

Navigating Change: Climate Adaptation Policies and Small-Scale Farmers

An analysis of the implications of adaptation policies on small-scale farmers' land use and land ownership in southern Mozambique.



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Abstract

Extreme weather events as a result of climate change are increasingly affecting countries in the global South. Farmers in Mozambique are not only affected by these climate-related extreme weather events but also by climate change adaptation policies.

This study explores how these policies are affecting small-scale farmers' land use and land ownership. This is done by using critical discourse analysis to examine the current adaptation policies in Mozambique, in combination with the analysis of empirical data gathered during field trips in the provinces of Inhambane and Maputo. To explore farmers' lived experiences, semi-structured interviews were held. The Ministry of Agriculture and Rural Development, the Ministry of Land and Environment, a Mozambican research center, and two civil society organizations were also interviewed, which provided further knowledge and contextual embedding. This research identifies which climate-related extreme weather events affect small-scale farmers the most, which are floods, extreme droughts, and the intensifying of cyclones, how these climate-related weather events affect how policies are made, and what these policies contain. The critical discourse analysis exposes mutual power relations between different actors. By comparing these policy plans with lived experiences of small-scale farmers, the effect of adaptation policies on land use and land ownership is shown. Adaptation policies are causing a change in seed use, and an increase in chemical fertilizer use, which are threatening food security. Land ownership is at risk due to the government's evacuation plans to protect people from extreme weather, which in turn can affect the socioeconomic well-being of these communities. The government welcomes foreign companies which allows these investors to play a role in the policy, and its (unintended) outcomes, because these parties are financing the implementation.

These findings offer insights into the complex relationship between climate adaptation policies, land use, and land ownership, and among different actors involved in policy development. This research provides information for policymakers to create and improve effective climate change adaptation strategies in Mozambique.

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List of Abbreviations

ENAMMC: Estratégia Nacional de Adaptação e Mitigação de Mudanças Climáticas;
National Strategy for Adaptation and Mitigation of Climate Change.

INGD: Instituto Nacional de Gestão e Redução do Risco de Desastres;
National Institute for Disaster Management.

OMR: Observatório do Meio Rural.

UNAC: União Nacional de Camponeses;
National Union of Peasants in Mozambique.

Chapter 1 - Introduction

Climate change is impacting everybody. Although some people are more vulnerable to the effects of climate change than others, the global threat is undeniable. In the context of Africa, the continent that contributes the least to climate change but is most affected by climate change, no group is more vulnerable to impacts than small-scale farmers who rely heavily on the land for their livelihoods (Manuel et al., 2021). Mozambique, a country in the southeastern part of the continent, is due to its geographical location an open door for cyclones. In addition, the country, characterized by its agricultural economy, is especially vulnerable to the negative consequences of a changing climate, which presents serious difficulties for the nation's rural populations (Patt & Schröter, 2008). As a result, climate adaptation policies have become an essential instrument for reducing the effects of climate change and promoting sustainable development, as long as these policies are dynamic, flexible, and constantly evaluated (Toreti et al., 2022).

Since climate change is of broad and current interest, it is high on the political agenda for many countries, including Mozambique (Bruna, 2021). The policies based on climate change are written to mitigate and adapt to the changing climate and to ensure people's quality of life under changing conditions. However, it is to say that climate change adaptation policies can worsen land ownership security, especially in countries with limited resources (Froese & Schilling, 2019), like Mozambique. This is because, for example, the government does not have the financial resources to implement policies, and citizens do not have the resources to adapt to the government's new plans (Westerhoff et al., 2011). In addition, these adaptation policies affect the land use decisions of small-scale farmers. Adaptation policies should ensure that land can still be used as efficiently as possible under changing conditions, but these interventions also bring other negative implications (Froese & Schilling, 2019). One example is that increased production on land also causes increasing pressure on land, likely leading to emissions diffusing into rivers. This, in turn, is increasing pressure on the environment. Climate change also increases migration, as areas, home to certain communities, become less livable. This can lead to voluntary migration, but resettlement is also seen as an adaptation option (Froese & Schilling, 2019). As a result, increasing population density in the areas considered safe to live in, can cause land disputes or conflicts in general (Froese & Schilling, 2019). These unintended effects are contradictory to the intentions of the policies, and therefore worth studying.

By using critical discourse analysis, the Mozambican adaptation policies are analyzed and related to acquired empirical data from the field. From this, conclusions emerge, which can eventually work towards solutions for political, economic, and social problems that both the citizens and the Mozambican government are facing. By analyzing and presenting the negative impacts, in socioeconomic terms, evaluations of policy plans can be made, from which changes can emerge. Revised adaptation plans,

incorporating the information from this study, can lead to more accurate, and targeted strategies to allow people to live the best possible lives under climate change threats. Because ‘‘good development policy is good adaptation policy’’ (De La Torre et al., 2009).

To explore the influence of climate change adaptation policies, the following research question is formulated; How do governmental climate change adaptation policies influence local farmers’ land use decisions and land ownership in Mozambique within the context of compounding impacts of climate change? With the following sub-questions:

- How are Mozambican small-scale farmers affected by climate change?
- What climate change adaptation policies are implemented by the Mozambican government?
- How are land use decisions and land ownership of small-scale farmers in the Mozambican provinces of Inhambane and Maputo affected by climate change adaptation policies?

This research explores the influence of governmental climate change adaptation policies on small-scale farmers’ land use decisions and land ownership in southern Mozambique, especially focused on the provinces of Inhambane and Maputo. In this research, both desk research and field research are done. Using existing literature, and the frameworks of Burton et al. (2002), and David Pannell (2010), the interrelationship between the themes is visualized. Using the *Estrategia Nacional de Adaptaao e Mitigaao de Mudancas Climaticas*, henceforth abbreviated to ENAMMC, as a starting point, based on critical discourse analysis, these adaptation plans are linked to field experiences.

This research is relevant in several areas. First, this research highlights the influence that climate change adaptation policies have on land ownership security, which is of great importance for people’s livelihoods (Murken & Gornott, 2022). The same applies to the influence on land use choices, as the way people use their land can influence their food security and economic performance (Ferrao et al, 2018). In this way, policies that can influence these land use choices affect the lives of citizens. Mapping the influences of policies on livelihoods can ultimately improve these areas, as identifying the problem is the first stage of solving difficulties. In this way, the research contributes to societal relevance. Besides societal relevance, there is also scientific relevance in this study. The scientific relevance lies in the contribution to understanding the complex interrelationship between climate change, adaptation policies, land use, and land ownership in the context of vulnerable small-scale farmers in the provinces of Inhambane and Maputo in Mozambique. Governments are not always aware of the impacts of climate change and the policies being made to adapt to these impacts (McDowell, 2013). According to Almeida & Jacobs (2022), problems and dilemmas related to this policy intervention, such as, for example, expropriation by resettlement, will affect the livelihoods of the poor. Such research is relevant not only in Mozambique but also in other countries facing climate change issues. The combination of academic and social relevance makes this research suitable for the field of international development studies.

Because this research shows where areas for improvement are, in terms of adaptation policies and their implementation, this research is relevant to the field of international development studies.

The outline of this thesis is as follows; after the introduction, in which the research questions were presented, the theoretical framework is presented in Chapter 2. In this chapter, existing literature on how climate change is shaping adaptation policy is analyzed. The chapter also explains the relationship between adaptation policies and land use changes and land ownership using existing frameworks. This is also done using a conceptual framework to visualize the mutual influences. In the following chapter, Chapter 3, the research methods are discussed, after which Chapter 4 outlines the relevant context in which the research takes place. In Chapters 5, 6, and 7, answers to the research questions are sought through secondary data, discourse analysis, and primary qualitative data analysis. Finally, Chapter 8 presents the discussion, and Chapter 9 presents the conclusion.

Chapter 2 – Theoretical Framework

This research explores the impact of the national climate change adaptation policies of Mozambique on small-scale farmers' land use and land ownership. This chapter starts with the presentation of the themes that are central to this study and analyzes these themes based on an exploration of the literature. After this, the complex relationship between those themes is discussed based on existing theories and illustrated through a conceptual framework. In this way, this chapter provides a theoretical basis for the rest of the study.

2.1 - Navigating through the themes

2.1.1 - Climate change and its (in)direct effects

First, it is necessary to identify what is meant by “climate change”. As this study addresses climate change adaptation policies, it is important to explain what these adaptation policies are based on. According to the United Nations (2023), climate change can be understood as a long-term shift in temperatures and weather patterns. The direct results of climate change are for example, more extreme weather, like floods (as a result of heavy rainfall, or as a result of the rising sea level), long periods of droughts, heat waves, or cyclones becoming more frequent and intensive. But, climate change influences climate policy (this is explained in more detail later in this chapter, see Figure 2) which through policy influences people's lives in the country (Pannell, 2010). The effects of those policies are therefore an indirect effect of climate change on citizens. However, also the perception of climate change can influence people's opinions about the urge of climate change, and how best to deal with this, which also applies to policymakers. However, it does not always require own knowledge about climate change to recognize its seriousness. As studied by Azadi et al. (2019), trust is an important factor in the risk perception of farmers that have limited knowledge of climate change, which is in line with Kellstedt et al. (2008), who argued that “trust facilitates the recognition and understanding of climate change”. Therefore, trust in, in the context of this research, governmental institutions is needed for farmers to adapt to climate change and climate change policies. Climate change policies specifically are discussed later in this chapter.

2.1.2 - Climate change adaptation policies

Climate adaptation policies are created by the government to provide citizens with instruments on how to adapt to climate change. According to Smit et al. (1999), adaptation policies (also called “planned” or “active” adaptations) aim to reduce the consequences of climate change and minimize people's vulnerability to the effects of climate change. Therefore, climate adaptation policies can be referred to as actions taken by the government (or governmental institutions) to “mandate or facilitate changes in socioeconomic systems aimed at reducing vulnerability to climate change” (Burton et al., 2002). As

these policies are created in response to climate change, is it to say that climate change itself is the starting point of (both mitigation and) adaptation policies. The relationships between climate change, its impacts, policy responses, and adaptation measures are illustrated in the following figure, figure 1.

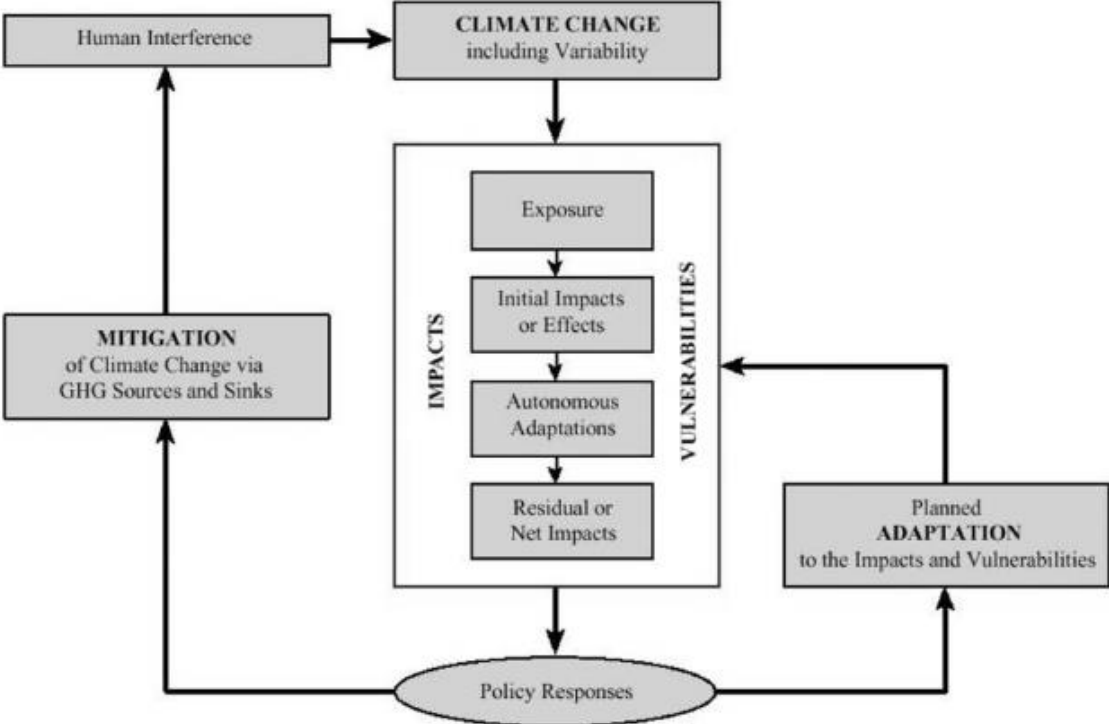


Figure 1 - Mitigation and adaptation policy responses to climate change. Source: Burton et al., 2002, p. 146.

Internationally, there are many differences among climate change policies (Ylä-Anttila et al., 2018). The main reason for this is open for debate, but it is to say that internal indirect factors such as economic structures, macro-political structures (for example the degree of democracy), and self-interest of the country to follow global environmental norms, play a role in this. Together with the pattern of policy-making networks, a combination of the factors just mentioned provides tools for understanding the international differences between climate change policies. Ylä-Anttila et al. (2018) give an example of the differences between Sweden and Finland. Even though the natural environment, political system, and living standards are comparable, the neighboring countries differ a lot when it comes to climate policies. This shows that it is not possible to generalize climate change policies.

However, there are also external direct factors that influence policies. Climate change policies, or climate change adaptation policies more specifically, are being influenced by, among other factors, the climate-related disasters that the country is dealing with. A so-called *focussing event*, which is a sudden, uncommon event that leads to harm and damage (Michaels et al., 2006), can influence the policy. Every policy goes through four stages; the problem statement and setting the agenda, adopting the policy, implementing the policy through legislation, and policy evaluation as the last stage. Climate-related

disasters can influence policy in different stages. A policy may be created based on such a focusing event, or such an event may require an already existing policy to be modified. In the first case, such an event may open a policy window, which can be perceived as a situation that arises when there is more room and opportunity for change within national policy (Michaels et al., 2006). So, in this perspective, climate change-related extreme weather events can create a policy window. This leaves room for evaluation and the renewal of climate policies to ensure that fewer negative impacts are experienced due to climate change. This eventually may lead to fewer policy windows because policies are constantly being improved, and the experience of negative effects of climate change and adaptation policies are interrelated to each other. The goal is therefore to create policies that are successful and that no new policy windows are created. However, it is important to be aware that successful policies are context-dependent. It is important that policies are flexible and kept under constant evaluation (Toreti et al., 2022).

2.1.3 - Land use changes

Land use is characterized by the plans, initiatives, and contributions made by individuals to produce, change, or maintain a specific land cover type (United Nations, 2003). Land use change can arise from both the indirect impacts of climate change (impacts on land use through adaptation policy) and direct impacts without policy involvement. The influence of adaptation policies is explored in Chapter 2.2.1.

Climate change and land use change maintain each other, as climate change can change land use, because land use can change as a response to the degradation of ecosystems (Meyfroidt et al., 2018). The effects of climate change and how people deal with these effects have an influence on how farmers deal with their land. But a change in land use can also intensify climate change, because the constant depletion of agricultural land, is one of the biggest sources of CO₂ emissions (Barati et al., 2023). To stay in the context of the research object, according to Ward et al (2014), growth in the agricultural sector, in particular, has accounted for much of the global land cover change. This may be because with the increase in world population, more food is needed to feed everyone (Wondie et al., 2016), but also because agriculture increasingly needs land due to the deteriorating quality of the land or crops dying due to drought or extreme rainfall (Cianciullo et al., 2023). However, land use change is not only dependent on factors such as a growing population. Farmers themselves have adaptation capacities on which they adjust their land use decisions.

2.1.3.1 - Small-scale farmers' adaptation capacities

However, touching on the impact of climate change on land use, it is worth discussing the adaptation capacity of farmers themselves. These adaptation strategies of farmers also result in a change in land use and are a response to the direct effects of climate change.

The concept of adaptation is context-dependent. Therefore, it is difficult to approach adaptation with one universal definition (Singh et al., 2022). In this research, adaptation capacity is approached as the capacity to adjust in ecological, social, and economic systems, in response to climate change, its effects, and its impacts (Smit et al., 1999). And more specifically, in the context of small-scale farmers, their adaptation capacities are considered as whether they have the (financial) resources to follow the adaptation policy guidelines, or whether they have the capacity to adapt based on their own experiences, knowledge about weather and agriculture, innovativeness and flexibility. The latter is an interesting one since psychological factors play a major part in the understanding of self-protective actions (Grothmann & Patt 2005). Psychological factors like ‘‘people’s values and belief systems, attitudes and perception, positionalities, motivations, goals, and culture’’ (Azadi et al. 2019), influence farmers' decisions making to what extent they will adapt to climate change, and in what way they will do so. For example, when farmers have directly experienced the consequences of climate change, they are more likely to actively act upon and adapt to climate change. Although the psychology behind the willingness to adapt is an interesting study, the focus of this research is not on why they adapt, but more on what small-scale farmers do to adapt to climate change.

Although the adaptive capacity of small-scale farmers is generally considered small (Awazi et al. 2021), there several ways in which they adapt to changing conditions. Adaptive strategies of farmers have been researched in several countries in Africa. Mogomotsi et al. (2020) researched the farmers’ adaptation strategies in northern Botswana which revealed that indigenous knowledge of high influence was in their adaptation choices. This indigenous knowledge, obtained from empirical observations and traditional practices, was used to predict seasonal weather conditions and identification when sowing and harvesting seasons had arrived. Indigenous knowledge is thus used to plan their agricultural calendar. In Ethiopia, small-scale farmers use several strategies to adapt to the changing weather. These include irrigation, modifying planting dates, using alternative crop varieties, conserving soil, and planting trees (Deressa et al., 2011). But, farmers who failed to adapt indicated that the reason was a lack of information on climate change and adaptation methods, a lack of financial resources, or a shortage of land. Farmers in the Limpopo Basin, in South Africa, also have adaptation strategies (Gbetibouo, 2009). Similar to farmers in Botswana (Deressa et al., 2011), farmers in South Africa plant different crops and changed crop varieties (Gbetibouo, 2009). But, also did the farmers change the amount of land under cultivation or grazed, has been invested in livestock, and more attention has been

paid to irrigation, to adjust to the changes in rainfall patterns (Gbetibouo, 2009). But according to Gbetibouo (2009), there are differences between adaptation strategies due to changing rainfall and adaptation induced by changing temperatures. Adopting a new crop variety is a strategy to cope with rising temperatures, while the building of water-harvesting schemes is an adaptation strategy for people who mainly experience the effects of a change in precipitation (Gbetibouo, 2009). These examples show that it must not be forgotten that small-scale farmers, in this example in Africa, are inventive to find adaptation solutions.

According to the United Nations' Intergovernmental Panel on Climate Change (IPCC), adaptation strategies adopted by small-scale farmers are crucial in reducing climate change vulnerability as they enable small-scale farmers to diminish potential damages to their agricultural output (Mogomotsi et al., 2020). National and local governmental institutions should acknowledge indigenous knowledge and should incorporate this and farmers' adaptation capacities into adaptation policies. However, the sole dependence of farmers on indigenous knowledge without due regard for modern and scientific climate change adaptation strategies could lead to low agricultural productivity and reduced food security. According to Deressa et al (2011), farmers who cannot adapt to changing conditions lack information and knowledge.

While trust is an important factor in adaptation behavior, it is also important for governments to disseminate information on various climate change issues, changing weather, and other predictions to farmers at national as well as local levels (Azadi et al., 2019). Knowledge and information are crucial to ensure that adaptation capacity is enhanced (Mogomotsi et al. 2020). Farmers' adaptation capacities should be included in adaptation policies, and these adaptation policies should then be fed back to farmers. So that the importance of indigenous adaptation knowledge becomes incorporated, and those who do not have the knowledge or resources are informed about how they can adapt to the conditions.

2.1.4 – Land Ownership

Land ownership and land rights are closely related. Land ownership can never be absolute (Merlet, 2020), and thus, land ownership is nothing more than having rights over that piece of land, more than someone else. When someone possesses these rights, it is to say that this person has land ownership, even though in some contexts this is not officially true because all the land belongs to the state. However, land rights can be passed on in different ways, which can be done through legal processes or customary law. "Patriarchy and property are closely connected" (Carruthers & Ariovich, 2004), and so properties, and hence land rights and land ownership, can be distributed through family ties. So, there are other factors influencing land ownership, for example, the notion of gender. But, this is not the focus of this study, and therefore the role of gender in land ownership will not be discussed further.

Land ownership and land rights go hand in hand because without land rights, land ownership cannot exist. Governmental institutions are the distributors of these land ownership rights (Feder & Feeny, 1991), which can affect, for example, economic development of a person. To secure land ownership rights, it is necessary to have effective implementation procedures as well as social norms to distribute these rights. Governments therefore play a crucial role in the process of gaining ownership over land.

2.2 - Exploration of the interrelation between the themes

2.2.1 - The connection between adaptation policies and land use change

As discussed, climate change policies can be complex, and the outcomes and successes are context dependent. Both adaptation policies and land use are being influenced by climate change. But land use is also indirectly changed by climate change, when land use change is caused by the creation or implementation of climate adaptation policies.

In a democratic state, implementing climate change policies can be challenging. Since government institutions cannot force farmers to use certain farming techniques, it is more important to encourage the various tools that can be used to in order to adapt (Pannell, 2010). Renewed farming techniques resulted from farmers' reactions to government policies, and thus cause a change in land use. Figure 2 illustrates this relationship, as an governmental body can influence private land-use decisions (box E) through the use of policy mechanisms (box A). These policy mechanisms can consist of more factors than only public policies. Laws and regulations, education, research and subsidies are also included in this analysis in box A, the policy mechanisms. However, it is necessary to acknowledge, that there are more external factors influencing land use decisions, which are shown through box B, C, and F. Nevertheless, this research's focus is on the influence of (adaptation) policies, and therefore mainly boxes A, D, E, G, and H are of importance in this context.

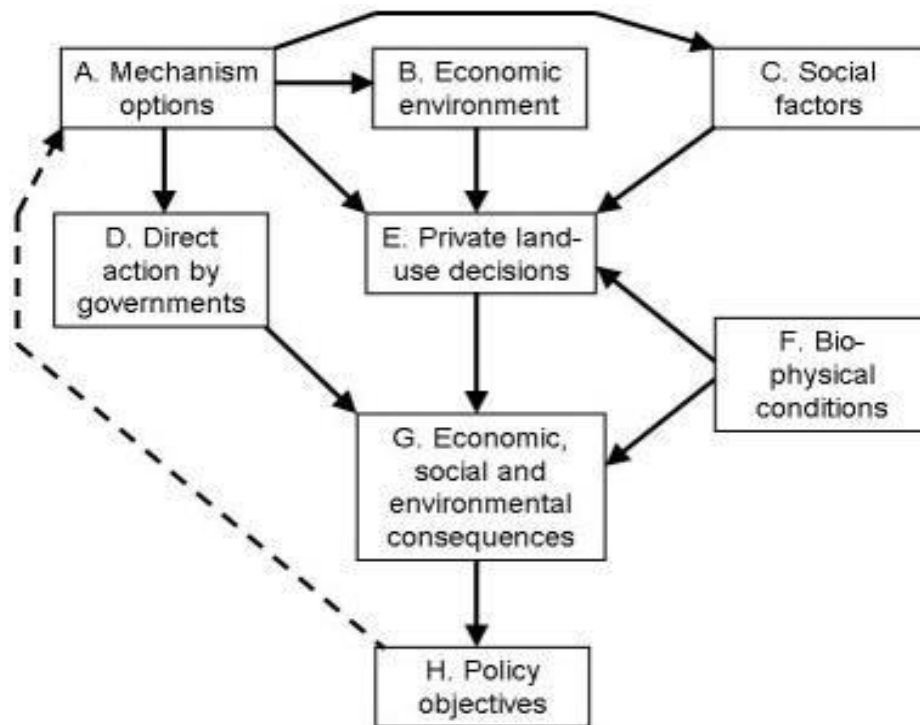


Figure 2: The continuous mutual influence between policy mechanisms (box A) and land-use decisions (box E) Source: David Pannell, 2010.

As illustrated in box G, land use decisions have economic, social, and environmental consequences. These consequences may or may not align with climate policy objectives. If not, the environmental bodies can adjust their mechanisms (box A) in a way that this adjustment will affect boxes B, C, D, E, and G and thus will have the desired outcomes. This is in line with Bruna (2022), who states that “future land use depends on the desired climate outcome”, and therefore land use decisions are influenced by climate goals. Besides government interventions that should lead to the desired climate outcome through changing land use, the government can also do this through more direct actions, illustrated in box D. Examples include actively protecting nature areas or building renewable energy sources (Pannell, 2010). It is worth noting that land use is continuously changing, depending on multiple factors, of which the influence of policy is only one. However, the influence of policy on land use change is a complex phenomenon, which therefore often occurs mainly indirectly.

2.2.1.1 – Agriculture and food security

A topic that is connected with land use, and is discussed further later in this thesis, is the concept of food security. As discussed above, climate adaptation policies affect land use decisions of small-scale farmers. Since the ultimate goal of this research is to contribute to the overall improvement of the lives of small-scale farmers in Mozambique, the improvement of food security is part of this, this concept is worth discussing.

Mozambique is a country facing problems with hunger and malnutrition. Therefore, the improvement of food security has been one of Mozambique's highest priority for years (Militao et al., 2023). But, it is worth noting during recent decades, the definition of food security has changed, with more emphasis on the influence of other factors on availability and accessibility of food, rather than just the quantity of food. In 1996, the FAO, the Food and Agriculture Organization of the United Nations, defined food security as "the situation when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and preferences" (De Oliveira Veras et al., 2021). This definition suggests that other facets of food security are just as important, as having enough food in quantity. To increase food availability and achieve food security, the agricultural sector is crucial (Pawlak & Kołodziejczak, 2020). Because of the direct connection between agriculture and food security, adaptation policies are influencing food security in this way as well. When farmers have more food security, they are thus less dependent on each individual harvest, which is often at risk of failure due to extreme weather. Improving food security, therefore, can contribute to increasing the resilience of small-scale farmers, and is further discussed in Chapter 7.

2.2.2 - The connection between adaptation policies and land ownership

Adaptation in rural areas of developing countries depends on the security of rights and access to land and resources (Castro & Kuntz, 2022). The relationship between adaptation and land ownership works both ways, as to be able to adapt, a certain security in land ownership is needed. But, adaptation (policies) can also affect the security of land tenure. For example, in Montes de María, Colombia, complex land disputes have implications for the adaptive capacity of the local people living there. Land disputes can cause forced displacement (Castro & Kuntz, 2022), pressuring people's land ownership, but the private sector also contributes to this. In particular, extractive industries, like mining companies, buy large areas of rural Columbia in the name of development. Land grabbing, displacement and disputes have a major influence on land ownership in Montes de María. This situation is similar to Mozambique's reality, where in addition to the private sector, the government also has a large share in the insecurity of land ownership. Due to the government's inclination to exploit natural resources, support "green projects", and preserve biodiversity, various groups of peasants and pastoralists experience displacement (Bruna, 2019). Those people are going through an ongoing expropriation process, including losing land, water and forest resources. Consequently, this extractivism (Bruna, 2022), results in an inequitable transformation of the livelihoods of rural communities and an unjust loss of land.

According to Arnall (2019), resettlement as an adaptation strategy is only justified if it meets the following three criteria. The first criterion is that resettlement should be considered as a last resort and should only be applied when absolutely necessary. Second, resettlement must be voluntary. And finally,

resettlement should be approached from a development perspective, which means that resettlement should always mean an improvement in living conditions. It is important to follow these criteria, because failure to do so could have significant consequences, especially with regard to land ownership, as evident in the examples above.

2.3 - Conceptual Framework

The conceptual framework schematically shows the interrelationship between the relevant themes. The conceptual framework is as follows:

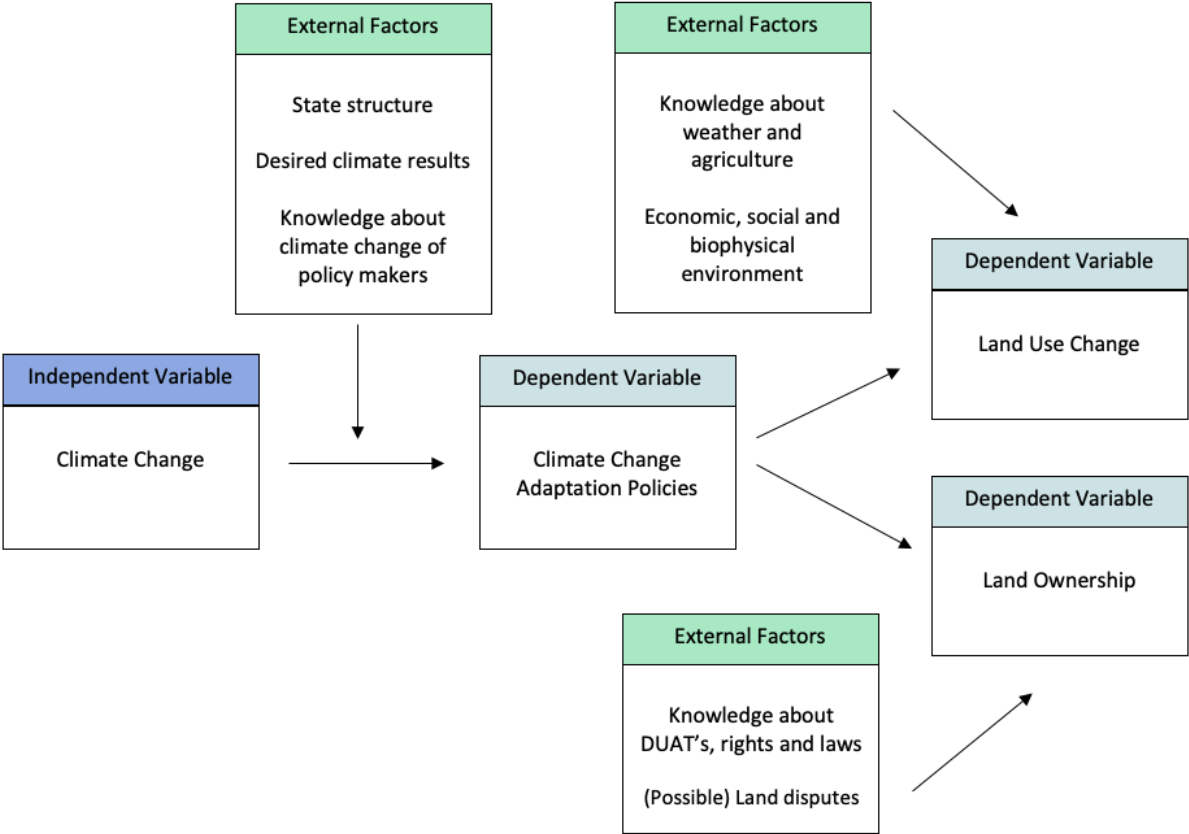


Figure 3: Conceptual framework

Chapter 3 – Research Design and Methodology

This research has been conducted during a timeframe of thirteen weeks between February and May 2023 and has taken place in the provinces of Maputo and Inhambane, Mozambique. In this chapter, the operationalization of the concepts, the research methods, and the limitations are discussed.

3.1 - Operationalization of the concepts

The operationalization of the concepts is based on generally used definitions and the existing literature. Focused on the context of this study, the ENAMMC is used as a starting point. This policy plan was created by the government of Mozambique to protect people from and help people adapt to climate change. For the concept of land use, it is important to specify what types of land this research focuses on. Therefore, the concept of land should be divided into the following two dimensions; agricultural land and land in rural areas. This research is not focused on urban areas and therefore is not considered when talking about land in this research.

Agricultural land is land that is utilized for permanent pasture, permanent crops, or arable land. Arable land is any area that can be used for growing temporary crops, such as grains, grazing, horticulture, or vegetable gardens, as well as land that is temporarily fallow. But, for example, vineyards and orchards are excluded (OECD, 2023). Unlike the dimension of agricultural land, the dimension of land in rural areas is more difficult to define. There is no universal definition when talking about what rural areas precisely are. According to Li et al. (2019), rural areas can be divided into four categories, which are based on the amount of interaction these areas have with metropolitan regions. This research, when talking about rural areas, refers to places where people live outside the city, are mainly self-sufficient, and have little to no interaction with the city. So, to return to the concept of land use, land use is about how people use their land as described above. For example, using land to grow crops or to graze animals. Land ownership, the last concept, can also be divided into two dimensions; ownership in terms of use rights, which is the case of Mozambique called “Direito do Uso e Aproveitamento da Terra”, also known as DUAT, which you can get by applying to the state for a piece of land. And the other form of land ownership is based on customary land rights (Almeida & Jacobs, 2022). But, the Mozambican Constitution excludes people from owning the land in a literal way, because all the land in the country belongs to the state. However, in this research, when talking about land ownership, DUAT or customary rights to use land is referred to.

3.2 - Research design and methodology

Both desk research and field research are used for this qualitative study. For example, government documents, especially the ENAMMC are analyzed, and field trips were made to 6 districts in 2 provinces in southern Mozambique. Interviews were conducted with different groups of farmers in Zavala,

Jangamo, and Inharimme districts in Inhambane province, and in the districts of Manhiça, Boane, and Matutuíne in Maputo province. The size of the groups of farmers varied from n=3 to n=10, and two interviews were also conducted with farmers individually. In addition, interviews were conducted with the Ministry of Land and Rural Development and the Ministry of Environment, interviews were conducted with two staff from the research center Observatório do Meio Rural in Maputo, now abbreviated to OMR, and conversations were held with two civil society organizations, namely AMDER and União Nacional de Camponeses, which is the National Union of Peasants in Mozambique, henceforth abbreviated to UNAC. Following this, the recordings of the interviews were transcribed, coded, and analyzed, with the consent of all the respondents.

3.2.1 - The first stage: preliminary research and analyzing secondary data

The first weeks of the research period in Mozambique consisted of getting to know the partner organization and becoming familiar with the city of Maputo. After this, desk research was done, which consisted mainly of gaining more knowledge on the subject, and analyzing specific government documents, including the ENAMMC. It was important to know more about adaptation policies before the fieldwork began to investigate farmers' experiences. Together with CTV, the focus of the research was narrowed down even more, and decisions were made about which specific institutes would be relevant for the research, and in which specific districts the fieldwork would take place.

3.2.2 - The second stage: field trips and collecting primary data

The next phase of the research started with the preparation for the first interviews with AMDER, OMR, and UNAC, and planning the trips into the field. The interviews with AMDER, OMR, and UNAC were held to collect primary data about the specific research objective in the context of Mozambique and to hear from non-government agencies what the problems are and how everything works. These parties had a lot of experience in the field and could thus provide relevant information, needed to be better prepared for the field trips and the interviews with the farmers. After the field trips, and at the end of the research period in Mozambique, two more interviews were conducted with governmental ministries. The interviews with the Ministry of Agriculture and Rural Development, and the Ministry of Land and Environment provided a different perspective on the situation and therefore relevant to compare with the other data obtained.

Table 1: Overview of interviews with reference numbers and additional information when known.

Interview	Reference Number	Characteristics: Farmers, type of land, type of crops
AMDER	P1	1 man (executive coordinator)
OMR Research Centre – Observatório do Meio Rural	P2	1 woman (researcher)
OMR Research Centre – Observatório do Meio Rural	P3	1 woman (researcher)
Farmers in Zavala	P4	Group of 3: 2 men and 1 woman Wetland and dryland Crops: lettuce, potato, onion, tomato
Farmers in Zavala	P5	Group of 6: 1 man and 6 women Wetland and dryland In the wetlands, lettuce, potato, tomato and salt production because of the salt lake. Corn in the dryland
UNAC - União Nacional de Camponeses	P6	1 man (advocacy officer)
Farmer in Jangamo	P7	1 man Dryland Carrots, cucumber, maize
Farmer in Jangamo	P8	1 man Dryland Cassava, vegetables, mango, melons, papayas
Farmers in Inharrime	P9	Group of 6 farmers: 3 men and 3 women Dryland Garlic, sweet potatoes, cabbages, lettuce, maize
Farmers in Inharrime	P10	Group of 5 farmers: 1 man and 4 women Dryland and wetlands Cassava, avocado, beans, peanuts

Farmers in Manhiça	P11	Group of 4 farmers: 4 men
Farmers in Manhiça	P12	Group of 6 farmers: 6 women
Farmers in Matutuíne	P13	Group of 7 farmers: 7 women Dryland Irish potato, sweet potato, cabbages, union, tomatoes, eggplants.
Farmers in Matutuíne	P14	Group of 4 farmers: 2 men and 2 women Dryland Carrots and green pepper
Farmers in Boane	P15	Group of 5 farmers: 5 men Dryland and wetland Tomatoes, cabbages, onion
Farmers in Boane	P16	Group of 6 farmers: 6 men Dryland and wetland Maize and vegetables
Farmers in Boane	P17	Group of 9 farmers: 4 men, 5 women Dryland and wetland
Farmers in Boane	P18	Group of 10 farmers: 8 men, 2 women
Ministry of Agriculture and Rural Development	P19	Group of 5 staff members: 4 women, 1 man
Ministry of Land and Environment	P20	Group of 3 staff members: 2 men, 1 woman

3.2.2.1 - Sampling

Conscious sampling has been used to select participants. For the researcher, it was hard to approach participants, because of the language barrier, few contacts, not having transportation and for the ministries official requests had to be made. Therefore, the participants were, in consultation with the researcher, selected by CTV, which used their network. Farmers were selected based on the locations where CTV was already working.

3.2.2.2 - Semi-structured interviews

In total, 20 interviews were conducted, which is the main research method. 12 of these were interviews with different groups of farmers, and 2 interviews were done with farmers individually. The specific number of farmers interviewed in each group is listed in Table 1. The type of interviews conducted were semi-structured interviews, based on an interview guide. In this type of interview, there is enough space for the participants to tell their story, and the answers that were given, this in turn was responded to ad hoc, from which new questions arose. This method of interviewing does ensure that each interview is non-identical and that not all the same questions are asked in each interview. The interview guide was modified several times throughout the process based on the prior interviews. The interview guide is added in the appendix.. Before the interviews, the research objective was explained to the respondents, it was ensured that the respondents could stop at any time when feeling uncomfortable, it was fine if they did not want to answer questions, and both the researcher and translator were introduced. Before the interview began, permission was sought to record the interviews so that they could be transcribed and analyzed afterwards, and respondents' privacy was also ensured.

The purpose of the interviews with the farmers was to learn about their lived experiences, opinions, and realities. Therefore, as mentioned earlier, interview guides were created to address specific topics, but to also have enough room for the participants to tell their stories. The interviews with AMDER, OMR and the Ministry of Agriculture and Rural Development, and the Ministry of Land and Environment took place in Maputo, the interview with UNAC was an online interview and the groups of farmers were interviewed in different parts of the country. In Inhambane province, two interviews took place in the district of Zavala, two interviews took place in Jangamo district, and two interviews were held in Inharrime. In the province of Maputo, two interviews were held in Manhiça, four in Boane, and two in Matutuíne. The duration of the interviews varied between 25 and 110 minutes.

3.2.3 - The third stage: analyzing the data

In the third period, analyzing the collected data was the main activity. Using the recordings made during the interviews, the conversations were transcribed. This was followed by the process of coding, which was done manually. The analyzing process of the data is done thematically. Using the themes based on the research questions which are also discussed in Chapter 2, relationships, answers, similarities, and contradictions were examined.

3.2.3.1 - *Critical discourse analysis*

To explore the ENAMMC in Chapter 6, critical discourse analysis is used. According to Bryman (2016), a “critical discourse analysis emphasized the role of language as a power resource that is related to ideology and socio-cultural change”. Critical discourse analysis is a method that is used in social scientific research, and approaches discourses from a political motive, and is therefore suitable for the analysis of governmental policy documents.

Critical discourse analysis (Fairclough, 2015), emphasizes the importance of close analysis of linguistic choices with a theoretical foundation of the context in which the analyzed text is applicable. This combination explores how discourse used in, in the context of this research, policy documents, produces, and reproduces social practices and power relations. For example, “the lives of poor and disadvantaged people are represented through different discourses in the social practices of government, politics, medicine and social science” (Fairclough, 2015), which is showing social differences. Because language is a material form of ideology (Fairclough, 1995), word and language choices say a lot about opinions, goals, and desires. By looking at the language of policies, and using critical discourse analysis, a lot can become clear about the views of policymakers, and thus from which position policies are written. This can explain what policymakers want to enforce with plans.

There are different forms of discourse analysis, which are print text analysis, oral text analysis, and thematic analysis (Mogashoa, 2014). In this research, a thematic analysis is used and is based on the themes of climate change (a), citizens (b), and the government (c). The analysis is based on these themes because policies are based on climate change (a), and thus is the starting point and main topic of the policy. In addition, the policies are made by the government (c) to ensure citizens (b) a comfortable life within the reality of climate change (a). In Chapter 6, therefore, using critical discourse analysis, the interrelationship and mutual (power) relations are explored.

3.3 - Limitations of the research

This section discusses the limitations of the research. The first limitation was a bounded research period. When there had been more time, more interviews with farmers could have been conducted to get a more complete insight into the farmers' realities. The time frame of 11 weeks in Mozambique determined the scope of the research. Another limitation concerns the sampling method when selecting participants. Because, as discussed earlier in this chapter, contacting participants through CTV, only people in their network were interviewed. And the interviews with the farmers were conducted in areas where CTV was already operating. Thereby, it may be the case that farmers gave certain answers because employees of CTV were present during the interviews. The same goes for employees at the ministries that were being interviewed. Both the researcher and the translator had the feeling that during these interviews, mostly "politically correct answers" were given. The translator said that those employers may be too afraid to lose their job when they criticized the government. An example of this was that, when asked about the success of policies in general, the interviewee argued that 100% of the policies are successful. Although she nuanced this answer later in the conversation by saying that not 100% but only 90% of policies are successful, this high success rate is questionable.

In Mozambique, is it still common for women to stay silent when a man is speaking, and it is not usual to go against a man. Therefore, when talking to groups of farmers that were mixed male and female, the men took the lead and women only followed the arguments of the man. It is questionable whether women shared the same thoughts as the men in the group, or that they did not express their own experiences. However, interviews were also held with groups of women farmers, in which they gave their own arguments.

Also, the use of a translator was necessary for this research. The national language in Mozambique is Portuguese, and limited people spoke English, especially in the rural areas. Despite Portuguese being the national language in the country, most citizens do not speak Portuguese and use different local languages to communicate. Different colleagues from CTV were there to translate the conversations from either Portuguese or another local language, into English. Beforehand, the translators knew what the research was about, for them to understand the questions and knew what the goal of the interview was. However, it must be considered that during a translation, relevant information may be lost or there may be misunderstandings. Also, the English skills differed per translator so it sometimes happened that a long answer was given by the interviewee, and the translation of it was much shorter. Finally, the researcher's Dutch background may have influenced the interpretation of the data. This aspect is further discussed in the following paragraph.

3.4 - Ethical reflections and positionality

Before the research started, ethical considerations were made. According to Bryman (2016), ethical principles have been categorized into four main areas by Diener & Crandall (1978):

- whether there is harm to participants;
- whether there is a lack of informed consent;
- whether there is an invasion of privacy;
- whether deception is involved.

To ensure ethical principles, these points had to be minimized as much as possible. To tackle the second and fourth points, before all interviews it was ensured that both the researcher and the research were introduced. In this way, the participants knew before they joined the study, what they were participating in. Participants were also assured that the data would be used for academic purposes only. To ensure respondents' privacy, anonymity was assured before the interviews, and therefore names and other personal details were not documented. Also, all participants were asked beforehand if they agreed with the interview being recorded so that the conversation could be transcribed afterwards. Among the respondents, there was no one disagreeing on this, so, all interviews could be transcribed. Preventing harm was assured by informing the participants about the study in advance, equivalent to informed consent, to ensure that mutual expectations were not contradictory. There was no (financial) compensation for the respondents, but this was made clear to the participants by CTV colleagues beforehand, so there could be no false hope.

As already mentioned, the researcher's Dutch background can influence the interpretation of the data. The researcher's positionality tells something about through which lens the researcher analyzes the data. This can be influenced by personal and cultural background. The anthropological meaning of positionality is about "specific categories of identity that can invoke a kind of cultural relativity" (Robertson, 2002). Besides the Dutch background, there are more personal characteristics that can influence the researcher's position towards participants, and also towards the data. The researcher identifies as female, is a young adult, and external characteristics such as hair color and skin color, can create bias for both the researcher and the participants. Cultural relativism (Spiro, 1986) is important in research like this, and with a background in anthropology, the researcher is familiar with this form of relativism. This contributes to not reasoning too much from the Dutch background. However, it is to note that this can never be completely successful or completely objective, CTV colleagues therefore played an important role in this, ensuring that the mutual expectations were explained, minimizing bias and distance between researcher and participants.

Chapter 4 - Setting the Context

In this chapter, relevant information is discussed to clarify the context within which the research takes place. First, the geographical context is explored together with Mozambique's reality of climate change. The next section considers the Mozambican governance in terms of climate adaptation, and adaptation policies, with a specific focus on the ENAMMC. At last, the profile of the research group is discussed.

4.1 - The geography of Mozambique

The Republic of Mozambique is a country in south-eastern Africa, which gained independence on June 25th, 1975 from Portugal (Cambaza, 2023). Because the Portuguese colonized Mozambique in the 16th century, the national language in the country is Portuguese, but this language is not spoken by everybody. The country is bordered by South Africa, eSwatini, Zimbabwe, Zambia, Malawi, Tanzania, and by the sea, the Mozambique Channel, and has a coastline of 2,700 kilometers, one of the longest coastlines in Africa. The country is divided into 11 provinces of which the capital city of Maputo is also one because of the provincial status, and all provinces are subdivided into districts. The capital, situated in the southern part of the country, has around 1 million inhabitants and is located on the coast. This is the place where the most time during the research was spent, and where the headquarters of CTV is located. In 2021, Mozambique had more than 32 million inhabitants, of which about 65% lived under the poverty rate (World Bank, 2023), and more than 60% depend on agriculture. With 56,3%, estimated in 2018, of the country's surface is agricultural land (CIA, 2023), we can consider Mozambique as an agricultural country, also because agriculture is the sector with a GDP of about 24% in 2017 (CIA, 2023).



Figure 4 – The Provinces of Mozambique. *Source:*
Cambaza, E. (2023), p. 143.

4.2 - Specific research area: the provinces of Maputo and Inhambane

4.2.1 - Maputo province

To narrow down the research area, we zoom in on the two provinces of Maputo and Inhambane, which also can be seen in Figure 4. Fieldwork was being done in different districts in those two provinces. Maputo province, not to be confused with the capital Maputo with provincial status, is the southernmost province and is divided into 8 districts which are shown in Figure 5. The population in this province is



increasing, as between 2007 and 2017, the population increased by 58,3%, divided among the different districts (Raimundo, 2022). A reason for this can be that the districts in this country have an increasing connection with the capital city in terms of infrastructure. Maputo Province and Maputo City are divided administratively. They are nevertheless interconnected and dependent on one another because neither Maputo City nor the Province of Maputo could survive without the other (Raimundo, 2022). For this research, field trips to the districts of Manhica, Boane, and Matutuine were taken.

Figure 5 - Districts of Maputo Province.

Source: Steege et al., (2020), p. 5.

4.2.2 - Inhambane province

The other province focused on, the province of Inhambane, is located along the coastline and has a province capital with a similar name, with about 80.000 inhabitants. The province is divided into 12 districts and two municipalities; Inhambane, the provincial capital, and Maxixe, the city with the biggest population and the economic capital. The province of Inhambane is a major contributor to tourism in Mozambique.



Figure 6: Districts of Inhambane Province. Source: Club of Mozambique, <https://clubofmozambique.com>.

Because it is not too far away from the capital city, the presence of several cities along the coastline, and the beaches where there is the possibility of many different (water) activities, the province attracts thousands of tourists every year (Guambe & Da Silva, 2022). Field trips took place in the districts of Inharrime, Zavala, and Jangamo.

4.2.3 - Land cover

In the whole country of Mozambique, deforestation is a big problem. With 52.4% of the land being forest in 2000, this number decreased to 46.7% in 2020 (World Bank, 2023). In 8 out of 11 provinces, forest land is decreasing while cropland, or agricultural land, is increasing (Cianciullo et al., 2023). One reason for this is that people need increasingly more land to grow an equal number of crops. This is due, for example, to the deteriorating quality of the land, or crops dying due to drought or extreme rainfall. The crops being planted and harvested the most in Mozambique are rice, maize, cassava, and beans, which are very important for the economy of Mozambique and the farmers' economic performance (World Bank, 2017). The agricultural exports from Mozambique are about 515 million US Dollars per year. However, the import is a lot higher. With an average of 922 million US Dollars per year, there is a high agricultural trade deficit (World Bank, 2017).

4.3 - Climate change in Mozambique

Climate change is, like in many other countries, a big problem in Mozambique. Due to its geographical location, a long coastline of about 2700 kilometers, and the downstream of nine big rivers, Mozambique experiences many negative impacts from climate change (Manuel et al., 2021). Extreme weather events such as cyclones, heavy rainfall with big floods as a result, and extreme droughts have become common during the past few years. The floods in 2000, which affected more than 500,000 people, and two cyclones Idai and Kenneth in 2019, which affected more than 800,000 people, were the most outstanding events in terms of extreme weather in Mozambique (Buchir & Detzel, 2022). In Chapter 5, specific climate change-related extreme weather events are discussed, including the effects of this extreme weather on the livelihoods and lived experiences of small-scale farmers.

Climate change has an impact on agriculture, as about 80% of the agriculture in Mozambique is rainfed, and therefore highly dependent on the weather and vulnerable to climate-related disasters (World Bank, 2017). Because agriculture is one of the most important sectors, as it accounts for four-fifths of the country's total employment (Arndt et al., 2011), climate change is influencing a big part of the Mozambican economy. Thereby, the damage caused by climate change also has implications for the national economy. Damage to infrastructure results in long-term problems for the country. For example, "once a road is washed away, its negative effects remain until the road is rebuilt (Arndt et al., 2011).

This leaves other financial resources to continue natural development in other areas. This problem also takes place in agricultural fields. When a plot is flooded, and crops die, it poses a problem for that farmer's family. However, the negative consequences keep piling up as long as the problem is not solved. The problems then grow cumulatively, and the longer nothing can be done about it, the more damage needs to be repaired. According to Arndt et al. (2011), the national welfare declines under climate change scenarios, "highlighting the importance of responding early to mitigate climate change and to adapt to new climate conditions".

4.4 - Governance and climate policies

Mozambique is a presidential democratic republic with the current president Filipe Nyusi being installed in January 2015 and reelected in October 2019. The democratic republic is divided into two spheres of government, the national and local governments. The law system in Mozambique is mixed, with a combination of Portuguese civil law and customary law (CIA, 2023).

4.4.1 - Climate policies on national and international level

Like many other countries, Mozambique is a signatory to international treaties when it comes to climate change. For example, Mozambique has signed the Paris Agreement, to acknowledge the importance of an international approach to combat climate change (OCHA, 2016). Mozambique has made significant attempts to include these climate change considerations in national development planning ever since ratifying the United Nations Framework Convention on Climate Change (Manuel et al., 2021). The government of Mozambique also created national policies regarding climate change. The national plan which is the starting point of this research is the *Estratégia Nacional de Adaptação e Mitigação de Mudanças Climáticas*, the National Climate Change Adaptation and Mitigation Strategy (ENAMMC). This document consists of mitigation and adaptation plans for climate change, for the time frame from 2013 to 2025. To be more specific, the ENAMMC is divided into three pillars; adaptation and climate risk reduction, mitigation and low carbon development, and cross-sectoral issues. However, this research only focuses on the adaptation plans of the ENAMMC. With adaptation plans, the goal is to reduce climate risk. This can be done in several ways, and 12 were highlighted in the ENAMMC. These 12 strategic actions are as follows;

1. strengthen early warning systems
2. increase capacity to prepare responses to climate risk
3. increase capacity to manage water resources
4. increase access and capacity to capture store, treat and distribute water
5. increase the resilience of agriculture and livestock
6. increase the resilience of fisheries
7. guarantee adequate levels of food security and nutrition
8. increase the adaptive capacity of vulnerable people
9. reduce people's vulnerability to CC-related vector-borne diseases
10. promote mechanisms for the planting of trees, and establish forests for local use
11. develop resilience mechanisms for urban areas and other settlements
12. suit the development of tourist zones and coastal zones to reduce the impact of CC

Of these, points 1, 2, 5, 7, and 8 are the most relevant because they were most discussed or experienced during the research and field visits.

4.4.2 - Preparation and ad hoc responses

As argued in the theoretical framework, focussing effects have a big influence on the content of policy (Michaels et al., 2006). Emergency responses to reduce the consequences of extreme weather are also one of the adaptation plans in the ENAMMC. The 2000 floods are remembered by many Mozambicans as one of the worst floods ever. With 699 deaths and more than 4.5 million people affected, it was the climate-related disaster that caused the most deaths within a year (ENAMMC, p. 7). As these types of climate-related disasters become more frequent, the ENAMMC states that it is important to increase the capacity for people to prepare for these types of events, and improving early warning systems can help in this regard. One form of increasing capacity to respond to climate change for people is also seen by the government as, for example, having people live in a less risky place. An example of this is that the government is advocating that people should live in upland areas so that when a flood comes, these people will either not be affected, or will have more time to move to safer zones. Improving the warning systems should ensure that warnings and information come earlier, in greater detail, and reach more people. However, the fact that Mozambique is multilingual may be a challenge here. In Mozambique, the National Institute for Disaster Management, now abbreviated to INGD, is responsible for responding to disasters. This party coordinates disaster risk management activities and operates under the Ministry of State Administration. The INGD focuses on preventing people from being affected by climate-related disasters, as well as on post-disaster rehabilitation and humanitarian assistance (ENAMMC, p. 8).

To conclude, this chapter provided information to understand the research area. The geographical context of Mozambique emphasized how vulnerable the country is to climate-related extreme weather events. The two specific provinces this research focuses on are Maputo and Inhambane, where field trips have been undertaken for a deeper understanding of the lived experiences and challenges that small-scale farmers are facing. Because climate change, especially floods, droughts, and cyclones are such a problem for the country, the government has drawn up the ENAMMC. These adaptation plans aim to reduce climate risks and build resilience among vulnerable communities.

In the following chapters, the impacts of climate change-related weather events, and the influences of the adaptation policies on farmers are discussed.

Chapter 5 - Climate Change and Farmers' Live Experiences

Local farmers are one of the most vulnerable groups to climate change (Manuel et al., 2012), and there are different ways in which they experience these negative impacts. Focusing on the impact of climate-related weather events, and therefore based on the following research question; “*How are Mozambican small-scale farmers affected by climate change?*”, this chapter emphasizes the lived experiences of local farmers, and discusses their vulnerability and resilience concerning these weather events.

5.1 - Climate change related extreme weather events

In addition to what is discussed in Chapter 4, the extreme weather that small-scale farmers experience most, in the context of this research, is discussed. Using primary data from the field, the lived experiences are analyzed to identify the negative consequences of the extreme weather on the livelihoods of small-scale farmers.

There are different ways in which farmers are being affected by climate change. There are direct impacts, in which you see the climate vulnerability in rural livelihoods and decreasing production, and for example the displacement of people. But also, indirect impacts, which are the implications of the implementation of climate adaptation and mitigation policies are discussed in Chapter 7. During the research period, it is found that the forms of extreme weather that participants were most affected by are mainly floods (due to rising sea levels, but also due to extreme rainfall) and long periods of droughts. These two extremes make water management a challenge for many farmers in Mozambique, which is also confirmed by the respondents in this research. Besides floods and periods of droughts, respondents also experience problems with cyclones, as these storms bring a lot of damage to houses, crops, land, and other properties.

5.1.1 - The problem with water

During the research period, both the OMR researchers, as well as by various participants, references were made back to the extreme floods in 2000. From personal experience, it can be said that in February 2023, during the first week of the research period, there were severe flooding events again. Especially in Matola, a small town next to Maputo, and in Boane district, about a 45-minute drive from Maputo, 16,500 people had to be evacuated (OCHA, 2023). During field trips to Boane, P15, and P17 expressed their experiences with these floods. *'This year is dramatically. More than in the year 2000'* (P17). These participants indicated that too much water was the biggest problem and challenge for them, as they explained their losses. *'Especially this year, it has been strange, they were suffering, since they are suffering from water, but this year was very strange. Because this place where we are sitting now*

was completely full of water. Even the materials that they use in agriculture were broken down because of the water. We lost more than 14 hectares of crops, because of the floods that affected very much this year” (P15). In this particular case, large amounts of water came from the Umbulus River, bringing large amounts of salt. As a result, the salinization of the land prevents crops from growing properly and is making the land less fertile. Even though those floods happened at the beginning of February, at the end of March, when field trips in Maputo province took place, many agricultural fields were still completely underwater.



Figure 7: Agricultural field under water in Boane district, Maputo province. Taken on March 31, 2023.

As a result, participants stated that they do not only lose crops or fertilizers, they also lose essential production time. Respondents in the district of Manhiça argued that they have to wait until the water has disappeared. *“We return to our fields when the conditions are better again”* (P12). Resulting in these farmers cannot produce, which directly affects their lives in terms of lack of food, but this also affects their economic performance, as the agricultural sector is the main source of income for these farmers.

5.1.2 - The problem with lack of water

In addition, besides too much water, lack of water is also a problem for many farmers. It is worth noting that the research period took place in the rain season, and therefore long periods of droughts were not personally experienced or witnessed, however, the participants shared their experiences with the lack of

water and the consequences. After a long period of floods, when the dry season arrives, farmers do not have enough water to use for their fields. The large amounts of water from the previous period cannot be collected and used when needed in the dry season. Participants argued that these periods of extreme weather, both in the rain season and in the dry season, have affected their farming activities. *“These rainfall irregularities have affected the agricultural calendar. This calendar is affected because of climate change”* (P19). During interviews in Matutuíne, farmers shared that the lack of water is influencing their land, because the crops they produce need a lot of water. *“Using the bucket is not enough for the crops to grow”* (P13), resulting in implications for both food security and economic gains. P12 argued that they were worried about the future, as they now notice that there is less and less water, and they are afraid that water will be accessible in the dry periods.

Several participants, therefore, expressed the need for an irrigation system (P4, P9, P10, P11, P12, P13). An irrigation system would be necessary in both the rain season, when farmers have to cope with large amounts of water, but also in the dry season, when water is scarce. However, many farmers do not have the resources to create or buy an irrigation system. Although P9 and P10 indicated their willingness to pay for an irrigation system, *“even this process, the irrigation process they need, they don't need it for free, they are able to pay, because they know that they want to work, and they really depend of this. But they are ready to pay”*(P10), no opportunity has yet been found for these farmers to gain an irrigation system. But, not only an irrigation system is needed, but also the skills and knowledge to possibly deploy a system in the future. P12 argued that they *“don't have the knowledge and strategies to use this water for irrigation of the fields”*. They need help to secure production and improve food security (P12). Both in facilitating and transferring the skills and knowledge to use the systems, the government could take an active role. But, this is included as an action point in the ENAMMC, and is discussed in more detail in Chapter 6.

5.1.3 - Cyclones, a combination of rain and wind

In addition to problems with water, Mozambique is experiencing cyclone season every year from January to March. In the field, respondents often mentioned cyclones and the negative effects they are experiencing. However, P10 argued that due to the changing climate, it is increasingly difficult to determine when there is a risk of a cyclone, as they come more often, more violently, and more unexpectedly. *“What they see is changes in things like, they have more rain in the time that it was not expected to have more rain. And they have storms in a time it was not expected to have storms”* (P 10). Respondents experience problems from the heavy rains a cyclone brings because the large amounts of water destroy the land or houses. But the wind itself also has an enormous impact. Crops blow to pieces or are completely pulled out of the ground, houses are damaged as the roof is blown off, or trees blow over and fall on farmers' properties, which for them often means rebuilding everything from scratch. *“What happens if a person loses the house, after the cyclones, they go to the bush, bring new materials”*

(P5). From this position it is very difficult to get back to the same level of, say, production or living standards, and *‘it is almost impossible to fully recover after this situation’* (P 10).

5.2 - Farmers’ coping mechanisms

Despite the impacts that these forms of extreme weather can have on farmers, the research shows that these farmers look for alternatives, to cope with the problems, they experience. For example, during the field trip to the district of Zavala, respondents (P5) showed how they take advantage of the salination of a lake on their land borders. These farmers have started salt production and trade in addition to engaging in agricultural activities, as shown in Figure 8. This salt production contributes to more economic security because since this salt is sold on the local market, this group of respondents is not solely dependent on income from the agricultural sector. Also in Manhiça district, one group of respondents argued that because of the changing weather, and that they could no longer remain solely dependent on agriculture, they started doing other activities. P12 reported being increasingly engaged, complementing their agricultural practices.



Figure 8: Storage of salt that is produced by the respondents (P5) in Zavala district, Inhambane province. Taken on 20 March 2023.

To conclude, as discussed in this chapter, climate change, and the extreme weather resulting from climate change, are impacting the livelihoods of small-scale farmers. Not only does the increase in heavy rainfall, floods, cyclones, and droughts cause a decrease in production on agricultural land, but these weather events also cause a growing vulnerability among those farmers. For instance, farmers report that their land gets flooded and is still under water after months, heavy winds cause their crops to be damaged, and drought makes crops unwilling to grow. These impacts of weather also affect farmers' economic stability, as agricultural practices are their way of generating income for many farmers. Several of the interviewed farmers indicated that despite the little support from the government, they have found ways to cope with this extreme weather. For instance, farmers have started fishing, using other crops or started salt production. However, farmers in this research group remain vulnerable to climate change.

Chapter 6 - Analysis of the ENAMMC

The Mozambican government created several policies and plans in order to cope with the climate change problem. As already briefly discussed in the contextual chapter, the *Estratégia Nacional de Adaptação e Mitigação de Mudanças Climáticas*, or National Strategy for Adaptation and Mitigation of Climate Change, abbreviated to ENAMMC prepared by The Ministry of the Coordination of Environmental Action, presents both mitigation and adaptation policies. This chapter addresses the following research question: *“What climate change adaptation policies are implemented by the Mozambican government?”*.

Using critical discourse analysis, this chapter looks at the social and political dynamics behind the policy and its implementation. This chapter identifies the discourses used to represent the plans, the people it affects, and the desired outcomes. These discourses are interpreted based on Mozambique's political system as a country, which is a democratic state (World Bank, 2023). This chapter discusses the adaptation strategies, followed by the discourse analysis per action point. A specific part is devoted to the implementation strategies of the policy plans, which is also followed by an analysis.

6.1 - Adaptation plans in the ENAMMC

The Government of Mozambique acknowledges the impact of climate change on the country and its national development, nature, and society. Therefore, adaptation policies have been developed to both build and enhance the resilience of the Mozambican people. These plans must also protect natural and physical capital in the country, and commitments under the United Nations Framework Convention on Climate Change (UNFCCC) must be complied with.

This critical discourse analysis is divided into 4 sections (based on the ENAMMC action points central to this chapter) which represent the discourses that are used concerning 3 areas of representation; climate change, citizens, and the government. This is about the relationship between climate change (a), citizens (b), and the government (c), on which the ENAMMC is based. In the ENAMMC, climate change (a) is seen as something that needs to be encountered, or at least something that has much influence on daily life, and solutions need to be found to adapt to it. Citizens, (b), are seen as the group that needs to be protected from climate change, as climate change is a threat, and they need governmental policies (c), to do this. The subchapters first summarize the content of the specific adaptation plans, which is then followed by the critical discourse analysis and the roles of the three represented areas.

In the ENAMMC, there are 12 action plans, already briefly mentioned in Chapter 4. However, this research focuses on 5 specific actions. This choice was made because these 5 action points from the ENAMMC most closely resemble the primary data collected during the field research, and thus an

inductive choice is made here. These specific 5 actions are as follows: strengthen early warning systems; increase capacity to prepare responses to climate risk; increase the resilience of agriculture and livestock; guarantee adequate levels of food security and nutrition; increase the adaptive capacity of vulnerable people (ENAMMC, section 4.6.1). For each action point, the areas of representation; climate change (a), citizens (b), and governmental policies (c), and thus the relationship between these three points will be discussed.

6.2 - Strategic action 1: Strengthen early warning systems

6.2.1 - Summary of action point 1

In the past, the lack of a functioning early warning system has contributed to many setbacks in terms of preparedness for extreme weather events like tropical storms, floods, and droughts. As a result, climate change has impacted several areas within society such as infrastructure and the agricultural sector (ENAMMC, p. 24). Especially in rural areas, where there is a lack of climate information and sources to get information from, for example, the radio, people are less prepared. The warning systems can be improved by distributing funds to NGOs or donors who can contribute to setting up, improving, and mobilizing the flow of information. It is also recognized that strengthening the position of institutional operators is important to carry out relief operations before, during, and after a disaster (ENAMMC, p. 24). In the context of Mozambique, the National Institute for Disaster Management, the INGD, is responsible for responding to and acting upon disasters. Thus, according to this strategic action, strengthening the position of the INGD will be able to contribute to the reduction of climate risks. According to ENAMMC, adequate and early weather information must be passed on to as many people as possible, including local communities, and the best way to reach as many people as quickly as possible should be figured out. This should consider that Mozambique is a multilingual country (ENAMMC, p. 24).

6.2.2 - Analysis of action point 1

In this action point, the three areas of representation are clear to see. First, climate change is associated with risk, extreme weather, and something citizens need to be protected from. This word choice ensures that the seriousness of climate change is directly known, and is evoking that something must be done about it, otherwise, the country is at risk. This acknowledges the importance of (adaptation) policies like the ENAMMC and can justify the interventions contained in this plan.

In addition, the representation of citizens is not very present. The ENAMMC speaks about the influence of climate change on citizens, and that something has to be done about it. Citizens, and especially people in rural areas, are portrayed as passive subjects where climate change happens to and overwhelms them. Here, ENAMMC indicates that rural communities cannot prepare for climate change, as long as the

warning systems are not properly working. The government plays a crucial role here because improving warning systems could prepare communities, which is the responsibility of the government. The government is thus leading in this intervention, playing an active role. Although the ENAMMC states that besides the government, NGOs and donors can also play a role in improving these systems, it is the government that assigns this role to certain parties. Thereby, the fact that institutional operators, and in the case of Mozambique the INGD, can play a significant role in disaster management, increases the responsibility and therefore the power of the government.

The discourse and thus representation of climate change, the citizens, and the government show the power relations between them. The citizens (b) are described in this action point as the passive actor, subject to the danger of climate change (a), who must wait for the government (c) to come to the rescue. This analysis is extended further in the next session, as action point 1 and action point 2 have commonalities.

6.3 - Strategic action 2: Strengthen capacity to prepare for and respond to climate risks

As mentioned, action point 1 is an extension of the action point under discussion in this section. The resulting analysis will therefore include a discussion of both interventions and is complementary to the analysis discussed on early warning systems.

6.3.1 - Summary of action point 2

Strengthening the capacity to prepare for and respond to climate risk must be enlarged by expanding INGD's influence in the coordination of operations, evacuations, reconstruction, and support for victims (ENAMMC, p. 25). The Multiple Uses Resource Centre (CERUM) must contribute to this and can assist the INGD in information gathering. Expanding CERUM's role can provide a better mapping of vulnerable areas and can identify what help is needed and where. CERUM and the INGD working together will ensure better relocation and protection of people and property, and therefore should continue to work together to the improvement of the capacity to prepare and respond, and provides the provision of resources and equipment to accomplish this (ENAMMC, p. 25).

6.3.2 - Analysis of action point 2

While this action point mainly highlights that increasing the role of INGD, which is similar to the previous action point, will help improve responding to climate change, it does not address the active role citizens can play. Action point 1, the improvement of early warning systems, in which INGD also has a key role, can be assumed as part of this action point, which discusses responding to climate change in general terms. The representation of climate change (a) is in this sense similar to the previous action

points, as well as the passive position of the citizens (b). Again, the government (c), and in this case the INGD specifically, is portrayed as the party that has the responsibility, but also the power to fix the climate change threats. When it comes to evacuation, it is not in consultation with citizens, but rather CERUM and INGD determine who should be moved where. In doing so, the discourse in these two action points suggests that there is no consideration or room for the resilience of the farmers themselves. This again creates the idea that the ignorant citizen, prey to climate change, must be rescued by the powerful government, which has all the facets to reduce the risk of climate change.

However, this does not match the political nature of the Republic of Mozambique, which is a democratic state. The discourse in the ENAMMC implies that citizens can only deal with climate change when the government is helping them, with no agency. This can create undesirable outcomes because interventions are not consensual.

6.4 - Strategic action 5: Increase the resilience of agriculture and livestock & Strategic action 7: Assure adequate food security and nutrition

6.4.1 - Summary of action points 5 and 7

These two action points are discussed together because, in the case of Mozambique, the resilience of agriculture and livestock is directly related to the assurance of food security and nutrition. Mozambique is a country with different agro-climatic zones. As a result, interventions must be tailored to the different areas with different agro-climatic characteristics. Because there is generally less rainfall in the south, but more on an irregular basis, the emphasis here should be on water management. Examples of water management are for example using irrigation systems and other forms of water collecting at large- and small-scale levels. But in the north of the country, more precipitation is expected, and actions should be focused on selecting and deploying crops that bring high productivity despite that weather (ENAMMC, p. 26). The conservation of agricultural land and the promotion of resilient crops is of great importance. This, combined with improvements in water management, should contribute to increased food security and nutrition (ENAMMC, p. 26).

An increase in the resilience of agriculture and livestock is an important intervention area since agriculture is very vulnerable to climate change in Mozambique. Farmers lose their crops and thus their economic stability and their livelihoods are at risk due to extreme weather such as droughts, floods, and cyclones. Crops should be introduced that are more resistant to climate variation, which should lead to the diversification of crops, and this will lead to an increase in nutrition. Making new technologies available should increase productivity, which in turn should contribute to food security. Because many farmers also own livestock, diseases among crops and livestock must be controlled and eradicated (ENAMMC, p. 27).

In addition to the introduction of better crops to increase food security, more interventions are needed to take food security and nutrition to the next level. For example, a big part of food security is the availability and accessibility of food. The mechanisms for distribution and transport must therefore be improved, as well as knowledge about nutritious food. Here, according to ENAMMC (p. 28), the development of nutritional education programs and the promotion of the use of local foods will also contribute to the management of food surpluses. An improvement in food security and nutrition makes people less dependent on crops that are vulnerable to climate change. An increased food security and nutrition score, in turn, contributes to Mozambique's overall national development.

6.4.2 - Analysis of action points 5 and 7

The improvement of agriculture is seen as an important sector not only for crops to assure food security, but also for a large part of the economic performance of farmers. The introduction of resistant crops, which in addition to food security also leads to diversification of crops, is a task for the government. The same goes for the technologies that increase production. In this action point, the influence of climate change on agriculture is discussed, but there is no room for farmers' own adaptation possibilities, and how they assure food security for themselves. The discourse in this action point implies that farmers should wait until the government develops better technologies that can make agriculture more resilient. However, people working in agriculture themselves are again represented as the group that should wait for the government to intervene.

In doing so, these technologies should contribute to improving food security and nutrition. But in addition, mechanisms of distribution should be improved to increase availability and accessibility, and education about food should contribute to public awareness. So, in this action point, the role of the government is to educate people on what healthy food means, and the importance of food security. Again, the government is portrayed as an omniscient body that has to tell citizens, many of whom in Mozambique are farmers and thus work and live with food day in and day out, how food security and nutritious food are important for the individual but also national development.

Nevertheless, these points do not explain what techniques can help improve agriculture, and how they can ensure the nutritional values of these crops. The action points remain fairly superficial, and a clear roadmap is not mentioned.

6.5 - Strategic action 8: Increase vulnerable people's adaptive capacity

Social protection can improve the resilience of vulnerable groups to the negative impacts of climate change. Climate change will cause more population displacement, more migration, and more poverty (ENAMMC, p. 29). More social support and protection should improve the resilience of vulnerable groups. This support is in the form of money transfer programs, but also by building dams and irrigation canals.

6.5.1 - Summary of action point 8

Increasing vulnerable people's adaptive capacity can be done in several ways. As discussed earlier, Mozambique is a large and diverse country, and therefore adaptation plans must also be created within the context of the situation to which these plans are going to be applied. Therefore, it is important to innovate community-based adaptation approaches. These approaches can help to strengthen already existing climate change-related social protection systems. It is important to link these social protection systems to the improvement of early warning systems.

6.5.2 - Analysis of action point 8

Action point 8 is more of a general action point rather than a targeted intervention on how to better prepare people for the consequences of claiming change. Unlike the other action points, the importance of community-based approaches is mentioned here, implying the importance of the context in which a community is located. However, there is no further mention of what these approaches entail and what the role for communities will be. The importance of social protection is thus named because climate change has many negative consequences, and is thus again represented as something "dangerous". But an active role for citizens or communities is not mentioned here.

To conclude, in all these action points discussed, it is to see, how it is described in the ENAMMC, that the government (c) plays a leading role in protecting citizens (b) from the negative influences of climate change (a). While this may seem logical, as public policy is written from the government's leading role, there is something to be critical about, namely the discourse used in the ENAMMC. There is little room for an active role that citizens can contribute to these climate issues, and citizens are mainly represented as the wait-and-see party, with climate change happening to them, and which the government has to rescue them from.

Because all of these areas are interrelated and dependent on each other's success, these strategic actions will need to be aligned. Because of this interrelationship, there is much overlap between the various strategic actions just listed. After the policies are in place, implementation must be properly coordinated.

“Because even if the policy is good, the implementation is bad, then the policy is bad and the implementation is still bad” (P2).

6.6 - Implementation of the adaptation policies

Correct implementation of the policy is at least as important as creating the policy itself. Therefore, there is effective coordination needed to maximize synergies and close gaps across sectoral responses, allowing effective communication and information flow. The ENAMMC describes that several implementation mechanisms are interrelated. These elements are as follows; coordination (COORD), implementation (IMPLEM), management and evaluation (M & A), knowledge management (Gestão do Conhecimento), and financing (Financiamento), which is illustrated in figure 9 (ENAMMC, p. 47). Meaning that the elements of coordination, implementation, management, and evaluation keep each other running, depend on each other, and are an ongoing process.

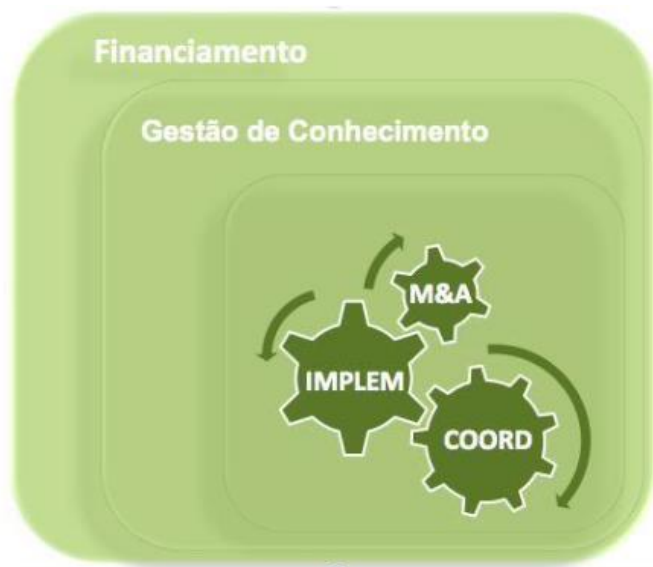


Figure 9: The implementation mechanisms of the ENAMMC, p. 47.

6.6.1 - Summary of the implementation strategies of the ENAMMC

For the different implementation mechanisms, different parties are responsible. The Ministry for the Coordination of Environmental Affairs is primarily responsible for the coordination and subsequent mechanisms of both mitigation and adaptation policies and is also the UNFCCC focal point. Within this ministry, there are again different parties specifically responsible for both coordination and financing (6.6.5). The Climate Change Unit directs the various mechanisms, for which other parties are responsible, and the Financing Coordination Agency is responsible for the financial aspect of the implementation. The Climate Change Unit is responsible for the connections and cooperation between the different mechanisms and the responsible parties. These inter-party connections are relevant because

climate change affects different, if not all, aspects of society, and thus different parties play a crucial role in the process of climate change adaptation (ENAMMC, p. 51).

Implementation of the ENAMMC is done by different actors. Both parties in the public and private sector, civil society organizations, and other partners. The ENAMMC identifies several possible intervention areas and actions per actor that will be briefly discussed. It is the responsibility of the government (and its agencies) to establish policies, regulations, and other projects related to climate change. The private sector can contribute by taking responsibility for, managing, and promoting their carbon emissions. Companies can also include climate change risks in their business plans, allowing them to respond to these risks and increase the overall resilience of the country. Community-based organizations can help add local knowledge about climate change to scientific knowledge, which is in line with Mogomotsi et al. (2020), as discussed in Chapter 2.1.3.1. And they can implement specific adaptation measures appropriate within the context of different communities. In addition, the media can play a major role in disseminating information on both weather forecasts (thus contributing to the improvement of early warning systems, see section 6.2) and more general climate information, allowing citizens to become more educated about these subjects. Nevertheless, it is worth noting that this enumeration is not exhaustive and complete (ENAMMC, p. 52).

As for the general coordination (6.6.1), the Climate Change Unit is also responsible for monitoring the implementation of the policies. This unit is responsible for the continuous collection, documentation, archiving, and management of information that is needed for the process of evaluation (ENAMMC, p. 53). However, these tasks are again divided into different themes, and different parties are responsible for the tasks within these themes. Nevertheless, according to ENAMMC, more investment is needed to develop a monitoring system that not only monitors the actions and changes but also evaluates the adaptation and mitigation policies, to keep improving the policies in an ongoing process. Only when this system works in this way will these plans be of a long-term nature, and can be adapted to the ever-changing environment (ENAMMC, p. 54).

As already mentioned, the Centre for the Management of Climate Change Knowledge is responsible for knowledge management regarding climate change. This center will rely on already existing entities and will therefore be complementary to existing knowledge institutions. The center will collect information produced by different institutes and are mainly responsible for both processing and disseminating this knowledge (ENAMMC, p. 55).

The last part of the implementation plans, and certainly one of the most important, is the financial aspect. Financial resources are needed to create and implement mitigation and adaptation policies. The Financing Coordination Agency is responsible for the financing of these plans. However, this is a

challenge for Mozambique and therefore several additional funds are necessary. Utilizing fundraising projects, the intention is to raise enough money to realize the adaptation plans. Potential candidates for fundraising will be identified and contacted by both the Financing Coordination Agency and the Climate Change Unit. These can also be foreign investors. However, it is the task of the Financing Coordination Agency to monitor, evaluate and submit reports on those projects to the Climate Change Unit (ENAMMC, p. 57).

6.6.2 - Analysis of the implementation strategies of the ENAMMC

It can be seen that many different parties are involved in the implementation of ENAMMC. Therefore, these parties have to maintain a lot of contact and cooperation among themselves, but it can also create ambiguity. The bureaucratic nature of the organization, as discussed in paragraph 6.6, of both developing the plans and implementing the plans can cause problems. There are many parties involved in the whole process, and many of these parties had yet to be established at the time the ENAMMC was written, such as the Centre for the Management of Climate Change Knowledge. Given the presence and role of the multitude of parties, this can slow down the enactment of policies, and take a lot of time. However, the role of citizens (b) is not mentioned in the ENAMMC implementation plans, which is consistent with the discourse in the description of the policy plans themselves.

To conclude, a critical discourse analysis provides the opportunity to look at the linguistic choices of the ENAMMC, and how these choices expose the incongruent power relations between the different actors involved. In both the strategic action plans and the implementation of these plans, citizens (b) are represented as a passive factor represented by the government (c) of the dangerous effects of climate change (a). This way of representing can eventually lead to a self-fulfilling prophecy, where citizens indeed can no longer do anything without government intervention, which does not seem to be the purpose of the ENAMMC. A self-fulfilling prophecy can be defined as “that what a person believes about him/herself (or what others believe about them) will influence their performance. The self-fulfilling prophecy can act positively or negatively, depending on whether expectations are positive or negative” (Vanderlaan, 2011). And therefore, the way of representation, and having certain expectations, can affect the outcomes. The way the various factors are represented suggests that there is little cooperation between citizens and government, although this should be the case in a democratic state, which is what the Mozambican government states to be. Moreover, the fact that the plans must comply with UNFCCC guidelines and that the implementation process must be accountable to the UNFCCC indicates that there is an influence of the United Nations on climate adaptation policy.

In addition, there is a splitting of different action points that correspond to each other. However, because of this separation, the plans are presented as separate actions leaving the definition and plan of action vague. The same applies to implementation. There are many parties involved, all with their task and role

in different implementation mechanisms. Nevertheless, it is unclear how the plans are going to be implemented and realized. In addition, this way of making, presenting, and implementing policy does not fully correspond to the democratic state Mozambique wants to stand for. In that case, the active role of citizens should be recognized, and the fight against climate change should take place in cooperation between citizens and the government.

The next chapter looks at the effects of climate adaptation plans discussed in this chapter on land use decisions and land ownership in the rural areas of southern Mozambique. This includes lived experiences of small-scale farmers who have been affected by these policies.

Chapter 7 – The Influences of Adaptation Policies

In this chapter, the influence of adaptation policies on land use and land ownership of small-scale farmers in southern Mozambique is discussed. The structure of this chapter is based on the themes identified and discussed in the theoretical framework and thus discusses adaptation policies and land use, and the interrelationship between those themes, and adaptation policies and land ownership, and this interrelationship. In addition, a specific paragraph is devoted to the impact of the implementation of these plans on land use and land ownership. This chapter focuses on the following research question: *‘How are land use decisions and land ownership of small-scale farmers in the Mozambican provinces of Inhambane and Maputo affected by climate change adaptation policies?’*

During this research, all respondents were asked about their perceptions of climate change, the role the government has to protect them against and help them adapt to climate change, and how this is affecting their land use and land ownership. As the respondents can be divided into different categories, groups of farmers, civil society organizations, and ministries, and their realities differ, the case was presented from different angles. However, it is important to note that the groups of farmers are not homogeneous, and that answers that were given can be considered as anecdotal evidence, and therefore not generalizable. The circumstances of their lives, agricultural land, and activities are not exactly the same. This should be considered when interpreting their answers and the data in this research. However, some experiences are similar, and therefore the information these farmers provided can be seen as complementary to each other.

7.1 - Adaptation policies versus land use

Climate change adaptation policies are influencing small-scale farmers' land use decisions in different ways. An example of this is the use of other seeds, to improve crops, as mentioned in Chapter 6.4. However, these interventions have (unintended) effects which have implications for local and national development. Changing seeds, for instance, can have implications for food security in Mozambique.

7.1.1 - The use of different seeds

First of all, climate change adaptation policies promote the use of different, ‘improved’ seeds. One of the action points from the ENAMMC, strategic action 5, focuses on increasing the resilience of agriculture and livestock, which should be done based on mainly crop improvement. Therefore, according to the civil society organization AMDER (P1), the government is promoting stronger seeds, which will ultimately make crops better able to cope with the changing climate. The government promotes these seeds to farmers by promising better and more efficient production, which gives farmers an improved socioeconomic position. Besides the promotion of other seeds by the government itself,

other foreign parties influence this kind of land use change as well, but this is discussed further in paragraph 7.3.

Table 2: Overview of which farmers received seeds from the government, their views on these seeds, and whether they use chemical fertilizers.

Which group of farmers?	Did they receive seeds from the government?	Are they satisfied with the production of these seeds?	Do you use chemical fertilizers?
P4	Yes	Yes	Yes
P5	Yes	Yes	Yes
P7	No	-	No information
P8	No	-	No information
P9	Yes	Yes	Yes
P10	Yes	Yes	Yes
P11	No	-	Yes, but aware of the consequences
P12	No	-	Yes, but aware of the consequences
P13	No	-	No
P14	Yes	Yes	Yes
P15	Yes	Yes	No, but they need it
P16	No	-	No
P17	No	-	No
P18	No	-	No information

As shown in table 2, there are differences between the groups of farmers. There are differences in receiving or not receiving seeds from the government, but there are also differences in the use of chemical fertilizers. Of the 14 groups of farmers interviewed, only less than half reported having received seeds from the government, of which all 6 groups were satisfied with the seeds they received. But, all the respondents that received seeds from the government, stated that they need chemical fertilizers, otherwise, the desired result will not be achieved.

As analyzed in the theoretical framework (Chapter 2), the government influences citizens' daily lives as the government can achieve its ideals through policy, and in the case of climate adaptation policies, the climate goals (Pannell, 2010). In general, farmers are aware of the role the government plays in their daily lives. For example, P15 argues that *"the government is helping by their side, because they also used to give them seeds every year"*. Not only in the area of the improvement of agriculture, farmers are aware of the government's influence, farmers who own cattle can also get help from the government. Since strategic action point 5 in the ENAMMC is also about improving the resilience of cattle, the government is promoting the use of vaccinations and medicines for farm animals. In the district of Jangamo, there are so-called technicians from the economic activity service of the district government that are giving farmers vaccines for their chickens or cattle. *"You see in this case, the technician brought some vaccine for the chicken, but maybe we can look at it. Maybe it is not good"* (P6).

7.1.2 - More chemicals are needed

A change in land use by using different seeds in this case, which is promoted by the government, brings along another consequence in land use, namely the increasing use of chemicals to cultivate the crops. As shown in Table 2, out of the 14 groups of farmers interviewed, 7 groups stated that they now must use chemicals, otherwise their crops will not grow as desired. But, out of these 7 groups of farmers, 3 of the groups of farmers expressed awareness of the negative consequences of using chemicals (P4, P11, and P12). For example, in Manhiça district, *"they want to use conservative agriculture. That are some strategies to protect the production, and to avoid the use of chemical techniques to preserve this situation of climate change"* (P11). However, these groups are still dependent on fertilizers as without the use of chemicals, yields are not successful, which can result in negative economic consequences. Also, one group of farmers indicated they do not currently use chemicals, but need them, *"because, when they put the seeds now, this land can't produce and they need the fertilizers to recover the land"* (P15).

7.1.3 - Implications of land use changes for food security

Nevertheless, this change in land use negatively impacts strategic action point 7 of the ENAMMC. Contrary to what is described in this action point, "assure adequate food security and nutrition", this change in land use worsens food security. The introduction of resilient crops and seeds can increase agricultural production and thus increase the quantity of food, and when looking only at an increase in the quantity of food, this strategy can contribute to an increase in food security. As discussed in Chapter 2.3, in the context of food security, it is becoming increasingly important to look at other factors besides the amount of food to determine whether someone is food secure. The role of nutritional values is becoming increasingly important. However, according to P2, this definition of food security is not yet always observed by the Mozambican government, which creates a contradiction between strategic action points 5 and 7. *"Last week, our agriculture minister said that 90% of the people now have three meals a day. And that is completely false. What does a meal mean to you? Is it a mango? It is mango season now, and we have mangos everywhere. But only a mango is not a meal"* (P2). Through the strategies of strengthening crops and seeds, this goal is achieved because the production can increase, but the other aspect of food security is not considered. The new and improved seeds are less nutritious than "original" seeds, *"these traditional seeds are more in terms of nutrition"* (P6), more pesticides are needed and many of these chemicals migrate into the crops, and in the long run the fertility of the soil of the agricultural land will only decline, as stated by advocacy officer of UNAC, *"here are areas in which they used chemicals, now are no longer fertile"* (P6).

As discussed in Chapter 2.2.1.1, Mozambique has a problem with hunger and high malnutrition among citizens (Militao et al 2023), the strategy to increase production seems a good solution, but this strategy forgets the quality of food and the nutrition score of certain products. There are also disadvantages in the long term, which are not mentioned in the ENAMMC nor the interviews held with the Ministry of Agriculture and Rural Development and the Ministry of Land and Environment. Also, most of the farmers who use these seeds, including pesticides, are not aware of the long-term consequences that this use may bring. This includes not only the health of the farmers themselves, but also the population of the rest of the country, and the countries Mozambique exports to, as millions of people are fed by the food grown on the agricultural fields.

To conclude, adaptation policies, and then in this context, strategic actions 5 and 7, which focus on the improvement of agriculture and the insurance of food security, affect the way local farmers use their land. This is mainly about a change in the use of seeds, which requires chemical fertilizers and affects soil fertility, and food security. But, the implementation of the plan to improve the resilience of agriculture and livestock thus actually ensures that the strategic point to ensure adequate food security

and nutrition cannot be achieved. This does not benefit the overall national development of citizens' lives and Mozambique as a country. Eventually, governmental interventions can create new problems.

7.2 - Adaptation policies versus land ownership

Besides affecting land use, adaptation policies also affect land ownership. On the one hand, the implementation of governmental policies affects land inheritance; on the other hand, the opportunity the ENAMMC gives to foreign investors also affects land ownership. The role played by foreign investors is discussed in Chapter 7.3.

7.2.1 - Climate induced displacement

Mozambique is a country that experiences many negative impacts from climate change, making its people especially vulnerable to the dangers posed by climate change. The strategy created by the government of Mozambique to protect people from extreme weather is described in ENAMMC in action point 1; strengthen warning systems. By improving these systems, both the citizens and the government agencies must be prepared as best as possible, and respond as quickly and adequately as possible to approaching danger. This should result in action point 2 of the ENAMMC, namely increasing capacity to prepare for and respond to climate risks. However, this can eventually lead to climate induced displacement.

7.2.1.1 - Early warning systems and the capacity to respond to climate risk

The improvement of early warning systems itself has no direct impact on the change of land ownership but can contribute to increasing the capacity to prepare for and respond to climate risks, which can have indirect influences on land ownership. This applies not only to communities but also to the government itself, as well as other agencies.

In Mozambique, the INGD is responsible for disaster management, and improving its early warning systems would enable the INGD to operate more efficiently. Currently, the state of the warning systems does not secure good preparation for all farmers. 12 out of the 14 groups of farmers interviewed argued that the warnings were too late or incomplete, resulting in a misunderstanding of the information. *‘Some people are surprised because one, they don't have the information and second, the information can be transferred in a very technical way that people don't understand what they receive. What does it really mean when they say they have to be resettled 200 kilometers and that they live in a risky area, they don't know’* (P3). This is partly because farmers do not get the information early enough or not detailed enough, or because the information is not understandable. This results in a situation that these farmers cannot properly prepare for climate change-related weather events. According to P4, *‘They just wait until it is over’*, resulting in the loss of their properties. Communities lose their land due to this extreme

weather, and are forced to seek alternatives, of which moving to other areas is sometimes insurmountable. In this way, not being prepared for extreme weather due to climate change negatively affects the land ownership of farmers. Improving the warning system will be a good solution, according to P11. This group argued that *“if the government would give the details of the information it will be very good. It will help to mobilize the community to prevent themselves from these situations”* (P11).

As discussed, improving the warning systems could enable farmers to better interpret the information, and thus be better prepared, thus reducing the risk of losing land and other property. However, improving the warning systems, also ensures that government agencies responsible for disaster management, such as the INGD, are better prepared and have more responsibilities of which the implications are important to discuss.

But, these arguments should be nuanced, as improving the warning systems can also have a positive influence on the improvement of the capacity to prepare for and respond to climate risks. If these policies are properly implemented, and the plans accurately executed, evacuation may not be necessary, or communities can easily return to their plots after evacuation, resulting in people retaining their land. So, it is fair to say that this intervention can also lead to positive outcomes.

7.2.1.2 - Intervention results in climate induced displacement; implications for land ownership

The improvement of early warning systems can improve the capacity to respond to climate risks, which can result in climate-induced displacement. The INGD operates under the Mozambican government, and the improvement of their capacity to respond to climate risks, causes people to be evacuated. One of the key strategies of the INGD is protecting people from climate change by relocating communities living in so-called risk areas to safer areas. This climate-induced displacement has significant consequences for the people that are affected, even though it might be a climate adaptation strategy designed by the government. These situations result in a change in the land ownership of both the fleeing and the receiving party, because *“people have been moved because of a disaster to a place, where they find other people already living or cultivating there and these people are forced to also moved or to be part of their land to accommodate these people who have been displaced”* (P3). There were farmers interviewed that had to be evacuated due to flooding. (P15) argued that *“they are affected very dramatically, and this experience is an experience that the authorities remove the people, yeah. They remove the people from these spaces to another space. Other farmers said they had not experienced this themselves but had heard it from others. For example, “here in the community, they don’t know any experience. Here, from other parts of the district, they heard that sometimes the government must take people from one place to another because of the water”* (P10). So, even for people who have not

experienced this directly themselves, the government strategy of relocating communities is a familiar intervention for other farmers.

During the field trip to Zavala district, the community was asked if they have ever lost land or other properties due to actions of the government, they confirmed that they have lost land, palm trees, and other fruit trees (P5). Farmers in the district of Boane explained the influence of the evacuation plans and that there had been no negotiation about the destination. “But the government tells them that floods are coming but there is no time and the information is coming, there is only one day left” (P15). Lack of negotiation causes farmers to quickly return to their own land plots. P17 argued that they went back to their lands themselves because otherwise they would no longer own land which is also their source of income. But this caused them to stay in the risk areas and experience the same problem over and over again, which does not improve the security and resilience of farmers and may cause resettlement for these farmers in the future again. In most cases, displacement is temporary, as an ad hoc response to extreme weather, but in some cases, it can also be permanent. However, when displacement is permanent, it mainly takes place in other situations. Then these interventions are not ad hoc responses, but rather larger projects for which the government needs land, which is discussed further in Chapter 7.2.2.

How the government deals with DUATS of communities whose ownership is at risk after climate-induced displacement varies from situation to situation. Some communities receive the ownership of new plots of land, while other communities have to share their owned land with new communities that have been resettled due to governmental actions. “They said that there are some experiences here, that the government use the local plan to take these people who suffered with the floods and put them in another place. But in another situation, the government distributed the DUAT, the land for this kind of people suffering from this issues” (P11), which influences the land ownership.

However, it must be noted that the case of climate-induced displacement in this research, can be nuanced. Given the large amount of literature about climate-induced displacement as a result of governmental interventions, there was an expectation before the research that this would also be encountered in the field. However, the majority of the respondents said they had not experienced this themselves but only heard about it. Since it is a serious problem due to governmental intervention, it is worth mentioning. However, more research is needed to confirm these findings.

7.2.2 - The problem of extractivism

Adding to climate-induced displacement as forming a risk for land ownership for the small-scale farmers, is the problem of extractivism. As discussed in the theoretical framework, extractivism may cause farmers to lose their land. The problem of extractivism does not involve ad hoc responses from the government, but rather larger projects for which the government needs pieces of land, for example declaring certain areas as a protected nature reserve (Chapter 2.2.1),

Building on action point 2 from the ENAMMC, “strengthen capacity to prepare for and respond to climate risks”, this strategy is also about increasing the capacity of the government itself to respond to and prepare for climate risk. Partly because of this, the government can resettle communities in other areas. This allows the government to increment response capacity, be better prepared, and reduce casualties when an extreme weather event occurs. But, even if the government is acting “under the name of the greater good” (Almeida & Jacobs, 2022), people’s properties are being negatively affected. In the district of Zavala, farmers argued that the government is intimidating them to make space for governmental interventions. *“They said that they come to inform, and they, but this is not to make a negotiation or to request to cut the palm trees, no. It is only to inform they are going to build the street. And if you try to, to say no, uhm, I accept to lose the palm trees after the payment, after the payment, after the compensation, they use to treat. To make you know that for example, the highway, parts of there, people lost their, their land, their plants. So, how do you not accept?”* (P4). However, this is not a unique situation it happens more often. Also, in the district of Inharrime, a group of 5 farmers argued that they have lost land and properties due to extractivism by the government. *“He said that he is the owner of this area and he lost goods like palm trees, fruit trees, houses, and land”* (P10). When these farmers were asked about the reason for their losses, they stated that it was a governmental project that has impacted the community. However, these specific farmers stated that they received money from the government, *“they were paid”* (P10), as a form of compensation for their losses. Nevertheless, even though the right to compensation is described in the ENAMMC, it happens more often not than not that farmers receive compensation for what they have lost due to the actions of the government, or directly due to climate change. 11 of the 14 groups of farmers argued they had not received compensation.

Within the problem of extractivism, the economic situation of Mozambique plays a major role. Not only the government but also foreign investors play a significant role in these activities. Chapter 7.3 discusses further the role of foreign investors, their extractivist actions, and their impact on the land ownership of small-scale farmers.

7.3 - The implementation of adaptation, the role of foreign investors

It is worth devoting a separate chapter to discuss an interesting aspect of this research. The implementation of a policy is as important as the creation of it, *“because even if the policy is good, the implementation is bad, then the policy is bad and the implementation is still bad. So, we have problems on both ends”* (P2). A big part of implementation is financialization, which in the case of Mozambique also partly depends on the private sector and foreign investors. The analysis of the ENAMMC and primary data showed that the implementation of adaptation policies also has an influence, especially on land ownership. Therefore, this chapter will discuss the influence of foreign investors, through the financialization of the implementation of adaptation policies.

Thus, the private sector and foreign investors play a big role in the implementation of these adaptation policies. Under the name of "the greater good," (Almeida & Jacobs, 2022), the state takes land from farmers, often to make room for foreign companies, because *“the state needs money to be able to work on their environmental goals”* (P1). During the field trip in the district of Matutuíne, it became clear how big the influence of foreign investors is. During the interview with a group of female farmers, next to the factory of Chinese company Dugongo Cement, the group stated that this company has had many negative impacts on their lives. Like in more African countries, China invests a lot in countries that need money, and therefore welcome foreign companies to invest in their country (Adisu, 2010). As a result, farmers in Matutuíne argued to have lost their crops, their houses, and their land (P13). The ENAMMC states that citizens should receive compensation for properties lost due to actions of the government, or due to climate change-related extreme weather events. Nevertheless, in this case, *“nothing has been done. There was no compensation, uhm even now, we are still waiting for something”* (P13).

Adding on this, another example of the influence of foreign investors is the role of the German company Beier. As discussed in Chapter 7.1.1, the government promotes the use of improved seeds. These seeds are said to be more resistant to extreme weather and therefore ensure production and food security. Besides the government's promotion of seeds, Beier has introduced a variety of maize that can produce 3 times more of the crop per hectare, than a local, organic variety of maize. However, as referred to in Chapter 7.1.1, these government seeds have implications, which is the same for the German company's seeds. *“Several implications are using the seeds from Beier”* (P1), because when farmers start using these, they become dependent on those, and on the “seed sellers” where they got the seeds from. According to P1 and P2, this is a way for foreign companies to maintain their power and influence in the country. As with the government's improved seeds, the use of fertilizers is also necessary with Beier's seeds. *“You have to use not only the seeds, but you have to use many pesticides to ensure that the production will increase. Also, the quality of maize coming from this does not generate new seeds, so*

you have to keep buying these seeds from Beier'' (P1). This, as discussed in Chapter 7.1.3, has implications for food security, soil fertility, and long-term implications for production.

The two cases of foreign companies show how these parties can influence farmers' lives. It is easy for foreign companies to invest in Mozambique because the government needs the money for, among other things, the implementation of adaptation policies. In this way, how the policy is written creates opportunities for these companies to be able to have a big influence on the way people use their land, and thus on the Mozambican people themselves. The examples encountered during the research show how the Chinese company Dugongo Cement, and the German company Beier, negatively influence land ownership and land use of small-scale farmers. However, further investigation of this role will require more research, also uncovering the possible influences that do not take place on the surface.

In conclusion, by using primary data collected during the fieldwork period in Mozambique, this chapter has demonstrated the relationship between climate change adaptation policies, and the effects on land use and land ownership of small-scale farmers in southern Mozambique. By using adaptation policies, the government promotes the use of different seeds that are more resistant to the changing climate. However, this change in seed use creates several implications. Crops become less nutritious, which in turn has implications for food security, the soil becomes less nutritious, and farmers become dependent on chemicals. thereby, land ownership is also influenced by adaptation policies. By protecting people from the effects of climate change, one of the key strategies of the government (and the INGD), is to resettle communities from so-called risky areas to safe areas. Climate-induced displacement and extractivism affect land ownership for many farmers. Farmers lose their land through forced displacement, and receiving parties have to share their land with communities that have already fled. Also, the implementation of adaptation policies influences land ownership and land use. Implementation of adaptation policies requires financing, and in Mozambique, many foreign investors are active. Examples of foreign companies encountered during the research include the Chinese company Dugongo Cement, and the German company Beier. Because of the arrival of these investors, farmers lose their land and other properties, and because of governmental extractivism, people have to be resettled "in the name of the greater good". So, climate change adaptation policies are affecting the everyday lives of small-scale farmers, and thus influencing their land use and land ownership.

Chapter 8 – Discussion

In this study, three sub-questions were established, and based on these sub-questions, this thesis divides the results chapters into Chapter 5, Chapter 6, and Chapter 7. Chapter 5 was based on a combination of secondary data and respondents' experiences. Chapter 6 consisted of a critical discourse analysis of the ENAMMC and Chapter 7 explored the impact of the ENAMMC on land use and land ownership, based on primary data.

8.1 - Climate change problems in Mozambique; the influence on local farmers

Chapter 5 highlights the significant impact of climate change and extreme weather on farmers' livelihoods. Abundant rainfall, floods, cyclones, and droughts not only reduce farmland yields but also make farmers more vulnerable. They complain of floods that submerge their land for long periods, high winds that destroy crops, and droughts that stunt growth, this shows that climate change does indeed have a great impact on the lives of these farmers. This is in line with what is stated by Manuel et al. (2021). Since farmers rely heavily on agriculture for their livelihoods, this also affects their economic stability. Despite limited government support, some farmers have adapted themselves a bit by looking for alternatives, like fishing and salt production which shows that farmers themselves have adaptation capabilities. This was also stated by Azadi et al. (2019). Despite this, farmers remain very vulnerable to climate change (Buchir & Detzel, 2022).

8.2 - Climate change adaptation policies; analysis of the ENAMMC

In Mozambique, both climate mitigation and adaptation strategies are applied. The ENAMMC is explored through the presentation and discussion of specific adaptation plans, using a critical discourse analysis. Policy implementation involves five procedures, each led by a separate institution. This involvement of different stakeholders requires intensive contact and cooperation, but can also lead to ambiguity. The bureaucratic nature of the organization, as discussed in section 6.6, the fact that some parties had yet to be set up, such as the Centre for the Management of Climate Change Knowledge, and because of the presence and role of various parties, policy implementation may be delayed and take a long time. Critical discourse analysis also provided insights into how policy is implemented on the citizens it affects by gaining a deeper understanding of the linguistic choices in the ENAMMC. In the ENAMMC, there is little room for inventiveness, knowledge, and adaptation capacity of the citizens themselves, and the government is placed in the position of ‘savior’. The ENAMMC suggests that there is little room for cooperation between citizens and government, although this should be in line with the democratic state that Mozambique aims to be. The absence of this too much could be a reason why the plans in practice do have a different impact (as explored in Chapter 7) than what the desired outcomes were.

8.3 - The influence of adaptation policies on land use decisions and land ownership of small-scale farmers in southern Mozambique

Using primary data obtained during fieldwork in Mozambique, this chapter has demonstrated the relationship between climate change adaptation policies and how these policies affect the land use and land ownership of small-scale farmers in southern Mozambique. For example, by using adaptation strategies, the government supports the adoption of alternative seeds that are more resistant to the changing climate. However, this change in seed use brings several problems. Crops become less nutritious, which in turn creates problems for food security, soils become less nutritious and farmers become dependent on chemicals. Land ownership is also affected by adaptation policies. By insulating individuals from the effects of climate change, displacement occurs. This climate-induced displacement affects the land ownership of many farmers and is in line with the arguments of Jacobs & Almeida, (2020), and Jayawardhan (2017). Farmers lose their land due to forced displacement, and host parties have to share their land with communities that have already fled. Policy implementation also has a major impact on land ownership. However, contrary to expectations, not many farmers in the study group experienced direct consequences of the adaptation policies themselves. For example, only 2 out of 14 experienced displacements themselves, and half reported receiving different seeds. This could be because this did not happen to occur in my group of participants, or for example because of a lack of knowledge about both climate change and government policies, and that farmers therefore do not link these two aspects. Nevertheless, these results differ from Bruna (2019). and Castro & Kuntz (2022), discussed that very many people are displaced. And to what has been gestated by AMDER, UNAC, and OMR, which argued that many farmers have experienced this. More research is needed to explain these differences.

Financial resources are needed to implement adaptation programs, and one very interesting finding is the major influence that the financialization of the implementation of the policies has on land ownership. Farmers are losing their property due to the arrival of these investors, and as a result of government extractivist, people are forced to leave their homes and start over somewhere new. In the name of ‘‘the greater good’’, this is justified by the government (Almeida & Jacobs, 2022). As mentioned, during this research there was an encounter with the Chinese company Dugongo Cement. The farmers and the district government employee talked about the impact of this Chinese company on farmers' land, which illustrates the influences foreign companies have on land like Mozambique. This is an empirical example of what was already argued by Bruna (2022), which explained the influence of foreign investors on the livelihoods of Mozambican citizens.

These results confirm the association between climate change adaptation policies and land ownership and land use. It can thus be suggested that climate change adaptation policies are influencing land use decisions and land ownership of small-scale farmers in southern Mozambique.

8.4 - Discussion of limitations

As in any research, there were some limitations in this project. As already discussed in Chapter 3, the methodology also had several shortcomings. For instance, a limited research period meant that not everything could be explored as deeply as desired, as choices had to be made. This can result in the information not being complete enough to draw firm conclusions. It is therefore important to keep the results, answers, and conclusions nuanced, and to view them in the context of a 3-month research period. Despite this short period to conduct the study, enough information was collected to answer the research questions. Nevertheless, as already discussed, the conclusions are still generalizable, and more, longer, more in-depth research is needed to further find out whether these answers are also applicable in broader contexts. Adding to this, being limited to the participants who were already in contact with CTV meant there was no possibility to do the sampling myself. This ensured that the research was somewhat driven in that sense, which was unavoidable in this case. Since there was no possibility of random sampling in this study, it is important to take this into account when interpreting the conclusions. It may be the case that "desired" answers were given by the farmers because someone from CTV or a local authority was always present during the interviews. Thereby, a limitation that had also been discussed in Chapter 3, the presence of a translator was essential. The fact that all interviews with farmers had to be translated possibly caused relevant information to be lost. Picking up on limited research time, it also occurred several times during the study that the participants were unaware of the amount of time the study required of them. At the Ministry of Land and Environment, they were told they were only available for 10 minutes, which was eventually stretched to half an hour, and the promise to answer the other questions in writing afterwards was never kept. Some farmers also said they did not have time for an interview, giving the impression that they wanted to get rid of it quickly. This could be because farmers had not been informed about the arrival of a researcher, and so it caught them by surprise, or it was precious time for them that they could also spend on agricultural land. If both parties had had more time for the research, and there was the opportunity to come back several times to talk to the same farmers, for instance, more valuable information might have been obtained.

All these limitations influenced the research, both during the research and afterwards while analyzing and documenting all the information. However, this study can be seen as a stepping stone for further research into the subject of the influence of adaptation policies on land use and land ownership of small-scale farmers in Mozambique.

8.5 - Suggestions for further research

This research has contributed to the exploration of (unintended) negative outcomes of climate adaptation policies on land use and land ownership of small-scale farmers in southern Mozambique, which is confirming existing literature. But, by using a critical discourse analysis of the ENAMMC, this study has highlighted different interrelationships between citizens and government. This could explain why some policies have certain outcomes. When citizens are portrayed in government policies as the passive party, who can do nothing without the government, it may be that the policy enforces this reality, making citizens indeed meaningless without the help of the government, which is a self-fulfilling prophecy. Besides, this research has focused specifically on the ENAMMC, and because the ENAMMC is going to be revised in 2025, this research can be a trigger and stepping stone for policymakers to critically evaluate the ENAMMC, and consider these findings when rewriting policy.

Although conclusions can be drawn from this study, there are suggestions for further research to confirm the conclusions, to test the conclusions in a broader context, or to go deeper into certain aspects of this study. In the field of international development studies, this research has contributed by finding evidence why critical consideration should be given to the implications of adaptation policies. By analyzing and presenting the negative impacts, in socioeconomic terms, evaluations of policy plans can be made, which can lead to policy improvement. Revised adaptation plans, incorporating the information from this study, can lead to more accurate, and targeted strategies to allow people to live the best possible lives under climate change threats. Because ‘‘good development policy is good adaptation policy’’ (De La Torre et al., 2009). Nevertheless, there are suggestions to explore the topic even further.

The inclusion of the aspect of gender into a similar study could yield other interesting results. As explored in Chapter 2.1.4, land ownership is transferred in many countries based on patriarchal familial lines (Carruthers & Ariovich, 2004), and thus the notion of gender is a determining factor within the concept of land ownership. Thereby, as discussed in Chapter 3 and experienced in the field, there is still a lot of difference between males and females in Mozambique in terms of roles to be assumed. When groups of farmers were interviewed where both men and women were present, mainly the men were speaking and the women agreed with what the men were saying. This could ensure that there are still differences in opinions and experiences between men and women. However, women's experiences will only come to light earlier when interviewed separately. Experiences in the field during this research of these different assigned gender roles could be a stepping stone to further research on the role of gender. A greater focus on the role gender can play in adaptation strategies and all the facets that may be involved could provide new findings, as both men and women are responsible and dependent on the use and ownership of agricultural land.

Also, in this research, only the effects of adaptation policies are discussed, while the ENAMMC also largely consists of mitigation plans. If more research is done using ENAMMC as a starting point, a deep analysis of mitigation plans could contribute to a better understanding of the effects of ENAMMC. An addition of research into the mitigation plans of ENAMMC to this study, where only adaptation strategies were discussed, could provide a more complete picture of ENAMMC's impacts as a whole.

Another suggestion for further research is about the psychology behind the willingness to adapt. As discussed in Chapter 2.1.3.1, this research is not about why people adapt, but rather about what people do to adapt. However, research on why people do or do not adapt to climate change can explain why people choose not to follow some government plans. Such a study could be of interest to policymakers, for example, as it could allow conclusions to be drawn as to why adaptation policies may not always be successful.

In addition, as mentioned in Chapter 7, more research on climate-induced displacement in the provinces of Inhambane and Maputo is needed to confirm the findings of this study. When more research is done on this specific topic, and more communities are interviewed, the effects of adaptation policies on climate-induced displacement can be explained. In this study, climate-induced displacement was discussed, but few respondents had experience with it, although it is a major problem not only in Mozambique (Jacobs & Almeida, 2020), but also in other countries for example Somalia (Jayawardhan, 2017) and Bangladesh (Sarker, 2023). The role foreign companies play in extractivism and the displacement of people can also be investigated. When the influence that these companies have on the livelihoods of citizens is examined and presented, the Mozambican government can create plans that protect the lives of communities from situations like these. Gathering more evidence on how adaptation policies can cause climate-induced displacement can contribute to the evaluation of adaptation policies and to the creation of policy that will not ultimately lead to displacement, but policies that will lead to development.

Chapter 9 – Conclusion

This research focused on the influence of climate change adaptation policies on land use and land ownership of small-scale farmers in southern Mozambique. Therefore, this study has looked for an answer to the following research question: *How do governmental climate change adaptation policies influence local farmers' land use decisions and land ownership within the context of compounding impacts of climate change?* Here, qualitative research was used to seek data on lived experiences of small-scale farmers facing climate change-related extreme weather events, and the adaptation policies based on them.

Adaptation policies are based on the climate change-related problem the country of Mozambique has to deal with, which are mostly floods, droughts, and cyclones. These extreme weather events have a direct impact on the livelihoods of Mozambican citizens, implying the importance of adaptation policies. Using a critical discourse analysis (CDA), the climate adaptation policies, the ENAMMC, were analyzed. The CDA showed that the way climate change, the citizens, and the government itself are presented and re-presented says a lot about the underlying power relations between them, and the influence these represented actors exert on each other. Citizens are portrayed as passive actors, with climate change happening to them, and from this, the government has to save the citizens. However, the ENAMMC still has many (unintended) negative outcomes, which is shown in Chapter 7, which besides the lack of a critical evaluation process of the ENAMMC, and clear realizations of the strategies, may be partly due to a self-fulfilling prophecy. Because citizens are portrayed and treated as an actor who can only deal with climate change with the help of the government, this may also become a reality, and citizens may not be able to do anything as long as help from the government is not present. If this governmental support is lacking, the success of the ENAMMC will also be lacking, as it is necessary for many farmers.

This qualitative study found that climate change adaptation policies influence land use and land ownership of small-scale farmers in Mozambique. Governmental climate change adaptation policies are influencing land use and ownership in different ways. For example, farmers have started using their land differently to cope with climate change. This has been promoted by the government by, for example, using different seeds, making farmers dependent on chemicals, or instead growing other crops, such as cassava, which is better residual against extreme weather. Land ownership is at risk due to the government's evacuation plans to protect people living in risky areas from extreme weather. However, this may cause farmers to lose their land, which in turn may affect the socioeconomic well-being of these communities. Thereby, not only the adaptation policies themselves but also the implementation will affect farmers' land ownership in particular. Through the financialization of the implementation plans and the role of foreign investors in them, these companies can exert great influence on the

distribution of land and land ownership. These investments are too important for Mozambique to be able to implement the adaptation policies at all.

So, governmental adaptation policies are influencing land use decisions and land ownership of small-scale farmers in southern Mozambique. Government plans to protect people from climate change also have negative impacts on farmers. The change in land use is not always beneficial and can affect food security, and land ownership is under pressure because of displacement, extractive, and the presence of foreign companies. Identifying the negative impacts of these adaptation policies, and evaluating them can contribute to improving adaptation policies in the future. Revised policies can help achieve a better outcome, to which a critical discourse analysis of current policies can contribute. Because that is what adaptation policies are written for, to ensure the quality of the lives of the citizens.

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Appendix: Interview Guide

It should be noted that the interview guide has been modified several times during the research period. The interview guide presented here is the guide that is used during the last interviews; conversations with small-scale farmers in the district of Boane, Maputo province.

Introduction and recording:

Thank you for your participation. I will first give a short introduction about myself before we start with the interview. I am Simone, 23 years old, from the Netherlands and I am currently in Mozambique to do research for my master's degree, International Development Studies. I am researching the effects of climate change and government plans to combat climate change on land ownership and land use. I am mostly interested in how people in rural areas perceive and experience climate change and these climate change policies, and how these policies influence people's livelihoods. I am in Mozambique for about 13 weeks and will travel to different places in the country to gather my information. Because I only speak Dutch and English, Julio (or Nelson or Zelia) is with me to translate the conversation when needed. The results and information you give me will stay completely anonymous. If it is okay with you, I would like to record this conversation with my phone. Do you agree with this? After analyzing this interview, the recording will be deleted.

Please know that you can end this interview at any time you want or when you feel uncomfortable. It is also no problem if you do not want to answer certain questions. So, if there are no questions, I would like to start with the interview.

Introduction questions:

1. Can you tell me something about yourself and the place where we are right now?
2. About land tenure; whose land do you work on and how did you acquire this land?
3. What type of farming do you do? What crops do you have?

Questions about climate change:

4. Can you tell me something about climate change?
5. Do you think climate change is a problem for your land? How? What do you notice?
6. Do you observe more extreme weather or changes in the climate during the past years?
 - a. How does this influence your land?
 - b. Have you lost land or other properties because of the extreme weather?
7. What did you do about this? / How did you adapt?

Questions about resilience:

8. Would you say you feel resilient to climate change/ extreme weather like for example floods or heavy rainfall?
9. Do you feel like the government is doing anything to help you with issues related to climate change or extreme weather?
 - a. Helping to prepare for extreme weather for example?
10. Do you receive information about climate change? Or information about extreme weather?
11. If so, is this information detailed enough in your opinion?
12. Have you changed anything in your farming techniques because of the weather?
 - a. For example: diversification, use of other seeds, other crops?
 - b. Is the government promoting these technique changes?
13. Can you fully recover from the damage extreme weather causes?

Questions about climate change policies:

First explain what these policies contain.

14. Have you ever experienced that you lost properties or land due to acting of the government?
15. Do you feel like the reason for this was about climate change, or had something to do with protecting you against extreme weather?
16. Did you receive any compensation (in any form) for your losses?

Questions about ownership and land rights:

17. Do you have information about your land rights?
 - a. Do you have access?
 - b. Are you aware about the land rights you have?
18. Do you feel like more information would help you to protect against illegal government acting?
19. Did you ever have a situation in which you felt like your rights were not being respected?
20. Was there something you did about this?

Closing questions:

21. What is something you would like to see change in the future?

Closing the interview:

Is there still something you would like to add to answers? Thank you for your time and participating in this interview. If there is something you would like to add or change, you can always contact me or anyone from the CTV team. All the information will be anonymized and if there is information you don't want me to use, don't hesitate to reach out. Again, thank you for participating and have a nice day.