on factors that cause stigmatization, and on the effectiveness of certain interventions in reducing stigma and in promoting the uptake of testing services. Through this research they hope to be able to design a more appropriate response. A consultant for the research will be contracted and will be gathering a multitude of views, including from people living with the disease at the community level (Interview: Atuahene).

From the national level, an anti-stigma campaign titled 'who are you to judge' has been started up which highlights people should have themselves tested first, before thinking about other people having HIV. NAP+ has been closely involved in the design of the campaign that is funded through the Ghana Sustainable Change Project, a 5-year project funded through the United States Agency for International Development with high emphasis on behaviour change

[5] Accessed January 4, 2008.

communication and on developing the means to facilitate this communication. Billboards and radio stations are being used to educate the people on HIV/AIDS; in addition to using these mass media, the government and its partners are trying to take the national AIDS response to the local level. (Interview: Akanlu). Additionally, a manual for associations and for NGOs supporting them in reducing community stigma and self-stigma has been developed in the campaign (Interview: Collins).

Besides facilitating training on HIV/AIDS to hospital counselors at the district level, NACP and GAC are providing funding to educate community volunteers and association members on the disease (Interview: Nappaneh). This means associations can provide education to the members on the need of changing behaviour (Interview: Kanzie). A national level project starting up at NAP+ aims to develop a communication manual to support this education on living positively. At NAP+ it is believed that this knowledge does not disseminate from the associations into the communities because of the stigma (Interview: Collins).

Chiefs are also being involved in educational efforts, but in their training sessions the GHS has preference for chiefs with more previous educational background (Interview: Santana). Educated chiefs can help demystify the disease with other chiefs and their community members, by explaining what they know drawing from personal experience and with knowledge of the view people have on the disease (Interview: Titus/Santana).

## 6.5 Project

The GDC-funded project that is covered in this chapter was proposed and conducted by the Upper West Regional Health Directorate of the GHS. The directorate was and is very concerned with the quality of life of people living with HIV/AIDS. The disease is a major public health issue, especially in Upper West, because of a resurgence of tuberculosis (TB) there. The combination of TB and AIDS is a short-term mortality cause. One of the directorate's goals is to effectively contain HIV, the other is to have healthy life years for all their citizens, including people living with the disease. The emphasis in this care is on HIV/AIDS orphans, because this group is at a high risk of becoming a large socio-economic burden on the communities in the region.

The research project's aim was to gather in-depth information on the associations in the Upper West Region and their formation. The knowledge produced would be of use to improve functioning of the two associations that were operational at the time the research started, and to aid in the formation of groups in other districts in the region (Interview: Basadi). The sub-goals of the project were:

To determine factors hindering and/or facilitating the formation of the associations in the region.

To determine factors contributing to the low participation in the associations.

To examine the methods used in the formation of the existing associations.

To identify the needs of people living with HIV/AIDS and community members and the specific roles they can play to meet their needs.

To make recommendations for the effective formation and participation in the associations.

An additional goal was to establish stronger links between associations and support organizations and link them up to practical support ultimately improving quality of life for the associations' members (Interview: Basadi).

The research team that conducted the project consists of six people, four from the health directorate and two with close ties to the directorate, working at Nandom Hospital. Nandom Hospital was involved because an association of people living with HIV/AIDS has been started

by nurses there. The team member that developed the funding proposal and is most involved in managing the project is not officially the principal investigator, because he was still officially a student at the time.

The approach of the project was to get an overview of different relevant perspectives on the associations and their needs. The PI considers the project highly participative because a large number of lay people holding stake in HIV/AIDS were involved (Interview: Yayemain). HIV/AIDS counselors were interviewed at Wa and Nandom Hospital. They provided insight in the specific challenges the associations face and the role of the counselor. Additionally the nurses at Nandom were able to contribute a lot of information on the process of starting up an association (Remark: Basadi). Interviews were also conducted with executives of the two organizations, with eight chiefs, with community health volunteers, and with two NGOs, Catholic Relief Services (CRS) and Rural Action Aid Programme (RAAP). The project proposal mentions the intention to interview spiritual and traditional healers as well, but this did not happen, according to the PI because it became clear that none of the associations' members went there after finding out they were infected (Interview: Yayemain).
Apart from the interviews, focus group discussions were held with members of the two associations during their meetings.

From the project interviews, there were no conflicting views found on the needs of the associations and the organizations that were expected to provide for these needs. After obtaining and analyzing the results, findings from the empirical study were compared to documented strategy, most from sources outside of Ghana. The findings were presented in July at a regional health meeting. At the meeting the GHS regional health office, district assembly representatives, the NGOs and two of the associations' executives and several opinion leaders attended.

### 6.6 After the project

The knowledge that was produced in the research project contributes to a number of developments. Most tangible, the research project manager is starting up a small NGO in Wa for care and support of associations, based on the knowledge he has gathered though the project. The NGO will be action-based to oversee the implementation of the findings and will focus on care, support, skills acquisition and orphan care. Some members lost there jobs in food preparation because they were identified, and now need skills reorientation. When on anti-retroviral treatment, they will need means of livelihood not to default. The NGO will fulfill the requirement APLWHAs have of a facilitating body to advocate their needs locally and provide training for sustainable skill development (Interview: Basadi).

The research project's findings will also be shared with the district assemblies in the Upper West region and with the people that were interviewed (Interview: Basadi). Most of the involved parties do not have concrete plans with the results that go beyond sharing with their peers. One of the chiefs plans to use the results to campaign for food and drugs, with NGOs and other institutions outside the community, to help the victims sustain themselves. He will try to convince other chiefs to join him in this campaign (Interview: Titus).

The leader of the association in Wa can share the results at the NAP+ meeting in Accra with other regional chairpersons and can also disperse the report or strategy document there (Interview: Kanzie). The programme manager at NAP+ would actually like to have a national programme for needs assessment, with two in every region, because Upper West findings cannot be generalized over the entire country; adaptation to local cultures, which differ even within Accra, is necessary, so a fair representation of regions is needed. NAP+ also wants to assess

capacity needs at national and regional levels in addition to assessments recently done at support group level, so they can devise a needs-based plan for capacity building (Interview: Collins).

When the project report is published it can also be picked up by academia and people involved in social work. The research team will also look to publish an informal version of the results in local journals and bulletins, to be read by people working schools, district assemblies and health care. (Interview: Yayemain)

Finally, the results of the research project will be part of the Upper West Regional Health report, and the national health report. The project is actually part of Policy Planning, Monitoring and Evaluation of the GHS in Accra, where the principal investigator has recently acquired a job. He has discussed the preliminary findings with the GHS Regional Director of Upper West and the NACP. As a result, they have started plans to work out a framework to guide the formation of associations collectively. The research wing of Policy, Planning, Monitoring and Evaluation of the GHS can then disseminate the framework to other regional offices.

Apart from the quantified overview of the needs of the members of the associations and the expectations they have of different parties the research project has given, another finding that is important to the Upper West Health Directorate is that there is a large fear of stigma preventing people from joining the associations. Also, some people are too sick to attend while this is when they need the support the most, so then it would be a welcome solution if family members were allowed to step in. For both reasons, the directorate wants to discuss the option of extending association membership to the family as well, a practice that is already in use in Uganda. If the new approach proves successful, it can be shared with the rest of the country though the GHS. Since the relationship between directorate and associations has grown through the project, trying out of other new approaches can also be done in the region (Interview: Yayemain). The need for this development of best-practice is underlined at NACP, which is looking for ways to advise the associations (Interview: Asante).

# 7 ANALYSIS AND REFLECTION

## 7.1 Introduction

This chapter presents the structured analysis of the cases presented. Two projects have been selected as case examples of projects based on information from the project proposals. The differences in dynamics of Model 2 and Model 3 participation in the projects, and the explanations for these differences, are presented first. A key difference in the dynamics of Model 2 and Model 3 project cases is how through the participation practices are enriched and constructed, respectively. To be able to give a more detailed analysis of these dynamics, I introduce a hierarchical relation between 'general' and 'specific' practices. From this relation it is understood that a large and differentiated general practice (such as health insurance management) is made up of several smaller practices involved with more specific issues (risk assessment and fraud control for example).

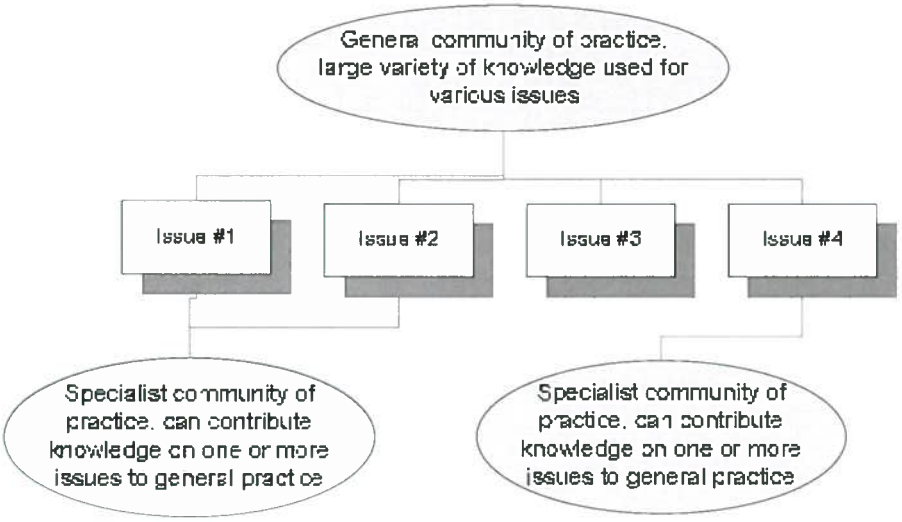


**Figure 8: General and specific communities of practice**

Research teams, after recognizing the need to gather informal knowledge to answer some of the questions they cannot answer themselves, need to identify the non-scientific practices that facilitate production of this knowledge. In addition, they need to identify the actors that are involved in this practice. These two identifications are closely connected. The actors that are approached will have to be interested in participating and in providing quality knowledge. In the ideal circumstance, the non-scientific practice is highly affected by the research topic, and as such, by the outcomes of the project: this means that when non-expert actors provide quality knowledge to the research project, they benefit from the knowledge production in the project. There is a high likelihood that the topic of a participative research project applies to one or more of the informal practices that facilitated the production of the knowledge provided to the project; in the specific cases of demand-driven research projects such as the projects funded through the Ghana-Dutch Collaboration, the application of the research to a non-scientific practice is an explicit requirement for funding. How the practice of application of a research project relates – in terms of specificity, as described above – to the practice facilitating production of the knowledge gathered by the research team will be analyzed for both Model 2 and Model 3 in subsection 5.2.4.

The analysis of the factors determining the dynamics of the two different modes of participation will reveal how through participative research projects new knowledge is produced, practices are created and improved, and new roles are taken. These dynamics co-evolve with Ghana's health care KRIS and its context; effects of this co-evolution, however, have not become visible immediately after the projects. Since these co-evolutionary effects are constrained by

existing arrangements in the KRIS and its context, these existing arrangements are interesting topics as well. Three influential arrangements will be discussed through an analysis of additional empirical data not included in the conceptual framework for my research. These are decentralization, international donor support and community education. Based on the insights gathered, an assessment of Ghana's developing health care KRIS within its context can be made. This assessment is presented in the final section of this chapter.

## 7.2 Participative knowledge production in the research projects

### *7.2.1 Introduction*

Two cases were selected as instances of Model 2 and Model 3 participation in the production of scientific knowledge production. That these cases fit the conceptual requirements to actually be considered Model 2 and Model 3 projects, in other words, that the use of these concepts is valid, will be proven first. Further empirical data for both cases is presented, analyzed, compared and reflected upon. From generalization of these results the concepts of Model 2 and Model 3 are expanded. The analysis is split up in seven characteristics that add up to two new models for project-based non-expert participation in scientific knowledge production. The final subsection presents a comparison of the old and new models and a reflection upon this through the re-application of the new models to two GDC projects that were classified as Model 2 and Model 3, respectively, but were not selected for in-depth analysis.

### *7.2.2 Model validation: local knowledge enriching cosmopolitan knowledge vs. co-production of knowledge*

In chapter 2, the conceptual foundation of the difference between Model 2 and Model 3 dynamics was presented. This is the role that the specific, local knowledge of non-expert participants has, in relation to the cosmopolitan knowledge of the scientific actors, in the knowledge production in the participation. In Model 2 participation, local knowledge is used to complement deficiencies in abstract cosmopolitan knowledge. Model 3 participation concerns issues on which there is little to no cosmopolitan knowledge available to the scientific actors. Subsequently, local knowledge and know-how is essential to the production of their cosmopolitan knowledge. Knowledge is produced through a cyclical process of acquisition of local knowledge by scientific actors in one specific context, abstraction to cosmopolitan knowledge, and application to other specific contexts, creating new local knowledge. Through this process, cosmopolitan and local knowledge claims are co-constructed.

The research team in the Model 2 case, in the first stages of their project, constructed a methodological framework that can be used to get a relatively quick overview of the disease patterns and their distribution over age and gender groups in a single district. The application of the framework is useful in cases where there is an insurance scheme active, but detailed data of the insurance claims are not (or not yet) being processed to construct such an overview. The overview gathered through filling the framework with data can then be expanded upon by adding data from future insurance claims. The research team has constructed the framework from cosmopolitan knowledge claims in a number of written scientific sources on insurance and health care. The methodological framework can, in principle, be usefully applied to any geographic locality where insurance claims data is not yet being processed. It can thus be categorized as an application of cosmopolitan knowledge. The research team gathered knowledge on the Kintampo-North scheme's operations and the systems that were in place and under implementation, such as the 'gatekeeper' system for fraud control, through an interview with the scheme manager. In addition the team obtained medical experience-based knowledge on disease occurrence in the district from the medical prescribers and district health administration administration. Both sets of knowledge claims were local in their application,

because they concerned the local context of the Kintampo-North district, and was used to complete aspects of a cosmopolitan framework that were designed to be of use in other districts as well.

In the Model 3 case, the research team also used a significant amount of cosmopolitan written sources in the beginning of the project. These sources came from the international community and from the Ghana Health Service and were used to situate the project in the context of the Ghanaian AIDS epidemic. As such, the cosmopolitan claims were used not as a cognitive framework to fill out, but rather as a frame to justify the project's relevance. In the project's participative efforts, information was gathered on the needs of members of associations living with HIV/AIDS, and their expectations of who was to meet this needs. In addition, from several non-expert actors knowledge was gathered on the expectations of their role in the provision of support: chiefs, local branches of NGOs, and nurses. From the nurses, additional experience-based knowledge was gathered on the starting up of an association. Through statistical analysis, the research team was able to narrow the support activities down to five key themes of varying importance in the formation of associations of people living with HIV/AIDS and members' participation in it, which was an important result of the project. This knowledge was disseminated through the project report and the meetings of the district assemblies of Upper West Region with the various non-expert actors involved. Through this dissemination the lay and professional actors got to know the five key support themes, and the expectations on their respective roles in providing this support, that the scientific actors had determined. The lay and professional actors had all provided essential knowledge to construct this new knowledge. Throughout the process, production of both local and cosmopolitan knowledge took place. Some of the needs and means for support in the themes applied specifically to the Upper West Region. Others were abstracted to be of use in the national GHS framework for support of formation of associations of people living with HIV/AIDS.

The roles of local and cosmopolitan knowledge in the respective projects, fits requirements for Model 2 and Model 3 participation in scientific knowledge production: the Model 2 project concerned a framework of cosmopolitan knowledge that was complemented by local knowledge on district health and insurance; the Model 3 case presented an exploration of a new topic by scientific actors, acquiring fragmented local knowledge, producing new local knowledge and abstracting this into cosmopolitan knowledge. The conclusions drawn on the specific cases in the subsequent sections, therefore, are highly probable of being valid for any instance of the two models.

### *7.2.3 Framework protection vs. framework construction*

The difference in roles of local knowledge in the two cases is representative for a different dynamics in the knowledge produced and disseminated. This subsection explores a specific aspect of these dynamics: the demarcation of the production of scientific knowledge that scientific actors enforce in Model 2 participation, while they do not in Model 3.

In the interviews the researchers conducted in the Model 2 case, the knowledge gathered was meant to fit the cosmopolitan framework that the researchers had set up beforehand. As a consequence, responses questioning the correctness of the design of the framework were to be avoided. In the interview with the Kintampo-North district scheme manager, the risk of such a response being given was small: the only way the framework could be questioned was by dismissing its use as a whole. Because the research team knew the general problems in the practice of insurance, they also knew that the scheme manager would have to acknowledge the use of the framework to the assessment of risk, and in turn, to ensuring the financial viability of the scheme.

A bigger threat to the framework was posed by experience-based medical knowledge, which was gathered from health prescribers and administration. The research team had developed a method for filling the framework with local knowledge, stipulating the gathering of

three categories of experience-based knowledge from the prescribers. These 'focus categories' of influence on disease occurrence were: the frequency of occurrence and cost of treatment for the disease; the influence a person can have on this frequency and cost; and the contamination risk and influence a person can have on this risk. The focus on these categories is based on assumptions on what factors are and are not important to determine the frequency of occurrence of a disease as well as the cost of treating it. These assumptions could be potentially rejected by the medical prescribers. To protect the framework from these potential threats the research team, whether consciously or unconsciously, took two measures.

One of these measures was the way the framework was constructed. The contents of the framework were taken from a large amount of scientific literature on insurance that was not known by the prescribers. The literature is hard even to lay hands on considering the low availability of physical and digital scientific literature in Ghana. The other protective measure to the framework was the design of the interview tools used to gather knowledge from the prescribers. The questions were framed to fit the 'focus categories' of influence on disease occurrence, and were split up into individual questions so that the underlying rationale and its assumptions did not mention the assumption of these focus categories. The protective measures worked, and the interview questionnaires were filled out with statements that fit the framework.

The Model 3 research team, in contrast, did not use a framework based on previous research, simply because this research was not there. The team gathered local knowledge from various non-expert actors, constructed new local knowledge and abstracted a cosmopolitan framework from this for the guidance of the formation of associations of people living with HIV/AIDS. The framework is to be used by GHS directorates all over Ghana and will be disseminated from the national level. Based on this framework, future participations in knowledge production can be started up that are of a Model 2 dynamics.

Model 2 participative efforts, in their need to complement cosmopolitan claims, have an inherent need for methodological protection of these claims. This protection can be designed in various ways, but a risk of the knowledge claims being refuted is always there. In a Model 3 project, there are essentially no cosmopolitan claims made before the participative efforts; the facilitation of the construction of a cosmopolitan framework is needed in this mode of participation.

### *7.2.4 Specific practice enrichment vs. general practice construction*

As was argued in the introduction to this chapter, participative research projects apply to a practice, and likely to a practice that a lay or professional participant is involved in. There are two key differences in a research project's application to a practice between Model 2 and Model 3 participations. In the Model 2 case, the research topic was risk assessment in health insurance. The knowledge produced applies to risk assessment, which is (or is to be) part of an institutionalized health insurance scheme management.

The Model 3 project had as topic the needs and expectations of people living with HIV/AIDS that are part of an association in Upper West Region, and the way through which the associations could effectively meet these needs with the available sources of support in their environment. How to meet these needs was determined during the project, when five themes for support and expectations on providing this support were shown to come out strongly. In other words: only during the project were the five key types of support (and expected means to provide this support) identified that, when combined, form a package of 'effective' support to the associations.

In conceptual terms, the research team in the Model 2 project aimed to produce knowledge applying to the specific practice of risk assessment, which is relevant as part of the general practice of insurance scheme management. The research team had determined this specific practice of application, and the general practice that it fit to, before engaging in the

participative effort. The Model 3 project, on the other hand, aimed to produce knowledge on the general practice of effectively supporting people living with HIV/AIDS through associations. This general practice was constructed during the participative efforts in the project through identification of the specific support practices that are part of it.

The differences between the two modalities can be attributed to the difference in roles of cosmopolitan knowledge. In Model 2 participation, cosmopolitan expertise is gathered before the participative effort takes place; this expertise is then enriched with knowledge of the local, specific context to which it applies. The cosmopolitan expertise can be reused in a multitude of local contexts. For the expertise to be of any added value, then, the practice of application has to be more specific than the practice through which the local knowledge enriching it is produced. Model 3 participation, in contrast, concerns issues that are unexplored from science. The research team identifies a general practice that they consider meaningful and assume they can improve upon through their research skills. This will be done on specific practices that are part of the general practice and are identified to be fit for improvement. Before the actual participative efforts take place, however, these practices and what can be added to them are still uncertain. This uncertainty was expressed in the research proposal with the broad aim to 'make recommendations for the effective formation and participation in associations of people living with HIV/AIDS'. Despite the aim, it could have happened that no room for improvement of any specific practice might be found: it could have come to light that the associations in Upper West already received all types of support they would consider in the most effective way possible. This risk is part of the explorative nature of Model 3 participation.

### *7.2.5 Socially recognizable participant identification vs. flexible participant identification*

Before scientific actors approach lay or professional participants for their involvement in a project, they first have to identify them. The basis for this identification is the research team's notion that the participant is involved in a lay or professional practice relevant to the project. There are differences in this process of identification between the two modalities of participation.

In the Model 2 case, the research team identified two general professional practices from which knowledge was to be obtained. The first was the practice of managing the Kintampo-North district scheme, where knowledge on the general operation of the scheme is produced; the research team identified the Kintampo-North scheme management team to be involved with this. The second was the practice of diagnosis and administration of diseases in the district, where knowledge on frequency of occurrence and other aspects of diseases in the district was produced; medical prescribers and district health administration in the district were identified to be involved with this practice. The diagnosis of diseases in Kintampo-North district is not limited to these actors, as there are more actor groups frequently involved with this practice. These are community members in general, diagnosing themselves, and traditional healers. Community members were asked about disease occurrence in their community in the interviews, but the goal the team had in mind was to assess the health seeking behaviour rather than get an actual fix on the occurrence of diseases. Traditional healers were not considered to interview at all. This marginalization does not stand on its own but is based on the system the project is aimed to strengthen: the NHIS does not cover any services delivered by traditional healers.

In the Model 3 case, the research team identified the operations of associations of people living with HIV/AIDS, and the provision of support to these associations, as a general practice that could be improved upon. At the stage of formulating the research proposal, the needs of the associations' members, as well as the support practices of (or expected from) other lay and professional actors were still unclear: the specific contents of the general practice of effective support were not yet determined. From interviews and focus group discussions with the associations' members, the research team extracted the needs, and respective importance of these needs, and sculpted these results to a selection of five key themes. With the establishment of these five key needs, a specific set of support practices meeting these needs, as well as the lay and

professional actors expected to be involved with these practices, were identified. The research team had already identified a set of actor groups that they expected to be involved with certain specific support practices and presented these expectations into the project proposal. In some cases they were right and non-expert actors were indeed involved: nurses, for example, in providing ART and counseling support. In the case of traditional and spiritual healers, they were proven wrong, as these groups were not identified to be involved in a key support practice. The decision to exclude these groups from further participation was based on the knowledge gathered from the associations' members. The research team also the looked for the intentions of lay and professional actors that might, in the future, get involved with support practices. Since the support from the community came out as a strong expectation, chiefs were involved from several towns in Upper West. In addition, non-expert actors involved were able to identify other potential supporters that had not been involved in the research project: assemblymen, women's groups in the community, and religious leaders. Some of the key support practices identified during the project turned out not to have professional actors involved at all: when the research team found this out, one of the research team's members was inspired to start up an NGO to start the practices.

In the Model 2 project, the scientific actors identified institutionalized professional actors of whom they could be certain that these actors would be involved with practices relevant to the project. They excluded, or overlooked, non-institutionalized lay actors involved with the same practice. In the Model 3 project, the scientific actors had to identify the specific practices that together make up the general practice through knowledge gathered from the lay and professional actors benefiting from the project. The definition of these specific practices was steered by the knowledge gathered from these beneficiaries.

The occurrence of these different dynamics of identification for the two respective models can be explained from the respective relationship between cosmopolitan and local expertise. In Model 2 participation, local expertise has to be considered substantial enough by the scientists to require it to be taken up into the project, so the identification of practices through which this local knowledge is produced, quite likely requires these practices to be institutionalized and recognizable. From the perspective of the expertise of the scientific actors: to be able to admit the partiality of their expertise, they need strongly institutionalized actors to represent the local context. Both practices are institutionalized; these institutions formed a basis for the identification of the professional actors involved in the respective practices of relevance. This is not just of concern to the scientific actors, but also to the sponsors of the research who have to have a good degree of trust in the non-expert participants. Model 3 participation involves a general practice not yet defined. The stakeholders benefiting from this practice will certainly be the stakeholders benefiting from any recommendations on the general practice involved; non-expert actors involved in the specific practices that make up this general practice are identified only during the project. This is done in collaboration with the non-expert actors that have been involved at that point. This means there is path-dependency in the identification of non-expert practices and actors in Model 3 collaboration, while this is not the case in Model 2 participation.

### *7.2.6 Backgrounds of scientific and non-expert participants in Ghanaian health care participation*

The Model 2 project involved a research group of four persons on the 'scientific' side of the participation, who all had a background at the University of Ghana. On the 'non-expert' side, a district mutual health insurance scheme manager and a number of medical prescribers contributed to the research project. The division of 'non-expert' and 'scientific' actor groups was based on subject and goals of the research project. This is not simple division, because the professional activities in Ghana's health care KRIS of the actors on both sides of the divide are not restricted to scientific and informal knowledge production, respectively. On the one hand,

members of the research team have other responsibilities than scientific knowledge production in Ghana's health care where they produce non-scientific experience-based knowledge, disseminate this knowledge and contribute to Ghana's health care knowledge and innovation. For example, one of the team's members is the superintendent of a health clinic; in this activity both management and medical knowledge are produced and disseminated to actors within the clinic, and fellow superintendents outside of the clinic. On the 'non-expert' side of the divide, the medical prescribers as well as the scheme director have background in academe. Moreover, some of the prescribers had a leading, 'scientific' role in scientific knowledge production in other health care research projects at Kintampo Health Research Center during the running time of the participative project. The educational background of these participants in the research projects is of direct use to them in producing the professional knowledge that was gathered from them by the research team.

In the Model 3 project the 'scientific' actors, apart from conducting the participative project, had responsibilities at the GHS Upper West Directorate. This made them responsible for, amongst others, policy planning and administration. In the carrying out of their duties, they produced (non-scientific) professional experience-based knowledge and innovation. Of the 'non-expert' participants in the project, none had a background in higher education (with the exception of one of the chiefs involved). But far more importantly, none of the non-expert participants had been trained to gather the experience-based knowledge on the needs, the start-up and the distributed support of associations of people living with HIV/AIDS that was solicited from them in the course of the project.

Summarizing, looking at the 'scientific' side of the participation there is no contrast between the two types of participation: in both cases the research teams are also involved in other practices in Ghana's health care KRIS and producing informal knowledge in these. An explanation for this multitude of practices researchers are involved in has already been given in the conceptualization. The Model 3 case does, however, contrast the situation of the Model 2 case on the 'non-expert' participants' background: in the Model 2 project, non-expert participants were involved that had been trained to gather knowledge from experience that was used in the project, while in the Model 3 project this was not the case.

Reflecting on the concepts of modalities of participation, the heightened probability that the 'non-expert' actors within a Model 2 participative research project in health care have background in higher education can be explained from the general goals of Model 2 participation. Model 2 participation is about enriching abstract scientific knowledge with local knowledge. In the case of health care, this local knowledge is often sought from people involved in the actual provision of health services. The institutionalized provision of biomedical health care and of insurance upholds a structure in which obtaining the position of responsibility to actually gather this local knowledge almost always requires a level of relevant education. This education, in preparing for the responsibility, does not just involve knowledge of 'regular' practices, but also the skills to allow the professional actors to innovate by producing experience-based knowledge. This holds for the case example, where relevant positions in scheme management as well as prescription of medicines required advanced education. A Model 2 participation where scientific actors produce knowledge together with non-institutionalized health care practitioners is possible and conceivable and would definitely provide new insights for the Model 2 approach, but was not planned for in any of the research proposals in the GDC.

The likeliness of Model 3 'non-expert' participants not having relevant academic background can be explained from the conceptual model as well. As the subject of any Model 3 participative research project has been unexplored by the scientific community, there is no possibility to have had education explicitly useful to producing experience-based knowledge on the subject. In the Model 3 case investigated, the topic was as new to the research team as it would have been to any research team; any 'non-expert' participant involved in the project that had had a modest academic background in any field of social research would have been on equal

footing with the research team. In the case of the Upper West Region of Ghana however, such 'non-expert' participants with background in social science are very scarce.

### *7.2.7 Construction and negotiation of identity and expertise*

Model 2 and Model 3 participation are characterized by different dynamics of the identity of non-expert participants are affected. In Model 2 participation there is room for negotiation of the non-expert actors' identity, because scientists affirm the value of their local knowledge and know-how. Model 3 participation, in contrast, involves a concerned group that is given a collective identity which is constructed with knowledge gathered in the participation. This subsection explores the dynamics underlying these outcomes at the individual project level. In addition, the dynamics of expert identities of the scientific actors are investigated. Both will show to be highly influenced by the knowledge gathered by scientific and non-expert participants.

The research team in the Model 2 project first negotiated its identity of expertise in risk assessment for health insurance at the Health Research Unit, when the team requested GDC funding for the project. HRU agreed, and the research team formulated a proposition to the non-expert actors they wanted to involve. The proposition affirmed the prospective interviewees in the value of their local knowledge. In the case of the district scheme manager and district health administration, the people engaged were the sole actors involved in the professional practice the research team needed knowledge from. The medical prescribers can actually be considered 'chosen' because there were other non-expert actors, also involved in the practice of diagnosing diseases, who could have been involved. The non-expert actors agreed to all propositions made, allowing for the interviews to take place. In the interview with the Kintampo scheme management the research team displayed extensive knowledge of risk assessment. The scheme director, in the same interview session, was the only non-expert actor in the district to gather cosmopolitan knowledge about the risk assessment framework and its use for insurance scheme operation. With the Kintampo Health Research Center, the district health administration, and the prescribers in the district, the research team established itself as a partner in scientific research, yet within a specific field of expertise far different from that of the prescribers. Through the participative effort, the research team learnt important methodological lessons on the added value of respective sources of data and on the limitations of carrying out fieldwork in the Ghanaian rural context through the experience of the 'test run' of applying the framework to the case of Kintampo-North district. Because of this position of expertise within inter-local arrangements, they will be able to utilize their inter-local knowledge again. The team has already projected a relevant new context of application: because the research project undertaken was in a rural setting, a successor should be in an urban setting. Their expertise is also being institutionalized in the University of Ghana, where students in health economics will be able to utilize the expert knowledge produced in the project to reapply and improve upon with projects that are part of a single course.

In the Model 3 case, the research team identified the practice of support through associations of people living with HIV/AIDS to conduct research on. This identified, at first, the members of the associations and the associations' leaders as part of a growing and necessary group in the HIV/AIDS response, increasingly effective in rallying support for its members. Through the knowledge produced in the participative effort, support through associations of people living with HIV/AIDS was defined to revolve around five themes: this definition also determined the support types an association of people living with HIV/AIDS can be used for. Based on the five key themes actor groups could were identified that were, or were expected to be, involved in support in any of the themes. As stated in the previous subsection, some were institutionalized but before the project, they were never related to a 'big picture' of the five themes. The NGOs, chiefs, volunteers, and nurses were constructed as knowledgeable on the common subject of supporting associations in both operation and start-up. Through the research

process, the research team became more and more knowledgeable on the formation and support of associations of people living with HIV/AIDS in Upper West Region.

In both cases, identity negotiation with all non-expert actors involved was initiated by the research team. In the Model 2 case, the research team proposed identities for the institutionalized participants. This both affirmed the identities of these institutionalized actors and marginalized non-institutionalized actors. In the same propositions, the researchers proposed their own identity as inter-local experts in risk assessment in district health insurance. The identities negotiated were then strengthened by both scientific and non-expert actors by gathering relevant knowledge. The scientific actors were gathered the most knowledge as they were involved with the carrying out of all participative efforts. The experience of developing the framework, applying it through the participation and being successful in filling gaps in the framework as expected with their participative efforts, strengthened the research team in their position of expertise. Institutionalization of this strengthened expertise took place after the project.

In the Model 3 case, non-expert identities were constructed during the participative research efforts. Specific practices were identified as key (after negotiation between non-expert and scientific groups), and several actors were identified as specific, local experts on these respective practices. Also, they were constructed as being part of a general practice. The associations, in turn, were constructed during the project in terms of the main support types they should be used for. The identity of the scientific actors was constructed during the process of knowledge production and acquisition in the project as well: only during the project did the research team construct their identities as Upper West and cosmopolitan experts on the support of associations of people living with HIV/AIDS. These positions of expertise were institutionalized at an NGO in Upper West Region and the GHS national level framework for support, respectively.

In Model 2 participation, scientific actors have superior cosmopolitan knowledge on a specific practice (risk assessment, in the case example) that is part of an institutionalized general practice (health insurance), which can be applied in different localities (districts). To be allowed to apply their superior inter-local knowledge the scientific actors have to take a position of inter-local expertise from the onset of the participation; participants, on the other hand, have to be willing to learn about the specific practice. Successful application of inter-local knowledge strengthens the scientific actors' position of expertise, while at the same time it strengthens the identity of the non-expert actors as they learn about the specific practice. In Model 3 participation, in contrast, a general practice of application (effective support to associations) is constructed during the project through the identification of the specific practices (of support, in the case example) that contribute to it. Because of this actors already involved with these specific practices (i.e. nurses) are, for the first time, given identities in relation to the newly created general practice: their identity is constructed through the knowledge production in the project. The scientific actors that produced the knowledge on the new general practice derive a position of expertise from this: this expert position is constructed only during the project. The knowledge they gather can be abstracted to a cosmopolitan form, which means there is also an opportunity to construct a position of cosmopolitan expertise.

### *7.2.8 Institutionalized vs. non-institutionalized support arrangements*

The previous subsection discussed, amongst others, the institutionalizations of the expertise that scientific actors strengthen or construct throughout the participative research projects. This institutionalized expertise becomes part of the support structure to the development of the practices that the non-expert participants in the research projects are involved in. The affected support structure, and how the institutionalizations of the expertise of scientific actors fit within this, is different for the two modalities of participative research.

In the Model 2 project, the support structure to the general health insurance in Kintampo-North consists of three major actor groups. The first are the other health insurance scheme management teams in Brong Ahafo Region, who through regional meetings share experience-based knowledge with them. In addition, the scheme is supported through the National Health Insurance Council, who provide training to schemes. The same is done by Danida, where a support programme for health insurance has been set up. Danida and NHIC provide training based on demand, which means they can cover a variety of specific practices within health insurance.

In the Model 3 project, there was no support structure for the general practice of supporting needs of people living with HIV/AIDS through associations. NAP+ aims to provide general support to the development of practices of associations, but does not include the roles of the actor groups helping the associations to meet these needs. There are structures for support of the development of some of the specific practices that were identified to be of highest importance in place. These arrangements ranged from structures in international NGOs, to the GHS, to bodies of chiefs, and all functioned separately.

Summarizing, the Model 2 project shows a structure supporting the non-expert participants in innovating for their general practice of health insurance. Within this structure, the scientific actors are able to represent inter-local expertise on a specific practice. In the Model 3 project, there is no such support structure for the general practice visible, because this has only recently been created. There are, however, visible arrangements supporting the development of some of the specific practices that make up the general practice, but these are fragmented and not aligned.

The different characteristics of the respective innovation support structures follow from the differences in the way practices are involved in the two modalities of participation. Model 2 participation involves a recognizable practice, which is likely to be institutionalized, and as such, is likely to have an institutionalized structure supporting its development. In Model 3 participation, a general practice is constructed, so initially there is no support structure for it in place. Specific practices are brought together to be the key components of this general practice during this construction, so support structures for the development of these specific practice are not likely to be aligned.

## 7.3 Key arrangements in Ghana's health care KRIS and its context

### *7.3.1 Introduction*

In the previous section presented a detailed analysis of the workings of the different types of participations, including their influence on (types of) knowledge produced, practices enriched or created, and identities strengthened and constructed. These developments are considered evolutionary, as they are a product of cumulated experience: they are also considered to be part of a larger developing system, Ghana's health care KRIS, with which the network of actors, practices and arrangements relevant to the projects is assumed to co-evolve. The effects of the evolving KRIS, however, take more time to become visible, as they can only be reconstructed from future activity in the production of knowledge in Ghana's health care.

Interesting additional empirical data has been found that is useful to a further understanding of the development of Ghana's health care KRIS and its context. After analysis of empirical data gathered through interviews with different institutions concerned with the topics of the respective research projects, three arrangements have come out as strong influences. These are decentralization of government, community education and dependency on international donors. Finding data on these arrangements was not an aim from the conceptual model and the research method, but happened when trying to situate the projects and topics addressed in them, within a context of relevance at the different stakeholders in these topics.

### *7.3.2 Government decentralization*

The decentralized structure of government and government bodies is an influential arrangement structuring Ghana's health care KRIS. Decentralization is part of a world-wide trend, and in developing countries there are several internal and external pressures to conform to this trend (von Braun, 1999). Through the decentralized structure funds and decision making-power are distributed over bodies with different scopes of responsibility, in Ghana's case, national, regional, district and sub-district. Being the public organization providing the majority of biomedical health care services in the country, the Ghana Health Service has been aligned with this government structure in its administration and policy formulation. GHS has organized its administration at the national, regional and district levels. Newly institutionalized practices are aligned with pre-existing institutions of decentralized organization for several reasons that shall be discussed in this subsection. In other words, there is a path-dependency in the emergence of institutionalizations: my research shows five types of alignment with previous arrangements of decentralization in the KRIS, with varying motivations.

The first type of alignment can occur when an institution wants to provide equal support to the innovation of a set of actors spread over the country (or region). Danida shows this preference in their training efforts, providing an equal amount of training to each region – even though the population numbers, as well as the number of poor people, vary heavily over different regions. The same discrepancy is visible in the arrangement of representation within NAP+: each region has one representative in their national level meetings, where innovations can be coordinated, having equal voice, even though coverage of associations of people living with HIV/AIDS throughout the country varies, as well as AIDS prevalence.

The second type of alignment occurs when it is beneficial to have comparable study populations. This is the case with the complex path-dependency of the Kintampo Health Research Center. In the early 1990s, the GHS wanted to establish three rural research centers, one in every agro-ecological zone of the country. KHRC was the center established in the forest-savannah transitional belt, because of the presence of a large hospital and because of its location along a key road in Ghana connecting to the three regions in the north of the country. Path-dependency is visible in the determination of the study population for their surveillance system: just as in the previously established system at Navrongo Health Research Center, the study population covered an entire district, be it of almost equal size in terms of population. The original decision at Navrongo to align with this political structure probably was probably based on intuition. There is more path-dependency to be found in the Demographic Surveillance System. Although the system was established in 1994, and Kintampo district was divided in two in 2004, the system still covers households – literally, because indexes are painted on to houses – in both Kintampo-North and Kintampo-South district, currently making it a two-district surveillance system.

The third type of alignment occurs when institutionalizations of novel practices are facilitated through pre-existing institutions, because they have to be responsive to local needs, which is one of the internal pressures contributing to the establishment of decentralized government in the first place. The most extensive example is the National Health Insurance Scheme, which was designed, piloted, and implemented on a district-level scale and then started up through the district assemblies of Ghana. The basis for organizing the NHIS in district-level mutual health insurance schemes was to increase its responsiveness to local needs. This need stems from the big differences over districts in terms of demographics, disease – or more relevant to the schemes, claims made – and wealth. At the same time this responsiveness is constrained by a number of nation-wide regulations – in the case presented, the premium levels are the most prominent example – that are upheld in Ghana's law through the National Health Insurance Act. In addition to government (or government body) facilitation of the institutionalization of a new practice, accountability of the new institution is an issue. The NHIS is held accountable both at

the national level government, and underlying district mutual health insurance schemes are held accountable at the district assemblies. This is visible in the in the Strengthening HIV/AIDS Response Partnerships programme.

The same type of alignment occurred in the Strengthening HIV/AIDS Partnerships programme. SHARP acknowledges the variations in the severity of the AIDS problematic and potential solutions to it throughout the country's geographical and social groups. Following this insight, they have concentrated efforts on specific risk groups; in implementing this focus, however, a set of key districts and regions were specified for each risk group, to align with prospective local partners in implementation of the interventions.

The fourth type of alignment occurs when different data sources on a single study population are wanted. This is the case in both of the research projects studied in my research, and was taken up in the study design from the onset. In the Model 2 research project, there was a need to gather knowledge on the occurrence of diseases within a well-defined study population. The HRU research centers were identified to be able to meet this need, and Kintampo Health Research Center was selected. Although the district surveillance system covers two districts, the project was decided to be limited to Kintampo-North district only. This was based on the locality of KHRC: it would be more convenient to limit the community surveys to the directly surrounding communities only. The GHS was asked for past figures on disease occurrence at their district health administration. In the Model 3 case, the research project was carried out by the Upper West Health Directorate of the GHS. Therefore, the research team only gathered data on their topics within the region. One of the aims of the project was to make recommendations increasing effectiveness of support to associations through the project, and knowledge dissemination was limited to the region. In addition, the people at the directorate expressed the desire to have at least one association in every district of the region.

In both cases, the research project in its study design was aligned with the institutions it was to gather knowledge from. Subsequently the expertise that was strengthened and constructed, respectively was also institutionalized according to the same alignment. In the Model 2 this expertise was institutionalized at national-level, concerning district-level risk assessment (although expanding the framework for risk assessment to bigger populations should not require a lot of effort from the research team, applying it will). In the Model 3 project regional expertise on supporting associations of people living with HIV/AIDS was institutionalized in an NGO with regional focus. Specific expertise on the GHS's role in effective support to associations is in the process of being institutionalized at the national level.

The fifth type of alignment is done in strategic grouping, and will be illustrated from the example of the platforms for innovation in the NHIS. District health insurance schemes have started up regional platforms that are currently not coordinated from the national level. There is no immediate benefit from this grouping up at the regional level specifically; there are even significant differences between districts within some if not all regions that affect insurance scheme management. The reason for regional grouping is strategic as it aligns the new arrangements of coordination with other decentralized organizations such as the GHS for future benefit. The strategic grouping that is allowed by the decentralized structure of the NHIS, is not coordinated from the national level, as the National Health Insurance Council's regional offices are still in the process of starting up. Still, there are innovations being thought out and implemented at the national level. The segmentation of top-down and bottom-up inputs in the innovation process can cause conflict, a striking example of which is in the innovation to prevent fraud in the NHIS: in several regions, the district schemes have come to agreement to implement a 'gatekeeper' system to prevent fraud, while the NHIC is establishing regional offices to coordinate ICT implementation, partly to address this same issue of fraud. Both these arrangements for coordinating innovation have been, or are in the process of being established at the regional level.

### *7.3.3 Community education*

Another important factor influencing the development of Ghana's health care KRIS and its context is the high emphasis on community education at institutions represented at the national level. In the approach of the issue of stigmatization of people living with HIV/AIDS from the national level, this emphasis is explicitly visible. The banner of the Ghana AIDS Commission's website states 'lack of education' as a root cause. This view was echoed by the statements of the programme manager of NAP+.

The emphasis on community education is a result of the disapproval of many of the traditional practices in rural cultures, with controversial examples such as female genital mutilation, combined with the notion that justification of these practices is derived from superstitions. With these two arguments, an eradication of these superstitions by replacing them with accepted cosmopolitan knowledge is justified. The case of HIV/AIDS stigmatization is approached as a similar issue. The result is a top-down process of cosmopolitan knowledge dissemination from the national level downwards. This is once again very visible in the case of HIV/AIDS, where a lot of effort is spent on the education of community volunteers and chiefs, as well as the nurses providing counseling on HIV/AIDS in biomedical health service facilities. In addition, public media are used to spread educational messages aimed at changing superstitious behaviour. Another example is the community education preventing overutilization of health service facilities.

Apart from translating into specific interventions, the emphasis on community education has the additional effect that, in contrast to modern Northern cosmopolitan claims, traditional knowledge and knowledge production are to some extent marginalized. This is visible in how traditional healers at sub-district and community levels are overlooked as actors involved with the diagnosis of diseases in the Model 2 case. The same marginalization is visible in the way the knowledge of community members is treated: this is used as a second-hand source of experience and is more important to map health seeking behaviour (that might, in turn, be changed). Ghana Sustainable Change Project also had a large emphasis on behaviour change communication, which takes local worldviews and interests into account in order to have more success in changing behaviour. SHARP has a similar orientation to having behaviour change as a goal, in which 'cultural factors' require some modulation of the intervention chosen.

Informal knowledge produced at the community level in Ghana, in short, is not being utilized as robust by formal actors and institutions in the KRIS. It can be assumed that through community-level discussion and practices, there is a system, or at least a patchwork of systems, guiding this informal knowledge production. This is part of Ghana's health care KRIS, but in its functioning is separated from the formal segment of the KRIS. This separation has effects of mistrust in two ways. Not only are community-level informal knowledge claims dismissed as 'superstition' and the producers of them marginalized in the formal system; also, many of the formal, Western scientific knowledge offered to the community is dismissed. A concrete example of community members discrediting scientific knowledge occurred in the Gambia, where researchers carrying out a vaccine trial were believed to be stealing blood to make a profit (ESRC, 2007).

Because the 'indigenous' informal knowledge production exists in addition to top-down community education exists in addition to, there is both formal and informal knowledge being provided to the general public. Therefore the knowledge accepted in any specific community, will be so on the basis of these two inputs. The identities of people in the communities are to a large extent determined by this generally accepted knowledge in their specific community: the stigmatization of people living with HIV/AIDS is a product of this mechanism. A very difficult question is how these identities can be altered from sources outside of the community, an issue discussed more in-depth in the assessment of the KRIS in section 5.4.

The two modalities of participation relate to top-down education in a different way. In Model 2 participation, local knowledge is framed and given importance from cosmopolitan

frameworks. These frameworks are designed to dismiss anything that would be considered superstitious (or only as input data: a 'cultural' factor). Therefore, Model 2 participation can be considered to contribute to the emphasis on top-down community education.

Model 3 participation, on the other hand, allows for lay and professional participants to co-determine the issues that are approached in the project. The motivation for this importance might stem from a different worldview, but the issue can be taken up nonetheless and its results used to the benefit of health care, even though world views differ. Health care is viewed by many societies (and communities) as a system with a hierarchy of alternatives of which biomedical care is one (De-Graft Aikins, 2004) – this does not just apply to the Southern context, but to the Northern as well, where folk knowledge on healing methods is definitely part of the health care system. Therefore, shared world views are not a prerequisite for the utilization of knowledge in health care. Model 3 participation, as a result, has potential to counter the trend of top-down community education in health care. Figure 9 presents the respective education and participation flows in the 'associations of people living with HIV/AIDS' case.

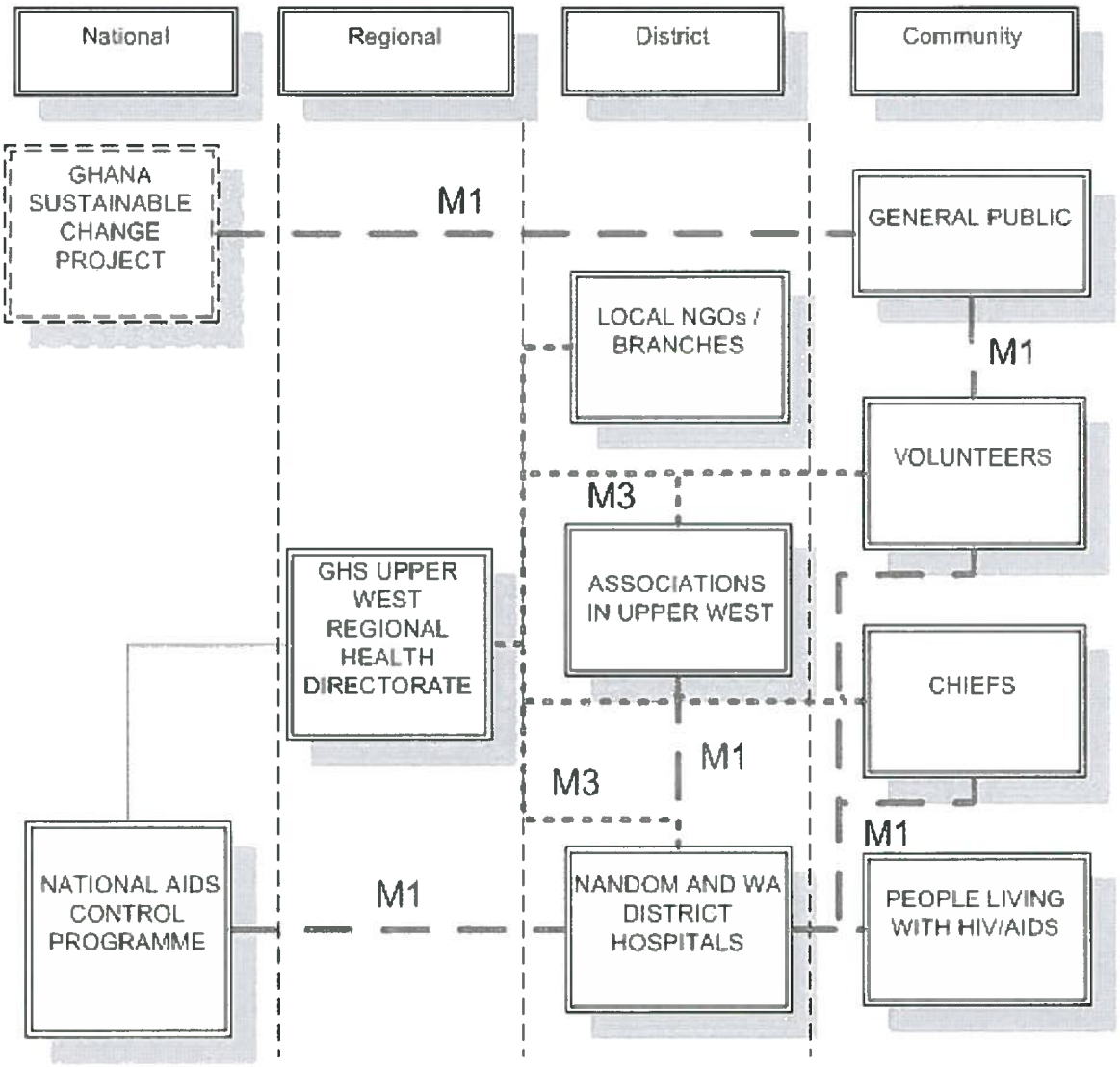


**Figure 9: Model 1 community education and Model 3 participation knowledge flows**

### *7.3.4 Dependency on donor funding*

A third factor having a major influence on Ghana's health care KRIS, is the high dependency on donor funding to provide health care and research funding and innovation support. Donor funding programmes have shaped systems both public and private: the structure of decentralization, discussed in section 5.3.2, is an example of their capability for bringing about that reform. An additional factor of influence is that these arrangements only exist for a limited amount of time, with the bulk of support programmes lasting five years.

In the Model 2 case, Danida is visible to be one of the sponsors supporting the innovation in health insurance in Ghana. Their priorities are determined every five years and set out in a health sector programme support strategy. Through their support for innovation, they are part of Ghana's health care KRIS. This puts them in a position of competition with the NHIC on the determination of priority areas in this support. In addition Danida, together with other donors, has influence on the policy development of health care in Ghana including the KRIS through the Ministry of Health's annual summit. Donors to the country's national HIV/AIDS response also have a large influence on the development of research and innovation strategy as well as the implementation guiding this response.

Health care research in Ghana is almost fully dependent on donor funding, and almost and almost all of this is organized through foreign five-year research programmes that are funded from foreign governmental development agencies[6]. This is also the case at the largest supervisor of health care research in the country, the Health Research Unit. The priority areas for research are usually stipulated by donors in their programme descriptions, so HRU has had to incorporate a high degree of flexibility in its network to be responsive to these demands. The GDC is a big exception, because it has determined that priority areas be determined through annual stakeholder discussion – it still is a temporary arrangement, though, with a running time of five years just like the majority of programmes.

The Kintampo Health Research Center has flourished since its inception, but only thanks a large degree of flexibility in meeting expectations from a variety of donors. After its establishment the government has not invested in the center, so the Center has used part of the funding of the bigger projects undertaken there to invest in for example, clinical laboratory facilities. These investments made them more eligible for future donor-funded programmes, such as the clinical trial of the malaria vaccine currently being carried out at KHRC. The uncertainty caused by the dependency on donor arrangements is expressed by the director of the center on its website: 'Even where very high quality work is being carried out by African institutions rated as centres of excellence, funders/donors may pull out for several reasons that can be best explained by them. The need for such African institutions to ensure their continual existence in times of financial turbulence requires strategic planning in its activities.'

Apart from the strategic flexible positioning of research actors, the five-year limit to research funding programmes also limits the availability of dedicated knowledge pools in the country. An example is the (five-year) SHARP programme, the results of which will hopefully still be available through its partner organizations, the Ghana AIDS Commission and the GHS's National AIDS Control Programme. Ghana AIDS Commission is also implementing a permanent solution to fragmented knowledge pools in the case of AIDS research, through an online research database that is soon to be established.

The dependency on donor funding is shown to effect flexibility in actors in Ghana's health care KRIS, and this is visible in the participative projects themselves as well, be it in different ways. The expertise that is established and strengthened through the Model 2 project is

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[6] This finding is congruent with Rip and Mouton's (2006) diagnosis that there is a large degree of donor segregation, which means for example the agricultural sector is oriented to one set of donors and the health sector oriented to the other; health care research, apparently, is only oriented to foreign government development agencies one set of donors and the agricultural to the other.

relatively limited in its flexibility of application, because it only applies to the specific practice of risk assessment in health insurance: for this expertise to meet the demands of future donors, these demands would have to be equally specific. The Model 3 project, on the other hand, helped construct the more general expertise on effective support of associations of people living with HIV/AIDS. Subsequently, there is a larger range of donor demands that can be met through the expertise gained – in fact, with the establishment of the NGO, new types of donor demand (to start up skills reorientation programmes, for example) can now be facilitated. In conclusion, Model 3 projects are assumed to contribute more than Model 2 projects to the strategic flexibility that scientific actors need in the current arrangement of high donor dependency.

## 7.4 Assessment of Ghana's health care KRIS and its development

Ghana's health care KRIS shows a high degree of segmentation, in two separate dimensions. Firstly, the different sectors of application (agricultural, health care, and others) are approached by their own segment in the KRIS with little coordination in between the sectors. This was also visible in a study on the KRIS of South Africa (Rip and Mouton, 2006). Secondly, as has been argued in subsection 5.3.2, there is a barrier between community level informal knowledge production on the one hand, and district-and-above level formal knowledge production and professional informal knowledge production, on the other. Notably traditional healers, which are important actors in the health care KRIS, have their own segment in Ghana's health care KRIS through separated practices and knowledge production. The barrier between the two segments prevents the informal knowledge from being utilized by the formal segment of the KRIS. The only empirical evidence found of utilization of traditional knowledge was the instrumental probing of the views of community members that the risk assessment research team did to determine health seeking behavior. In the example of associations of people living with HIV/AIDS, informal knowledge was gathered from community-level actors. These actors, however, were either members of these associations or involved in supporting them; and because of training and regular interactions with people involved in institutionalized health care, these actors have above-average amount of biomedical knowledge determining their view on the issue of HIV/AIDS. As a result, no informal knowledge produced from a traditional or quasi-traditional was utilized in the project; only informal experience-based knowledge.

As a result of the barrier between the community level between informal and formal knowledge production, there is a risk that the debate about the quality of a specific piece of knowledge is taken up into bigger debates of traditional versus modern cultural, with actors taking sides in the knowledge quality debate according to their cultural position. An example of such a process in Tanzania has been analyzed by Langwick (2007). Children showing symptoms of convulsion were diagnosed by traditional healers as suffering from the local disease of ***degedege***. The symptoms were to some extent, but not completely, the same as malaria; biomedical health professionals, however, did not know how to treat it other than malaria. The Tanzanian Ministry of Health, from their modern cultural position, preferred the malaria analysis and promotes this view in their public education programs; with pursuing this policy, they disregarded any local assessment of knowledge quality and aligned with the actor group that made claims congruent with their cultural position.

Debates of traditional versus modern cultural are also taking place in Ghana. An article in Ghana's oldest newspaper noted how the Upper West Regional Minister had advised North-Ghanaian traditional rulers to "eradicate their archaic cultures" that partly gave rise to negative cultural practices such as "female genital mutilation, early marriages, widowhood rites, defilement, child trafficking and child labour." (The Statesman, 2007).

Efforts to try to utilize informal knowledge could lead to some mutual appreciation of each other's knowledge and view, creating more openness to enrich both segments of the KRIS with knowledge of the other, which increases opportunities for dissemination of robust

knowledges. Currently modern knowledge is forced in top-down through educational programmes. The goal of these educational efforts is to effect changes in behaviour beneficial to the people. These efforts can conflict with local identity construction, knowledge production and dissemination that are more robust in the rural communities than modern views. Therefore, it is quite possible that a more efficient and successful way to change behaviour is through modulating the informal knowledge production and dissemination.

Modulating informal knowledge production is easier said than done, but there are examples: the method of 'Theater of the Oppressed' (Boal, 2000) allows participants to express their views on specific issues by acting them out in scenarios, without needing to articulate these views verbally. In such interactions ways forward between knowledge producers, irrespective of their (modern/traditional) background can be negotiated. Undertaking such efforts to promote integration of the informal community segment of the KRIS can be stimulated from the government level, but as experience in South Africa[7] shows, this is a very precarious matter.

Ghana's health care KRIS is highly influenced by its dependence on donor funding. In formal knowledge production in Ghana, the bulk of this funding is dispersed through five-year programmes with their own focus and goals. Actors and institutions involved in formal knowledge production in Ghana have to be adaptive to meet the changing demands of these donor programmes. Their development is determined by a strategy of adaptation to fit the preferences they think donors will have. Investments in infrastructure are made to contribute to this strategy; therefore the GDC funding, that is distributed based on knowledge demand expressed by actors in the Ghanaian health care, can also contribute to this strategy.
The investments made in infrastructure, to fit to perceived donor preferences, do lead to an expansion of institutional infrastructure. The Kintampo Health Research Center stands out as an example of how an institution can grow from adapting to the needs of several individual projects, and because of this, has established itself within Africa as a center for excellent health care research in a rural setting. This buildup of infrastructure in Kintampo, however, has been and continues to be, according to the strategy of adapting to perceived donor preferences. Because of this strategy the evolution of the formal knowledge production segment of Ghana's health care KRIS is at best only partially endogenous.

[7] From South Africa various interesting cases have been analyzed of how knowledge of traditional healers and modern society interact. A current discussion is on the 'emancipation' of their knowledge, which means a traditional healer's diagnosis is to be regarded equal to a biomedical diagnosis – which in turn would mean sick leave could be requested based on such traditional diagnosis as well.

# 8 GENERAL CONSIDERATIONS AND EPILOGUE

## 8.1 Introduction

Being the final chapter of the thesis, one might expect a set of conclusions to my research, but this would imply that data collection and analysis fitted the mould of the research question. On the contrary, my research was more like a journey, and this is reflected in the analysis in the preceding chapter. The dynamics of participation in scientific research, originally conceptualized as a link between informal knowledge on the one hand and the development of a KRIS on the other, ended up becoming a topic of analysis in their own right. The second section of chapter 7, in contrast, covered the complex environment of the KRIS, and showed three very influential external forces on the development of the KRIS, thereby complicating the analysis of internal influences such as those of the GDC projects. In this sense, my research is yet another example of a Northerner coming to terms with the complexity of the development of a Southern nation.

The original goal of the thesis, as stated in the introduction, was to bring insights in the dynamics of a system that appropriately covers the competitiveness of nations, the KRIS. These insights can certainly be derived from the analysis, be it more distant from the research question than expected, and they will be considered in the following sections. In addition, the fact that the consideration exceeded the original research question, is an entry point for a discussion of how the research for this thesis was carried out. This epilogue, with which this chapter, and thesis, is concluded, serves both as an insight in the process as well as a reflection on what approaches from the field philosophy, science and society can bring to a developing nation.

## 8.2 The KRIS approach, a hard fit

As was argued in the analysis, Ghana's health care KRIS is segmented in a number of ways. This follows from the concept, which includes a wide variety of actors that are connected in various ways and are influenced by a collective system dynamics, even though they do not have institutions, policies or actors within them underline these connections. This makes the dynamics of development of a KRIS very hard to analyze.

This is not a problem that is limited to the Southern context; an application of the KRIS concept to an analysis of the competitiveness of a Northern country is also quite likely to show significant segmentation. There is, for example, a vast presence in the Northern countext of NGOs that develop and apply their expertise secluded from the rest of the system. Therefore, an analysis from the KRIS approach would be interesting to carry out in the analysis of Northern development as well.

Furthering of the use of the KRIS concept (rather than NIS or sectoral RIS concepts) could mark another turning point in the relatively short history of analyzing the complex dynamics of national development. Previous systems approaches, such as those in terms of higher-education systems, are easier to make visible because they reside, to a large degree, in visible institutions. Because of this visibility, actors within such a system identify themselves with such a system as well as the connections to other actors that the system implies. The KRIS approach is different in the sense that it involves a lot more actors and connections than before, and therefore requires active reconstruction because the actors concerned do not see the connections – or do not want to see the connections, when they believe practices in the KRIS to be a source of 'superstition' rather than knowledge.

## 8.3 Endogenous development through local ownership?

The KRIS approach and the design of the GDC programme coincide in terms of ideology: namely, that a nation should not just become self-reliant but that this self-reliance should develop endogenously, from needs, opportunities and strengths generated within the country. The Ghanaian-Dutch Collaboration aimed to do so by delegating supervisory responsibilities to the recipient country, as well as through promoting a demand-driven knowledge input to the development process. A legitimate question to ask, then, is to which degree this approach is able to effect truly endogenous development of a nation.

The Health Research Unit of the Ministry of Health was in charge of finding gaps in the national knowledge for health care through annual stakeholder meetings. In this, demand for knowledge was expressed from their network of institutions (hospitals, non-governmental organizations) that were already part of the communication network of the Health Research Unit. As such, the programme excludes the informal knowledge segment of the KRIS and the possible endogenous contributions that could have come from this segment.

Additionally the analysis showed that the research actors pursue strategies of predicting how they can fit future donor programmes. In the light of these strategies, the Ghana-Dutch Collaboration provides funding that is easier to obtain when compared to more stringent donor programmes. Most of the GDC projects, however, built on subject expertise of the researchers carrying out the projects: the projects on the one hand fit this expertise and on the other hand strengthened and expanded it – the scarce projects with Model 3 participations being the exception to the rule. Where these efforts to strengthen expertise are part of a strategy of fitting exogenous demands, they cannot be considered endogenous. Therefore demand-driven research funding can at most hope to develop hard-to-finance exogenous developments, and not contribute to endogenous developments.

This is not to say that the GDC is a failure or that donor funding should be cancelled, as good things come out of it for the people of developing nations. Rather, the realization that a purely endogenous development is not an option in practice (this would, for example, exclude a nation from international trade, which is of great importance to the development of nations) should be incorporated into the pattern of norms determining how development of a nation (KRIS included) is assessed.

## 8.4 Epilogue

This thesis is not just the presentation of a position I maintain by argument; it is also the conclusion of a process. When contrasting the data I have collected, presented, and analyzed to the research question I formulated, it is clear that the outcomes of my research were far from expected. My endeavors in research have been rife with uncertainty; as I will suggest in this concluding epilogue, in the field of philosophy of science, technology and society uncertainty must not be seen as an enemy but rather as a friend of research.

In the starting phase of my thesis project, I was looking for a research topic that would interest me, and I came across the Ghana-Dutch Collaboration's website. What struck me was the novelty of the programme's design, and the ambition it had of providing local ownership through a new type of development assistance. Its primary goals were in the line of demand-driven research: to provide knowledge useful to the health sector; one of the additional goals was less articulated and more uncertain: it was the development of capacity for further development. Where does capacity reside? How do research projects contribute to this capacity? I was uncertain how to answer these questions, but certain that I would find concepts to help me do this. I had found my research topic.

I introduced two modes of participation as the key variable in my investigation, as I thought the analysis I read in Callon's article was very compelling. I felt certain that researchers

and non-experts alike to be equally excited about these interesting forms of cooperation in scientific research, and thus be full of wild expectations on future developments concerning participation.

I was proven wrong. Life in Ghana is hard, for most people, and its professional practices are ridden with problems: too many problems to be excited about one specific form of cooperation in scientific research. Additionally, participation was not institutionalized in any way nor was its virtue of democratizing science underlined: participation in Ghana is a practice characterized by informality. As a result, there were no great expectations to be gathered from these types of cooperation.

Being a master student, such realizations were hard to put in perspective: I was conducting a research project of this scale for the first time; it was also my first experience in analyzing health care, (I did not do any preliminary study on Dutch health care); finally, it was my first experience in the African development context. All was uncertain again.

My opportunities for collecting data, as in any empirical research project in philosophy of science, technology and society, were limited by people's willingness, availability, and logistic issues. Willingness and availability were high, though, as I was usually welcome to interview on a day's notice; logistic issues were a – by Northern standards – uncomfortable 14-hour bus ride to the Upper West Region of the country. Despite the uncertainties I had about my research I had to provide some degree of certainty to my interviewees: this meant that I would present myself as 'research evaluator' when interviewing people involved in the projects, and 'broad impact analyst' when interviewing other relevant sources.

I came home with a motley collection of data, certain that there was an interesting story to be told, but uncertain whether I would be able to do it – once again, it was hard for me to put the issue into perspective, as I was about to start writing my first thesis. Over the period following, topics were fit for analysis that I had not counted on to be so before taking off to Ghana.

Over the time period of conducting and finishing my research I have shifted from situations of uncertainty to certainty and back several times. To students of philosophy of science technology and society, it should not be seen as a problem to avoid but as a challenge to learn to live with, as letting go of certainty is often necessary to find new insights.

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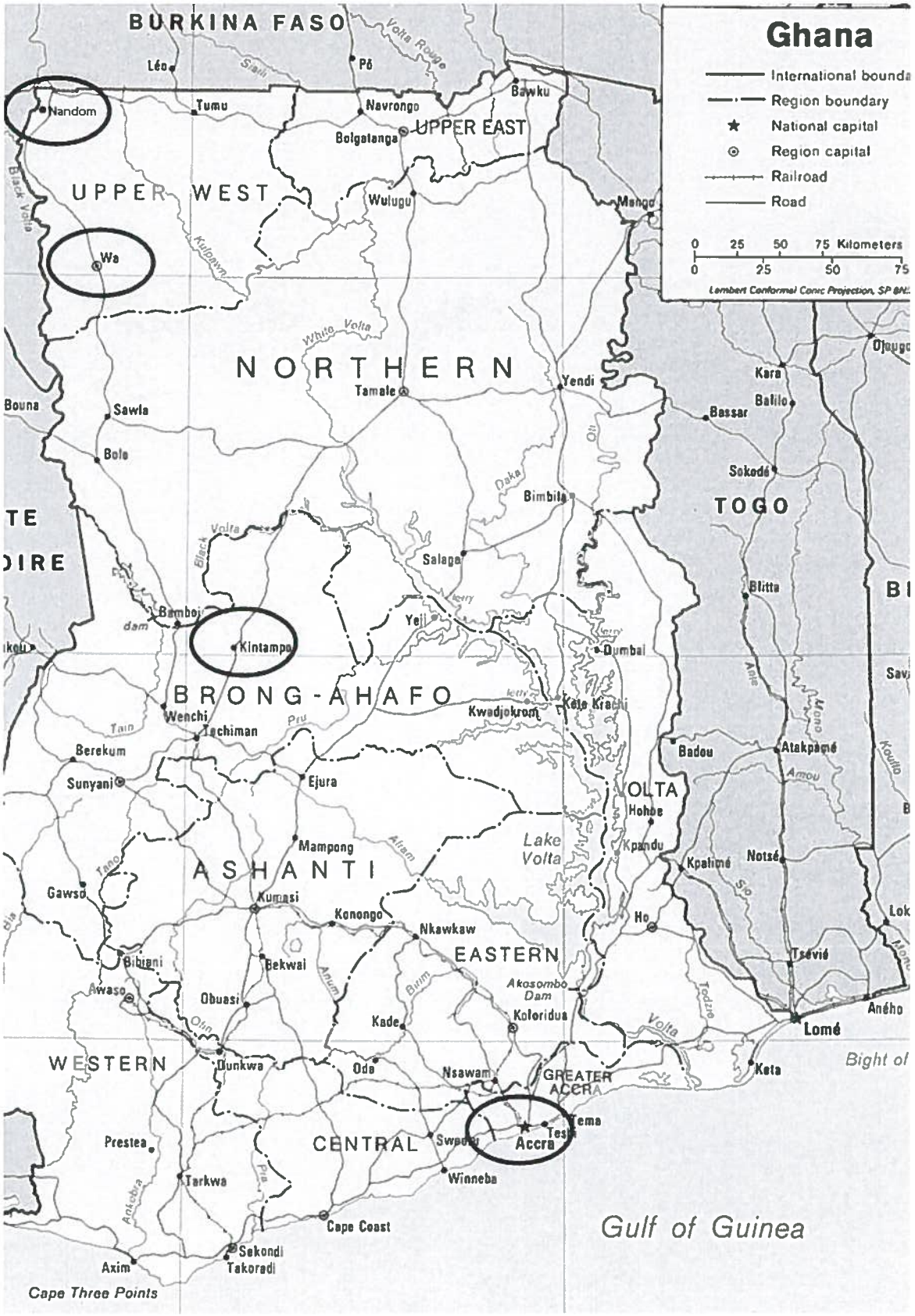
# APPENDICES

A –Map of Ghana with places of interest



B – Characterization of twelve selected GDC projects

| Project title | Participation type |
|---|---|
| Developing Exemption Criteria and Modes of Pre-payment Under the National Health Insurance Scheme<br>Intermittent Preventive Treatment for Control of Malaria in Pregnancy its Effects on Maternal Morbidity and Neonatal Health<br>A Critical Review of Resource Allocation in the Health Sector: A Study of Health Sector Resource Inflows and their Allocation<br>The Effect of training, feedback and monitoring visits on improving reporting of Adverse Events following Immunization (AEFI) by healthcare workers: a 10-month prospective study<br>Reducing Malaria: The Role of Community Participation and Communication in selected Communities in three districts in the Ashanti Region<br>Assessment of Private Laboratory Capacity to Support TB Care and Control in Ghana | Model 1 |
| Cost Analysis and Efficiency of Sub-District Health Facilities in Ghana<br>**Determining the Insurability of Health Risks in Ghana: the case of Kintampo-North District**<br>Assessment of the capacities of private health facilities in the Kumasi metropolitan area to undertake active anti-retroviral therapy<br>The effect of drug advertisements on drug utilization and health seeking behaviour in the Upper East Region | Model 2 |
| **Assessing possible factors that affect the formation and participation of APLWHA in the Upper West Region**<br>Could a Code of Conduct developed by Consensus through participation of health staff in the Wasa Amenfi East District themselves improve the staff attitude towards Clients? | Model 3 |

C – List of interviewees, with time and dates

| Last and first name | | Relevant position | Interview date |
|---|---|---|---|
| Acheampong | Odi | NHIC Operation Manager | - |
| Agyei | Seth | Director of Kintampo Health Research Centre | - |
| Akanlu | George | Strategic Information Officer at SHARP | June 12, 2007 |
| Akanzinge | Phillip | NHIS implementation coordinator at GHS | May 24, 2007 |
| Amoako | Jacob | Manager of Kintampo-North DMHIS | - |
| Asante | Kwadwo | Monitoring & Evaluation Coordinator at NACP | May 7, 2007 |
| Atuahene | Kyeremeh | Research Coordinator at Ghana AIDS Commission | June 22, 2007 |
| Basadi | Richard | Researcher on APLWHA project | May 13, 2007 |
| Bomba | Martin | Manager of Jirapa-Lambussie DMHIS | June 26, 2007 |
| Collins | Francis | Programme Coordinator for NAP+ | June 20, 2007 |
| Dzikunu | Helen | Programme Manager for insurance at Danida HSSO | June 11, 2007 |
| Faakang | Matilda | HIV/AIDS Counselor at Nandom District Hospital | June 26, 2007 |
| Gemegah | Albert | PI for insurability project | May 4, 2007 |
| Kanzie | Josephine | Leader of Wa Municipal Association of PLWHA | June 25, 2007 |
| Nappaneh | Stella | HIV/AIDS Counselor at Nandom District Hospital | June 26, 2007 |
| Santaa | Philomena | HIV/AIDS Counselor at Wa District Hospital | June 24, 2007 |
| Santana | Naa | Chief of Doromir | June 25, 2007 |
| Sule | Agama | Community Health Volunteer in Kambale, Wa | June 25, 2007 |
| Tetteh | Edith | Member of Scientific Review Committee for GDC | - |
| Titus | | Chief of Piri | June 26, 2007 |
| Tuo | Cecilia | HIV/AIDS Counselor at Nandom District Hospital | June 26, 2007 |
| Victoria | Andraga | Community Health Volunteer in Piri | June 26, 2007 |
| Vondee | Earnest | Fellow researcher on insurability project | - |
| Yayemain | Daniel | PI for APLWHA project | June 27, 2007 |

D – Breakup of research question in empirical subquestions, and expected conclusions

***"How does participative knowledge production in the HRP influence the evolution of Ghana's health care knowledge, research and innovation system?"***

S1 How is knowledge accessed, used, discussed and disseminated by actors in the HRP's research projects?

- P11: What institutions, researchers, professionals and lay people are directly involved in the knowledge production process?
    - Researchers.
        - Ghanaian?
        - Northern?
    - Non-academic professionals/knowledge end-users.
        - Health service providers (from largest hospitals to community workers)?
        - Health insurance providers?
        - Health policy makers?
    - Interviewees/lay people.
        - Community/urban health service users?
        - Traditional rulers and healers?
        - Lower-level service staff?
- P12: What type of knowledge is being produced in the knowledge production process?
    - What knowledge goals?
    - What end-users?
    - Part of what field of scientific research?
    - Very local/specific focus or aimed at knowledge to be useful elsewhere in KRIS?
- P13: Through what means/media do the professionals and lay actors make experience-based knowledge accessible in the knowledge production process?
    - Private means/media?
        - Work-in-progress documents?
        - Social inquiry: one-on-one interviews (sometimes just a single question), through telephone e-mail or face-to-face?
        - Workshop sessions with larger groups?
        - Closed group presentation
    - Public means/media?
        - Scientific journal publication?
        - Popular publication?
        - Open group presentation/lecture/congress?
        - Radio/TV broadcast?
        - Websites?
    - 'double agency': actors both researcher and end-user of knowledge produced?
- P14: What type of knowledge do the different actors bring forward?
    - (Formal) Scientific literature and models (researchers)?
    - Formalized 'Best practice' procedures in work context (professionals)?
    - Experience-based knowledge (professionals and interviewees)?
- P15: By whom this accessibility of informal knowledge promoted? Is this promotion successful?
    - Just on initiative of the actor making knowledge accessible?
    - By the researchers or the programme committee?
        - Workshops organized?
        - Set-up and spread of informal newsletters and websites stimulated?
        - Social ties with professional institutions and communities fostered?

        - Researchers' visits stimulated?
        - Progress reports or presentations made available?
        - Direct lines for information spread established ('hotlines')?
- P16: What actors are involved in the decisions whether or not to use a piece of informal knowledge for the knowledge production process?
    - Researchers openly discuss with professionals?
    - Researchers decide authoratively?
- P17: Through what measure(s) do the researchers form opinions about the quality of informal knowledge made accessible by non-academics?
    - Scientific background check – do researchers compare claims with scientific articles/theory?
    - Social background check of the actor(s) presenting the knowledge – are arguments of personal or institutional expertise used by the researchers?
    - Check on credibility of the 'circulation' that is claimed – do the researchers critically ask for the – allegedly – connected experiences that form the basis for the knowledge that is made accessible?
    - Naming/categorization compliance check – is the knowledge fit for aggregation with terms that are already being used in the knowledge production process?
    - Backward reasoning ('inference') check (in case of theoretical knowledge) - do the researchers check the validity of the theory on similar situations the researchers have encountered?
- P18: What actors are included in the dissemination of the knowledge produced?
- P19: By what means/media? What knowledge is publicly accessible (through non-scientific literature, the Internet)? What actors that are directly involved in the knowledge production and dissemination process access the knowledge?
- P110: How do non-academic actors form opinions about the quality of the scientific knowledge they have access to?
    - Social background check of the researcher(s) presenting the knowledge?
    - Check on frequency knowledge has been validated to be true ('circulation')?
    - Check on knowledge being part of an accepted robust experience framework ('naming and framing')?
    - Backward reasoning ('inference') check?

S2 What actors are excluded from knowledge dissemination and production, but still gain access to knowledge produced in the HRP's research projects, and how?

- P21: What actors are not directly targeted in the project's dissemination plans, but still get access to the knowledge so they can consider utilizing it?
    - Professionals overlooked?
    - Traditional healers/rulers?
    - Community members?
    - Lower-level health service staff members?
- P22: What actors are not directly targeted in the project's dissemination plans, but want access to the knowledge because they are affected by the uptake of the knowledge by other actors?
    - Professionals overlooked?
    - Traditional healers/rulers?
    - Community members?
    - Lower-level health service staff members?
- P23: Through what means/media do they gain access?
    - Public?
    - Private?

    - 'double agency': actors both researcher and end-user of knowledge produced?
- P24: Of what use is the knowledge to them?
    - An example of successful uptake of experience-based knowledge, stimulating them to gather – and attract resources for the gathering of – robust experience-based knowledge themselves?
    - The knowledge has an application that was not part of the research project's focus?

S3: How does knowledge access and use lead to system-level changes in the health care KRIS? Are these changes effected by the projects directly or because of the 'role model' function of the projects?

- P31: Do expectations on the (formal and informal) procedures on participative research change? Is equality of voice in guiding the knowledge production process expected?
- P32: Is a larger role of the traditional system expected in governing the KRIS?
- P33: Are actors from professional and traditional background expected to be gathering more experience-based knowledge and contribute to the KRIS with this?
- P34: Is a wider focus for dissemination expected? Are public media expected to become more important in knowledge dissemination?

S4: Do different forms of participation in knowledge production lead to different processes in effecting changes on the health care KRIS?
[This question will not be answered through gathering new data but through comparing the analysis of the two cases.]

P41: How to determine different forms of participation?

- Amount of experience-based knowledge that is used by researchers?
- Amount of scientific knowledge that is used by non-academics?

P42: How to determine different processes of knowledge access, use, production and communication taking place, based on different forms of participation?

- Different actors targeted for knowledge production and dissemination?
- More/less specific knowledge produced and disseminated?
- More/less authorative decision making on whether or not to implement informal knowledge?
- More/less access of knowledge outside the targeted group for dissemination?

P43 – Conclusion: How do these processes lead to different system-level changes in the health care KRIS?

Expected conclusions:

FH31) A higher level of participation, if successful, leads to new expectations and procedures on incorporating non-academic knowledge into new research. As such actors from traditional, professional and academic background expect equality of voice in the decisions guiding the knowledge production process.
FH32) A higher level of participation, if successful, leads to further integration between the traditional/informal and state/official policy systems governing the KRIS.
FH33) A higher level of participation leads to further stimulation of use (through dissemination plans!) and development of public media with community-wide spread.

CH31) A lower level of participation maintains current procedures on non-academic knowledge, giving academics an authoritarian rule over the knowledge production processes.
CH32) A lower level of participation leads to a more focused and on-its-own scientific health care research in Ghana.

CH34) A lower level of participation can, under specific circumstances, contribute to preference for use and development of private media for smaller target groups.

| Low participation | High participation |
|---|---|
| Division of traditional and governance | Integration of governance systems |
| Role of decision maker highly attributed to actors with scientific background | Role of decision maker at least subject to discussion from different backgrounds. |
| Low EBK intention in non-academics | High EBK intention in non-academics |
| Small dissemination groups | Large dissemination group |
| | Larger role for public media |

Challenges in data gathering

- Getting interviewees interested enough in the project to have them make time for interviews.
    - Researchers/programme committee:
      Project is on second-order benefits from the unique, innovative research partnership. As such it makes even more of the positive impact they are making visible. Additional strong points of the programme can come to light and be taken up in policy.
    - Professionals and lay people:
      Project ***critically examines*** how effective the unique partnership is in mobilizing local experience-based knowledge and perhaps could be.
- Getting access to working documents and other communications and being allowed to attend workshops and meetings. Strongly coherent with the point above.
- Relevance bias: once knowledge (either scientific or informal/experience-based) has been dismissed, it will be hard to retrieve in interviews.
- Logistics: getting access to actors in the community/communities
- Language: getting access to data from community actors that do not speak English.

E – Interview instrument used in interviews with research participants

Introduction I

***"My research project focuses on the broader implications of the Ghanaian-Dutch Collaboration for Health Care and Development. To find these, I take a broader perspective on the activities of the people involved in the research projects that are funded by the Collaboration. The goal of my research is to analyze how through the projects sets of people, organizations, policy and technological infrastructure are created and changed in Ghanaian society. This analysis will be worked out at three different levels. One is the level of the entire health care sector. One is the level of the projects and their place within the sector between different formal and informal organizations and their respective policies. The last is of the individual people that directly contribute to the advancement of the research project in terms of new knowledge. Let us focus on the level of the [health care finance/community participation] project that you are involved in first."***

1. To which degree is the project you are involved in participative?
(Answers can be compared with independent project data from proposal and working documents; also, they make the interviewees (normative and descriptive) ideas on participation visible)
2. I have an overview of the organizations directly responsible for the carrying out of the project. Have any other organizations been involved? [P11]
3. Has there, alongside the input of people directly involved, been input in the research project from organizations' documentation or publications? [P12,14]
4. How well established do you find these media? [P17,110]

5. You are involved in a research project in [health care finance/community participation] that is funded by the Ghanaian-Dutch Collaboration for Health Care and Development. I have an overview of the researchers and assistants in the project. Are there additional people making informal contributions to the project? [P11]
* if a new actor is named:
* 6. Can you tell me about the organization/institution this actor is part of? [P11]

* if time is limited due to a large actor group:
* 7. What people made interesting contributions to the research project?
(people not included in the answer can later be named when asking why they did not make interesting contributions, possibly showing new cases of decision-making processes)

>start actor contribution in knowledge production case loop

8. Can you name an interesting contribution that [actor] made? What new idea or insight did [actor] contribute? [P12, P13 and P14]
9. What efforts are being/have been taken to support [actor] in making this contribution? [P15]

>end actor contribution in knowledge production case loop

* if no informal actors are named:
* 10. Were there also interesting contributions from non-scientific backgrounds, for example [informal actor]? [P12,13,14,15]

***" I am also interested in the decision-making processes in the research project. This means both the expanding decisions determining new direction for the project, and the focusing decisions that determine roads not to follow."***

11. Which three decisions made do you consider most important to the project?
>start decision-making case loop

(to be derived from the story through additional case-dependent questions):
(12. What others were involved in this debate? [P16])
(13. What were the argument(s) used by these actors? [P14])
(14. What did you think of these argument(s)? [P17 and P110])
(15. What argument(s) did you bring forward? [P14])
(16. What did the others think of your argument(s)? [P17 and P110])
(17. How and by who was the final decision made? [P16])
>end decision-making case loop

*"Now let us focus on the results of the research project".*

18. What preliminary results have so far come from the research project? [P12]
19. Are there any supplementary informal results that you think are important? [P12]

>start communication actor loop
20. To who would you want these and future results sent, and why? [P18, P21, P24]
21. How do you make results accessible to these people, groups and/or institutions? [P19 and P23]
22. Is this part of the dissemination plans for the research projects? [P18]
>end communication actor loop

23. Can you identify possible users who will get access to your results only through publications? What do you expect them to do with this knowledge? Do you have any examples of these users contacting you to give them more information (unintended uptake)? [P22]

Introduction II

***"Like I mentioned at the beginning of the interview, I want to analyze the system effects on the Ghanaian national health care knowledge, research and innovation system. This consists of the people, organizations, policy and technological infrastructure institution that contribute in some way to the furthering of health care in Ghana. The system not only includes researchers such as those in the team you are part of, but also other people and organizations that discover new knowledge for better effecting health care, based on experience for example. The last part of my analysis focuses on how the processes initiated and guided by the research projects in the GDC alter the dynamics of this system that it is part of, in other words, how they co-evolve with it."***

19. Do you expect the research participations between academics and non-academics to work differently in the future? How? [P31]
20. Do you expect a larger role for the traditional healers and the chiefs in developing new knowledge? [P32]
21. (if a non-academic) Do you expect to be gathering new [experience-based/traditional] knowledge, because of your experiences in the research project? [P33]
22. Do you expect the target group for dissemination of the project results to become larger? What media do you expect to be used for this dissemination? [P34]
23. Do you believe there are individuals or institutions in the national health care that should be included in the knowledge production or dissemination process of future GDC projects? [P32]

F – Interview instrument used in interviews with stakeholders

Introduction I

***"My research project focuses on the broader implications of the Ghanaian-Dutch Collaboration for Health Care and Development. To find these, I take a broader perspective on the activities of the people involved in the research projects that are funded by the Collaboration. The goal of my research is to analyze how through the projects sets of people, organizations, policy and technological infrastructure are created and changed in Ghanaian society. This analysis will be worked out at three different levels. One is the level of the entire health care sector. One is the level of the projects and their place within the sector between different formal and informal organizations and their respective policies. The last is of the individual people that directly contribute to the advancement of the research project in terms of new knowledge. I gather that you know results from a research project in [health care finance/community participation] that is funded by the Ghanaian-Dutch Collaboration for Health Care and Development, and perhaps have even applied these results. Is this correct?***

1. What results from the GDC's research projects do you know? [P21 and P12]
2. Through what medium did you access the results? [P23]
3. How do you expect to be able to use this knowledge? [P24]

* if a public medium has been named:

* 4. Do you expect other stakeholders like yourself to be interested in the results of the research project? [P22]
5. Did you also gather any informal results from somebody involved in the GDC? [P12]

Introduction II

***"Like I mentioned at the beginning of the interview, I analyze the system impact in Ghanaian society in a very broad sense. The largest system in Ghanaian society I analyze the impact of the processes in the GDC's research projects in, is the national health care knowledge, research and innovation system. This consists of the people, organizations, policy and technological infrastructure institution that contribute in some way to the furthering of health care in Ghana. The system not only includes researchers such, but also any other people and organizations that discover new knowledge for better effecting health care in a non-scientific manner, based on experience for example. The last part of my analysis focuses on how the processes initiated and guided by the research projects in the GDC alter the dynamics of this system that it is part of, in other words, how they co-evolve with it."***

4. Would you personally have wanted to be involved in the research project? Or would you want anybody else you know to have been involved? [P32]
5. Do you expect a larger role for the traditional healers and the chiefs in developing new knowledge? [P32]
6. Do you expect to be gathering new [experience-based/traditional] knowledge, because of your experiences in the research project? [P33]
7. Do you expect the target group for dissemination of the project results to become larger? What media do you expect to be used for this dissemination? [P34]