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The BCCSAP as a strategy to decrease climate change vulnerability

- A case study of the Bangladesh Climate Change Strategy and Action Plan

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Abstract

The term *Climate change* is ubiquitous these days. The effects of climate changes too are ubiquitous. Nations worldwide feels the effect of climate changes – some more than others. Especially poor developing countries face large challenges caused by change climate. Climate changes pose a serious challenge for the developing countries to reach UNs Millennium Development Goals and climate changes are therefore a subject often analyzed within development research. In short can it be said, that climate changes might affect the fight against disease, hunger, poverty and environmental degradation. Action must therefore be taken now to diminish the negative consequences of climate change. One initiative taken all over the world is to develop governmental strategies and action plans to cope with climate change. This thesis will therefore focus on a climate change strategy conducted on a governmental level.

The term *climate change vulnerability* is used in several different ways by various scholarly communities. *Climate change vulnerability* as a term is more and more in focus in development research concurrently with that the consequences of climate changes are felt. One way of using *climate change vulnerability* is to apply it in a development context with focus on social sciences, which is the case for the present thesis.

The purpose of this thesis is to create a critical analysis of the *Bangladesh Climate Change Strategy and Action Plan* as a strategy to decrease climate change vulnerability in Bangladesh.

This will be done by conducting a document analysis in two steps where Bangladesh and the *Bangladesh Climate Change Strategy and Action Plan* will serve as objects for the analyses. First step is to conduct a vulnerability analysis of the poor in Bangladesh to outline the characteristics of the climate change vulnerable in Bangladesh. The second step is to analyze the *Bangladesh Climate Change Strategy and Action Plan* in relation to the findings in the vulnerability analysis. This will provide an option to outline whether the *Bangladesh Climate Change Strategy and Action Plan* is a useable strategy to decrease climate change vulnerability in Bangladesh. The case study is based on several documents of various character; personal second hand observations, statistics, analyses from different NGOs, and governmental papers.

The thesis will be structured by a theoretical framework consisting of the concepts *vulnerability, livelihood* and access. These are combined in a theoretical framework and are all seen as much intertwined. The notion of livelihood consisting of capitals will be structuring throughout the thesis.

The thesis provides an analysis of the *Bangladesh Climate Change Strategy and Action Plan* as a strategy to decrease climate change vulnerability. The results of this are to be seen as material to a further discussion and debate on climate change strategies and action plans.

Abbreviations

BCCSAP	Bangladesh Climate Change Strategy and Action Plan
GEF	Global Environment Facility
GoB	Government of Bangladesh
IISD	International Institute for Sustainable Development Studies
IPCC	Intergovernmental Panel on Climate Change
LDC	Least Developed Country
MoEF	Ministry of Environment and Forests
NAPA	National Adaptation Programme of Action
NGO	Non-Governmental Organization
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change

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1. Introduction

1.1. Climate is changing

'Climate change is a major development issue that needs to be addressed urgently. Unless global warming slows down, the incidence of droughts and floods will likely increase, vector-borne diseases will probably expand their reach, and many ecosystems, such as mangroves and coral reefs, will likely be put under great stain. In short, achievements in the fight against disease, hunger, poverty, and environmental degradation risk being unraveled by climate change.'

(UN Millennium Project, 2006)

It is no longer a question of recognizing whether the climate is changing; the warming of the climate is unequivocal and the observations of an increase in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level are evident (IPCC, 2007).

According the *Intergovernmental Panel on Climate Change*, the IPCC, eleven out of the last twelve years were among the twelve warmest years in the record of global surface temperature (IPCC, 2007). It has at the same time been observed that the temperature increase is widespread; average Arctic temperatures have increased at almost twice the global average rate in the past 100 years; there has been an increase in sea level and a decrease in snow and ice extent; mountain glaciers and snow cover on average have declined in both hemispheres; this all along with numerous long-term changes in other aspects of climate on continental, regional and local scales. Moreover are dry areas are turning into deserts, agricultural areas are drying out, animal species are becoming extinct and more weather-related natural disasters like hurricanes, cyclones and floods are occurring. Climate changes are thus evident and present all over the globe (IPCC, 2007).

Predicting climate changes is very difficult, as climate is a many-sided matter and it is not easy to define the future consequences of the climate change as the changes are highly dependent on how humanity chooses to continue. It is possible to say, that climate change is more than a warming trend. Increasing temperatures can lead to changes in many aspects of weather and could have far-reaching and unpredictable environmental, social and economic consequences (IPCC, 2007).

The awareness of the risks following the climate changes is ubiquitous these days and focusing on climate change inevitably leads to the discussion of whether these changes are manmade or natural occurrences. This thesis will not look into technicalities on whether climate changes are caused by human action, but depart from the point of view that human action has had an influence on the changes in the temperature.

Readers might disagree with this point of view, but for the focus of this thesis, it is not important whether humanity caused the climate changes and who are to blame for this. The climate changes are occurring and adaptation is needed.

1.1.2. Impacts of climate change on development

'There is no bigger problem than climate change. The threat is quite simple; it's a threat to our civilization.'

Sir David King, Former Chief Scientific Advisor to the UK Government (DiPiazza, 2009 p. 6)

Climate changes are a potential threat to human welfare and also a challenge to development. The negative effects of climate change are mostly felt in developing countries as the changes are posing a challenge for the fight against poverty. Climate changes could hence lead to a setback in the work to protect and enhance human well-being and sustainable development (Danida, 2009).

Figure 1: ***Potential impacts of climate change on poverty and the MDGs***

Source: (Tanner, et al., 2008 p. 6)

The UN's Millennium Development Goals, the MDGs, can be taken into use to suggest how climate change affects development as the MDGs have a large impact on the development agenda worldwide.

Tanner and Mitchell illustrate the effect climate change has on poverty and the MDGs in the article *Enhancement or Entrancement* (Tanner, et al., 2008). Poverty can be seen as illustrating the level of development as poverty reduction is the overall development goal in the MDGs in *Figure 1: Potential impacts of climate change on poverty and the MDGs* (Tanner, et al., 2008). Different types of climate changes have a certain influence on the

economy, the output and the poverty reducing effect, according Tanner and Mitchell. The figure all in all outlines the challenges climate changes are posing to eradicate poverty, reaching the MDGs and creating progress for humankind (Tanner, et al., 2008). Danida supports the idea that climate changes pose a challenge for the MDGs in the *Danish Climate and Development Action Programme* (Danida, 2005). In the report it is stated that efforts to reach the MDGs and other development objectives can be undermined without adequate response to climate change and development programs must incorporate climate changes, implicit or explicit. By taking climate changes into consideration, development work can be seen as being *climate proofed*. *Climate proofing* is when development efforts are protected from negative impacts of climate change, climate variability, and extreme weather events and ensure that climate-friendly development strategies are pursued to delay and reduce damages caused by climate change (Danida, 2005).

1.1.2.1. The Two Leg approach

Climate change action is a contested subject with many different approaches. One focus that seems to be repeated is that both mitigation and adaptation have to be taking into account and the next paragraphs will focus on this.

The IPCC approaches climate change with the vision that efforts concerning climate change must *walk on two legs*; one leg being *adaptation to* and the other leg being *mitigation of* climate change. Adaptation covers measures for adjusting the impacts of climate change and managing the risks, while mitigation covers policies and measures to reduce the emission of greenhouse gasses. While adaptation can be seen as a cure to alleviate negative impacts, mitigation can be understood as prevention (IPCC, 2007). Adaptation is closely linked to poverty reduction and development and the developing countries often emphasize adaptation to climate change as the main concern. Mitigation efforts can in principle have the same effect on stabilizing the greenhouse effect, irrespective of where in the world they are carried out (Danida, 2005). Adaptation rather than mitigation is central to this thesis as adaptation naturally emphasizes developing countries and the lack of capabilities to cope with climate change (Danida, 2005). Adaptation can moreover be said to be more relevant than mitigation as the timeframe can be shorter and the results are faster to be seen. Mitigation and adaptation are though closely linked when talking about climate change and the two next paragraphs will therefore outline these two phenomena.

1.1.2.1.1. Mitigation of climate change

Mitigation can be defined as an intervention to reduce human-caused emission of greenhouse gases and includes a reduction at the source of emissions, capturing of waste greenhouse gases and creating sinks for

storing carbon (Danida, 2005). Mitigation can thus be said to refer to strategies that reduce the probability of climate change through practices that mitigate the increased occurrence, severity, and unpredictability of weather patterns resulting from climate change (Meinzen-Dick, et al., 2007).

Mitigation covers several actions on different levels and should be pursued as an integral part of promoting sustainable development and improving living conditions for present and future generations. By taking actions to lessen climate change, potential risks caused by climate change can be delayed which will give vulnerable countries more time to build capacity to prepare for inevitable climate change (Danida, 2005). As stated in the *Human Development Report 2007/2008* it

> *'[…] might be possible to protect Amsterdam, Copenhagen and Manhattan from rising sea levels in the 21st Century, albeit at high cost. But coastal flood defenses will not save the livelihoods or the homes of hundreds of millions of people living in Bangladesh and Viet Nam or the Niger or Nile deltas. Urgent climate change mitigation would reduce the risks of human development setbacks over the course of the 21st century […]'.*
>
> (UNDP, 2007 p. 59)

Reducing human costs prior to that date will require support for adaptation which illustrates how closely mitigation and adaptation are linked together. Even if mitigation is successful there will still be effects and results of climate change and adaptation. The next paragraph will hence take a closer look into adaptation to climate change.

1.1.2.1.2. Adaptation to climate change

Adaptation can on a general level be seen as the management of risks and vulnerability associated with climate change and extreme weather events. Countries face different types and degrees of risk, starting from different levels of human development and vary widely in their technological and financial capabilities. Adapting to climate change has been defined by the UNDP as *'A process by which strategies to moderate, cope with, and take advantage of the consequences of climate events are enhanced, developed and implemented.'* (Danida, 2005 p. 19), and according to the IPCC adaption is an *'[…] adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.'* (Danida, 2005 p. 18).

Adaptation involves taking action to minimize the negative impacts of climate change and taking advantage of new opportunities that may arise. In practical terms there are a number of actions to adjust to, cope with or avoid the impacts of climate change. These actions include protection against sea-level rise, strengthen the primary health care, changes in design specifications and building codes, rehabilitation of

natural ecosystems, construction of infrastructure to stand higher level of water run-off, risk adjustments to address variations in crop production, and management of water resources. This indicates that the management of risks of climate changes includes a range of opportunities for adaptation in development cooperation that are linked to poverty reduction. Therefore, adaptation to climate change should be integrated into the broader development agenda. The recognition of an urgent need for adaptation in the most vulnerable countries has led to proposals from developing countries, NGOs, and research institutions for strengthening the role of adaptation in the international climate regime (Danida, 2005).

Adaptation can on a more specific level be seen as action communities and individuals can undertake in response to changing conditions in climate. These actions can create strategies within agriculture that are connected with natural resource management such as improved land and water management practices. People may also adapt to climate change challenges by moving out of the agriculture business permanently or temporary, by either taking the whole household or just parts of it out. A community has many possibilities to adapt to climate changes, but it also requires a number of collective action institutions and arrangements to enable small households to accumulate assets and knowledge (Meinzen-Dick, et al., 2010). As adaptation concerns human will the following paragraph look into who are affect by the climate changes and how.

1.1.3. Climate change vulnerable

'[…] poor people tend to be most dependent upon the environment and the direct use of natural resources, and therefore most severely affected when the environment is degraded or their access to natural resources is otherwise limited or denied.'

- joint submission to the World Summit on Sustainable Development prepared by the World Bank, European Union, UNDP and DFID (IISD, 2003 p. 13).

The last years have brought an increase in the awareness of climate change and an increase in the number of reports on climate change. Besides playing a central role on the political agenda, climate changes means that the future for many poor societies look very weak according future climate scenarios created by IPCC (IPCC, 2007). All countries will feel the consequences of a changed climate, but there is little doubt that developing countries will feel the changes more heavily as they are more vulnerable to changes, as illustrated in *Figure 1: Potential impacts of climate change on poverty and the MDGs*.

'The developing countries are expected to suffer the most from the negative impacts of climate change. This is due to the economic importance of climate-sensitive sectors (for example, agriculture and fisheries) for these countries, and to their limited human, institutional, and financial capacity to anticipate and respond to the direct and indirect effects of climate changes. In general, the vulnerability is highest for least developed countries in the tropical and subtropical areas. Hence, the

countries with the fewest resources are likely to bear the greatest burden of climate change in terms of loss of life and relative effect on investment and economy.'

Multi-agency report on *Poverty and Climate Change*, 2000 (Danida, 2005 p. 9)

The most vulnerable are those who have the fewest resources to counter the changes. According to the *Human Development Report 2007-2008*, the developing countries will face the greatest and earliest burden in terms of adverse impacts on living standards, livelihood, economic growth and human vulnerability (UNDP, 2005). The least developed countries constitute of a group of 49 of the world's poorest countries. According to the *2005 Environmental Sustainable Index Report* they are they characterized by having low institutional capacity and are particularly vulnerable to natural disasters, undernourishment, leak sanitation and safe water supply. The Least Developed Countries, the LDCs, are moreover characterized by low income per capita; weak human resources based on indicators of life expectancy at birth; per capita calorie intake; combined primary and secondary school enrolment; adult literacy; and a low level of economic diversification (Osman-Elasha, et al., 2007). There are, according to the *Human Development Report* two aspects that are important to elucidate. First aspect is that the developing countries in tropical and subtropical regions will experience some of the strongest effects of the climate change. Second aspect is that the risks that come with the climate change will be superimposed on societies marked by vulnerability and mass poverty. While the developed countries have the capabilities; financial, technological and human, to respond to the risk followed by climate changing developing countries are far more constrained and adapting climate changes is considered a large task for the governments. There is thus little doubt that both developed and developing countries will be affected by and have to deal with the consequences of a changing climate, but with the developing countries being more vulnerable with fewer resources, it will be affected to a much higher extend (UNDP, 2009). Vulnerability as a concept and term will be given a central role in this thesis. Vulnerability will for now be understood as an insecurity of individuals, households and communities in the face of changes (Ribot, 2010) but will be outlined in chapter *3.2.Vulnerability in the context of climate change.* Climate changes will have a large influence on the world's food supply, the infrastructure, health, as well as the accessibility to potable water in the short perspective, according IPCC (IPCC, 2007).

An aspect especially affected by climate changes is the livelihoods of people as livelihood comprises every aspect of life. With natural resources playing a crucial role for a large part of the world's population, threats to ecosystems caused by climate changes can undermine livelihood security. Livelihood is about people, their resources and what they do with it (Baas, et al., 2006). Livelihood will play a central role in this thesis, and a theoretical perception of the term will be provided in chapter *3.3.1.Livelihood assets.* Climate shocks

affect livelihoods in many ways. They wipe out crops, reduce opportunities for employment, increase food prices and destroy property and confront people with stark choices. Wealthy households can manage shocks by drawing upon private insurance, using their savings, or trading in some of their assets, but poverty-stricken households will not have many resources to cope with the effects of climate changes and will therefore be more affected on their livelihoods. With limited access to formal insurance, low income and small assets, poor households have to adapt to climate shocks under more constrained conditions (UNDP, 2005).

When climate disasters strike, some households are rapidly able to restore their livelihoods and rebuild their assets. For other households, the recovery process is slower. For some, especially the poorest, rebuilding may not be possible at all. While agriculture accounts for a shrinking share of regional employment and GDP, it remains the source of livelihood for a large section of the poor. It will hence increase inequalities between producers, undermine livelihoods and add to pressures that are leading to forced migration and climate change. In the end this will thus create incremental risks in the lives and livelihoods of the poor (UNDP, 2005).

1.1.4. Climate change policies

There is a general understanding, that the challenge of climate change can only be met through a concerted international effort and through cooperation between developed and developing countries (Danida, 2005). The following paragraphs will therefore give a brief overview of policies to decrease the number of risks following climate changes.

Since the late 1980s, most industrialized nations and many developing countries have implemented climate change-related policies. The *UN Brundtland Commission* recommended industrialized counties to reduce the greenhouse gas emission in 1987. Not long after, in 1992, a number of countries signed the climate convention at the *UN Conference on Environment and Development* in Rio de Janeiro, Brazil. At the conference it was agreed that the industrialized countries should stabilize the emission of green house gases on a 1990 level before the year 2000. At this conference the *Agenda 21* was adopted. This is a program run by the UN related to sustainable development and was the first summit to discuss issues related to global warming. The number *21* refers to an agenda for the 21st century. The implementation was intended to involve action at international, national, regional, and local levels. Some governments advised local authorities to take steps to implement the plan locally. *Agenda 21* is divided into four sections: focusing on social and economic dimensions, conservation and management of resources for development, strengthening the role of major groups (the role of children and youth, women, NGOs, local

authorities, business and workers), and means of implementation. Today *Agenda 21* is a guiding principle for sustainable development work in different countries, regions and all the way down to municipalities. The key task of *Agenda 21* today is to ensure, that the decisions made today will not deteriorate the conditions for our children in the future (Danida, 2005).

After many years of climate negotiations the *Kyoto Protocol* was formulated in 1997 in Kyoto, Japan. In the protocol, industrialized countries committed to an even larger reduction in the emissions of greenhouse gases. The agreement was later ratified by most of the attending countries, except for the United States and Australia. The protocol was finally signed in 2005 after a long time hesitation of Russia (Danida, 2005) and Australia in 2007.

At the COP13 on Bali, Indonesia in 2007, the *Bali Roadmap* was adopted as a mandate to reach a 'post-Kyoto' agreement with common vision at COP 15 in Copenhagen, Denmark in 2009. The results of the COP15 have been perceived as insufficient as it ended with an agreement saying, that those countries who do not agree on the goals set, can simply abstain from signing. The agreement is called the *Copenhagen Accord*, which illustrates the character of the agreement being more a declaration than a specific political agreement (Solve Climate, 2009).

1.1.4.1. NAPAs

Not only are climate change policies formulated in a global context but the separate countries also have climate change policies. This counts for both developed and developing countries. While the developed countries mainly focus on mitigation and funding projects in developing countries, the developing countries are formulating climate change policies to adapt to and mitigate the climate changes. This is to a large extent through plans called the *National Adaptation Program of Action* (NAPA). The NAPAs are funded by the *Least Developed Countries Fund* (the LDCF), under the *United Nations Framework Convention on Climate Change* (the UNFCCC). The rationale for developing NAPAs rests on the high vulnerability and low adaptive capacity of the LDCs. The preparation of the NAPAs has been significant in a number of LDCs, and contributes to an increase of the awareness of the adaptation challenges climate change pose. The NAPA reports have become key-government statements to illustrate the concern of the threats the climate change poses. NAPAs are not to be seen as obligations, but as a step towards addressing a country's urgent and immediate needs in regards to climate change adaptation and LDCs should see the completion of the NAPA document as a step towards addressing the needs identified in the NAPA (UNFCCC, 2002).

Based on feedback from the LDCs, the *Global Environmental Facility* (GEF) developed a project cycle to simplify procedures to allow LDCs to easily access LDCF resources. The GEF has so far mobilized a large

amount of money to implement NAPA follow-up projects and the response of the LDCs has been significant (Global Environment Facility, 2008). The NAPAs are supported by a number of institutional partners; *the United Nations Development Programme, United Nations Environment Programme, the World Bank and the International Fund for Agriculture and Development*. Moreover is the *UN Institute for Training and Research, Climate Change* assisting in enhancing or creating regional pools of expertise in LDCs (Global Environment Facility, 2008).

1.1.4.2. Bangladesh – one step further

NAPAs are as mentioned general documents in the LDCs but some countries take climate change policies one step further. One of those countries is the *People's Republic of Bangladesh*, which will be referred to as Bangladesh in this thesis. Bangladesh is likely to be among the countries that will be affected the most by the climate changes on top of an already high level of poverty. Floods, tropical cyclones, storm surges and droughts, which are likely to become more frequent and severe in the years to come, often hit the country. The *Government of Bangladesh*, which will be referred to as the GoB in this thesis, seems to have recognized the seriousness of the impact of climate change and has been preparing to challenge these issues over the years to come (Government of Bangladesh, 2005).

Bangladesh has, as many other LDCs, formulated a NAPA to address the adverse effects of climate change. Since the implementation of the NAPA, Bangladesh has taken another step and created the *Bangladesh Climate Change Strategy and Action Plan*, the BCCSAP, which now functions as the basis of their efforts to combat the adverse effects of climate change. The GoB has prepared the BCCSAP after extensive consultations with sections of the citizens, including the most vulnerable and disadvantaged groups, identified as major groups in the Agenda 21, outlined in chapter *1.1.4.Climate change policies.* The vision of the BCCSAP is among other goals to *'[…] achieve economic and social well-being for all the people.'* (MoEF, 2009 p. xv). The well-being will be challenged by the climate changes, and the goal is therefore to diminish the vulnerability to climate changes and increase the ability to cope with the climate changes (MoEF, 2009). Bangladesh and the BCCSAP will serve as a case to understand the climate change policies and an elaborated description will be provided later in the thesis. The investigation of the BCCSAP to obtain an understanding of climate change policies will be structured by the following research question:

1.2. Research question

To what extend is the *Bangladesh Climate Change Strategy and Action Plan* likely to reduce the climate change vulnerability for the poor in Bangladesh?

2. Methodology

The following chapter will present the methodology of this thesis. Introductory philosophy of science will be presented followed by a presentation of the research design with comments on conducting a vulnerability analysis, using a case study and on which role the theory will play. This will be followed by a presentation of the project design to create an overview of the thesis. All in all the following chapter will outline how I will examine to what extent the Bangladesh Climate Change Strategy and Action Plan is likely to reduce climate change vulnerability of the poor.

2.1. Philosophy of science

This thesis will take a structural constructivist approach inspired by Pierre Bourdieu and his field-analysis. Social field are perceived as social structures by Bourdieu. A fundamental point is the perception of the social space as a differential social order (Bourdieu, 1994). In this perception certain actors take certain positions in a social field. These positions depend on the actor's relation to, or distance from the positions the other actors take. The positions of the actors are thus relational determined and positions taken by actors having different types of capital. The capital thus determines the positions in society. Inspired by Gilje and Grimen this can be described as *methodological relationalism* (Gilje, et al., 1993). The focus on relations and capital in methodological relationalism complement the concept of access and livelihood, referring to chapter *3.Theory and concepts.* It moreover underlines the importance of these concepts when researching vulnerability as a social construction.

The ontological approach in thesis is social constructivist. This in general entails an emphasis on the praxis- and interpretation-dependent character of societal phenomena. Taking this approach implies that societal phenomena are not eternal and inalterable, but come into existence through historical and social processes. This interpretation contains a possibility for the process of change; when societal phenomena are shaped and created by human action, they are also changeable by human actions (Rasborg, 2007). The social constructivist ontology applied in this thesis has an anti-realism approach. In this lies the idea that knowledge and realization are not a direct reflection of reality but always stems from interpretations. This implies a hermeneutic epistemological approach. By interpreting a social constructed reality the researcher is creating an understanding of this reality, which can affect future interpretations. This is by Max Weber defined as double hermeneutics (Weber, 1976). This will in this thesis mean that when I as a researcher analyze climate change vulnerability in the society of Bangladesh, I analyze an already interpreted reality. As the vulnerability analysis is based on secondary empirical descriptions created by others it can be said to be interpreted more than once. This perspective will be outlined further in chapter *2.2.2.Case study*.

2.2. Research Design

The following paragraph will present the research design of this thesis. The function of the design is to ensure that the evidence obtained enables me to answer the research question; *to what extend is the Bangladesh Climate Change Strategy and Action Plan likely to reduce climate change vulnerability for the poor in Bangladesh?* Thus can it be said to be a logical structure of inquiry (de Vaus, 2005).

The research has an explanatory character as it will be searching for a causal explanation of climate change vulnerability and whether the BCCSAP is likely to reduce climate change vulnerability. To answer the research question adequately this research will have two steps. First step is to clarify and outline climate change vulnerability in Bangladesh, i.e. to conduct a vulnerability analysis. Second step of the research consists of an analysis of the efficiency of the BCCSAP to reduce climate change vulnerability. These analyses will be rounded off with a conclusion and a description of the BCCSAP as a strategy to decrease climate change vulnerability.

2.2.1. Vulnerability analysis and analyzing the BCCSAP

The vulnerability analysis will elucidate climate change vulnerability among poor people in Bangladesh. This phenomenon must be fully described and outlined to research whether the BCCSAP will decrease climate change vulnerability among the poor in Bangladesh.

A vulnerability analysis distinguishes between a risk-hazard and social constructivist framework. The risk-hazard approach focuses on evaluating the multiple outcomes or impacts of a single climate event and the focus is placed on what happens when a hazard strikes. The social constructivist framework on the other hand characterizes the multiple causes of single outcomes; it looks into the multiple causal factors as e.g. poverty, unstable policies, environmental change and poor infrastructure that can cause loss of livelihood when a hazards strikes. The social constructivist framework is concerned with what causes the vulnerability and considers humans to be vulnerable to undesirable outcomes (Ribot, 2010). The applied framework in this thesis will be the social constructivist as the framework places the burden of explanation of vulnerability within the social system. This opens up for investigating the whole Bangladesh society and supports the holistic character of the concept of vulnerability, and incites a research that involves all areas of the society. The social constructivist approach build on the same understanding as the applied philosophy of science and entails a sociological view on vulnerability as a social phenomenon. It thus provides a basis for tracing out social causality of vulnerability (Ribot, 1995).

2.2.1.1. Livelihood approach

The social constructivist framework in vulnerability analysis includes entitlement and livelihood approaches. These approach an analysis of the sensitivity and resilience of individual households or livelihood systems and tend to bring attention to the most vulnerable populations in a society (Ribot, 1995). These approaches were developed by Amartya Sen who begun working with vulnerability to hunger and famine (Sen, et al., 1989). The applied approach in this thesis will be the livelihood approach. This approach builds on the entitlements analysis but shift the focus to livelihood strategies that are embedded in a larger ecological and political economic environment. The livelihood approach explicitly link vulnerability to climate hazards by acknowledging that hazards change the assets of a household. The households' assets are therefore in focus when conducting a vulnerability analysis. Conducting climate change research from a livelihood-vulnerability approach often contains a pro-poor approach.

Vulnerability will be seen as a holistic concept as mentioned in chapter *2.2.1.Vulnerability analysis and analyzing the BCCSAP*. Vulnerability is hence not a delimited concept. This is to be understood in the way, that reducing vulnerability and building assets will not only reduce vulnerability, but also bring a range of subsidiary benefits and might go beyond reducing vulnerability to climate change (Ribot, 2010).

To sum up can it be said that the chosen method in this thesis will be a social constructivist approach to a pro-poor vulnerability analysis with a livelihood approach. This chosen approach is applied to a case study; Bangladesh being vulnerable to climate changes. The next step is to obtain a detailed understanding of the specific problems and who are vulnerable. This understanding includes an understanding of causal structures or a variety of vulnerabilities of concern. This understanding will be obtained by analyzing data and documents describing the situation in Bangladesh. This process will be outlined in the next chapter.

2.2.2. Case study

The research design includes considerations of how to collect the necessary data. I will in this thesis rely on different written sources; articles, personal descriptions, reports and strategies. The relevant information will be defined partly by the theoretical framework and partly by what generally is needed to present a sufficient description of the current situation in Bangladesh. I am aware, that the chosen type of data is different from what social researchers often work with. The method applied in this thesis will be a qualitative research method analyzing documents. The applied method in this thesis, document analysis, hence adopts an interpretive approach to the data. Document-analysis can be said to be a method not that well-defined and are by some not even seen as a method as using documents in the analysis does not automatically include anything on how the data will be used. The choice of how to use document-analysis

will therefore depend on the approach to the subject and the problem in focus (Duedahl, et al., 2010). Document analysis is one of the unobtrusive methods as the researcher is not in direct contact with the subjects of research (Kellehar, 1993). Using documents as sources does therefore require a certain criticism towards the sources. A critical view on the data sources will be provided in chapter *7.1.Critical view on the thesis.*

The distinguishing characteristic of case studies is that contextual information is collected about the case to create a context within which we understand the causal processes. This again illustrates the holistic character of the central phenomena. The challenge is here to avoid *abstract empiricism* to ensure an explanatory research (de Vaus, 2005). This will be avoided in this thesis by having the theoretical concept and the central aspects of the vulnerability analysis guide the data to ensure that data on all needed areas is provided. A full picture of the society in all its complexity can only be obtained when information from a wide range of the constituent elements, the embedded units, is collected (de Vaus, 2005). The case study design in this thesis will be an explanatory single case design that attempts to make a snapshot of the current Bangladesh with regards to climate change.

Considerations on reliability and validity need to be taken into account when working with a case study. Both internal and external validity is of interest when it comes to case studies and will be commented on in chapter *7.1.Critical view on the thesis.*

2.2.3. Use of theory

I have chosen to work with several theorists in this thesis. This can be seen as combining three theoretical concepts in an applicable framework. The combined concepts are *vulnerability*, *livelihood* and *access*. Amartya Sen will work as an inspiration (Sen, et al., 1989), while the work of Jesse C. Ribot (Ribot, 2010; Ribot, 1995), alone and together with Nancy Lee Peluso (Ribot, et al., 2003), Frank Ellis (Ellis, 2000), the IPCC (IPCC, 2007)and the IISD (IISD, 2003)will be direct sources. The level of abstractness, application and explanation in *vulnerability* and *livelihood* the theories can be described as middle range as they concentrate on understanding and explaining social life. *Access* as a theoretical concept possesses a higher level of abstractness and will therefore be applied as an overall theoretical aspect determined by *livelihood* and *vulnerability*.

The theoretical framework will be functioning as a general framework for this thesis. The vulnerability analysis is generally inspired by the theoretical notion of vulnerability and the structure is inspired by Ellis' notion of capital (Ellis, 2000). The relationship between the theoretical framework and the analysis is especially outspoken in the second part of the analysis as it is structured by Ellis' five capitals and the

results and conclusions found in the vulnerability analysis. *Vulnerability*, *livelihood* and *access* are as mentioned central concepts in the whole tradition of working with climate change vulnerability and can be said to be the origin of theoretical concepts applied in social climate change research (Ribot, 1995).

2.3. Project design – an overview of the thesis

The project design will be outlined in the following paragraph. This is done to present an overview and a clear structure of the present thesis.

The area of interest is presented as an introduction in chapter *1.Introduction.* This introduction presents climate change, its impact on development; that the least developed countries are more affected; and how they are affected. Next, a short presentation of already conducted climate change policies is given. One of these is the *Bangladesh Climate Change Strategy and Action Plan*, the BCCSAP. This strategy will be controlling the thesis, as it is the subject of research. Bangladesh will be taken in as a case study as it is one of the least-developed countries mostly affected by climate changes. This all in all leads to the research question on whether the BCCSAP is likely to reduce climate change vulnerability. The following chapter *2.Methodology* presents the methodological considerations of this thesis. This includes some comments on the applied philosophy of science, the research design, an outlining of which role the theory plays in thesis before rounding of presenting the project design. The following chapter *3.Theory and concepts* contains a presentation of the theory and the theoretical concepts. This will contain individual presentations of the vulnerability, livelihood and access as theoretical concepts, before combining them in a common framework illustrating how the concepts will be applied in this thesis. The presentation of the data on Bangladesh in chapter *4.Bangladesh* will be followed by the first step of the analysis in chapter *5.1.Vulnerability Analysis.* Before conducting the second step of the analysis in chapter *5.4.Analysis of the BCCSAP and the climate change vulnerable*, the BCCSAP will be outlined in chapter *5.3.Presentation of the BCCSAP*. This will altogether be rounded off with chapter *6.Conclusion* and some perspectives on the validity and reliability of the thesis in chapter *7.Reflection.*

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3. Theory and concepts

The theoretical focus will in this thesis be placed on *vulnerability*, *livelihood* and *access*, as outlined in chapter *2.2.3.Use of theory.* The three concepts are all based on the work of development or climate change researchers and have in some cases been combined to create a full applicable understanding of the concepts. The theoretical framework is build on the work of Amartya Sen as inspiration, while the work of Jesse C. Ribot, alone and with Nancy Lee Peluso, Frank Ellis, the IPCC and the IISD will be direct sources.

3.1. Background

The concept of *vulnerability* and *livelihood* was introduced within the discourse on natural hazards and disaster in the 1970s by Sen, O'Keefe and Wisner (Sen, et al., 1989). The focus on natural occurrences was pushed aside in favor of a focus on socio-economic conditions as the causes for natural disasters. They found that the loss of lives was increasing in line with the increase of occurrence of disasters and that the losses of lives concentrated in least developed countries where the vulnerability was increasing. Especially Amartya Sen, the Indian economist and philosopher, stands out in this relation[1]. Sen laid the ground stones for analyzing the causes of vulnerability in the 1980s in Bangladesh where he worked with hunger and famine. Sen made several key contributions to the research of fundamental problems in welfare. All his contributions are tied together by an interest in the most impoverished members of society (Sen, et al., 1989). The tradition of a pro-poor research of vulnerability can hence be said to begin with Sen and he is mentioned a source of inspiration by a large number of researchers and is often referred to in their papers. This is also a common denominator for the researchers which I will use to create a theoretical conceptual framework for the current thesis.

3.2. Vulnerability in the context of climate change

Is it useful to determine that *vulnerability* is a many-sided and complex subject and as a term contextualized in different ways all depending on which science is in play. The purpose here is not to define one single correct notion of the term, but to propound *vulnerability* as a concept in climate change research. The purpose is moreover to state how *vulnerability* as a concept will be theorized and applied in this thesis. A starting point for defining the concept in this thesis is Frank Ellis's definition of *vulnerability* as '*[…] a high degree of exposure to risk, shocks and stress […]'* (Ellis, 2000 p. 62). This definition includes a

[1] Sen was born in India and took his first degree in Calcutta. He witnessed the Bengal famine of 1943, in which between two and three million died. This was a tragedy that had a great influence on Sen and he was struck by its thoroughly class-dependent character and the unbearable economic misery felt close, even though he was not affected himself. Despite assessments and honor professorships at universities all over the world Sen kept a connection to, and interest in, India and Bangladesh. Sen developed the theory of social choice, worked with the measurement of welfare and poverty, and spent much time studying the roots of famine.

dual aspect of external and internal factors; an external threat to livelihoods due to climate change and internal coping capabilities determined by different factors. *Vulnerability* can thus be said to represent a conceptual cluster for integrative research of humans and environment.

As climate change research often is constructed by scientists from different research traditions can it be problematic with competing and different perceptions of *vulnerability* as a scientific term, and it is therefore essential to use a common operationalization. The following chapter will therefore present *vulnerability* as a concept in climate change inspired by Jesse C. Ribot's paper from 2010 *Vulnerability does not just come from the sky: Toward Multi-scale Pro-poor Climate Policy.*

3.2.1. Defining vulnerability

Climate change present hazards to individuals and societies as a whole. According to Ribot are the damages shaped by the social, political and economic vulnerabilities of people and societies and climate events are transformed into differentiated outcomes via social structure. These different outcomes are due to social and political-economical circumstances; the vulnerability does not come from the sky. It is contingent on social inequality, unequal access to resources, poverty, poor infrastructure, lack of representation, and inadequate systems of social security, early warning, and planning. Ribot is of the opinion, that there in general is insufficient knowledge on the social dimensions of climate change vulnerability and he works with multiple vulnerabilities in different environmental and political-economical contexts to create an overall understanding of vulnerability (Ribot, 2010).

Ribot suggests a social constructivist approach and a focus on the multiple causes to single outcomes. Ribot thereby decline a focus on risks and the multiple outcomes of a single event and hence take a step back, and ask what causes the vulnerability. In line with the social constructivists, Ribot defines climate stresses as external phenomena. He thereby perceives the risk of disaster and suffering as social and places the vulnerability within the social system. Ribot partly agrees with an integrative approach that tends to be an extension of the social constructivist approach but though tries to combine the risk-hazard approach and a social constructivist approach. In the integrative approach, vulnerability is seen as depending on both physical and human factors, and internal and external aspects perceived as separate dimensions of vulnerability, inspired by the IPCC (Ribot, 2010). A causality-based approach can be taken and causes of vulnerability are traced in specific instances of risk. This approach looks into why a given individual, household, group, nation, or region is vulnerable to certain damages (Ribot, 2010).

Poverty is one of the conditions affecting vulnerability the most as mentioned in chapter *1.1.3.Climate change vulnerable.* Poor are often least able to rebound from stress and regularly live in unsafe

environments often hit by floods and droughts. They moreover frequently lack insurance to help to recover losses and do seldom have influence to demand action from their government as the weak within a society tend to be of lower priority for those in power. Their everyday conditions are hence bad even in the absence of climate stress (Ribot, 2010). Women, minorities and other marginalized populations are especially vulnerable as they are sharing many of the living-circumstances of the poor.

3.3. Livelihoods in a context of climate change

Livelihood too is a many sided concept taken into use in a number of different scientific schools. A definition used widely in climate change research is, that '*A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities, while not undermining the natural resource base'* (IISD, 2003 p. 12). A definition very close to the definition developed by IISD is a definition developed by Frank Ellis. His definition is inspired by Chambers and Conway, but includes minor modifications. Ellis works from a perception that '*A livelihood comprises the assets (natural, physical, human, financial and social capital), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household.'* (Ellis, 2000 p. 10). This definition will be guiding the work with livelihood as a theoretical concept in this thesis. I will return to the notion of access in chapter *3.4.Access in the context of climate change*, but central in the definitions are the idea of livelihood assets which will be accounted for in the following paragraph.

3.3.1. Livelihood assets

Livelihood assets are to be understood as means of production available to a given individual, household or group that can be used in their livelihood activities. Assets can thus be seen as the basis on which livelihoods build and the greater and more varied the asset the higher and more durable is the level of sustainability and security of the livelihood (IISD, 2003). In the most approaches five forms of livelihood assets are identified; natural capital, social capital, human capital, physical capital, and financial capital.

Actual resources available to a household reflect the characteristics of the local resources and the extent to which the household is able to gain access to these resources. This reflects issues of ownership, entitlements and of the availability of technologies that make it possible to use the resources. According to Ellis does natural capital comprise the land, water and biological resources people use to survive. Natural capital is enhanced when it is brought under a human control that increases its productivity, and it is thus not to be seen as a static phenomenon (Ellis, 2000).

Social capital is the set of social relationships upon which people draw in pursuit of their livelihood. These social relationships include the range of networks, memberships of groups and organizations, relationships of trust and access to institutions that are important in the actual livelihood activities and that can be determining in terms of access to things as markets, credit, and several other factors of production. Social capital also covers community and wider social claims on which individuals or households can draw by belonging to social groups of varying degrees of inclusiveness in society. Ellis draws on definitions from several researchers, e.g. Moser, Berry and Swift, to create a definition of social capital as he describes social capital as the asset the most difficult to describe in other than broad qualitative terms (Ellis, 2000). Social capital can be defined, inspired by Moser, as *'[…] reciprocity within the communities and between households based on trust from certain social ties'* (Ellis, 2000 p. 36). This directs the attention to personal or family networks with kin as well as family friends. The economist Sara Berry does in this relation emphasize the time and resources that are devoted to extending such networks as they are seen as an investment in future livelihood security (Berry, 1989).

In human capital are the skills, the knowledge, the ability to labor and health in focus. These are all important for the ability to conduct livelihood activities. For households this also includes the number of productive individuals and the knowledge of these individuals and how hard they are able to work. It moreover includes the knowledge and skills learned through formal education and non-formal leaning (Ellis, 2000). Human capital can therefore be increased by investment in education and training, as well as by skills acquired through pursuing occupation and can be made more effective by diminishing illness or other health problems. Human capital is static, but the composition of human capital within the household changes constantly due to demographic reasons, unexpected events, and external pressures (Ellis, 2000).

Physical capital constitutes basic infrastructure for transport, buildings, water management, energy, and tools and machines. It includes the persons owning and those having access to the productive capital and both capital provided by the government or private whether it is free or paid. Physical capital is comprised by physical assets that are created by economic production. This is buildings, irrigation canals, roads, tools, machines, etc. Physical or man-made capital can in many situations substitute for natural capacity; an example could be manmade water pipes substituting for open channels with consequent reductions in loss from leakage. Important groups of physical capital that facilitate livelihood diversification are infrastructural assets such as roads, power lines, and water supplies. These physical capitals are important as they facilitate the interaction with the surrounding world by facilitating movement of people, increasing the possibilities for markets in remote areas and ensuring electricity, which increases manufacturing

industries. A supply of clean water does moreover have multiple beneficial effects on rural livelihoods due to saving labor time and avoidance of illness and diseases (Ellis, 2000).

A final asset to be mentioned is financial capital. These are the financial resources which are available to people and that provide them with different livelihood options. This counts both savings, supplies of credit, pension, social security payments and insurance. All this can be finances for investment in new productive assets, for inputs to production and for responding to the effects of different vulnerabilities including recovering and reconstructing livelihoods damaged by climate change. Neither savings nor loans are directly productive forms of capital as they owe their convertibility into other forms of capital or directly into consumption. The transferability is a fundamental characteristic of capital in form of cash. If there is no financial market or a high distrust in the financial institutions savings is hold in another form, e.g. cattle, gold or food stocks, that all are convertible into other forms of capital or consumption when sold (Ellis, 2000).

The five capitals aggregated determine much about how livelihoods work and can in practice be tools to understand how people respond to climate changes (Ellis, 2000). It is important to stress that the capital categories are heuristic, none are distinct or complete and each form of capital may influence other capital mechanisms.

3.4. Access in the context of climate change

Livelihood and *vulnerability* are as theoretical concepts closely linked with *access*. Access in this relation can be seen as a Meta theory illustrating a political economic approach. The following chapter will hence look into power and the mechanisms of access in a political-economic aspect.

Jesse C. Ribot and Nancy Lee Peluso theorize access as a concept in climate change research, in their paper *A Theory of Access* from 2003. They define access as *'[…] the ability to derive benefits from things'* (Ribot, et al., 2003 p. 153). This is a definition that have been broadened out from a more classical definition where access is seen as *'[…] the right to benefit from things*' (Ribot, et al., 2003 p. 153). Ribot and Peluso take a new approach to theorizing access and develop a concept of access to examine a broad set of factors that differentiate from property.

Ribot and Peluso's notion of access is about bundles and webs of powers that enable actors to gain control and maintain access. Most essential is focusing on the ability to benefit from things; material objects, persons, institutions, and symbols. Focusing on abilities more than rights, as in property theory, opens up for a focus on the wider range of social relationships that can hinder or enable actors to benefit from

resources without focusing on property alone. Access is then about all possible means by which an actor is able to benefit from things. This means that the concept of access that Ribot and Peluso present focus on who actually benefits from material objects, persons, institutions and symbols and through what processes they are able to do so. Benefits are important in this relation because all actors in societies; people and institutions *'[…] live on and for them and clash and cooperate over them'* (Ribot, et al., 2003 p. 155). The term *benefit* is common to definitions of both access and property and Ribot and Peluso use *benefit* similarly to term *value* (Ribot, et al., 2003).

Gaining access is a central aspect in the general process where access is established. The central strands in this process are the means and relations by which actors are enabled to gain, control, and maintain access to resources. *Mechanisms* are used to cover these means, processes and relations, inspired by Foucault (Ribot, et al., 2003). The *mechanisms* in play here are divided into two main categories; *Rights-based access* and *structural and relational access mechanisms*. Access based on rights has an underlying basis in law while structural and relational access mechanisms include a number of additional factors that help define the structures and social relations. These factors mediate how access to gain benefits from material objects, persons, institutions and symbols are controlled by the access to technology, capital, markets, labor, knowledge, authority, identities, and social relations. The listed factors here may differ in importance depended on the system and situation in focus. Structural and relational access is thus dependent on which society is in focus (Ribot, et al., 2003). Ribot and Peluso does in this relation emphasizes that the categories are heuristic. Each form of access may influence other access mechanisms and result in a complex distribution of benefits. Where and how the categories affect each other depend on the web of access in which each is embedded. No matter how the access mechanisms are categorized they will form the strands of bundles of power from which resource benefits are gained in resource production, transformation and use (Ribot, et al., 2003). Ribot and Peluso see structural and relational access as more relevant, as it is possible to have the right based on the law, but this is of no use if there is no real access in the shape of structural and relational access. So when looking into access and livelihood assets they suggest taking a step back and analyzing structural and relational matters (Ribot, et al., 2003). Power is needed to obtain benefits and according Ribot and Peluso is ability akin to power. The definition of power is inspired by Michel Foucault and perceives power as emerging from, though not always attached to, people. This means, that power emerge from and flow through the intended and unintended consequences or effects of social relationships, where institutions and cultural practices can cause people to act in certain ways without any apparent force. Actors and social relations are consequently given a central role when talking about access. For Ribot and Peluso access relations are always changing dependent on an individual's or group's structural and relational position. When focusing on social relationships access can be placed in a

political-economic framework to identify the circumstances by which some people benefit from particular resources while others do not (Ribot, et al., 2003).

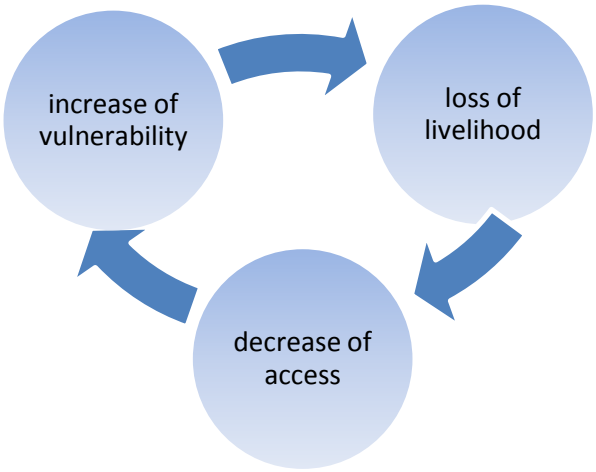
3.5. Livelihoods, access and climate change vulnerability

This present chapter will elucidate how *livelihood* and *access* as central concepts relates to climate change *vulnerability*. The notion of the theoretical concepts is based on the outlining of the concepts in chapter *3.2.Vulnerability in the context of climate change*, *3.3.Livelihoods in a context of climate change* and *3.4.Access in the context of climate change.* The three concepts are all to be seen as intertwined and all determined by each other. Even though the concepts are much intertwined will livelihood and vulnerability be the key concepts in this thesis. Access can be perceived as being on a higher level of abstraction than vulnerability and livelihood. This makes the concept more difficult to operationalize and therefore less applicable in the research conducted in this thesis, referring to Ribot and Peluso (Ribot, et al., 2003)quoted in chapter *3.4.Access in the context of climate change*. This is to be understood in the way that access will be seen as an overall concept determined and constituted by livelihood assets and vulnerability.

Vulnerability will be in focus when working with the theoretical concepts, referring to the research question in *1.2.Research question,* while livelihood and access will function as supporting concepts. These two concepts also are closely linked. Access impact livelihoods at all levels (Ribot, et al., 2003). This is most outspoken in two connections; how access to livelihood assets is guiding the possibilities in life and how a loss of livelihood mean a loss of access (IISD, 2003). Vulnerability is closely linked to access and livelihood assets because these are a principal means by which actors reduce their vulnerability. It is the access to capital assets that give people the capabilities to pursue livelihoods that may have direct objectives, referring to Ribot and Peluso (Ribot, et al., 2003) in chapter *3.4.Access in the context of climate change*. As described in chapter *3.3.Livelihood in a context of climate change* livelihood is consisting of a number of livelihood assets. These assets are referred to as types of capital. It can roughly be said, that the higher level of livelihood assets, the lower the level of vulnerability will be (Ellis, 2000). So to improve livelihood a person need access to capital. To answer the research question on whether the BCCSAP is likely to decrease climate change vulnerability in Bangladesh, will the focus thus be placed on access to capital as livelihood assets. It can be said that access and livelihood assets are linked and has a significant influence on all aspects in maintaining livelihood. Livelihood is moreover relevant in the context of vulnerability because having a high level of vulnerability when struck by climate changes, most likely will lead to loss of access to livelihood assets (Ellis, 2000). This includes a loss of the command over the capitals that can be the needs for a satisfying livelihood. This again means a low access to livelihood assets. A simple illustration can be as

an ongoing wheel, where it perhaps cannot be said which factor occurred as the first, but where all three occurrences reinforce each other.

Figure 2: ***Theoretical framework – vulnerability, livelihood and access***



The figure above illustrates how the three concepts are inseparable and intertwined. The intertwined character also shows how vulnerability, as the focus in the research question, only can be investigated by looking into livelihood assets and implicit in to access. The diversity of these approaches is to be understood in the way that in this thesis will the interconnectedness be accepted, but a magnifying glass will placed over the concept of vulnerability, using livelihood and access implicit as supporting concepts. This focus will be continuous throughout the thesis.

4. Bangladesh

The following chapter will present a brief description of the biophysical, social, economic, political and developmental situation for the poor in Bangladesh to depict the exposure, sensitivity, adaptive capacity and vulnerability of the poor to climate changes occurring in Bangladesh.

Bangladesh is surrounded by India to the West, North and East and Myanmar to the East. South does it boarder on the Indian Ocean. Bangladesh is a relative new country with a chaotic lifetime with a dictatorship and since 1992 a democracy. Until 1947 was it a part of the British colonies and became independent in 1971.

When the Moroccan adventurer Ibn Battuta first came to Bengal hundreds of years ago he described west Bengal as *'[…] a country of great extent, and one in which rice is extremely abundant. Indeed, I have seen no region of the earth in which provisions are so plentiful.'* (Hartmann, et al., 1983 p. 11). It was indeed a *Golden Bengal*, *sonar bangla*, as the Bangladeshis call their land. Today is it another matter; Bangladesh is described as one of the poorest countries in the world constantly haunted by famine (Hartmann, et al., 1983).

Figure 3: ***Map of Bangladesh***

Source: (Graphic Maps)

4.1. Biophysical

Bangladesh is one of the largest deltas in the world, except for the hilly regions in the northeast and southeast and the terrace land in the northwest and central zones. It is formed by a dense system of large rivers and a large number of tributaries and covers about 144.000 sq. km in total. The land area of the country can be divided into three categories; floodplain that counts about 80 percent, the Madhupur and Barind terraces that covers about 8 percent while the last 12 percent consists of tertiary hills. Both the floodplain and the terraces, in total 88 percent of the country, are often exposed to flooding because of the monsoon. The country is very flat, and only in the northwest do land elevations exceed 30 meters above mean sea level (Government of Bangladesh, 2005).

The large rivers are cutting its ways directly from Himalaya in North all the way through the country and ends in the Bay of Bengal in the South. Those are the rivers Brahmaputra, Ganges and Meghna. They are

providing nourishment to the fields of the country and thereby food to the citizens, but are also every year causing massive destruction. The rivers are very important for the Bangladeshis and have comprehensive influence on their lives in many aspects. This can be seen in how they inspire many Bangladeshis' favorite image of fate: '*The river wanders this way and break that way – that is the river's play.'* (Hartmann, et al., 1983 p. 12).

Three fourth of the rain in Bangladesh falls in the summer monsoon from June to September but in the winter are many areas in the country stroked by drought and irrigation is needed for the agriculture. In the monsoon are the coastal areas and large parts of the delta hit by powerful tropic cyclones from the Bay of Bengal. The low-lying areas at the coast are flooded and the waters are pressed up into the rivers. The result is floods every year in large parts of the country. The yearly floods are important for the agriculture, but are at the same time causing devastating natural hazards (Government of Bangladesh, 2005).

4.2. History

The first Europeans to visit eastern Bengal, now Bangladesh, found a rich and thriving country but by 1947 eastern Bengal was reduced to an impoverished agricultural hinterland being a part of the British Empire. The British were controlling Bangladesh for many years, the period that the Bangladeshis call the *British Raj,* and exploited Bangladesh's legendary cotton textile industry, which once ranked among the greatest industries of the world (Hartmann, et al., 1983). The British's introduced a new system of land ownership to Bengal in the hope to create a class of loyal supporters and to raise money by introducing taxes. With this new system land became private property and could now be bought and sold. Sheik Mujib-ur-Rahman and his Awami League, based on cultural nationalism and secularization, won an overwhelming victory in East Pakistan in 1970. This victory made the West Pakistan Rulers respond by launching a military breakdown and the civil war began as a culmination of these tensions. A bloody trauma began and Bangladesh went from relative obscurity to being headlines in the world press (Hartmann, et al., 1983). Sheikh Mujib returned to power to the shouts of *'Joi bangla!'*, 'Victory to Bengal!' which though could not drown the problems of economic stagnation and poverty (Hartmann, et al., 1983). The enthusiasm faded and gave space to anger and despair. The rice-prices were soaring and in the autumn of 1974 up till 100.000 Bangladeshis starved to death. The following years did Bangladesh receive an unprecedented influx of foreign aid, but the living conditions of the country's poor majority deteriorated and the wages fell to two-thirds of their pre-independence level. General Ziaur Rahman, who played a central role in the fight for liberation, took over the presidency in 1977 (Hartmann, et al., 1983). At the election in 1991 did the BNP get in control with Begum Khaleda Zia as a leader and the strong disputes between the secularized Awami League and the Islamic BNP continued through the 1990s. The Awami League got the power again in 1996,

with the daughter of Mujibur Rahman, Sheikh Hasina Wajed, as a prime minister. At the election in 2001 did the BNP and its allied get a great victory and Begum Khaleda Zia was again forming government despite accusations of election fraud (Government of Bangladesh, 2005). In 2006 did the BNP-government give the power to a ministry lead by Fakhruddin Ahmad and the country was in state of emergency until 2009 where a government supported by the military took over the power. The head of state today is the President Zillur Rahman and the prime minister Sheik Hasina (Udenrigsministeriet, 2010).

4.3. Economy and politics

Infrastructure, industry and technology have over the last decades developed significantly in Bangladesh. Particularly the transport system to increase the connectivity of rural areas with the cities and large markets has been improved. The amount of capital put into the infrastructure is very high because of a difficult terrain with water courses and periodic flooding and poor soil conditions. The Bangladesh transport system operates through four ways; roads, railways, inland waterways and airways. Bangladesh is predominantly an agricultural country but also house a number of large scale industries based on both imported and indigenous materials, like jute, cotton, textile, sugar, cement, chemicals, fertilizers and tanneries. The country at the same time depends on imported technologies (Government of Bangladesh, 2005).

Political is Bangladesh run by a parliamentary government where the President is the head of state without any real power while the government is run by the Prime Minister. There are two large parties that switch having the power; the Bangladesh National Party, the BNP, and the Awami League. Bangladesh is, with the other countries in South Asia a member of the South Asian Association for Regional Cooperation, the SAARC (Government of Bangladesh, 2005).

Regarding socio-economic conditions has Bangladesh had stability in general and economic growth over the last decade as market oriented reforms has led to a more stable macro economy. Despite economic achievements is poverty still a widespread problem in Bangladesh as well as the gap between the rich and the poor is increasing. Bangladesh has, since its independency made several initiatives in the economic factor. On the political area is Bangladesh trying to attract foreign investments by giving foreign investors a number of benefits, e.g. beneficial tax deduction. The largest export is textile which comprises around 75 percent of the total export. Bangladesh though experiences several large obstacles to a growing economy. The yearly cyclones and floods, the bad conditions of the harbors, a growing labor force that cannot get work in the agriculture, delays in the use of natural resources as, e.g. natural gas, a lack electricity, and slow implementation of economic reforms are all contributing to prolong the development. Despite many

obstacles has there been a steady economic growth on about 5 percent the last years (Government of Bangladesh, 2005).

4.4. Social

Concerning human development has Bangladesh, according to the Human Development Index, moved from a low human development category to a medium development category, and is in 2009 ranking as number 146 out of 182 nations with a level of poverty that vary substantially across the country (UNDP, 2009).

Religious is Bangladesh a moderate Muslim country without any serious religious fundamentalism. Islam is the dominant religion, and around 85 percent of the population is Muslims. The largest minority are the Hindus which comprise around 12 percent of the population. The rest, around one million, are Buddhists, Christian or believers of a tribe religion (Government of Bangladesh, 2005). Although Bangladesh is a predominantly Muslim country there is a proportion of hereditary low caste or untouchable Bangladeshis who are compelled to work in unsavory and dangerous occupations. Caste is a Hindu concept but in Bangladesh it is acted on by Muslims as well (Lönqvist, et al., 2010).

The majority of the population lives in the rural areas but there have been a rapid urbanization of the country. The distribution of populations is important in the context of climate change and it is estimated that about 79 percent of the Bangladeshi population lives somewhat away from the sea and the rest 21 percent lives directly in the costal districts (Government of Bangladesh, 2005).

5. Analysis

The following chapter will contain the analysis of the thesis. The analysis will be conducted in two steps as outlined in chapter *2.2.1.Vulnerability analysis and analyzing the BCCSAP.* This chapter will hence contain a vulnerability analysis of the poor in Bangladesh and a sum up on this analysis with a description of the climate change vulnerable in Bangladesh. The BCCSAP will be presented before conducting the second step of the analysis; analyzing the BCCSAP and the climate change vulnerable.

5.1. Vulnerability Analysis

The purpose of this vulnerability analysis is to outline who in Bangladesh are most vulnerable to climate changes and what characterizes them. The objective is to obtain a detailed understanding of the specific problems with climate changes in Bangladesh. These will afterwards be aggregated to obtain an understanding of climate change vulnerability in Bangladesh. The structure of the analysis is to a high extend inspired by Ellis' notion of capitals outlined in the theoretical framework in paragraph *3.4.Access in the context of climate change.* The different subchapters will each focus on one capital while fulfilling the purpose of the vulnerability analysis; to create a profile of climate change vulnerable in Bangladesh. There can seem to be a difference in how complex the different capitals are, but both complex and less complex capitals can assist in creating an understanding of climate change vulnerability in Bangladesh and all capitals will therefore be up for analysis.

5.1.1. Natural capital

Natural capital is essential when talking about climate change vulnerability. Inspired by Ellis the term natural capital comprises land, water and other biological resources to survive (Ellis, 2000). Perceiving natural capitals as land, water and other biological resources makes it one of capitals less complicated to work with. Agriculture is given a central role when focusing on natural capitals. Bangladesh is to a very high extent dependent on agriculture as over 60 percent of the Bangladeshis live in rural areas and depends on agriculture for their livelihoods (MoEF, 2009). When looking at the biophysics is it seen that the soil in Bangladesh is originally among the most fertile in the world and the floodwater renews this fertility as it provides fresh silt and promotes the growth of beneficial soil micro-organisms. Moreover the subtropical climate allows crops to be grown all year (Hartmann, et al., 1983). Interesting is, that not all parts of the population have access to this soil. A great percentage of the poor in Bangladesh are living in rural areas and are dependent on the agriculture, but their access to land is still low (World Bank, 2000). This means, that very few people in Bangladesh own much land, or even enough land to provide them with food. In

2000 did four out of five of the poorest 20 percent of the population own less than half an acre land, and landlessness is increasing (Government of Bangladesh, 2005).

Very important in the aspect of natural capital is that there are some overall changes going on in Bangladesh. Land traditionally used to agriculture is diverted into other activities because of urbanization, human settlements and riverbank erosion (Government of Bangladesh, 2005). The size of land to agriculture is hence getting smaller which inevitably brings a decline in access to land to agriculture. People living of agriculture are hence in general loosing land to produce crops to live off and the increasing landlessness leads to a decrease in the level of natural capital. With no or very little access to land can the poor in the rural areas be said to have a low level of natural capital (Ellis, 2000).

The coastal areas in Bangladesh are moreover affected by varying degrees of salinity which affects the farming possibilities negatively. This is because the severity of the salinity problem has increased over time which again means that access to land and to do agriculture is decreasing as the soil becomes unusable to grow crops. This again leads to a decrease in natural capital among those living in the coastal areas (Government of Bangladesh, 2005).

Another vital problem is the lack of access to clean water. The rivers in Bangladesh have large seasonal variations and water scarcity is a seasonal problem when the water amount available becomes smaller than the amount demanded or the quality of water restricts the use. When the amount of water fails to match the amount needed, the poor most often will be the first to lose the access to clean water as they have fewer resources to lean on when claiming their rights. Moreover is water scarcity most often experienced in rural areas where the most poor are living (Government of Bangladesh, 2005). The poor can therefore be said to have a low natural capital.

It might seem necessary to mention, that there might be a number of other natural capitals that are interesting but not mentioned here. The omission of those is not because they are not recognized or might not have an influence on the total natural capital. Those in focus here are those that seem as most characteristic and pressing in relation to the climate change vulnerability in this coherence.

Natural capital is by Ellis described as the most important capital for the poor because of the dependency of natural resources through farming, herding, collection or hunting to obtain a certain livelihood (Ellis, 2000). The low level of natural capital can therefore be said to have a large influence on the total climate change vulnerability. Summing up can it be said, that the poor have low natural capital and are, based on that, to a certain extent vulnerable to climate changes.

5.1.2. Social capital

Taking Ellis' notion of social capital is it perceived as covering the set of social relationships upon which people draw on in pursuit of livelihood (Ellis, 2000). This is a complex term to work with as these social relations include all relations in a society. The number of relations is moreover very high, and the perception of these relationships varies from person to person. Ellis describes social capital as the capital type most difficult to describe in other than broad terms. Social capital also comprises the range of access to institutions of society that are important in the actual livelihood activities (Ellis, 2000).

Having access to some institutions are of course more important than others all depending on the different social characteristics of the area or country in focus. With the focus on the basic livelihood, institutions that provide education and contribute to a good health are important. This means access to schools as well as hospitals and health clinics.

Schools are free of charge in Bangladesh (BESCO, 2010). This means, that attending school and education on paper is possible for every Bangladeshi. Despite that schools are free of charge are economy and poverty an obstacle for the poor. The pupils have to provide themselves with books, booklets, pens and other necessaries to fully attend school. This is in general not expensive, but can be a large expense for a poor family (JICA, 2007). Many children in Bangladesh are therefore not attending school. This diminishes the poor's level of social capital, when it is perceived as access to the education system. Another obstacle that contributes to a low social capital is that there are not many schools in the rural areas, so the children must walk a long way to get to school. This takes away time from working in the agriculture for their own families or other, and they cannot ear money to contribute to the household. It does at the same time mean that the children are away from their homes and villages when it is dark, and especially the girls are therefore risking assaults (BESCO, 2010). The low attendance in schools can be seen in the education level and literacy rate, which will be commented more on when focusing on human capital in chapter *5.1.3.Human capital.*

The constitutional commitment of the GoB is to provide basic health and medical treatments to all Bangladeshis. They ensured that *'Health is the basic right of every citizen of the Republic […]'* (World Health Organization, 2007). There are about twenty doctors per each 100.000 Bangladeshis, while there in a country like Denmark are290 doctors per each 100.00 persons (Ulandssekretariatet, 2010). A low number of Bangladeshis use the official doctors, nurses and hospitals because of many hindrances. Access to hospitals, medical clinics and treatment is a large issue affecting social capital among the poor in Bangladesh. Seeing a doctor is officially free of change for every Bangladeshi and a proper health treatment

should therefore be accessible for every Bangladeshi. Despite this does 60 percent of the population in Bangladesh still lack access to proper treatment. Medical treatment is hence out of reach for many Bangladeshis. Not least for the very poor, according to the World Bank Report *Quest for a healthy Bangladesh: A vision for the 21st Century* (World Bank, 2000). The combination of an official free of charge, but overburdened, health system and a population divided into a small rich part and a large majority living on less than a dollar per day, means that many doctors take in patients that pays to get through the system. It can be reads that poor complain that the public clinics ignore them and provide well dressed and rich people with treatment because they are able to pay a bribe in the World Banks *World Development Report 2000/2001* (World Bank, 2001). There is thus a divided health system – one for the rich and one for the poor, where the one for the poor almost not exists. The placement of the hospitals and clinics is besides the bribe dividing the population. The GoB's health system is not where the ill people are. There is again a problem with the placement of the institutions as the majority live in rural areas and almost all hospitals are placed in the cities (World Bank, 2000). There is hence a paradox as there are only few sickbeds, but many of them are empty, despite of a high illness rate. Besides the official health system are there an oriental system that the majority of the population use. This system is partly based on doctors with formal educations and partly on cures by village people who were taught locally. Almost every village has their cures and midwifes without formal education (Ulandssekretariatet, 2010). The poor can hence be said to have a low level of social capital when focusing on access to health-institutions.

Focusing on social capital as a relational capital is it unavoidable to mention the NGOs in Bangladesh. There are many NGOs in Bangladesh doing social grassroots work and at the same time administrate a large amount of foreign aid. Most of them are Bangladeshis' and administrate many million dollars of foreign aid yearly. Bangladesh is continuously very dependent of foreign aid as 95 percent of the development programs are financed by foreign donors. The most important contributors are the US, Japan and the Asian Development Bank (Central Intelligence Agency, 2010). The NGOs are not only controlling aid but are also active at the political arena. The NGOs express that the politicians appreciate the commitment of the NGOs and that they are supporting the parties without competing with them. None the less are some Bangladeshis pointing out, that this means that foreign aid plays a role in the political arena, and some wonder whether it is the foreign donors or the Bangladeshis that set the agenda (Central Intelligence Agency, 2010).The poor in Bangladesh sees the NGOs as their allies, and thereby expect to strengthen the possibility for influence through them. The NGOs are not only controlling foreign aid but also have an influence on the political arena and the poor get some influence through the NGOs. The presence of the NGOs can thereby in a way be said to increase the level of social capital among the poor.

All in all can the poor be said to have a low level of social capital when looking at access to basic institutions as schools and hospitals. It should though be accompanied with the aspect, that because of the presence of many NGOs does it seem as the social capital of the poor is increasing.

5.1.3. Human capital

Human capital is important for the ability to conduct livelihood activities. Ellis' notion of human capital is basically put on the same footing as labor as it is often said, that the chief capital possessed by the poor is their own labor (Ellis, 2000). It can hence be said, that human capital refers to the labor available to the household: education, skills and health. Human capital includes the knowledge and skills learned through formal education and also non-formal learning and human capital can hence be increased through investment in education or training. Education will therefore play a central role when looking at human capital. It is moreover the understanding, that human capital can be made more effective by diminishing illness or other health problems (Ellis, 2000). Health is thus given a central place when talking about human capital.

A basic problem for many poverty-stricken is a bad health. The health situation in Bangladesh illustrates a society divided in a poor condition and most illnesses are poverty-illnesses. It is though relevant to stress that as the poverty rate is decreasing is the health situation among the poor better than earlier, but still a present problem. Especially the poor children are affected by malnutrition and surveys shows that children up to six years are severe underweight or stunted in growth. This level is among the highest in the world (World Health Organization, 2007). This means, that they do not have much ability to work or to go to school and thereby keep a high level of human capital.

Another issue contributing to a low level of human capital is lack of education. The poor do often not have access to schools as outlined in the analysis in chapter *5.1.2.Social capital*. That many of the children do not go to school or quit school after a few years only can be explained with that the parents use the children as labor force. The girls are often working in the households while the boys serve at other farms or work the fields of their parents. As mentioned in chapter *5.1.2.Social capital* 5.1.2. Social capital are schools free of charge but the pupils must provide the necessary books themselves which can be too expensive for poor families and they keep the children at home instead. The children that do attend schools are often experiencing very large classes and teaching is most often learning by rote and reading out loud in unison (JICA, 2007). This often concludes in bad education, and Bangladesh is one of the countries in the world with the highest illiteracy rate (JICA, 2007). Only 60 percent of the children complete a primary education. The adult illiteracy rate is 53,5 percent for persons aged 15 and above, according the *UNESCO Institute for*

Statistics estimates based on its *Global Age-specific Literacy Projections Model* from May 2009 (UNDP, 2009). Illiteracy often goes hand in hand with poverty.

The education situation of the country is in general dismal. Nearly forty-seven percent of the adult population illiterate and two-thirds of them are women and the net primary school enrolment is 54 percent while net secondary school enrolment is only 19 percent. Being illiterate brings obstacles for the poor to educate themselves and thereby get into better jobs than those available in agriculture and their capability to labor is restricted to few areas (BESCO, 2010). This means, that when the ability to labor equals human capital, can the poverty-stricken be said to have a low level of human capital. All in all can it be said, that analyzing health and education in Bangladesh shows a relative low level of human capital.

5.1.4. Physical capital

Physical capital does, according to Ellis, constitute persons owning and access to physical capital. This means that physical capital constitutes basic infrastructure for transport, buildings, water management, energy, tools and machines (Ellis, 2000). It moreover includes both capital provided by the government or private, free or paid. Physical or manmade capital can in many situations substitute natural capital. This means, that where natural capital is low in form of bad access to clean water, could purification or desalination systems substitute. Infrastructural capital is important in physical capital as it facilitates interaction with the surrounding world (Ellis, 2000).

Focusing on the infrastructure in Bangladesh as a physical capital must it be mentioned that the infrastructure has developed significantly, especially the transport system. The purpose of this is to increase the connectivity of rural areas with the cities where the large markets are placed. There have been, and still are, put a high amount of investment into developing infrastructure. The terrain where the infrastructure is needed is very little accessible and therefore expensive to work in. The terrain is difficult to work in because of the many rivers, the periodic flooding and poor soil conditions as outlined in chapter *4.* Bangladesh. The transport system operates through four ways, and especially the land transport is complicated to construct as it has to intricate routes free of water. Especially because of the periodic flooding is it difficult to construct and maintain land transport as elevated infrastructure embankments demands a lot of time and money (Government of Bangladesh, 2005). The progress is therefore slow. This means that it can be difficult for the population living of agriculture and other jobs in rural areas to get into the larger cities. It is thereby difficult to access larger markets to buy and sell products. As Bangladesh is predominantly an agricultural country is the part of the population that live in the rural areas very

dependent on getting to markets where they can sell their goods. The level of the physical capital can therefore be said not to be very high for the population living of agriculture in rural areas.

5.1.5. Financial capital

The notion of financial capital that Ellis has developed covers the financial resources that are available to people and that provide them with different livelihood options. This can be both savings, supplies of credit, pension, social security payments and insurance and also finances for investment in new productive assets. Financial is most often cash, but if there is no financial market or a high distrust in the financial institutions, financial capital can be cattle or food stocks convertible into other forms of capital or consumption (Ellis, 2000).

Bangladesh is one of the poorest countries of the world. It is categorized as a least developed country and the estimated per capita GDP is US$ 363. The majority of the people in Bangladesh are poor (Pramanik, 2003) and around 37 percent of the population lives below the poverty line (Central Intelligence Agency, 2010). Poverty is one of the largest social and economic problems in Bangladesh. The group of poor people decreased to less than the half of the total population in the 1970s and 1980s, but stagnated in 1990. In 1995 and 1996 were there fewer very poor Bangladeshis than ever before, both in absolute and relative numbers (Government of Bangladesh, 2005). There are only a modest difference between rich and poor when looked at the large population and almost every Bangladeshi is poor in Western ideas of poverty. There are very rich people in Bangladesh living in large houses, have several cars, many servants and send their children to expensive schools. They are though so few, that they disappear in the statistics (Government of Bangladesh, 2005).

Climate change vulnerability and poverty can be said to be two very interlinked factors and being poverty-stricken is by itself a useful vulnerability indicator. Bangladesh is in general one of the poorest countries of the world with a low human development; Bangladesh rank as number 145 out of 182 on UNDPs Human Development Index (UNDP, 2009). The means that the Bangladeshi population in general is poor and the majority of the population, 77,8 percent, earn less than two US$ per day (Pramanik, 2003). Hence, the population can as a whole be characterized as having a low level of financial capital. It must though be mentioned, that the level of poverty varies across the country and are strongly correlated with spatial distribution of food insecurity. The United Nations World Food Programme have reported, that the poorest can be found in the north-west and the coastal belt; Mymensingh, Netrakona, Bandarban and Rangamati. Districts with more than one million people living in extreme poverty include Sirajganj, Naogaon, Bogra, Mymensingh and Cittagong (Government of Bangladesh, 2005).

The poverty on the countryside maintains and reinforces a structure in the society that has already existed in Bangladesh for centuries. The poor are dependent on those better off providing them with loans, work or land as tenancy. The loans are often so expensive, that the poor will never be able to pay them back and they and their families end up in a lifelong dependency. In return for loans, work or tenancy is the poor and his family voting for the patron if he runs for an official post or vote for the party or the person he tells them to. They also have to accept, that he takes the boons that could have been good for everyone. The system exists parallel with the official power system and intervenes with it, as the judges and the public servants in the country often follow the patron's will. The system with patrons and clients distort the society and makes it difficult to involve the poor in the social and economic development (Harboe, 1998).

The GoB has decided on a minimum salary. This does though not cover agriculture, and the people working in agriculture therefore get paid less and have a lower level of financial capital. It is though worth to mention, that because of a low salary are people working in agriculture often paid in rice and other provisions (BESCO, 2010). There is therefore very low financial capital when perceiving financials simply as cash, whereas when it is measured in provisions, is it slightly different. However, this does not mean that the poor in agricultural areas are less poor than those in urban areas; it does only mean that hunger might be experienced less often. It is clear, that for the common Bangladeshi the level is of financial capital very low.

5.2. Climate change vulnerable in Bangladesh

Summing up on the vulnerability analysis can it be said, that those especially vulnerable to climate changes seem to have a low level of the entire analyzed capital types; natural, social, human, physical, and financial. It can be said that especially the level of the capital types focusing on tangible capitals are low, i.e. the natural and the financial capital types. This means, that the climate change vulnerable have very little or no land, no access to land, and that they own very few livestock and very little cash. This can be explained with that the climate change vulnerable very seldom own cash or things. It was moreover found that those being especially vulnerable to climate change do not have a high level of capital when it comes to the more intangible capital types; human, social and access to physical capital. This means, that the climate change vulnerable have difficulties to access to fertile land, difficulties to access clean water, difficulties to access health clinics and schools, bad health, low educational level and bad infrastructure at disposal.

It seems to be a recurring characteristic in the vulnerability analysis, that the level of capital is low in all capital types. This means that a characteristic of the climate change vulnerable in Bangladesh is that they

are poverty-stricken, have a limited access to institutions to build up human capital, that a great number of them are landless and they are situated in areas with no or very less developed infrastructure.

The economist Diana Carney uses a schematic approach to illustrate the capital status (Carney, 1998). This illustration entails plotting the capital status in a pentagon, where each of the corners represents the five different capitals. The pentagon thereby works as a five axis graph in which the relative level of the capitals can be plotted. The center of the pentagon represents zero level of a capital. It is worth noting, that the axes are not calibrated, but represent rank orderings. The axes in the outer perimeter, the axes that shape the pentagon, illustrate the maximum level of capital. It is hence to be understood in the way that, that the outer perimeter, the stipple line, represents the level of capital for people not being particularly vulnerable to climate change, and the inner pentagon, the dotted line, is to be understood as representing the climate change vulnerable in Bangladesh.

Figure 4: ***Capital Status***

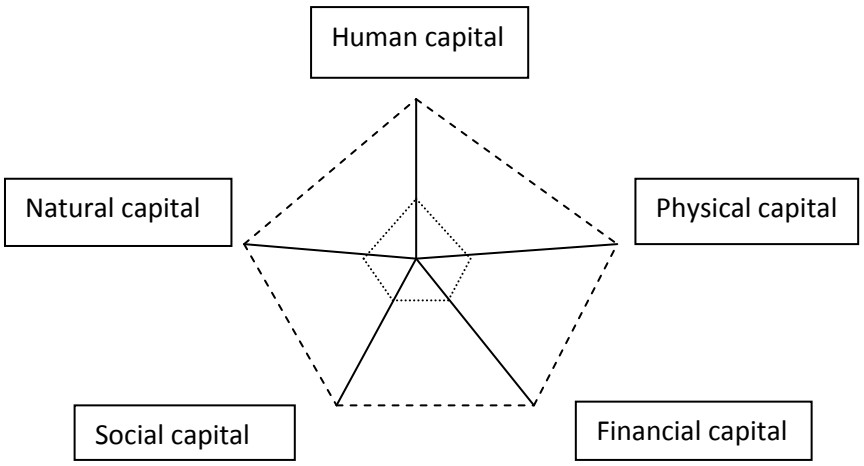


Figure 4: Capital Status illustrates how the climate change vulnerable simply has low level of capital types, without any exceptions. A framework of this kind does not provide a recipe for vulnerability reduction. It does, however, suggest a way of seeing the main components; the capitals, and to think about the link between them. It is important that the capitals are viewed in both a static and dynamic perspective. The static perspective provides a snapshot of the current levels of capital and thereby a current description of what characterizes the climate change vulnerable of interest. A dynamic perspective is interesting in the sense as it is significant in which direction the capital is moving as a consequence of the impact of external pressures and trends on livelihoods. Taking a dynamic perspective the pentagon of capitals can be very interesting, as it can be used to illustrate how the capitals have changed. It could hence be very interesting to turn back to this illustration when the BCCSAP has been implemented over some years and the programs

have been active over some time and see whether the relation between the capitals has changed. This is though not possible in the present thesis because of time limitations.

The climate change vulnerable Bangladeshis are hence those with low level of capital, no matter which capital is in focus. This means, that the BCCSAP from the GoB has to focus on increasing the level of capital of those being poor and without access to institutions to strengthen human, social as well as other physical capital. Whether the BCCSAP contain these focus areas will be analyzed in chapter *5.4.Analysis of the BCCSAP and the climate change vulnerable* where the BCCSAP will be analyzed in relation to Ellis' five capital types. The following chapter will provide a presentation of the BCCSAP.

5.3. Presentation of the BCCSAP

The GoB formulated the *Bangladesh Climate Change Strategy and Action Plan*, the BCCSAP, which functions as the basis of the GoB's efforts to combat the adverse effects of climate change as mentioned in chapter *1.1.4.1.Banglaesh – one step further.* The structure, its origin and the objectives of the BCCSAP will be outlined in the following paragraph as the BCCSAP will serve as an analysis object. The paragraph will accordingly be based on the *Bangladesh Climate Change Strategy and Action Plan*, formulated by the *Ministry of Environment and Forests*, the GoB, in September 2009.

The BCCSAP 2009 is an updated and revised version of the BCCSAP prepared in 2008. The 2009 version has been prepared by a drafting and revision committee formed by the Ministerial Review Committee (MoEF, 2009).

After the new GoB came into power in 2009 did it wish to examine whether the premises and the actions in the BCCSAP 2008 were consistent with the GoB's priorities for future economic, social and human development in Bangladesh. To do this the GoB formed a Cabinet Review Committee and the revised version of the BCCSAP 2009 has followed the guidelines and incorporates the views and thinking of this committee.

The GoB is very conscious that Bangladesh is among the countries that are the worst affected by climate change and has been preparing for the challenge for several years and sees the challenges as both environmental and developmental. The NAPA was developed in 2005 after extensive consultations with communities all over the country, UNFCCC and other related fora. The GoB and its development partners has invested over US$10 billion to make Bangladesh less vulnerable to climate changes over the last 35 years. These activities have been focused on flood management schemes, coastal polders, cyclone and flood shelters and the raising of roads and highways above flood level. The GoB has moreover developed

state-of-the-art warning systems for floods, cyclones and storm surges and is expanding community-based disaster preparedness. Besides have climate resilient varieties of crops been developed (MoEF, 2009).

Implementing the various components of the BCCSAP is the responsibility of ministries and agencies in corporation with the civil society and the business community. The MoEF will be responsible for coordinating activities under the Action Plan and will report to the Steering Committee on Climate Change[2] and to the National Environment Committee[3] (MoEF, 2009).

The BCCSAP has been prepared through a consultative process involving the GoB, civil society and development partners and the main purpose is to *'[…] articulate a strategy to manage climate change and its impacts in Bangladesh leading towards an action plan of programmes addressing the needs for substantive interventions with a definitive timeline for their implementation'*. (MoEF, 2009 p. xiii). The vision in the BCCSAP is moreover to *'[…] eradicate poverty and achieve economic and social well-being for all the people.'* (MoEF, 2009 p. xv). The plan is to achieve this through a pro-poor climate change strategy which prioritize adaptation and disaster risk reduction, and also address low carbon development, mitigation, technology transfer and the provision of adequate finance. More than 50 million people in Bangladesh still live in poverty and many of these live in remote or ecological fragile parts of Bangladesh, such as chars, river islands, and cyclone-prone coastal areas that are very vulnerable to natural disasters (MoEF, 2009).

The BCCSAP is presented in two parts: first part is presenting the background based on physical and climatic contexts, core socio-economic realities and policies in the country and the consequent rationale for a strategy on climate change. The second part elaborates a set of programs based on six pillars of intervention. Both parts will be outlined below.

The BCCSAP is a ten-year program created to cover the period from 2009 to 2018 to build the capacity and resilience of the country to meet the challenge of climate change. The plan is to take the need of the poor and vulnerable, including women and children, into consideration and mainstream these needs. The strategy will comprise six pillars in the first five years, from 2009 to 2013;

2 Chaired by the Minister of Environment and Forests
3 Chaired by the Chief Advisor or Prime Minister

Figure 5: ***The BCCSAP***

BCCSAP					
1	**2**	**3**	**4**	**5**	**6**
Food security, social protection and health	**Comprehensive Disaster Management**	**Infrastructure**	**Research and knowledge management**	**Mitigation and low carbon development**	**Capacity building and institutional strengthening**
1.1. To increase the resilience of vulnerable of vulnerable groups, including women and children, through development of community-level adaptation, livelihood diversification, better access to services and social protection.	**2.1**. Strengthen the government's capacity and that of civil society partners and communities to manage natural disasters, and ensure that appropriate policies, laws and regulations are in place.	**3.1.** To repair and rehabilitate existing infrastructure and ensure effective operation and maintenance systems.	**4.1**. Model climate change scenarios for Bangladesh by applying global climate change models and methodologies at regional and national levels.	**5.1**. To develop a strategic energy plan and investment portfolio to ensure national energy security and to lower greenhouse gas emissions.	**6.1.** Review and revise, where appropriate, all government policies to ensure that they take full account of climate change and its impacts.
1.2. Develop climate change resilient cropping system, fisheries and livestock systems to ensure local and national food security.	**2.2**. Strengthen community-based adaptation programs and establish them in each of the disaster-prone parts of the country.	**3.2**. Plan, design and construct urgently needed new infrastructure to meet the changing conditions expected with climate change.	**4.2**. Model the likely hydrological impacts of climate change on the Ganges-Brahmaputra-Megha systems to assess likely future system discharges and river levels in order to derive design criteria for flood protection embankments.	**5.2**. Expand the social forestry program on government and community lands throughout the country.	**6.2**. Mainstream climate change in national, sectoral and spatial development planning and ensure that impacts on vulnerable groups and women are prioritized in plans.
1.3. Implement surveillance systems for existing and new disease risks and ensure health systems are geared up to meet future demands	**2.3**. Strengthen cyclone, storm surge and flood early warning systems to enable more accurate short, medium and long-term forecasts.	**3.3** Undertake strategic planning of future infrastructure needs, taking into account the likely (a) future patters of urbanization and socio-economic development; and (b) the changing of the hydrology of the country, because of climate change.	**4.3**. Monitor and research the impacts of climate change on ecosystems and biodiversity.	**5.3**. Expand the 'greenbelt' coastal afforestation program with mangrove planting along the shoreline.	**6.3**. Build the capacity of key government ministries and agencies to take forward climate change adaptation.
1.4. Implement drinking water and			**4.4**. Research the likely impacts of	**5.4.** Seek the transfer of state-of	**6.4**. Build the capacity of the

sanitation programs in areas at risk from climate change.			climate change on the macro-economy of Bangladesh and key sectors and contribute to developing a climate-proof national development plan.	the art technologies from developed countries to ensure that we follow a low-carbon growth path.	government to undertake international and regional negotiations on climate change. Regional and international cooperation is essential in order to build necessary capacity and resilience.
			4.5. Research the linkages between (a) climate change, poverty and vulnerability and (b) climate change, poverty and health in order to identify possible interventions to increase the resilience of poor and vulnerable households to climate change	**5.5**. Review energy and technology policies and incentives and revise these, where necessary, to promote efficient production, consumption, distribution and use of energy. The sixth, and last pillar, concerns	**6.6**. To build the capacity of the government, civil society and the private sector on carbon financing to access various global climate funds.
			4.6. Establish a Centre for Research and Knowledge Management on Climate Change to ensure Bangladesh has access to the latest ideas and technologies from around the world, and ensure that data is widely and freely available to researchers.		**6.7**. To build the capacity for education and training of environmental refugees to ease and facilitate their migration to other countries and integration in new societies. [4]

Source: (MoEF, 2009)

The GoB recognizes that it is necessary to strengthen their institutions of Bangladesh to respond effectively to the enormous challenges of climate change. They have therefore established a *National Steering Committee on Climate Change* to coordinate and facilitate national actions on climate change.

The BCCSAP was developed through a participatory process involving all relevant ministries and agencies, civil society, research organizations and the business community. Programs funded under the BCCSAP are implemented by these actors too. The BCCSAP is to be reviewed periodically and revised in line with emerging scientific and technical knowledge and the outcomes of global negotiations under the UNFCCC

[4] The lack of target 6.5 will be commented on later in the thesis.

and other UN-led climate change negotiation processes. In implementing and financing the BCCSAP the MoEF differentiates between activities that are a part of the regular national development program and the incremental work that will be financed under the BCCSAP. Programs for immediate implementation are identified with special attention on the needs of the poorest and most vulnerable. The GoB has established a *National Climate Change Fund*, and the implementation of the BCCSAP is financed through the GoB's resources and external support from development partners as well as international funds created for the purpose. The GoB has allocated US$ 45 million to implement the BCCSAP. Now the country needs extra help. Bangladesh has therefore created the so-called *Climate Change Multi Donor Trust Fund*. The purpose of the fund is to give the donors a common ground for climate-aid to Bangladesh to coordinate the economic contributions and to attract even more money. The money that is donated is not a part of the donated development aid, but additional funds (Danida, 2009).

There are 44 programs listed in the BCCSAP. The list is by no means exhaustive but only outlines the first set of activities that were undertaken in line with the needs of the communities and the overall development program of Bangladesh. These programs are divided into the same six pillars as outlined and illustrated above in *figure 5: the BCCSAP*, each pillar comprising between four and nine programs, with the highest number of programs under the theme *Food Security, Social Protection and Health*.

5.4. Analysis of the BCCSAP and the climate change vulnerable

In the following paragraphs the BCCSAP will be analyzed in relation to the capital status of the climate change vulnerable in Bangladesh outlined in chapter *5.2.Climate change vulnerable in Bangladesh*. As in chapter *5.1.Vulnerablity analysis*, this analysis of the BCCSAP will mainly be structured by the five capital types outlined in the theoretical framework in chapter *3.4.Access in the context of climate change* and the theory hence plays a central role. Having Ellis' capitals structuring the analysis can be explained with the link between vulnerability, livelihood and capital as outlined in the theoretical framework in chapter *3.Theory and concepts.*

The BCCSAP has initiatives on several levels and the analysis will therefore take in capitals and climate change initiatives on a more general level, all dependent on where they seem relevant. The initiatives on a more general plan may not directly influence the level of capital but might decrease climate change vulnerability in general.

The overall vision to *'[…] eradicate poverty and achieve economic and social well-being for all the people'* (MoEF, 2009 p. xv), is a recurring motive during the 76-pages long document. The vision is very wide which makes the strategy comprehensive and far-reaching and the strategy takes in almost every conceivable

aspect. This means that there can be multiple visions that are not directly linkable to capital on actor-level when analyzing the BCCSAP in relation to the capitals. The efforts not directly linked to capital are typically on an institutional level or still on a research stage. These efforts will be analyzed after looking into how the strategy matches the five capitals.

5.4.1. Natural capital

The BCCSAP can to a certain extent be likely to contribute to an increase of the Bangladeshis' level of natural capital. There is at any rate a great focus on land, water and biological resources in the BCCSAP. This can especially be seen in the amount of money and energy invested in efforts to develop climate change resilient cropping systems (MoEF, 2009). This is of great importance when a large part of the population is living of agriculture and hence dependent on climate change resistant crops. Moreover are those living in rural areas mostly poor people with a low level of capital, disregarding which capital is in focus, referring to chapter *5.2.Climate change vulnerable in Bangladesh*. Although all capitals are of great influence on the livelihoods are poor people very dependent on natural capital. This can be substantiated by the declaration from the UNDP quoted by IISD which states that *'[…] poor people tend to be most dependent upon the environment and the direct use of natural resources […]'* (IISD, 2003 p. 13) because of the high level of dependency through farming, herding, collecting or hunting (IISD, 2003). Natural capital is according to Ellis enhanced when it is under human control and of that reason not to be seen as static (Ellis, 2000). Natural capital can therefore also be expected to be sucestible to initiatives and efforts from the GoB.

The initiatives in the BCCSAP that could influence natural capital are especially occurring under the first theme; *Food Security, Social Protection and Health.* The link between the theme and the natural capital can be understood in the way that the initiatives in the BCCSAP might not have a direct and immediate influence on natural capital, but will have the possibility to affect it positively with time. The objective of the first program under theme one, T1P1, is to breed new climate change friendly cultivars under the headline '*Institutional capacity for research towards climate resilient cultivars and their dissemination*' (MoEF, 2009 p. 33). Developed climate change resilient crops might with time, according to the MoEF seven to eight years, be accessible for the poor part of the population living of agriculture as the program also contains a vision of dissemination (MoEF, 2009). This could with time contribute to an increase in the level of natural capital by giving the poor access to climate change sustainable crops. It is not a direct and immediate effort that will decrease climate change vulnerability by increasing natural capital instantly, but a more general contribution to ameliorate the level of capital among the poor. This can also be said to be the case for program T1P2 and T1P3, also under the first theme. They contrive plans for respectively

developing climate resilient cropping systems and adaptation against drought. These efforts may also contribute to an increase in the level of natural capital over time. The initiatives are not directed at the poor farmers in the first time round, but might have a positive influence over time. This is moreover to be seen in that they are operating with a medium to long timeline and the results are not expected to be seen right away.

It can be said, that the BCCSAP have initiatives that can increase the level of natural capital of those being vulnerable to climate change in Bangladesh. This is because those especially vulnerable to climate changes in Bangladesh are people in rural areas living from agriculture. Those living in coastal areas and chars are to a great extend dependent on natural capital to obtain and maintain a proper livelihood. It is relevant to mention, that the initiatives in the BCCSAP are not initiatives that are expected to show results in the near future but might help to improve climate change vulnerability over time.

The initiative to support poor in agricultural areas mentioned in the BCCSAP is critiqued in a report implemented under the project Improved *Adaptive Capacity to Climate Change for Sustainable Livelihoods in the Agriculture Sector* from the *Asian Disaster Preparedness Center* and the *Food and Agriculture Organization of the United Nations*. The report *Livelihood adaptation to climate variability and change in drought-prone areas of Bangladesh* states that the BCCSAP fails to make a concerted effort to create awareness among the different stakeholders of the treats of climate changes. The report outlines that the initiatives related to climate change adaptation require community involvement. Creating awareness among people vulnerable to climate changes is according to the report one of the areas needing the most immediate attention (Baas, et al., 2006). The report from the *Asian Disaster Preparedness Center* and the *Food and Agriculture Organization of the United Nations* thus states that the BCCSAP lacks to take in those needing the natural capital to adapt to climate changes and will therefore not be able to increase the level of natural capital among the climate change vulnerable.

5.4.2. Social capital

The level of social capital is as outlined in the vulnerability analysis playing a central role in Bangladesh concerning capital to decrease climate change vulnerability. The GoB is aware of this and mentions this as important areas throughout the BCCSAP (MoEF, 2009). In this thesis social capita is, as outlined in chapter *3.3.1.Livelihood assets*, to a great extent perceived as having access to institutions that facilitate basic conditions to obtain and maintain a proper livelihood, referring to Ellis' notion of social capital (Ellis, 2000). In the vulnerability analysis in chapter *5.1.Vulnerability* were the focus especially placed on basic access to education and health institutions. Access to these institutions is in focus in the BCCSAP as well. A vision to

ensure actual access to basic health services and social protection for the entire population, especially for the worst affected by climate changes, is explicitly outlined several places in the strategy, e.g. in the first part-vision under the first theme; *Food security, social protection and health* (MoEF, 2009 p. 27). In accordance with chapter *5.1.2.Social capital* in the vulnerability analysis, is this initiative needed as health institutions in principle are free of charge for every Bangladeshi (World Health Organization, 2007). Accessing health institutions are though not a genuine possibility for poor Bangladeshis because of traditions of bribery and geographical misplacements, referring to chapter *5.1.2.Social capital* (World Bank, 2001). Programs to enable access to basic health institutions can therefore be of utmost relevance when it comes to increasing social capital, when social capital is perceived as access to basic institutions.

The initiatives in the BCCSAP on a more general level can be seen as increasing the Bangladeshis' general access and influence. As an example of an initiative that can contribute to an increase of social capital, can the vision to *'[…] undertake climate change investments with communities, learn from them, build on their knowledge of their local environments, and ensure that proposed investments meet their needs.'* (MoEF, 2009 p. 19), be mentioned. The vision is to increase influence through cooperation with local institutions and communities. Influence can be perceived as a part of social capital based on the notion that social capital is the set of social relationships upon which people draw in pursuit of their livelihoods and the influence this affiliation entails (Ellis, 2000). Those vulnerable to climate change thereby get a possibility to influence strategies concerning them, as the planners of the strategies can accommodate their needs. Having this kind of influence can therefore to a high extent be equated with possessing social capital, referring to Ellis' notion of social capital (Ellis, 2000). The BCCSAP emphasizes the need of civil society and explicit mentions the needs to draw on experience and the capacity of the affected to develop approaches to address the issues around climate changes (MoEF, 2009). This will again enlarge influence and thereby bring a higher level of social capital. This can be exemplified by that the BCCSAP comprises a vision to *'Strengthen community-based adaptation programmes and establish them in each of the disaster-prone parts of the country.'* (MoEF, 2009 p. 27). The BCCSAP moreover attempts to strengthen the capacity of the GoB and *'[…] that of civil society partner and communities to manage natural disasters and ensure that appropriate policies, laws and regulations are in place.'* (MoEF, 2009 p. 27). The GoB thereby expresses a wish for the local communities and the civil society to take action and obtain influence on the policies and programs concerning them. They moreover express a wish that the impacts of the vulnerable groups are prioritized in the plans. Hence, there can be said to be a formulated initiative for the climate change vulnerable to have an influence, which to a certain extent can increase social capital. An increase of influence is an effort that will have a medium to long timeline, as this kind of initiative can be expected to take time and demands a large amount of work.

There are moreover formulated an overall vision of *'Capacity building and institutional strengthening to enhance the capacity of government ministries and agencies, civil society and the private sector to meet the challenge of climate change'* (MoEF, 2009 p. xviii) in the second theme of the BCCSAP. This comprises visions for strengthening all levels of society in playing an active role in meeting the climate changes – both governmental institutions and local communities.

The above chosen examples and focus areas might seem very diverse. This can be explained with, that social capital can be a very complicated capital to define in other than broad terms (Ellis, 2000). The applied initiatives in the BCCSAP can neither here be said to be directly and immediate affecting initiatives. The level of social capital of those being vulnerable to climate changes might be influenced over time as the visions in the BCCSAP analyzed as concerning social capital are general visions for the society (MoEF, 2009). General changes and improvements in the Bangladeshi society will also affect the poor and climate change vulnerable part of the population.

5.4.3. Human capital

The applied notion of human capital in this thesis is as outlined a notion inspired from Ellis that human capital refers to the labor available to the household; education, skills and health (Ellis, 2000). The BCCSAP contains an overall vision to improve food security, social protection and health: the overall topic for theme one. Theme one underlines that *'Every effort will be made to ensure that they* [the poorest and most vulnerable] *are protected and that all programmes focus on the needs of this group for food security, safe housing, employment and access to basic services, including health'* (MoEF, 2009 p. 27). There is thus a general attention to improve the basic living conditions and human capital for the poor and climate change vulnerable. Especially health is given a central role in this relation and the BCCSAP comprises several visions to improve the health of the poor and climate change vulnerable. There are several visions under the different themes that illustrate this. One example is that the BCCSAP expresses it as *'[…] important to implement public health measures (immunization; improved drainage, sanitation and hygiene) to reduce the spread of these diseases and to improve access to health services for those communities likely to be worst affected by climate change'* (MoEF, 2009 p. 16).There is thereby suggested an active initiative to increase the level of human capital by active efforts to ameliorate the health situation of those vulnerable to climate changes in Bangladesh. This is done both by increasing access to health institutions but also by reducing the spread of diseases by improving drainage, sanitation and hygiene. Ameliorating the health situation for the climate change vulnerable can increase the level of human capital because being healthy strengthens the ability to labor. The ability to labor is, as outlined, perceived as the most important part of human capital, referring to chapter *3.3.1.Livelihood assets*. Another example is the objective to *'[…]*

implement drinking water and sanitation programmes in areas at risk from climate change.' (MoEF, 2009 p. 27), that is listed as the fourth objective under the first theme. Improving drinking water and sanitation is very likely to have a positive effect on the health and thereby on the human capital. The BCCSAP can hence be said to content initiatives that focus on health and human capital to a great extent. It is here relevant to note, that these programs have a medium to long timeline. They are hence not expected to show results immediate.

As such there are not many explicit programs focusing on development of the educational system in the traditional understanding, i.e. primary, secondary and tertiary education. The focus is to a larger extent placed on *'Awareness rising and public education towards climate resilience'* (MoEF, 2009 p. 43), which is the wording of the third program under the second theme. The focus is hence not on education in general, but on education on climate change. This is hence a direct initiative to increase the knowledge and education of how to react and develop resilience towards climate change for those vulnerable to climate changes in Bangladesh (MoEF, 2009). This can be seen as an increase that also can contribute to an increase in human capital. This program is to be implemented immediately and have a long timeframe which illustrates how the GoB perceives these subjects as very important. It can be noted, that the programs that can be related to human capital in this thesis has immediate to long implementing timelines.

There are several efforts in the BCCSAP that can contribute to an increase in the level of human capital of the poor and climate change vulnerable in Bangladesh. Attempts to make initiatives directed at education, skills and health of the climate change vulnerable are seen in a more or less direct way, but are none the less present. The intention to improve human capital is hence present and the first results are expected within short time.

5.4.4. Physical Capital

Physical capital is in this thesis perceived as basic infrastructure for transport, buildings, water management, energy, and tools and machines as outlined in chapter *3.3.1.livelihood assets.* This notion of physical capital is again based on Ellis' definition of the term (Ellis, 2000). The third theme in the BCCSAP comprises a great part of these aspects under the headline *Infrastructure*. This theme comprises three objectives; *3.1: Repair and rehabilitate existing infrastructure, 3.2.: Plan, design and construct urgently needed new infrastructure and 3.3.: Strategic planning of future infrastructure* (MoEF, 2009 p. 28). Climatic catastrophes and changes in physical conditions have been present in Bangladesh over a long time and the need of focus can now be said to be embedded in the consciousness of the GoB. The importance and the awareness can be seen in already existing initiatives. These initiatives operate on different levels and with

different areas in focus. One example that can be mentioned is that Bangladesh has a world-renowned community-based warning system and has build shelters on stilts for refugees where storm surges can flow underneath. These shelters can typically house 700 refugees which provide housing possibilities for many persons. There is though the problem, according to the GoB, that people are reluctant to go to the shelters, because they do not want to leave their livestock and other belongings behind (MoEF, 2009). The GoB expresses these problems in the introduction of the BCCSAP where the impacts of climate change are outlined. This serves very well as an illustration of how there already are initiatives that can contribute to an improvement of the level of physical capital. The initiative is though not successful, and more initiatives are needed. This is the case for a number of existing initiatives on climate change in Bangladesh. The BCCSAP address some of the issues related to physical capital. These seem to fall into two categories; initiatives that are immediate and directly focusing on humans and initiatives that are more with a focus on physical improvements and with a longer time frame.

The initiatives that could influence the physical capital are as examples program number seven under theme one; *'Ensure adequate water supplies and improved sanitation.'* (MoEF, 2009 p. 39) with the addition that *'In meantime, every effort should be made to ensure that people currently living in drought-prone and saline affected areas are provided with adequate services.'* (MoEF, 2009 p. 39). This is a program that has a short, medium and long timeline and several stages. This illustrates how important the GoB perceives it. A goal is set, and while working to achieve this goal there initiatives are demanded. Especially ensuring water supplies is important for the climate change vulnerable as water plays a very central role for keeping a good health and is a shortage for the climate change vulnerable in Bangladesh. The initiative is directly aimed at the climate change vulnerable in Bangladesh with an immediate start and can be expected to contribute to increasing the level of physical capital. Another example can be the second program under theme three with an objective *'To make existing cyclone shelters safe and functional.'* (MoEF, 2009 p. 47). This program is also intended to begin immediately. Making existing shelters safe and functional is also an initiative that directly affects the poor and climate change vulnerable, as it will most likely be those that will need a place to find shelter. The programs are therefore to a certain extent likely to contribute to an increase in the level of physical capital.

When looking at the initiatives focusing more directly on the physical capital are there also several programs that can be taken in as examples: Program number one under the third theme with the objective to *'Ensure continued flood protection by repairing and rehabilitation existing flood embankments.'* (MoEF, 2009 p. 46). This initiative does not directly focus on people's livestock, but more on the physical surroundings. The physical surroundings play a great influence for people being vulnerable to climate

changes and poor people in general. This is also the case for the climate change vulnerable in Bangladesh. Ensuring flood-protection will for the climate change vulnerable mean that the environment in which they living become safer when a flood strikes. Flood protection means that there is less risk for the climate change vulnerable to lose buildings and other physical capitals. This can to a great extent be said to be related to the level of physical capital which this program very likely can contribute to increase. The same can be said when looking at program number three under theme three; *'Repair and reconstruct the existing polders in the coastal belt of Bangladesh'* (MoEF, 2009 p. 48). This program works with in a medium to long timeframe and will be implemented later but still focus on physical issues. Repairing and reconstructing polders in the coastal belt will be of great benefit for the climate change vulnerable as many are located in the coastal belt. This program may hence be likely to contribute to an increase in physical capital for the climate change vulnerable in Bangladesh.

It can be said that with a focus on physical capital the BCCSAP have a potential to contribute to an increase in the level of physical capital the climate change vulnerable possess. This is both through initiatives directly aimed at climate change vulnerable people and through initiatives aimed at the physical surroundings. The programs linked to physical capital cover a wide timeframe. Some are implemented immediate and some have medium or long prospects. This seems to illustrate that the vision to improve physical surroundings will be presents over a long time.

5.4.5. Financial capital

The BCCSAP expresses many overall visions of how to *'[…] build the capacity and resilience of the country to meet the challenge of climate change […]'* (MoEF, 2009 p. xvii). To achieve this, the needs of the poor and vulnerable will be prioritized in all implemented initiatives (MoEF, 2009). The GoB is very aware of the fact, that there are a high number of poor and climate change vulnerable in the population and the BCCSAP explicit express that it must carry its population with it to face this enormous challenge (MoEF, 2009). That the GoB places a special focus on the poor can be seen in the first part of the BCCSAP that comprises climate related data on Bangladesh and functions as an argument to focus on climate change, as well as in the overall vision for the strategy. There is hence taken a pro-poor approach to build capacity to meet the challenges of climate change. This can be illustrated very well with the following quote:

> *'The challenge now facing the country is to scale up its resilience and protect the lives and livelihoods of the people, especially the poorest and most vulnerable families, including women and children. The people and Government of Bangladesh are ready and willing to rise to this challenge.'*
>
> (MoEF, 2009 p. 2).

The pro-poor approach can be seen consistently through the strategy and is expressed in various ways. In the third chapter of the strategy; *Impacts of Climate Change*, is it underlined that people living on chars and along the coastline, i.e. in rural areas, are among the poorest in the country (MoEF, 2009). The GoB is aiming to oblige by *'Supporting communities and people in rural areas to strengthen their resilience and adapt to climate change will remain a high priority'* (MoEF, 2009 p. 18). In addition there are also programs under the different themes that aim directly at poverty-stricken and the finances, e.g. program four under theme two with the objective *'To put in place an effective insurance system for risk management against loss of income and property'* (MoEF, 2009 p. 45). There is hence a certain effort to help the vulnerable and poor to strengthen their resilience and ability to adapt to climate changes with a focus on financial capital. There can thus be said that there are special initiatives aimed at those with a low level of financial capital. The BCCSAP will thereby have a good probability to pose positive influence on the level of financial capital for those especially vulnerable to climate change.

5.4.6. All capitals

The GoB has during the years developed several initiatives to encounter the negative results of the climate changes. Especially one, the *Flood Action Plan* has been focus of much critic. There are some similarities in the BCCSAP and the Flood Action Plan that makes it interesting to mention here. Construction of tall embankments along the three large rivers is the ultimate essence of the plan. One of the large points critiqued in the Flood Action Plan was, that the World Bank who was administrating the plan ignored the knowledge and experiences of the locals. There was a belief that effective protection against flooding in Bangladesh was possible only by constructing a system of embankments along the major rivers. The critique was leveled by the campaigner-theoretician Peter Custers, who pointed out that embankments do not reduce flood waters, just move it to areas closer to the sea where people are already vulnerable. The World Bank's experts advised a change in the rivers without questioning whether at all the basic human knowledge about the delta rivers have been sufficiently taken into use and earlier experiences with artificial controlling the rivers were ignored by the World Bank (Custers, 1993). The World Bank holds the responsibility for administrating the Multi-Donor Trust Fund trough which money obtained from national and multilateral climate change funds is pooled in the BCCSAP. The fund is intended to provide direct access to adaptation for government agencies, NGOs and private sectors (MoEF, 2009). Seen in the light of the experiences with the flood Action Plan can it be discussed what it might mean that the World Bank administrates the Multi-Donor Trust Fund. It can be feared that the World Bank again will fail to work with the local communities and they will not be aware of the purpose of the strategy. Moreover can it be mentioned that the BCCSAP is, as outlined in chapter *5.3.Presentation of the BCCSAP,* formulated in

corporation between several members of different ministries and *'environmental specialists and others'*, as outlined in the *Acknowledgements* in the BCCSAP (MoEF, 2009). This might mean that the members of ministries are over-represented. An overrepresentation of this kind can result in a one-sided strategy that does not take suggestions from NGOs and other organizations on grassroots-level into consideration. The GoB does in this way formulate a strategy that includes focus areas that the GoB ascribes as important. This can lead to several inconveniences. Lönqvist, in corporation with others, provide a good example in the report *Shortcut to the frontline: supporting local NGOs on climate change in Bangladesh* from 2010 of what happens when the developers of strategies fail to work with the local communities. They describe how the *Bangladesh Water Development Board* is charged with maintaining the embankments constructed along the rivers.

'However, as stated in the BCCSAP: "Many of them are in poor shape due to lack of proper maintenance. Local people also sometimes damage embankments by cutting through them to drain water from the land into the rivers. Although these gaps are filled in again, these points remain vulnerable to breaches. In many places the [related] structures, such as sluices and regulators no longer function properly." Sometimes people also cut down the stabilising trees from the banks.'

(Lönqvist, et al., 2010 p. 15).

It is hence very important to work with the locals to ensure that there are agreements of how to approach climate changes and to ensure, that the stakeholders do not work against the strategies.

Not only is the BCCSAP critiqued for not working with the poor. It is also critiqued in the work with the NGOs. This critique again comes from Lönqvist et al. The BCCSAP invites the NGOs to improve linkages between institutions and perhaps improve the capacity of government officials to deal with climate change. Such a view does according to Lönqvist et al. reflect an opinion that NGOs deal mostly with service delivery and micro-finance; they are not seen in the role of credible research institutions or activists or lobbyists. The NGOs are not seen as relevant to the work of the GoB and there are therefore very little corporation between NGOs and GoB according to Lönqvist et al. (Lönqvist, et al., 2010).

Another common critique directed at the BCCSAP stems from the *International Institution for Environment and Development*, the IIED. The IIED critique the BCCSAP to fail to account for some key realities. The IIED critiques the BCCSAP for solely providing *in situ* solutions to climate change issues. IIED outlines that in the next few decades a high number of people will be obliged to adapt by migration as the areas in which they live will be unsuitable for living. Yet the BCCSAP assumes, according to IIED, that all adaptation actions can be achieved in situ. The IIED advocates that a strategic approach would be to consider a relocation of the

climate change vulnerable. The IIED suggest that this can be done by creating new towns build at higher inland and with offering possibilities to work. IIED outlines that this would decrease the flow of immigrants to Dhaka, an already overcrowded capital and defines this as a strategic adaptation that is synonymous with development planning (Burton, 2008). Lönqvist et al. can be said to support this idea as they state that *'Migration is such a miserable option that it makes staying and fighting seem all the more attractive.'* (Lönqvist, et al., 2010). They are of the opinion that the cities need more planning and investment to be able to absorb millions of climate internally displaced persons. The BCCSAP though includes a project for improvement of the sewerage in Dhaka, but this is only one of the many problems that need to be solved for the city to house more people. The BCCSAP should therefore include more initiatives to help the cities adapt to more people.

5.4.7. Institutional strengthening

There are, as mentioned in chapter *5.4.Analysis of the BCCSAP and the climate change vulnerable* initiatives on several levels that can be linked to the capitals in different ways. As the BCCSAP have been analyzed in relation to Ellis's five capitals in the paragraphs above this paragraph will cast a glance on initiatives on the institutional level in the BCCSAP.

The sixth theme in the BCCSAP comprises five programs under the theme *Capacity Building and Institutional strengthening.* The objective of the programs under the sixth theme is to strengthen the capacity of government ministries and agencies, civil society and the private sector to meet the challenge of climate change (MoEF, 2009). To do this they plan is to *'Review and revise, where appropriate, all government policies (sector by sector) to ensure that they take full account of climate change and its impacts'* (MoEF, 2009 p. 27). The strategies of the GoB are so to say under inspection. This process is intended to begin immediate and have a short to medium time perspective. The different programs under the sixth theme all have different wordings and focus areas, but focus on the same; revision of the GoB's policies. An example that illustrates this very well is program one; *Revision of sectoral policies for climate resilience* with the objective *'To integrate climate change issues into development policy and action.'* (MoEF, 2009 p. 71). This is not an initiative that can be directly linked to capital types, but illustrates how the overall focus on climate change issues is being integrated in the mindset of the GoB. Another example is program two; *mainstreaming climate change in national, sectoral and spatial development programmes* with the objective to achieve *'Integration of Climate Change management in all aspects of development action'* (MoEF, 2009 p. 72). There is here taken an initiative to ensure that climate change consciousness is present in all aspects of development work in Bangladesh. This can be said to be initiatives with a domestic focus. Formulating an initiative to assure the presence of consciousness of climate change issues within the

Bangladeshi politics illustrates how important climate changes issues are for the GoB. It can be understood as very positive for increasing the level of capital to decrease climate change vulnerability.

There are also positive tones to be found regarding the BCCSAP. This often comes in relation to that climate change strategies should be implemented in all levels of polices as many agree that adaptation should not be planned and financed as a separate policy or program. This opinion stands out in the report *What is climate change? And how it will effect Bangladesh* by James S. Pender supported by the *Norwegian Church Aid* (Pender, 2008). The report mentions how mainstreaming climate change adaptation into development thinking and practices has been recommended as a priority. It also mentions how the GoB recommends mainstreaming adaptation to climate change into policies and programmes in different sectors. He underlines, that mainstreaming is important as it will mean that there will be consistency between climate change and poverty reduction efforts so that climate change adaptation will not work against poverty reduction and development policies; development policies do not increase vulnerability to climate change factors; and it is guaranteed that climate change is treated as a centrally important issue with regard to human well-being (Pender, 2008).

Regarding general awareness increasing the BCCSAP does in first view have a good chance to success according to Baas et al. (Baas, et al., 2006). They are of the opinion that awareness must be increased about climate change impact on human and natural systems such as agriculture, human habitat, forests or biodiversity. They are of the opinion that though awareness has been created to a certain extent must there be further efforts that also includes local communities (Baas, et al., 2006).

The strategy also has an external aspect when it comes to institutional strengthening. This is to be understood in the way that the strategy actively formulates the importance of awareness of climate change issues in external relations as they are *'[…] seeking to enhance cooperation with neighbours on key issues […]'* (MoEF, 2009 p. 24). Another illustration of this can be that *'Bangladesh is seeking the strong political commitment and support of the international community to assist in implementing its long-term climate-resilient strategy. We call on the international community to provide the resources needed to meet the additional costs of building climate resilience'* (MoEF, 2009 p. 25). This formulation is from the argumentation for the BCCSAP. The GoB does thereby express an active attempt to and need of corporation from external actors. There can thus be said to be an external aspect in the BCCSAP.

The IIED is of the opinion that the external aspect should be elaborated with a perspective that climate change is an issue that will cross the boarders of Bangladesh. The BCCSAP does not consider a regional effort. The IIED express that, *'No country can solve the carbon emissions problem alone; nor can adaptation*

be addressed solely on a national basis. In Bangladesh, climate-triggered, large-scale migration is likely to spill across borders and oceans, causing a range of social and political implications and consequences including potential conflict and threats to security.' (Burton, 2008 p. 2). The IIED hence advocates for an initiative across borders and that Bangladesh works with countries surrounding them and not only calls for financial help from foreign governments.

5.4.8. Research stage

The BCCSAP encompasses a high number of aspects and areas on which a consciousness on climate change issues is needed. Many of the programs have direct and immediate influence on the climate change vulnerable in Bangladesh. There are also a number of programs that can be categorized as being on a research stage. This is to be understood as that they still require some work before they can be implemented and put in motion. The common denominator can be said to be that they all focus on initiating actions as the objective is to address, monitor or revise certain determinants to decide on and establish programs or climate change related initiatives. As a very general example can program eight under theme one, *Food security, social protection and health,* be mentioned. The objective of this program is *'To address, in a timely and effective way, adverse impacts on livelihoods in ecologically vulnerable areas.'* (MoEF, 2009 p. 40). This is a much generalized program that works against erosion in income, employment and human health. These are all important factors to improve the levels of different capital and thereby the livelihood of people. The wording of the program does though not call for immediate action and does not account for which actions and efforts are needed. It is more illustrating a vision to increase the consciousness of climate change issues. There are many programs with a similar overall objective but a slightly different focus. As an example can program one under theme four, *Establishment of a centre for research, knowledge management and training on climate change* under the fourth theme be mentioned. The objective of this program is *'To increase institutional and human capital capacity on research and knowledge management related to climate change, and to train professionals.'* (MoEF, 2009 p. 54). Program two and three under the same theme as the example mentioned, have the overall same objectives and do not either affect the climate change vulnerable directly first time round, but might with time also contribute to an improvement in the level of capital to improve the livelihoods of climate change vulnerable. Program five under theme four can be mentioned as another example with a slightly different focus. The objective of this program is *'To identify macroeconomic and sectoral impacts of climate change […]'* (MoEF, 2009 p. 58). This program does also have a very general character but with a certain focus on economy. This is also not a program that can be said to influence any capitals directly but can with time have an influence on the level of financial capital among the climate change vulnerable.

There can thus be said to be several programs with a focus on climate change issues that will need attention over time. These initiatives are supposed to be implemented when the needed work has been accomplished. This brings a longer time perspective into the BCCSAP and leaves an impression that the GoB aims to create a new and more conscious approach to working with climate change issues.

The fifth theme in the BCCSAP focuses on mitigation and Low Carbon Development. These subjects are not relevant for answering the research question as there is kept a focus on adaptation and theme five have therefore not been brought directly into the analysis. It can though seem relevant to mention that the fifth theme comprises ten projects, all more or less on an institutional and political level. Despite that Bangladesh's contribution to the generation of greenhouse gases is very low does Bangladesh wish to play a part in reducing emissions and aims to do this through developing new strategies as well by reviewing and expanding already existing strategies.

It can be mentioned, that the BCCSAP does not directly formulate measurable goals in the programs, i.e. in shape of numbers. This gives an impression that the GoB does not directly account for that these changes and improvements will be completed. There are moreover several small flaws and lacks as spelling and grammatical mistakes and as an example is target five under pillar six left out in both 2008 and 2009 versions of the BCCSAP. I have tried to look closer into it, but cannot figure out why this target is left out. These mistakes do not disturb the understanding of the visions, but leaves an impression of an incomplete document.

6. Conclusion

I have in the chapters above conducted an analysis in two steps to answer the research question: *To what extend is the Bangladesh Climate Change Strategy and Action Plan likely to reduce the climate change vulnerability for the poor in Bangladesh?* It has first been outlined who in Bangladesh are most vulnerable to climate changes and how they can be characterized, through a vulnerability analysis of Bangladesh, referring to chapter *5.1.Vulnerability Analysis*. The vulnerability analysis is conducted on data from several different sources all being secondary. These were partly outlined in chapter *4.Bangladesh* and partly described during the analysis where it was taken into use. The findings of the vulnerability analysis were used to create a profile of the climate change vulnerable in Bangladesh, see chapter *5.2.Climate Change vulnerable in Bangladesh.* As a next step was an analysis of the BCCSAP based on the findings in the vulnerability analysis conducted in chapter *5.4.Analysis of the BCCSAP and the climate change vulnerable.* The assumption was that analyzing the effect the BCCSAP might have on the different capitals can be contributing to approaching an answer to whether the BCCSAP is likely to decrease climate change vulnerability in Bangladesh. It was found that the effect the BCCSAP might have on the different capitals can contribute to an increase of different capital in different strength. It was moreover found that the BCCSAP operates on several levels; initiatives that can be linked directly to the climate change vulnerable and initiatives that operate on a more general level. I have looked into climate change vulnerability in Bangladesh and the BCCSAP using a theoretical framework based on the work of Nancy Lee Peluso, Frank Ellis, the IPCC and the IISD with Amartya Sen as inspiration. The findings are therefore to be seen in a perspective of these theoretical approaches.

6.1. The BCCSAP as a strategy to decrease climate change vulnerability

Beginning with natural capital, it is seen in the findings of the analysis in chapter *5.4.1.Natural capital* that the BCCSAP contains initiatives that can contribute to an increase in the level of natural capital of those being vulnerable to climate change. The BCCSAP contains several programs which with time can affect those living from agriculture in rural areas positively. People living in coastal areas and chars are to a great extend dependent on natural capital to obtain and maintain a proper livelihood. Especially their livelihoods will be affected as outlined in chapter *1.1.3.Climate change vulnerable.* The programs are not expected to show results in the near future but are expected to show results over time, as they operate with medium and long timelines (MoEF, 2009). The programs are likely to contribute to an increase of the level of natural capital in Bangladesh as they focus on land, water and biological resources, i.e. Ellis' notion of natural capital (Ellis, 2000). Natural resources are very important when working with climate change vulnerability,

as natural capital is one of the capitals climate change vulnerable depend mostly on, referring to the quote by IISD in chapter *5.4.1.Natural capital.*

It is though important to mention here, that there have been directed a critique at the BCCSAP from Baas et al. The critique is that the BCCSAP fails to create programs that interact with the stakeholders of the treats of climate change. This is an aspect that needs immediate attention for the BCCSAP to be successful according to Baas et al. (Baas, et al., 2006). Based on this critique can it therefore be said, that to decrease climate change vulnerability in Bangladesh should the BCCSAP make a greater effort to incorporate the climate change vulnerable more directly and take in the stakeholders of the threats to climate change where is it possible (Baas, et al., 2006).There can summative be said, that there are no results expected in the near future related to natural capital, but it can be expected that the level of natural capital might improve over time, especially if the climate change vulnerable is included actively in initiating the programs.

The initiatives in the BCCSAP that were linked to social capital in chapter *5.4.2.Social capital* can neither be expected to be directly nor immediate affecting the level of social capital of the climate change vulnerable in Bangladesh. They might influence social capital with time as the initiatives in the BCCSAP analyzed as relating to social capital, i.e. influence and access, are perceived as general visions for the society. This is to be understood in the way, that programs that are analyzed to might pose positive influence on social capital are programs containing overall visions for a general access and influence. General changes and an increase of influence and access in the Bangladeshi society will also affect the poor and climate change vulnerable part of the population. When social capital is perceived as having access to institutions that facilitate basic conditions to obtain and maintain a proper livelihood, referring to Ellis' notion of social capital (Ellis, 2000), the level of social capital among climate change vulnerable can be expected to increase under the BCCSAP. All programs linked to social capital in chapter *5.4.2.Social capital* operates with short to long timeframes. This can be interpreted in the way, that although they might be implemented within short time, will the results only show after a long time. The prospect of increasing social capital with the BCCSAP can therefore be said to be positive – but only with time.

Concerning human capital can there be said to be several initiatives in the BCCSAP that can be likely to contribute to increasing the level of human capital of the poor and climate change vulnerable in Bangladesh (MoEF, 2009). Human capital has been perceived as education, skills and health in this thesis based on Ellis' notion of the term (Ellis, 2000). Attempts to make initiatives directed at education, skills and health of the climate change vulnerable can be said to be found in the BCCSAP – both in a more and less direct versions (MoEF, 2009). The probability to improve human capital is present here more directly than

in any of the other capitals that were researched in chapter *5.4.Analysis of the BCCSAP and the climate change vulnerable.* It can therefore also be easier to see the positive changes of the BCCSAP in relation to human capital. The initiatives linked to human capital in chapter *5.4.3.Human capital* operate in different timeframes. Some programs are to be implemented immediately and have a prolonged existence in Bangladesh while others might need some time of preparation before they can be implemented (MoEF, 2009). This means, that the first results can be expected to be seen within short time and last for long while other initiatives will show results later on. There is thus continuous attention towards human capital in the BCCSAP.

Regarding physical capital can it be said, that the BCCSAP will have a good potential to contribute to an increase in the level of physical capital, referring to chapter *5.4.4.Physical capital.* This can be explained with that there are several programs that focus on physical issues. This contribution can be both through initiatives directly aimed at climate change vulnerable and through initiatives aimed at the physical surroundings as basic infrastructure for transport, buildings, water management, energy, and tools and machines. The BCCSAP hence addresses many different issues that can be related to physical capital. These are either of immediate and direct character or with a more prolonged physical focus (MoEF, 2009). It can therefore be expected that the BCCSAP will contribute to an increase in the level of physical capital of the climate change vulnerable in Bangladesh as it entails continuous efforts that has both long and short timelines.

Analyzing the BCCSAP in relation to financial capital, as done in chapter *5.4.5.Financail capital* can it be seen, that there are a number of initiatives in the BCCSAP that are likely to contribute to a decrease of climate change vulnerability in shape of an increase of financial capital. This can be explained with, that the BCCSAP in general takes a pro-poor approach. This vision is repeated throughout the strategy, among other places in the summary where the GoB's vision is described as *'[…] to eradicate poverty and achieve economic and social well-being for all the people. This will be achieved through a pro-poor Climate Change Strategy […]'* (MoEF, 2009 p. xvii). In addition to an overall pro-poor strategy the BCCSAP also contains initiatives aimed at the poor part of the population with a low level of financial capital. There are programs under the different themes that aim directly at poverty-stricken and their financial situation, e.g. program four under theme two with the objective *'To put in place an effective insurance system for risk management against loss of income and property'* (MoEF, 2009 p. 45). It can thus be said, that the BCCSAP in general has a pro-poor approach that is present in all initiatives.

The BCCSAP also contains a number of strategies on an institutional level as outlined in chapter *5.4.6.Institutional strengthening*. These strategies aim to increase the consciousness of climate change

issues to keep it present in all development strategies and other plans initiated by the GoB. To increase the awareness are the GoB strategies that are already formulated also under inspection (MoEF, 2009). Because of the vision to increase climate change consciousness, do the programs on the institutional level all have the same overall objective; to revise the GoB's policies concerning climate changes. Formulating initiatives to ensure the presence of consciousness of climate change issues within the Bangladeshi politics illustrates how important climate changes issues are for the GoB. This shows an active effort to increase the awareness in internal strategies. This can be understood as very positive for increasing the level of capital to decrease climate change vulnerability. The BCCSAP do not only express a wish of awareness in internal affairs, but also explicitly expresses a wish for climate change issues to be present in external relations. The BCCSAP does in fact directly call for corporation with external actors, i.e. foreign governments and aid providers (MoEF, 2009). This external aspect can contribute to improving the situation for the climate change vulnerable in Bangladesh as the GoB calls for help from abroad. If Bangladesh gets both funding and projects from abroad would it be possible to launch new projects that might not have been launched if the GoB were to act alone. This call for help from abroad goes very well in line with the general understanding outlined in chapter *1.1.4.Climate change policies* that the challenge of climate changes can only be met through a concerted international effort and through international cooperation (Danida, 2005).

As a last aspect can it be mentioned, that the BCCSAP comprises a number of programs that are on a research-stage. The common denominator is as outlined in chapter *5.4.7.Research stage,* that they all focus on initiating actions, as the objective is to address, monitor or revise certain determinants to decide on and establish programs or climate change related initiatives (MoEF, 2009). There are hence a number of programs that might contribute to decreasing climate change vulnerability over time as the awareness again will be increased and many new programs most likely will be launched.

Seen in the perspective of the applied notion of, that climate change vulnerability is determined by the level of capital, inspired by Ellis (Ellis, 2000), the BCCSAP seems to have good possibilities to contribute to a decrease of climate change vulnerability among the climate change vulnerable in Bangladesh.

There has, as outlined in chapter *5.4.6.All capitals,* been leveled criticism at the BCCSAP from different actors, such as the IIED, the *Asian Disaster Preparedness Center,* the campaigner-theoretician Peter Custers, and Lönqvist et al. on the behalf of the *International NGO Training and Research Center*. The critique was mainly, that the BCCSAP fails to work with the local communities and they will therefore not be aware of purpose of the strategy. This critique is leveled based on experiences from the Flood Action Plan implemented in Bangladesh in 1989. Lönqvist in corporation with others and Custers provide a good example of what happens when the developers of strategies fail to work with the local communities and

warns that the same should happen in the BCCSAP and underlines the importance of working with the locals to ensure that there are agreements of how to approach climate changes and to ensure that the stakeholders do not work against the strategies (Lönqvist, et al., 2010; Custers, 1993). The BCCSAP is moreover critiqued for not cooperating with the NGOs. This critique is again delivered from Lönqvist et al., as they are of the opinion, that the NGOs are not seen in the role of credible research institutions or activists or lobbyists and are not trusted any large role in the work to decrease climate change vulnerability (Lönqvist, et al., 2010). Another point that is critiqued the *in situ* character of the strategy. This critique stems from the IIED. They are of the opinion that the BCCSAP fails to account for some realities by not incorporating programs concerning climate change migrants. IIED predicts a flow of migrants especially to Dhaka, and that the capital is not geared for an increase of the population (Burton, 2008). The BCCSAP though includes a project for improvement of the sewerage in Dhaka, but this is only one of the many problems that need to be solved for the city to house more people. The BCCSAP should therefore include more initiatives to help the cities adapt to more people (Burton, 2008).

There are hence different perceptions of the probability of success of the BCCSAP. According the critiques should the BCCSAP to a higher level prioritize to work with local communities and NGOs to be successful. The BCCSAP should also consider housing-solutions for potential climate change migrants to be successful in decreasing climate change vulnerability in Bangladesh (Lönqvist, et al., 2010).

Shortly can it be put, that the findings in the analysis were in general that the BCCSAP comprises many programs that in one way or another would be likely to contribute to an increase in the level of capital of the climate change vulnerable in Bangladesh. Based on the analysis can it can very short be said, that it is likely that the BCCSAP has a positive influence on climate change vulnerability in Bangladesh as it comprises several programs that can be expected to influence the level of capital in a positive way. There possibility to end up successful will though be enhanced if the GoB collaborate more local and regional actors in implementing and completing BCCSAP.

As a closure can it mentioned, that the BCCSAP is to be seen as a 'living' document as outlined in chapter *5.3.Presentation of the BCCSAP.* This is to be understood in the way that the BBCSAP is subject to changes, and can therefore be adjusted over time to fit new findings and go in depth with new focus areas.

7. Reflection

The following chapters will contain a general critical view on the thesis and provide some comments on how the present thesis has contributed to the research area.

7.1. Critical view on the thesis

The following paragraph will comprise some considerations on the use of theory, the choice of method, reliability as well as internal and external validity.

It is relevant to take a glance on the choices of the theoretical framework. The concepts that constitute the theoretical framework all operate within the same area; climate change and its affect on livelihoods. The three concepts complement each other in a useful way that help to cover the central aspects of climate change vulnerability. It can though be said that the theories might provide a concurrent approach, that ensures that there will not be any conflicting perceptions and thereby no discussion between the theories. It could hence have been interesting to use theories with a more different focus to create a wider theoretical framework. This is though deselected because of delimitations in pages and time to conduct this thesis.

The theory has been given a very central place in this thesis as Ellis' notion of capital has been structuring the two analyses. It is therefore relevant to note, that the statements and findings in the analysis on climate change vulnerability and the BCCSAP are all to be seen in relation to the notion of vulnerability as being conditional of the level of capital. The findings are thus to all contingent on the theoretical approach. It can therefore be expected that if another theoretical approach is applied will the findings be of another character. The theories can therefore be said to be governing the research and accordingly the finding to a very high extent.

It is moreover relevant to comment on the choice of method in this thesis. Using document analysis as a method implies a critical view on the sources applied as they all are secondary data. In the present thesis have there been applied a number of different resources to describe a biophysical, social, economic political and developmental snapshot of Bangladesh. The applied sources count over ten and vary over a large timeframe. The oldest data applied is Hartmann et al. from 1983, while the most present are BESCO, the *Central Intelligence Agency* and *Ulandssekretariatet* from 2010. The oldest data is used to create a historical overview and provide static facts about Bangladesh. It is hence not a problem that they are of such an old date. The newest data, all produced recently have been used to create a description of present issues. The sources are also of very different character; from official reports from governments to personal descriptions in books. I have therefore been aware of that most of them are already interpreted data. This

must be kept in mind when working with the data and when reading the thesis. That the type of data vary to a large extend can be said to strengthen the data. They all complement each other and ensure a varied snapshot of Bangladesh. Data from the GoB is given a central role in this thesis. As the objective was to analyze a strategy composed by the GoB it must be taken into consideration that the data and the BCCSAP might complement each other very well. This can to a certain aspect be problematic and perhaps not create a varied result. The statistics and numbers with a reference to the MoEF are produced by the *Bangladesh Bureau of Statistics*, which also is an institution under the GoB. It can therefore not be expected to be independent numbers. These statistics and numbers are even though taken into use, as it is very complicated to find statistics on Bangladesh. The data formulated by the GoB have I though chosen to apply despite this, as it has been a challenge to access data about Bangladesh. I am of the opinion that it is not a problem as long as I am aware of that they stem from the same organization and other authors are taken in to support the data.

The research conducted in the present thesis can be said to have a relative high reliability – an answer on whether the BCCSAP is likely to reduce climate change vulnerability through the analysis. The analysis has been very concentrated on Bangladesh and provides an answer related to Bangladesh. Because the central role that the GoB is given is the analysis could it be expected that the BCCSAP would be analysis to be a successful strategy to decrease the level of climate change vulnerability. It was though found, that the BCCSAP would require focusing more on some in depth efforts to be an optimal strategy to decrease climate change vulnerability.

Validity can be divided into two sub-points; internal and external validity. The internal validity can be said to be relative high in the relation to which extend the research question is answered. The research question requests that the thesis defines whether the BCCSAP is likely to reduce climate change vulnerability for the poor in Bangladesh. The research provides a clear suggestion on whether the BCCSAP will decrease the climate change vulnerability for the poor in Bangladesh based on Ellis' capital types. As the research is based on a certain theoretical approach is the answer as outlined only reliable when referring to the applied theoretical approach. This condition confirms an interpretive nature of social science; there is no correct final understanding of a phenomenon. The understanding will always be conditional of time, place and theoretical approach. This does though not make the findings less relevant or interesting; it just needs to be kept in mind when reading the thesis. I am therefore of the opinion that the internal validity is relatively high.

The external validity, i.e. the generalizability, will not be of great focus as this research builds on a case study. By executing this research is the purpose in a higher degree to create an exhaustive understanding of

the case that to produce results applicable to the whole research area. The above outlined answer to the research question is concluded from working with the BCCSAP in Bangladesh and is therefore only applicable for this specific case.

As the research is based on a certain theoretical approach is the answer as outlined only reliable when referring to the applied theoretical approach. This condition confirms an interpretive nature of social science; there is no correct final understanding of a phenomenon. The understanding will always be conditional of time, place and theoretical approach. This does though not make the findings less relevant or interesting; it just needs to be kept in mind when reading the thesis.

The findings might though suggest something about other climate change strategies and climate change vulnerability. The elements of the BCCSAP that have been criticized or applauded by using the theoretical framework of vulnerability, livelihood and access might be present and relevant in other climate change strategies in less developed countries. The research can in this way to a certain extent suggest something more general about governmental climate change strategies and climate change vulnerability.

Although the external validity is not of great interest is it relevant to take a look into how this thesis in general has contributed to the research area on climate change and vulnerability. The following paragraph will therefore take a look into this as a closure on the thesis.

7.2. Contribution to the research area

The product produced by accomplishing this thesis contributes to the area of study with a suggestion on how to analyze climate change vulnerability. The results are not to be seen as a final truth but can be seen as a contribution to further research in several different ways.

A vulnerability analysis based on Ellis' notion of capital types can hence be conducted in any region or country of interest to create a picture of who are mostly vulnerable to climate changes. The research area does not need to be limited to focus on a country but can in principle be communities at all levels. It can be added, that the smaller the area of interest is the more detailed profile can be created. It can moreover be a suggestion of a method that can be taken into use when the objective is to compare climate change vulnerability in different regions or countries. The pentagon inspired by Carney will especially be useful here, as the different profiles can be put into the pentagon and thereby compared visually. The second step of the analysis can also be conducted in any other connection. This can be explained with that analyzing the findings of a vulnerability analysis in relation to any possible strategy based on the five capital notions formulated by Ellis will provide a picture of whether the strategy will fulfill its objective. It is though of

course necessary that the strategies focus on decreasing climate change vulnerability if the capital types change strategies and action plans.

In closing, it seem relevant to mention, that this thesis does not produce any definitive evidence, but can be seen as material to a further discussion and debate on climate

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