

SCHOOL OF MANAGEMENT AND GOVERNANCE

PUBLIC ADMINISTRATION

Success factors of Cradle to Cradle implementation in The Netherlands

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Abstract

The Industrial Revolution entailed a lot of positive consequences for large scale economic and social development in the industrialised countries. This development could only continue at the expense of the environment. In the second part of the 20th century, the negative consequences for the environment were perceived to be problematic. Since, environmental policies try to deal with these negative consequences.

Governments tried to achieve their environmental targets via laws and regulations. However, this regulatory policy instrument proved to be inadequate. During the 1980s, many environmentalists throughout Europe strived for structural changes in environmental policy. In 1992, the 5th Environmental Action Programme (EAP) of the European Union emphasized the use of new policy instruments, notably market-oriented instruments and voluntary instruments. In The Netherlands, the National Environmental Policy Plan (NEPP) aimed at eliciting private initiative and shared responsibility.

Responsibility can only be taken when freedom is provided. Through voluntary instruments, a company could be given the flexibility to determine its own strategy to achieve the environmental targets that are set by the government. Furthermore, responsibility could result in voluntary initiatives taken by a company that even go beyond environmental regulation. Voluntary instruments are perceived to be much more effective than regulatory policy instruments. Voluntary initiatives are taken by industries themselves. They have the best knowledge about the impact of their activities on the environment. They probably also know the most effective way to change their products and processes in order to improve their environmental performance. For this reason, in certain situations the government can better opt for voluntary instruments in order to achieve their environmental targets.

There are several kinds of voluntary initiatives. Croci (2005) distinguishes six categories:

- voluntary public schemes
- negotiated agreements
- unilateral commitments recognised by the Public Administration
- unilateral commitments
- third party initiatives
- private agreements

The first three categories are all voluntary agreements, containing both a public and a private counterpart. The last three categories are purely private voluntary initiatives.

Voluntary initiatives could be supported by the government under certain circumstances, but why should companies enter a voluntary initiative? Feeling responsibly will not be the only explanation for this. The circumstances that are conducive to voluntary initiatives have been widely studied. One of these was a study of Bressers and De Bruijn (2005) on Dutch Covenants, a successful example of negotiated agreements between the government and Dutch industries concerning environmental performance.

Is it possible to conclude that after two decades of voluntary policy instruments environmental targets have been achieved?

Responsibility, or responsible entrepreneurship, has become a popular term. The concept of Corporate Social Responsibility (CSR) is supported by the European Commission, for its perceived positive economic, social and environmental consequences. Many companies do have a strategy on CSR.

This is heavily criticised by Porter and Kramer (2006). They argue that companies do use CSR for public image benefits only. In practice, the economic interest is still the core business, while other responsibilities are clearly peripheral interests. Porter and Kramer state that business and society are mutually dependent. A more profound stage of responsible entrepreneurship than CSR would be Creating Shared Value: a company's activities are aimed at both corporate profits and social progress simultaneously.

However, environmental problems still exist. All policies, being regulatory or voluntary, aim at 'improving' the environment by minimising emissions, limiting the use of toxic chemicals or restricting waste. Because we always want to satisfy our needs, we do not want to give up economic development in favour of the environment. Therefore, we try to be as efficient as possible: machines should produce more while simultaneously being 'cleaner' for the environment. But whatever we do, economic activities will always negatively affect the environment.

Michael Braungart and William McDonough argue that environmental problems should not be solved; instead, they should be prevented. Braungart and McDonough state that nature will not adapt to humans, in contrast, humans need to adapt to nature. Therefore, they take biological cycles as an example for human activities. In nature, waste does not exist. Id est, waste from a

tree (i.e. blossom, leaf) serves as food for animals or organisms. They convert 'waste' into nutrients for these plants or trees. In order to grow, a tree extracts nutrients and water from its environment. At the same time however, a tree gives food to its environment.

Industries should follow the example from nature. They produce a product that will be consumed by the customer. After use however, the product should not become waste. Instead, the product should be returned to the company in order to be disassembled. All materials of the products should be reused for new applications without a loss of quality. Here is a crucial difference with recycling: in the perception of Braungart and McDonough, recycling is basically *downcycling* because the quality of the product decreases, and after the product's second life, the materials still become waste. Materials should always be *upcycled*, i.e. reusing the materials infinitely in a so-called technical cycle without any loss of quality. As a result, materials do not end up as waste after the product's use, instead they serve as 'food' for new products. Thus, a material's life is not from cradle to grave, but from cradle to cradle.

Cradle to Cradle; that is how Braungart and McDonough have named their idea. In order to prevent environmental problems, products need to be smartly designed. In such a product design, detrimental materials will not be used. Products may contain materials that belong to the biological as well as the technical cycle, but when disassembling the product after use, it must always be possible that the material returns in its 'own' cycle.

Furthermore, in the production process only renewable energies, like solar or wind energy, should be used. A last requirement in the product design concerns the respect for diversity. A company should respect local people, local culture and the local environment.

Cradle to Cradle is not about efficiency and not about minimising. Instead, Cradle to Cradle is a positive philosophy. It is about effectiveness and optimisation. People do perpetually want to satisfy their needs, and by implementing Cradle to Cradle they can do so without harming the environment, and in some cases even contributing to the environment. Environmental problems will not exist in a Cradle to Cradle world. Cradle to Cradle might be the best way to deal with environmental problems, more than any regulatory or voluntary policy instrument.

However, Cradle to Cradle is far too holistic to be seen as a policy. For this reason, Cradle to Cradle cannot be implemented from one day to another. Braungart and McDonough therefore argue that the implementation of Cradle to Cradle should start with a specific product or process. In order to concretise their idea, Braungart and McDonough have developed a system for Cradle to Cradle certification. Products can be Cradle to Cradle certified at several levels

(basic, silver, gold and platinum) by a private certification agency (e.g. EPEA, EIG). A company that decides to design a product to be Cradle to Cradle certified, can be perceived to take a voluntary initiative to go beyond environmental regulation. In this context, Cradle to Cradle can thus be seen as a (voluntary) third party initiative.

Presupposing that the idea of Cradle to Cradle is worth pursuing, the question evokes how the implementation of Cradle to Cradle can be facilitated. A first strategy is to look at best practices. It turns out that compared to population, worldwide The Netherlands counts most companies that possess Cradle to Cradle certification. In other words: companies that do not only support the idea of Cradle to Cradle, but really put the first concrete step in implementing Cradle to Cradle. As not much research has been done on the implementation of Cradle to Cradle, this will be an explorative research. Of course further research has to be done, but a first step is to find an answer to the following research question:

“What have been the success factors of Cradle to Cradle implementation in The Netherlands?”

In order to find answers in a structured way, a first step is to look at success factors for voluntary initiatives that have already been researched, and subsequently applying these to Cradle to Cradle implementation in The Netherlands.

A voluntary initiative that has proved to be successful in The Netherlands, are the Dutch Covenants. Although these are negotiated agreements (i.e. a voluntary initiative with a private and public counterpart), it is perceived to be plausible that some of the success factors for Dutch Covenants will also apply to Cradle to Cradle.

Bressers and De Bruijn have studied Dutch Covenants and concluded that the policy climate, the threat of alternative (direct) regulation and the representativeness of the industrial sector are crucial factors for successful performance of the negotiated agreement.

Of course, success factors for Cradle to Cradle are not necessarily restricted to the success factors of Dutch Covenants identified by Bressers and De Bruijn.

Based on literature on voluntary approaches, this research also takes into account potential economic factors, factors that relate to the role of the government (although there is no agreement with the government, the government could of course make use of instruments that support Cradle to Cradle), and the stage of responsible entrepreneurship. Deciding to design

products according to the Cradle to Cradle concept can be perceived as a further step in responsible entrepreneurship than Corporate Social Responsibility or even Creating Shared Values. The main research question has thus been answered by addressing the following sub-questions first:

- 1) Did the success factors of Negotiated Agreements influence the implementation of Cradle to Cradle in The Netherlands?*
- 2) What are the economic factors that facilitate Cradle to Cradle in The Netherlands?*
- 3) What is the role of the government in facilitating Cradle to Cradle in The Netherlands?*
- 4) To what extent are Cradle to Cradle initiatives explained by responsible entrepreneurship?*

All nineteen Dutch companies that possess Cradle to Cradle certification have been asked to fill in an Internet-survey that deals with these sub-questions. With a rate of response of nearly 70%, the findings can be said to be quite representative for this population.

It can be concluded that a policy climate of consensus-seeking and joint-problem solving is conducive to Cradle to Cradle implementation in The Netherlands. In addition, the majority of the companies are in an advanced stage of responsible entrepreneurship. However, the main conclusion of this explorative research is that economic factors are the most important success factors for Cradle to Cradle implementation in The Netherlands. All companies state that they will have a competitive advantage by investing in Cradle to Cradle from now. The majority of them also believe that most competitors will implement Cradle to Cradle within a few years time.

Paradoxically, Cradle to Cradle is a very holistic concept that goes even further than the idea of Creating Shared Value. Nevertheless, economic factors proved to be the most success factors of Cradle to Cradle implementation.

Because the government's support of Cradle to Cradle implementation is inadequate according to the companies in this research, economic benefits are a crucial for Cradle to Cradle.

All companies expect that Cradle to Cradle implementation would increase when the government more actively facilitates the implementation.

Of course, further research is required in order to generalise success factors to other Dutch companies work with Cradle to Cradle without being certified yet, or even to other countries. A Cradle to Cradle world is not a utopia, but much more knowledge is certainly required.

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Acronyms and abbreviations

CEC	Commission of the European Communities
CSR	Corporate Social Responsibility
EAP	Environmental Action Programme
EEC	European Economic Community
EMAS	Environmental Management and Audit System
EPEA	Environmental Protection & Encouragement Agency
EIG	EcoIntelligent Growth
EU	European Union
ISO	International Organization for Standardization
LEED	Leadership in Energy and Environmental Design
MBDC	McDonough Braungart Design Chemistry
MEA	Multilateral Environmental Agreement
NEAPOL	Negotiated Environmental Agreements: Policy Lessons to be Learned
NEPP	National Environmental Policy Plan (“ <i>Nationaal Milieuplan</i> ”)
NEPI	New Environmental Policy Instruments
NGO	Non-Governmental Organisation
RCEP	Royal Commission on Environmental Pollution
SEM	Single European Market
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
WTO	World Trade Organization

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Writing a thesis like this would not be possible when living a hermit life. Of course, the social environment of family and friends unconsciously influences the ambitions and objectives you pursue. As always, some people deserve to be named here.

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Not every child gets access to higher education. From childhood onwards, my parents gave me the opportunities to develop and supported me to use these opportunities. Having confidence and patience was the kind of support that was needed while writing this thesis. Of course, I also want to mention my brother Jaap here. Home sweet home proved to be a safe, pleasant and fertile ground to develop. While writing this thesis, this also applied to my uncle, aunt and grandmother.

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But above all: Leonie was really able to empathise with me, as she understood and accepted that I needed to study and thus did not have time for her. Still, we're living happily together. This made it much easier for me to make good progress and finish my studies before travelling together to Rwanda. For this, I am grateful to her.

Different people have thus supported me to make me proud on this thesis. Of course, I am very happy that I have succeeded in finishing university education.

Thank you all for your support!

Preface

Someone who chooses to study for example dentistry, will be employed as a dentist. But what kind of profession is following after studying Public Administration? Studying Public Administration means being broadly educated in economics, politics, sociology and law. This variety is why I chose to study Public Administration. The international aspect appealed to me most. Therefore I specialised into European Studies, while still doing courses in economics, politics, sociology and law, albeit at the European Union level. Furthermore I completed the minor on Sustainable Development. In order to complete this minor, I did an internship in Bamako, Mali. While living and studying in Bamako, I concluded that I liked Sustainable Development much more than European Studies or Public Administration. What would have happened if I knew about this before going to university?

As I already reached quite an advanced stage in Public Administration and European Studies, I decided not to give up and simply continued studying Public Administration. In the meantime, I worked at the Ministry of Defence. As a consequence, I had to finish my studies alongside working. In order to succeed, it was important to find and maintain motivation. For my thesis, I tried to find a research topic that was related to Sustainable Development.

Ultimately, the concept of Cradle to Cradle inspired me to finish my studies. Although combining Cradle to Cradle with developing countries turned out to be impossible, the concept itself interested me very much. Cradle to Cradle is a new concept that has so far only been studied on a small scale. However, Cradle to Cradle is not a theoretical concept, foremost it deals with the real world. Cradle to Cradle concerns a complete change of our mind-set on products, processes and even lifestyle. It is a smart and positive concept, and it is to be hoped that one day the whole world thinks and acts Cradle to Cradle.

Here's the big advantage of the wide range of topics that relate to Public Administration. It is always possible to find an inspiring topic to graduate.

Chapter 1: Introduction

Humans do always have needs, and thus they do want to satisfy them perpetually. That causes problems of course. This may negatively affect other human beings, the local environment or even the planet. In order to manage the negative consequences, a 'neutral' authority is needed. This 'neutral' authority is called the government. The government is perceived to be an authority because it is able to enforce its will while taking into account the public interest. The government's will is called a policy and is usually translated into a law or regulation.

However, the government does not necessarily need to use direct regulation, i.e. laws or regulations, to effectively enforce its will. Under certain circumstances, voluntary initiatives could be even more effective. Environmental policy is one of the fields where voluntary initiatives have proved to be effective. This research focuses on voluntary action. Voluntary approaches have been widely discussed in literature and do have different interpretations. A voluntary initiative could contain a commitment towards the government. This is usually seen as a voluntary agreement. In The Netherlands, industries have negotiated environmental targets with the government. These negotiated agreements have been called 'covenants'. In addition to these kinds of voluntary initiatives, purely private initiatives exist. For instance, a third party can take an initiative that contributes to the environment. Industries can consequently join this initiative on a voluntary basis. ISO 14000 is an example of an initiative from a third party, in this case the International Organization for Standardization (ISO). ISO sets certain environmental standards, and companies can decide to commit themselves to these standards. In exchange, companies receive an ISO-certificate, from which they might gain public image benefits.

Whatever may be the voluntary initiative, all initiatives are, as direct regulation, based on the assumption that we 'contribute' to the environment by minimising emissions, restricting consumption and limiting our waste. In other words: we can only contribute to the environment by minimising. At the same time however, we still want to develop, because we do want to satisfy our needs. In order to combine both, we try to minimise harm to the environment by being as efficient as possible, i.e. doing more with less. We try to design less toxic products, make machines that consume less energy and are thus less polluting. But still, human activities negatively affect the environment, which makes us feel like guilty.

Economics versus the environment; what an annoying dilemma!

Isn't it possible to develop economically without harming the environment? Might it be possible that human activity even contributes to the environment? Is a future possible where we could satisfy our needs perpetually without harming other human beings, the local environment or even the planet? Imagining such a future might be perceived as woolly, idealistic, impossible or even utopia. It will certainly evoke many questions.

Michael Braungart, a German chemist and William McDonough, an American architect, have concretised this future. The very bottom-line of their idea is that human beings are part of nature, not the other way around. Braungart and McDonough take natural processes as the standard that serves as an example for humans. Nature's processes consist of continuous biological cycles. Braungart and McDonough take the cherry tree as a metaphor for human processes. A cherry tree extracts water and nutrients from its environment in order to grow. Consequently, it will bloom exuberantly. Thereafter however, all blossoms fall to the ground. These fallen blossoms could be seen as waste. However animals and microbes use its waste and convert it into soil nutrients, which are used as food again by the cherry tree. In other words: in biological cycles waste equals food.

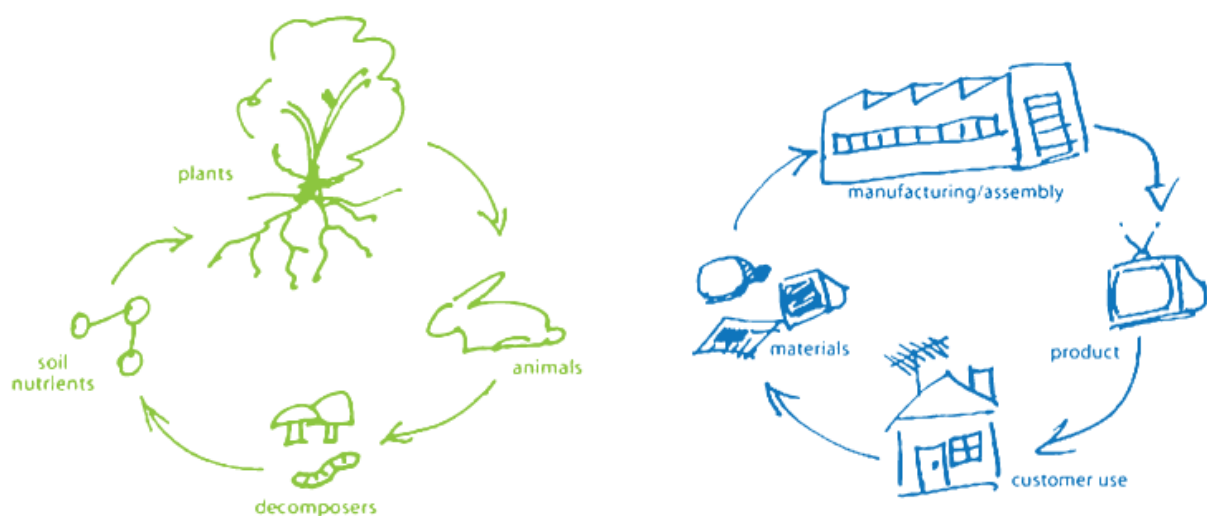


Figure 1: the biological cycle and the technical cycle (source: www.mbdc.com)

Braungart and McDonough argue that the life cycle of an industrial product should be comparable with a biological cycle. The crucial point is that after customer use, the product will not end as waste. In other words: the product's life cycle is not from 'cradle to grave'. In contrast, the product should return to the factory in order to be disassembled. The product's

materials could be used again in the same or in other applications, without any loss of quality. Id est the concept of Cradle to Cradle: even in the industrial cycle waste equals food. With Cradle to Cradle the knife cuts both ways: by eliminating the concept of waste, an enormous environmental problem is prevented from arising. At the same time, because materials are re-used infinitely, the continuous extraction of materials, and therefore the exhaustion of the planet's resources, will not be necessary. In addition, the Cradle to Cradle philosophy requires the use of renewable energies and respect for natural and human diversity. Braungart and McDonough state that environmental problems should not be solved, but rather prevented. Therefore a smart product design is required to produce a product that does not contain toxic or unsafe materials, or uses fossil energy resources instead of renewable energy sources. Cradle to Cradle is about effectiveness instead of efficiency, about optimisation instead of minimising. This requires a revolutionary change in the way we think about product design and product use: our mind-set should be based on 'cradle to cradle' instead of 'cradle to grave'. This however means that a whole system has to be changed. Braungart and McDonough argue that a new industrial revolution will ultimately result in a future where we could satisfy our needs perpetually without harming other human beings, the local environment or even the planet.

Braungart and McDonough have elaborated their philosophy to the very practical and concrete level. Companies can fulfil certain Cradle to Cradle requirements with regard to the products they produce. In exchange, they will receive a Cradle to Cradle certificate from a private party for the concerning product. Although Cradle to Cradle is far more comprehensive than only one aspect of environmental policy or a couple of requirements, it can still be seen as a voluntary initiative.

The presupposition of this research is that Cradle to Cradle is worth pursuing. Today, the concept of Cradle to Cradle is in its infancy and therefore only implemented on a small scale. The first question that consequently evokes is what can be done to support the implementation of Cradle to Cradle? In order to answer this question it can be helpful to look at best practices of Cradle to Cradle implementation. Of course, there are different ways to define a best practice. It is possible to look at companies that support the idea and aim to work with it. Another option is to look at companies that already work with Cradle to Cradle. The most objective and concrete way however, is to look at companies that already possess Cradle to Cradle certification. In absolute numbers, the United States count most companies that possess

Cradle to Cradle certification. If these absolute numbers are corrected for population, an interesting conclusion can be drawn. Table 1 gives a top ten overview of companies that possess Cradle to Cradle certification per capita. The Netherlands is the leading country in this overview. It should be noted that the figures are not based on the company's number of certified products and that the level of certification (products can be certified in the categories basic, silver, gold and platinum) is not taken into account as well. However, it is expected that these figures will not change the ranking of these countries a lot. The Netherlands can be said to be a best practice.

	Country	Ratio
1.	The Netherlands	1,19
2.	Switzerland	0,39
3.	Belgium	0,38
4.	United States	0,23
5.	Denmark	0,18
6.	Austria	0,12
7.	Australia	0,09
8.	Spain	0,09
9.	United Kingdom	0,08
10.	Germany	0,06

$$\text{Ratio} = 1,000,000 * (\text{number of companies that possess Cradle to Cradle certification} / \text{population})$$

Table 1: Number of companies that possess Cradle to Cradle certification per capita

If we take The Netherlands as a best practice of Cradle to Cradle implementation, it is of course very interesting to identify what factors have resulted in the implementation of Cradle to Cradle in this country. This explains the main research question of this thesis: “What have been the success factors for Cradle to Cradle implementation in The Netherlands”?

How to find the answers to this question in a structured way? Cradle to Cradle can be perceived as a voluntary initiative. Thus, it can be useful to look at factors that have been identified as successful with regard to voluntary initiatives, and consequently try to apply them to Cradle to Cradle implementation in The Netherlands. Another voluntary initiative that performs well in The Netherlands is the covenant. Although this is an agreement with the government and thus different from a third party initiative like Cradle to Cradle, potential success factors could be distilled that also might apply to Cradle to Cradle implementation in The Netherlands. Bressers and De Bruijn have studied Dutch covenants. The factors they studied will be applied in this research.

Of course, Cradle to Cradle implementation in The Netherlands could be explained by more factors than only those identified for Dutch covenants. Therefore, additional potential success factors are studied, based on explanations for voluntary initiatives that are identified in literature. These additional potential factors can roughly be categorised in economic factors, factors with regard to the role of the government and factors with regard to the stage of responsible entrepreneurship.

A survey will be used in which Dutch companies that possess Cradle to Cradle certification will be asked about the identified potential success factors in the study of Bressers and De Bruijn on Dutch covenants and in literature on voluntary initiatives.

Cradle to Cradle is a worldwide concept. When success factors of Cradle to Cradle implementation in The Netherlands have been identified, it is of course interesting to know which of these factors are exclusively applicable to the Dutch context, and which factors are applicable to other countries as well. However, this interesting question is beyond the scope of this research. On the one hand, except for the United States the absolute number of companies that possess Cradle to Cradle certification is too low to be able to study. This would only be possible if the concept of successful implementation of Cradle to Cradle would be broader than only certified companies. On the other hand, comparing Dutch performance of Cradle to Cradle with other countries, requires not only knowledge of *what* the success factors are in The Netherlands, but also *why* these are success factors. In other words, in order to answer these kinds of questions, explanatory research would be necessary. This research however is exploratory.

This research focuses on exploring success factors of Cradle to Cradle implementation in The Netherlands. Far more research is needed in order to understand successful - and inhibitory - factors of Cradle to Cradle. This knowledge can help in developing and expanding the Cradle to Cradle philosophy, thereby coming closer to a real Cradle to Cradle world. A world in which environmental policy does not exist and discussions about regulatory or voluntary instruments are useless. But above all, a positive world where products and processes are optimised in order to be able to contribute to the natural and social environment and enjoying economic welfare at the same time.

Chapter 2: Theoretical background

2.1. Environmental Policy

Environmental policies are of course a reaction to environmental decline supposedly caused by human activities. In the following, environmental policies are discussed in general, starting at the international level, and continuing to the national level.

2.1.1. European Union Environmental Policy: from laggard to leader

As wind blows and water flows, environmental problems are not limited to country borders. Environmental problems are international problems and should therefore be solved on an international level.

Until the mid 1980s the United States was a worldwide leader in environmental policies, but since then, roles have been reversed. Kelemen (2007) identifies two reasons for this reversal, one being electoral and the other being economic.

In a parliamentary democracy policy interests are a reflection of the electoral process. Whereas in the United States the relative importance of environmental issues declined, the influence of 'green' political parties in major Member States increased in the mid 1980s. This resulted in ambitious environmental targets that were to be met by environmental regulation. However, this negatively affected competitiveness of businesses in the Member States concerned, as they had to cope with the burden of (far reaching) environmental regulations, which of course meant extra costs for these businesses, whereas competing businesses in other Member States did not have this regulatory burden. "Green power at national level was magnified by the dynamics of regulatory politics in the EU. EU institutions such as the European Commission and the European Parliament had strong incentives to favour a greener EU" (Kelemen, 2007: 2).

In the mid 1980s, the European Economic Community (EEC), forerunner of the current European Union (EU), was aspiring a Single European Market (SEM). In order to meet this

goal, while incorporating environmental ambitions, environmental regulations were harmonised. So, green powers at national levels could convert their environmental ambitions into regulations via the European level. As a result, (far reaching) environmental regulation applied to all Member States, which in turn placed the European Union among the countries with the highest environmental standards (Kelemen, 2007).

The second reason for the reversed roles of the European Union and the United States concerns the economic aspect and is basically a follow-up of the electoral results. Harmonised environmental regulations dealt with strict requirements on e.g. air and water pollution, waste management and chemical safety regulations. Businesses within the European Union face the burden of environmental regulation, imposing extra costs on them in order to meet the standards. Companies in non EU-countries do not face these environmental regulations. Consequently, companies within the EU reduced their product quality in order to maintain competitiveness (Kelemen, 2007).

EU policy makers have since tried to spread EU environmental standards throughout the world. Not only for the sake of positive environmental commitment, but also because of international competitiveness. The EU makes use of two strategies to *globalise* environmental standards.

First, it plays an active role with regard to international environmental treaties (or Multilateral Environmental Agreements (MEAs)), like the Rio Earth Summit or the Kyoto Protocol. Second, it tries to influence international trade rules of the World Trade Organisation (WTO). The EU environmental standards pose legal challenges concerning the WTO trade rules, as the WTO could possibly classify environmental regulation as a non-tariff barrier to trade. The European Union pursues “international trade rules to permit trade restrictions that are based on environmental objectives” (Kelemen, 2007; 5).

The European Union currently has a leading position in the world with regard to environmental regulation and within this regulatory framework of the EU, countries have developed their own environmental policies.

2.1.2. Environmental Policy in The Netherlands

Environmental policy in The Netherlands is highly influenced by European environmental policy. More than 80% of Dutch environmental regulation is determined directly or indirectly by 'Brussels' (Wesselink & Van Wijk, 2003). European regulation has to take the principles of *subsidiarity* and *proportionality* into account. The principle of subsidiarity means that the European Union may only impose regulation on Member States if European regulations turn out to be more effective than regulations on the national, regional or local level. The principle of proportionality means that each Member State itself is allowed to decide how it will meet EU targets.

These principles ensure the autonomy of Member States. This explains why environmental policy is existent in The Netherlands, and moreover why e.g. the Dutch environmental policy may differ from environmental policy in any other EU Member State.

In The Netherlands, environmental targets have been compiled in a National Environmental Policy Plan (NEPP, or in Dutch: *Nationaal Milieuplan* (NMP)) since the 1980s. The 1989 NEPP was supplemented in the NEPP+ (1990), NEPP 2 (1993) and NEPP 3 (1997). Since 2001 NEPP 4, which was a reaction to inadequate measures in NEPP 3, has applied. NEPP 4 is characterised by its long term targets, formulated until 2030.

The overall target of the current Dutch environmental policy focuses on a sustainable society. Sustainability is defined as satisfying the current generation's needs in such a way that will not be at the expense of future generations. Furthermore, environmental problems may not be passed on to people living in other countries.

It goes without saying that environmental targets have been specified qualitatively as well as quantitatively. Measures to be taken include minimising emissions, especially the main carbon dioxide CO₂, and restricting dangerous or toxic waste. With regard to sustainability, the Dutch environmental policy supports the use of renewable energies.

The government also supports emissions trading. Each company faces restrictions with regard to the emission of greenhouse gases. If a company emits more than the limit set by the government, it can buy emission rights from companies that emit less than their entitlement to. Emissions trading encourages companies to restrict their emission, as they can save money or even make money. In order to diminish total emission, limits will be adjusted gradually. It is to be expected that emissions trading will expand enormously in the short term, and be an

efficient measure in minimising harm to the environment in the long run (Hill, Jennings & Vanezi, 2008).

The Dutch government imposes direct regulation, i.e. environmental laws and regulations, on companies and citizens in order to achieve environmental targets. These regulations consist of prohibitions, environmental taxes or subsidies.

One of the objectives of NEPP 4 is to emphasize the responsibility of businesses, industries, agriculture, consumers and other stakeholders in order to meet environmental targets.

Strikingly, The Netherlands has already had a successful tradition of more than two decades of voluntarily established covenants, which can be seen as the outcome of shared responsibility. So, environmental policy instruments can be compulsory (i.e. direct regulations) or voluntary, e.g. covenants.

2.2. Voluntary Approaches

Today, voluntary approaches are an indispensable policy instrument. Especially in environmental policy the voluntary approach has been widely applied. What does this voluntary approach encompass? Why is this approach used when a compulsory policy instrument is the alternative?

2.2.1. Dissatisfaction with the traditional approach

Until the 1980s, environmental protection was perceived as an additive in European countries and thus in the European Economic Community (EEC). The traditional approach focused primarily on *end-of-pipe* solutions for environmental protection. This means technologies were applied to decrease e.g. CO₂ emission of industries. End-of-pipe regulation could be applied on a large scale and was achieved by direct regulation, i.e. environmental laws and regulations. End-of-pipe solutions, however, ignored the production process; the use of energy or input of materials; they were not taken into account (Hey, 2005).

Due to the increased influence of environmentalists in the 1980s, the approach towards environmental protection changed fundamentally ¹. The traditional approach was perceived to be inadequate for the protection of the environment. A more integral system was developed, emphasizing sustainable development. In line with the 1987 United Nations Brundtland Report (titled “Our Common Future”), the concept of sustainable development was incorporated in the 1992 5th Environmental Action Programme (EAP) of the European Union. The 5th EAP is perceived to be an action programme for structural change, not only because of its different approach towards environmental protection, but also with regard to the policy instruments that could be used. The traditional approach only focused on direct regulation by the government. Meanwhile, the 5th EAP emphasizes the use of new instruments, “especially on market-oriented instruments such as fiscal incentives or voluntary instruments, which strengthen producers’ and consumers’ own interests in environmental decision-making” (Hey, 2005: 23). Furthermore, a consensus-oriented approach should take non-governmental actors into account (Hey, 2005).

Thus, the new approach coincides with new environmental policy instruments.

¹ The rising influence of environmentalists in Europe has already been discussed in chapter 2.1.1.

2.2.2. New Environmental Policy Instruments

Roughly until the mid 1980s environmental policy contained only regulatory tools, i.e. direct government regulation. Since then, a wide range of new policy instruments have come into existence. Börkey et al. (1998) now indentifies three overall categories of instruments:

- regulatory instruments: environmental laws and (direct) regulations
- economic instruments: firms or consumers are given financial incentives
- voluntary instruments: commitments made by firms to go beyond regulation

Jordan et al. (2005) distinguishes between regulatory tools and ‘newer’ tools of environmental policy, which is abbreviated to NEPIs (New Environmental Policy Instruments).

Subsequently, the NEPIs are subdivided into four sub-types (Jordan et al., 2005):

- market-based instruments
- eco-labels
- environmental management systems
- voluntary agreements

Market-based instruments use market forces to “internalise the cost of polluting activities in a more cost-efficient manner than regulation” (Jordan et al., 2005: 11). Examples include eco-taxes, subsidies and tradable permits (e.g. emissions trading).

Eco-labels provide information to consumers in a standardised way, allowing them to consider whether or not to buy a product for environmental reasons. Eco-labels therefore rely on a kind of moral suasion (Jordan et al., 2005).

An environmental management system assesses the way a company manages the environmental impact of its activities. Independent organisations, like the EU’s EMAS (Environmental Management and Audit System) and ISO’s (International Organization for Standardization) ISO 14001 have set standards with regard to environmental issues within the management of a company. Such an EMS requires companies to “audit the environmental impact of their activities, establish internal management systems to monitor and where possible reduce these impacts, and provide stakeholders with a regular statement of their activities” (Jordan et al., 2005: 12). Companies that fulfil the requirements will be certified.

Participation is optional, although for instance ISO 14000 certification has been given a compulsory status through market forces.

Jordan et al. (2005) note that an agreed definition of Voluntary Agreements still does not exist. The European Commission define Voluntary Agreements as “agreements between industry and public authorities on the achievement of environmental objectives” (Jordan et al. 2005: 12). Carraro and Lévêque use the terms ‘voluntary agreements’ and ‘voluntary approaches’ interchangeably. In contrast to the European Commission, they specify their definition: “Voluntary approaches are commitments from polluting firms in improving their environmental performances. They include three main different instruments: environmental negotiated agreements between industry and public authorities, unilateral commitments made by polluters, and public voluntary schemes developed by environmental agencies” (Carraro & Lévêque, 1999: 1). Contrary to Carraro and Lévêque, Croci (2005) distinguishes between ‘voluntary approaches’ and ‘voluntary agreements’, but uses the same definition of Voluntary Agreements as the European Commission.

According to Croci, “voluntary approaches in environmental policies are based on the idea that, under certain conditions, firms can decide to commit themselves to go beyond regulation” (Croci, 2005: 6). In general this commitment is taken on the basis of a cost and benefit analysis. Croci (2005) identifies the following categories of voluntary approaches:

1. voluntary public schemes
2. negotiated agreements
3. unilateral commitments recognised by the Public Administration
4. unilateral commitments
5. third party initiatives
6. private agreements

Croci argues that with regard to Voluntary Agreements, a private and a public counterpart need to be clearly identified (Croci, 2005). Voluntary public schemes (1), negotiated agreements (2) and unilateral commitments recognised by the Public Administration (3) fulfil this criterion and are thus identified as Voluntary Agreements by Croci. Note that these policy instruments are in accordance with the instruments identified in the definition of Carraro and

Lévêque cited above. The other voluntary approaches identified by Croci do not have a private and public counterpart.

Unilateral commitments (4) are a form of self-regulation. Industries can create own their programs or codes of conduct in order to improve environmental performances. Monitoring can be arranged by the industries themselves or by a third party chosen by the industries.

Third party initiatives (5) are “programs designed by third parties open to the participation of individual firms”. They are similar to voluntary public schemes, but differ from them in that there is no agreement with a public body, but with private organisations only. According to Croci, ISO is such a private organisation, with ISO 14000 as third party initiative.

Private agreements (6) are a result of negotiations between industries and victims of these polluting industries, without any public intervention.

2.2.3. Voluntary Agreements

The policy instruments that Croci (2005) identifies as Voluntary Agreements, coincide with the policy instruments that Carraro and Lévêque (1999) identify as Voluntary Approaches: voluntary public schemes, negotiated agreements and unilateral commitments recognised by the Public Administration.

According to Carraro and Lévêque, in a voluntary public scheme “firms agree on standards (related to their performance, their technology or their organising) which are developed by environmental agencies” (Carraro & Lévêque, 1999: 2). Croci adds the requirement of a public and a private counterpart to this definition (Croci, 2005). For this reason, Croci sees the ISO, a private organisation, as a third party initiative, whereas Carraro and Lévêque indentify the ISO as a voluntary public scheme (Carraro & Lévêque, 1999; Jordan et al., 2005).

Negotiated agreements are bargained contracts between public authorities and industry, containing environmental targets and a time frame within which these targets have to be met. Negotiations can be initiated by both private or public organisations. The agreement leads to obligations for all parties: industries do have the obligation to meet the environmental targets, whereas the public authorities should provide administrative, economic or information access

benefits (Crocì, 2005). Carraro and Lévêque (1999) add to this that the public authority generally will withhold from introducing new legislation, unless these voluntary negotiated agreements fail to achieve their target. Nevertheless, “the voluntary agreement may be legally binding (as in The Netherlands) or not (as in Germany), depending on whether executive branches of government are empowered by national constitutions to sign such agreements with organised interests” (Carraro & Lévêque, 1999: 3).

“Unilateral commitments consist of environmental improvement programmes set up by firms themselves and communicated to their stakeholders” (Carraro & Lévêque, 1999: 2). Croci (2005) perceives a unilateral commitment to be a Voluntary Agreement when firms ask the Public Administration to recognise the commitment in order to increase the credibility of their commitment. “In this case the Public Administration can perform monitoring or define guidelines regarding the implementation of the commitment” (Crocì, 2005: 8). Unilateral commitments are a form of self-regulation.

Jordan et al. (2005) divided New Environmental Policy Instruments (NEPIs) into four categories: market-based instruments, eco-labels, environmental management systems and voluntary agreements. In the categorisation of Croci however, eco-labels and environmental management systems are examples of a voluntary public scheme, and thus belong to a voluntary agreement (Crocì, 2005). This is exactly what Jordan et al. (2005) indicate: there is still not an agreed definition on what voluntary agreements are, and what they are not.

Crocì (2005) distinguishes between agreements with a private as well as a public counterpart and agreements without a public counterpart. Voluntary agreements are always agreements that can be influenced by the Public Administration. Croci (2005) uses an economic perspective in order to explain the added value of a public counterpart in a voluntary agreement. “Environmental voluntary agreements try to remedy market failures differently from traditional regulatory and economic instruments. In fact, they are based on the exchange between the Public Administration and firms and on the design of a framework of incentives to parties in a context of negotiation and cooperation” (Crocì, 2005: 3).

From an economic perspective, environmental problems are negative externalities. This means that costs are incurred by society, whereas polluting industries have caused these costs, without the society’s consent. As environmental problems cannot be reallocated by the market,

a Pareto-efficient situation (i.e. a situation where “no one can be made better off by changing the allocation of resources without anyone becoming worse off” (Douma & Schreuder, 2002: 30)) will not be achieved. Therefore, intervention of the government will be necessary. In economic terms, the government should impose measures in order to achieve a Pareto-efficient situation, i.e. an efficient level of pollution. However, this assumes that the government possesses perfect knowledge of causes and consequences of environmental pollution for each industry (Crocì, 2005). In practice, this is of course not the case. The government therefore should collaborate (in a context of negotiation and cooperation) with the industries themselves, as they are the best option to obtain knowledge about their industry’s impact on the environment. In other words, direct regulation will prove to be inadequate. The government should use renewed environmental policy instruments that appeal to the necessity of collaboration with industries. Voluntary approaches do appeal to this necessity.

Following Croci’s definition, the voluntary approach that contains an agreement between a private and a public counterpart, is perceived as a voluntary agreement (Crocì, 2005). The economic theory elaborated above, is an explanation of a situation in which the government will rationally enter a voluntary agreement. But why should firms embark on a voluntary agreement?

Crocì (2005) describes incentives that rationally ensure firms to embark on a voluntary agreement with the government, and thereby commit themselves to go beyond regulation. According to the neoclassical economic theory, a firm’s rational behaviour results in maximising its utility. Assuming this to be true, entering a voluntary agreement that commits a firm to reduce environmental harm would not be rational. Therefore, “any voluntary action would be irrational” (Crocì, 2005: 12).

However, voluntary agreements exist, and they can be rationally explained by looking at the individual considerations of firms. Croci (2005) identifies seven of these considerations:

- to avoid (or procrastinate) stricter regulation
- to obtain flexibility by complying with the regulation: having the freedom to choose specific technologies or measures to meet targets set by the government;
- to induce the government to adopt a stricter regulation: attractive for firms that are into new technology, competitors would have to bear relevant costs to reach the same standard;

- to cut costs through pollution prevention: firms enter a voluntary agreement in order to have access to all relevant information about technological options;
- to get access to credit for profitable investments: benefits from investments that reduce pollution may come over a long period, but firms may not have access to credit for such investments. The government can grant access to credit using specific agreements with financial institutions;
- to obtain tax exemptions or incentives
- to gain reputation

Thus, voluntary agreements can rationally be attractive for firms to embark on. In addition, Croci identifies another advantage of voluntary agreements: “The process in which stakeholders are involved to reach a voluntary agreement can contribute to build trust among actors and consensus on targets, which can positively affect the implementation phase and reduce monitoring and enforcement costs” (Croci, 2005: 23).

2.2.4. Characteristics of Voluntary Agreements

Beside their content, voluntary agreements also vary from each other with regard to their characteristics. Dalkmann et al. (2005) identify five characteristics of voluntary agreements:

- product versus process oriented: is the environmental performance aimed at improving the product or the process?
- target-based versus implementation based: is the voluntary agreement aimed at achieving an identified target, or has this target already been decided on by regulation?
- binding versus non-binding: does the voluntary agreement induce sanctions in case of non-compliance, enforceable by law?
- individual versus collective liability: is the agreement individual or collective (i.e. signed by a representing branch organisation)?
- open versus closed access to third parties: do community organisations or environmental groups play a role in the voluntary agreement?

In addition, Mol et al. (2000) use the aspects of *jointness* and *voluntariness* to characterise a voluntary agreement. Jointness is the extent to which policies are jointly formulated and

implemented by public and private parties. Voluntariness is concerned with the extent to which the agreement is legally binding. Successful and unique examples of a voluntary agreements that have a high jointness and low voluntariness can be found in The Netherlands, where numerous covenants have been agreed between private and public counterparts.

2.3. Dutch Covenants

One of the voluntary approaches is the negotiated agreement. “Negotiated agreements are the key instrument of the National Environmental Policy Plan in The Netherlands, where they are called covenants. Covenants related to reduction of greenhouse gas emissions and other pollutants have been signed with more than fifty industry sectors, including industries dominated by large companies such as oil and chemical industries but also including sectors dominated by small and medium-sized enterprises such as textiles, leather, dairy, printing and packaging printers” (Cararo & Lévêque, 1998: 3).

The Netherlands has a leading role with regard to negotiated agreements, but what are the conditions for the success of these negotiated agreements?

2.3.1. Call for change

In the 1980s The Netherlands faced the same changes in environmental policies as elsewhere in the world. “New ambitions and the lack of confidence in traditional approaches called for a strategy and style other than the authoritarian style that accompanied the use of direct regulation. The new strategy aims specifically at eliciting private initiative and ‘shared responsibility’” (Bressers & De Bruijn, 2005a: 242). The licensing system showed huge deficiencies in The Netherlands. Procedures took too much time, inspections were costly and flexibility was lacking (Bressers & De Bruin, 2005b).

Instead, international development, including the Brundtland Report and the Fifth Environmental Action Programme, also affected The Netherlands. In reaction to these developments, the National Environmental Policy Plan (NEPP) was designed. Initially, this NEPP presented ambitious targets, but showed inadequacy with regard to the way these targets could be achieved. In 1990, its successor, NEPP+, emphasized the necessary changes in policy strategy. Target groups would have to take more responsibility in order to achieve the environmental targets. Subsequently, consultations were held with representatives of the main industry branches. Once these consultations led to an agreement on what the branch would contribute to the environment, this negotiated agreement was recorded in a covenant in most cases (Bressers & De Bruin, 2005b: 264). Meanwhile, there are dozens of covenants in The Netherlands.

2.3.2. Neapol project

Prior to the study implemented by Bressers and De Bruijn on Dutch environmental covenants, the Neapol project (Negotiated Environmental Agreements: Policy Lessons to be Learned) researched 12 negotiated agreements in six European countries. This research comprised four hypotheses on the relationship between the institutional-economic context and the performance of the negotiated agreement (Bressers & De Bruijn, 2005a).

Policy style hypothesis:

The fact that the public environmental policy evolves in a tradition and climate of consensus seeking, joint problem solving, mutual respect and trust is a crucial positive factor for the performance of negotiated agreements.

Instrumental hypothesis:

The fact that public policy makers show a willingness to use alternative policy instruments as an incentive to deal with environmental problems (in case the negotiated agreements fail) is a crucial factor for the positive performance of negotiated agreements.

Sectoral hypothesis:

The fact that the industry sector involved is homogeneous, has a small number of players, is dominated by one, possibly two players or has a powerful industry association that can speak for all its members are crucial factors for the positive performance of negotiated agreements.

Competition hypothesis:

The fact that firms can gain competitive advantages due to consumer pressure by co-operating in negotiation and by compliance with a negotiated agreement is a crucial factor for the positive performance of negotiated agreements.

The Neapol project did conclude that correlations are strong for the policy style, instrumental and sectoral hypotheses. However, the collected data did not support the competition hypothesis (Bressers & De Bruijn, 2005a).

During 2002 and 2003, Bressers and De Bruijn executed a study on 57 Dutch environmental covenants that was based on the four hypothesis of the Neapol project. Hereto Bressers and De Bruijn added some new features.

2.3.3. Contextual interaction theory

Negotiated agreements arise through communication between at least two parties. The way in which this communication, or ‘social interaction process’ in the terminology of Bressers and De Bruijn, takes place, strongly affects the performance of the negotiated agreement between these two parties. The *contextual interaction theory* states that the social interaction process can be explained by “the combined values of the actors’ motivation, information and relative power” (Bressers & De Bruijn, 2005a: 243). The final outcome will predict the type of interaction and its probable effects. If negotiations take place in a climate of consensus seeking, joint problem solving, mutual respect and trust (cf. the Neapol project’s policy-style hypothesis), the effects will be the following (Bressers & De Bruin, 2005a):

- with regard to the actors’ motivation: both parties will not demand extreme efforts from each other, because both are not willing to risk a long term trust relationship;
- regarding information: an open and credible exchange of information;
- regarding power: the other party will not be abused for a short term goal, as this would affect the (high) level of trust.

With regard to the ‘policy style’ factor, Bressers and De Bruin see trust as a crucial factor.

In their study on Dutch environmental covenants, Bressers and De Bruin (2005a) added the climate of trust, as well as the level of self-responsibility, with regard to the ‘policy style factor’. With regard to the factor of ‘sector homogeneity’ of the Neapol project, Bressers and De Bruin state that: “it is an important condition for well functioning negotiated agreements that the sector has representatives that are strong enough to really negotiate on its behalf, including the legitimacy to accept compromises with original stakes when making a deal”.

In the Neapol project ‘consumer pressure’ turned out to have no correlation with the performance of negotiated agreements. In the research on Dutch covenants, however, possible consumer pressure certainly correlated with the success of negotiated agreements.

2.3.4. Additional explanatory factors

In search for other explanatory factors, Bressers and De Bruijn (2005a) added five workshops to their research, covering a total of eight covenants. Participants agreed on the four “Neapol” factors, and added new insights.

The first additional explanatory factor does concern *initial* trust. Of course, clear and quantified targets are necessary in order to design an effective covenant. But flexibility towards the implementation should not be constrained, as flexibility is one of the main reasons to enter a negotiated agreement. Agreements should not stipulate every detail. Some aspects should be left to the partners’ discretion. This is only feasible if partners embark on a basic level of trust.

Secondly, in addition to the instrumental factor of having a stick behind the door, participants added the notion of “having a stick *before* the door”. It is necessary to have a clear motive to enter a voluntary agreement. Examples that were given include a government’s threat to impose stricter regulations, and a public opinion that made industry realise change is inevitable. “Successful negotiated agreements arise from a *sense of urgency* from all partners” (Bressers & De Bruin, 2005a: 252).

Thirdly, covenants need to be embedded in the policy system. “Voluntary approaches are very seldom used as ‘stand-alone’ instruments. Instead they tend to form part of policy packages involving one or several other instruments, like some type of “command-and-control” regulations, taxes, tradable permits, etc.” (Braathen, 2005: 335).

Fourthly, successful covenants depend on the level of information. If there is insufficient information about the environmental problem, it is very difficult to establish clear targets. On the other hand, too much information facilitates direct regulation, because transaction costs of negotiations are too substantial to bargain when details on targets and the way these targets have to be met, are known. Covenants are most suitable when environmental problems urge further exploring before solutions are found (Bressers & De Bruin, 2005a).

Last but not least, the effectiveness of the negotiating process itself affects the performance of a covenant. During negotiations all major disagreements have to be discussed, in order to avoid conflicts later on. Well-developed negotiating processes are thus of crucial importance (Bressers & De Bruin, 2005a).

Bressers & De Bruin (2005a) conclude by saying that “consultation and collaboration, central characteristics of the use of covenants, are likely to flourish better in more corporatist context characterized by pragmatic bargaining and consensus building between administrative and societal actors than in a more adversarial system. The use and effectiveness of negotiated agreements is, therefore, more easily realized in some countries than others” (Bressers & De Bruin, 2005a: 253). Apart from socio-economic differences, the stage of responsible entrepreneurship also determines whether a negotiated agreement can succeed, or that other voluntary initiatives may be more suitable to meet the needs of an industry or country (Crocì, 2005). Even though the successful implementation of negotiated agreements may vary from country to country, “business leaders all over the world regard the Dutch approach as a promising example of how public policy can accommodate corporate social responsibility endeavours into business itself” (Bressers & De Bruin, 2005a: 241).

Indeed, the new strategy by the end of the 1980s aimed “specifically at eliciting private initiative and ‘shared responsibility’” (Bressers & De Bruin, 2005a: 242). Apparently, there is a correlation between the new strategy and corporate social responsibility.

2.4. Responsible entrepreneurship

By the end of the 1980s, the concept of “shared responsibility” had been added as a new aspect to Dutch environmental policy. This concept, however, did not solely apply to Dutch environmental policy. On the contrary, appealing to the responsibility of industries or companies with regard to the environment, was an international phenomenon. “Clearly, business is a vital part of the solution. We increasingly rely on business not only to reduce the environmental impact of products and services, but also for the innovative and entrepreneurial skills we need to help meet sustainability challenges” (UNEP, 2002: 3).

Thus, business is perceived to be important in order to achieve environmental improvement. Of course, *feeling* responsible must be converted into *acting* responsibly. This evokes the question of how a company should act responsibly in an effective way. “Everyone – from top management to local employees, from shareholders to customers – wants to know how a company sees its mission in terms of economic, environmental and social performance. And that’s just the beginning. The vision needs to be translated into objectives and targets; indicators have to be developed that enable progress towards these targets to be measured; and the results must be accessible to all” (UNEP, 2002: 3).

Responsible entrepreneurship thus needs to be anchored in a strategic plan. The striking part in this quote however, relates to the clause “economic, environmental and social performance”. The United Nations broadens the concept of responsibility according to the adage *People, Planet, Profit*. This kind of responsible entrepreneurship can improve competitiveness and sustainable business opportunities. Moreover, it makes voluntary initiatives more robust (UNEP, 2002).

2.4.1. Corporate Social Responsibility

The voluntary environmental approaches or agreements that were discussed so far, are more robust when they are embedded in a company’s philosophy on responsible entrepreneurship. Corporate Social Responsibility (CSR) is a well-known concept that has been associated with responsible entrepreneurship. As the name suggests, originally the social aspect was emphasized and responsibility referred to a firm’s voluntary contributions to society. Over time, the concept developed and has been given a broader interpretation (Carroll, 1999). The

European Commission defines corporate social responsibility as “a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis” (CEC, 2006: 5). Jordan et al. (2005) argue that many corporate social responsibility activities would be *unilateral commitments*. “Unilateral commitments consist of environmental improvement programmes set up by firms themselves and communicated to their stakeholders” (Carraro & Lévêque, 1999: 2). Corporate social responsibility has a broader scope than only environmental improvement programmes, but still a firm has to commit itself to an improvement programme which it communicates to its stakeholders.

According to theory, unilateral commitments are a form of self-regulation. Nevertheless, comprehensive strategies have been developed by public organisations, notably by the European Commission. Due to the voluntary character, enterprises practicing corporate social responsibility decide to go beyond minimum legal requirements. Therefore, the European Commission concludes that “through CSR, enterprises of all sizes, in cooperation with their stakeholders, can help to reconcile economic, social and environmental ambitions” (CEC, 2006: 2). Consequently, the Commission calls on the European business community to “publicly demonstrate its commitment to sustainable development, economic growth and more and better jobs, and to step up its commitment to CSR” (CEC, 2006: 2). This call for corporate social responsibility has been done in the context of the Lisbon Agenda, a development plan for the EU’s economy between 2000 and 2010 that aimed at making the EU “the most competitive and dynamic knowledge-based economy in the world capable of sustainable growth with more and better jobs and greater social cohesion”. CSR has been perceived as an important instrument to achieve this. In order to facilitate CSR, the European Commission has created a “European Alliance for CSR”, an open alliance for enterprises that support corporate social responsibility. The alliance should create new partnerships and new opportunities for stakeholders with regard to CSR (CEC, 2006).

Although the European Commission is very enthusiastic about corporate social responsibility, Porter and Kramer (2006) are critical of the concept. In contrast to definitions of CSR, they argue that corporate attention to CSR has not been entirely voluntary. “Many companies awoke to it only after being surprised by public responses to issues they had not previously thought were part of their business responsibilities” (Porter & Kramer, 2006: 3). Activist

organisations have proven to be more aggressive and effective with regard to organising public pressure on companies. In reaction to this, companies improved their public relations and developed media campaigns as well as glossy CSR reports. These reports however “rarely offer a coherent framework for CSR activities, let alone a strategic one. Instead, they aggregate anecdotes about uncoordinated initiatives to demonstrate a company’s social sensitivity. What these reports leave out is often as telling as what they include. Reductions in pollution, waste, carbon emissions, or energy use, for example, may be documented for specific divisions or regions but not for the company as a whole. Philanthropic initiatives are typically described in terms of dollars or volunteer hours spent but almost never in terms of impact. Forward-looking commitments to reach explicit performance targets are even rarer” (Porter & Kramer, 2006: 3). If the implementation of the concept of corporate social responsibility is inadequate, what should be done in order to ameliorate this situation?

2.4.2. Creating Shared Value

To start with, Porter and Kramer (2006) identify four arguments that have been given to explain why companies should practice corporate social responsibility: moral obligation, sustainability, license to operate and reputation.

Moral obligation appeals on the moral duty to be good corporate citizens. This refers to ethical values and respect for people and the environment.

Sustainability means that companies should operate in accordance with Brundtland’s definition of sustainable development: “Meeting the needs of the present without compromising the ability of future generations to meet their own needs” (Porter & Kramer, 2006: 4).

In order to do business, a company depends on governments’ permits, communities and other stakeholders. Practicing CSR forms a ‘license to operate’ in this context.

Reputation can also be a driver of CSR initiatives, as “it will improve a company’s image, strengthen its brand, enliven morale, and even raise the value of its stock” (Porter & Kramer, 2006: 4).

These arguments should theoretically lead to a good implementation of corporate social responsibility. As argued, in practice this was not the case. The four arguments that are

mentioned above cover an underlying, overall relationship between business on the one hand, and society on the other. “To advance CSR, we must root it in a broad understanding of the interrelationship between a corporation and society while at the same time anchoring it in the strategies and activities of specific companies” (Porter & Kramer, 2006: 7).

This means that successful companies need a healthy society and vice versa, a healthy society needs successful companies. A company needs a productive workforce, which means a well-educated and healthy society. Furthermore, such a society “creates expanding demand for business, as more human needs are met and aspirations grow” (Porter & Kramer, 2006: 7).

External social conditions influencing business, are referred to as *outside-in linkages*.

On the other hand, society needs the business sector for “jobs, wealth and innovation that improve standards of living and social conditions over time” (Porter & Kramer, 2006: 7). The influences of business on society are referred to as *inside-out linkages*.

Porter and Kramer (2006) state that for the past two decades, business as well as society has focused too much on alleged conflicting interests, instead of looking at the points of intersection. However, the mutual dependence of business and society implies a principle of *shared value*. This means that whatever choice will be made, it must benefit both business and society. The principle of shared value should be integrated into a company’s core business strategy. The idea is that companies can create economic value by creating societal value.

Creating shared value differs from corporate social responsibility because it abandons the mind-set in which societal issues are at the periphery. Both economic and societal issues are at the company’s core business. Shared value therefore is regarded as a new way to achieve economic success. According to Porter and Kramer, shared value can even be seen as an improved form of capitalism, as in recent years business has been blamed repeatedly for social, environmental and economic problems.

The idea of creating shared value can be seen as a more advanced stage of responsible entrepreneurship than corporate social responsibility. Creating shared value can therefore make voluntary initiatives even more robust (UNEP, 2002) than CSR. Of course, these voluntary initiatives include environmental voluntary approaches. Basically, environmental voluntary approaches are an instrument to minimize the detrimental effects of business on the environment.

Creating shared value is perceived as a change in the mindset. An idea that goes even further than creating shared value, making all environmental voluntary approaches superfluous – simply because environmental problems do not exist anymore, must be revolutionary. It is called Cradle to Cradle.

2.5. Cradle to Cradle

Cradle to Cradle is a voluntary initiative, but is far more comprehensive than only a commitment or an agreement. Like creating shared value, Cradle to Cradle concerns a change in mindset. Cradle to Cradle, however, goes farther and is a revolutionary change in the way we do business. This section describes the idea of Cradle to Cradle.

2.5.1. Cradle to Grave

Between 1763 and 1775, James Watt invented a steam engine that was created to drive machines in any kind of factory. This was one of the most important inventions that led to the Industrial Revolution which took place in the 18th and 19th centuries. Large scale industrial production had been made possible, and led to economic development. During the Industrial Revolution average income showed a significant and sustained growth, eventually all over the world. The Industrial Revolution, with all its innovations and successes, made people believe that mankind could create the world.

Industries, and people, were convinced that the earth served mankind. Resources were thought to be inexhaustible and it was perceived to be the task of human beings to use these resources. Raw materials were necessary for large scale industrial production, thereby achieving the objective of maximizing economic growth.

The use of materials needed to serve economic development only, and therefore these materials were merely designed to achieve economic targets. Materials could therefore have a low quality, containing cheap plastics and dyes. Consequences for the environment were not taken into account in the beginning of the Industrial Revolution.

Although the Industrial Revolution can still be seen as a positive turning point in human history, we also know the dark side of the consequences of the Industrial Revolution today. Some of the destructive consequences Michael Braungart and William McDonough (2009) cite are:

- an annual emission of billions of kilos of toxic emissions by industries into the air, water and soil every year;
- production of dangerous materials that force future generations to be vigilant;

- enormous amounts of waste;
- dumping valuable materials anywhere in the world.

“The Industrial Revolution design contained elementary shortages, leading to crucial omissions. Not only do we face their catastrophic consequences, but in addition our way of thinking is still being dominated by the perceptions from that era” (Braungart & McDonough, 2009). But what do Braungart & McDonough mean by “the Industrial Revolution design”? Braungart & McDonough explain industrial infrastructure as a linear one. Product design focuses on producing and delivering the product as quickly as possible. Other aspects are not taken into account. This way of product design still originates from the Industrial Revolution era. After usage almost all products end as waste on dumping grounds or they are incinerated as waste. In other words: a product’s life cycle follows a linear line starting in a cradle and ending in a grave.

It is exactly this “Cradle to Grave” design that is called an unintelligent and outdated design by Braungart & McDonough. If products will always end as waste, we are not only facing problems processing or storing (toxic or dangerous) waste, but we are also throwing away biodegradable materials (Braungart & McDonough, 2009).

2.5.2. Eco-efficiency

In the last decades we have certainly recognised the destructive consequences of industries on our planet and human well-being. Governments were forced to proclaim environmental regulations in order to minimize harm on the environment. Industries had to limit production, minimise emissions and prevent toxic waste as much as possible.

In June, 1992 the United Nations Conference on Environment and Development (UNCED) was held in Rio de Janeiro to address environmental decline. Here, industrial participants agreed to a new strategy, called *eco-efficiency*. Eco-efficiency can briefly be explained by “doing more with less”. A United Nations report called “Our Common Future” stated:

“We need to encourage industries and industrial enterprises to make more efficient use of natural resources, because they pollute less, produce less waste and are based on recyclable instead of non-recyclable natural resources. But especially, the irreversible destructive effects on human health and the environment need to be restricted to a minimum”.

The quotation above contains negative words like ‘limit’, ‘minimize’, ‘prevent’, ‘restrict’ and ‘less’. These words are embedded in environmental regulations and sanctions will follow if a company violates these regulations. Due to environmental regulation, industrial companies were forced to use natural resources more efficiently: industrial machines had to become cleaner, faster and quieter. By doing this, industries could still aim at maximizing profits, without fundamentally changing their production structures. In the meantime, exhaustion and destruction of the planet is still continuing, albeit in smaller steps and spread over a longer period of time. Eco-efficiency therefore only weakens the old, destructive system. The system itself remains unchanged (Braungart & McDonough, 2009).

2.5.3. Recycling

In the citation above from the United Nations report “Our Common Future” another term has been presented: recyclable natural resources. Today, recycling is perceived to be an environmentally friendly concept. Of course, re-using paper, glass or other materials is a step forward. However, Michael Braungart and William McDonough still argue that recycling is a concept that belongs to the system of eco-efficiency.

Their crucial argument focuses on the design of products. Products might contain recyclable resources, but they are not designed to be recyclable. These products are therefore not automatically environmentally friendly. In a recycling process different materials are mixed, resulting in a mixture that, most of the time, is of lower quality.

Usually recycled material can be used only once more. After second usage, the quality of the product’s materials is too poor and materials eventually still end as waste. Braungart and McDonough use the term *downcycling* for the kind of recycling that contains a loss of quality after usage. Eventually, recycling is still part of a Cradle to Grave design (Braungart & McDonough, 2009).

2.5.4. From downcycling to upcycling

In their book “Cradle to Cradle: Food equals waste”, Braungart and McDonough explain that we should not *downcycle*, but *upcycle* materials. The difference between both terms can be

explained by looking at the quality of materials that can be maintained after recycling. Contrary to downcycling, upcycling materials means that 100% of the quality will be maintained. If this is the case, materials should not become waste even after using it two or three times. Instead, upcycling means that materials can be re-used infinitely without using their quality. The difference between downcycling and upcycling is a crucial one because it indicates a difference between two systems. Since the Industrial Revolution our perception of a product's life cycle has been linear: from cradle to grave. Braungart and McDonough however, propose a system based on a product's life cycle from cradle to cradle; thereby re-using materials infinitely (Braungart & McDonough, 2009).

The negative vocabulary that is currently used in the relationship between humans and the environment could be replaced by a positive one. If we use materials infinitely, we don't throw away them as waste. This means that materials are abundant. If this is the case, it is not necessary anymore to 'minimize', to 'restrict', to 'prevent' or to 'limit'. A system based on Cradle to Cradle therefore is a positive one. In the system proposed by Braungart and McDonough people don't need to feel guilty towards the environment. It is not a case of man versus the environment, but people and the environment that will reinforce each other continuously. Now the question arises how Braungart and McDonough plan to put their ideas of Cradle to Cradle into practice.

2.5.5. Waste equals food

If the product's use comes to an end, the product will be thrown away. Nowadays a product's materials become waste. According to Braungart and McDonough, however, there should not be any waste material. If a product has to be thrown away, all its materials should be *upcyclable* and therefore constitute the resources for other applications. In a system that is based on a cycle instead of being linear, waste equals food.

Braungart and McDonough use the cherry tree as a metaphor for their idea of Cradle to Cradle. A cherry tree uses its environment to grow. The tree blossoms exuberantly in spring, resulting in enormous 'waste' when its blossoms fall to the ground. This could be seen as an enormous waste of colours, energy and resources by the cherry tree. However, all elements remain in the cycle, nothing is thrown away. The 'waste' of the cherry tree is used as food for microbes, insects or small animals (Braungart & McDonough, 2009).

In nature, nothing is wasted. With regard to the industrial cycle, Braungart and McDonough try to simulate nature. They argue that instead of incinerating or throwing away valuable materials, we should return the materials to technical or biological cycles in order to be able to use them in new products.

2.5.6. Biosphere

Braungart and McDonough argue that there are two material cycles: a technical and a biological one. Materials that can be used as biological nutrients belong to the biosphere, materials that can only be used for technical applications belong to the technosphere. Biological materials can be completely ‘consumed’ by the planet. Microbes and other animals can literally eat these materials.

Today, for example, packaging materials are mainly plastic. Designing packaging material made solely of biological materials could make it possible to collect packaging material as ‘waste’ and consequently return it to the earth as, for instance, fertilizer.

The idea is that human beings can make use of everything the earth offers, as long as they give it back to the earth after usage, whilst enriching the environment simultaneously (Braungart & McDonough, 2009).

2.5.7. Technosphere

In the same way as biological material needs to get back into the biological cycle, technical material has to return to its own technical cycle. The quality of the material can only be guaranteed in a closed cycle. “By isolating technical materials from biological materials, they can be upcycled instead of being recycled” (Braungart & McDonough, 2009: 136).

Furthermore, metals should not be alloyed with different kinds of metals, as this decreases the quality of the material and therefore the possibilities to use the material in the future. In order to maintain optimal quality, metals should only be alloyed with similar metals. The same goes for plastics.

In the view of Braungart and McDonough, technical materials should become a ‘product of service’. Customers use a product for a certain period of time. When this period has expired,

the product goes back to the manufacturer, where the product will be stripped and the materials will be used as ‘food’ for new products (Braungart & McDonough, 2009).

Some materials, however, belong neither to the biosphere nor to the technosphere. These materials contain dangerous or toxic elements. Michael Braungart and William McDonough call these materials *unmarketable*. We have to be creative in the measures we take when dealing with them. It will be obvious that nuclear waste is an example of unmarketable material.

Braungart and McDonough propose a use of materials that come either from the biosphere or the technosphere, that can also be given back to their cycle of origin completely.

2.5.8. Design chemistry

The environmental problems like waste, exhaustion or pollution which we currently face, should not be dealt with by fighting these symptoms, but rather by starting at the bottom of these problems. In Braungart and McDonough’s words, we need to apply smart designs. This means that designs do not focus on the economic aspects only, but on all aspects.

When designing a product, a designer should think about the materials he is going to choose to construct the product. The designer has to keep in mind that he is designing a “product of service”. It must be possible to dismantle the product when its use has ended. Consequently, the materials of the old product, whether biological or technical, can be returned to their original cycle, serving as ‘food’ for a new product. Of course, a smart designer will not use materials that contain dangerous or toxic elements at all.

If a design fulfils these requirements, the design will fit into the Cradle to Cradle philosophy. Design chemistry is defined by Braungart and McDonough as “the incorporation of scientific and ecological knowledge into product and process design”. Such a design can be disassembled, which has clear advantages with regard to the environment: (dangerous) waste does not exist anymore, in the long run we can save valuable materials and even abolish the extraction of new raw materials.

Which materials can be used by a designer and which cannot? Materials should be evaluated for their human and environmental characteristics during production, after having used the

product and after having recycled it. After this thorough evaluation we can conclude whether materials can be safely cycled as biological nutrients or technical nutrients.

In a production process different chemicals could be added to the basic material. In the evaluation, materials are therefore broken down into individual chemical ingredients. In the production chain of a product, different companies add materials that eventually result in the final product. When breaking down materials, information needs to be collected from the whole supply chain.

Subsequently, individual chemical ingredients are analysed using the Material Evaluation Criteria developed by Braungart and McDonough. When the individual characteristics have been assessed, the individual chemical ingredient is evaluated in its broader context, i.e. the material that is part of the final product.

Braungart and McDonough have developed a list of 'positive' chemicals. This means that product developers can use these chemical ingredients in order to create a design suitable for disassembly, making upcycling possible. So, Cradle to Cradle begins with a smart design.

2.5.9. Eco-effectiveness

Eco-efficiency is, as discussed above, defined as a strategy of "minimizing harm to natural systems by reducing the amount of waste and pollution human activities generate". These human activities, moreover, evoke feelings of guilt towards the environment. Being "less bad", i.e. optimising the wrong system, is not a good practice.

If we wish to enhance the quality of life, we do not want *less*, but *more*. Therefore, Braungart and McDonough argue that we should not minimise industries and processes. Instead, we should improve and expand industries and processes. Then do we come to a positive vocabulary, as opposed to the negative vocabulary related to eco-efficiency. 'Positive' growth will lead to better health, more niches, more diversity, more intelligence and more abundance for us and for future generations (Braungart & McDonough, 2009).

Braungart and McDonough introduce the term *eco-effectiveness* as the opposite of eco-efficiency and define it as a "strategy for designing a human industry that is safe, profitable and regenerative, producing economic, environmental and social value". Eco-effective designers do not only focus on the main target of the product or process (which basically is an economic target), but on the picture as a whole.

Within this complete picture, upcycling is just one of the aspects. So far, only the concept of “waste equals food” has been elaborated upon. The philosophy of Cradle to Cradle, however, is broader and also contains a vision on ‘renewable energies’ and ‘respect for diversity’. These concepts will be addressed first.

2.5.10. Renewable energies

The philosophy of Cradle to Cradle is based on nature and its biological cycles. So far, the design of a product has been emphasized. The design should be able to upcycle materials, so that the materials remain in their biological or technical cycle. In other words: Cradle to Cradle assumes waste, as in natural systems, to be nonexistent.

Moreover, Cradle to Cradle goes beyond this aspect. Nature uses energy flows in its cycles, without affecting the planet negatively. Again, Braungart and McDonough draw a parallel with nature when designing human systems. As in nature, human activity should not affect the planet negatively. Energies that are used to facilitate human activity should, according to the Cradle to Cradle philosophy, be renewable.

Renewable energy originates from natural resources, resources that will continuously be naturally replenished. Sun, wind and water (rain, tides or in combination with different altitudes) are obvious examples of natural resources.

These natural resources can be transmuted into energy. We can make use of the sun by orienting a building towards the sun, or using materials that reinforce the thermal effects of the sun. Sunlight can also be used to disperse light into a building. These are examples of passive solar techniques. Active solar techniques include the use of photovoltaic panels that convert solar radiation into electricity (Aitken, 2003).

The force of wind is another renewable source of energy. Wind turbines can generate electricity, whereas windmills can be used for mechanical power. As with other forms of renewable energy, wind energy does not produce greenhouse gases. Although energy from wind is a clean alternative to fossil fuels, the visual aspect of wind turbines is perceived as a disadvantage.

The most widely used form of renewable energy concerns hydroelectricity. Differences in altitudes lead to water power, which can be converted into electricity. Tidal energy is another example of converting water into energy.

Biomass is the last example of a renewable energy source. The Biomass Energy Centre defines biomass as a “material that is derived from living, or recently living biological organisms. In the energy context it is often used to refer to plant material, however by-products and waste from livestock farming, food processing and preparation and domestic organic waste, can all form sources of biomass. With such a wide range of material potentially described as biomass, the range of methods to process it must be equally broad”. One of these methods concerns the chemical conversion of biomass that results in a fuel (RCEP, 2004).

As Braungart and McDonough state, we should make much more use of renewable energies in the future. Further research is necessary to enhance the possibilities of renewable energies. In the Cradle to Cradle philosophy, human activities are ultimately completely based on renewable energies. In such a situation, human activity does not affect the planet negatively.

2.5.11. Respect for diversity

Cradle to Cradle also has a human component. Nature, in all its forms, colours and systems is divers. We have to respect this natural diversity, but Braungart and McDonough extend the principle of respect for diversity to human beings: “respect for diversity does not only apply to biological diversity, it also applies to the diversity of locations and cultures, of people and their needs, in other words, to the diversity of the unique human element” (Braungart & McDonough, 2009: 148). The principle of *One size fits all*, on which large-scale uniformity is based and that has been applied in the world on a large scale as well, is what Braungart and McDonough call *devolution*. In nature, diversity fosters the number of productive functions with regard to the concerning ecosystem and the planet. It is not those who are strongest and try to control nature that will survive, but instead, those who are best able to adapt to the diversity of nature that will survive. Braungart and McDonough again use nature as a model for human activities and thus state that we need to respect all diversity, and thus we need to adapt ourselves to this diversity. If this is what we want, then how can our human activities contribute to the diversity of our environment? According to Braungart and McDonough, industries that respect diversity are characterised by their focus on the local environment. They work with local materials and local energy flows and make use of local societal, cultural and economic powers.

In other words: if those who are best able to adapt will survive, a sustainable design equals a local design. This means that, according to the Cradle to Cradle principle of *Respect for diversity*, we need to adapt human systems and industries to their local environment, and always try to contribute to this environment, instead of applying a strategy of *One size fits all* to the environment. If there is a need to import material from one side of the world to the other, we should take the local environment of that place into account. We have to show our respect towards it (Braungart & McDonough, 2009).

One aspect of “Respect for diversity” concerns water stewardship. Manufacturers should respect the need for all life on earth to have clean water. As Cradle to Cradle assumes that we have to contribute to our environment, water that leaves the factory should be as clean as or even cleaner than it was put to use. Ideally, water that a manufacturer uses, should be kept within closed loops. This means that the same water that leaves the factory will enter the factory. In other words: water is being upcycled and waste equals food.

“Respect for diversity” also includes respect for the social environment. This is the social responsibility of a company and deals with respectful relationships with its workers, the local community, customers, suppliers, the business network, the government and other stakeholders. Diversity also enriches the quality of life because of the strong differences in cultural backgrounds. “Respecting these differences broadens your horizons and can inspire to creative changes” (Braungart & McDonough, 2009: 178).

Braungart and McDonough argue that in their Cradle to Cradle view, social responsibility must really be part of the company’s strategy. Currently, most companies possess a policy on Corporate Social Responsibility, however, alliance with their daily activities sometimes appears to be ‘inconvenient’ (Braungart and McDonough, 2009).

2.5.12. Cradle to Cradle in practice

Eco-effectiveness is defined by Braungart and McDonough as a “strategy for designing a human industry that is safe, profitable and regenerative, producing economic, environmental and social value”. Eco-effectiveness respects business interests and the public good when it is

rooted simultaneously. This differs essentially from the eco-efficiency point of view where economic interests are respected in the first place, and other interests are added later on. We can develop products and processes that are extremely effective, as long as they resemble the natural world. Braungart and McDonough state that if we shape human activities like this, the next industrial revolution is before us. An industrial revolution that they define as an “emerging movement of production and commerce eliminates the concept of waste, uses energy from renewable sources, and celebrates cultural and biological diversity. The promise of the Next Industrial Revolution is a system of production that fulfils desires for economic and ecological abundance and social equity in both the short and long terms-becoming sustaining (not just sustainable) for all generations”.

However, it is impossible, and undesirable, to abolish all established procedures, systems and ways of designing and producing. Most of the time change begins with only one specific product, system or problem. If change can expand over more products, systems or problems, chances of a new industrial revolution might increase.

Although the philosophy is broad, Cradle to Cradle starts at the bottom, with the design of one specific product. Therefore, Cradle to Cradle certification is granted to single products.

2.5.13. Certification

The Cradle to Cradle philosophy is put into operation via Cradle to Cradle certification. Certification is carried out by private organisations as MBDC. MBDC's partners in Europe, the German EPEA and the Spanish EIG, are licensed to certify companies as well. There are five categories of criteria that will be assessed: Material Health, Material Reutilisation, Renewable Energy Use, Water Stewardship, and Social Responsibility. The certification has four levels: Basic, Silver, Gold and Platinum, with the last one having the highest requirements with regard to the principle of Cradle to Cradle. Certification is valid for one year and needs to be renewed on an annual basis. Companies that possess Cradle to Cradle certification, can benefit by promoting their certification. They can have a competitive advantage with regard to brand value and reputation. Furthermore, Cradle to Cradle certification makes a company eligible for other kinds of certification, e.g. LEED-points

(Leadership in Energy and Environmental Design, a benchmark for the design, construction and operation of high performance ‘green’ buildings).

With regard to the criteria on Material Health, the product has to be composed of materials that can be defined as technical or biological nutrients and are safe and healthy for humans and the environment. Individual chemical ingredients will be placed in four categories: green, yellow, red or grey; see figure 1. Of course, there is a chemical elaboration on this rating, but this elaboration is beyond the scope of this research.

Table 2: Cradle to Cradle Toxicity Ratings for Chemicals

GREEN	Little to no risk associated with this substance. Preferred for use in its intended application.
YELLOW	Low to moderate risk associated with this substance. Acceptable for continued use unless a GREEN alternative is available.
RED	High hazard and risk associated with the use of this substance. Develop strategy for phase out.
GREY	Incomplete data. Cannot be characterized.

Source: www.mbdc.com

Material Reutilisation deals with the concept of waste and assesses the extent to which waste has been eliminated and the materials can be used in the future (through upcycling).

The criteria on Renewable Energy Use assess the use of solar, wind, water or other renewable energy sources during the manufacturing process of the product.

Water Stewardship assesses the way a company manages its use of water.

The last criterion concerns Social Responsibility. This criterion relates to the principle of “respecting diversity” and assesses the level of respect towards the health, safety and rights of people and the planet.

These criteria translate the Cradle to Cradle philosophy into concrete steps that could be taken by any company willing to change its system and embrace the Cradle to Cradle principles.

2.5.14. Recapitulating Cradle to Cradle

Cradle to Cradle is a philosophy based on the following tenets:

1. Eliminate the concept of waste
2. Use renewable energies
3. Respect the diversity of human and natural systems

Each of them takes the biological metabolism as a model for human activity. In nature processes do make use of materials in cycles that are safe, healthy and abundant. Braungart and McDonough want man to draw parallels between biological metabolism and technical metabolism. By this they mean that materials humans use for industrial purposes must remain in closed loops and thus can be used infinitely.

The infinite use of materials, without losing their quality, is called upcycling. If a product's use has come to an end, the product can be dismantled and its materials can be used for 100% in the design of another product. By doing so, waste equals food.

The choice of materials is crucial at the beginning of a product's design. Materials have been broken down into individual chemical ingredients and they have been individually assessed on Cradle to Cradle criteria. A smart choice of materials makes upcycling possible.

The concept of Cradle to Cradle, however, is more demanding than merely the choice of materials. It also requires a usage of renewable energies generated from the sun, wind or water. In addition, Cradle to Cradle also means respect for the diversity of human and natural processes. This respect for diversity is shown by adapting to the local environment, i.e. not only to local nature, but also to the local economy, culture and society.

An eco-effective design embeds all these requirements and is thus a Cradle to Cradle design. This requires a fundamental change of the system, or in the words of Braungart and McDonough, a Next Industrial Revolution. This is impossible and undesirable. The first changes start with specific products, systems or problems. Therefore, Cradle to Cradle certification focuses on individual products.

Chapter 3: Methodology

3.1. Research questions

In The Netherlands, the Cradle to Cradle philosophy is supported on a relatively large scale. When looking at the number of companies that possess Cradle to Cradle certification, The Netherlands has a leading position in Europe. The Netherlands even count the most companies that possess Cradle to Cradle certification per citizen worldwide.

Of course, the development of Cradle to Cradle is still in its infancy, also in The Netherlands. Braungart and McDonough (2009) argue that a complete implementation of Cradle to Cradle cannot take place in just a couple of years. Cradle to Cradle starts with a specific product or a specific system. In this regard, Cradle to Cradle can be perceived to be successful in The Netherlands. For its revolutionary as well as positive character, Cradle to Cradle should be implemented on a larger scale, i.e. intensifying Cradle to Cradle in The Netherlands, and expanding the philosophy in other countries as well. In order to know how to facilitate Cradle to Cradle, it is useful to analyse a good practice, which is Cradle to Cradle in The Netherlands. The main research question has been formulated in this way:

“What have been the success factors for Cradle to Cradle implementation in The Netherlands?”

In order to answer the main research question, the theoretical background of Bressers and De Bruin (2005) and Croci (2005) has been used to formulate the sub-questions of this research.

3.1.1. Comparing Cradle to Cradle with Dutch Covenants

There are more than one hundred Covenants in The Netherlands. This means that with regard to the number of negotiated agreements, The Netherlands also has a leading position. Success factors for negotiated agreements have already been investigated by Bressers and De Bruin

(2005). Although Cradle to Cradle is not a negotiated agreement, its success factors might relate with the success factors for Dutch Covenants.

“Did the success factors of Negotiated Agreements influence the implementation of Cradle to Cradle in The Netherlands?” (1)

This is the first sub-question of this research. In this context Negotiated Agreements are the Dutch Covenants. The research of Bressers and De Bruin (2005), which itself is based on the Neapol project, has been used to identify success factors for the Dutch Covenants. In their research, the policy climate, instrumental and sectoral hypotheses proved to be true and thus can be regarded as success factors for Dutch Covenants. The following sub-sub-questions have been derived from these hypotheses:

- “In what kind of policy climate do Cradle to Cradle initiatives flourish?”
- “Is alternative or direct regulation expected with regard to Cradle to Cradle objectives?”
- “Is sector homogeneity relevant for the implementation of Cradle to Cradle?”

The Neapol project and the study of Bressers and De Bruin (2005a) contained four hypotheses. The fourth hypothesis dealt with the economic aspect:

“The fact that firms can gain competitive advantages due to consumer pressure by co-operating in negotiation and by compliance with a negotiated agreement is a crucial factor for the positive performance of negotiated agreements”.

Bressers and De Bruijn (2005a) concluded that this hypothesis had to be rejected in case of the Dutch Covenants. In other words, the economic hypothesis was not a successful factor. In the structure of this research, this aspect has therefore been separated from “Success factors for Negotiated Agreements in The Netherlands”. However, this does not automatically mean that the economic hypothesis cannot be used in this research.

Before doing that, the success factors that Bressers and De Bruin (2005a) identified in their workshops, need to be considered:

- the level of initial trust;
- a stick *before* the door / sense of urgency, a clear motive for voluntary action is needed;
- the agreement needs to be embedded in the policy system;
- level of information
- process itself

The level of initial trust can be incorporated in the sub-sub-question on the policy climate. The ‘sense of urgency’ factor can also be incorporated in other sub-questions of this research.

However, the other three factors do not really apply to Cradle to Cradle. Cradle to Cradle is too holistic to be seen as an agreement that could be embedded in the policy system. Basically, Cradle to Cradle is a whole system in itself.

The factors “the level of information” and the “process itself” are typical for agreements, but not for Cradle to Cradle.

3.1.2. Other potential success factors for Cradle to Cradle

Of course, success factors for Cradle to Cradle do not necessarily coincide with the success factors for Dutch Covenants. In order to find out other possible success factors for Cradle to Cradle, Croci’s reasons for taking action voluntarily will be used:

- to avoid (or procrastinate) stricter regulation
- to obtain flexibility by complying with the regulation: having the freedom to choose specific technologies or measures to meet targets set by the government;
- to induce the government to adopt a stricter regulation: attractive for firms that own a new technology, competitors would have to bear relevant costs to reach the same standard;
- to cut costs through pollution prevention: firms enter a voluntary agreement in order to get access to all relevant information about technological options;
- to get access to credit for profitable investments: benefits from investments that reduce pollution may come over a long period, but firms may not have access to credit for such investments. The government can grant access to credit using specific agreements with financial institutions;
- to obtain tax exemptions or incentives
- to gain reputation

Procrastinating stricter regulation can be seen as a ‘sense of urgency’, a factor that was identified in the workshops that Bressers and De Bruijn organised. All factors can roughly be divided into two categories: economic factors and factors that deal with the role of the

government. The second and third sub-questions of this research are based on this categorisation.

“What are the economic factors that facilitate Cradle to Cradle in The Netherlands?” (2)

This question will be specified into three other sub-sub-questions, based on the factors that were identified by Croci (2005):

- What economic advantages are driving the Cradle to Cradle implementation in your company?
- Can Cradle to Cradle initiatives be explained by public image benefits?
- Are financial benefits to be expected on the long term?

“What is the role of the government in facilitating Cradle to Cradle in The Netherlands?” (3)

The other factors that are identified by Croci and deal with the role of the government are integrated in the questions that deal with the role of the government.

Furthermore, Croci argues that the way voluntary initiatives are taken, relates to the stage of responsible entrepreneurship. The last sub-question of this research therefore deals with responsible entrepreneurship:

“To what extent are Cradle to Cradle initiatives explained by responsible entrepreneurship?” (4)

It is assumed that Cradle to Cradle initiatives will be taken by companies that already have a certain policy with regard to responsibility. Companies are asked if they do have a strategy with regard to Corporate Social Responsibility (CSR) and maybe even with regard to Creating Shared Value. Cradle to Cradle can be seen as a step further than Creating Share Value.

3.2. Conceptualisation

3.2.1. Success factors

What have been the success factors for Cradle to Cradle? In the context of Cradle to Cradle, a factor can be described as a socio-economic circumstance. Cradle to Cradle also deals with biological and technical cycles. Biological cycles depend on the energy of the sun. Technical cycles depend on positive chemical ingredients. Both the sun and positive chemical ingredients are success factors for Cradle to Cradle, but these kinds of factors fall beyond the scope of this research.

Socio-economic circumstances literally deal with societal and economic circumstances. Societal circumstances include influences with regard to the government or the policy climate. When a circumstance is conducive to the implementation of Cradle to Cradle, this is perceived to be a successful factor.

3.2.2. Cradle to Cradle

Although the concept of Cradle to Cradle is not limited purely to environmental issues – “respect for diversity” also relates to social issues – the emphasis is indeed on environmental issues. If the principles “waste equals food” and “use renewable energies” will be applied, the environment will be positively affected. The idea of Cradle to Cradle can thus be seen as strategy that deals with environmental issues. This strategy is not embedded in any law or regulation, and thus can be seen as a voluntary initiative.

The Cradle to Cradle initiative came from Michael Braungart and William McDonough and their MBDC organisation. According to Croci (2005), this would be a third party initiative, according to Carraro and Lévêque (1999) and Jordan et al. (2005) Cradle to Cradle would be a voluntary public scheme. This different categorisation is explained by the distinction that Croci (2005) makes between voluntary approaches with a public and private counterpart on

the on the one hand – calling these voluntary agreements, and voluntary approaches with only a private counterpart on the other. To what extent is this distinction relevant for Cradle to Cradle?

It should be clear that applying Cradle to Cradle does not lead to a commitment against any public authority. If a company possesses a Cradle to Cradle certificate, this means that a specific product designed and produced by the concerning company, fulfils the requirements determined by MBDC. Thus, there is no agreement with any kind of government.

According to the main research question, the success factors leading to Cradle to Cradle need to be determined. In other words, what factors influenced the successful implementation of Cradle to Cradle? Although there is no agreement with or commitment against any government, the government can still influence the implementation of Cradle to Cradle. For this reason, the distinction made by Croci (2005) is not relevant in determining success factors for Cradle to Cradle and will thus not be made.

Braungart and McDonough (2009) argue that Cradle to Cradle cannot be implemented from one day to another. Most of the time change begins with only one specific product, system or problem. As Cradle to Cradle is still a young concept, in practice the success of Cradle to Cradle is restricted to specific products. Many companies might be enthusiastic about the philosophy of Cradle to Cradle, but as long as they do not possess a Cradle to Cradle certificate, they are not examples of successful implementation of Cradle to Cradle.

3.2.3. Negotiated Agreements

Negotiated agreements are bargained contracts between public authorities and industry, containing environmental targets and a time frame within which these targets have to be met. Negotiated agreements vary with regard to their legal character: they can be binding or not. In The Netherlands numerous negotiated agreements exist with a binding character. They are referred to as Covenants.

The first sub-question of this research compares success factors of negotiated agreements with the implementation of Cradle to Cradle in The Netherlands. In this context, negotiated agreements concern the Dutch covenants.

3.2.4. Sector homogeneity

Sector homogeneity is a term used by the Neapol project with regard to the sectoral hypothesis: “The fact that the industry sector involved is homogeneous, has a small number of players, is dominated by one or two players or has a powerful industry association that can speak for all its members are crucial factors for the positive performance of negotiated agreements” (Bressers & De Bruijn, 2005: 244).

In the context of this research the term ‘representativeness’ applies to this concept. Is it possible to represent the whole sector in negotiations with e.g. the government?

Moreover, a homogeneous sector should facilitate the diffusion of Cradle to Cradle. The concept of sector homogeneity therefore also refers to this aspect.

3.2.5. Financial benefits

A financial benefit can be defined as a benefit that can be expressed in money. In the context of this research, the benefit is related to the implementation of Cradle to Cradle.

3.2.6. Responsible entrepreneurship

For a long time, economic performance had been perceived to be the only output variable of a company’s business. Companies however, do affect more aspects of society than only the economic one, and not always in a positive way. In economic terms, these negative consequences can be seen as market failures. This would mean that it is the government’s task to intervene.

During the last decades however, companies have been made aware of their responsibilities with regard to negative consequences of their activities. In first instance, the social

responsibility of companies had been emphasized, i.e. responsibility with regard to employees or the community. Over time, the concept of responsibility expanded and incorporated environmental issues too.

Corporate Social Responsibility (CSR) is a form of responsible entrepreneurship and has been added by many companies. Although CSR has been praised by the European Commission, it has been criticized by Porter and Kramer (2006). They argue that in practice CSR performs inadequately, as it is added to a company's core business, instead of being part of it.

Porter and Kramer (2006) state the relationship between business and society is characterised by mutual dependence. Consequently, they come up with "Creating Shared Value" as a new concept. Creating shared value requires a different mind-set, as economic performance is not anymore a company's core business. Shared value means that both economic and societal performance belong to the core business of a company.

Cradle to Cradle goes even further, as it is a revolutionary way of thinking, based on biological cycles. The company's activities should contribute to the environment, instead of bringing harm to the environment.

Basically, responsible entrepreneurship is a gradual concept. In this research, its scope ranges from 'no responsibilities' to the idea of 'Cradle to Cradle'. Whatever may be the stage of responsible entrepreneurship, it does always concern voluntary contributions.

3.3. Research method

3.3.1. Explorative research

Cradle to Cradle is a relatively new concept. It's still a rudimentary field of research. Especially, Cradle to Cradle has not been researched before from a socio-economic angle. As there are still no theories developed in this field, this research is characterised by inductive reasoning. This way of thinking starts with the observations of units. If a pattern can be detected within these observations, it ultimately tries to come to a theory. In contrast to deductive reasoning, i.e. starting at the general level (theory) and testing the theory by observing, this research does not test known theories and hypothesis. Even the variables that could be tested are not known. Indeed, with regard to success factors for Cradle to Cradle, a world has to be explored. Therefore, the purpose of this research is explorative. Babbie (1998) identifies three reasons for explorative research (Babbie, 1998: 90):

- to satisfy the researcher's curiosity and desire for better understanding;
- to test the feasibility of undertaking a more extensive study;
- to develop the methods to be employed in any subsequent study.

These identified reasons by Babbie match with the purposes of this research. Explorative research can be very valuable when breaking new research ground. Not only it can provide some first knowledge on a topic, explorative research can also give insights into research methods that could provide definitive answers.

However, a shortcoming of explorative studies is the unsatisfactory, not definitive answers that it provides. According to Babbie (1998), representativeness plays a role in this. In research, statements are made upon a population. Most of the time, a sample is taken from the population and investigated thereafter. The results are subsequently generalised for the whole population. In order to have valid, definite results, at least the sample should really represent the population. As explorative research is inherent to deficient knowledge of the composition of the population, chances are high that a sample will not be representative.

3.3.2. Explanatory research

Explorative research tries to identify what the success factors for Cradle to Cradle are.

Explanatory research aims at identifying why it is a successful factor. Although the character of this research is explorative, respondents are in some cases asked why they think the given factor is successful.

3.3.3. Units of analysis

The purpose of this research is to explore on the success factors for Cradle to Cradle in The Netherlands. Of course, this evokes the question where to collect the answers? A literature review is not possible, as literature on this topic does not exist. Thus, information has to be collected from practice. Who can be asked for information? Who can be studied? In other words, what is the unit of analysis in this research?

Cradle to Cradle is a philosophy, a way of thinking. Should individuals be studied that support this philosophy? Or should companies be studied? And how should individuals or companies that support the Cradle to Cradle philosophy then be identified? How to define 'support'?

These questions are difficult to answer, precisely because of the explorative character of this research. Therefore, it is necessary to find a unit of analysis that can be determined objectively.

Because Braungart and McDonough (2009) see a specific product that is designed according to the Cradle to Cradle philosophy as a first step towards 'complete' Cradle to Cradle.

Products that are Cradle to Cradle certified can be objectively determined form the basis of the units of analysis. Companies that possess a Cradle to Cradle certificate are the units of analysis in this research. It is supposed that these companies support the Cradle to Cradle philosophy. However, they differ from other companies that support Cradle to Cradle exactly because they have put their support into action.

3.3.4. Survey research

Survey research is perceived to be the best method available to social scientists, when it is not possible to observe the population directly. It's also the most frequently used method in the social sciences. Typically, questionnaires are administered to a sample of the population that is being researched (Babbie, 1998). Three major methods are distinguished: self-administered questionnaires, interview surveys and telephone surveys. Dijkstra and Smit (1999) discuss these methods using criteria that are of importance when one method has to be chosen.

The first criterion is about the velocity that is needed to obtain the answers. Telephone surveys yield the fastest results, followed by self-administered questionnaires. Interview surveys will take most time to collect the data.

Costs are another criterion that has to be taken into account. In some cases, the available budget forces a researcher to choose for a self-administered questionnaire, in order to reach as much as possible respondents. In this research, costs were not a real consideration.

The choice for a certain method, can have implications for the level of non-response. Self-administered questionnaires usually yield a higher non-response rate.

The amount of information that is needed does also play a role. Most information can be obtained via an interview survey. An interview could take about two hours and of course, open ended questions can be posed. Both a telephone survey and a self-administered survey can take about fifteen minutes. In a telephone survey, more open ended questions can be posed, but on the other hand, in a self-administered survey more questions can be posed if they contain closed answers. Furthermore, in a self-administered survey longer and more complex questions can be posed, as opposed to a telephone survey.

If a questionnaire contains many redirections, an interview or telephone survey is more suited than a self-administered survey.

Organising a self-administered survey is the easiest way to collect data. A telephone and interview survey requires more endeavour by the researcher.

Last but not least, the quality of collected data is an important criterion. There is no 'best' method with regard to this, but when using self-administered surveys, the threat has to be taken into account that the questionnaire might not be filled in by the respondent you have summoned to, but by another person.

In this research data have been collected by a self-administered questionnaire. The most important consideration for this decision deals with the character of the questions and answers. Some questions are too long for a telephone survey. Almost all questions are multiple choice questions. By using a self-administered questionnaire, more questions can be posed compared to a telephone survey. Furthermore, as stated above, a self-administered questionnaire is the easiest way to collect data. Data will not be influenced (either in a positive or a negative way) by interviewing qualities.

An interview survey was not a real option for practical reasons. As the respondents are located across the country, an interview survey would cost too much time.

The choice for a self-administered questionnaire has, as described above, some disadvantages. These concern the velocity compared to a telephone survey, a usually higher non-response rate, the complexity of redirections and the threat that another person fills in the questionnaire than the person you have summoned to. These disadvantages have to be taken into account while compiling the questionnaire and deciding how this questionnaire will be distributed.

3.3.5. Sampling method

Basically, a questionnaire will be sent to a selection of the population. In other words, a sample has to be drawn. The population in this research however is quite small. All Dutch companies that possess a Cradle to Cradle certification have been summoned to fill in the questionnaire online. These companies have been identified by looking at the overview of Cradle to Cradle certified products published by MBDC.

In this research, neither purposive nor random sampling methods needed to be used. Of course, this affects the validity of the research positively.

3.4. Operationalisation

Operationalisation is a term which is defined by Babbie (1998) as the “development of specific research procedures (operations) that will result in empirical observations representing those concepts in the real world” (Babbie, 1998: 139). In this citation, Babbie refers to ‘those concepts’. These are specifications of the way a term needs to be interpreted in the context of the concerning research. The concepts used in this research have been specified in paragraph 3.2.

Of course, the procedures, or operations, should be focused on the ability to answer the research questions. In addition, while developing this procedure the disadvantages of a self-administered questionnaire need to be taken into account.

3.4.1. Self-administered questionnaire

To start with, the disadvantages of a self-administered questionnaire need to be dealt with. The most important decision in order to face these disadvantages has been to construct an Internet-questionnaire. The questionnaire has been put on a special website. The link to this website has been given in an introduction email to the respondents.

In the introduction letter, i.e. the introduction email, the respondent has kindly been asked to fill in the questionnaire online, which would take about fifteen minutes from his time. After having answered all questions, the results would automatically be sent back.

Beforehand, it was expected that an Internet-questionnaire would affect the velocity positively, as it is the most user-friendly way of filling in a questionnaire. This proved to be a true expectation: all responses had been received within one week. Presumably, this would not have been the case when the questionnaire had been sent by post. Of course, in this case it could be assumed that all respondents had direct access to the internet as all of them worked in the office.

The use of an Internet-questionnaire also intended to enhance the response rate, as normally a self-administered survey is inherent to higher non-response rates. In order to increase the response rate even further, the questionnaire has been translated into Dutch. Respondents were able to fill in either the English or the Dutch version, according to their own preference.

Furthermore, redirecting after certain answers could be automatically installed when constructing the online questionnaire. The disadvantage of redirecting that is associated with self-administered questionnaires has been eliminated by using an Internet-questionnaire. At the end of the questionnaire respondents have been asked for their position in the company. This question aims at identifying whether the respondent belongs to the group of respondents that is summoned to fill in the questionnaire.

Now these preconditions have been set, the research questions have to be operationalised. This means that questions to be posed to respondents need to be determined. The answers need to provide a measurement on an indicator, which can consequently be used to answer the research question.

3.4.2. Success factors for Negotiated Agreements in The Netherlands

The first sub-question of this research aims at identifying whether the success factors for Negotiated Agreements in The Netherlands (i.e. the Dutch Covenants) do also explain the success of Cradle to Cradle in The Netherlands. Based on the theoretical background, Cradle to Cradle is a third party initiative, and certainly not an agreement with the government. As Cradle to Cradle is a voluntary initiative, a company goes beyond regulation by implementing Cradle to Cradle. It is interesting to know whether a company has signed an agreement with the government in order to prove this. Not only because of curiosity, but also for methodological reasons. If some kind of agreement has been signed, then a relationship could be possible with the answers of the other questions.

Of course, it is interesting to know what kind of document the company should agree upon if there has been signed an agreement. This could be for instance an individual agreement, a multi-actor covenant, a letter of agreement or a contract. If an agreement has not been signed, the respondent will automatically be redirected to the next question.

The following sub-sub-questions are related with the success factors identified in the study of Bressers and De Bruijn (2005a) according to the policy-style, instrumental and sectoral hypotheses.

- In what kind of policy climate do Cradle to Cradle initiatives flourish?

- Is alternative or direct regulation expected with regard to Cradle to Cradle objectives?
- Is sector homogeneity relevant for the implementation of Cradle to Cradle?

Terms like consensus, responsibility, decentralisation, civil society, trust, authority, enforcement and mutual respect are indicators for the policy climate. The following questions have been formulated to cover these terms:

- *Numerous environmental targets are set by legislation. Do you discuss these targets with the government?* If this question is positively answered, the respondent will be asked at what governmental level these discussions take place: with the local, provincial, national or European government or with Water Authorities. In The Netherlands, a Water Authority is an official governmental body. It could be possible that the level of government relates to, for example, the level of trust.
- *Do you have the flexibility to define your own strategy to achieve the environmental targets that apply to your company?* If yes, why does the government grant this flexibility? Is this related to their policy of decentralisation, i.e. making companies responsible? Or is flexibility granted by the government primarily to enable companies to work out an effective strategy that fits best for their own situation?
- *Do you discuss environmental targets with third parties?* This question examines the relation with civil society. If a respondent answers 'yes', then he will be asked to describe what kind of parties he discusses with, for instance industrial organisations, NGOs, customers, suppliers or the community.
- The last question that belongs to the policy climate sub-sub-question deals with terms like trust, authority, enforcement and mutual respect. This question has been set up as a matrix question. Actually, this matrix question yields five questions, although they have been formulated as statements. They concern whether the government is open to new opportunities, whether the government is a reliable partner to talk to, whether the government has proven to keep its promises, whether the government facilitates Cradle to Cradle sufficiently and whether the government recognises that Cradle to Cradle goes beyond environmental regulation.

The instrumental hypothesis from the Neapol project and Bresses and De Bruin (2005a) deals with the question whether implementing Cradle to Cradle voluntarily can be explained by

expected alternative or direct regulation with regard to Cradle to Cradle objectives. The following questions have been formulated:

- *Do you expect that the objectives of Cradle to Cradle will be transformed into regulation by the government within a few years?* Subsequently, respondents are asked why they think so.
- *Do you expect that Cradle to Cradle will be applied within a few years by the competitors of your company?* Again, respondents are asked why they think so. This question could also be an indicator for economic reasons, as this expectation might drive a company to implement Cradle to Cradle voluntarily in order to achieve a competitive advantage. However, if many companies implement Cradle to Cradle, it is assumed that ultimately the Cradle to Cradle objectives will be integrated in direct regulation.
- Cradle to Cradle even goes beyond existing environmental regulation. However, there are many different areas of regulation. It could be possible that the company does not yet meet the proposed targets of other policy areas. *In situations like that, do you use Cradle to Cradle certification as an instrument to negotiate expected direct regulations?* The instrumental hypothesis from the Neapol project and Bressers and De Bruin (2005a) has not been used in this context. However, the purpose of this research is explorative. If Cradle to Cradle would be used as an instrument in this context, then respondents are asked to explain in what way they do so.

The last successful factor identified by the Neapol project and Bressers and De Bruin (2005a) concerns sector homogeneity. This concept focuses on representativeness in the sector of the concerning company. The respondent is asked whether a clear market leader can be defined in the sector of his company first. If yes, the following statements have been given in a matrix question:

- *The market leader has a significant influence on the other companies;*
- *The market leader is an attractive actor for the government to talk to;*
- *The market leader can represent the sector with regard to discussions with the government on environmental targets;*
- *Companies in the sector will accept the results of negotiations between the market leader and the government.*

If there is not a clear market leader in the concerning sector, then sector homogeneity has been tested using the following statements:

- *It is possible that all companies in your sector agree to be represented by one actor in negotiations with the government;*
- *Companies in your sector will accept the results of negotiations between the representative actor and the government.*

3.4.3. Factors with regard to the economy

The sub-question with regard to economic factors that facilitate Cradle to Cradle in The Netherlands has been divided into three sub-sub-research questions:

- What economic advantages are driving the Cradle to Cradle implementation in your company?
- Can Cradle to Cradle initiatives be explained by public image benefits?
- Are financial benefits to be expected on the long term?

With regard to the first sub-sub-question, ‘economic advantages’ can be broadly defined. Via a matrix question respondents have been asked if they have gained advantages by implementing Cradle to Cradle with regard to:

- *transaction costs;*
- *technical assistance or training;*
- *access to information*

These specific advantages have been cited in the literature of Croci (2005) with regard to voluntary agreements. In addition, a company could have the advantage of already having access to material resources that facilitate the implementation of Cradle to Cradle, e.g. having access to raw materials, safe materials or already using saving energy systems. The respondents are asked if their company has access to these resources conducive for Cradle to Cradle.

Respondents have been asked whether the customers of their company are individuals or companies. This question serves as a first indicator for the second sub-sub-question. The assumption is that the public image is perceived to be more important when the company’s customers are mainly individuals.

Subsequently, a matrix question has been used to ask respondents on *public visibility*. The following questions have been posed:

- *Can your company be located in the end of the production chain?*
- *Do you produce products that are well-known to public?*
- *Do you think the marketing of Cradle to Cradle certification leads to competitive advantages?*
- *Do you inform your customers that you are producing Cradle to Cradle?*

With regard to expected financial benefits on the long term, two questions have been posed to respondents:

- *Do you expect that Cradle to Cradle will be applied on a larger scale in a few years?*
- *Do you expect to have a competitive advantage by investing in Cradle to Cradle from now?*

Cradle to Cradle requires investments, but when a company expects Cradle to Cradle to be applied on a larger scale in a few years, financial benefits will follow on the long term.

3.4.4. Factors with regard to the government

One of the sub-questions of this research deals with the role of the government in facilitating Cradle to Cradle. Two matrix questions have been used to address this sub-question. The first matrix concerns the current role of the government in facilitating Cradle to Cradle, the second matrix questions whether Cradle to Cradle would be implemented by more companies due to intervention of the government. Government's intervention has been specified into five policy instruments which have been identified by Croci (2005):

- *financial incentives like subsidies or tax exemptions;*
- *facilitating platforms where knowledge and experience can be exchanged;*
- *carrying out less frequent inspections;*
- *easier administrative procedures for participating companies;*
- *helping companies to get easier access to credit.*

These policy instruments have been put in question in both matrix questions.

3.4.5. Factors with regard to responsible entrepreneurship

The stage of responsible entrepreneurship affects the way voluntary initiatives are taken. Cradle to Cradle could be seen as a voluntary initiative. In order to find out if the implementation of Cradle to Cradle relates to the stage of responsible entrepreneurship, respondents are asked if their company has a specific policy with regard to Corporate Social Responsibility (CSR). It is supposed that all companies possessing a Cradle to Cradle certification do have a policy with regard to CSR. A further step with regard to responsible entrepreneurship is the concept of Creating Shared Value. Respondents have also been asked whether their company has *a strategy that not only aims at corporate profits, but simultaneously considers social progress as the company's core business*. If yes, they are asked to what kind of social progress their company focuses. If not, respondents are asked whether it is feasible, according to them, that in a couple of years their company will pursue corporate profits and social progress as core business simultaneously.

3.4.6. Answer possibilities

Most questions in the survey are closed-ended questions. "Closed-ended questions are very popular because they provide a greater uniformity of responses and are more easily processed" (Babbie, 1998: 148). Two reasons can be given for the decision to make use of closed-ended questions primarily. Firstly, the population of this research is relatively small and secondly, this research is an explorative one. Therefore, most questions do only have two possibilities to answer: yes or no. Even with a small population, general statements can be made. The disadvantage of these closed-ended questions is that it does not give specific information. In most cases, a following question tries to specify why a respondent answered yes or no, but indeed, more specific information requires further research. Basically, this is always the case when doing explorative research.

The questionnaire contains questions as well as statements. Using both "gives you more flexibility in the design of items and make the questionnaire more interesting as well" (Babbie, 1998: 148). With regard to answer possibilities on statements, Rensis Likert has introduced the Likert-scale. According to this scale, respondents are asked if they strongly agree, agree, disagree or strongly disagree with a statement. However, the purpose of this research is

explorative. For this reason, and again because of the small population, respondents can only agree or disagree with statements in the survey of this research. This will not generate specific information, which means that further research is required.

Some questions and statements have been posed in a question matrix. A question matrix facilitates the collection of more information on one topic by using one main question.

Furthermore, in order to obtain reliable and valid information, questions have been formulated as clear as possible and double-barreled questions and negative items have been avoided.

Summarising, the answer possibilities in this research aim at providing clear, but relatively general information about the population.

In some questions, the option “don’t know” has been added as an answer possibility. Dijkstra and Smit (1999) argue that this option should only be added when respondents could really have no idea of the right answer. In these cases, not adding a “don’t know” option, should definitely result in a wrong answer. A respondent that frequently uses the “don’t know” option, indicates that he does not belong to the respondents that are summoned to fill in the questionnaire. The “don’t know” option therefore serves an instrument to enhance the validity of the research.

3.5. Validation process

“We use the term validity to refer to the approximate truth of an inference. When we say something is valid, we make a judgment about the extent to which relevant evidence supports that inference as being true or correct” (Shadish et al., 2002: 34). While building on the research design, some aspects can be deliberately taken into account in order to enhance the validity of the research findings.

As the population in this research consist of 19 companies in total, a selection process with regard to the sample, whether being random or purposive, is unnecessary. All companies have been sent an email. In other words: selection bias as a threat to validity has been ruled out. Consequently, the rate of response should be as high as possible, in order to be able to make valid conclusions upon the population.

In order to achieve this, an Internet-survey has been designed, as it was the expectation that this would be the most comfortable way for respondents to self-administer a survey, while at the same time being able to ask many questions.

A final problem with regard to the validity of the findings could be that other persons than those who are summoned to fill in the questionnaire, do answer the questions. In order to prevent this threat as much as possible, respondents have been asked their position in their company.

Chapter 4: Findings

The questionnaire has been sent to Dutch companies that possess Cradle to Cradle certification according to the MBDC. It concerned 19 companies in total. Four companies did not respond, which means non-response is 21%. Two companies sent an email back that they were not able to fill in the questionnaire, because the concerning managers were absent in the whole period due to holidays. These refusals do not correlate with the content of the research, so there are no real consequences for the validity of the research.

Concluding, 13 out of 19 companies have filled in the questionnaire, which is almost 70%.

This means that the results of the questionnaire can be perceived representative.

4.1. Comparison of Dutch Covenants with Cradle to Cradle certification

The first sub-question dealt with the success factors of Dutch Covenants and was formulated as follows:

“Did the success factors of Negotiated Agreements influence the implementation of Cradle to Cradle in The Netherlands?”

The first question asked whether the respondent’s company had signed an agreement with the government to prove that it goes beyond regulation by implementing Cradle to Cradle. It can be concluded that Cradle to Cradle cannot be seen as an agreement. Only one respondent stated that he had signed a letter of agreement. This finding is nothing more than a confirmation of the expectation. But to what extent do success factors of Dutch Covenants also apply to the implementation of Cradle to Cradle?

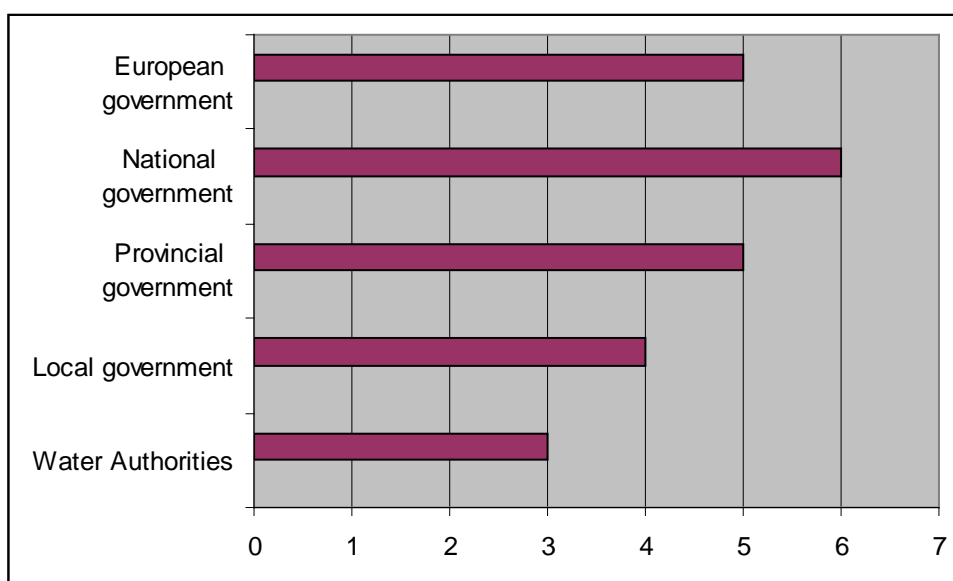
4.1.1. In what kind of policy climate do Cradle to Cradle initiatives flourish?

This sub-sub-question compares the first hypothesis from the Neapol project with Cradle to Cradle. Policy climate has been operationalised via questions about the company's relationship with the government (including the indicator of 'trust') and the civil society. Furthermore, respondents have been asked about whether they have flexibility to define their own strategy to achieve environmental targets or not.

Numerous environmental targets are set by legislation. Do you discuss these targets with the government?

It turns out that 8 companies discuss environmental targets with the government. These discussions take place at all governmental levels, although most of them with the national governmental institutions: 6 companies discuss with the national government. In addition, 5 companies discuss with the European and Provincial governments. Environmental targets are least discussed with the local government (only 4 companies) and Water Authorities (3 companies). These results have been showed in figure 2:

Figure 2: Environmental targets are discussed with different governmental levels.



Do you have the flexibility to define your own strategy to achieve the environmental targets that apply to your company?

Nine respondents answer that their company has flexibility to define an own strategy to achieve environmental targets. These respondents have been asked why they think the government grants them the flexibility to define their own strategy to achieve environmental targets. The answers are not unequivocal. Three of them say that the government does not want to decide everything centrally and three other respondents say that the government wants to facilitate companies to work out an effective strategy that suits for their own company. Some respondents filled in “other” reasons. These include the following reasons:

- the government is not really interested in Corporate Social Responsibility;
- the government cannot determine “how” environmental targets should be achieved;
- the government is not yet ready to prescribe how environmental targets should be reached.

Do you discuss environmental targets with third parties?

No fewer than ten companies discuss environmental targets with third parties. Almost all companies discuss these targets with the industrial organisations, NGOs (including environmental organisations), customers and suppliers. Strikingly, only one company discusses environmental targets with the local community.

Five statements on the role of the government are given below. Please choose for the answer that is, in your perception, most suited to your company.

The table below shows the results of the questionnaire with regard to this question.

Table 3: The role of the government with regard to the policy climate

	Agree	Don't agree	Don't know
The government is open to new opportunities concerning environmental regulations.	8	4	1
The government is a reliable partner to talk to.	5	5	3
The government has proven to keep its promises.	1	8	4
The government facilitates Cradle to Cradle sufficiently	2	10	1
The government recognizes that Cradle to Cradle goes beyond environmental regulation.	7	4	2

Can these findings give an answer to the sub-sub-question “In what kind of policy climate do Cradle to Cradle initiatives flourish”? Based on the findings of this questionnaire, the conclusion would be that a policy climate in which a company discusses environmental targets at different governmental levels as well as with different kinds of third parties and has the flexibility to define its own strategy to achieve environmental targets, facilitates the implementation of Cradle to Cradle most.

Remarkably, the government does not play a significant role with regard to the implementation of Cradle to Cradle. Only one company agrees with the statement that the government facilitates Cradle to Cradle sufficiently.

4.1.2. Is alternative or direct regulation expected with regard to Cradle to Cradle objectives?

Do you expect that the objectives of Cradle to Cradle will be transformed into regulation by the government within a few years?

Ten respondents do not expect this. They are asked why they have this expectation. Answers that have been given include:

- Cradle to Cradle is still in its infancy. The government is primarily awaiting;
- the Cradle to Cradle approach is too holistic to be handled by the government. The government will take some objectives of Cradle to Cradle to convert into laws, but this will mainly be explained by competition motives;
- Cradle to Cradle is seen as a private initiative completely. The government does not perceive the environment to be an economically innovative chance, also not in the current economic crisis;
- there are alternatives to Cradle to Cradle that are more popular in Europe;
- Cradle to Cradle is an intention, but action will not follow.

Do you expect that Cradle to Cradle will be applied within a few years by the competitors of your company?

All respondents answered positively to this question. Again, they were asked why they have this expectation. Answers that have been given include:

- competitive position
- Sustainability (C2C) is becoming a 'hot item'. People want to establish a (public) image through sustainability. This applies to companies as well as customers.
- "the only good thing to do"
- logical development economically as well as socially.
- Cradle to Cradle will take a leading role, a minimum requirement.

Cradle to Cradle even goes beyond existing environmental regulation. However, there are many different areas of regulation. It could be possible that the company does not yet meet the proposed targets of other policy areas. In situations like that, do you use Cradle to Cradle certification as an instrument to negotiate expected direct regulations?

Except for one, there are no respondents who use Cradle to Cradle certification as an instrument in negotiations. Two respondents have given an explanation for their answer:

- we are Cradle to Cradle certified, however we hardly gain any advantage for this by the government;
- C2C has a holistic approach. If you really implement it seriously, the situation as described in the question cannot come about.

“Is alternative or direct regulation expected with regard to Cradle to Cradle objectives”? This sub-sub-question should be answered negatively. It is expected that more companies will implement within a few years, but this will not directly lead to regulation. Cradle to Cradle cannot be seen as an instrument.

4.1.3. Is sector homogeneity relevant for the implementation of Cradle to Cradle?

Eleven respondents stated that a clear market leader could be identified in their sector. Subsequently, these respondents have been given four statements on the market leader in their company's sector. Respondents had to choose for the answer that is, in their perception, most suited to their company. The results have been given in table 4.

Table 4: Statements on the market leader

	Agree	Don't agree	Don't know
the market leader has a significant influence on the other companies.	9	2	0
the market leader is an attractive actor for the government to talk to.	8	0	3
the market leader can represent the sector with regard to discussions with the government on environmental targets.	6	4	1
companies in the sector will accept the results of negotiations between the market leader and the government.	2	4	5

Some remarkable answers are that three respondents don't know whether the market leader is an attractive actor for the government to talk to, whereas there are no respondents who do not agree with this statement. Probably, the explanation is that those three 'don't know'

respondents do not belong to a market leader. A slight majority of the companies agrees to the statement that the sector can be represented by the market leader, but only two of them think that other companies in the sector will accept the results of negotiations between the market leader and the government.

Only two respondents stated that in their sector a clear market leader cannot be identified.

However, they all agreed on the following statements:

- It is possible that all companies in your sector agree to be represented by one actor in negotiations with the government;
- Companies in your sector will accept the results of negotiations between the representative actor and the government.

A rough conclusion would be that in a sector where no market leader can be identified, the sector homogeneity and representativeness is higher than in sectors where a market leader has been identified. Of course, this requires further research.

4.1.4. Conclusion with regard to the first sub-question

“Did the success factors of Negotiated Agreements influence the implementation of Cradle to Cradle in The Netherlands?”

As expected, Cradle to Cradle cannot be seen as an agreement. A policy climate in which a company discusses environmental targets at different governmental levels as well as with different kinds of third parties and has the flexibility to define its own strategy to achieve environmental targets, can be perceived a successful factor that also facilitated the Dutch Covenants.

Instrumental factors are not really relevant for the implementation of Cradle to Cradle. Sector homogeneity facilitates Cradle to Cradle, albeit not really convincing. However, it seems that a distinction needs to be made between sectors with a market leader or sectors without a market leader. In the last case, sector homogeneity seems to be much higher.

4.2. Economic factors related to Cradle to Cradle

The second sub-question deals with economic success factors of Cradle to Cradle and is defined as follows:

“What are the economic factors that facilitate Cradle to Cradle in The Netherlands?”

4.2.1. What economic advantages are conducive for Cradle to Cradle?

Have you gained any of the following advantages by implementing Cradle to Cradle?

The answers of the respondents have been given in table 5.

Table 5: Have you gained any of the following advantages?

	Yes	No
lower transaction costs	0	13
technical assistance or training	1	12
access to information	3	10

Do you already have access to material resources that facilitate the implementation of Cradle to Cradle (e.g. raw materials, safe materials, saving energy systems)?

Eight respondents do already have access to material resources that facilitate the implementation of Cradle to Cradle. The other respondents do not have access to these resources, while they possess Cradle to Cradle certification.

4.2.2. Can Cradle to Cradle initiatives be explained by public image benefits?

First, respondents have been asked whether their customers are individuals or companies. All companies stated that their customers were companies. Only one respondent added individuals as the company's customers.

Table 6 shows the findings of the questions with regard to “public visibility”.

Table 6: findings with regard to “public visibility”

	Yes	No	Don't know
Can your company be located in the end of the production chain?	7	6	0
Do you produce products that are well-known to public?	7	5	1
Do you think the marketing of Cradle to Cradle certification leads to competitive advantages?	13	0	0
Do you inform your customers that you are producing Cradle to Cradle?	13	0	0

Although individuals are not the direct customers of the companies that are in the survey, the majority of these companies state that their products are close and well-known to public. The marketing of Cradle to Cradle certification serves proved to be a very clear successful factor of Cradle to Cradle in The Netherlands.

4.2.3. Are financial benefits to be expected on the long term?

Do you expect that Cradle to Cradle will be applied on a larger scale in a few years?

Nine respondents do have the expectation that Cradle to Cradle will be applied on a larger scale in a few years. Three of the respondents do not think so and one respondent does not have any idea.

Do you expect to have a competitive advantage by investing in Cradle to Cradle from now?

This question is answered unequivocally: all respondents state to expect a competitive advantage by investing in Cradle to Cradle.

4.2.4. Conclusion with regard to the first sub-question

So far, companies did not really gain advantages from implementing Cradle to Cradle. Companies perceive Cradle to Cradle to be a good investment, as they expect to have a competitive advantage on the long term. On the short term, companies try to market Cradle to Cradle certification and gain public image benefits.

4.3. Public policy instruments to facilitate Cradle to Cradle

The third sub-question deals with success factors of Cradle to Cradle that relate to the role of the government and is defined as follows:

“What has been the role of the government for Cradle to Cradle in The Netherlands?”

Two matrix questions have been posed to the respondents on the role of the government. In the tables 7 and 8 below their answers are shown.

Table 7: the current role of the government for Cradle to Cradle

<i>Does the government currently facilitate Cradle to Cradle through:</i>	Yes	No	Don't know
financial incentives like subsidies or tax exemptions?	1	6	2
facilitating platforms where knowledge and experience can be exchanged?	3	5	1
carrying out less frequent inspections?	0	7	2
easier administrative procedures for participating companies?	0	6	3
helping companies to get easier access to credit?	0	6	3

Table 8: the potential role of the government for Cradle to Cradle

<i>Do you think Cradle to Cradle would be implemented by more companies when the government will:</i>	Yes	No	Don't know
make use of financial incentives like subsidies or tax exemptions?	7	1	1
facilitate platforms where knowledge and experience can be exchanged?	7	2	0
carry out less frequent inspections at those companies using Cradle to Cradle?	4	3	2
make administrative procedures easier for participating companies?	5	3	1
help companies to get easier access to credit?	7	2	0

From these tables the conclusion can be drawn that the current role of the government is too inadequate to be a successful factor for Cradle to Cradle in The Netherlands. However, most respondents perceive the government to be a potential successful factor in facilitating Cradle to Cradle in The Netherlands.

It should be noted that this question has only been answered by nine respondents. Although the conclusion for these respondents might be clear, it is very difficult to generalise this conclusion. However, it is interesting to do further research on this conclusion.

4.4. Stage of responsible entrepreneurship

The fourth sub-question deals with success factors of Cradle to Cradle that relate to the role of the government and is defined as follows:

“To what extent are Cradle to Cradle initiatives explained by responsible entrepreneurship?”

First, respondents have been asked if their company had a policy on Corporate Social Responsibility (CSR). It turned out that all companies that possess Cradle to Cradle certification do have a CSR policy. This was also expected, as it is assumed that Cradle to Cradle will be successfully implemented when a company has an advanced stage of responsible entrepreneurship.

Next, the idea of Creating Shared Value, which is a step further than CSR, has been questioned. Ten respondents stated that their company had a strategy that not only aims at corporate profits, but simultaneously considers social progress as the company's core business. The companies focus on education, health and sustainable development with regard to their social progress strategy. One respondent added the triple P (Profit, People, Planet) as his company's strategy.

From these results, it can be concluded that a company that has an advanced level of responsible entrepreneurship, will also be able to take the step to implement Cradle to Cradle. Responsible entrepreneurship can thus be perceived as one of the success factors for Cradle to Cradle in The Netherlands.

Chapter 5: Discussion

5.1. Cradle to Cradle is not an agreement

Respondents of the questionnaire clearly indicated that they did not sign an agreement to show that they were going beyond regulation by implementing Cradle to Cradle. Indeed, Cradle to Cradle is a private initiative. Although both Negotiated Agreements and Cradle to Cradle are examples of voluntary initiatives that perform well in The Netherlands, they do not share the same success factors.

Carraro and Lévêque (1999) divided voluntary initiatives in voluntary public schemes, negotiated agreements and unilateral commitments. They did not explicitly distinguish between voluntary initiatives with a public as well as a private counterpart and voluntary initiatives with only a private counterpart. However, the results of the questionnaire in this research show that both kinds of voluntary initiatives should really be distinguished.

The first sub-question of this research compares the success factors of Dutch Covenants with the implementation of Cradle to Cradle in The Netherlands. The success factors of Dutch Covenants were based on four hypotheses, of which three were accepted as success factors: the policy climate, the instrumental and the sectoral hypotheses (Bressers & De Bruijn, 2005a). Some factors do only apply to situations that are characterised by negotiations between public and private counterparts.

Respondents of the questionnaire clearly stated that they do not implement Cradle to Cradle because they expect laws or regulations from the government within a few years. This is not only because Cradle to Cradle is a private initiative, but also because it is too holistic to be able to use as an instrument. Cradle to Cradle is not about solving one particular environmental problem, it is about changing a whole system. Changing the way products and systems are designed. Laws and regulations on the contrary, do always focus on particular components of the system. These components can subsequently be specified and negotiated. The instrumental factors are successful for negotiated agreements, not for Cradle to Cradle.

In the context of this research, Croci (2005) is right. He distinguishes private voluntary initiatives from initiatives that have both a public and private counterpart. According to Croci, Cradle to Cradle is a third party initiative. He clearly distinguishes such an initiative from a voluntary agreement. In explaining success factors, this distinction is crucial.

With regard to sector homogeneity, Bressers and De Bruijn (2005a) showed that representativeness of the sector is a successful factor for Dutch Covenants. The questionnaire of this research showed that in most cases a clear market leader can be identified, which also is assumed to be a good partner for the government to talk to. At the same time however, respondents do not expect all companies in the sector to comply with the results of the negotiations between the market leader and the government. Still, these findings primarily focus on voluntary agreements with the government.

Sector homogeneity could facilitate Cradle to Cradle when companies do influence each other. Especially when a market leader implements Cradle to Cradle, this might foster other companies in the sector to implement Cradle to Cradle as well.

Currently, sector homogeneity cannot be identified as a successful factor for Cradle to Cradle. At the end of the questionnaire respondents have been asked to which sector their company belongs. Strikingly, in The Netherlands there are hardly companies of the same sector that possess Cradle to Cradle certification.

5.2. Policy climate

Originally, the government used direct regulations to achieve environmental targets. However, this ‘authoritarian’ policy style instrument proved to be inadequate. As a reaction, environmental targets should be achieved by applying the concept of ‘shared responsibility’ (Bressers & De Bruijn, 2005a). This concept fostered voluntary initiatives.

A policy climate that fosters responsibility also to be taken by companies and citizens, will be a successful factor for any voluntary initiative. Especially Cradle to Cradle, which is a private initiative, will better perform in a policy climate of consensus seeking and joint problem solving.

Indeed, a majority of the respondents stated that their company discussed environmental targets with the government at merely all kinds of levels. Moreover, almost all companies do discuss these environmental targets with third parties. These findings indicate that these companies operate in a climate of consensus seeking. Furthermore, most companies do have the flexibility to define their own strategy to achieve the environmental targets.

An important factor for the successful implementation of Cradle to Cradle is a policy climate that is not authoritarian. A policy climate that forces companies to think about solutions to environmental problems and communicate about these with stakeholders, will also foster the decision to implement Cradle to Cradle.

Part of the policy climate is of course the role of the government. One of the success factors for Dutch Covenants was the positive relationship between companies and the government. A certain level of trust, and especially *initial* trust (Bressers & De Bruijn, 2005a) and consensus building have been identified as success factors for the Covenants in The Netherlands. These aspects of the policy climate did obviously not apply to Cradle to Cradle.

5.3. The role of the government

Mutual respect and trust is a crucial positive factor for the performance of negotiated agreements. Bressers and De Bruijn (2005) have developed the *contextual interaction theory*. It states that the social interaction process can be explained by “the combined values of the actors’ motivation, information and relative power” (Bressers & De Bruijn, 2005a: 243). If negotiations take place in a climate of consensus seeking, joint problem solving, mutual respect and trust, then the effects will be (Bressers & De Bruin, 2005a):

- with regard to the actors’ motivation: both parties will not demand extreme efforts from each other, because both are not willing to risk a long term trust relationship;
- regarding information: an open and credible exchange of information;
- regarding power: the other party will not be abused for a short term goal, as this would affect the (high) level of trust.

In addition, Croci (2005) states: “The process in which stakeholders are involved to reach a voluntary agreement can contribute to build trust among actors and consensus on targets, which can positively affect the implementation phase and reduce monitoring and enforcement costs” (Croci, 2005: 23).

With regard to the ‘policy style’ factor, Bressers and De Bruijn see trust as a crucial factor. Exactly at this point, the findings of the questionnaire are striking. Only five companies that possess Cradle to Cradle certification agree that the government is a reliably partner to talk to. Furthermore, only one company agrees on the statement that the government has proven to keep its promises. With regard to Cradle to Cradle, ten respondents state that the government does not facilitate the implementation sufficiently.

Croci (2005) has identified a couple of instruments that the government can use to facilitate voluntary initiatives. These include financial incentives like subsidies or tax exemptions, creating a platform to exchange information, carrying out less frequent inspections, easier administrative procedures for participating companies or helping companies to get easier access to credit. Respondents have been asked whether the government used these instruments to facilitate the implementation of Cradle to Cradle. According to the findings of the questionnaire, almost none of the instruments had been used by the government so far. Of course, all of these findings do not support trust between companies and the government.

When a company negotiates with the government on specific environmental targets, it is important that both parties trust each other. In contrast, Cradle to Cradle is a purely private initiative. Nothing has to be negotiated, nothing has to be agreed upon. This evokes the question why trust in the government should be important in the context Cradle to Cradle.

As a result from the changed approach to environmental problems during the 1980s in Europe, the 5th Environmental Action Programme of the European Union emphasized structural change. This included a different view with regard to the policy instruments that should be used, “such as fiscal incentives or voluntary instruments, which strengthen producers’ and consumers’ own interests in environmental decision-making” (Hey, 2005: 23).

This European environmental policy ‘trend’, did of course affect The Netherlands. In reaction to the international developments, the newly introduced National Environmental Policy Plan (NEPP) aimed “specifically at eliciting private initiative and ‘shared responsibility’” (Bressers & De Bruijn, 2005a: 242). This is a crucial point, as ‘shared responsibility’ is still part of Dutch environmental policy.

Börkey et al. (1998) identified regulatory, economic and voluntary environmental policy instruments. Croci (2005) elaborated on the voluntary instruments and distinguished voluntary agreements from private voluntary initiatives. Cradle to Cradle should be identified as a third party initiative according to Croci’s categorisation. Although Cradle to Cradle is a purely private initiative, basically the initiative is a consequence of governmental policy.

For this reason, the government should facilitate Cradle to Cradle much more than it has done so far. According to the findings of the questionnaire, the implementation of Cradle to Cradle obviously expands when the government will make use of financial benefits like subsidies or tax exemptions, facilitate platforms for participating companies where knowledge and experience can be exchanged, carry out less frequent inspections at these companies, make administrative procedures easier and help them to get easier access to credit.

When the government supports companies to implement Cradle to Cradle, it will positively affect trust.

So, the government should facilitate Cradle to Cradle because Cradle to Cradle is a voluntary initiative and thus part of governmental policy? Should the government consequently support each voluntary initiative actively and explicitly?

Of course, as a basic rule a voluntary initiative should contribute to the environment and should also be more effective than direct regulation. In other words, a voluntary initiative should have added value. With regard to the Cradle to Cradle philosophy, it is almost impossible not to be convinced of its added value.

There are however many voluntary initiatives that have an added value without being supported by the government explicitly. ISO 14000 is an example of a purely private initiative. However, this voluntary initiative is much more specific than Cradle to Cradle. Because of the holistic character of Cradle to Cradle, it is much more difficult for companies to implement it. Cradle to Cradle is not about fulfilling certain environmental requirements, it is about changing the whole system. Currently, Cradle to Cradle is still in its infancy. Although it is a third party initiative, the government can play the same role as it can do with infant industries. Protecting and supporting them until they are strong enough to 'survive' without governmental help. This is what the government should also do with regard to Cradle to Cradle.

A last question remains. If the government should support Cradle to Cradle because it is a contributory voluntary initiative that will perform better with governmental support, why does the government currently not act in a supportive way? Two reasons can be given for this. The first reason corresponds with one of the answers that had been given in the questionnaire. One respondent explained that the holistic approach of Cradle to Cradle is too much for the government. Basically, the government is a fragmented institution, divided in departments based on a certain policy topic. Cradle to Cradle requires a change of the system, i.e. more comprehensive than only environmental policy. The government thus lags behind with regard to knowledge of Cradle to Cradle and the way it can effectively support it. The second reason is political. Cradle to Cradle requires, ultimately, a change of the system. However, currently there are of course power mechanisms at work in the political arena that do have a lot of interests in today's Cradle to Grave system. The technical metabolism, which is pursued by Braungart and McDonough, has consequences of course for current industries that extract raw materials. Demand for raw materials will decline, unless demographical developments lead to a higher demand. Using renewable energies has of course influences for fossil energy industries, although using renewable energies is already supported heavily by the government. One respondent of the questionnaire stated that Cradle to Cradle is not supported by the government, because there are alternatives that are more popular. Alternatives that are efficient instead of effective, but at least do not require a whole change of the system.

5.4. Responsible economics

Why should companies implement Cradle to Cradle when the government does not support them and in addition, direct regulation is not to be expected in the near future?

Of course, responsible entrepreneurship can drive companies to implement Cradle to Cradle. In the questionnaire, all respondents stated that their companies possess a strategy on Corporate Social Responsibility (CSR). Although CSR can be seen as a form of self-regulation, the European Commission has developed comprehensive strategies to support CSR. According to the European Commission, “companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis” (CEC, 2006: 5) when conducting CSR strategy. CSR is associated with responsible entrepreneurship, and the European Commission has facilitated it by creating a “European Alliance for CSR”, despite CSR is a voluntary initiative. The difference with the governmental support for Cradle to Cradle is striking at this point.

Porter and Kramer (2006) have criticised CSR because in practice it would mainly be a tool to improve the public image of the company. Porter and Kramer argued that a change in mind-set would be necessary. Business and society are mutually dependent, which means that companies should have a policy that not only aims at corporate profits, but simultaneously considers social progress as the company’s core business. Creating shared value would really be responsible entrepreneurship according to Porter and Kramer. In the questionnaire, ten respondents stated that their company’s core business focused on corporate profits as well as social progress.

Cradle to Cradle would thus be a logical next step for these ‘responsible’ companies.

However, the results of the questionnaire make clear that the most successful factor for Cradle to Cradle is the economic benefit. Investing in Cradle to Cradle would result in a competitive advantage, because 100% of the respondents stated that they expect their competitors to implement Cradle to Cradle as well within a few years. On the one hand, this is because of ideological reasons. Respondents state that Cradle to Cradle is ‘the only good thing to do’, or will become a minimum requirement in environmental policy. On the other hand, respondents are looking at the short term advantages. Sustainability, including Cradle to Cradle, is becoming a popular item. Companies can establish a positive public image by marketing Cradle to Cradle. Again, 100% of the respondents expect to have a competitive advantage by

marketing their Cradle to Cradle certification. All of them inform their customers that they are Cradle to Cradle certified. Companies therefore try to gain public image benefits by implementing Cradle to Cradle.

Economic considerations do form success factors for Cradle to Cradle. In some way, this sounds paradoxical. Porter and Kramer have criticised Corporate Social Responsibility because economic considerations were most important, and CSR was placed somewhere in the periphery. Companies should balance both interests by creating shared value. Cradle to Cradle is perceived to be a revolutionary next step, as it requires a whole change of the system from Cradle to Grave towards Cradle to Cradle.

Dutch companies that possess Cradle to Cradle certification do try to gain the same advantages where Porter and Kramer have CSR criticised for. However, in a policy climate that lacks government support, it should be accepted that companies try to find short term advantages. This is comparable with a government that supports infant industries in a laissez-faire economy. This is accepted until the industries are strong enough to operate without governmental support. Without short-term public image benefits, companies that implement Cradle to Cradle would maybe not survive. However, it is to be hoped that on the long term, a company will not gain competitive advantages anymore with regard to public image benefits. This would mean that competitors also implement Cradle to Cradle. Ultimately, we live in a Cradle to Cradle world.

Chapter 6: Conclusion and recommendations

6.1. Conclusion

Environmental problems arose after the Industrial Revolution. Since, especially in industrialised countries, people thought they were able to control nature. The planet was seen as a gift to humans. Humans should of course use the planet in order to satisfy the needs, in other words, nature had to be dominated. Consequently, a whole economic system developed based on this attitude towards nature. Braungart and McDonough called this a linear system. Raw materials were extracted, products were produced and consumed, and after use the materials became waste. Still, the economy is based on the linear system, i.e. from Cradle to Grave.

During the last decades, people have recognised that their economic activities harmed the environment significantly. In first instance, the government was perceived to be responsible to deal with environmental problems. The government tried to apply so-called *end-of-pipe* solutions. General requirements with regard to waste or emissions via direct regulations. During the 1980s, environmentalists throughout Europe became more and more influent, which eventually led to a change in the environmental policy approach. Environmental policy was perceived to be more effective by also using economic and voluntary instruments. This international 'trend' did also apply to The Netherlands. Dutch environmental policy stressed "shared responsibility" with regard to the environment.

Shared responsibility meant that companies themselves should also think about environmental protection. The idea behind this strategy was that companies had more information about the environmental impact of their activities and therefore could better determine effective environmental strategies than the government. At the same time, voluntary action could have certain advantages for the companies too. These include lower transaction costs, access to information and technical assistance.

The kind of voluntary initiatives varied. According to Croci (2005), voluntary initiatives could be categorised into six groups: voluntary public schemes, negotiated agreements, unilateral commitments recognised by the Public Administration, unilateral commitments, third party initiatives and private agreements. In general, voluntary initiatives all go beyond regulation. The reasons why voluntary initiatives are taken differ, so do their performance. For example, negotiated environmental agreements proved to be very successful in The Netherlands, where they are called Covenants.

Thus, since about two decades more policy instruments existed than only direct regulation. As a consequence, environmental strategies became more and more diverse. Last years, *efficiency* has been a popular term with regard to environmental protection, i.e. doing more with less. According to Braungart and McDonough this strategy still evokes feelings of guilt towards the environment. Efficiency is associated with ‘negative’ terms as limitations, restrictions and minimisations. As a positive answer, Braungart and McDonough introduced Cradle to Cradle. In The Netherlands, the philosophy of Cradle to Cradle has been widely supported.

As Cradle to Cradle can be seen as a voluntary initiative, the question evokes if the success factors of Dutch Covenants – another voluntary initiative that has been studied already by Bressers and De Bruijn – would maybe also explain the successful performance of Cradle to Cradle in The Netherlands. On the other hand, the Dutch Covenants are an agreement between companies and the government, while Cradle to Cradle is purely a private voluntary initiative. Therefore in this explorative research also other potential success factors for Cradle to Cradle in The Netherlands have been investigated. The main research question has therefore been formulated as follows:

“What have been the success factors of Cradle to Cradle in The Netherlands?”

The Internet-survey of this research among companies that possess Cradle to Cradle certification aimed at obtaining a better insight in success factors of Cradle to Cradle in The Netherlands.

Bressers and De Bruijn applied four hypotheses from the Neapol project to Dutch Covenants. The policy climate, instrumental and sectoral hypotheses were accepted in their study. These

factors have been integrated in the questionnaire of this research. Only the policy climate factors could partly be used in explaining the successful performance of Cradle to Cradle in The Netherlands. The other success factors that were identified by Bressers and De Bruijn with regard to the Dutch Covenants, were quite specific to voluntary agreements.

With regard to the companies that possess Cradle to Cradle certification, the government cannot be seen as a successful factor at all. The government obviously does not support Cradle to Cradle in any way for these companies.

It would be premature conclusion to state that the government does not facilitate Cradle to Cradle at all. With regard to other voluntary initiatives, e.g. the Dutch covenants, the Dutch government has proven to facilitate these.

At least, much more research is required on the role of the government with regard to Cradle to Cradle.

The companies that were in the research all performed well with regard to the stage of responsible entrepreneurship, but economic factors can be concluded to be the most success factors that explain Cradle to Cradle in The Netherlands. The concerning companies invest in Cradle to Cradle because they expect a competitive advantage. Furthermore, respondents to the questionnaire see Cradle to Cradle as a possibility to distinguish themselves from other companies, and market their Cradle to Cradle certification in order to gain public image benefits.

The policy climate does also play a role. Companies that possess Cradle to Cradle certification discuss their environmental targets with the government at different levels and with third parties. Moreover, companies possess the flexibility to determine their own strategy to achieve environmental targets. The policy climate is clearly not authoritarian. Companies in The Netherlands indicate that they operate in a climate of consensus seeking. This forces companies to think about solutions to environmental problems, of which Cradle to Cradle is one.

Another major conclusion of this research concerns the potential role that the government can play in facilitating Cradle to Cradle, according to the companies in this research. All

respondents expect Cradle to Cradle to expand with support from the government. Based on these findings, governmental support is therefore highly recommended.

Although a voluntary initiative is purely a private one, the government could be a successful factor for it. Corporate Social Responsibility (CSR) is a good example of this. Companies do not have to sign an agreement with the government, but still the government can support CSR. The European Commission for example launched the “European Alliance for CSR”. In The Netherlands, the government could also facilitate a Cradle to Cradle platform.

Another instrument that respondents expect to be successful, are financial incentives. A company could be given a subsidy, or a tax exemption, for a designed and produced product that is Cradle to Cradle certified. In the short term, this will cost money, but on the long term, this money will be saved as environmental problems should diminish.

Given the current cuts in public expenditure, it could of course be possible that the government does not have any money to finance subsidies or tax exemptions. In that case, the government could make use of the other instruments: less frequent inspections, easier administrative procedures or facilitate access to credit.

All of these instruments do directly or indirectly lead to economic advantages. As economic factors have been identified as the most successful for Cradle to Cradle in The Netherlands, it should be clear that the government possesses enormous untapped potential with regard to the development of Cradle to Cradle.

With regard to Cradle to Cradle, The Netherlands can be perceived as a best practice, at least in Europe. This means that learning from this best practice does not only apply to The Netherlands itself, but also for other countries. Within Europe, these learning processes can be coordinated by the European Union. If *Brussels* would look more to The Netherlands with regard to Cradle to Cradle, this philosophy has a much bigger chance to expand all over the world. In general however, the success factors of voluntary initiatives vary from time to time and from place to place. Maybe this applies to Cradle to Cradle to a lesser extent, because of its holistic nature. In any way, this explorative research evokes many new questions which unfortunately remain unanswered. Therefore, more research is required on this topic.

6.2. Recommendations for further research

The population of this research consisted of Dutch companies that possess Cradle to Cradle certification. Statements based on this research can basically only be made with regard to this population. A very interesting question would be why these companies implement Cradle to Cradle. In other words, take the step from explorative towards explanatory research. In this context, it would be interesting to compare the success factors with companies that are not working with Cradle to Cradle. Economic advantages should apply to all companies, so why do only a couple of companies implement Cradle to Cradle? Does the stage of responsible entrepreneurship explain the difference between implementing Cradle to Cradle or not? Does the sense for innovativeness explain the difference?

Cradle to Cradle does also perform well in the United States. A comparative study could be interesting in order to get better insight in success factors under different circumstances.

Given the influential role the European Union plays for global environmental policies, it could be interesting to know why Brussels does not promote Cradle to Cradle. Is this due to a lack of knowledge about the idea, or is it because there are power mechanisms at hand?

Here the discussion comes back to the role of the government. The findings of this research are clear, but of course they should be questioned and at least verified. This research contained only 19 companies. It would be wise to incorporate also other companies that are working with Cradle to Cradle without being Cradle to Cradle certified; how is their perception of the government? And of course, in studying the role of government, it would be highly recommended to ask governments at different levels about their perception of Cradle to Cradle and the way they deal with it.

Cradle to Cradle could be very interesting for developing countries as well. A lot of African states for example have been industrialised on a small scale only. Could it be possible for them to directly introduce the technical metabolism, i.e. a Cradle to Cradle system?

A final remark has to be made to Cradle to Cradle in The Netherlands. It could be interesting to study the relationship between the place of origin of the company and the implementation of Cradle to Cradle. It seems that most companies that implement Cradle to Cradle are located outside the Randstad-region. Especially the southern part of The Netherlands counts the majority of companies that implement Cradle to Cradle. Does for example the density of business networks play a role? Or maybe attention paid to Cradle to Cradle by local media?

All of these questions could help to develop the philosophy of Cradle to Cradle. It would be useful research. Not only because it helps Cradle to Cradle, but ultimately, because environmental problems wouldn't exist in a Cradle to Cradle world. Regulatory, economic or voluntary initiatives would be irrelevant. A new movement should arise. Like the "green" parties in the 1980s were responsible for the structural changes in environmental policies, a new movement should arise in order to change the whole system from Cradle to Grave towards Cradle to Cradle. This should be a positive movement that does not stress the negative aspects of human activity, which leads to a feeling of guilt towards our planet. Humans do always have needs, and thus they do want to satisfy them perpetually. No problem of course!

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Appendix I: Letter of introduction

Dear Sir / Madam,

As part of my graduation at the University of Twente in The Netherlands I am doing research to circumstances that facilitate the application of “Cradle to Cradle”. Your company possesses a “Cradle to Cradle” certification and is therefore in the target of my research.

I would highly appreciate if you are willing to fill in an online questionnaire concerning “Cradle to Cradle”. The questionnaire consists of 25 closed or multiple choice questions and will take about 15 minutes of your time. In order to complete the research, data obtained from this questionnaire are essential.

In order to continue to the questionnaire please use this link:

www.thesistools.com/web/?id=209841

I kindly request you to complete this questionnaire by **Monday, July 25**. After answering the questions you can directly send the questionnaire.

Information obtained shall be kept confidential and shall be used for academic purposes only. It will not be able to trace back an individual company out of the results of this research.

A brief explanation of the research topic can be found on the introductory page of the questionnaire. Please use the link above to open the questionnaire.

I would like to thank you in advance for your cooperation on this research. Please contact me if you would like to receive a copy of the thesis or if you have any questions about the questionnaire or the research.

Yours sincerely,

Koos van der Meulen

student Public Administration / Sustainable Development

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Appendix II: Questionnaire Cradle to Cradle

Introductory page

Please use the "START" button below to start the questionnaire.

First, some background information on the research topic and the questionnaire will be given.

Cradle to Cradle is an innovative, a sustainable and an ambitious idea about designing and producing present-day products. Cradle to Cradle is still in its infancy; thus having a promising future. Currently however, companies are not bound to any legal obligation to apply Cradle to Cradle. Although we all might like to, companies will not abruptly apply Cradle to Cradle. Companies should not only be willing to implement Cradle to Cradle, they also need to be able to do so. In other words: circumstances need to be conducive to Cradle to Cradle.

My study background is Public Administration. Therefore, in this research I do not focus on the chemical technological aspect of Cradle to Cradle, but instead on the circumstances that facilitate Cradle to Cradle. These circumstances could have a diverse character and could relate to e.g. political, economic, environmental, publicity and policy related conditions.

Precisely because of the voluntary nature of Cradle to Cradle it is extremely interesting to collect more data on circumstances conducive to Cradle to Cradle.

Research about the public administrative aspect of Cradle to Cradle is limited. However, research has been done on companies that voluntarily complied with other kinds of environmental requirements.

Consequently, success factors resulted from this research. First part of the questionnaire in my research compares these success factors with the circumstances that your company faces. These success factors concern for example the policy climate, the scope and diversity of the network your company is part of, and the openness of communication with the government. In the second part of the questionnaire political and economic circumstances are added. Finally, "Corporate Social Responsibility" (CSR) will be dealt with.

The results obtained by the questionnaire will help to answer the research question:

"What are the success factors of Cradle to Cradle implementation in The Netherlands?"

In addition, they could lead to further investigation that contributes to the ultimate goal of expanding Cradle to Cradle.

Start

1. Did you sign an agreement with the government to prove that you go beyond regulation by implementing "Cradle to Cradle"?

- ☒ Yes
- ☒ No
- ☒ Don't know

2. What kind of document should you agree upon?

- ☐ Individual agreement
- ☐ Multi-actor covenant
- ☐ Letter of agreement
- ☐ Contract
- ☐ Other, please specify:

3. Numerous environmental targets are set by legislation. Do you discuss these targets with the government?

- ☒ Yes
- ☒ No
- ☒ Don't know

4. At what government-level do you discuss these environmental targets?

- ☐ Local government
- ☐ Provincial government
- ☐ National government
- ☐ European government (European Commission)
- ☐ Water Authorities

5. Do you have the flexibility to define your own strategy to achieve the environmental targets that apply to your company?

- ☒ Yes
- ☒ No
- ☒ Don't know

6. Because of what idea does the government grant flexibility to you to define your own strategy to achieve environmental targets?

- ☐ The government does not want to decide everything from the central level; companies are responsible to define the way they want to achieve environmental targets;
- ☐ The company can work out an effective strategy that fits best for its own situation;
- ☐ Other, please specify:

7. Do you discuss environmental targets with third parties?

- ☒ Yes
- ☐ No
- ☐ Don't know

8. With what kind of third parties do you discuss environmental targets?

- ☐ Industrial organisations
- ☐ NGOs (including environmental organisations)
- ☐ Customers
- ☐ Suppliers
- ☐ Community
- ☐ Other, please specify:

9. Five statements on the role of the government are given below. Please choose for the answer that is, in your perception, most suited to your company.

	Agree	Don't agree	Don't know
The government is open to new opportunities concerning environmental regulations.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
The government is a reliable partner to talk to.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
The government has proven to keep its promises.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
The government facilitates "Cradle to Cradle" sufficiently.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
The government recognizes that "Cradle to Cradle" goes beyond environmental regulation.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Do you expect that the objectives of "Cradle to Cradle" will be transformed into regulation by the government within a few years?

- ☐ Yes, because:
- ☐ No, because:

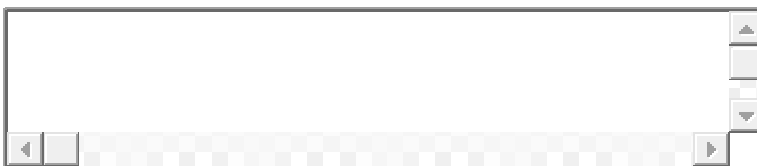
11. Do you expect that "Cradle to Cradle" will be applied within a few years by the competitors of your company?

- ☐ Yes, because:
- ☐ No, because:

12. "Cradle to Cradle" even goes beyond existing environmental regulation. However, there are many different areas of regulation. It could be possible that the company does not yet meet the proposed targets of other policy areas. In situations like that, do you use Cradle to Cradle certification as an instrument to negotiate expected direct regulations?

- ☐ Yes
- ☐ No
- ☐ Don't know

13. If you use "Cradle to Cradle" certification as an instrument, could you please explain in what way you do so?



14. Can a clear market leader be defined in the sector of your company?

- ☐ Yes
- ☐ No
- ☐ Don't know

15. **Four statements on the market leader in your company's sector are given below. Please choose for the answer that is, in your perception, most suited to your company.**

	Agree	Don't agree	Don't know
The market leader has a significant influence on the other companies.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
The market leader is an attractive actor for the government to talk to.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
The market leader can represent the sector with regard to discussions with the government on environmental targets.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Companies in the sector will accept the results of negotiations between the market leader and the government.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. **Two statements on negotiations with the government are given below. Please choose for the answer that is, in your perception, most suited to your company.**

	Agree	Don't agree	Don't know
It is possible that all companies in your sector agree to be represented by one actor in negotiations with the government.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Companies in your sector will accept the results of negotiations between the representative actor and the government.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. **Have you gained any of the following advantages by implementing "Cradle to Cradle"?**

	Agree	Don't agree	Don't know
lower transaction costs	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
technical assistance or training	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
access to information	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. **Do you already have access to material resources that facilitate the implementation of "Cradle to Cradle" (e.g. raw materials, safe materials, saving energy systems)?**

- ☒ Yes
- ☒ No
- ☒ Don't know

19. Your company's customers are:

- ☐ Individuals
- ☐ Companies

20. Next questions relate to your company's "public visibility".

	Yes	No	Don't know
Can your company be located in the end of the production chain?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Do you produce products that are well-known to public?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Do you think the marketing of "Cradle to Cradle" certification leads to competitive advantages?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Do you inform your customers that you are producing "Cradle to Cradle"?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

21. Do you expect that "Cradle to Cradle" will be applied on a larger scale in a few years?

- ☒ Yes
- ☒ No
- ☒ Don't know

22. Do you expect to have a competitive advantage by investing in "Cradle to Cradle" from now?

- ☒ Yes
- ☒ No
- ☒ Don't know

23. Does the government currently facilitate "Cradle to Cradle" through:

	Yes	No	Don't know
financial incentives like subsidies or tax exemptions?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
facilitating platforms where knowledge and experience can be exchanged?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
carrying out less frequent inspections?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
easier administrative procedures for participating companies?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
helping companies to get easier access to credit?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

24. Do you think Cradle to Cradle would be implemented by more companies when the government will:

	Yes	No	Don't know
make use of financial incentives like subsidies or tax exemptions?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
facilitate platforms for participating companies where knowledge and experience can be exchanged?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
carry out less frequent inspections at those companies using "Cradle to Cradle"?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
make administrative procedures easier for participating companies?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
help participating companies to get easier access to credit?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

25. Does your company has a specific policy with regard to Corporate Social Responsibility (CSR)?

- ☒ Yes
- ☒ No
- ☒ Don't know

26. Does your company have a strategy that not only aims at corporate profits, but simultaneously considers social progress as the company's core business?

- ☒ Yes
- ☒ No
- ☒ Don't know

27. To what kind of social progress do you focus?

- ☐ Education
- ☐ Health
- ☐ Sustainable development
- ☐ Other, please specify:

28. Is it feasible, in your perception, that in a couple of years your company will pursue corporate profits and social progress as core business simultaneously?

- ☒ Yes
- ☒ No
- ☒ Don't know

29. What kind of role do you have in the company?

30. To which sector does your company belong?

Thank you very much for completing this questionnaire.

[SEND QUESTIONNAIRE](#)

Appendix III: Introductiebrief

Geachte heer / mevrouw,

In het kader van mijn afstudeeropdracht van de Universiteit Twente doe ik onderzoek naar de omstandigheden die de toepassing van “Cradle to Cradle” faciliteren. Uw bedrijf is “Cradle to Cradle” gecertificeerd en valt daarom in de doelgroep van mijn onderzoek.

Graag zou ik u willen verzoeken een online vragenlijst met betrekking tot “Cradle to Cradle” in te vullen. Het betreft 25 gesloten cq. meerkeuzevragen en zal ongeveer 15 minuten van uw tijd in beslag nemen. De gegevens zijn voor het afronden van het onderzoek essentieel.

U kunt naar de vragenlijst gaan door op de volgende link te klikken:

www.thesistools.com/web/?id=209715

Ik zou u vriendelijk willen verzoeken de vragenlijst **uiterlijk maandag 25 juli** in te vullen. Na het online invullen van de vragenlijst kunt u deze direct versturen.

De op basis van deze vragenlijst verkregen informatie zal vertrouwelijk behandeld worden en alleen academische doeleinden dienen. De resultaten van het onderzoek zullen niet tot een individueel bedrijf herleidbaar zijn.

Een korte, inhoudelijke toelichting op het onderzoek en de vragenlijst kunt u vinden op de introductiepagina van de vragenlijst, zie hiervoor bovenstaande link.

Graag dank ik u bij voorbaat voor uw medewerking. Indien u een exemplaar wenst te ontvangen van de afstudeerscriptie, of vragen hebt over de vragenlijst dan wel het onderzoek, dan kunt u uiteraard altijd contact met mij opnemen.

Met vriendelijke groet,

Koos van der Meulen

student Bestuurskunde / Duurzame Ontwikkeling

Universiteit Twente

tel: 06-13616995

email: j.s.vandermeulen@student.utwente.nl

Appendix IV: Vragenlijst Cradle to Cradle

Klik onderaan de pagina op "START" om de vragenlijst te starten. Hier treft u allereerst enige achtergrondinformatie met betrekking tot het onderzoek en deze vragenlijst

“Cradle to Cradle” is een vernieuwende, duurzame en ambitieuze visie op ontwerpen en produceren van hedendaagse producten. “Cradle to Cradle” staat nog in de kinderschoenen; het heeft de toekomst dus nog voor zich. Op dit moment bestaat er echter voor bedrijven geen juridische verplichting om “Cradle to Cradle” te produceren. Al zouden we het misschien graag willen, duidelijk is wel dat bedrijven niet van de ene op de andere dag zullen overstappen op “Cradle to Cradle”. Bedrijven moeten niet alleen ‘willen’, maar ook ‘kunnen’. Met andere woorden: de omstandigheden moeten het toepassen van “Cradle to Cradle” bevorderen.

Als student Bestuurskunde richt ik me in dit onderzoek niet op de chemisch technologische achtergrond van “Cradle to Cradle”, maar juist op die omstandigheden die het toepassen van “Cradle to Cradle” faciliteren. Die omstandigheden kunnen zeer divers zijn en kunnen samenhangen met bijvoorbeeld politieke, beleidsmatige, economische, publicitaire en milieugerelateerde voorwaarden. Juist vanwege het vrijwillige karakter van “Cradle to Cradle” is het voor de toekomst buitengewoon interessant om een beter beeld te krijgen bij de omstandigheden die bevorderlijk zijn voor “Cradle to Cradle”.

Onderzoek naar het bestuurskundige aspect van “Cradle to Cradle” is nog zeer beperkt. Wel is reeds onderzoek gedaan naar bedrijven die zich vrijwillig conformeerden aan andersoortige milieueisen. Hieruit vloeiden succesfactoren voort. Het eerste deel van de vragenlijst in mijn onderzoek zet deze succesfactoren af tegen de omstandigheden waarmee uw bedrijf geconfronteerd wordt. Het gaat hier dan bijvoorbeeld om het beleidsklimaat, de grootte en diversiteit van het netwerk waarin uw bedrijf zit en de openheid van de communicatie met de overheid. Het tweede deel van de vragenlijst voegt hieraan politieke en economische omstandigheden toe. Tot slot wordt het “Maatschappelijk Verantwoord Ondernemen” (MVO) behandeld.

De resultaten van de vragenlijst zullen helpen de onderzoeksvraag te beantwoorden:

"Wat zijn de succesfactoren van de implementatie van Cradle to Cradle in Nederland?"

Tevens kunnen zij aanleiding zijn voor verder onderzoek met als uiteindelijke doel het verder kunnen uitbreiden van “Cradle to Cradle”.

[Start](#)

1. Heeft u een overeenkomst getekend met een overheidsinstantie om aan te tonen dat u door het toepassen van "Cradle to Cradle" verder gaat dan de huidige regelgeving vereist?

- ☐ Ja
- ☐ Nee
- ☐ Weet niet

2. Wat is het type overeenkomst dat met de overheidsinstantie is getekend?

- ☐ Individuele overeenkomst
- ☐ Multi-actor convenant
- ☐ Brief houdende overeenstemming
- ☐ Contract
- ☐ Anders, nl:

3. Er zijn talloze doelen geformuleerd in regelgeving aangaande het milieu. Bediscussieert u deze doelen met de overheid?

- ☐ Ja
- ☐ Nee
- ☐ Weet niet

4. Op welk niveau bediscussieert u deze milieudoelen?

- ☐ Lokale overheid
- ☐ Provinciale overheid
- ☐ Nationale overheid
- ☐ Europese overheid (Europese Commissie)
- ☐ Waterschap

5. Heeft u de vrijheid om zelf te bepalen op welke manier u wilt voldoen aan de vastgestelde milieudoelen?

- ☒ Ja
- ☒ Nee
- ☒ Weet niet

6. Wat is volgens u de achterliggende reden dat de overheid u de vrijheid geeft om zelf te bepalen op welke manier u wilt voldoen aan de milieu-eisen?

- ☐ De overheid vindt dat niet alles centraal bepaald moet worden; bedrijven zijn verantwoordelijk voor de wijze waarop aan milieu-eisen voldaan wordt;
- ☐ U kunt nu een effectieve strategie uitwerken die specifiek voor uw bedrijf geldt;
- ☐ Anders, nl:

7. Bediscussieert u milieudoelen met derden?

- ☒ Ja
- ☒ Nee
- ☒ Weet niet

8. Met wat voor soort derden bediscussieert u deze milieudoelen?

- ☐ Industriële organisaties
- ☐ NGO's (waaronder milieuorganisaties)
- ☐ Klanten
- ☐ Leveranciers
- ☐ Lokale gemeenschap
- ☐ Anders, nl:

9. Hieronder volgen enkele stellingen over de rol van de overheid. Svp het antwoord aanvinken dat in uw beleving voor uw bedrijf het meest van toepassing is.

	Eens	Oneens	Weet niet
De overheid staat open voor nieuwe alternatieven wat betreft milieu-regelgeving.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
De overheid is een betrouwbare partner om mee te praten.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
De overheid heeft bewezen haar beloftes na te komen.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
De overheid faciliteert "Cradle to Cradle" voldoende.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
De overheid erkent dat "Cradle to Cradle" verder gaat dan de huidige milieu-regelgeving.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Verwacht u dat de doelstellingen van "Cradle to Cradle" binnen enkele jaren door de overheid zullen worden omgezet in regelgeving?

- ☒ Ja, omdat:
- ☒ Nee, omdat:

11. Verwacht u dat "Cradle to Cradle" binnen enkele jaren ook door uw concurrenten zal worden toegepast?

- ☒ Ja, omdat:
- ☒ Nee, omdat:

12. "Cradle to Cradle" gaat verder dan bestaande milieu-regelgeving. Echter, er is ook regelgeving op andere gebieden. Het zou kunnen dat u op andere gebieden dan milieu nog niet aan voorgestelde regelgeving kunt voldoen. Gebruikt u in dergelijke situaties de "Cradle to Cradle" certificering als instrument in onderhandelingen of discussies met de overheid?

- ☒ Ja
- ☒ Nee
- ☒ Weet niet

13. **Indien u "Cradle to Cradle" certificering inderdaad als instrument gebruikt op andere gebieden, kunt u aangeven op welke manier u dat doet?**

14. **Is in de sector waarin uw bedrijf actief is sprake van een duidelijke marktleider?**

- ☒ Ja
☒ Nee

15. **Hieronder volgen enkele stellingen over de marktleider van de sector waarin uw bedrijf actief is. Svp het antwoord aanvinken dat in uw beleving het meest van toepassing is.**

	Eens	Oneens	Weet niet
De marktleider heeft een significante invloed op de andere bedrijven.	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
De marktleider is een goede gesprekspartner voor de overheid.	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
De marktleider kan de sector vertegenwoordigen in onderhandelingen met de overheid omtrent milieu-eisen.	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Bedrijven in de sector zullen de uitkomst van de onderhandelingen tussen de marktleider en de overheid accepteren.	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

16. **Hieronder volgen twee stellingen die betrekking hebben op onderhandelingen met de overheid. Svp het antwoord aanvinken dat in uw beleving het meest van toepassing is voor uw bedrijf.**

	Eens	Oneens	Weet niet
Het is mogelijk om in de sector waarin uw bedrijf actief is één vertegenwoordiger overeen te komen die de gehele sector representeert in onderhandelingen met de overheid.	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Bedrijven in de sector zullen de uitkomst van de onderhandelingen tussen de vertegenwoordiger van de sector en de overheid accepteren.	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

17. **Heeft u van onderstaande voordelen kunnen genieten door de toepassing van "Cradle to Cradle" binnen uw bedrijf?**

	Ja	Nee	Weet niet
lagere transactiekosten	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
technische ondersteuning / training	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
toegang tot informatie	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. **Heeft u al toegang tot materiële middelen die de toepassing van "Cradle to Cradle" voor u vergemakkelijken (bijv. grondstoffen, veilige materialen, duurzame energiesystemen)?**

- ☒ Ja
☐ Nee
☐ Weet niet

19. **Klanten van uw bedrijf zijn:**

- ☐ Particulieren
☐ Zakelijke klanten

20. **De volgende vragen hebben betrekking op de "publieke zichtbaarheid" van uw bedrijf.**

	Ja	Nee	Weet niet
Bevindt uw bedrijf zich aan het einde van de produktieketen?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Produceert uw bedrijf produkten die bij het publiek bekend zijn?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Verwacht u dat het marketen van uw "Cradle to Cradle" certificering leidt tot een competitief voordeel?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Informeert u uw klanten dat u "Cradle to Cradle" produkten produceert?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. Verwacht u dat "Cradle to Cradle" over enkele jaren op grotere schaal zal worden toegepast?

- ☒ Ja
- ☒ Nee
- ☒ Weet niet

22. Verwacht u een competitief voordeel door nu te investeren in "Cradle to Cradle"?

- ☒ Ja
- ☒ Nee
- ☒ Weet niet

23. Faciliteert de overheid op dit moment bedrijven in de toepassing van "Cradle to Cradle" middels:

	Ja	Nee	Weet niet
financiële prikkels als subsidies of belastingvoordeel?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
het creëren van een platform waar kennis en ervaring met betrekking to "Cradle to Cradle" kan worden uitgewisseld?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
het minder vaak uitvoeren van inspecties bij bedrijven?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
het vereenvoudigen van administratieve procedures?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
het ondersteunen van bedrijven om makkelijker toegang tot krediet te krijgen?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

24. Verwacht u dat "Cradle to Cradle" in de toekomst door meer bedrijven toegepast zal gaan worden als de overheid:

	Ja	Nee	Weet niet
financiële prikkels toekent als subsidies of belastingvoordeel?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
een platform creëert waar kennis en ervaring met betrekking tot "Cradle to Cradle" kan worden uitgewisseld?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
minder vaak inspecties uitvoert bij bedrijven?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
administratieve procedures vereenvoudigt?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
bedrijven ondersteunt om makkelijker toegang tot krediet te krijgen?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

25. Heeft uw bedrijf een specifiek beleid ten aanzien van Maatschappelijk Verantwoord Ondernemen (MVO)?

- ☒ Ja
- ☒ Nee
- ☒ Weet niet

26. Heeft uw bedrijf een strategie die niet alleen gericht is op bedrijfsresultaat, maar tegelijkertijd ook de maatschappelijke vooruitgang in de omgeving van het bedrijf als core-business aanmerkt?

- ☒ Ja
- ☒ Nee
- ☒ Weet niet

27. Op welke gebieden richt uw bedrijf zich als het om maatschappelijke ontwikkeling gaat?

- ☐ Onderwijs
- ☐ Gezondheid
- ☐ Duurzame ontwikkeling
- ☐ Anders, nl:

28. Denkt u dat het binnen enkele jaren haalbaar is dat uw bedrijf niet alleen bedrijfsresultaat, maar als core business tegelijkertijd ook maatschappelijke vooruitgang nastreeft?

- ☒ Ja
- ☒ Nee
- ☒ Weet niet

29. Wat is uw functie binnen uw bedrijf?

30. Tot welke sector behoort uw bedrijf?

Hartelijk dank voor het invullen van deze enquête!

VRAGENLIJST VERSTUREN