









## **Acknowledgements**

To the Distributor 11 Association staff “AREDONZE”, particularly to Monteiro Bambo for the time they spent with me, for sharing their thoughts, problems and experiences.

To the MIA agent Paulo Coalo for his contribution, and for introducing me to the Distributor 6 staff.

To MIA administration and staff for providing me a working place, for facilitating my transport and contact with farmers, and for their important contribution to making this study more detailed. Special thanks to

To HICEP for allowing me access to their files and documentation.

To the Eduardo Mondlane University, particularly

To all my friends who gave me support and helped me to get rid of stress.

I wish to thank Cristovão Petula for his tremendous contribution as a translator and his support to settle me in the area, both essential towards the completion of this field work.

I am also grateful to my theses supervisor Gert Jan Veldwisch who without his help, guidance and patience this study would not have been completed.

Special acknowledgements to my wife Magdalena Schindler-van der Struijk, who have helped me through this whole thesis and made the grammar revision of this study, thank you.

## **Abstract**

This thesis investigates the smallholder farmers' access to land and water in the Chokwe Irrigation System (CIS) in Southern Mozambique, mediated through technology, capital (money) and social relations. In Chokwe a private rice processing company, owned by British investors (Mocfer Industrias Alimentares - MIA), is implementing contract farming programs since 2006. These programs are forcing farmers to change their access strategies in order to protect their way of living. More specifically the research examined the process of reallocation and or (re)distribution of land instigated by MIA's Associated Producers (AP) contract farming programme from 2008 till 2011. During this period, individual farmers had to obtain at least eight hectare of land in a single location in order to be able to work with MIA, which has led to the displacement of maybe hundreds of smallholder farmers.

MIA's AP program was stopped after three years of unprofitable investment, and as result the company shifted to the so called Promotion and Commercialization of Rice (PCR) program, which does not have criteria for a minimum landholding size. However, the changed land distribution was maintained. In addition access to cash, fertilizer and mechanized land preparation through MIA was changed and farmers started looking for other ways to reach these inputs. Hence, MIA's programs led to changes in how benefits from and for smallholder farmers are accessed. The adaptations in these lines of access (or mechanisms of access) are essential for smallholder to secure their landholding and their possibilities to continue to cultivate rice.

**Keywords:** contract farming, mechanisms of access, irrigation system, rice production.

## Table of Contents

<b>1 Introduction.....</b>	<b>1</b>
1.1 Conceptual framework .....	2
1.1.1 Stakeholders .....	3
1.1.2 Land tenure and Land-use .....	4
1.1.3 Mechanisms of Access .....	4
1.1.4 Farmers’ strategies.....	7
1.2 Problem statement .....	7
1.3 Objectives.....	8
1.4 Research Question .....	8
1.5 Methodology.....	9
1.5.1 Interviews.....	10
1.5.2 Secondary data .....	11
1.5.4 Data management .....	12
<b>2 History and context - Mozambique and Chokwe Irrigation Scheme.....</b>	<b>13</b>
2.1 Case study location and context .....	13
2.2 Historical background .....	16
2.2.1 Portuguese project and settlement (1954-1975) .....	16
2.2.2 Socialization of the country side (1977-1983) .....	16
2.2.3 Privatization and land distribution (1984-1996).....	17
2.2.4 New management company and water users associations (1997-2012).....	17
2.3 Stakeholders identification and key stakeholders description.....	18
2.3.1 International .....	18
2.3.2 Regional.....	19
2.3.3 Local .....	19
2.4 Conclusion.....	21
<b>3 Contract Farming - the Associated Producers, and the Promotion and Commercialization of Rice program .....</b>	<b>22</b>
3.1 MIA’s Contract Farming Programmes.....	22
3.1.1 WUA Partnerships .....	22
3.1.2 Associated Producers and its selection process .....	25
3.1.3 Consequences and some remarks about the first two MIA’s partnerships.....	27
3.2 The Promotion and Commercialization of Rice program .....	28
3.2.1 Selection process .....	29
3.2.2 First outcomes of the PCR.....	30
<b>4 Mechanisms of access and farmer’ strategies.....</b>	<b>31</b>
4.1 Labour .....	31

4.2 Authority .....	33
4.3 Knowledge.....	34
4.4 Identity.....	34
4.5 Markets .....	35
4.6 Social relations .....	37
4.7 Technology.....	37
4.8 Capital .....	40
<b>5 Discussion and conclusions .....</b>	<b>42</b>
5.1 CIS prior MIA .....	42
5.2 MIA contract farming and its effects in the mechanisms of access within the CIS .....	43
5.3 Conclusion.....	45
5.4 Field work experience .....	46
<b>References.....</b>	<b>48</b>



## Important acronyms

ARA- Sul:	Regional Water Administration of South (Administração Regional de Águas do Sul)
AREDONZE:	Irrigation Water User Association of D11 (Associação dos Regantes do Distribuidor 11)
AP:	Associated Producers (Produtores Associados)
CIS:	Chokwe Irrigation System (Sistema de Irrigação do Chókwè)
D6:	Water channel distributor 6 (Distribuidor 6)
D11:	Water channel distributor 11 (Distribuidor 11)
HICEP:	Public Hydraulic Company of Chokwe (Empresa Pública Hidráulica de Chókwè)
MIA:	Moçfer Food Industry (Moçfer Indústrias Alimentares)
PCR:	Promotion and Commercialization of Rice (Fomento e Comercialização do Arroz)
SDAE:	District Services of Economic Activities (Serviços Distritais de Atividades Econômicas)
ISPG:	Polytechnic Superior Institute of Gaza (Instituto Superior Politécnico de Gaza)



# 1 Introduction

'Chokwe Irrigation Scheme Remains a Sleeping Giant' (AllAfrica, 2011). The headlines of the Mozambique News Agency (AIM) in which the President Guebuza states "that the Chokwe irrigation scheme is not being properly exploited and is still not fulfilling its function within the government's plans for food production" is a good starting point to begin to talk about the system. Since, it is through this premise of the inefficient 'sleeping giant' that strategies are being implemented in the area in order to bring development for the area and consequently the country (AllAfrica, 2011; Bolding, 2009; Pellizzoli, 2009; Veldwisch, 2010). However, such strategies, and their major implications, are leading to a process of land and water reallocation and (re)distribution, which as a result, have crucial repercussions to the relations of production and social dynamics in the region.

The Mozambican agricultural policy 'Green Revolution Strategy' from 2007, is currently in practice, and has as its principal objective:

*(...) to induce greater production and productivity increases for smallholders to ensure a greater supply of food in a competitive and sustainable way (RoM, 2007: p. 6).*

Moreover, it is based on five pillars, which include upon others the development of markets and technology for information and communication, improvement of financial systems for agricultural credit, as well as creating human and social capital. However, this main objective is not implemented in practice in the Chokwe area, since there is an arising issue regarding the redistribution and access to land and water, which in fact, affects to a large extent the most vulnerable members of their society, in other words, the smallholder farmers (Munguambe et al., 2009).

The main cause, resulting in this reallocation and (re)distribution of land and water, was the cooperation between private companies and the government, leading to a small number of farmers with bigger portions of land, in place of the previous situation when a large number of farmers held small farms (Veldwisch, 2010). The Chokwe Irrigation System (CIS) is an example of the consequences of this neo-liberal development path carried out by the Mozambican 'Green Revolution Strategy' agencies, where:

*The programs of public interest with the potential to generate economic activity (for example, irrigation systems, infrastructures for selection and conservation of production, silos, etc.) will be implemented through public-private partnerships (RoM, 2007: p. 10).*

Since the 'green revolution' package misses words like: analyse, stakeholder, valuation, evaluation, consequence, outcomes, impacts, and so forth of socio-economic problems created by the strategy itself, it is important to seek a better understanding of the ongoing strategies which are being used by the smallholder farmers to adapt and defend their way of living. Please do keep in mind that it is not the objective of this thesis to examine the 'green revolution strategy' *per se*, but rather to investigate the programs implemented in the irrigation system, their results, and the farmers' reactions towards them.

In order to achieve this goal, this study will focus on the programmes implemented by MIA (Moçfer Indústrias Alimentares), a private company owned by British investors actively trying to stimulate rice production in Mozambique, more specifically their contract farming past programs and their consequences, as well as their new seed promotion program. Since 2006 MIA has been working with CIS water users associations and farmers to establish a mutually beneficial partnership in which MIA provides services such as mechanized ploughing, fertilizers, and so forth, and in return farmers would take care of the fields and carry out the responsibilities regarding yield.

From MIA projects, the contract farming program (2008 till 2011), and the promotion and commercialization of rice (PCR) program which started in 2010 are the more relevant, as it was through these that MIA itself could get control of large areas within the Chokwe Irrigation System (CIS), and most importantly, it created opportunities for some farmers to increase their own areas by reallocating neighbored other smallholder farmers in the irrigation system. Since, the CIS is divided in distributors, MIA decided after inspecting the system which of those met the company criteria and in several cases distributors were not taken into account as they presented salinization, water logging or were divided into many small areas among the smallholders.

Therefore only a few distributors were considered viable to MIA for the contract farming program, among these the distributor 11 and 6 where considered the most interesting ones in the CIS. The 11 because MIA have been working in the area and with their farmers since the company established in the irrigation system having a contract farming partnership between the Distributor 11 (D11) Water User Association (WUA) and the company. The Distributor 6 on the other hand did not have any farmers participating in contract farming till MIA's latest PCR program. These two distributors can show the contrast between affected and non-affected by MIA's contract farming and the changes in the rice production process which are not yet investigate.

This study elucidates this matter through the following structure:

- Chapter 1: Introduction to the research and motivation sources, conceptual framework, problem statement, objectives, research question and methodology.
- Chapter 2: A general background about the case study area and the context in which water and land issues are presented, the historical background pertinent to the study, and the identification and description of the key stakeholders
- Chapter 3: MIA's Associated Producer (AP) – Contract Farming process, and MIA's Promotion and Commercialization of Rice (PCR) program. The selection process, results, consequences and lessons learned.
- Chapter 4: An analysis of the farmers' mechanisms of access to land and water as a main focus, and the access to other resources such as: markets, technology, capital (money), and so forth, all during past and ongoing programs in the CIS. Their reactions in order to gain, control and maintain the access to different resources.
- Chapter 5: Main conclusion of the research related to the conceptual framework and research questions.

## **1.1 Conceptual framework**

In this thesis I discuss and investigate the dynamics and the roots of the existent smallholder farmers' strategies to face the process of reallocation and (re)distribution of land and water, and the new promotion and commercialization of rice program in the Chokwe Irrigation System (CIS) in a constructivist approach. Thus, I am assuming that knowledge is created or generated through a social process, by interactions and experiences, and therefore also by adaptation to the economic, social and technical changes in the environment.

Moreover, it is through the discourse that the CIS is the “breadbasket of the nation” and the same time still is a “sleeping giant”, that the government is the responsible for the reallocation and (re)distribution of land in the area.

*A constructivist approach invites us to take these conditions of production of knowledge into account, and show that the knowledge offered by conventional narratives may be wrong, over-simplified, or based on missing information. In the end, this will result in the production of more grounded knowledge, the construction of better narratives representing a ‘truer’ and more productive knowledge (Zwarteveen and Wester, 2011).*

Consequently, any choice made throughout this study had intrinsically affected the knowledge generated by it, from the selection of the case study itself, to the analysis of the data. Hence, knowledge cannot be considered neutral, since it is subject to the different human interests and perceptions which it is embedded into. The simple fact of inquiring the smallholder farmers about how they are reacting to changes in land redistribution for instance, or in market possibilities, changes which are happening in their area, in the irrigation system that they are using, affecting their livelihoods may trigger their awareness, and possibly increase their actions upon it.

*We seek to understand them. We would like to hear their stories. We may have reservations about some things the people tell us, just as they will question some of the things we will tell them. But we enter the scene with a sincere interest in learning how they function in the ordinary pursuits and milieus and with a willingness to put aside many presumptions while we learn (Stake, 1995).*

The quote above from Robert E. Stake, defines not only what is a case study itself, but also the purpose behind this case study, which is to investigate the technical dimension change, in this case the possibility to access land and water, as the major drivers to social changes – the choices and strategies used by smallholders farmers in the high complex sphere of land and water management, in order to achieve that an interdisciplinary approach will be put into practice. The intention is to work simultaneously, analysing the social aspects of reallocation and (re)distribution of land with the technical aspects of land availability. Hence, this complex problem, a living problem, will be investigated by an approach which leads to a ‘simultaneous analysis of the technical and the social, as different but internally related dimensions of a single object’ (Bolding, 2004).

There are several concepts related to land and water management, and also to the reallocation and or (re)distribution of land and water, yet stakeholders, land tenure and use, mechanisms of access, and farmer’s strategies are the most relevant and useful for this case study, as they were considered intrinsically connected, in other words they directly affect each other.

### 1.1.1 Stakeholders

*Stakeholders are any individuals, groups of people, institutions (government or non-government) organizations or companies that may have a relationship with the project/program or other intervention at stake. They may – directly or indirectly, positively or negatively – affect or be affected by the process and/or the outcomes. Usually, different sub-groups have to be considered because within a certain group interests may be different (WETwin, 2010).*

Among the many definitions of stakeholders currently available I choose the one from WETwin since it explicitly compress the relationship between stakeholders to a project or program, which is happening in CIS. Hence, in order to better grasp the extent of the process of land and water

reallocation and (re)distribution, it is essential to identify and analyse the actors involved in the process. Stakeholder identification and analysis is useful to understand the most evident interactions within and between the different actors, as well as to evaluate their importance and decision power level. Therefore, an accurately recognition of the key stakeholders is the first step to be taken and the most crucial one, which will be followed by a description of their characteristics, interests, associations and possible conflicts.

As any stakeholder can be considered a key one dependable on the viewing angle and focusing of one study, it is important to highlight that in this thesis the importance of a stakeholder is related to its connection and level of power related to smallholder farmers. Consequently, only those were properly taken into account for the analysis during the field work in CIS, the others were mainly listed, and some are not included in Chapter 2.

### 1.1.2 Land tenure and Land-use

*Land tenure is the relationship, whether legally or customarily defined, among people, as individuals or groups, with respect to land. Land tenure is an institution, i.e., rules invented by societies to regulate behavior. Rules of tenure define how property rights to land are to be allocated within societies. They define how access is granted to rights to use, control, and transfer land, as well as associated responsibilities and restraints. In simple terms, land tenure systems determine who can use what resources for how long, and under what conditions (adapted from FAO, 2002).*

I decided to use this definition of land tenure in my thesis because it fits well in the CIS situation, since as mentioned above it is about who allowed whom to use the resources. Of course, one cannot disagree that by understanding the land tenure current process, and how it has been developed until nowadays, is important in a quantitative and qualitative point of view to identify and analyse the interrelation between land, land-use and smallholder farmers' interests. Yet, in the CIS the access to land is not exactly defined by law or authority and neither by customary rules, but by a mix of both, a huge grey area, in which someone can almost always find some area to work, although the circumstances to access the area e.g. distance and the situation of the area e.g. salinization are the restraining issues behind the actual access.

### 1.1.3 Mechanisms of Access

*Access can be defined as the ability to derive benefits from things, in which the different political-economic circumstances change the terms of access and may therefore change the specific individuals or groups most able to benefit from a set of resources. Therefore access analysis is the process of identifying and mapping the mechanisms, by which access is gained, maintained, and controlled (Ribot and Peluso, 2003).*

Due to the nature of the CIS problems, in which every year there is an uncertainty and inconstancy with regard to the possibility for farmers to achieve their wanted benefit, in this case rice (independent of the purpose e.g. consumption, market, seeds), it is essential in my opinion to look into the access mechanisms which can allow or restraint smallholder farmers to reach their goal. Since, it is necessary that each farmer tries to attain land and water in order to get the benefit generated by it, consequently all farmers have to attempt in finding way to gain the access.

*The ability to benefit from resources is mediated by constraints established by the specific political-economic and cultural frames within which access to resources is sought (Ribot and Peluso, 2003).*

Moreover, Ribot and Peluso (2003) argued that by mapping the web of access it is expected to find the patterns of resource and those who controls, who gains and who maintains the access itself, with the aim of comprehending the conflicts associated with the resource. Moreover, the authors discussed about the mechanisms of access, or 'structural and relational access mechanisms', which people use to reach the resources and its benefits. The categorized access mechanisms are: technology, labour, authority, knowledge, identity, markets, money and social relations.

In this investigation major attention was given to the access to technology, capital and social relations. Nevertheless, during the study other elements of the structure of access were taken into account to give a better analysis of their connections and links with the smallholder farmers. Since all mechanisms of access are important giving a certain situation and time of the year, it is necessary to understand how significant they are with regard to the possible strategies/responses taken by smallholder farmers, and what are the criteria within each one of them. Figure 1 incorporates the chosen mechanisms of access and their reference points in a fictional given moment, as one access mechanism can be more important in a certain situation e.g. access to labour can be considered the most important mechanism during harvesting and yet not at all important during the rice growing period. This model attempts to facilitate the analysis of the different mechanism and their importance in the CIS.

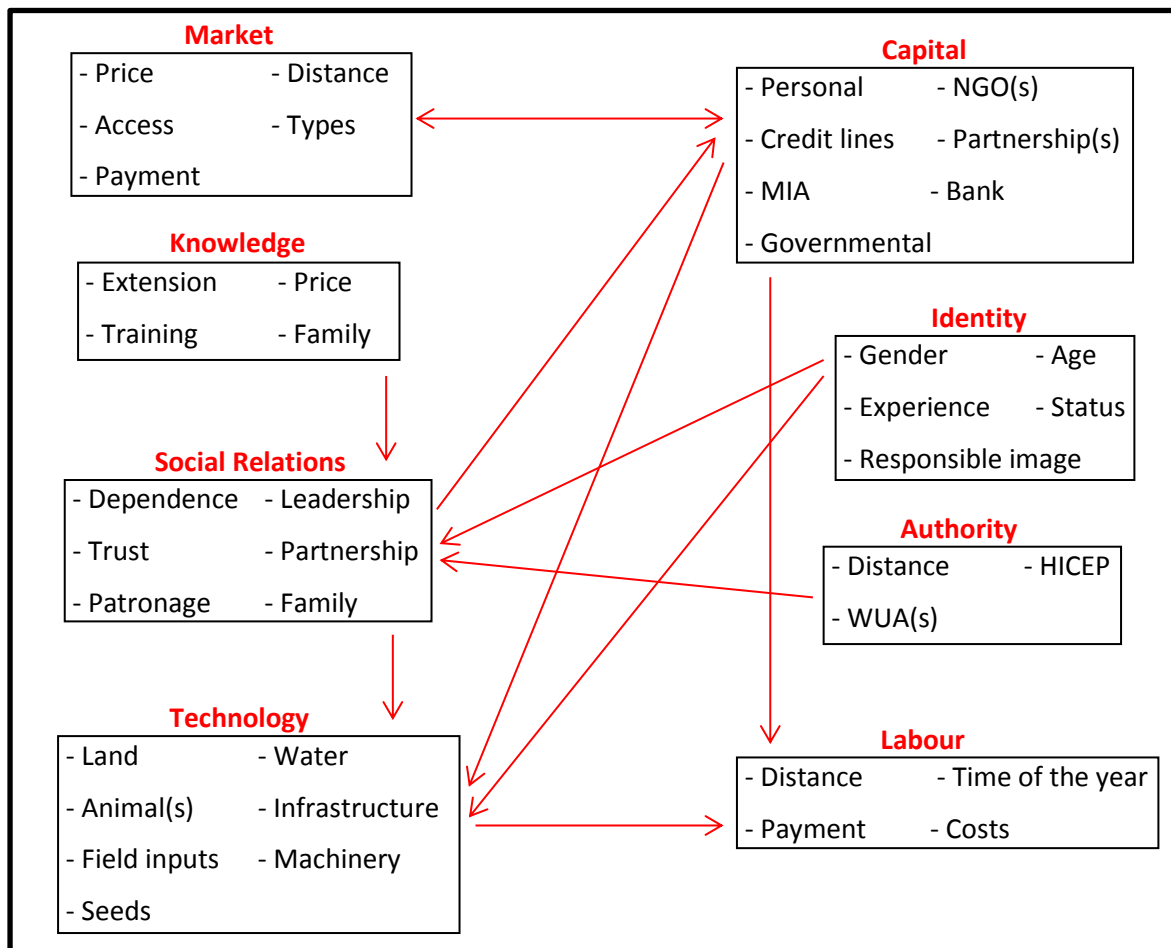


Figure 1: Mechanisms of access model for each resource in a fictional given moment affecting CIS farmers. In which each block represent a particular mechanism of access (in red), inside each block are the categories taken into account for the specific mechanisms e.g. price, distance relevance to market. The arrows represent the linkage between mechanisms and that access to one mechanism may give access to others e.g. capital may give access to labour, which is then dependent of it costs, also capital facilitate the access to markets as a distance can be paid, on the other hand access to market gives access to capital.

- Access to technology

In this thesis, I considered the opportunity to benefit from land, water, animal(s), infrastructure, field inputs and machinery to be included within the scope of access to technology. This mechanism can be considered one of the important ones, as land and water are the major limiting factors in order to cultivate rice.

In my point of view, by understanding which conflicts and struggle farmers had since MIA started to work in the CIS, one can more reliably draw conclusion over the possible options available for smallholders farmers at certain point, and better analyse the farmers responses to overcome their hurdles.

*[In 2009/2010] Producers were selected by MIA and upon their blessing were given land by HICEP (Veldwisch, 2010).*

The criteria to decide who receives land within a distributor by the WUA in the CIS was investigated in order to determine who can reach or not the benefit, who controls it and how they maintain , but also compare to the level of understanding and information which the farmers have of it. Consequently, the inherent characteristics of the process, and its relations with the responses of farmers, can be evaluated.

- Access to capital (money)

The opportunity and capacity to invest in rice cultivation is as important and to have land in the CIS, in fact it can be considered the most important one for the ones who have access to large portions of land, and yet cannot fully use it due to the insufficient money from any source such as: personal, NGO(s), bank or micro credit companies, partnerships (e.g. MIA, particular), governmental and so forth. In the CIS money is used to pay land preparation, rice nursery, rice transplanting, fertilizers, bird chasing, weeding, and harvest. Therefore the reference to capital throughout this paper is used as a synonym for money.

- Access to market

The concept concerns to options available to farmers sell rice when their yield allows them to do so. Price of the rice, distance to market, access to transport, condition of payments and where to sell it e.g. from home or village, are all taking into consideration when farmers evaluate their cost benefits of trying to sell their production.

- Access to social relations

Inside this scope one can find relationships of dependence, patronage, leadership, trust, partnership and family among CIS farmers. Such relations allows smallholder to reach other more important access like technology, so they make use of these social relations to achieve wanted things, for example a temporary area size increase, a possibility to pay for a tractor to plough the field, and so forth. Therefore this mechanism of access is a continuous part of the farmer's day by day life and even more important during WUA meetings, consequently it is also directly and indirectly linked to access through identity as a person more positively known can have things facilitate to him.

- Access to authority

It refers to official and unofficial organizations which affect directly and indirectly farmers' strategies in the CIS. The most important aspects within this mechanism are the distance to these organizations and the permission to access the HICEP will be considered the essential part within this mechanism.



- Access to labour

Regarding to labour, this study focused in four aspects: distance, costs, timing, and condition(s) of payment, all which I considered important in the CIS. Distance refers to how far labour can be found and it is intrinsically connected to timing, since labour can be always found within the villages, yet during high labour demand periods, such as ploughing and harvesting its availability decreases, consequently increasing its costs. Conditions of payment regards if the payment is made in cash or in rice.

- Access through social identity

People, and specially in this case smallholders farmers can be identity by their gender, age, years of experience and or status within the communities or WUA, since these are in my opinion the most important social distinction among CIS farmers, especially because this social classification may allow or not someone to have access to a certain benefit, program or aid.

- Access to knowledge

Smallholder farmers within the CIS have limited access to new technics and procedures, and knowledge is mainly passed from father to son, and from neighbour to neighbour. Extension courses, trainings, workshops, practice itself, private organizations and relatives are the possible sources of information.

#### 1.1.4 Farmers' strategies

In this study, farmer strategies are seen as any plan of action designed or idealized, put in practice or not, to achieve a short or long-term goal with regard to agriculture or any other activities within a family and or community, in response to changing in context related to how the smallholder farmers have been receiving and perceiving the process of reallocation and or (re)distribution of land and water.

*An irrigation system is a complex set-up to control water, combining and inter-relating **physical elements** (water sources and flows, the place where it is applied and the hydraulic infrastructure to catch, conduct and distribute it), **normative elements** (rules, rights and obligations related with access to water and other resources), **organizational elements** (human organization to govern, operate and sustain the system) and **agro-productive elements** (soil, crops, technology capital, labor force and the capacities and knowledge of the art of irrigation) (Boelens and Hoogendam 2002).*

This definition of irrigation systems elucidates how tangled and complex they can be and it presents some of the numerous possible elements within its scope. Because of this links between policies, institutions and organizations, these smallholder farmers have to explore their different strategies to overcome the refusal or impossibility to have access to land.

## 1.2 Problem statement

There is a limited understanding of the strategies used by smallholder farmers to defend their access to land and their way of living in reaction to current agricultural development process implemented, which is causing reallocation and (re)distribution of land and water in the Chokwe Irrigation System (CIS).

It is essential to investigate the extent of these strategies in order to assess the changes in the socio-technical and economic dimensions. Especially since these alterations in the forms of production from a high labour demand and subsistence agriculture to a low labour demand, capital and input

intensive are directly affecting the local social structure. Moreover, it is in the governmental interest to maintain, to cooperate and to support such endeavours undertaken for companies like MIA.

*The Government of Mozambique, having learned the lessons of the past, undertook concrete measures to support to the agricultural sector, choosing to **focus on the existing potential**, in order to transform it into a source of wealth, looking to improve the welfare of the population and the socio-economic development of the country (RoM, 2007: p. 5).*

Last but not least, in reference to the quote above from the “Green Revolution Strategy”, one may think it is relevant to ask how much focus is been given to which existing potential? And, how the CIS’s smallholder farmers are responding and adapting to it?

### 1.3 Objectives

The focus of this thesis is on the process of reallocation and (re)distribution of land and water in the Chokwe Irrigation System. The main element of this investigation is what the strategies of smallholder farmers are, and how they secure their way of living when facing the current policies which are changing the forms of productions in the system.

- Specific Objectives

To identify and give a detailed account of the current problems/results associated with the land and water reallocation and (re)distribution in the Chokwe Irrigation System.

To identify and analyse the land and water reallocation and (re)distribution process, the smallholder farmers affected by the new form of production, and their strategies.

### 1.4 Research Question

How are the access to land, water and capital of smallholder farmers in distributor number 6 and distributor number 11 of CIS affected by MIA’s agricultural development programs, i.e. the contract farming program of 2008-2011 and the new promotion and commercialization of rice of 2010-2012, and how do these smallholder farmers strategically respond to this?

- Specific research questions

What are consequences of these programs and how do they affect the access to land and water for the smallholder farmers?

Who are the key stakeholders involved in both programs as well as in the farmers strategies?

What are the actions and strategies of smallholder farmers and how they try to achieve this response?

## 1.5 Methodology

The type of methodology put into practice in this research was a “Case Study”. Since it:

*Aims to understand the case in depth, and in its natural setting, recognizing its complexity and its context. It also has a holist focus, aiming to preserve and understand the wholeness and unity of the case (Punch, 2005).*

Fieldwork was conducted in the CIS from 1<sup>st</sup> of November 2011 till 5<sup>th</sup> of December 2011 and from the 5<sup>th</sup> of January 2012 till 25<sup>th</sup> of January 2012. During these two intensive periods, since weekends were also included, unstructured interviews were combined with field observations and supplemented with existent literature on CIS. Therefore, a collection of qualitative and quantitative data sources were used. The methods below were chosen in order to combine the strengths of the two approaches to minimize the weaknesses presented in each one, and ultimately increase the reliability and usefulness of the research. More specifically qualitative data from the interviews and observations combined with quantitative data from MIA.

I conducted field work in the Distributor 6 (Figure 2) as it was considered a viable area to make observations and interviews since it was not included in MIA programs from 2006 till 2011 due to the small average size of the plot, as MIA's first two forms of contract farming in the CIS considered the D6 as not profitable neither practical to work. Therefore D6 was only affect by the changes in the CIS region itself, such as market alterations, price fluctuations and so forth, but not directly affect by MIA first two programs. This striking difference when comparing to the Distributor 11 (D11) was the main reason to choose for the D6, and due to that the mechanisms of access are still very similar as before MIA' projects.



Figure 2: Map of the distributor 6 and its subdivision D6, D6A and D6B. Source: HICEP - Chokwe.

On other hand, since MIA was established in CIS the company have been working with the farmers of the D11 (Figure 3). Therefore, all three contract farming programs play a role in the area, shaping

and forcing farmers to adapt to a new scenario, consequently, it is important to take into account the ongoing changes and circumstances in which CIS farmers are embedded, as these circumstances direct their strategies and in some cases even dictated them. Besides, the current state of affairs generates a high degree of uncertainties that also influence smallholder's choices, especially concerned to long terms preferences, reason why the distributor was chosen in the first place.

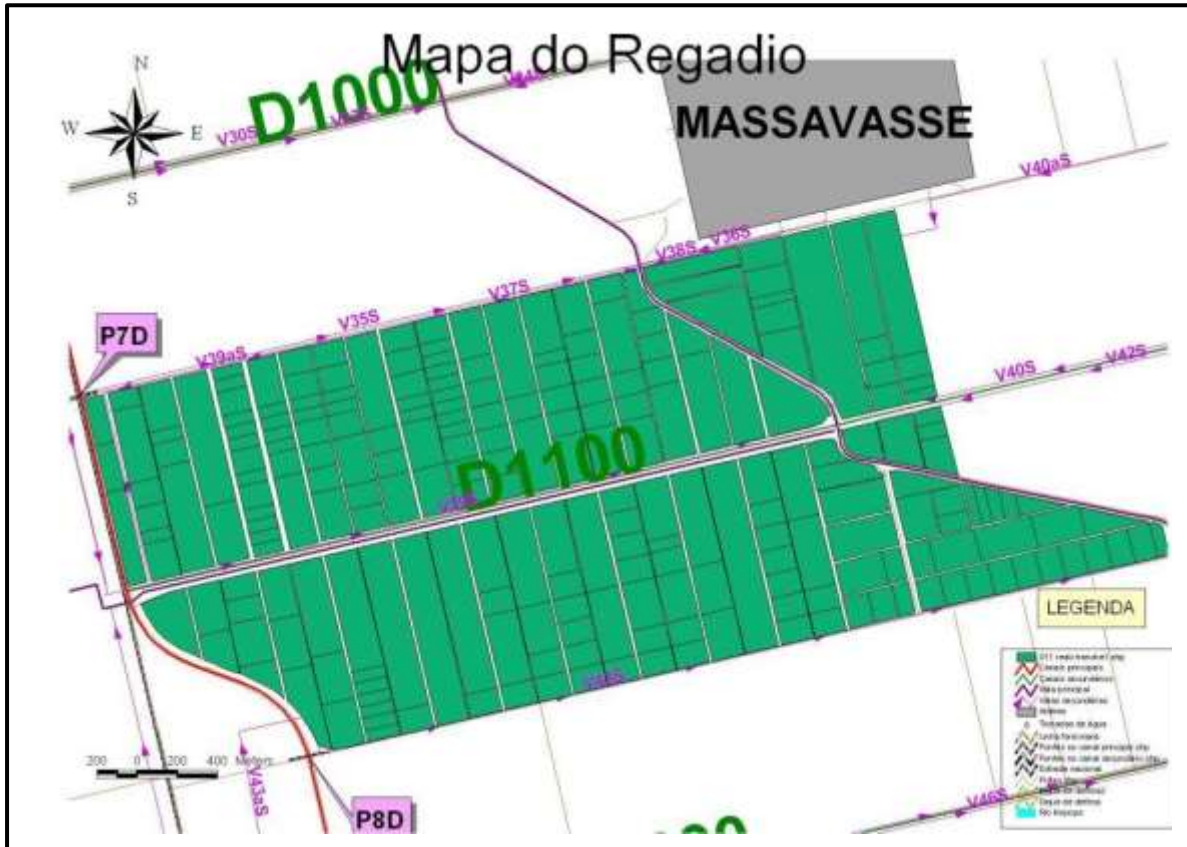


Figure 3: Map of the Distributor 11 and the location of the village of Massavasse where all farmers from the distributor live. Source: HICEP – Chokwe.

### 1.5.1 Interviews

*In order to understand other persons' constructions of reality, we would do well to ask them ... and to ask them in such a way that they can tell us in their terms [rather than those imposed rigidly and priori by ourselves] and in a depth which address the rich context that is the substance of their meanings (Punch, 2005)*

In this thesis, it is taken into account that there are 3 main types of interview: structured, focused or semi-structured and unstructured or informal, the major difference among them is regarding to the freedom of speak given to the interviewed, and since the purpose of this study was to go into details listening the accounts regarding the CIS, mainly informal interviews were used. The idea behind the informal interview is to let people express themselves in their own words with regarding to the pertinent subjects, and yet still trying to cover the importance of each mechanism access. On the other hand, when time was a constraining factor and or a second interview was not possible, focused interview took place, where a list of topics was used as a guideline to cover all the relevant aspects and information possibly needed from the informant.

In addition, two group interviews were made. They were very useful due to the fact that many details and remarkable information were exposed from stakeholder group discussions and their interactions. The group dynamics was considered the most important point to focus on, as interests

and arguments were brought to surface while farmers talked with each other and also when they helped another interviewed with their answer. In some a few cases they start to discuss about how the something really happened and in this moment I could see the small but yet significant differences in their points of view.

Ethical issues are intrinsically present in social studies, because they involve people, thus before each interview the person (people) was either asked if they mind about the use of their name(s) or in many cases it was clarified that their names were not going to be used. As in all interviews an audio recorded was use to collect information during the whole conduct of this research, it is precisely because of that interviewed people were informed or asked beforehand.

At the beginning of every interview I would start by telling my name, followed by an explanation of my goals, and finally I would stress that the individual did not have to share his name in case he/she did not want. The intention was to make people as comfortable as possible in order to increase their willingness to participate and to share important information. In cases in which people would try to have the interview in Portuguese, I would still introduce the translator and explain that he would help in case of miscommunication and or lacking of vocabulary. After these two steps were done, I would ask where they live and their plot locations followed by if there were problems in his/her plot and what they were, at this point the interview would normally run fluent.

In total, 66 people were interviewed, being 16 of them key informant from organizations such as HICEP and MIA, and the remaining 50 CIS farmers with different area sizes. Moreover, there were 2 collective interviews with 8 and 5 individuals respectively. In all interviews special attention was given to their willingness to help, in other words if they actually wanted to talk with me and share their opinions, problems and difficulties, also attention was paid to their comfortableness to talk and body language. The location in which the interview took place varied, yet smallholders were mainly interviewed on the field, and key informant from organizations in their workplace.

Due to the fact that several smallholder farmers in the CIS do not speak Portuguese, or their fluency level was not enough to have a proper interview, a student from the Chokwe Agrarian Institute was hired to work as a translator, and from the 50 interviewed farmers, 28 required translations. The necessity of a translator brought some drawbacks to the research itself, since he was not always available to go to the fields, and consequently it was not always feasible to make a proper schedule with farmers. Another disadvantage was his inexperience, which led to longer interval between interview when I was explaining and describing our approach and his part in the process.

In truth, many more interviews were schedule in the time being there, but three main factors prevented that from happening. First, the lack of commitment from some farmers, since a few times I arrived at the meeting location and there were nobody to be found, which combined to the second factor, the absence a fast and reliable public transportation led to losing several hours weekly. Last but not least, many interviews were schedule to the end of January, and this time coincided with heavy rain and wind in the CIS, which destroy many houses in the area, consequently, farmers were tending to their own needs and could not attend to the interview. Moreover, field visits around that time were less productive as I mainly found empty field instead of farmers working on them.

### *1.5.2 Secondary data*

In this study, documentary data covered any essay, reports, organizational memoranda, governmental procedures and policies, as well as any quantitative evidence such as records, statistical analysis, population status and so forth, where the relevancy of the documents and its reliability will be taken into account. The main goal was to combine the different range of data with

interviews and observations in order to triangulate and ensure the quality of the information produced.

MIA provided data referent to their past programs as well as the new PCR, the digital files contained information regarding past programs, basically it showed the name of the farmers, the area cultivated, the area harvested and the value of the production. Moreover, they provided the contracts themselves which their rules. However MIA did not have reports of the interviews made during the Associated Producers selection process. Nevertheless, two employees who participated in the selection process explained in detail how it was carried out. Besides MIA, HICEP was the only other organization which gave significant data, but they were very defensive with regarding to the disclosure of their information and only after a declaration stating that I was working in partnership with the Universidade Eduardo Mondlane was issued that I could have access to the data. Moreover, HICEP representatives explained since the beginning that most information was outdated and that an update was essential. Last but not least, the Universidade Eduardo Mondlane was another source of reliable data regarding the area. However its main focus was in the soil problems occurring in the CIS, such as salinization.

### 1.5.3 Field observations

As mentioned before, field observations were put into practice throughout this study, since it is useful and important to have a clear view of the area conditions. Moreover, in order to bring reliability and validity to the study, observations and statements from different sources e.g. governmental, organizational, informal, and so forth, were combined to enable seeing the issues from different points of view.

During field visits, my main concern was to examine the conditions of the field in which smallholder farmers were working, water delivery and water drainage facilities. More especially, I checked for the presence of water logging, salinization, the state of the tertiary canals, if drainage canals were clogged, the walking and tractor access to the fields, and the condition of adjacent fields.

### 1.5.4 Data management

In order to be able to manage all the data gathered during this study, field notes, pictures, interviews (taped, recorder or written), digital documents and hardcopy documents were stored either in a plastic folder or in two separate hard disks, besides that Microsoft Office Word and Excel, Photoshop Lightroom and Sony Organizer were used in the digital documents. Moreover, backups were regularly made and uploaded online as soon as possible to avoid losing data in case of hardware failure or similar causes in which my equipment could have been lost.

During my last month in Mozambique, more specifically in Maputo I was assaulted and lost part of my data, nothing that could not be replaced and yet some notes and the especially the thoughts over these notes were lost as they were in a notebook which was lost. In the end I use the digital files and rewrote everything back, however I cannot dismiss the fact that some arguments and ideas were probably lost.

## 2 History and context - Mozambique and Chokwe Irrigation Scheme

This chapter describes the circumstances in and around the case study. First, a description of the case study location and characteristic, presenting physical information, past floods, rehabilitations programs, salinization problems, water delivery and drainage difficulties, and infrastructure will be given. Following this initial overview, the historical background will be addressed with the relevant political periods and their subsequent changes affecting the irrigation scheme. Next, the identification of the key stakeholder in the area will be presented along with their main characteristics and action level e.g. local or national. Lastly, a brief and yet necessary additional comments on how these facts are important in relation to smallholder' strategies, and in the implementation of MIA's Associated Producers (AP) program and Promotion and Commercialization of Rice (PCR) program.

### 2.1 Case study location and context

The case study location is in the Chokwe district (Gaza Province) around 200 kilometres northeast of the Capital Maputo (see Figure 4), between the Latitudes 24 05' and 24 48' South and Longitudes 32 31' and 33 35' East (Munguambe et al., 2009). The irrigation scheme was designed and built in the 50s, it was supposed to deliver water by gravity supplied by the Limpopo River for 33,000 ha of fields divided in 3 sectors *Montante*, *Sul*, and *do Rio* with approximately 6,000 ha, 19,000 ha and 9,000 ha respectively (Figure 3). Yet, due to past floods and salinization problems the actual usable area is 23,000 ha, from which only 7,000 ha are rehabilitated and actually being used in the sectors *Montante* and *do Sul* with 2,770 ha and 4,230 ha respectively for each sector (HICEP, 2011).

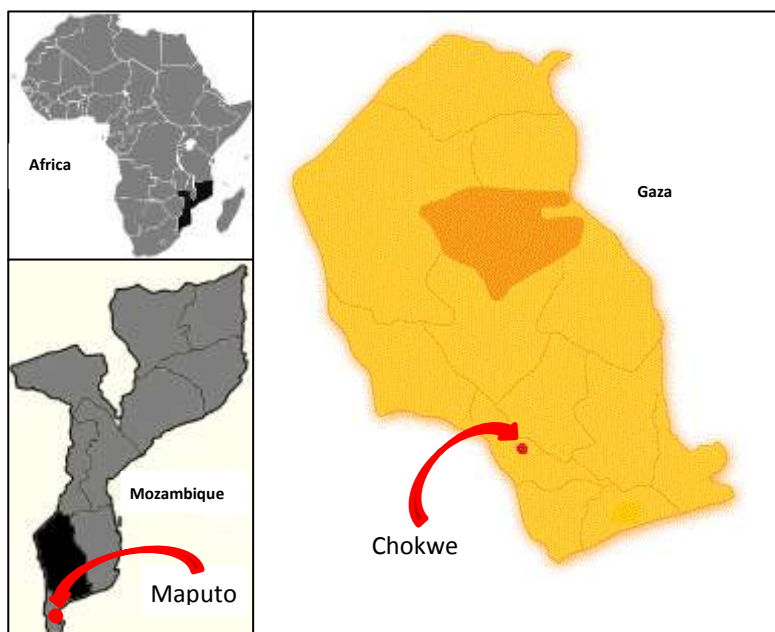


Figure 4: Map with the location of Chokwe and consequently the Chokwe Irrigation Scheme (CIS). Source: adaptation of digital public maps.

However, literature provides values ranging from 26,000 ha to 30.000 ha for the total area and from 4,000 ha to 7,000 ha for the usable area, this variation can be attributed to revised information, change in area used and source of data (Kajisa and Payongayong, 2011; Munguambe et al., 2009; Veldwisch, 2010). Independently of which evaluation is correct, the striking fact is that only a very small part of the scheme is being used.



Figure 5: The Chokwe Irrigation System map with the three sectors division. Source HICEP.

As mentioned, this discrepancy between the total size of the Chokwe Irrigation Scheme (CIS) and the area used is mainly due to floods. The 1977 flood covered large areas of the scheme, cattle and crops were lost, the irrigation scheme destroyed and it was the worst in living memory prior to the 2000 flood (Bowen, 1989; Silva et al., 2010). The scheme was put under the control of the Limpopo Agro-Industrial Complex (CAIL), a huge state farm responsible for around 92% of the area, which was also responsible for the rehabilitation of the irrigation scheme (Bowen, 1989; Pellizzoli, 2010).

The 2000 flood, the worst in 150 years, severely damaged the scheme by destroying almost all water supply and water drainage infrastructures, in addition to that, the losses expanded to cattle and households (Munguambe et al., 2009; Silva et al., 2010). People were forced to evacuate, production was inexistent in 2000-1 and nearly none in 2001-2. The Mozambican government asked for international aid to restore transport networks and infrastructures, and with funds from a.o. the Japanese government the scheme was partially rehabilitated in 2003, which accounts for the current 7,000 ha.

The Chokwe area is also prone to periods of drought, although it does not affect the physical irrigation scheme itself, the droughts have a direct influence on economic and political aspects, and consequently on the farmers, especially the smallholder' farmers due to the decreasing level of food security. Both droughts and flooding are recurrent due to the geographical location of Mozambique (Manjate et al., 2010), in which the climate in the Gaza Province is semi-arid dry, presenting great rainfall variation within and among the years with an annual average of 622 mm, which falls mainly (88%) in the wet season from October to April (Munguambe et al., 2009).

Moreover, the climate conditions and field abandonment are both increasing the potential level of salinization and water-logging (Figure 6) in the CIS. Bowen (1989) refers that 2000 ha was out of



production due to salinity more than 20 years ago, and in a more recent work, Brito et al. (2002) states that 42% to 70% of the plots are until a certain degree salinized. The Distributor 11 (D11), with a total area of 1,276 ha has 276 ha lost to salinization, in other words, 22% of the usable and rehabilitated area is inaccessible for farming. One of the reasons behind these problems is the insufficient management and care, and both can be partly attributed to title insecurity. This issue will be further discussed in the coming chapters and in detail in Chapter 4.



Figure 6: Water logging in the Distributor 6.

On top of the problems already mentioned, the rehabilitated 7,000 ha present several water delivery and drainage difficulties and deficiencies. During the rehabilitation of the system, many secondary canals were deepened, causing the water level in these canals to be below that of the tertiary canal. Moreover, after the rehabilitation was concluded, some canals were not levelled properly, causing a decreasing in water supply at the end of these respective canals, so several plots are not being used or maintained. Other problems encountered in the CIS are siltation near some intakes and also the fact that many tertiary canals were destroyed by cattle. The cattle problem was assessed by HICEP and the company has plans to implement measures in order to decrease the problem in the future.

Even though the water delivery problems seem strikingly big, they are not seen as the worst problem in the CIS, since in fact water drainage is a far worse problem to deal with according to the farmers. It became clear during the field study that the water drainage facilities are currently not suitable for the scheme, for reasons that range from limited maintenance to insufficient capacity. In certain crucial times of the rice cultivation cycle, the excess of water in the field leads to a significant decrease in yield, which consequently leads to farmers facing new problems regarding the use itself. In other words, if the rice will be consumed, saved for next year seeding, or sold, in this order of importance. In truth, it is obvious that the desire of each farmer is to have enough rice production to fulfil all three uses.

Last but not least, it is essential to mention that road infrastructures are poor in the area and most are highly vulnerable to rainfall, becoming impassable for cars, tractors and sometimes even

people. The difficulty is even bigger when mechanized seeding and harvesting are applied, since both processes occur in the higher precipitation period. For instance, road access unavailability was one of the causes of the low rice production in 2010-2011 by MIA's associated producers, this unprofitable year contributed to the company's decision to end the program.

## 2.2 Historical background

In order to better understand the farmer's choices and their reasons behind them, it is vital to be familiar with the Mozambican political changes affecting the CIS over time. Therefore, this next section will trace the scheme production stages in addition to the socio-economic impact on the farmers.

### 2.2.1 Portuguese project and settlement (1954-1975)

The CIS was originally a Portuguese project from the 1920s, yet the construction began in 1952, and only in 1954 the first Portuguese farmers started to settle in the scheme as well as some *assimilados*, who were black Mozambicans with Portuguese citizenship, to cultivate crops supported by the *Brigada Técnica de Fomento e Povoamento do Limpopo (BTFPL)* organization which would provide land, land preparation, seeds, technical support and so forth (Munguambe et al., 2009).

Moreover, the BTFPL, which was fully under Portuguese staff, was also responsible to manage the irrigation system and to pay for the production after all the services were deducted. In this first period, socio-economic problems were already present in the area, with conflicts between people using the irrigation system and the ones occupying the rain-fed lands over management problems related to water scarcity (Pellizzoli, 2009).

In June of 1975 Mozambique became independent, before the act and in the coming months after it, the vast majority of Portuguese colonial settlers had fled the country, and the abandoned land became spontaneously reoccupied by the nearby smallholders (West and Myers, 1996). Due to the fact that the scheme was run by Portuguese staff before independence, and these colonists left the country, the scheme remained without proper management till 1977. After that, the state farm Limpopo Agro-Industrial Complex (CAIL) took control of the land and production, and the Irrigation System Eduardo Mondlane (SIREMO) became responsible for the management of the irrigation scheme.

### 2.2.2 Socialization of the country side (1977-1983)

In 1977 the Liberation Front of Mozambique (FRELIMO) decided in the Third Frelimo Congress to implement a series of socialist policies in order to develop the agricultural sector through the creation of state farmers (CAIL in Chokwe), cooperatives and communal villages (Pellizzoli, 2010). Besides, the government sought to have a certain degree of control over the rural population, yet, the process had been resisted by the population, and only after the 1977 flood the government could take control of the area as CAIL/Government took advantage of the situation to remove the smallholders from the scheme and move them to communal villages (West and Myers, 1996). Forced by the circumstances, people had to evacuate to not well planned villages, lacking sufficient water supply for farming as well as for family needs, providing limited production expansion, and in some cases no access to roads (Bowen, 1989).

The state farm was a huge complex of more than 33,000 ha responsible for the whole scheme, destined to be the "granary of the nation". From 1977 till 1983 the CAIL presented poor levels of production, which combine with the new large-scale capital intensive agricultural wishes of FRELIMO, lead to a restructuring of the company. Moreover, it is relevant to mention that CAIL was not the entity in charge of the maintenance, water supply and management of the irrigation scheme,

since for that purpose the government created the *Sistema de Regadio Eduardo Mondlane* - SIREMO (Irrigation System Eduardo Mondlane) at the same time.

### 2.2.3 Privatization and land distribution (1984-1996)

The restructuring of the CAIL took 3 years starting from 1983, which consisted mainly in the division of the land into four agricultural sectors – state, private, family and cooperative. The state sector was then responsible for 10 state farms of approximately 2,000 ha each and 10,000 ha of the scheme was distributed to the other 3 sectors. Bowen’s (1989) paper provides area data with regard to the division in 1985 and 1986/87, see Table 1.

Table 1: Land occupation by sector and average size/unit in the Chokwe Irrigation Scheme in 1985 and 1986/87.

Sectors	1985				1986/87			
	Units	Ha	Average per unit	%	Units	Ha	Average per unit	%
State	10	11,000		45.8	7 <sup>1</sup>	8,500		32.0
LOMACO <sup>2</sup>	--	--	--	--	3	2,500		9.0
Family	12,000	9,000		37.5	14,371	9,650		36.0
Private	300	2,500		10.4	436	4,600		17.0
Cooperative	14	1,500		6.3	14 <sup>3</sup>	1,500		6.0
<b>Total</b>		<b>24,000</b>		<b>100.0</b>		<b>26,750</b>		<b>100.0</b>

Source: Bowen (1989) referent from the GDEAC, Chokwe August 1987.

<sup>1</sup> The seven farms were in Lionde, Massavasse, Conhane, Nwachicoluane, Mapapa, Hokwe, and Chilembene

<sup>2</sup> Lonhro-Mozambique Agricultural Company, LOMACO, was an enterprise jointly owned by the Mozambican government and LONHRO (British multinational). It took control of 3 state farms in Chilembene-Hortil, Matuba and Macarretane.

<sup>3</sup> In 1987 there was a total of 2,583 cooperative members.

In spite of the restructuring, management problems were still present and combined with the recurrent labour strife, lead to the 10 farms going bankrupt. In 1990 the managers were instructed to divest land in order to resolve problems of landlessness and to calm the mounting conflicts (West and Myers, 1996). Also, according to West and Myers (1996), the divestment process was chaotic since the best parcels and larger plots were designated for the private sector, while the parcels farthest from irrigation and closest to drainage canals, or the ones having salinity problems were distributed to the family sector. In fact, the distribution of land was determined more by wealth, status and personal connections than by capacity or willingness to work and manage the field, and in the end the distribution process had to occur more than one time since, beneficiaries and non-beneficiaries did not agree with the outcome, for instance in the village of Massavasse in which farmers interviewed during this study reside.

### 2.2.4 New management company and water users associations (1997-2012)

Replacing the SIREMO, the HICEP, a state-owned company, was established in 1997 with the responsibility of managing the irrigation system, the distribution of water, and to charge water fees in the CIS. The main objective was to “adopt regulations to guarantee a rational use of [Chokwe Irrigation Scheme]” given the “need to better exploit [its] potential” (Pellizzoli, 2009). Besides, it also defined norms concerned to the new Water Users Associations (WUA) created in 2004 due to the government decentralization reform, which require the WUAs to organize farmers, and give technical support, in addition to facilitate access to water and funds (Munguambe et al., 2009).

HICEP was working in collaboration with private companies, especially with the Mozfoods S.A., this “partnership” is in line with the new governmental agenda of increasing productivity and reviving the “granary of the nation”. The outcome of this cooperation is having positive impacts, as there was a significant improvement in productivity (Veldwisch, 2010). However, the costs of the negative

impacts for the local smallholder farmers, and consequently for the local society, are not yet grasped. These are both results of the “green revolution strategy”, a set of guidelines which intends to boost the Mozambican’s by increase the levels of agricultural production and productivity.

HICEP is responsible for the water management in the CIS, but since the decree number 41 from the 21th of August 2009 it also has the authority to manage land. Within these management attributions it is included the power to distribute and to dislocate people from their land if the area is not being used. Yet, HICEP did not fully implemented the decree and its attributions, and only in October 2011 they started to have public meetings in order to communicate and raise awareness with regard to the new rules which are planned to be implemented starting in the hot season 2012-2013.

It is not within the scope of this thesis to investigate the process and the effects of HICEP’s newest responsibility, which in fact did not even start and consequently did not affect MIA programmes. Nevertheless, it is important to take the farmers context into account in this situation, since many of them considered the land their own and also have their own reason of why they could not work the whole area.

### 2.3 Stakeholders identification and key stakeholders description

Following the physical and historical account pertinent to the CIS, the list bellow provides an overview of the stakeholders identified in the area, see Table 2. Besides that, in this section the key most relevant stakeholders are described taking into consideration their direct or indirect influence on farmers in the Chokwe Irrigation Scheme. Furthermore, in order to have a more organized account, which will give a better overview of their possible effect, the stakeholders will be divided in 4 different action levels: International, National, Regional and Local.

Table 2: Stakeholders identification with possible direct or indirect influence on farmer strategies.

		International	Regional	Local
Stakeholders	Identified and listed	Japan International Cooperation Agency (JICA)	Serviços Distritais de Atividades Econômicas (SDAE), Regional Water Administration of South (ARA-Sul)	--
	Key and described	International investors	Orízicola Inácio de Sousa (Palmeira)	Small, medium and big farmers, Credit lines, Water Users Associations (WUAs), HICEP, MIA, ISPG

#### 2.3.1 International

- International Investors

British investors such as venture companies and the British government itself actively support the programs implemented by MIA, thus they directly influence the company’ capacities and its continuity, as during my field work MIA director clarified that he was busy as some representative from the British Government was in the area to visit and to get a clear view of what has been done in the area. Therefore, it can be inferred that they play a significant role in the local farmers’ livelihood since MIA has an explicitly affect in their choices and strategies. Moreover, it is assumed that as international sources of capital which can possibly improve rice production, such investors have agreements with the Mozambican Government, especially for the reason that it suits the

current national policies. This thesis is not the place to review or look into details of the particularities of such agreements, yet it is importance to stress the remarkable impact of international agencies in the small producers' daily life.

The focus and interests with regard to Chokwe have been in producing rice and subsequently increasing this production, such proposed plan of action is not new in agriculture development policies and also what is not new are the potential negative social impacts of these endeavours. In this case there is not conflict between local and international stakeholders, yet some local conflicts have its roots in the international action level.

### 2.3.2 Regional

- Orízicola Inácio de Sousa (Palmeiras)

The rice trading and processing Company Inácio de Sousa, better known as Palmeiras - name of the city where it is located, was in the past the most suitable and closest option for farmers to sell externally their rice production (apart from home selling it). Palmeiras is interest in buying rice from CIS producers and consequently, they are the only competitor to MIA.

The company buy any rice brought to their factory, and on top of that they send trucks on prescheduled dates to the villages in order to buy rice from producers Palmeiras has a simple qualification process with regard to impurities present in the rice, no humidity check and the payment is immediate or up to 48 hours in case of higher amounts.

### 2.3.3 Local

- Farmers

The local rice producers in the CIS who can or not official have an area to cultivate, and may use from 0.2 ha up to more than 8 ha. Their interest is to cultivate the land as it is their source of income from, yet they struggle with several difficulties. Therefore, in order to avoid or to overcome these difficulties they develop and use different strategies which eventually lead to partnerships, conflicts, associations, commitments and so forth, the investigation of these strategies are the objective of this study. Thus, extensive information is provided in further chapters.

- Credit Lines

There are several financial options available to farmers in the CIS from where they can have access to credit, among those the most easily obtainable with regard to their level of bureaucracy are: Banco Terra, CCOM, CPL, and Pro-Crédito. However, other such as: Banco Terra, Banco Oportunidades de Mozambique, BCI and Barcleys do exist, but they need a much more detailed process concerned to documentation, proof of income, and so forth or they only give loan in which the minimum amount is too high for most farmers and certainly for all farmers interviewed in this study, in reality most of them need both.

Currently it is very difficult for some farmers to have access to any of the option above due to their own loan historical background, as there is now a system tracking information pertinent to past loan and non-payment credits. Thus farmers who have any unpaid debt are tagged and these simple cannot get any kind of loan, as credit organizations do not trust farmers with this profile. Moreover, credit lines tried receive their money back however not much can be done from the point of view of the companies as in most cases smallholders simple cannot pay and juridical actions are useless as the possible goods retrieved will not be cost beneficial to the credit lines since farmers do not have much to be taken. Nevertheless, farmers who are not in debt can exist have access to loans, there are also partnerships between credit lines e.g. Africa Works and small groups of farmers (30<sup>th</sup> November 2011), and between credit lines and WUA staff as CCOM has with a few D11 staff (1<sup>st</sup> December 2011, 6<sup>th</sup> January 2012).

- Water User Associations (WUAs)

The WUAs were created in each distributor in the CIS and through their staff and members it became the entity responsible to maintain the tertiary canals within their distributor, to have an update account of areas being cultivated, to organize activities, to defend their members rights. Besides the WUA staff (president, vice and secretary) work as a middleman between farmers and the HICEP, thus problem are first dealt in the WUA and only after the staff being unable to fix it the issue is then presented to HICEP. Last but not least and most importantly, WUA are the responsible to provide land for people who living in the area and are interested in being a farmer in the distributor, to become a member the person has to live in a certain area e.g. Massavasse to become a D11 member, or be presented by someone inside the WUA, or being related to a member of the association and now wants to become a member themselves e.g. a son of a farmer now wants to cultivate an area himself.

Most WUAs in the CIS have approval and authorization from the government to act as the distributor representatives, but there are still some unofficial, and both distributor 11 (D11) and distributor 6 (D6) have official status. In some case they have a physical area as the D11 which is located in a house-office inside the village of Massavasse, yet mostly distributors, like D6, do not have an office. It is interesting to mention that the D6 is subdivided in 3 secondary canals D6, D6A and D6B, each with its own deputy responsible for its own subdivided distributor.

The associations were essential for MIA during the selection process for the AP program, and eventually for the PCR program. Moreover, they were responsible for the reallocation of members during the AP program and act as facilitators for MIA in both programs, which generated a certain level of impartiality. Therefore, land allocations and reallocations are a potential source of conflicts within each association.

- *Moçfer Indústrias Alimentares* (MIA)

The private company founded in 2004 responsible for the contract farming aka Associated Producers (AP) and the Promotion and Commercialization of Rice (PCR) program is extensively addressed throughout this thesis, consequently it will be briefly described in this section. In summary, its main interests regarding to the CIS are to produce seeds, to make partnership with farmers which leads to obtain rice and eventually sell it, and last but not least and their main goal is to secure this production in order to make the company break-even, value which was of 10,000 tons of rice from their establishment till the end of the AP program when the company fired many employees and stop to prepare and to harvest farmers rice, consequently now the company needs 8,000 tons of rice to break even. They have cooperation with HICEP and in several times they provided maintenance activities in the scheme when it was within the scope of interests.

- Public Hydraulic Company of Chokwe (HICEP)

Since HICEP is the solely responsible for the management of water and land in the CIS, it is intrinsically associated directly or indirectly to any endeavour, program and activity implemented in the scheme. However, the water provided for the scheme is licensed by ARA-Sul (see above) and currently HICEP is struggling with them with regard to the water bill. HICEP insists that the amount of water paid is above of the amount of water used, due to several reasons. The conflict between the two public companies directly affects the maintenance of the scheme as great part of HICEP's resources goes to ARA-Sul instead of going to the CIS.

The formal objective of the HICEP is to increase land use and production in the CIS, which consequently leads to the possibility to collect more funds through water fees. Therefore, when companies such as MIA have the intention to establish in CIS, HICEP is by default more willing to

support it due to their potential positive impacts. However, the potential negative impacts are not fully taken into account and one of the reasons, for instance in the case of MIA, is the actual low production of rice per hectare in CIS as well as the low land use.

- High Polytechnic Institute of Gaza (ISPG)

ISPG is a local public high educational institute funded in 2005 aiming to provide technical professional instruction in the field of agriculture and livestock in the region of Gaza increasing economic and social development by offering professionals from three different courses: Zootechnical Engineering, Agricultural Engineering and Accounting. Therefore, the institute indirectly influences smallholder choices by providing knowledge for the next generations who will eventually take over the fields, as in many cases sons of farmers were studying at ISPG.

## **2.4 Conclusion**

Even though it is not in the scope of this study to evaluate the impacts of Mozambican past events on its current situation with regard to Chokwe Irrigation System, it is important to mention that the historical background of the region, the country instability after its independence and the termination of the governmental farms affected smallholder farmers in the CSI, and can be considered one of the causes which led to the low rice production in the region, which is one of the reasons why MIA's contract farming could be implemented in the region.

### **3 Contract Farming - the Associated Producers, and the Promotion and Commercialization of Rice program**

This chapter gives a description of one of the contract farming process, the Associated Producer (AP) partnership, and the Promotion and Commercialization of Rice (PCR) program, both in cooperation between Chokwe Irrigation System (CIS) farmers and *Moçfer Indústrias Alimentares* (MIA). Moreover, it presents a brief account of the contract farming process between MIA and Water User Associations (WUAs) prior to the AP and PCR processes.

#### **3.1 MIA's Contract Farming Programmes**

In 2005 MIA started to work with in the CIS with the objective to produce rice through a contract farming partnership with water user associations (WUAs) in the area, however the process itself was only implemented for a period of 3 years from 2006 till 2008. During this time MIA and the WUAs established by contract their obligation to each other, of which the most important was that WUAs would provide land to MIA. On the other hand, MIA would pay a certain quota to the WUA, which would be used for rehabilitation of needed areas, and help farmers to prepare their land with tractors (mechanized process).

The partnership with WUAs did not work for both parts as farmers did not agree with MIA rice qualification process and MIA on the other hand did not have profit being unable to acquire sufficient rice (10.000 tons) to break even, thus from the end 2008 till beginning of 2011 MIA changed their approach by starting to have contracts with individual farmers, so called Associated Producers (AP). After three years of unprofitable investments the AP programme was also cancelled and during this process MIA passed through a restructuring process, and in 2010 MIA started to implement changes in its policies and also to look for alternatives to fulfil their demand.

These changes led to the creation of the Family Sector Programme, which was a pilot project put into practice by MIA in 2010 and through which seeds were provided to smallholder farmers and in return the farmers would give it back the double of the amount of seeds received. In the 2011 campaign, MIA ended the AP program and put its whole effort in the Family Sector, now called Promotion and Commercialization of Rice (PCR) program. Summarizing MIA had three different distinct important phases for this study, Water User Association(s) and MIA partnership (WUA-MIA) from 2006 till 2008, the Associated Producers (AP) from 2008 till 2011, and the Promotion and Commercialization of Rice (PCR) ongoing since 2010.

##### *3.1.1 WUA Partnerships*

The partnership between MIA and WUAs lasted for 2 years, in fact for two rice seasons, the process occurred in many WUAs and among those the most accounted partnership was between MIA and Aredonze, which is the Irrigators Association of D11. Its office is located in the village of Massavasse and it is responsible for about 1276 ha, from which 276 are considered lost due to land degradation. Since, the D11 is one of the two areas in which this investigation will focus and also the area where more information can be found, this partnership is used as an example of how the process took place and its consequences.

Since MIA was not known when they first start to work in the CIS it was necessary for them to have external help, and for that MIA preciously acquired governmental support at high levels, which in a local level was expressed by HICEP. Thus, when MIA approached the water user associations they did in combination with HICEP and having their support (14th January 2012). According to Munguambe



et al. (2009) the contract between the D11 and MIA occurred in response to the lack of capacity of the farmers to explore the land. In reality the discourse that farmers did not have the capacity to work the fields was widely used as an argument to support MIA's endeavour in the CIS.

In the contract between Aredonze and MIA it was specified that the association would be responsible for: (1) giving access to 500 ha, from the 1000 ha which are considerable suitable to produce, in a 2 years contract; (2) sell the production to MIA according to the service provided and conditions; and (3) that members would respect the contract. On the other hand of the deal MIA would: (1) pay a quota for the 500ha which would be used to rehabilitate the tertiary canals; (2) help preparing 100 ha of land and provide all necessary inputs such as seeds, fertilizers, herbicides and so forth, and yet deduct the costs after the harvest; (3) pay the water fees to HICEP; (4) help cleaning the D11 canal; (5) and provide machinery for the remaining 400 ha at reasonable costs to (Munguambe et al., 2009).

Therefore, it was necessary to reallocate farmers who were occupying 1000 ha to the remaining 500 ha available, in which the AREDONZE use the following criteria: (1) the area of each farmer prior the partnership; (2) the capacity to work the land, in which priority was given to younger farmers; (3) the location of the plots with regard to the access to water; and (4) the payment of the WUA running costs. This process led farmers to receive areas which, in one or more aspects, were inferior when compared to the ones previously possessed.

*I got my land in 2004 in the D11 left around ramal 13 with 2 ha, but I am working in the D10 instead of the D11 because MIA occupied my area, and now I have 0.4 ha. MIA came to talk with the WUA a got the land through them. I also have to talk with the owners of lands and ask them to work in part of their fields, as the WUA does not do this service. I think the WUA should be responsible to give land in other areas, but till now that did not happen, it happened many people in this area, so many lost their land. I made complained about that to MIA and also to the WUA but nothing happened. (23<sup>rd</sup> November, 2011)*

Another farmers interviewed states that:

*The people presented in the areas which MIA wanted to work had to move to another location, the problem was that MIA used or is using that area, but the WUA never gave the other located areas to people or gave smaller area compared to their previous ones. People complained about that but it was never solved, and many people have the same problem. (23<sup>rd</sup> November, 2011)*

First of all, most of the areas were farther away, significantly increasing travelling distance and time. Second of all, according to smallholders interviewed during this study (23<sup>rd</sup> November, 2011; 13<sup>th</sup> January 2012), the areas given were smaller and sometimes presented worsening problems with regard to water delivery, water logging, water drainage, salinization and access. Another possibility was the farmers not receiving any indication of a new area, consequently he/she had to make agreements with relatives or neighbours in order to be able to cultivate.

The partnership was not profitable to MIA and consequently the contract farming with the WUA was not renewed after the 2 years period. According to the interview with MIA's engineers:

*Working with WUAs was not possible as the associations worked united when was time to get the investments and inputs, but when was the time to pay the debts, nobody wanted to be responsible for the inadequate production of any other member. So MIA*

*did not have any profit from the area. The reason why MIA decided to work through the WUA was to facilitate the negotiations as they would work with a unique partner instead of many. (28<sup>th</sup> November 2011)*

The major problem to MIA was the inexistent profitability of the investment and the uncertainties with regarding to the debits from each WUA. However, it was not only MIA that was not content with the agreement, since according to the farmers, the partnership with MIA had its disadvantages and the most striking one was the process of qualification of the rice produced by the smallholders, as they argue that MIA was not clear with regard to the criterion and its strictness concern humidity, purity and percentage of unwanted rice (red, green, broken). With regard to that one of MIA's agronomists explained:

*The quality control check which MIA used in the past could increase the value of rice significantly, however in practice this almost never happened. So farmers used to bring rice of lower quality, hence the price would go down. Farmers start to say that MIA was stealing and cheating them. (9<sup>th</sup> November 2011)*

Both parts had mentioned that there were benefits, and yet due to the shortcomings and problems presented above it was in the interest of the WUA representatives and MIA that the contract should come to end, especially for MIA.

This was a considerable problem especially because the farmers were used to sell their products to Inácio de Sousa (aka Palmeiras) where the rice qualification is less demanding and more straightforward as an ex-associated producers says during an interview:

*The company [MIA] has a problem in their quality check, especially impurities, as they tend to decrease the value of the bag of rice a lot. At Palmeira there is no such a thing as humidity, impurity and etc., 50 kg of rice is 50 kg of rice, so they just pay for the bag. (23<sup>rd</sup> November 2011)*

On top of this problem, the farmers complained about MIA's delay in payments, another issue which is also linked to their previous buyer Inácio de Sousa, since the company pays immediately, and MIA had delays from 3 to 5 months. Besides that, farmers complained about loss of production on field due to the incapacity of MIA to harvest the rice in the most suitable period due to the limited machinery. The combination of problems led many farmers to have debts.

As a result, when the partnership came to an end MIA decided to work solely as service provider and the Associated Producer(s) process started with MIA having contract with each individual rather than with the WUA(s). not all the land acquired by MIA during these partnerships were given back to all WUAs as MIA still has area where they are focusing in the production of seeds. One of the smallholder farmers interview in the field said:

*I got this area from relatives because the other area [I had] MIA occupied on the D11. (13<sup>th</sup> January 2012)*

I asked how this happened and she explained:

*MIA spoke to the leader of the branch, the leader gathered the people and told them that they have to give in the space so MIA can work, afterwards they keep for them, and since then I ask for new area every year. They told me that they would give back the area when they leave. The WUA gave me an area somewhere else, but I don't want to go*

*there because I found a place through my relatives in this area and this is enough for me and my family. But I lost in production because the area now is smaller than before. (13<sup>th</sup> January 2012)*

**L.F. van der Struijk:** Why don't you want the area available through the WUA?

*The area I got from the WUA was of 1 ha, but there it was divided between some people, so at the end the area would be smaller than what I am having now. I tried to get more from the WUA, but they said that I came too late, so they already distributed most of the land available. I am not upset. Because MIA took the area from everybody, so it was not personal. (13<sup>th</sup> January 2012)*

Similar situations were found among other farmers in the D11. However, MIA in fact gave back the areas in the D11 to the WUA, and yet those areas were redistributed among other people or simple shared between WUA members. Therefore, the possibility to reallocate and to redistribute land within WUA was an outcome of the WUA(s)-MIA partnership(s), and this was a key tool to facilitate the implementation of Associated Producers in the 3 years to come.

### *3.1.2 Associated Producers and its selection process*

As mentioned above, MIA had to change its strategy if they wanted to continue to work in the CIS, and with the lessons learned within the 2 years of WUA contract, the company decided to have single contracts with farmers who would meet their criteria to become an associated producers. As a starting point, MIA already had contact with all WUA staff and with many potential members, through them they start to disseminate information regarding to their objectives and criterion. More important is that it was through WUA(s) staff and village leaders that MIA could gather farmers and potential members who would fit their selection criteria.

The selection process started with presentations made by MIA in the villages when they explained what were the project, goals, contract, price(s), and so forth. MIA wanted to reach the leaders of the villages, who were the responsible to gather the people, so they would present to their members prior MIA's visit what was the program about and their requirements. During these presentations they already made a list of people interested to work with MIA with name, location of the plot and size of the plot. I asked MIA engineers who were still working at MIA during the time of the field work and who were responsible for the selection process, what was the most important criteria to accept a farmer as an Associated Producer (AP), and that was land availability, bellow a quote from an interview with one of them.

*The first requirement was that the farmers must have at least 8ha. Then we would start to ask for HICEP documentation and afterwards the field for problems like drainage, salinity, etc. (12<sup>th</sup> January 2012)*

The land availability promoted by the WUA(s)-MIA partnership played a key role in this period, since a few farmers could now acquire land enough to become an AP. Apart from that MIA had the objectives that after the presentations in the villages, people would talk to each other and pass the information further on, which would eventually lead to farmers passing by the company to express their interests in joining the endeavour (12<sup>th</sup> January 2012). During the interviews made during field work, all MIA engineers were really clear that anyone could approach them in order to become an AP, and yet the criteria would in the end prevent them to participate.

As mentioned above, the second phase of the selection process was to make a field visit in the plots to check their conditions, such as: drainage, salinity, access, water delivery, and actual size of the plot. One of MIA engineers mentioned that:

*The only problem found in this phase was about the size of the plots, because people gave the information which was not up to date. They said that the areas were bigger than the effective useful area in reality. The decrease in area size was mainly due the maintenance of the canals where the remaining soil taken from the canals were put in the field, so for instance, areas of 16 were 12, 10 were 8 and so on, but the minimum to be an AP was 8ha. (28<sup>th</sup> November 2011)*

After the field inspection, the farmers who had their fields were considered appropriated by MIA were invited for an interview. During the interview MIA's engineers would ask a series of questions with the aid of a questionnaire, in which the most important points approached were age, years of experience working with rice, and their individual and possible collective family manpower.

Following the interview many were already excluded of the process by their answers and especially experience, yet MIA's engineer told me that some people could vouch for others in case of someone fulfilling the other criterion. Among the field criterion which basically were: salinity, water delivery, water drainage, plot size and access, MIA mostly overlook access to the area itself since they could find a way to enter the fields.

Last but not least the farmers should provide a document from HICEP proving that the areas was in fact his or that he could work that area for the period in question, without this declaration MIA would not allow anyone to become a AP. Following that the contract would be finally signed, in which it was bound to four additional annexes explaining the circumstances, and obligations of both parts (more details in Chapter 4).

The AP was terminated following 3 years in which MIA could not get the 10,000 tons to breakeven in any of the years. Besides that almost all farmers were in debt. According to MIA's engineers the main problem was the level of compromise and commitment of the farmers with regard to their responsibilities, hence their fields and production.

*The main problem is the level of compromise, you know, commitment of the farmers themselves, for instance, in this 51ha area we made a plan to deliver the seeds and on the day nobody shown up, so we had to phone the WUA's president and ask for his intervention, so the president came, the vice-president, they helped as well and soon some people start to come but some were drunk. In fact that was good for us because our director was there and he could see the condition level of how we have to work here in the system. (28th November 2011)*

Another MIA engineers during an interview comment that:

*One of the common problems was when farmers [after] making the contract, stated that they would be responsible for [paying the costs of] bird catchers but at the end they didn't have money or they didn't use people enough, so they ask MIA for money to have bird catchers but also did not use the appropriate number [of people] in order to keep some cash, I think that there is a lot about the lack of commitment from farmers. (13th January 2012)*

Apart from that, they mention water delivery problems, water drainage, insufficient rehabilitation of the canals which HICEP assure that will happen, and also MIA's own purchasing rice conditions.

Since their establishment in the CIS MIA would only buy rice from people who were members of the association (during the WUA partnership), or only from AP (during the individual contracts), since they wanted to assure a better rice quality.

### 3.1.3 Consequences and some remarks about the first two MIA's partnerships

The major outcomes from both MIA's contract farming (WUA partnership and Associated Producers) affecting smallholders farmers were the increasing internal politics within WUA, the disposition and reallocation of farmers which may or not have received new areas somewhere else, and a shift from labour intensive to a desirable mechanized mode of production.

A clear example of this shifting is demonstrated by some of the D11 WUA members who want to start a partnership with a big Mozambican farmer. I asked, during an interview with one of the 5 key staff from the D11 WUA, how was going to be without MIA support:

*I will handle myself. There is a partnership between the WUA and a big producer who is going to prepare the land for us and use half of it, and the other half is for the people included in the agreement. The agreement is for 5 years, the first year they pay 25% for the land preparation, 50% in the second, 75% in the third and 100% on the 4th and 5th year. The harvesting will be manual. The rice will be sold to MIA, especially because MIA will provide the seeds. (21<sup>st</sup> November 2011)*

Another key D11 staff in another interview went into more detail:

*WUA members are now making a partnership with a big producer from another Region. Our goal is to seed 120 ha. The deal is that he [big farmer] works 120 ha and prepares another 120 ha for the members. There are 28 members dividing the 120 ha, but there are more people interested. Both areas [in total 240 ha] are in good shape without salinization or drainage problems, the main concern right now is with regard to water supply due to siltation. The intention is to sell the rice to MIA since they are getting the seeds from MIA. The extra inputs are our responsibility. (6<sup>th</sup> January 2012)*

Even though farmers are trying to find ways to have prepared their land with mechanized tractor, there are still missing the extra inputs which were present during the AP program. Herbicides, fertilizer, money for weeding and bird chasing control are not being provided anymore, yet farmers who knew their importance but still did not have access to them, are wishing for them after seeing their effects. The importance of these inputs is clear to all interviewed farmers, but the ones which did not have access to them do not strive to obtain them, and do not perceive their possible loss as the farmers ex-associated producers. The new difficulty is explained:

*I [ex-AP] always try to use extra inputs, like fertilizers, herbicides, etc., but with MIA it was easy because since we could just go there and pick it up. (21<sup>st</sup> November 2011)*

MIA ending the AP program also led to areas being not fully used:

*I had 8 ha while I was an associated producer, but now because MIA does not prepare the soil anymore, and also don't give any extra support, I cannot work the whole area. So I am working 4ha now. (23<sup>rd</sup> November 2011)*

*My father worked with MIA as an AP, but since the AP came to a finish he could not work this area [the whole branch - around 8 ha, yet a significant part is not being use due to salinization]. So I am working here now with 3 marachas [0.6 ha]. My father is not using this area anymore because he has another one being used in another place. (13<sup>th</sup> January 2012).*

Another consequence which will affect some distributor in the CIS is the inexistence of maintenance from MIA's side. In fact, their help with regard to clean the canals is acknowledged by HICEP, and also by ex-AP and non-AP farmers. Since when they help maintain one canal or drainage, they immediately help other farmers among the distributor.

*MIA helped a lot with the infrastructure maintenance, mainly cleaning. The D11 canal for example has problems with water delivery due to the land leveling, so MIA went there and fixed it. (21<sup>st</sup> November 2011).*

One of the most important drawbacks from MIA AP program was the debts acquired by almost all AP, especially in the last year when high precipitation led to big losses and the end of the program. This subject was not so openly brought-up by farmers during the interviews, which was expected for this particular peculiar issue, yet farmers made comments and acknowledge the existent debt.

The end of the AP also led to an increase of the price paid per kilo of rice by MIA. According to one of MIA engineers this was only possible due to the decreasing in their expenses, as they now do not spend money with land preparation, harvesting, inputs and so forth, and also because they fired 162 people which were engaged in the AP program.

Moreover, since 2009 MIA is buying rice from anyone who is interested in selling to them, and yet they have been having difficulties because there is still a lot of scepticism regarding selling to MIA because people were still thinking they were only dealing with AP, and because the MIA's rice quality check. Regarding to MIA now buying rice and their quality check, one of the interviewed farmers stated that:

*Before MIA I used to travel at least 60km to sell my rice [at Palmeira], of course paying the transportation, but there [at Palmeira] the conditions of payment are much better, it is immediately. MIA once took 8 months to pay. The waiting is very difficult for the farmers because when he sees a bag of rice he sees money. Also MIA entered in the rice production without having any notion of how aggravated the things are, and now they are starting to understand. As before they [MIA] wanted 0% of impurities, and now it is 2%. It is impossible to harvest without having impurities. (21<sup>st</sup> November 2011)*

Even though MIA currently changed their approach and it is now including every possible rice producer in the CIS through the PCR, results of their previous action evidently modified the whole technical and social structure. An in depth analysis of these consequences and how they affect farmer's strategies will be present in Chapter 4.

### **3.2 The Promotion and Commercialization of Rice program**

As an alternative to deal with past problem and unsuccessful investments, MIA during the rice season of 2010-2011 started with the family sector program. The idea was to provide seeds produced by MIA in the CIS to smallholder farmers by having individual contract with smallholder farmers responsible for a certain area. Within the contract it is stipulated that the farmer will receive

a certain amount of seeds dependable if he is using transplant or direct sowing, the producer in question must give back the double of the amount of seeds taken by the end of the campaign. In return the company expected that these farmers would sell their surplus to MIA, but no obligation is in place. The pilot project was a success according to MIA's engineers and thus they expand the program which in 2011-2012 became the Promotion and Commercialization of Rice (PCR).

Another important reason behind MIA initiative to start the PCR was to be able to compete and in fact steal market from Inácio de Sousa, and as mentioned before, is for that reason also the company now buys rice from anyone interested in selling to them, independent of the person be or not part of the PCR. Especially because after 5 years in which the company could not breakeven once, they come to the conclusion that they had to be more open minded concerning their standards. Therefore, from the campaign of 2010-2011 MIA was buying rice from anyone who was interested to sell to them. Moreover, MIA started to use the same methods as Inácio de Sousa by sending trucks to specific location and villages to collect the harvest.

In order to include as many farmers as possible, MIA created and hired people to fulfil the position of field agents. MIA did that because there were difficulties at the starting point of the pilot project to gather people, and to let them know MIA's interest in working with them. On one interview with MIA's engineer I asked how the beginning of the project was:

*This year the process [to gather people for the program] was easier because we already knew what they were going to do [join MIA], but last year at the beginning was very difficult to find people, so I went to HICEP to get information about the smallholder farmers. I received lists [of people] and at the end I did not use them because it was not up to date. After that I contacted the WUA' presidents, and even other producers who were our partners from the AP. During this time the field agent idea started. (9<sup>th</sup> November 2011).*

These agents are well know people by MIA and also respected by the population in certain villages, and especially by the WUA members of the distributors they are responsible. Their task is to provide information to MIA about possible rice producers in their area and if they are having their fields prepared before receiving seeds from MIA, to be a personal relation and intermediary between MIA and farmers, to attract more producers, and most importantly to keep track of their activities. As mentioned and in practice field agents will inform MIA engineers when they are providing the seeds to farmers if their field according to the agents they visited every field or they said that they know that a particular farmer is reliable, which led to the conclusion that not all field may have been visited. Moreover, from what was seen there are not written information provided from agents to MIA engineers.

### 3.2.1 Selection process

PCR's selection process can be considered undemanding, especially when compared to the AP selection process. Since, to be able to get seeds from MIA the producer has to have first an official legalized identification, and second his or her area must be prepared in case of direct sowing, as for nursery a small area is expected to be ready. In some cases the area did not need to be prepared, however this would only happen if one of MIA's agents would vouch for the person, in many case MIA's field agents would do that (9<sup>th</sup> November 2011, 21<sup>st</sup> November 2011, 14<sup>th</sup> January 2012).

Although I did not fully participate in the selection process when MIA went to the WUA to explain what the PCR was about and the company requirements, I was present during MIA's rice seed distribution, and before that MIA's engineering were interviewed and enquired about the process. It happened as describe, with people gathering around one predetermined location, presenting their

identification or their relatives to MIA representative which checked with of the agents if the person in question had their area prepared and in some cases that it was kin to the identification presented. Besides that during visits to Massavasse while in company of one of MIA's agent farmers approached him to ask about when would be the next delivery or to tell that their area was already prepared.

### 3.2.2 First outcomes of the PCR

The first drawback of the PCR was that many farmers who participated in the pilot project created debts as they could not give back the double of the amount of seeds taken. Yet, these debts may be forgiven given the circumstances of the campaign, as precipitation was much higher than expected and uninterrupted from the beginning of November till February. In an interview a MIA's engineer explained that:

*In cases of failure to pay back the debts from last year, MIA is thinking of forgiving the debt. But we will have to look each case separately to see what was/were the reason behind the efficiency problem. For instance, if there wasn't lack of effort from the farmer and he did what it is expected from him, and still there was a problem, then MIA will be very careful during the analysis of the case. Due to the fact the last year campaign was far from common because of the high precipitation, this year campaign will give a much closer evaluation to the real PCR potential. (9<sup>th</sup> November 2011)*

I inquire about the cases in which they know or think that it was lack of effort from the farmer:

*Of course if after the study of the case the farmers did not have a good production due to his lack of effort MIA has to be rough and ask them to pay their debts, and also MIA won't provide seed to them anymore. (9<sup>th</sup> November 2011)*

Since the PCR is less demanding with regard to cost for the company, MIA since the termination if the AP program now breaks even with 8000 tons, 2000 tons less than when the AP program was in practice. However, they still do not expect to achieve this amount, especially because farmers will keep rice for their own consumption and or sell rice to Palmeira. Therefore their goal is to reach around 4000 tons, from the also expected 3000 ha of PCR producers this next campaign, an average of 1.3 tons of rice per hectare.

MIA is trying to increase their competition to Palmeira hence they change their qualification method even before the PCR came to place. Nonetheless they thought to make farmers more inclined to sell to them by also changing their payment methods. During the PCR program rice will be paid immediately to the farmer on the time in which MIA is collecting the bags of rice. To do so, MIA will establish some posts in key location in the CIS and also schedule within some villages a day when the truck will pass by to collect the harvest. This completion for the rice market has positive impacts in the life of smallholder farmers as they need to worry less about transportation and their costs.

The PCR program can potentially include all CIS rice farmers as anyone interested in cultivating rice can apply for the program, making easy for farmers to have access to seeds, which in theory are good and yet other limiting factors as for instance soil quality may lead the farmer to acquire a debt, nevertheless the PCR can increase the willingness to produce rice. Besides, MIA also provides some technical assistance that may not seem much, but for farmers who have not been receiving any kind of support it can be an additional incentive.

In summary, MIA's program implemented in the region forced farmers to changed their strategies and adapt to the mechanisms if access order to cultivate rice.



## 4 Mechanisms of access and farmer' strategies

The aim of this chapter is to describe how the mechanisms of access changed for smallholder farmers in consequence of MIA projects in the region, along with the possible strategies implemented by farmers in the distributor 6 and 11 of the Chokwe Irrigation. An analysis is presented based on the framework of the web of access to pinpoint the consequences of MIA programs and how farmers are trying to secure their way of living. In order to make it easy to demonstrate these changes, this chapter will be subdivided in each mechanism of access showing the alterations which occurred in each distributor.

The detailed analysis of technology, capital and social relations for both distributors are given in order to identify patterns of resource which are affecting smallholder farmers in relation to those who are or can control, gain and maintain the access per se. Furthermore, access to labour, authority, knowledge, identity and markets will be taken into account in their relation to the 3 major mechanisms analysed.

### 4.1 Labour

In the CIS four there are four factors to be considered within labour scope, which are (1) distance, (2) payment options, (3) costs, and (4) availability which is related to the time of the year. However, from those only the costs can be considered the major limiting factor within the CIS, and linked to it is the payment options.

The Distributor 11 (D11) has several farmers who need external work force in order to produce rice as their field are too extensive to be work alone or with the help of relatives. However, when MIA started with the water user association partnerships farmers had less need for external labour as MIA would be responsible for the highest labour demanding activities of field preparation and seeding. Moreover during MIA's WUA partnership and Associated Producers (AP) program, the farmers who participate in the contract farming would receive capital from MIA in order to pay for extra and necessary activities which were not executed by MIA itself such as weeding, bird chasing, and herbicides or fertilizers application.

*In the D11 mainly transplant is used as mode of cultivate, and it is done by the family members as an area around 1~2ha already need extra labor. However, there are many factors influencing in this relation as well as in the relations to the price of the labor per day for transplantation. Since, it depends of the size of the nursing itself, the distance from it to the field, how are the conditions of transport between the 2 points e.g. cleaning field, good path, etc; and also the period of the year, consequently when there is a higher need for labor the price increases. The price per day can go from 60 to maximum 100 (in rare cases), with 70~80 Mt per day being the average. In summary farmers cannot always pay for extra labor and mainly use their families. (9<sup>th</sup> November 2011)*

Therefore, from 2006 till 2010 the D11 labour force became accustomed to receive money for their work as MIA would provide capital for it, which make more difficult for other farmers who were not included in MIA projects to access labour. Hence, the many farmers who did not participate in MIA's programs had to make arrangements prior to the peak season or pay higher prices for daily workers. In most cases an agreement regarding to the paying method was the limiting factor as in practice workers want to be paid in cash after every day if possible, or at the end of the week/activity, and in reality the farmers could, as still can, mainly pay with rice or partially with rice. Hence, farmers now

have to use more their social relations to secure external labour by finding people who will accept the payment being done partially or completely by rice.

In the same period (2006-2010) D6 farmers were not affected by MIA programs, and in fact MIA's WUA partnership and Associated Producers programs actually increase labour availability since they use tractors to prepare and to seed the fields, which decrease the amount of people who were living near the D6 but would look for work in the D11. As labour availability increase the main limiting factor is regarding to the time of the year when farmers can hire people to help in their production, as the prices during certain periods increase.

As the plots sizes in the D6 are small per farmer (around 0.4 ha to 2 ha) smallholders do not need as much extra labour and D11 farmers, preferring to do the activities themselves in order to decrease the costs, especially if the extra worker would only accept money. However that does not mean that farmers do not want or need extra labour but mostly that they simple cannot pay for it, particularly during the peak times of seeding and harvesting.

*My rice production is always reduced because I cannot hire people and because I cannot work everything myself, we need help and support from the HICEP and from the government. (23<sup>rd</sup> January 2012)*

*The problems are the same in all D6, drainage, lack of inputs and support, not enough capacity, and labor is the main problem. Because of that people are still lending land if they are not working with it because they cannot work themselves. (23<sup>rd</sup> January 2012)*

Therefore, access to labour is mainly achieved through social relations where relatives and/or neighbours help out the farmer, and in return they normally received help with their own areas, or the allowance to use part of the field. Besides in some cases an agreement is made over the total amount of rice harvested.

With the end of MIA AP program, it would be expected that the need for extra labour in the D11 to perform the activities of land preparation and seeding would increase, yet the situation remains practically that same as many farmers want to have their field prepared by tractor instead of animal, and due to the current insufficient money since MIA now does not provide money for extra activities. Moreover, farmers now tend to use less people then needed for weeding and bird chasing, and the possible external labour which would be used in the application of fertilizers and herbicides is not necessary since there is no capital to buy them in the first place.

Therefore it can be concluded that the labour availability did not change since MIA established in the CIS, as its ups and downs are still linked to peak periods of the year. However, farmer' strategies with regard to access to labour changed due to MIA's first two programs, as now farmers from both distributor have to make use of their social relations to ensure that they will find someone who can accept being paid with rice and or any other agreement which do not involve payment in cash. In the D11 another change is the personal preference of some farmers who are trying to find ways of having certain activities e.g. weeding or bird chasing, done by external labour instead of doing the task themselves. Last but not least, farmers who participate in MIA programs and had their field mechanically prepared during this period are now trying to find ways to maintain this scheme by searching for other partners, consequently MIA programs changed how farmers want to produce as now they prefer to have tractors preparing their field than their own labour, external or animal.

## 4.2 Authority

The D11's WUA office is located in Massavasse where every Wednesday afternoon the association staff are open to receive members from the association, besides that they can also be accessed at home or by cellphone, yet officially Wednesday is the day in which farmers can present their problems. Member of the association can go directly to HICEP, which is not considered far by the farmers interviewed, but it is not advised as problems should be first tried to be dealt internally and only when the issue go beyond the responsibility of the WUA HICEP should be contacted.

Since MIA started to work in the CIS, and specifically in the D11, the possibility to access the WUA authorities become essential for farmers who wanted to become a MIA partner, collectively (MIA WUA partnership) or individually (AP). WUA is the primary responsible to give the possibility to a farmer to increase his/her area size, and as MIA would only work with farmers who had at least 8 ha, the access was became essential, thus without it one could neither get more land nor work with MIA, which consequently increase the WUAs power within each distributor.

It can be concluded that access to authority can be considered a key mechanism of access to technology which will lead to more land and consequently more water, yet it is not the access of authority itself that allowed farmers to increase their areas and become MIA partners, but the social relations with WUA staff, the individual capital and to a certain degree their social identity. Concluding, the access to authority did not change prior or subsequent MIA's programs, but the importance of the social relations with those authorities increased significantly in the D11. It can be assumed that the same happened with other distributor as the steps to acquire more land and work with MIA were exactly the same for the other distributors.

*I have 4 ha, but I had 8 ha while I was an associated producer, but now because MIA does not prepare the soil anymore, and also don't give any extra support, I cannot work the whole area. So I am working 4ha now. (23<sup>rd</sup> November 2011)*

The situation regarding to access to authority is similar but not as important for the Distributor 6 (D6) and for other distributor in which MIA did not work with. For the D6 the WUA's staff is easily accessible as their main members, president and deputies work almost every day in their areas within the D6. Hence, when smallholders have a problem they can go directly to them and seek advice or help, which is also extended to issues for which HICEP is the responsible. Besides, the staff can be also contacted at home or by cellphone since the WUA does not have an office. Farmers can also contact HICEP straight, yet the HICEP employee responsible for the D6 advices people to go to their president first, also members prefer to present their problems first to the president or deputy as it is informal and personal, and they also know that the problems carry more weight if submit to HICEP by the president of the association. Most of D6 members live within the Chokwe city and around Lionde, consequently the distance to HICEP is not a limiting factor in case a member decides to present their problems directly to the HICEP.

In summary, MIA did not change how farmers could or not access their authorities, but rather changed the level of importance of these authorities in the associations and distributor in which the company worked with since their establishment, and this increased WUA's power gained during MIA's first two programs did not diminish after their respective endings. Hence, now with the PCR program taking place the D11 WUA staff still have power enough to make separated agreements with other producers including only some hand-picked farmers who were mainly MIA partners.

### **4.3 Knowledge**

Access to knowledge is very limited for CIS farmers as there are no courses or workshops given in the area for adults. Hence, the main source of knowledge came from family, relatives, neighbours, and practice when referring to older farmers who worked for the Mozambican State rice production company. Nevertheless, there is the Polytechnic Superior Institute of Gaza who provide BSc in agriculture for young adults who in some cases are sons and daughters of farmers in the region, yet in practice the smallholder farmer access to knowledge is poor for the whole CIS, especially because governmental organizations do not provide any support, and payment for the service is out of question due to limited money.

Prior MIA, CIS members would have almost no access to knowledge, but since the company started to work in some distributors they started to provide technical assistance to the members who participate in their programs. Therefore the less favoured members who were not included in the contract farming would still not receive direct support, yet this could be overcome through interactions and social relation between those less favoured and MIA's partners, as they had indirect access to knowledge.

However the situation was not satisfactory for MIA's partners on the first place, as they complained that many questions and problems would not reach the headquarters of MIA. Farmers argued that the engineer responsible for the D11 would not present the real situation to their own responsible, and also that he overlooked many issues brought by smallholders.

With the ending of MIA's WUA partnership and AP (2006 till 2011), and beginning of the PCR, MIA's previous partners are now receiving less support as they were used to, and some questions are still left without answers, especially the ones regarding to the quality of MIA' seeds and their germination issues.

On the hand, the access to knowledge actually increased in the D6 since the program of Promotion and Commercialization of Rice from MIA started, as farmers can now present their doubts and questions to MIA agriculture engineers. Although this access is limited and in many cases the engineers do not even visits the fields in question, it is still better than no access at all according to some D6 farmers interviewed (23<sup>rd</sup> January 2012).

### **4.4 Identity**

Before MIA started to work in the D11 the access to land was mainly done through social relations and authority as in the D6. This situation changed from 2006 and on, as MIA started to work in the distributor and WUA staff members started to select people who were willing, but also and especially capable to work in partnership with the company. This capability was linked to factors like age, years of field experience, gender and status. The chosen individuals became more important in the community, as this was one of the ways in which a farmer could get more land and benefits provided by MIA.

Nonetheless, farmers who needed more land in order to fit MIA's plot size criteria still gained access through the negotiation and help of other social relations such as friendship, reciprocity, patronage and so forth. It was due to this necessity to create, to nurse and to maintain these relations that the D11 WUA became more politicized and why access via identity became more important. After the AP program came to an end, the WUA started to search for new partners, hence being identified as a hard working responsible farmer was essential to gain access to this possible endeavour.

It can be concluded that MIA contract farming in the D11 increased the strength and importance of the identity mechanism of access. Farmers became more aware of other farmers productiveness, working power and responsibility, in summary in his/her success which was shown by their own production, hence MIA programs indirectly forced farmers to adapt themselves to this new setting where identity plays a decisive role when a farmer wants to increase his/her field.

The Distributor 6 (D6) on the other hand has the same settings as the D11 prior MIA programs. Hence, access through social identity is not as important as other access for the smallholder farmers as none of the four aspects taken into account within the identity scope: age, gender, experience, or status are intrinsically connected to the access to land and consequently water. In other distributors a person has to live in a certain locality or village in order to have the area officially in his/her name, yet in the D6 the person can either be living in Chokwe or Lionde. Moreover, in the case of the D6, access to land is mainly done through social relations (relatives and neighbours) and authority (WUA staff).

#### **4.5 Markets**

There are many farmers from the D11 who have been producing rice with the main goal of commercializing their surplus, and consequently they are more affected by limiting factors such as types of market (e.g. home, small sellers in the city, or bigger companies), distance to the buyers, payment options, price, and rice quality criteria. Prior MIA the best option for D11 smallholders would be to sell their rice to the company Inácio de Sousa (aka Palmeira) located in the city of Palmeira 100 km far from the village of Massavasse. Therefore producers had to find and pay for their own transportation which would obviously decrease their profit.

Since MIA started to work in the D11 all farmers who actually had areas sufficiently big to participate in the programs (8 or more hectares) had their rice harvested and bought by the company, which was a required part of the contract during the period from 2006 till 2011. Hence, now MIA partners had to be aware of price, quality requirements and payment.

Price was not an issue as both parts would settle over the price prior to the production. However, rice quality requirements were an issue which led to conflicts between producers and the company. By contract MIA had explicitly determined how rice would be qualified, and yet farmers apparently did not fully grasp their possible losses at the beginning so when the harvested rice received its qualifications farmers declared that the company was trying to cheat and steal from them. MIA tried to explain that this was the agreement and at the end farmers had to accept the outcome and received less than they were expecting.

Besides that, payment was led to conflicts between farmers and MIA as in some cases the company took months to pay for the harvested rice. Farmers explained that they were not used to that as Palmeira would pay them straightaway or give them a check which would be deposited in their bank account in case of higher amounts. MIA stated that this delay was due to their qualification process, as all the harvested rice could not be qualified so fast, and in some cases the company was expecting external capital which did not arrive in time. In summary farmers argued that the whole problem was in MIA's qualification process which decreased their income and delayed the payment, once again farmers were used to Palmeira which did not have a strict rice qualification process.

The biggest conflict between MIA and their partners was actually neither regarding the qualification nor their delay in payment, but their harvesting policy. According to the contract MIA has the right to harvest all rice which would be taken to their company, yet farmers had the misconception that

they would be allowed to retain part of the production for their own consumption. MIA did not accept that, leading to situations where farmers would stand on the fields in front of the tractors in order to save some production. In the end MIA did harvest all the rice and farmers argued that they had the right to eat and they would not accept that after the first year partnership. Both parts came to an agreement that in the next rice season the smallholders would save part of his/her area to produce for their own consumption, nonetheless MIA would not prepare or seed the area in question.

During MIA first two contract farming programs, smallholder farmers who did not want or were not allowed to participate in the partnership were left with the same options as before. Thus or they would sell to Palmeira in the case of a higher surplus or sell it from home as MIA would not buy rice from anyone who would not be a partner. An exception to this policy was the last year of the AP program in 2011, yet almost no one knew about this change so consequently MIA's share of rice bought from external producers were small in this year.

The situation changed drastically after MIA started the PCR program since now the company shifted to a less strict rice qualification process and they were buying rice from anyone interested in selling to them. Moreover, it is not within the contract any clause the binds farmers to sell their surplus to MIA, only that they should give back the double of the amount of seeds taken or pay for them for a price stipulated before signing. MIA expects to collect more rice than in previous year when these factors are combined with the fact that anyone can join the program if they have identification and a prepared field.

One of MIA engineers declared that they had to make these changes in order to compete with Palmeira. This completion promoted benefits to smallholder farmers as now both companies have a pickup truck service, consequently distance is not a limiting factor anymore. However, even with these changes there were farmers who stated that they would still sell to Palmeira instead of MIA since according to them it would be more profitable.

In conclusion MIA's necessity to compete for market in order to make the company break even, and their latest contract farming program led to significant improvement for the D11 smallholder farmers with regarding to market access and benefits. Smallholder farmers adapted themselves quickly to the new possibilities and are trying to make the best out of it by weighing the pros and cons of selling their surplus to MIA or to Palmeira.

The situation in the D6 is different than the D11 as according to the farmers the rice yield is not enough in order for them to worry about market possibilities, as they normally could only produce the amount necessary to cover for the next year's production and their own consumption with a small surplus which was usually sold from home. Therefore, prior and during MIA's WUA partnership and AP programs D6 rice producers mainly cared about the current price of the rice at homesale, and not so much about other factors such as distance to the market, payment possibilities, or different types of markets.

The situation changed as MIA's PCR program started, as now farmers can sell their surplus directly to MIA, after meeting the contract criteria of giving back twice the amount received, and after taking the amount necessary for own consumption. Hence farmers are now more conscious about their possible income, and they seemed to have an increasing awareness regarding to external market factors as they know it will define the value being paid to them at the end of the campaign. If farmers decide to sell their surplus to MIA factors such as payment and market distance is not a problem, as MIA pays immediately and they pick up the harvest in certain locations spread throughout the CIS.

## 4.6 Social relations

In the D11 all possible ways to gain access via relationships are important, thus family, friendship, dependence, leadership, trust, patronage, partnership, obligation, and reciprocity are each and every one used to gain access to others mechanisms via social relations. During field visits, interviews and group meetings it was possible to identify that certain farmers would try to control this access by maintaining contact in a daily bases, or at least weekly bases, with important members of the WUA staff. Moreover, it was clear that certain WUA members received a different treatment as they were approached more respectfully and with some flattery.

It could be expected that this web or relations would lose a bit of its importance when MIA ended the AP program, since now farmers did not have to compete in order to become partners in the new PCR program. However, the WUA staff and some other members who were mainly all ex-AP farmers saw the benefits of having their areas prepared by tractors and the advantage of a bigger area, and sought for a new partner. The outcome of this new partnership was still not official (more details will be presented in the technology subsection), yet the essential element of this agreement is that the WUA would provide 120 ha to the other interested party (Fuele - a big producer from another region in Mozambique), which in return would prepare another 120 ha for D11 WUA members.

It can be argued that farmers saw the increasing importance of this mechanism of access and tried to make adjustment in order to have more land in the D11 by maintaining a closer contact with the WUA staff and or try to befriend them. In this case other factors such as already having a large area in the distributor, or being identified as a hard work individual may have had a key impact when one were trying to expand his/her network.

In the distributor 6, field visits and interviews have showed that within the multiple possible relations mainly reciprocity, friendship and family play a role in the distributor. Other such as patronage, dependence, trust, leadership are not as important, hence there is a limited reliance on these social connections because they are not necessarily connected to access and maintenance of land. MIA's first two contract farming programs did not affect this mechanism directly or indirectly, yet now with the PCR people are slightly more interested in maintaining a closer contact with neighbours and with the MIA agent as they may need extra help. Hence the differences between the distributors with regard to the importance of this mechanism of access are a clear sign of the impacts of MIA programs in the CIS.

## 4.7 Technology

Access to technology refers to the possible use of land, water, field inputs (e.g. fertilizers), machinery (e.g. tractors), animal power (e.g. cows for ploughing), infrastructure (e.g. roads), and seeds. To acquire official access to land, especially areas bigger than 1 ha it is necessary to contact the D11 WUA and request it, hence the association is the main responsible to give land access to people. However, it is common to be able to obtain small areas such as 0.2 ha to 0.4 ha through social relations.

The D11 in contract with the D6 has more farmers in general, as well as more farmers with bigger areas e.g. 4 ha, 8 ha and so forth. Before MIA started to work in the distributor farmers stated that many areas were not been use as the official owners did not have capital enough to use them in fully, which was one of the reasons why MIA, with support from the government, showed interest in cultivating in the distributor. Therefore, from 2006 and on the access to land changed drastically as MIA started their partnership with the WUA and their selected members.

As MIA only would work in area which did not present salinization and water logging problems, the association had to reallocate some farmers to other areas, in which those who were not considered capable or who could not through other mechanism guarantee their selection were moved. In reality many people lost their areas instead of being reallocated, the vast majority did not have areas bigger than 1 ha, hence they did not have many difficulties to find a similar plot regarding to its area size to work with. However, the quality of the new allocated or obtained areas was inferior to their previous ones.

After the ending of MIA WUA partnership the situation became worse, as MIA started to work with individuals through the Associated Producer (AP) program, as each farmer now would have to have at least 8 ha of field to be selected as an AP. As a result, even more farmers were relocated or simple had to leave their areas. In these both periods (WUA partnership and AP) access via social relations and through identity was a key to secure or to increase, even if temporarily, smallholder farmer' areas.

The process could have been more complicated or could have presented more conflicts, but that did not occur since MIA and the WUA had HICEP blessings in order to make the program work. The reason behind this support is that HICEP was and still is interested in money coming from water fees, as technically more land would be used now by or with MIA, hence HICEP would collect more fees.

The interest of farmers to become part of MIA production was enormous as the company would provide all remaining necessary technologic inputs and even capital when necessary. Farmers did not have to worry anymore about field preparation, seeds, field inputs and harvest, or with capital dependent procedures such as weeding or bird chasing. Moreover, MIA would even fix and give maintenance to the irrigation system structure. D11 farmers who were not part of MIA partnership would suffer the same difficulties as D6 farmers, with some extra negative aspects as distance to the field, or soils with problems.

After the ending of the AP program, MIA started the PCR, a program which does not provide any technological advantage expect for seeds. However, many farmers got used to have at least a certain level of support, and since the previous programs allowed a group of member to control part of the distributor, they sought for a new partner. Fuele (the possible new partner) was discussing with the WUA staff and other selected members, who totalized 28, about him being responsible to prepare and to seed 240 ha which he would produce half of this area from himself, and the other area would be divided among the 28 D11 smallholder farmers.

Moreover, the contract is for a period of four years, in the first year farmers included in the deal will pay 25% of the costs of the land preparation and seeding of their 120 ha, 50% in the second year, 75% in the third, and finally the total cost in the fourth year. The idea is to pay less in the first years in order to allow farmers to invest in the remaining necessary technological inputs, as well as labour.

As the deal is with 28 D11 WUA members, it can be concluded that in fact these members control 240 ha in the distributor, since they are the ones allowing Fuele to work in half of their area, in average that is around 8.6 ha per farmer. It can be argued that this would never be possible if MIA would not have been implemented in the region and/or if HICEP would not had given their full support to the endeavour.

In the D6 access to land, and intrinsically to water from the irrigation system, is not considered an issue according to their farmers, as no one had problems to have an area to work with. In most cases the area obtained is not official, which means that the farmer in question is borrowing part of an area or the total area from someone else who could not work the field in the season. WUA staff is



normally informed, yet in most cases the staff members seek to know what is happening within their distributor.

Field inputs on the other hand were not used by any of the farmers interviewed, since they lack capital to invest in their own production, which also applies for machinery and/or animal power. Farmers explained that they know the benefits of using fertilizers and herbicides, but they say they do not have capital to invest in their fields. Although, when it is possible, and existent, farmers tend to use their capital to prepare their field by either tractor or cow, since it is the land preparation the biggest limiting factor regarding the use of land. Most farmer simple do not have the manpower to prepare their own land as it is bigger than they can handle themselves, they neither have capital to pay for external labour, consequently they use social relations to acquire some help through agreements over the area used and/or the production itself.

Infrastructure regarding roads and walking paths are not a problem in the D6, yet the irrigation system presents several problems. Water delivery is the first one mentioned by the farmers, as they argued that since rehabilitation took place the secondary canals are lower than the tertiary canals consequently more water is necessary than given to the distributor in order to irrigate the fields properly (Figure 7). Directly link to the water delivery is the water drainage problem, as many fields could not be used due to water logging (Figure 8). Farmers discussed about the necessity to clean the drainage canals, but they said that it is very difficult without machinery. Particularly during three different field visits, as the level of precipitation was higher than expected, which lead to the flooding of several fields (totally or partially). The losses were severe as farmers could do nothing to take the water out to save their production.



Figure 7: Tertiary canal intake in which is possible to see the results of the rehabilitation which lowered the secondary canals, consequently it is necessary more water to reach the intake.

The HICEP is the responsible for the irrigation system and was already confronted with the problem by the WUA members, but still no help was given as the governmental company claims to do not have money to fix the problems. WUA staff tried to gather farmers and the head of each branch in order to make a collective effort to clean the drainage canals, in some areas the attempt was successful and it was possible to see the clear differences between clean and unclean canals. Such measures should be enough to deal with a normal level of precipitation in the region, but the storms prior the field visits were significantly higher.

Seeds for cultivation are not an issue according to most farmers, as they save seeds from the previous year or acquire them with relatives or neighbours. However they complain about germination problems and would like to have better quality seeds. Seeds are the only aspect within technology in which MIA affects the D6, these changes occurred only after the PCR started in 2011, prior to this year MIA did not pose any positive or negative influence. Even though MIA's PCR program provides technology through seeds and a new market possibility for D6 farmers, it can be concluded they did not affected the web of mechanism of accesses in the distributor as farmers still rely in the same mechanism with the same importance.



Figure 8: Water logging in the Distributor 6 due to drainage problems.

#### 4.8 Capital

Capital can be considered to be the ability to access something which has costs, for this study it is presented as the possibility to gain access to other mechanisms, especially technology and labour. However, to gain access to capital one has to make it or acquire through other entities. Within the CIS the possibility to acquire funding besides personal capital, is MIA and banks or credit lines. Farmers who did not have access to MIA during their WUA partnership and AP program had to rely

on their own investments, in case that was not possible, the only remaining options are banks or credit lines.

Therefore, it was clear the reason for farmers to work in partnership with me as they will be able to have access to capital for bird chasing and weeding, and besides they would not have to depend on their own capital to prepare the land, cultivate, seed, apply fertilizer and herbicides, and harvest. These nested source of mechanisms is direct linked to the farmers power to benefit from the land he uses, consequently this led farmers to adapt themselves in order to increase their chance to reach these advantages. It is interesting to point it out that even though MIA in fact used to provide more gain through technology than through capital itself, yet farmers saw MIA as a source of capital which they did not have to spent themselves, hence farmers wanted access to technology, but as this technology is acquired by capital they normally see this way.

In Mozambique, as everywhere else, capital is lent to someone who meets certain requirements and every bank or credit line has their own set of criteria. Smallholder farmers working in the CIS know about the difficulties to acquire credit and most of them clearly state that they do not meet the criteria, essentially because they do not have collateral. Nonetheless there are also other causes, such as farmers being tagged as indebt in the Mozambican protected credit, which is a service provide to clients telling them if the person in questions has previous debt in any other bank or credit line. In summary most farmers do not have money to invest which directly limits their capacity to produce, hence decreasing their yield and quality of life.

Prior PCR MIA did not have any influence in this mechanism in the D6, yet currently the company is enabling access to a small amount of credit, as farmers have a secure buyer to sell at once all the surplus, and also due to the misappropriation use of seeds. Farmer can ask for seeds saying that they will use direct seeding when in reality they will make a nursery and transplant later on, these extra seeds alleviate the farmer' costs or provide some cash in case of them being sold.

## 5 Discussion and conclusions

This chapter discusses the findings on bases of the mechanisms of access framework, present the conclusions, and finally a reflection about the field work experience in Mozambique. In order to facilitate the discussion and to give a better overview of the changes which occurred within and among the mechanisms, the chapter will be subdivided.

It is important to mention again that this study takes into consideration the definition of access proposed by Ribot and Peluso (2003) in which access is defined as the ability to benefit from things. As farmers in the CIS regard rice yield as their ultimate benefit which will provide for their necessities, so does this study. Therefore, access to one mechanism such as land and water (technology) do not assure that the farmer in question will gain benefit from the land, as he would still need rice seeds, knowledge, manpower, capital, and so forth. However, as natural resources, land and water can be used to focus the analysis and from there and on one can investigate the tangly connections between the mechanisms which will in fact culminate in a farmer's benefit.

### 5.1 CIS prior MIA

In the CIS smallholder farmers would make use of their social relations to seek their benefits, being access to capital the main limiting factors and the most needed by farmers.

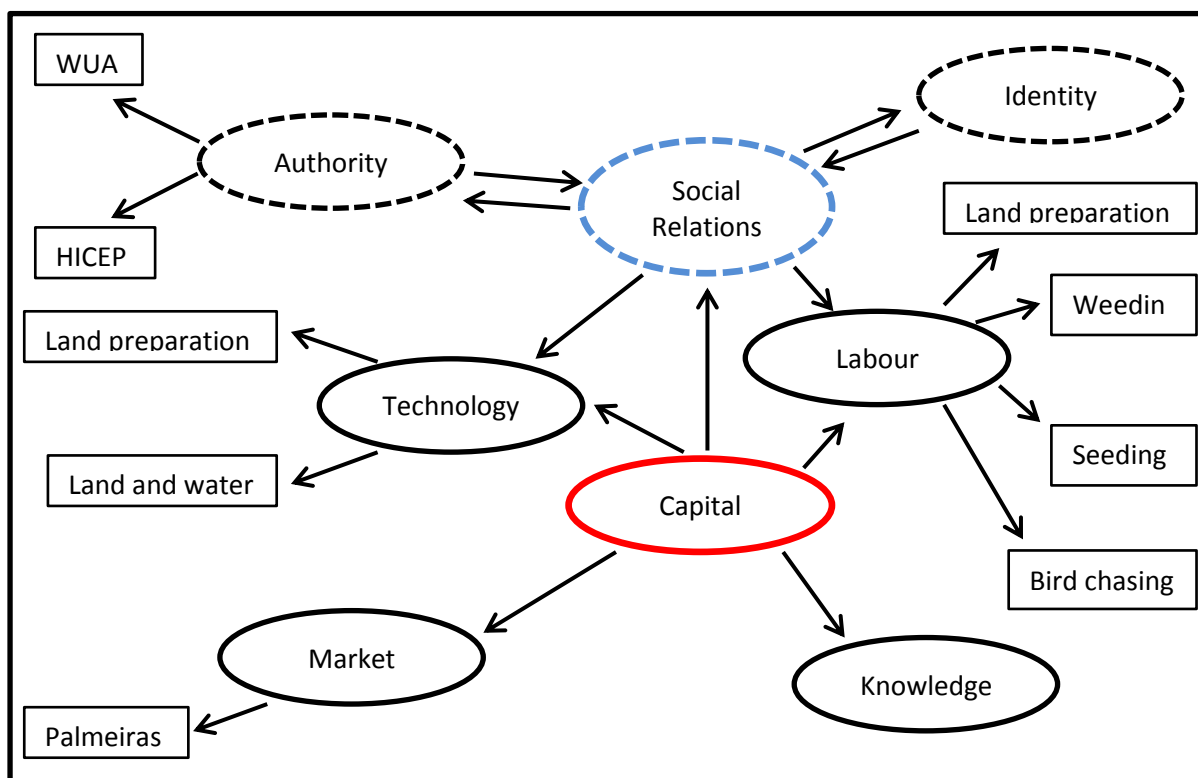


Figure 9: Schematic diagram of the mechanism of access which farmers use to acquire benefit from land in the CIS prior MIA WUA Partnership, in which farmers can try to access in order to cultivate rice. (1) Oval shaped: mechanisms of access; (2) rectangular shaped are the categories within the mechanism; (3) red lined: most desired access; (4) blue lines: use as an alternative to access other mechanisms; (5) dashed line: accessible to all, not dependent; (6) solid line: accessible through others mechanisms or meanings.

Figure 9 presents a simplified analysis of the flow process attempting to bring understand how farmers could benefit from the land, showing the multiplicity of relations. According to the interviews farmers their main needs (independently of their area size) are land preparation, weeding

and bird chasing. In some cases farmers also explain that herbicides and fertilizers would help their production, apart from these they also complain about the state of the infrastructure and yet it is not their main concern. Although access to technology and labour are clearly what they need, smallholders express in access to money (Capital) since then they would be able to pay for them. It can be argued that not all farmers follow the same strategies, yet their needs are equal with the only exception of when an issue is presented. For instance, interviewed farmers did not show interest in new technics and did not seem keen to receive more information however they mentioned that when a problem appears, e.g. seed germination, they try to look for assistance.

As most of them do not have money to invest, they try through relations of friendship, trust, reciprocity, patronage, dependence, obligation and so forth, to acquire access to other categories within each mechanism, such as labour, animals for field preparation.

*I work together with my 5 sons in the field as I cannot handle to do it myself alone, and my husband is in South Africa working to send money. (23<sup>rd</sup> November 2011)*

*I work 3 ha, the area in fact of my father, but he is too old now I am the one working there. I could increase the working area by borrowing it from some nearby neighbors and I have 12 people from my family and relatives working in the field.*

These relations in some few cases can be supplementary as in the case of the farmers having money to invest, but in it is great majority farmers use social relations to access and find ways to cultivate. A clear example is when a landowner tries to pay labour in rice, which is not well accepted in the CIS and consequently only through friendship they can achieve that. In this period mechanism such as knowledge, authority, identity, and market were not considered so important.

Land to be used was not an issue according to farmers, as they always could find a place to cultivate. However other factors within access to technology such as quality seeds, infrastructure, tractor or animal for land preparation limited rice production consequently the benefit. Moreover, WUA were not the main vector by which smallholder would acquire land to use, as acquiring land from relatives, neighbours or friends is much more common.

## **5.2 MIA contract farming and its effects in the mechanisms of access within the CIS**

MIA's contract farming changed the importance of the mechanisms of access within the distributor in which the company worked. Therefore, for farmers who could not participate or did not want to participate in the programs due to any reasons rely on the same schematic structure presented before MIA (Figure 9), in other words, in their social relations to obtain benefits. However, the mechanisms changed for those participating in MIA's contract farming.

Not all farmers who wanted to participate in the contract farming reached their goal, as MIA first selected distributors where the farmer's plot size were relatively big and the ones where the soil did not present problems, and by excluding other distributors MIA obviously excluded the farmers owning or using that area. In the D11 farmers who wanted to participate in contract farming had to pass through a selection process.

During the first year this selection process was made by the associations themselves and according to farmers the main factor was the location and size of the farmer area. Hence, farmers who already own land in the area would have a huge advantage, consequently the land which was already in control by the farmers would be the main decisive factor if he or she would be included in the program, as land size was MIA's most important factor.

The mechanisms of access were drastically changed when MIA entered the scene, as they held a nest of privileges for their partners (Figure 10). In this period the WUA, more specifically its staff (president, vice, secretary and so forth not including members), became more powerful as they were the main responsible to deal with MIA. Again social relation was the main mechanism which was used in order for farmers to acquire land when they did not already have land themselves. During these programs WUAs were responsible to relocate people within their distributor, which was only possible due to the support provided by the government through HICEP to MIA. Farmers who did not participate in the AP program try to produce rice following the strategies presented above in Figure 9.

It is clear that farmers who had a closer contact with the WUA staff had an advantage. Ribot and Peluso (2003) argued that privileged access to the individuals or institutions with the authority to make and implement laws can strongly influence who benefits from the resource in question. In the case of the CIS the WUA did not make or implement laws, but they were the tools by which the government allowed and supported MIA, hence MIA increased the power of the WUA current staff in the distributor, as the staff was responsible to give their support to any farmers interested in access MIA programs and consequently the company resources.

Therefore, agreements between farmers were made to make it possible for some of them to acquire more land, with the final goal of being able to participate in MIA's AP program. Such interactions over land and its outcome would not be viable, or even imaginable, without the influence of a large scale company supported by foreign investments, and its cooperation with the state.

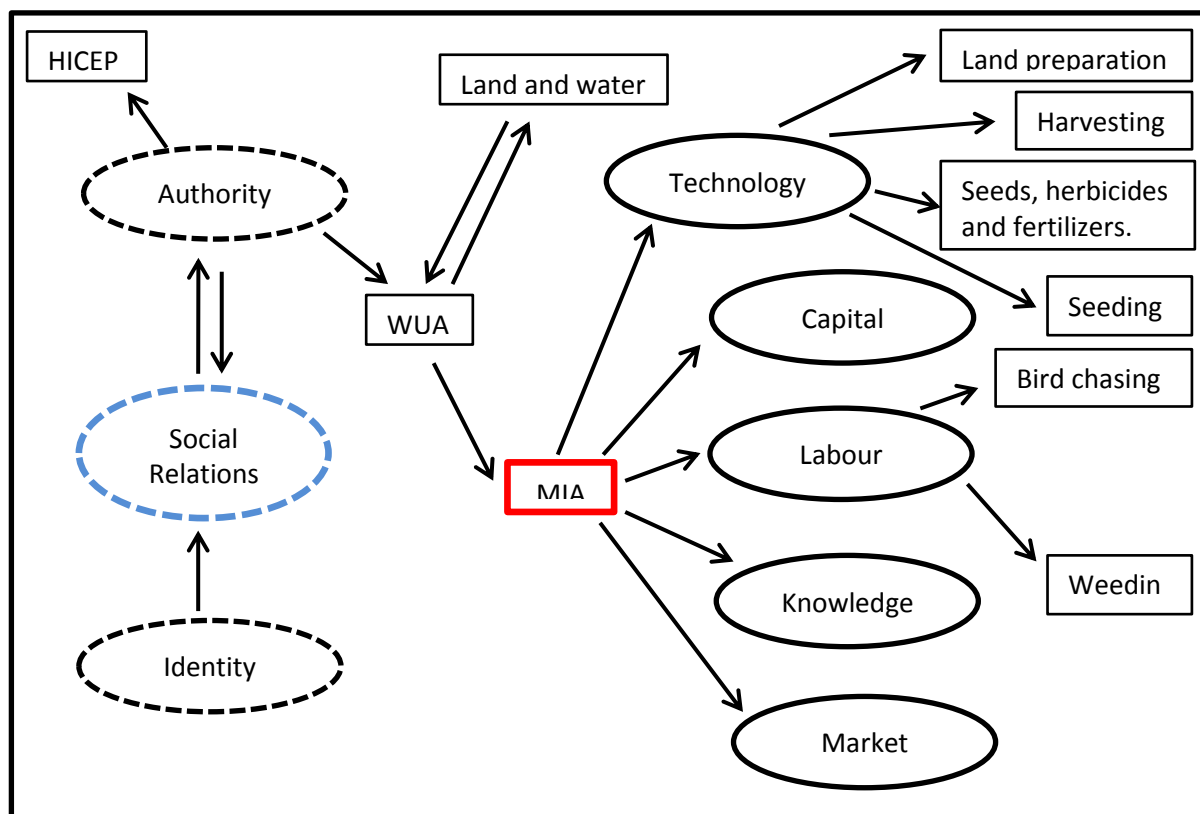


Figure 10: Schematic diagram of the mechanism of access to acquire benefit from land in the CIS during MIA WUA partnership and associated producers program for farmers who did participate in the program. (1) Oval shaped: mechanisms of access; (2) rectangular shaped: possible privileges within the mechanism; (3) red lined: most desired access; (4) blue lines: use as an alternative to access other mechanisms; (5) dashed line: accessible to all, not dependent; (6) solid line: accessible through others mechanisms or meanings.

The accords that were made among WUAs members were not difficult as the land ownership and use is so volatile in the CIS, since farmers easily allowed other to work in their land and accept have their current areas changed for similar ones in another location, thus WUA staff could manage their acceptance. This instability is generated by several factors, such as: poor infrastructure, absence of money to invest, salinization and so forth. Besides that, land title unreliability unquestionably decreases the sense of ownership which consequently leads to a lack of care and maintenance concerned to the field itself, in addition to a decline in the level of collaboration within WUA' members. In summary, the physical and past-political dimensions are strikingly important when smallholder farmers make present socio-economic choices, and are essential to understand how these choices are related to the mechanisms of access.

MIA stopped the AP program in order to cut expenses and they stop to provide the nested advantages for their partners, moving to a more open partnership where any farmers within the CIS can participate. As it is possible to see in Figure 11, these changes had direct impact in the mechanisms of access.

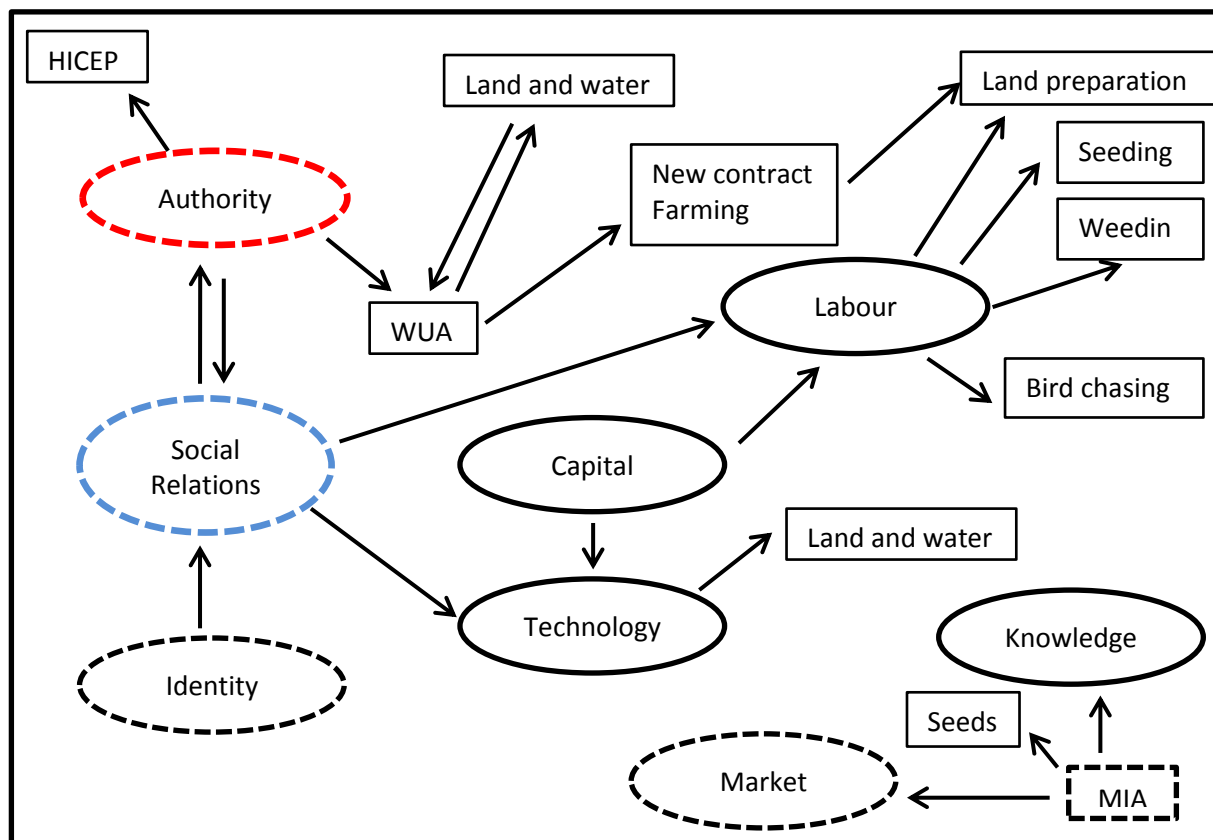


Figure 11: Schematic diagram of the mechanism of access to acquire benefit from land in the CIS after MIA WUA partnership and associated producers program, and during MIA promotion and commercialization or rice program. (1) Oval shaped: mechanisms of access; (2) rectangular shaped: possible privileges within the mechanism; (3) red lined: most desired access; (4) blue lines: use as an alternative to access other mechanisms; (5) dashed line: accessible to all, not dependent; (6) solid line: accessible through others mechanisms or meanings.

### 5.3 Conclusion

Land ownership is not the problem in the CIS for smallholder farmers who did not participate in MIA programs and/or were not direct affect by it as for instance in distributor 6. Throughout the field work, and independently of their size of their area, farmers from both distributors are in need for technology, more specifically land preparations and inputs such as fertilizer and herbicides are the

most important factors, followed by infrastructure needs such as clean water delivery and drainage canals. However, their concern is expressed as insufficient money to make a proper use of the land, yet in theory farmers do not want capital itself, what they actually want are the technologies which can be reach through capital.

Farmers who do not have money to invest in labour and technology make use of their social relations to attempt to overcome the problem. The use of family relatives, neighbours or friends to prepare the land, cultivate and to perform activities such as weeding and bird chasing is widely use. Moreover, it is also through them that farmers try to have their field prepared by animal or tractor. Other mechanism such as authority and identity also play a significant role, as they are intrinsically linked to social relations. It also can be concluded that farmers' strategies to have access to land did not change within the CIS as the great majority of smallholders still use their social relations and identity to acquire benefits. However, what changed was the importance of these mechanisms since farmers have to rely strongly on them now in contrast to before MIA programs, as without them it would be more difficult to cultivate rice.

WUA members and staff acquired more land due to MIA programs by relocating other farmers, and now they also can decide easily who can get or not more land as they are the responsible to officially provide cultivable areas inside the distributor. Such an increase in the power relation was only possible due to the governmental support which MIA received. Moreover, due to this capacity to hold land and decide who works on them that some farmers are able to continue to pursue contract farming with another producer, as an example is the fact that only 28 farmers are responsible for 240 ha in the D11. Hence MIA's programs instigate some farmers to pursue contract farming. It also can be concluded that in practice the WUAs are more important in allocation and reallocation of land than HICEP, even though HICEP is the official responsible for land distribution and management within the CIS.

Competition between MIA and Palmeiras increased the marketing possibilities for smallholder farmers in the CIS, as they can now choose to whom to sell. This can be considered beneficial as CIS smallholder farmers do not have many options to sell their rice production, and in reality many do not even think about selling it due to low yield. Yet, market possibilities are not the farmer main concerns when deciding their strategies.

#### **5.4 Field work experience**

Among the limitations and difficulties encountered during the work, transport was the main limiting factor. In the CIS my main transportation option was to use *chapas*, which are small vans adapted for around 25 people without any security. Moreover, they only leave their starting point (Chokwe station) when completely full, hence I sat sometimes 30 to 40 minutes inside without moving, and apart from that the *chapas* do not go inside the village of Massavasse consequently I had to walk around 10km more. Therefore more work could have been done with the time which I was spending moving around, especially regarding to the interviews. To overcome this problem I tried to rent a car or motorcycle and even thought about buying a small motorcycle, but in the end the costs were higher than I was expecting. Even though I had difficulties concern transportation, the problem should have not been so serious is people would have showed-up for the appointments scheduled, as many times I travelled to a certain location and stood there waiting till it was clear that nobody would come, in these cases I wasted a whole morning or afternoon for nothing.

Another limitation was language, as even though Portuguese is the official language in which I am fluent, smallholder farmers in its great majority do not speak the language at all or at not fluent. Hence, I could not interview some people in my first field work, after that I hired a student from the



ISPG who helped me as translator, and as a downside I had my observations limited as I was not the person actually receiving the information directly, but only was being assimilated and passed to him. I tried to make the best out of it and in several occasions I instructed my translator to keep a fluent flow, yet there were times in which it was not possible due to the person being interviewed.

Apart from these two, the only issue worth mentioning is that farmers were not feeling so comfortable during some interviews or only warmed up after some questions. Thus, I tried to hold some questions for the middle/end of the interview hoping to have a more fluent answer than a direct one. Nevertheless, there were times in which I had to ask each question very carefully, as an example I can point to a case that I asked a farmer if he had any problems in his area and he said no, after a few more questions I asked if he had drainage problems, and he said yes and started to tell about some losses due to water logging.

Moreover, I also had a difficult time during my last 2 weeks in Chokwe during my visits to the distributor 6 as the area suffered a series of storms in the week before, it destroyed many roofs and several farmers were not present in the field due to that which consequently decreased the amount of people interviewed in the area. It was also due to the heavy rainfall that I had to leave Chokwe around 8 days before I was anticipating since there was a red alert for the area which could make it impossible for me to leave the area, in the end I had some minor problem in the road on my way back to Maputo. Another important fact is that due to health issues I had to leave Mozambique for 26 days which also decreased the amount of data collected.

During the development of my proposal I was not aware that MIA had ended the associated producers program and starting the promotion and commercialization of rice, due to that upon arriving in Chokwe I was faced with two different programs which were very different in their core. As the PCR provides much less than the AP, this change was interesting as it was possible to see some remarkable effects which would not be possible otherwise, such as that farmers could not make use of their whole area where they were working in previous years, and also that desire of some farmers for contract farming and their search for new possible agreements.

Since I used the MIA office as a working place during field work, it is fair to say that I was exposed to their opinions much more than the opinion of the farmers themselves. Therefore, I tried to keep in mind that this could lead to a bias during the development of arguments and especially while inquiring farmers during interviews. In order to avoid that I made in my second week in Chokwe a checklist of issues and points which I thought important and those were always used while I was interviewing either farmers or MIA engineers. In fact this checklist only increased with time and yet I tried my best to approach each and one of them in an open manner, asking what the person in question thought about that or if they had something to say regarding that matter.

During my first series of farmer interviews, which took place in the headquarters of the D11 in Massavasse, I realized that the person who was introducing me to the area and the farmers was actually picking which person I should interview next. From that point on I had to tell people that I would be visiting the area by myself, and consequently also asked if I could wander around and select people by myself. It did not seem a problem to him and to the best of my knowledge he did as I asked. Hence, I do not consider that being introduced by him affected farmer responses to my questions. The same also happens in distributor 6, where I had interviews with and without having one of the deputies together with me.

## References

- AllAfrica Global Media (2011).** 'Chokwe Irrigation Scheme Remains a Sleeping Giant'. *Agencia de Informacao de Mocambique (AIM)*. Distributed by AllAfrica Global Media (Washington, DC – USA). AIM Report on 12 April 2011, accessed 26 September 2011 <http://allafrica.com/stories/201104130136.html>
- Bolding, A. (2004).** 'In hot water: a study on sociotechnical intervention models and practices of water use in smallholder agriculture, Nyanyadzi catchment, Zimbabwe' *PhD Thesis 419 pages*.
- Bolding, A. (2009).** 'The return of Company Rule in Mozambique: the case of irrigated biofuel and food production in the Elephants-Limpopo and Incomati rivers'. *Unpunished draft paper 28/10/2009*.
- Bowen, M. L. (1989).** 'Peasant Agriculture in Mozambique: The Case of Chokwe, Gaza Province'. *Canadian Journal of African Studies*. Vol. 23, No. 3, pp 355-379
- FAO (2002).** 'Land tenure and rural development' *Economic and Social Development Department*. Accessed at <http://www.fao.org/DOCREP/005/Y4307E/y4307e05.htm> on 11 October 2011.
- FAO (2003).** 'Agricultural Land Use. *Food and Agriculture Organization (FAO)*. Distributed by Land and Water Development Division. Website 2 September 2003, accessed on 11 October 2011 <http://www.fao.org/landandwater/agll/landuse/landusedef.stm>.
- HICEP (2011).** Progresso na Reabilitação de Infraestruturas de Irrigação e Drenagem. Internal PowerPoint presentation. Chókwè, 26 October 2011.
- Kajisa, K. and Payongayoung, E. (2011).** 'Potential of and constraints to the rice Green Revolution in Mozambique: A case study of the Chókwè irrigation scheme'. *Food policy*. Vol. 36, 615-625.
- Manjate, C. (2010).** 'Analysis of water and related laws of Mozambique. *UNESCO-IHE Institute for Water Education, and Water Resources Section, Delft University of Technology*. Part of: Water rights in informal economies (CP66) - What role of law in promoting and protecting the productive uses of water by smallholder farmers in Mozambique? Jan. 2010. Edited by Pieter van der Zaag.
- Munguambe, P., Chilundo, M. and Juliaia, C. (2009).** 'Water use and access in the Chókwè irrigation scheme, Mozambique: The Case Study of the "Associação dos Regantes do Distribuidor 11"'. *Project CP66: Water rights in Informal Economies in the Limpopo and Volta basins*. Final draft Report. 40 pages.
- Nailman, The (2009).** 'Rice fields in Rwanda' Used by me due to its similarities. Photo taken on the 3<sup>rd</sup> of September <http://www.flickr.com/photos/nailman/3263151206/>
- Pellizzoli, R. (2009).** 'Gender, agriculture, and the "efficient producer" discourse: a case study from Mozambique, and lessons'. *Review of African Political Economy*. Vol. 37, No. 124, June 2010, 213-220.
- Pellizzoli, R. (2010).** "'Green revolution' for whom? Women's access to and use of land in the Mozambique Chókwè irrigation scheme". *Review of African Political Economy*. Vol. 37, No. 124, June, 213-220.
- Punch, K. F. (2005).** 'Introduction to Social Research – Quantitative and Qualitative Approaches' *Second Edition*. Sage Publications – London, Thousand Oaks, New Delhi.
- Republic of Mozambique – RoM (2007).** 'Concepts, principles and strategy for the green revolution in Mozambique'. *Ministry of Agriculture*. Maputo - Mozambique
- Ribot, J. C. and Peluso, N. L. (2003).** 'A Theory of Access' *Rural Sociology*. Vol. 68, No. 2, June, 153-181.
- Boelens, R. and Hoogendam, P. (eds.) (2002)** 'Water rights and Empowerment'. Assen: Van Gorcum Publishers 255p.
- Silva, J. A., Eriksen, S., Ombe, Z. A. (2010).** 'Double exposure in Mozambique's Limpopo River Basin'. *The Geographical Journal*. Vol. 176, No. 1, pp 6-24.
- Stake, R. E. (1995).** 'The Art of Case Study Research'. *Sage Publications – International Education and Professional Publisher – Thousand Oaks, London, New Delhi*. Printed in USA.

- Veldwisch, G. J. (2010).** 'Rice value chain development and changing control over land and water resources in Chókwe, Mozambique'. *Unpublished first draft 30/10/2010*.
- West, H. G. and Myers, G. W. (1996).** 'A Piece of Land in a Land of Peace? State Farm Divestiture in Mozambique'. *The Journal of Modern African Studies*. Cambridge University Press, Vol. 34, No. 1 (Mar., 1996), pp 27-51.
- WETwin (2010).** Lead author: Trudi van Ingen. Seventh Framework Programme. 'WETwin Stakeholder Analysis and Strategies for Stakeholder Engagement' *Not available online*. More information at [http://www.wetwin.net/about\\_workpackages.html](http://www.wetwin.net/about_workpackages.html) Accessed 8 October 2011.
- Zwarteveen, M. and Boelens, R. (2009).** 'Thinking Water Justice: Some Inspiring Concepts and Theories'. *Curso-Taller Justicia Hídrica*. Cusco 22-27 November 2009.
- Zwarteveen, M. and Wester, F. (2011).** 'Knowing Knowledge'. *Lecture Notes – Research Approaches in International Land and Water Management*. Wageningen University, 07 February 2011.