
DEPARTMENT OF SOCIAL SCIENCES

Resilience-building in communities vulnerable to climate change

BA thesis

Author: Ása María H. Guðmundsdóttir

Supervisor: Auður H. Ingólfssdóttir

(Spring – 2016)



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Abstract

The aim of this thesis is to explore how vulnerable communities can strengthen their resilience to adapt to climate change and for that purpose, a case study of vulnerable communities in Malawi, who recently faced climate related challenges, was conducted. A case study was chosen as it allows for a certain generalization to be made by studying a representative case thoroughly and therefore it would serve as a good insight into how the research question might be answered. The theoretical framework of the thesis is based on the concepts of development and knowledge, both of which will be explored and put into context with each other. The issue of climate change and its manifestations will also be explored in a general manner as it is highly relevant to the research question. Due to the complexity of the question of how vulnerable communities can strengthen their resilience to adapt to climate change, a concrete answer was hard to come by but by generalizing from the case study some conclusions could be drawn. Main findings point to the feasibility of an approach that combines the existing strengths of the local level with those of the international level. The benefits of including agents from within the community as well as from the outside, in resilience-building could be considerable as the knowledge each possesses is important for a strategy to be successful.

Key concepts: Development, climate change, knowledge, Malawi, adaptation, vulnerability, resilience, community.



Preface

This thesis is presented as a final dissertation for a Bachelor's degree in Philosophy, Political Science and Economics (PPE) from Bifröst University. The assessment for the thesis is 14 ECTS and it was supervised by Auður H. Ingólfssdóttir.

During my first year at Bifröst University I found myself interested in almost everything that PPE had to offer and I wasn't sure where the next two years would take me. In the summer semester of 2014, however, I took two courses that put me on the track that I have been on since; Climate Change and International Politics with Auður H. Ingólfssdóttir and Development Economics with Magnús Árni Skjöld Magnússon. The following December and January, I was visiting Malawi when an unusually heavy rain period caused devastating flash floods in the southern part of the country. During that visit I saw first-hand how calamitous the changing climate can be for developing countries and my interests in the fields of climate change and development were peaked. The next months I then spent in Slovenia on an Erasmus exchange with the University of Ljubljana. There, I took a course called Crisis Management and Contemporary Security where I wrote a final paper on climate related disasters in developing countries. The subject for this thesis has therefore been coming to me slowly ever since 2014, allowing me to develop my understanding of the subject with time, both through reading and writing and through my experiences in Malawi.

I would like to give thanks to my supervisor, Auður H. Ingólfssdóttir for a good and constructive guidance through the writing process as well as for inspiring my interest in the subject through the courses I have taken with her. Furthermore, I would like to thank Jón Steinar Guðmundsson for stimulating discussions whenever I felt lost in my writings, Eva Pandora Baldursdóttir and Gunnhildur Lilja Guðmundsdóttir for reading over my work with a critical eye and finally my parents and brother for always being there to motivate me when I need it the most.

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1. Introduction

This chapter will provide a general introduction into the thesis, beginning with a background of the topic in hand. The research question will then be specified as well as the proposed approach to it. Finally, the methodology used will be explained and possible limitations discussed.

1.1. Background

The issue of climate change is one of the most pressing topics on the agenda in the international community. It is, by most, recognized as one of the biggest challenges of our time, one that crosses borders and calls for a united effort by the international community to come up with ways to adapt to whatever lies in store.

The nations of the world do not, however, stand equal in front of this challenge. The capabilities of the global north to deal with the consequences of climate change, far outstrip those of the global south. The global south is generally much more vulnerable to any kind of a hazard and the likelihood of a hazard spiralling into cross-sectoral crises is high. The vulnerability of a country is largely rooted in its fragility and the nations in question are usually what is called *fragile states*. In a 2009 working paper, The Centre for Research on Inequality, Human Security and Ethnicity defines fragile states as “states that are failing, or at risk of failing, with respect to authority, comprehensive basic service provision, or legitimacy“(Stewart & Brown, 2009, p. 3). The countries in question are often politically unstable and the state is not providing adequate security for its citizens and civil wars and communal or political violence often take place within them. The state is also either failing or has already failed in providing its population with access to basic services such as health services, education, water or sanitation. Furthermore, these countries are likely to have legitimacy issues; corrupt governments are common, they tend to be undemocratic, power has not been granted through free election and the military is powerful. A combination of failures such as the above mentioned add up to a country that is unlikely to be able to react to a hazardous event in an adequate way and that event is therefore more likely to spiral and become a disaster (p. 4). In addition to the fragility of the state, the geographical position of many of the countries in the global south are a vulnerability factor as they tend to have more extreme climate and therefore more extreme hazards.



This north-south divide and strategies to help develop this vulnerable part of the world has also long been a topic of discussion among scholars, policy makers and various global actors. A debate is ongoing in academia as well as between policy makers and public administrators about how to go about development, whether it is possible, if it should be undertaken at all and by whom and even if it is anything besides a power-tool to maintain western hegemony in the global playing field. As a result of this broad discussion of the concept, many theories have arisen, the schools of thought often grouped together as either conventional or alternative, depending on how they view the process.

This thesis proposes to use critical theories to explore how the resilience of societies vulnerable to climate change can be strengthened through the accumulated knowledge and experiences of the locals. Through a case study of a community that used their extensive local knowledge, aided by external agents, to respond to a climate related event that escalated into a national crisis and prepare for future events, the question will also be addressed empirically.

1.2. Research question

The thesis proposes that resilience-building in communities vulnerable to climate change is best undertaken in consultation with the locals. A valuable store of knowledge, be it informal knowledge, lies in peoples that have for many generations lived in the area in question, experienced the nature around it first hand and are a part of the society that inhabits it. If this knowledge is ignored it can be detrimental for any strategy for resilience-building, it can result in reduced efficiency and increased costs as well as negative consequences for the community involved.

With this assumption in mind, the research question is as follows:

How can vulnerable communities strengthen their resilience to adapt to climate change?

1.3. Methodology

In order to gain an understanding of how vulnerable communities can strengthen their resilience to adapt to climate change, a case study was chosen as a research method. John Gerring defined a case study as “an intensive study of a single unit for the purpose of understanding a larger class of (similar) units” (Gerring, 2004, p. 342) and that definition harmonizes well with the purpose of the case study conducted in this thesis. The aim here is to look at a single case of a vulnerable community where attempts at resilience-building are being made and from that case, try to gain an understanding of the issue.

In the second chapter of the thesis, a theoretical framework will be established in order to provide a context for the case study. The theoretical framework is threefold; the first part focuses on theories of development, the second discusses ideas of knowledge and the third gives an overview of the issue of climate change. This chapter is largely based on the writings of theorists and scholars in the fields being discussed but also on reports from institutions such as the United Nations etc. and on statistical data from various sources. All source material is critically analysed and its validity verified insofar as is possible. In the third chapter, the case study will be introduced and specific factors will be highlighted and discussed in the theoretical context. The fourth chapter will then be a concluding chapter, incorporating discussions and results.

It is the hope of the author that, using this method of looking at a single example in order to be able to generalize further, will provide some insight into how the research question might be answered. It is important to note however that a conclusive answer is unlikely to be reached due to the complexity of the question and the topic in hand. The results reached here are more likely to be indicative of how the inclusion of specific factors such as local knowledge etc. might be beneficial in resilience building.

2. Theoretical framework

In this chapter, the theoretical framework of the thesis will be given. The first part will discuss ideas about development and how the understanding of the term has changed with time. The second part will focus on knowledge and its part in the developmental discourse. The issue of climate change will be addressed in the third part and its relevance to the topic explained. Finally, some key concepts used in the case study will be defined.

2.1. Development

The concept of development is one that has been evolving and changing in tune with social changes for a very long time. The field of development studies is theoretically rich, the very definition of the term as well as a wide range of approaches to how best to go about development is discussed and debated on by scholars. This chapter will merely scratch the surface of development theories, some conventional ideas will be discussed as well as criticisms they have received from alternative theorists. Furthermore, ways to measure development will be introduced and discussed.

Many of the development theories considered “conventional” today reflect the capitalist emphasis on the market as the best system to ensure well-being. The world’s economic sphere is that of market capitalism, the system has secured itself by creating an interdependence between the nations of the world and so, whether it is desirable or not, most countries must integrate. An essay by Gérald Berthoud, *Market* (2010), talks about how market capitalism went from being an institution that was governed by those who created it, to being a system that regulates societies as a whole, including ideas about development. Development, Berthoud says, has become something that is only possible for those who are ready to part with their traditions and acquired morals in favour of the pursuit of economic ends, mainly that of making profit (p. 75). This idea of Berthoud’s about discarding traditions being a necessary step in the process of developing is for example, reflected in modernization theory that tends to equate modernity with development.

The basic idea of modernization theory is that the development of a “traditional” society lies in the adaptation of modern practices, technologies and value-systems – a modern society is an industrial society. It links economic development to



social, cultural and political change. Economic growth, then, is the propeller of development. The chain of events predicted in modernization theory goes that with industrialization comes greater specialization in society which then raises educational and income levels. These predictable changes then spur societal changes leading to an overall development (Inglehart & Baker, 2003).

In 1949, Harry Truman became the president of the United States. In his inauguration address he talked about the US's plans for the rest of the world. He stated that more than half of the world were living in unacceptable conditions and went on to say "I believe that we should make available to peace-loving peoples the benefits of our store of technical knowledge in order to help them realize their aspirations for a better life"(The American Presidency Project, n.d.). The United States' aim was to be to help the people living in chains and the solution was more production, „more food, more clothing, more materials for housing and more mechanical power to lighten their burdens“. He had no pretence that this was to be a selfless act or a fulfilment of some moral obligation the US had toward the rest of the world, his rationale was that directing the „underdeveloped“ onto a path of production and economic growth, would mean benefits for all countries. „All countries, including our own, will greatly benefit from a constructive program for the better use of the world's human and natural resources. Experience shows that our commerce with other countries expands as they progress industrially and economically“(The American Presidency Project, n.d.).

With this address, Truman had established western hegemony. Western ways of life had become an indicator against which all other communities must be measured in deciding where they stand in the global hierarchy. Paternally he assigned aspirations to the poor of the world to live a better life, not having to explain that by "better life" he meant "modern life" – Western life. The underdeveloped, then, became a category in which all the "others" of the Western world could be placed, no matter how diverse they were between them or how little they had in common. The difference between the new categories established with Truman's address – the developed and the underdeveloped - and the ones the world had before – the colonizers and the colonized – was that the former allowed and expected a move between categories. The atrocities of WW2 sparked a change in ideas about racial superiority that hitherto had given justification to imperialism and terms like "savage communities" were exchanged for "traditional communities". The reason for a society's backwardness no longer lay in the genetics of its members but in its limiting traditions and values (Rist, 2008).



As development became to be understood as a process available for those societies willing to embark upon modernizing themselves, an indicator about the level of development was needed. For this purpose, a country's GDP was looked at - the higher the GDP, the more developed a country is (Rist, 2008).

Walt Whitman Rostow was one of the scholars that emphasized the importance of GDP when measuring development. His *The Stages of Economic Growth: A Non-Communist Manifesto* (1960) described the five stages a community goes through on its way from underdevelopment to development. The first stage was *the traditional society*. A traditional society was necessarily limited because of its lack of access to modern science and technology needed in order to increase productivity. In addition to this, Rostow maintained that the value systems, social hierarchy and instability of these societies hindered growth (p. 4-7). The next stage in the process was *the precondition for take-off*. At this time, societies were preparing for transition. This stage was generally seen as being spurred by external factors such as influences from more developed societies. This was where the idea of the benefits of developing started spreading and economic growth became something desirable for the community as a means to some good ends, be it the welfare of the people, dignity of the nation etc. In the precondition stage education started broadening, modern institutions started developing and investment increased. The most important feature here however, was politics. The creation of a centralized nation-state was considered a deciding factor. The progress was slow for most because of the persistence of traditions but this was necessary groundwork for the next stage, *the take-off* (p. 17-35). The take-off was when a society finally let go of its resistance to growth. Industries expanded, compound interests became institutionalized, and agriculture became commercialized as a result of new technologies. The economic and social structures of society transformed in the take-off so that economic growth could be sustained (p. 36-58). The *take-off* was followed, generally some decades later, by *the drive to maturity*. This was a period when the newly established modern economy revised and improved itself. Modern technology was extending to include more sectors, more complex processes were developed, domestic production increased etc. This is where a move beyond the industries that initially propelled the take-off happened and modern technology was used to create new industries (p. 59-72). When a maturity was reached, the society entered *the age of high mass-consumption*. In this era of post-maturity, the focus was shifted from the extension of new technologies; welfare societies emerged and the

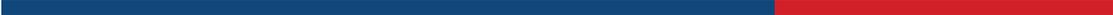


production of durable consumer goods became a priority. This is where the labourer started reaping direct rewards from development in the form of social benefits and cheap, durable products (p. 73-92).

Many aspects of Rostow's theory have been heavily criticized since its début. In his book *The History of Development*, Gilbert Rist (2008) critically discusses Rostow and his contribution to the field of development studies. He starts by discussing Rostow's ideas about the *traditional society*. For Rostow, the traditional society is but the larval stage of a country, a point from which to develop. The life in a traditional society is a continuous struggle against scarcity and so increased production must be the solution. Rist points out that this is a very socio-centric assumption because it implies that all societies have the same values and same wants. Furthermore, Rist criticizes the idea of modernization as development in general by pointing out what might be lost in the process of developing, namely traditional values and know-how (p. 94-100).

In a chapter in *The Handbook of Development Economics*, Amartya Sen (1988) discusses the concept of development in a way that contrasts Rostow's theory of economic growth. Sen is hesitant about using the word *growth* in the development discourse and states that "The importance of "growth" must depend on the nature of the variable the expansion of which is considered and seen as "growth" (p. 12). The link between a country's GNP (or GDP as is most commonly used) and development is troublesome for Sen because it fails to take into account the distribution of economic growth within the country; while the GNP may be rising, it is unlikely that every member of society benefits from it. Another problem Sen has with the use of economic growth as a measuring stick is that the only thing a person's real income, for example, tells us is the economic state of that person at that time. It is hard to equate that with overall well-being where so many other factors must be taken into account. Sen furthermore raises questions of *externality* and *non-marketability*. The use of economic indicators must mean that only the preconditions given for their calculation are considered means of well-being and that excludes so many factors that are not considered valuable in the market sense. And even if the commodities aren't marketed, for example the goods the worker doesn't sell but consumes at home instead, the fact that a market exists for the goods makes all the difference (p. 13-15).

Instead of Rostow's theory, Sen suggested a different approach, the capability approach. The capability approach views human life as a set of doings and beings or,



as Sen suggested, “functionings”. These range from basic functionings such as escaping morbidity and mortality or being nourished, to more complex ones such as being educated, voting or travelling. The capability of a person then refers to the various functionings or set of functionings he or she is able to achieve. Furthermore the capability of a person reflects his or her freedom to be able to choose between functionings (Sen, 1990, p. 43 - 44). Sen emphasizes the importance of the freedom of choice between capabilities but does point to a difference in how we value this freedom; whether it has intrinsic value or is valuable as a means to an end. If we look at the freedom to choose as intrinsically valuable we can say that, regardless of what set of functionings a person chooses in the end, the ability to choose is an indicator of the person’s overall well-being. It is also possible to look at freedom as only having instrumental value, meaning that it is reduced down to being a means to an end. This view supposes that the amount of choices available to a person does not matter as long as the one ultimately chosen is available. Sen however maintains that the instrumental view does not necessarily exclude the intrinsic value of freedom (Sen, 1987, p. 2 – 5). There are indeed instances where the freedom of choice is very important when it comes to evaluating the chosen functionings, even if the freedom is viewed as being instrumental. As an example of this, Sen talks about the difference between fasting and starving. Neither the starving person nor the fasting person eats and to a person only evaluating the well-being based on the functioning chosen, the two share circumstances. The difference however is that the one fasting had a choice not to do so but the one starving did not and so the ability to choose becomes important in evaluating well-being (Sen, 1990, p. 84 – 50). In measuring the quality of a life or a person’s well-being, the capability approach focuses on the functionings available, a person’s capability of achieving these functionings and his or her freedom of choosing a preferred life.

So, in the later part of the 20th century it had become clear that GDP was not a sufficient indicator in measuring levels of development. A growth of GDP between years tells for example nothing of how the growth was produced, it is blind to whether it was created through something hurtful for the environment, society etc. Neither does it reflect on how the profit of the growth is distributed, whether it is reaching all members of society or only a small elite. Some attempts were made at creating indexes that would measure social welfare by taking into consideration more diverse factors such as income distribution and life expectancy. These include the *Physical Quality of Life Index* that aimed at measuring to what extent basic need were being met by the



world's poorest people and the *International Human Suffering Index* which measured welfare through on twenty indicators with basis in Amartya Sen's capability approach (Stanton, 2007).

In 1990, the United Nations Development Programme (from now on UNDP) published its first Human Development Report (from now on HDR) and since then a report has been published annually, analysing contemporary development challenges. The HDRs analyses build on Amartya Sen's capability approach and through the years, a development paradigm has formed, called the human development approach. According to the human development approach, the aim of development is to increase people's capabilities or the options available to people in their lifetime by removing obstacles such as poverty, illiteracy, lack of freedom etc. These options include access to knowledge, long life, nourishment and community participation (Fukuda-Parr, 2003, p. 301 – 303). In order for the human development approach to have an evaluation aspect, a measuring tool had to be developed that would measure over all well-being instead of isolated factors like, for example, the use of GDP did. For that purpose the Human Development Index (from now on HDI) was created and was to reflect „life expectancy, literacy and command over the resources to enjoy a decent standard of living“(UNDP, 1990, p. 1). In creating this index, a decision had to be made as to what capabilities to include in the evaluation. The scope of human capabilities is infinite and furthermore, the value of a capability is subjective to each person. The solution to this was to create two criteria, either of which a capability must fit into in order to be included; either it must be *universally valued* or *basic*, meaning that a lack of it would exclude other capabilities. These criteria are fairly open ended which allows the HDI to adapt to a constantly changing society. Another difficulty that arose in creating the HDI was that, as it measured overall development achievement of countries, it did not take into account how that achievement was distributed within the country. This limits the HDI in that it sheds little light on equity but does also retain the index's simplicity in which its strength lies as it makes the HDI more applicable and relatable to policy-makers and the public (Fukuda-Parr, 2003, p. 304 – 308).

The HDI is still the main component of UNDP's HDR. Today it is calculated by adding three indices; health, education and income and then calculating the average of the three, each having equal value (UNDP, 2015, p. 2).

$$HDI = (I_{Health} * I_{Education} * I_{Income})^{1/3}$$



Each index is a representation of a few factors. The health index represents life expectancy at birth, education is a weighted average of mean years of schooling and expected years of schooling and income is gross national income per capita (PPP 2011 \$) (UNDP, 2015, p. 2).

The index has not been free from criticism and scholars have pointed out some faults regarding the way it is decided. The data used has, for example, come under scrutiny. Some have pointed out that, due to the infrequent collection of data, the risk of inaccuracy in reporting and general lack of thoroughness in data collecting, the data is unreliable and of poor quality (Stanton, 2007). Others have said that some crucial indices are excluded from the equation, limiting the credibility of the index. The equation itself has then been criticized as well, the equal weight given to all three indices for example is a point of worry for some. The index has also been considered redundant, some critics maintain that the indices are highly correlated and that the information added by including *health* and *education* don't add much to information derived from looking at GDP (Stanton, 2007). For the purpose of this thesis, another criticism must be offered to the HDI, or rather of the education index and ideas about the measurability of knowledge. Looking at education or knowledge merely as years of schooling, shows a distinct bias toward the measurable and excludes other, perhaps more traditional, types of knowledge. This criticism will be discussed further in the next section

This section has discussed ideas of development and how the development paradigm has shifted from being centred on economic growth to the human development approach which measures overall well-being. The next section will focus on concepts of knowledge and how knowledge is relevant in the developmental discourse.

2.2. Knowledge

Knowledge, much like development, is not a fixed concept; what we know, our ideas and how we know is constantly changing. Knowledge is also a driving force in social changes, for better or worse, as history has proven. In the knowledge discourse two categories of knowledge are often specified; there is formal, scientific, western



knowledge and then there is knowledge that could be called informal, local, traditional or indigenous. This section will discuss knowledge and its role in development.

From Rostow's assertion about the backwardness of traditional societies and their customs and beliefs, to the current paradigm of human development, ideas about the validity of non-western or non-scientific knowledge has changed. What was once discussed in major developmental literature as a hindrance to growth is now being seen as something to be valued and included to some extent. This discourse employs a few different terms, either interchangeably or with small distinctions but for the purpose of this thesis, the terms "western knowledge" and "local knowledge" will be used as they are broad and can embody much of what the other terms entail.

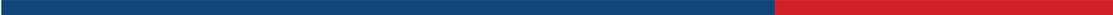
Western knowledge is often synonymous with scientific knowledge. It is centralized and orderly, objective and viewed as a system that follows the scientific method to explain the world around us; the phenomenon is observed, a hypothesis is made which is then either proven or disproven. It is at the core of the idea of development and development strategies are undertaken using a framework of western knowledge (Australian Research Council, n.d.). Local knowledge, on the other hand can be defined as the knowledge accumulated by people in a given community over time, it is based on experience and embedded in social practices and interactions. It is considered personal and subjective, implicit and informal. It isn't necessarily bound to an indigenous group but it is created and passed on in a community of people, be it rural, urban, nomadic or settled. Local knowledge is often linked to coexisting with nature; ways of doing agriculture, preparing food, managing livestock etc. and it is most often passed on orally. It is not homogenous between communities or even within communities as specific groups can hold specific knowledge; farmers have different knowledge from fishermen, women have their specialized knowledge etc. (Food and Agriculture Organization of the United Nations, 2005, p. 7 - 9).

As mentioned above, focus is increasingly being shifted to the importance of including local knowledge in development and especially in projects that have to do with the environment. Advocates of this have pointed to the obvious failures of a few decades worth of development and attribute that to the bottom-down approach of past efforts. In their article *The value of indigenous knowledge in climate change mitigation and adaptation strategies in the African Sahel*, Nyong, Adesina and Osman Elasha state that local knowledge must be integrated into climate change adaptation and mitigation



strategies and identify a few steps that need to be taken in order to do so (2007). To begin with, the value of local knowledge in equipping communities to address their own vulnerabilities must be acknowledged. A bottom-up approach must then be adopted and local participation encouraged so that the community can continue on with the project in a sustainable manner. The communities in question should also be regarded as being equal partners and even play a leading role as capacity should be built on what already exists in the community. It is however important to note that local knowledge should not be viewed as a substitute for western knowledge, the two systems should complement each other where they meet and each should learn from the other (p. 795). This is very representative of the view of advocates of local knowledge and while this shift of focus is positive, there are some who find the discourse problematic. One of the issues pointed out has to do with the categorization of knowledge. Viewing western and local knowledge as two separate systems implies that both are spatially and temporally fixed, the generation of either happens solely within their respective worlds and it ignores possibilities of interactions between the two. Furthermore, the categories are bound to overlap; the insistence, for example, that western knowledge is always impersonal and objective is questionable for some as the interpretation of scientific data is often very dependent on the researchers past experiences (Raymond, Fazey, Reed, Stringer, Robinson & Evely, 2010, p. 1767 – 1770). In addition to this, it can be argued that this dichotomization of the two encourages an “us-and-them” mentality and serves to accent the marginalization of local knowledge systems. As western knowledge is already hegemonic, its methods and ways of establishing “truth” is bound to affect what kind of local knowledge is to be validated as being relevant in development strategies. This has to do, for example, with western knowledge’s reliance on objective data that is collected in a systematic and rigorous manner (Briggs, 2005, p. 9 -10). This can result in a certain bias towards the measurable, a bias which excludes and devalues much of local knowledge, meaning that only knowledge that can by, some means, fit into a certain frame will be recognized.

This bias towards measurable knowledge is reflected in the HDI’s index of “education”. According to UNDP, the education index is to be representative of the capability of being knowledgeable and it is measured by the average between expected years of schooling and mean years of schooling (UNDP, 2015). This way of measuring what it is to be knowledgeable excludes everything that happens outside the formal education system; the know-hows and the ways of being and doing, generated by a



community, tested, taught and learned through generations. Local knowledge is dismissed as a contributing factor to a community's development or overall well-being because it isn't measurable.

This section has explored the concept of knowledge and its relevance to development. When it comes to using local knowledge in development, its inclusion is generally thought of as being positive and very important in the success of any strategy. It is however important to be aware of how the discourse goes because it can be argued that depicting western and local knowledge as opposites can easily undermine the inclusion efforts. Furthermore, it is important to be aware of inherent biases as failure to do so can result in unintentional exclusion. The next section will explore climate change and its relevance to development.

2.3. Climate Change

Climate change is a universal issue; it crosses borders and affects the lives of people all around the world. The fact that our climate is changing has been known for a long time but it is only in recent decades that systematic activities to combat it have been undertaken. The impacts of this are becoming increasingly more visible and it is clear that not all countries of the world stand equal in the face of the challenges climate change poses. This section will explore climate change in order to provide an understanding of what it is as well as how it affects vulnerable communities more severely than others.

The industrialized world has long been dependant on fossil fuels such as coals, natural gases and oil. The importance of these fuels has been increasing ever since the industrial revolution in the 18th century. Today they are a fundamental cog in the global economic machine and the western world depends on their use for maintaining a modern standard of living. In order for these fuels to be of use they need to be burned and that process releases greenhouse gases (from now on GHG) which adversely affect the earth's climate (UNFCCC, 2002, p. 47). The atmosphere is largely composed of nitrogen and oxygen but also has a small amount of GHG, most notably carbon dioxide or CO₂, which serves to trap some of the warmth from the sun's rays on earth, making her fit for life. Geological studies show that the amount of carbon dioxide in the atmosphere



has fluctuated throughout earth's history and that temperatures have varied in correlation but that at no point before the industrial revolution did CO₂ levels go higher than 290 ppm. (Giddens, 2011, p. 12). Since the 1950s, Mauna Loa Observatory has been monitoring and collecting data on the state of atmosphere. Its observations have shown a steady increase in carbon dioxide levels; in March of 1958 the monthly average measured was 315.71 ppm but 58 years later, in March of this year, the monthly average had risen to 404.83 ppm. (Earth System Research Laboratory, 2016). These rising levels of carbon monoxide in the atmosphere are then reflected in the rapid warming of the earth. According to the International Panel on Climate Change's (from now on IPCC) fifth assessment report, published in 2014, the last three decades were each warmer than any preceding decade, dating back to 1850 (IPCC, 2014a, p. 40). The impacts of global warming are manifold and widespread and are already being observed all around the world; glaciers are shrinking, sea levels are rising, the ocean is acidifying, migration patterns are changing and extreme weather events such as droughts, floods and heat waves are happening more frequently (IPCC, 2014b, p. 4-8). These are only a few examples of how the increasing temperatures affect the earth as a whole but even though the atmosphere is global, climate change impacts different parts of the world in different ways. The way that people are affected by the manifestations of climate change doesn't depend solely on their country's geographical position or its climate system. Arguably, social, economic and ecological factors of the country are even more important when it comes to the impacts of climate change on people's lives (Byg & Salick, 2009, p. 156 - 157). While for some, climate change is simply a change in weather and a little less predictability of the seasons, for others it is a matter of life and death. Large parts of the world are already socially vulnerable; poverty, conflicts, political instability, corruption, lack of access to services, lack of resources etc. all serve to decrease a country's ability to react to any kind of a stressful event. Climate change exacerbates these pre-existing conditions of vulnerability and events such as droughts or floods tend to overwhelm the adaptive capacity of the vulnerable societies. Furthermore, people within countries don't always share situations. A vast difference can be between the livelihoods of rural and urban populations within a country as well as between ethnic, religious or social groups (CARE International, 2009 p. 1 – 7). In her book, *Hazards, Vulnerability and Environmental Justice*, Susan Cutter (2006) identifies some of the factors that increase the vulnerability of specific peoples within a population. These factors include gender, with women often having a harder time



recovering after a crisis than men due to lower wages, less opportunities and more household responsibilities. Level of social dependency is another factor as well as level of education, field of employment and family structure (117 – 121). Those who either depend on others or depend on climate sensitive agriculture for a living, as often is the case in rural populations, any unexpected or extreme weather event can result in serious income loss and food scarcity. This imbalance of resources, livelihoods and opportunities makes the issue of climate change even more complex as the problem isn't uniform; localised efforts and strategies are needed in for each country.

This section has explored climate change and highlighted how it affects certain communities very adversely. For those communities that can be considered vulnerable, the need to build resilience to climate change is dire and immediate because any event could be a matter of life and death. The next section will define vulnerability and other key concepts.

2.4. Key concepts

This section will cover some of the key concepts used in this thesis. This will provide a better understanding of the subject and the discussion that takes place in the text.

2.4.1. Adaptation

The UNFCCC defines adaptation to climate change as “Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities” (2014). There are various activities that communities can undertake in order to adapt to climate change but for the purpose of this thesis, the focus will be on resilience-building.

2.4.2. Disasters

The UNISDR's terminology defines disaster as “A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.” (UNISDR, 2007a) A disaster is likely to occur when a vulnerable community faces natural hazards.

2.4.3. Natural hazards

The World Meteorological Organization defines natural hazards as “severe and extreme weather and climate events that occur naturally in all parts of the world“(n.d.). Natural hazards are events such as earthquakes, floods, tsunamis etc., which can turn into a disaster if the community facing them is inadequately resilient to them.

Flash floods are a type of natural hazards. They are floods usually caused by heavy rains over a short period of time. They develop quickly, giving little or no warning or time to prepare. Flash floods move with a destructive strength and speed, often uprooting trees, destroying homes etc. (Philander, 2008). The events that will be discussed in the case study were brought on by flash floods occurring after a short period of heavy rains.

2.4.4. Resilience

In its 2012 report *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*, the IPCC defined resilience as „The ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner“(p. 563). Using this definition the concept will, for the sake of this thesis, be understood as the ability of societies and communities to react to and recover from a natural hazard in such a way that reduces the likelihood of a disaster. This concept is vital in the following discussion because the thesis aims to address how communities can strengthen their resilience to adapt to climate change.

2.4.5. Vulnerability

The UNISDR defines vulnerability as “The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard“(2007b). Vulnerability can be the result of a variety of factors but in order to justify the choice of a case study for the thesis, certain indicators must be mentioned. UNEP’s *Module on Climate Change Vulnerability and Impact Assessment* (Bizikova, Habtezion, Bellali, Diakhite & Pintér, 2009), talks about vulnerability as a “function of the character, magnitude and rate of climate variation to which a system is exposed;



people's sensitivity; and their adaptive capacity“(p. 14). The factors mentioned here will be the tools used to analyse the community chosen for the case study. It's exposure to risks will be examined, and the sensitivity of the community explained as well as its adaptive capacity.

This section has defined some key concepts used in this thesis. In the next chapter these key concepts will be used to some extent as the case study is introduced and discussed.

3. Case study

In order to gain a better understanding of how climate change affects developing countries it was important to narrow the point of view and look at what happens at the local level. For that purpose, a case study was chosen as it makes it possible to observe a representative unit closely and then make a certain generalization based on the findings. This chapter will focus on the case of Malawi, a vulnerable country that faces huge challenges due to climate change. In the first section, an overview of Malawi will be given and the country's vulnerability then discussed. The response of local communities in Malawi to a recent natural disaster, which could be considered reflective of the types of disasters likely to occur more frequently with a changing climate, will then be explored and discussed with emphasis on the part played by local knowledge.

3.1. Malawi

Malawi is a small, low-income country in eastern Africa with a population of around 16.8 million people. It was established as the British protectorate of Nyasaland in 1891 but the country gained independence as the Republic of Malawi in 1961 (The World Factbook, 2016). The country is landlocked and shares borders with Mozambique, Zambia and Tanzania. It is divided into three regions, the north, central and south which then are further divided into districts. Within the districts there are traditional authorities (from now on TA) ruled by chiefs but the smallest units of administrations are the villages within the TAs which are governed by a traditional village headman. The village headmen then answer to a group village headman who oversees a cluster of villages within a district (African Health Observatory, n.d.).

According to Malawi Meteorological Services, the country's climate is sub-tropical, meaning that it is strongly seasonal with three seasons alternating. The warm-wet season usually lasts from November to April and this is when 95% of the annual precipitation in Malawi takes place. From May to August the country experiences the cool-dry winter season with moderate average temperatures. The hot-dry season then lasts from September to October (2006).

Malawi's economy is largely dependent on agriculture, a sector that contributes 33.3% to the country's GDP (value added) (World Bank, 2014a) and in which, 64.1% of the total labour force was employed in 2013 (World Bank, 2013). In addition to the



economy being highly dependent on agriculture, most Malawians rely on subsistence farming for survival. Around 84% of Malawi's population is rural (World Bank, 2014b), almost 60% of which lived below the national poverty line of \$1.20 a day in 2010 (World Bank, 2010).

According to the Rural Poverty Portal (from now on RPP), the rural poor in Malawi are unable to diversify out of agriculture, a situation further frustrated by the recurrence of shocks, most of which are weather related; floods, drought, etc.. These shocks severely affect the households that rely on agriculture, costly coping strategies such as selling assets decrease future chances of any social mobility (n.d.). Maize is the most commonly grown agricultural product, even though tobacco is the country's main export. Malawian diet comprises mostly of their national dish, Nsima which is a maize flour porridge, eaten with available relishes. Maize is a staple food, so its production is considered essential for the general health but the crops require much land and increasingly unpredictable weather makes maize production vulnerable (Food and Agriculture Organization of the United Nations, 2015, p. 3).

According to the World Bank's overview of Malawi, one of the country's main challenges is to improve its infrastructure (World Bank, 2015). A reliable energy sector is perhaps the most pressing infrastructural concern with only 9.8% of Malawians having access to electricity in 2012 (World Bank, 2012). In Africa Infrastructure Country Diagnostic's country report on Malawi's infrastructure, increased funding for road maintenance is also said to be needed as well as funding for water supply and sanitation sectors (Shakaratan & Foster, 2010).

Malawi's political system is a presidential representative democratic republic. As mentioned before, the country gained independence in 1961 and became a republic in 1966 but the first multi-party elections weren't held until 1994 following the forced resignation of first president, Dr. Hastings Kamuzu Banda. The 31-year reign of president Banda was an autocratic, one-party regime with all aspects of governance firmly under his control. During his autocratic reign, a lot of positive reformations took place in Malawi, transport and communication systems were improved and the economy fared well due to Banda's government's emphasis on cash crop production and food security (The World Factbook, 2016; Kalinga, 1998). This, of course, is not to say that the economic growth improved the lives of every Malawian. The success was primarily in the estate sector, the estates were largely in the hands of presidential favourites being leased considerable amount of customary land, which was focused on



commercial crops meant for export, mainly tobacco. The smallholder sector, however, was focused on maize, Banda's preferred crop in the battle for food-security in the country. The state held monopoly on marketing smallholder produce, the Agricultural Development Marketing Corporation (from now on ADMARC) set the price of maize low and predictable and the amount produced was supposed to meet the needs of the nation but was not meant for export. This bias toward the estate sector, which admittedly fuelled Malawi's economy for a time, led to the majority of smallholder farmers being confined to maize production. The ADMARC focused on using work market price increases to keep the price of maize low for the urban population and to finance the estate sector instead of passing them on to the smallholder farmers themselves (Sahley, Groelsema, Marchione & Nelson, 2005, p. 13 – 14). Banda's reign ended in 1994 with Malawi's first multi-party election and a new constitution was adopted in 1995. The first years after Banda saw an increase in democracy and free speech. The newly elected president, Bakali Muluzi, sought to broaden Malawi's international relations and to increase the country's role in regional affairs. Muluzi also wanted root out corruption but after being re-elected in 1999, an election disputed and protested against, he himself attracted much criticism for just that. The political landscape of Malawi has since been fraught with corruption which has resulted more than once in international donors withholding funds or even withdrawing their aid. The most recent, and the most serious, incidence of which occurred in 2013. Following a shooting of Paul Mphwiyo, budget director in Malawi's Ministry of Finance, reports about the mismanagement of public funds started circulating and finally an audit of the Treasury was ordered. The audit concluded that some \$15 million had been drawn out of the Treasury by around 70 civil servant over a period of only six months (O'S, 2014).

This section has given an overview of Malawi and highlighted specific factors about the country's economic, political and social spheres. Looking at these factors, it can be argued that Malawi fits the description of a fragile state and that it could be considered a vulnerable community. In the next section, the country's vulnerability will be explored further and more thoroughly.

3.1.1. Vulnerability

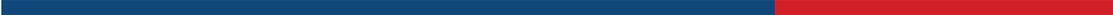
USAID conducted an assessment of Malawi's vulnerability to climate change based on the three factors mentioned in the UNFCCC's definition of vulnerability; exposure,



sensitivity and adaptive capacity. As well as being a quantitative assessment, the team conducted a qualitative research they called Participatory Rural Assessment (from now on PRA), gathering perceptions of the climate and whether it has changed from the locals. In this part of the assessment, nine villages, reflective of the diversity in livelihoods in Malawi, were chosen as a sample. Within the villages individual participants were then chosen in a way that accounted for power dynamics between leaders and institutions (Wood & Moriniere, 2013, p. 12 – 14). This section will discuss the assessment’s findings in the context of the thesis.

The report starts by identifying those factors that make Malawi especially exposed to climate change. As mentioned before, the country’s climate is sub-tropical. African climate literature, however, places the area into two climate zones; equatorial east Africa and subtropical southern Africa. This means that the regions within the country, the north, central and south, will likely be influenced differently according to their geographical position. With the regions being affected differently they will consequently have different needs when it comes to adaptive planning so this complicates the resilience building efforts in the country (p. 30). There are already some worrying indicators to a rapidly changing climate in the area such as higher temperatures and decreased overall precipitation (p. 33 – 34). The participants in the PRA mostly confirmed these findings. All participants perceived the summers to be hotter than what they considered to be normal as well as a distinct change in precipitation. These changes have resulted in less predictable seasons, a point of much concern to an agricultural society that depend on rain-fed crops, such as maize, for survival. The PRA also showed that exposure to hazards such as droughts or floods has increased for most (p. 35).

In discussing the sensitivity of the country to climate change, the reports begins with addressing water resources. It states that a changing climate is already impacting the availability of water in Malawi. This is due to the increasingly erratic nature of rainfall and rising temperatures. Surface water makes up most of Malawi’s water availability and precipitation is the principle source of surface water, so with less precipitation and increased evaporation due to higher temperatures the amount of available water decreases (p. 38 – 39). Natural resources have also somewhat been affected by climate change, although the report points to a lack of evidence in this field. Environmental degradation such as soil erosion or deforestation is often mentioned in



the context of climate change but the report points out that these are most often a result of a mixture of social and environmental factors, not a direct change of climate change (p. 40 – 41). The same difficulty occurred in regards to the effects of climate change on fish stocks in Malawi. There have been declines in 12 fish species commonly fished in the country since the 1990s, but due to lack of research and evidence it proved difficult to isolate what roles human actions and climate play respectively (p. 46). When it comes to phenology however, the sensitivity to climate change becomes apparent. As discussed in the previous section, maize is a staple food in Malawi and is considered of high importance in the country's general health. The report states that maize is very sensitive to climate, it is rain-fed and so can be severely harmed by erratic rains. The maize crops also decrease with rising temperatures and that that sensitivity is increased when the soil in which it grows is insufficiently moist. The PRA showed, in some instances, that increasing winds due to climate change also affected the maize crops negatively, either by breaking the maize or by bringing pests such as stalk borers which prey on the crops (p. 41 – 42). In addition to maize, the effects of climate change on other crops such as groundnuts, cowpeas and soybeans were explained but due to lesser relevance to, and the scope of the thesis, that discussion will be left out.

The adaptive capacity of Malawi was explored through a framework that the report calls “Adaptive Capacity, Areas of Influence”. The framework identified eight areas of influence ranging from local to institutional; governance, leadership, resources, hardware, psychological capacity, learning capacity, room for autonomous change and variety.

In the *governance* sphere, it is important that the public is supportive of the government and that the general perception is one of legitimacy and fairness. The report points to some strengths in this sphere, mainly that there is “Promising potential for community managed forests...” (p. 53). The challenges perceived here have to do with the state promotion of maize as a preferred crop through a subsidy program, this emphasis is seen by many to be unfair as maize is climate-sensitive and does not grow as well everywhere (p. 49). Other challenges that might be relevant in this area is the high level of corruption in Malawi's government as discussed in the previous section as it undermines the public's trust and leads to legitimacy issues. The *leadership* area is strong in that there is much attention being paid to climate change in the country's leadership. However, there is a very high level of turnover in the field so a specialization of key agents is lacking (p. 49). When it comes to *resources*, a variety, including



institutions, human resources and financial or economic resources, must exist for the strengthening of adaptive capacity. In this sphere there are some definite strengths, mainly in regards to financial resources, in the form of donor interest in funding projects directed at climate change. The Norwegian embassy is especially mentioned in regards to this. There are however some challenges when it comes to human resources, as mentioned before the high turnover hinders field specialization as well as the diverse role each employee has, there are very few whose sole focus is on climate change (p. 50). The area of *hardware* refers to infrastructure, technology and information. Here, the increased use of mobile phones in the country can be viewed as a strength, this allows for more reliable early warning systems and methods of relaying information to be developed. The general state of the country's infrastructure, as discussed in the above section, is a challenge in this context. Road maintenance is negligible and ever increasing move of rural people to urban dwellings puts a strain on cities who are under-equipped to address this issue (p. 51). The *psychological capacity* of a nation refers to the willingness and to adapt understanding that actions must be taken and even though the report has little studies on this in Malawi, it is clear that Malawians in general are willing to adapt and do seek new options but that there is a tendency to fall back into old practices. The same challenge faces the *learning capacity* sphere. The assessment showed that Malawian farmers are fast learners and that mistakes are rarely repeated but that poverty severely hinders possibilities for a change (p. 51) For there to be *room for autonomous change*, an agent, be it a farmer, a fisherman or an institution, must have access to information, options and innovative opportunities. Where this leeway exists, the report shows that Malawians were willing to explore alternative livelihoods and even if those were perhaps not always sustainable or environmentally friendly more options might be given a higher level of information about climate change. The challenge therefore is a lack of general understanding as well as the confining nature of poverty (p. 52). In the area of *variety* a definite strength is the presence of multiple international actors, ministries etc. This variety of those engaged in the climate change discussion in the country can have beneficial effects in efforts to plan ahead, find solutions and frame the problem. The challenge here however is the uncertainty of the impacts of climate change in Malawi, as well as the complex nature of the climate in the country. Figure 1 provides a summary of the strengths and challenges in the eight spheres of influence.

Sphere of influence	Strengths	Challenges
Governance	Potential for community managed forests	State run subsidy program perceived to be unfair. Corruption
Leadership	Climate change visible on the agenda	Key agents lack specialization in the field
Resources	Good access to financial resources through donors	High turnover leads to little specialization in the field.
Hardware	Widespread mobile phone use	Poor infrastructure
Psychological capacity	Willingness to adapt	Tendency to return to old habits
Learning capacity	Willingness and an ability to learn	Poverty
Room for autonomous change	Willingness to explore alternative livelihoods	Lack of general understanding of climate change Poverty
Variety	Presence of a variety of international actors	Uncertainty of the impacts of climate change Complex nature of Malawi's climate

Figure 1 - Adaptive capacity of Malawi

This section has looked at Malawi's vulnerability based on three factors; exposure, sensitivity and adaptive capacity. There are some definite challenges the community faces on its road to increased resilience but that does not take away from the strengths it possesses. The vulnerability assessment showed much willingness of the Malawians to explore new ways of living and to adapt to a changing climate which is a definite strength of a community. This willingness is reflected in the case study discussed in the next sections, where, in the face of a crisis, communities come together to help each other, rebuild and prepare for what the future holds.

3.2. Example of a climate related natural disaster

Climate change manifests itself differently as discussed in chapter 2.3. on the issue. The severity of its effects in each community depends on many factors. In vulnerable communities, climate related events such as droughts or floods can easily result in a disaster, partly because of the factors discussed in the above section. This section will give an example of such an event, one that could be considered representative of the climate-related challenges, vulnerable communities will face more and more in the future.

In January of 2015, Malawi experienced the heaviest rainfall in recorded history. The southern regions of the country were hit especially hard, with 400% higher precipitation than normal. The rainfall forecast, provided by the Department of Climate Change and the Meteorological Services had predicted an overall normal rain season lasting from October 2014 to March 2015, so there had not been an incentive for proper preparation. This emphasizes the increased unpredictability of the climate and its harmful consequences. The heavy rain led to serious flash floods in 15 of the 28 districts in Malawi and on January 13th a state of emergency was declared in these districts (The United Nations, 2015) On the 22nd of January 2015, the government of Malawi (from now on GoM) published a preliminary response plan in reaction to the floods. In that response plan a thorough overview of the disaster was given. The report stated that the floods had already affected the country's infrastructure severely; roads and bridges had been swept away, hydrological and meteorological stations were damaged as well as irrigation and disease control structures and basic services such as water and sanitation could not be provided in the affected areas. Thousands of people were isolated due to the floods, 174.000 were reported to be displaced, 62 dead and 153 still missing (Government of Malawi, p. 3). The report also stated that some 63.000 hectares of land had been submerged, more than half of which was cropland. This left an estimation of 116.000 farmers being severely impacted as compromised crops could lead to no food or income in the near future if no action was taken. This would, however, not only affect the farmers themselves but the country as a whole as much of the crops under floodwater were intended for local market and the GoM estimated a loss of over \$8 million in food production. In addition to crops being compromised, much livestock



was lost (Government of Malawi, p. 4). On the 31st of March 2015, the Department of Disaster Management Affairs (from now on DoDMA) published its 16th situation report on the January floods and the subsequent response. According to that report some 1.1 million people had been directly affected by the floods, there were still 145.000 displaced people, 106 were dead and an outbreak of cholera had been reported with 423 confirmed cases (Department of Disaster Management Affairs, 2015).

Immediate relief aid was largely provided by international agents such as the World Food Programme, which had begun distributing food assistance within 72 hours of the disaster. Following response was overseen by DoDMA and an assessment of the immediate response needs was made. The needs were substantial, in the GoM's preliminary response plan an estimation of \$81 million was needed in nine clusters; shelter and camp management, food security, agriculture, transport and logistics, education, health and HIV, protection, WASH (water, sanitation and hygiene) and finally nutrition. This amount thoroughly overwhelmed the GoM's capacity but with a variety of agents working within the country, a response plan was made and a coordination architecture developed so as to maximize the utility of the efforts. Two committees were activated, on the one hand there was the National Disaster Preparedness and Relief Committee which comprised representatives from all ministries, selected number of local NGO's and the Malawi Red Cross Society. On the other hand there was the Humanitarian Country Team, with heads of UN agencies, international and local NGO's, representatives from the GoM and the Malawi Red Cross Society. Together these actors worked together to make response plans for each of the nine clusters mentioned above. In these plans, the situation was analysed, objectives stated and activities needed to reach these objectives identified. The implementation of these cluster plans were then to be overseen by the relevant government department in cooperation with a compatible aid organization, for example, the Health and HIV cluster response was led by the Ministry of Health in cooperation with the World Health Organization (from now on WHO). Furthermore, an inter-cluster coordination was important so as to avoid duplication among the clusters (GoM, 2015, p. 9-26). The follow through of response plans has been good according to a press statement from the UN in Malawi. As of the 27th of May 2015, 40% of funds needed had been donated, some 100.000 farmers had been targeted to receive agricultural support, reports of violence, and especially gender based violence, had gone down since the disaster first hit and WHO in cooperation with the International Vaccine Institute



and the Ministry of Health had been providing cholera vaccination (United Nations, 2015).

This section has given an example of how a natural hazard can easily turn into a disaster when it hits a vulnerable community. The vulnerability of the country, as discussed in the previous section, is put into sharp relief when an event like this occurs and it does not take long for the effects to become disastrous. In order to prevent a disaster from happening in a vulnerable community like Malawi, resilience to climate change must be strengthened. The next section discusses a program aimed at building community resilience.

3.2.1. Increasing community resilience

Increasing resilience is a key activity that a country like Malawi must undertake in order to adapt to climate change. The events of 2015 emphasized this, as the nation was quickly plunged into a state of an emergency following the floods and even after immediate relief aid had been given, the country still faced months of food insecurity, huge fiscal losses and immense uncertainties regarding displaced people, cholera etc.. Adaption strategies must aim at equipping the vulnerable communities with methods and ways to reduce the likelihood of a disaster occurring as a result of a natural hazard. Resilience-building happens at the local level and this section will explore one project with this objective that operates in Malawi. The project is called the Enhancing Community Resilience Program (ECRP), it is led by Christian Aid in cooperation with other agents and funded by UK aid, Irish Aid and the Norwegian Ministry of Foreign Affairs (Department of Disaster Management Affairs, 2015).

As discussed in a previous section, Malawi's three regions are divided into traditional authorities ruled by chiefs and further into smaller administrative units governed by village headmen. In these districts now operate Area Civil Protection Committees (ACPCs) and their narrower counterparts Village Civil Protection Committees (VCPCs). The Enhancing Community Resilience Programme operates in eleven districts and through the program, these communities have been given the chance to put their own expertise of the land they live on to good use.

When the floods happened, the program was put to the test and according to Christian Aid assessment of the program, the results have been positive. In cooperation



with ECRP, the Area- and Village Civil Protection Committees have been developing plans and mechanisms fit for local use (ECRP, 2015a). One of the fields ECRP is concerned with is the development of a simple yet reliable early warning system, something that is vital in reducing losses in the events of a disaster. To this end, the rapid increase in mobile phones has been utilized and in cooperation with Esoko, an African based communication service, text messages are being sent to farmers regarding weather forecast and agricultural information. In addition to having access to local weather reports, a river gauge has been set up with colour-coded measuring-points indicating when danger of the river overflowing is imminent. The ones responsible for watching the rain gauge can then relay the message via text to surrounding communities (ECRP, 2015b, p. 4). The early warning system is a good example of how resilience can be built on the grounds of what the community already has and how existing structures can be utilized and strengthened to this end.

Furthermore, according to an ECRP newsletter published in December 2015 traditional indicators are also being used in this effort. Says Amos Mwamlima, chair of Mwakashunguti VCPC:

Early warning signs and signals have been passed on from forefathers – it has been a human desire for millennia to make accurate weather predictions. For example, when black flying ants come out during the early rains it is a sign of heavy rains (ECRP, 2015b, p. 3).

The newsletter goes on to talk about how monitoring the behaviour of other animals can also serve to give an early warning for those with deep understanding of the normal behaviour of the country's fauna but that more advanced technology might easily miss (ECRP, 2015b, p. 3). Here, local knowledge and western knowledge complement each other in a way that increases effectiveness. This understanding of the nature by some in the community may have been there for generations but having a way to relate the information increases the utilization of such knowledge.

Another resilience building activity ECRP undertakes is teaching farmers climate-smart agriculture techniques. According to a Christian Aid bulletin on the work the program is doing, "Lead farmers" are selected by their communities to be middle-men between the locals and the program. The lead farmers receive education and training on a monthly basis in conservation agriculture, information that is then



passed on to other farmers in the communities. One lead farmer, Philip Oneka of Mbelemunu village, explains that these techniques include mulching, planting in fours and methods of soil cultivation. Anne Jackson, lead farmer in Nantusi adds that through this program lesser amounts of land are now being used for a higher yield of crops (ECRP, 2015c, p. 8). This approach allows for farmers to be taught by community-chosen equals who understand their society and the best way to relay information within it. This combines what has been scientifically developed as a resilient way of doing agriculture with the socially developed way of teaching and learning. Additionally this allows lead farmers to meet during the monthly training session, learning from each other and exchange information, thus furthering cooperation between districts.

The ECRP has also worked together with village savings and loans groups (VSLs) in an effort to increase household resilience. In Christian Aid's report on the project some 50.000 ECRP households were estimated to participate in a village savings and loans group. Nicholas Mwale joined such a group when ECRP started work in his village. Using borrowed funds he was able to set up a business selling fish in 2012 and in 2013 he expanded the business by opening up a grocery store and is now using his experience to educate others. In the aftermaths of the floods, the VSLs also provided loans to people in need, assisting with money for food purchases etc. (ECRP, 2015d, p. 6). These loans allow for people to assist each other in establishing a sustainable way of generating income for their households and also builds up the community from within.

According to Christian Aid, communities that the Enhancing Community Resilience Programme operates in have also been preparing for another episode of floods like those in 2015. Jack Issa of the Kampani Village Civil Protection Committee explains that the members of the committee have developed a map of Kampani's area, on which key challenges have been pinpointed. The places known by the locals to be vulnerable to disasters have been marked, the reason for that vulnerability identified and measures developed to counter the risks. These measures include planting trees along rivers known to overflow during heavy rains in order to bind the soil, moving people from flood-prone areas and the creation of sand barriers. In addition to this, contingency planning is under way in an effort to reduce losses during the events. These involve accumulating a store of flour so as to be able to provide some nourishment for those affected should a flood occur, providing community members



with first aid training and strengthening houses and other structures so as to reduce the likelihood of collapses (ECRP, 2015b, p. 4). Efforts like these can greatly increase a community's resilience. A map like the one in Kampani doesn't only serve to minimize risks, it could be argued that the awareness of the community as a whole of these risk factors and of climate change in general might increase. Working together on a project such as this is likely to spark discussions that would extend beyond the committee itself and into the community and the contingency planning then involves the people of the community in collecting flour etc.

Following the floods, Christian Aid conducted an assessment of the resilience of communities that the Enhancing Community Resilience Programme operated in and compared it to other communities. The assessment showed that ECRP communities did indeed show signs of increased resilience. The early warning systems proved especially useful, allowing for more actions to reduce the impacts of the floods to be taken in time. As far as coping goes, the ECRP communities also showed signs of better standing, much thanks to the village savings and loans groups. However the assessment noted that there were still some serious obstacles to overcome, most of which had to do with lack of emergency aid provisions and financial barriers (ECRP, 2015b, p. 12). These obstacles reflect those that USAID found in its vulnerability assessment, the challenges to resilience-building in Malawi is first and foremost poverty.

This section has examined the resilience-building efforts undertaken by communities in which the Enhancing Community Resilience Programme operates as well as the program's successes and challenges. The next chapter will discuss the case study as a whole in the theoretical context introduced in chapter 2 and finally, some conclusions will be drawn.

4. Discussions and conclusion

The aim of this thesis was to answer the following question: *How can vulnerable communities strengthen their resilience to adapt to climate change?* This is a complex question as it encompasses so many different issues; climate change, poverty, development, social inequalities, politics etc., all of these topics in themselves are immense and multidimensional. This complexity means that a concrete answer is hard to come by but with the insights gained through the case study presented in this thesis, some conclusions can be drawn as to what might be a feasible approach to resilience-building in vulnerable communities.

The ongoing Enhancing Community Resilience Programme in Malawi, discussed in the case study, definitely shows some promise for resilience-building. The project focuses on the local level and aims at building resilience from within, on a community basis, by utilizing existing structures and mechanisms. Its framework is one that reflects the discussion undertaken in chapter 2.2., about the inclusion of local knowledge in development. The knowledge of the locals is not dismissed, nor are the social circumstances, such as local administrative structures, devalued as irrelevant to the success of the program. Western knowledge is then used to complement the existing ways of knowing, such as with the early warning systems etc. The two work together in a way that can be very beneficial for resilience-building. However, it is important to note that, using the argument put forth in chapter 2.2., about the bias towards the measurable, it could be argued that the local knowledge valued in the project is only that which is easily reconciled with western knowledge. Knowledge of a practical nature that can easily be transferred, such as observing the behaviour of certain insects in order to catch early signs of changes in weather etc. This bias towards measurable knowledge, and therefore the exclusion of other kinds of knowledge, could lead to a certain imbalance within the communities. In chapter 2.3., where climate change was discussed, certain social groups were mentioned as being especially vulnerable. One of these groups were women and this was due, partly, to their household responsibilities, women are also a group that often holds specified knowledge within the communities as mentioned in chapter 2.2. It could be argued that the knowledge belonging to women is largely excluded in the project as it is often bound more to the household; cooking, child-raising etc. and less with matter such as large-scale farming. This disparities in



the value placed upon knowledge within the community could be said to further increase gender inequalities.

The program seems to fall well in line with the human development approach discussed in chapter 2.1., as it focuses on empowering the communities and the individuals within them, expanding their options and it aims to provide them with the tools needed to adapt better to an increasingly changing climate. The program doesn't look at economic growth as the end-all solution; activities like increasing productivity, commercializing crops or strengthening the markets are not at the forefront, as has often been the case with past development efforts. It does however recognize poverty as a big challenge to resilience-building as it tends to confine people to livelihoods that are inherently vulnerable to climate related hazards, such as climate sensitive farming, like maize production is. Poverty allows for less mobility between sectors and even though people are willing to make a change, as was apparent in USAID's vulnerability assessment, there is little leeway to do so.

The confining nature of poverty was highlighted following the floods of 2015 as, even with all the resilience-building that had already taken place through the Enhancing Community Resilience Programme, the capacities of the country to respond to immediate needs following the events were completely overwhelmed. The fragility of Malawi combined with the increasing frequency of natural hazards due to climate change make resilience-building a very slow process. However, one of Malawi's adaptive capacity strengths mentioned in USAID's vulnerability report was the presence of a variety of international actors within the country. The interplay between the national and the international could be argued to be vital in resilience-building as funding and relief aid from external agents can lessen the strain on the state considerably in case of an emergency. Furthermore, general assistance from external agents can help with resilience-building within the country; long-term projects that aim at strengthening infrastructure, increasing general health of the population, securing access to education etc. all serve to enhance the capacity of the country to adapt to climate change.

The case of Malawi is reflective of many other vulnerable communities who face similar challenges due to climate change so from the discussion of resilience-building in Malawi, a certain generalization can be made. It is useless to state that local knowledge alone or western knowledge alone are enough when it comes to resilience-building, as history has shown that neither is true. The answer does not lie in excluding



either, on the contrary, the benefits of including both could be considerable. A general understanding of the importance of building from within, respecting and acknowledging the strengths of the community as well as its social circumstances could also serve to increase the likelihood of success. International actors are well equipped to be in an assistive capacity as they can provide the communities with funding as well as a certain coordination element but it could be argued that the communities themselves should play the biggest role in designing the strategy. The way that people in a given community live their lives and interact between themselves and with the nature around them has to be included in order for the strategy to be sustainable and that understanding only lies with those who experience it first-hand.

An approach, then, based on an interplay between the global and the local, one that utilizes both western and local knowledge and takes into account the unique factors of each community, could be beneficial for communities undertaking resilience-building in order to adapt to climate change.

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