Sugarcane contract farming with smallholders in Xinavane, Mozambique: Neo-colonialism or development opportunity?

A case study in association management, day-to-day interactions and livelihood strategies

MSc. Thesis by Ernst Sonneveld

February 2012

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WAGENINGEN UNIVERSITY
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A case study in association management, day-to-day interactions and livelihood strategies

Master thesis Irrigation and Water Engineering submitted in partial fulfilment of the degree of Master of Science in International Land and Water Management at Wageningen University, the Netherlands

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February 2012

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ABSTRACT

Rising food prices and the demand for fossil fuel alternatives have resulted in large scale land acquisitions by foreign investors in developing countries. Especially Mozambique has become an interesting partner, given its favourable trade agreements, its cheap labour reserve and its enormous agricultural potential. As a result, colonial estates have been rehabilitated and even extended, in particular by the sugar sector. With stimulating measures from the government, the Açucareira de Xinavane, now owned by South African's largest sugar producer is turning to contract farming as a means to involve the local population while extending their agricultural potential and increasing Mozambican's sugar exports. Contract farming can be regarded as a way to lift the poor out of poverty by providing them with loans, infrastructural (irrigation technology) and know-how support and income security, but this does not happen unconditionally.

In order to identify the conditions for successful irrigated contract farming in Xinavane, I have studied the day-to-day interactions and the internal management of three outgrower associations and the effect of contract farming on their livelihoods. It was found that most conflicts found in everyday practices, such as planting, irrigation, and weed control can be explained by the underlying different interests and motives of the main actors. Association management and the ability to be self-supporting remains very limited, which is most likely the result of recurring patron-client mechanisms, characteristic for Mozambique's development history. For some, land ceding to the association has resulted in a decline in their food security. Others simply farm out their fields to the association to generate additional income, since company regulations do not explicitly require members to work on their fields.

Acknowledgements

In order to do this research, there were quite a number of prerequisites that had to be fulfilled before I could finally start collecting my data. A number of people have been really helpful in that process, providing me language services, useful data or simply their hospitality, which were highly appreciated.

First and foremost I would like to thank Evie Neiva for assisting me in making my first steps into getting used with the Portuguese language, although they were found insufficient for a complete understanding of everyday practices and relations, but were very helpful in acclimatising during my first weeks in Mozambique. Special thanks for my interpreter Stuart for bridging most of the language and cultural gap during my research.

Thanks to the staff of Fatima's Backpackers for their hospitable attitude during my stay, both in the first weeks and in the weekends when I returned from the field. Also thanks to the Marcel van der Berg and Maarten van den Berg for their help and Dutch view on Mozambican realities.

Thanks to CEPAGRI for arranging the necessary credentials making my research possible, while also providing me with the means to further prepare my research during the weeks I had to wait for permission to enter the research area.

Also thanks to all the SSG section and area managers, providing me with the necessary insights into daily cane growing realities by showing me around on field trips. Special thanks to Adriano Fejao for his efforts in these. These trips were found to be very useful in the writing process. Also special thanks to the Baars family for their unexpected, but highly appreciated hospitality in the field.

Finally, I would like to thank my supervisor Alex Bolding for his feedback, patience and encouraging enthusiasm that helped me finishing all the work. Also thanks to study mates Reinier Veldman and Manpriet Singh for their valuable help and coffee breaks.

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AdX	Açucareira de Xinavane
AfDB	African Development Bank
AMSP	Accompanying Measures for Sugar Protocol
CEPAGRI	Centro de Promoção da Agricultura
DBSA	Development Bank of South Africa
DUAT	Direito de Uso e Aproveitamento de Terra
EBA	Everything But Arms
EIB	European Investment Bank
EU	European Union
EPA	Economic Partnership Agreement
FAO	Food and Agricultural Organisation of the United Nations
FDI	Foreign Direct Investment
GoM	Government of Mozambique
GSP	Generalised System of Preferences
MTc	Mozambican Metical
NGO	Non Governmental Organisation
OFID	OPEC Fund for International Development
SSGDP	Xinavane Small Scale Grower Development Project
SSG	Small Scale Grower
SSIP	Small Scale Irrigation Project
TH	Tongaat Hulett

1 Introduction

Since the end of the latest food crisis in 2007-2008, governments and food producing companies have realised the consequences of fluctuating food prices caused by their dependency of third world countries' production rates combined with sharp fluctuations in oil prices. Also the need for more biofuel production as an alternative to fossil fuels (but as a competing land and crop use) has played a role in this (Cotula, Vermeulen, Leonard, & Keeley, 2009). As a result, some have begun investing heavily in farmland acquisitions in developing countries in order to secure control over the food and biofuel production chain. Others are mainly investing in building (food) processing plants and engage in contract farming with local farmers. It has been argued that especially smallholder contract farming can provide a way to lift the poor out of poverty by providing them with loans, infrastructural and know-how support and income security. Mozambique is in this no exception: it's neo-liberal macro-economic reform policy has attracted a lot of this foreign direct investment (FDI) with which it hopes to reap the benefits of forms of rural wealth creation and generate more economic growth (Carmo Vaz & van der Zaag, 2003). But for both FDI in general, and land deals and outgrower partnerships in particular, successes are as prevalent as failures and thus offer no guarantee for sustainable pro-poor rural development.

In Xinavane, Mozambique, a typical example exists of a mix of company estates, and several smallholder and commercial outgrower schemes all producing sugarcane for the Açucareira de Xinavane (AdX), owned by Tongaat Hulett, a South African sugar company that operates the sugar mill and the sugarcane producing estate (Carmo Vaz & van der Zaag, 2003). Currently Xinavane is the only location in Mozambique where a sugarcane producing and processing company is experimenting with smallholder outgrowers organised in associations. The different forms of smallholder involvement in sugarcane production in Xinavane therefore provide possibilities for analysing smallholder interactions with the company, the self-sustainability of the associations in which they are organised and the effects of these partnerships on the livelihoods of individual farmers.

For the Xinavane case, I want to find out how different modes of contract farming affects association's self-management in their outgrower schemes and irrigation management in particular. I will use an actor oriented approach and the concept of arenas of interaction to study day-to-day interactions between individuals and groups in different associations and their relation with each other and/or with the company. I will also pay special attention to the constraints and possibilities of contract farming for more secure livelihoods as many studies claim that smallholder partnerships are pro-poor and would therefore result in more livelihood security. In my research my main focus is on using qualitative data using semi-structured interviews and observations.

This chapter will continue with a section on the research background which gives the reader more information on the current political, regional, scientific and local situation. The second section explains the problem statement and is then followed by the main and sub research questions, and finally the methodology is discussed in the last section.

1.1 Background

1.1.1 Development policy and political background

Between 2006 and 2008 the Food & Agricultural Organisation (FAO) reported of a global food crisis, which was reflected in an increase of the average staple food prices in developing countries with 48%. This crisis especially had dramatic effects in the South, including riots and political instability. Although prices have now dropped, in 2009 they were still 19% higher than before (Dawe & Morales-Opazo, 2009). Many countries (developed and developing) realised the importance of food security and stable prices and are now investing heavily in measures to secure themselves against future food price crises.

But food security is not the only reason why media recently reported about large land acquisitions all over the world. Biofuels, backed by the 10% biofuel addition target of the European Union for 2020, are seen as a cleaner alternative to traditional fossil fuels, the use of which contributes to global warming and associated climate change. Fossil oil reserves are diminishing, which makes it interesting to invest in biofuels, even though land requirements for the production of one tank of biofuel are high (Cotula et al., 2009).
Other reasons for increased investments in large scale biofuel production projects are policy reforms in various African countries, which have created more attractive conditions for foreign investors as well as high rates of return for agriculture, since both food and (bio)fuel prices are expected to rise again. (Arndt, Benfica, Tarp, Thurlow, & Uaiene, 2009; Cotula et al., 2009).

Because of this, Sub-Saharan Africa and Southern Africa in particular are now affected by large land deals covering a total area of more than double the size of the UK (Vidal, 2010). For investors, land is relatively cheap here and governments are willing to sell it or lease it out as a way to increase GDP growth, increase productivity and generate more government income. Partnerships between foreign investors and local peasants could offer opportunities to both prevent the recurrence of neo-colonial mercantilism, whereby the profits flow out of Africa for the benefit of foreign companies, and promote new forms of pro-poor rural development.

1.1.2 Regional background

The context sketched above also applies to Mozambique, with applications proposing to devote 12 million hectares of arable land (over 40% of Mozambique's total arable land) to biofuel production currently under consideration (Arndt et al., 2009). However, these numbers include a lot of speculative proposals. The numbers provided by Schut et al. (2010) are more realistic: officially only 245,504 ha have been proposed for large scale production of biofuels, of which 81,920 ha has been approved. However, biofuels still make up only a small portion of the total applications of agricultural land. Especially sugarcane and cotton have received a high amount of investment over the past 8 years (USAID, 2008). According to Marini (2001), 4 out of 6 sugarcane mills and estates have now been taken over by South African or Mauritian investors.

There are several reasons for the increased interest in Mozambique reflecting the increased amount of FDI which can be divided in internal (I) and external (E) reasons:

I: Mozambique has shifted from a socialist system to a market economy, which attracts more foreign investors. The agricultural sector is of particular interest, because investments made in modern commercial agriculture are seen as a means of kick-starting rural development. Foreign investments can provide the knowledge and capital to develop a

modern agricultural sector able to exploit the country's large agricultural potential. However, since a large majority of the rural population is engaged in agricultural production as its mainstay source of livelihood, local smallholders must be given a role in the developments by gaining access to these resources. In this way they will reinvest their returns in the local economy (LMC International, 2006).

E: Mozambique currently benefits from a number of trade regulations which has the objective of stimulating the country's exports, which is believed to stimulate economic growth. First, the country's status as an LDC (least developed country) permits Mozambique to export any goods to the EU without restrictions or quotas. This is done under the EBA (Everything But Arms) initiative. Second, there is the EPA (Economic Partnership Agreement) between the EU and the SADC (Southern African Development Countries) which also grants preferential access to European markets. Third, under the US GSP (Generalised System of Preferences) Mozambique qualifies to export goods duty-free to the US (Schut, Slingerland, et al., 2010). Fourth, but more particular for sugar production is that the country is a beneficiary of the EU sugar protocol (ISO, 2008; Tongaat Hulett, 2010). All these trade measures give Mozambique some form of preferential or duty-free access to export markets which were otherwise not available.

1.1.3 Scientific background

At field production level, an agribusiness company generally has three options when obtaining raw materials:

- **Improve vertical integration** of the production process by construction or expansion of private estates, which are owned by the company . Modern, capital intensive western technology is usually applied here to reduce labour intensity. In this way, a company engages in more parts of the supply chain to gain more control over it.
- **Outgrower contracting/ partnerships**, in which a company outsources the crop production to commercial or smallholder farmers. In this situation contracts are prepared in which certain agreements are made with respect to price and supply. This is normally done in a way that will guarantee a stable price and market outlet for the producers, and secure a more or less stable flow of supply for the agribusiness company.
- **Direct supply by commercial farmers**. Usually commercial farmers supply directly to the companies and will receive the current (but fluctuating) market prices for their crops, but contract farming can be done here as well (Marini, 2001).

While a guaranteed market is the key aspect of contract farming, agribusiness companies can include other services in a contract as well. As it is in the interest of the company to increase the productivity of a farmer, various options exist to provide him/her with means to invest in and improve his farm and therefore his yields. This can be done by providing farmers with loans, credit, mechanised assistance, or by repairing or rehabilitating the irrigation system (ISO, 2008). Eaton & Shepherd (2001) have defined a number of 'modi operandi' for contract farming, which will be elaborated later in this proposal.

Because it can be practically and administratively too costly to interact and sign contracts with each smallholder individually, often farmers are organised in farmers associations, either at the instigation of themselves or by the company (Porter & Phillips-Howard, 1997). In the first years of cooperation between the association and the company,

the company normally provides most of the services and inputs and deducts the costs for these afterwards from the harvest revenues. However, because it is financially burdensome for both parties, associations are normally stimulated by the company to become more self-supporting and gain more independence (Glover & Kusterer, 1990).
Although the concept of contract farming should ideally be mutually beneficial, it often creates a dependency. Since conditions and prices to be paid to a farmer are set by the company, a farmer is bound to the contract (Munguambe, Chilundo, & Julaia, 2010).

1.1.4 Research area (local background)

The Xinavane sugar estate, officially named Açucareira de Xinavane (abbreviated AdX) is situated some 150 km north of Mozambique capital Maputo (see Figure 1) and is currently the largest irrigated sugarcane estate of Mozambique. As one of the oldest sugar mills in the country, it was founded by the British in 1914, but taken over by the Portuguese in the 1950s and was producing 53,000 tonnes of sugar at its top in the 1970s. After Mozambican independence, production declined due to a large outflow of Portuguese skilled labour and managers, while the collapse of the Mozambican currency, the socialist government and the civil war stagnated production.

Figure 1: Location of the study area

To prevent national bankruptcy in the late 1980s, Mozambique had to open up itself for foreign investment, its sugar mills and estates have attracted considerable interest from South African and Mauritian investors. For AdX, the South African sugar company Tongaat Hulett took a 49% in 1998, and started with the rehabilitation of the estate and mill in 2000 (OFID, 2006). After a second expansion to its current estate size of 11,879 ha, Tongaat Hulett has augmented its ownership share to 88% in 2008, while the remaining 12% is owned by the GoM. Since 2009-10 the production capacity of the mill has risen from 31,000 to 208,000 tonnes of raw sugar annually (Tongaat Hulett, 2011).

Next to these estate expansions, also the number and total size of smallholder outgrower schemes has increased substantially, a modus operandi of sugarcane production not found elsewhere in the country. By promoting smallholders producing cane under contract, the Government of Mozambique (GoM) hopes to stimulate rural development in the area. This smallholder development aims for more Mozambican involvement and income from sugarcane production, reaping the benefits from foreign investments that could otherwise not be made. The ultimate aim is to create a 22% share in cane production by smallholder outgrower schemes (AdX, 2010).

Currently there are 15 smallholder schemes in the Xinavane area, with around 1,539 smallholders producing cane on 2,091 ha of communal land. All farmers in the schemes are organised in farmers associations, in which a number of activities and responsibilities are centralised, such as payment distribution and irrigation management. The various associations were established in three phases, of which phase 3 schemes and associations

have only been established recently. Phase 1 and 2 associations were established with the help of grants from the GoM, the Southern African Development Bank (DBSA) and the African Development Bank (AfDB) , while phase 3 associations are indebted with a loan by TH/AdX. Table 1 gives an overview of the schemes currently in operation.

Table 1: Overview of smallholder outgrower schemes in Xinavane currently in operation (Jelsma, Bolding, & Slingerland, 2010)

Phase	Year	Association	Size sugarcane area (ha)	No. of Small-holders	Ha/ small-holder	Irrigation system	Funding agency	Loan or grant
1	1998	Maguigane	90	66	1.4	Dragline	GoM and Southern African Development Bank (DBSA)	Grant
2	2005	Macuvulane	185	180	1.03	Dragline	GoM and African Development Bank (AfDB or BAD)	Grant
	2008	Chihenisse	200	40	5.0	Pivot		Grant
3	2008	Macuvulane 2	73	89	0.8	Dragline	AdX, with funding sought at the European Investment Bank (EIB) and other parties which are interested to support these developments.	Loan
	2009	Maria de Luz Guebuza	263	200	1.3	Dragline		Loan
	2009	Hoyo-Hoyo	189	150	1.3	Dragline		Loan
	2009	Buna	218	110	2.0	Dragline		Loan
	2009	Maholele Macamo	72	4	18	Dragline		Loan
	2009	6 de janeiro/ Colo	74	200	0.4	Dragline		Loan
	2009	Olhar de Esperança/ Facasize	107	250	0.4	Dragline		Loan
	2009	Maholele G 1st Stage	266	6	44.3	Dragline		Loan
	2010	Chichuco	95	150	0.6	Dragline		Loan
	2010	Maholele Mutombene	56	4	14.0	Dragline		Loan
	2010	Tres de Fevereiro D	133	10	13.3	Dragline		Loan
	2010	Mucombo Est.	70	80	0.9	Pivot		Loan
Total			2,091	1,539	1.4			

Given the large investment made by TH/AdX in smallholder activities, it also appears that the company hopes to supplement their current production from their nucleus estate in order to operate their mill at a higher efficiency. Table 1 also shows numerous differences between phase 3 associations, indicating that AdX/TH is using these phase 3 associations to test “what works”.

1.2 Problem statement

Although AdX currently has more than 10 years of experience with the establishment and inclusion of smallholder outgrower associations, still there is little knowledge available about the mechanisms governing the relationship between AdX and the organisation of an association and its individual members during the production process of cane. In these last

ten years several modes of outgrower partnerships have emerged and are now used and tested in different associations. However, it is unclear what their effects are on:

- Costs and benefits for the company compared to the costs and benefits for the association;

As a large investment has been made in the development of the phase III smallholder schemes by AdX/Tongaat Hulett, this company would like to recover its investments in two ways: first by supplementing their estate production with sugarcane production from associations, and second by association loan repayments. Finally it is also seeking a suitable con-funding agency willing to relieve the company from part of their investment burden. So far, it is unclear what the investment's effects are on these;

- Company-association interactions during the production process of sugarcane;

As most smallholders in Xinavane are unfamiliar with neither commercial farming nor the use of irrigation, it is unclear how associations are going to adopt western technology based production management practices that allow for the commercial cultivation of sugarcane, and what the role of the company is in this learning process. It is also unknown how different funding modalities (government/development bank vs. company) influence daily management practices. It is possible that, given their investment made, AdX will have a higher influence in the practices of these last phase associations.

- The internal organisation and dynamics of associations;

In order to reduce administrative and practical costs, smallholders have to organise themselves into associations. However this type of collective farming puts requirements on cooperation between members and the governance of such an organisation. It is unclear how these associations in Xinavane currently function and what their relation is with the company.

- Rural livelihoods of smallholders and the contribution of revenues from sugarcane activities to their homesteads;

GoM believes smallholder inclusion can kick-start rural development, but it is unclear whether this is true for the case in Xinavane and to what extent this happens.

It can be concluded that it is unknown which (aspects of an) outgrower model is/are the most pro-poor and sustainable while retaining of interest to the company. This is very important for both Tongaat Hulett, as they have invested a lot in smallholder development, as well as for policy makers like CEPAGRI, who want to draft partnership policies for the sugar sector in order to stimulate and promote partnerships with sugar companies.

1.3 Research questions

What are the underlying interests and motives of the actors involved in the production process of smallholder sugarcane contract farming in Xinavane, and how do these affect:

- Cane production modalities?
- Interactions and resulting conflicts between the association and the company?
- Association autonomy or dependency?
- Smallholder livelihoods?

These questions can be divided into a number of sub-questions, which will form (in order or appearance) the main chapter outline of this thesis:

Chapter 3

Q: What is the status quo of sugarcane outgrower activities in the Xinavane area and what are the institutional arrangement made between smallholder associations and AdX?

1: Why did sugarcane developments in Mozambique and in Xinavane specifically experience such a strong revival?

2: What were the reasons for the Açucareira de Xinavane to engage with local smallholders?

3: Since smallholders lack the capital and the skills to cultivate sugarcane, under what institutional arrangements will they be able to produce?

Chapter 4

Q: How is sugarcane cultivated in the Xinavane area?

1: What are the different modalities of cane production in the associations?

2: How is the labour organised in the associations studied?

3: How do these modalities correspond with or differ from the cane production modality as found in the AdX estate?

Chapter 5

Q: What are the underlying reasons for conflicts between associations and the company and how do they relate to control or dependency over production practices and resources?

1: How is AdX's management hierarchy implemented in the associations and how do the positions of different staff members relate to the associations?

2: What are the arenas of interaction between company and associations manifested during different stages of the production process?

3: What are the origins of conflicts and how and by whom are they solved? What are the outcomes/reactions?

4: What influence does AdX's management takeover and imposition have on control over the production process and the resources necessary for this?

Chapter 6

Q: How are Ostrom's principles for institutional design implemented in the associations and what influence does the association's resulting social capital have on its relations with the company?

1: How were these associations established?

2: To what extent are Ostrom's principles for institutional design necessary for collective action implemented in the associations and do these differ from real-life practices? If so, how do they differ and why do they differ?

3: What possible alternative concept can explain current association management and behaviour vis-à-vis the company better?

Chapter 7

Q: How does sugarcane contract farming in Xinavane influence the livelihood strategies of individual smallholders?

1: What do the traditional land and labour divisions with respect to gender, labour allocation and migratory influences look like in the study area?

2: What was the previous situation (livelihood) of association members and what was the reason/ were the reasons for joining an association?
3: What is the opinion of smallholders on their changed livelihoods?
4: What are the resulting livelihood strategies of households after joining?

1.4 Research methodology

1.4.1 Literature research

This thesis research is based on earlier explorative research done by Jelsma (2010). Jelsma has made an overview of all smallholder activities in Xinavane, and his report has provided a valuable starting point for this research. Especially financial overviews, cane yields and association modalities were useful as stepping stones for further in depth research.
Furthermore, literature on the physical environment (climate data, soils, and infrastructural data) and socio-economic environment (income, employments) were gathered prior to field research.

1.4.2 Comparative research

The unit of research will be the smallholder outgrower schemes area in Xinavane and the people who are involved in contract farming, either through their farmers associations or through AdX/TH and its partners. This includes management staff of AdX and Agricane, Unitrans, smallholder outgrowers, (board) members of farmer associations, but also government officials (municipality or district) and NGO's present in the area. As this research provides an in-depth analysis of these smallholder schemes and builds on Jelsma's explorative research, three smallholder schemes were selected in order to narrow the focus of the researcher. The selection of these three associations is based on three criteria:

- The age of the association (in which phase was the association established);
- The type of irrigation infrastructure that is used (center pivot or drag line);
- Relative size (the number of members compared to the scheme size).

This has resulted in the selection of one phase II association (Chihenisse), and two phase III associations (Macuvulane II and Facazisse). These latter two differed in production management practices and their relative size. Unfortunately Maguigane, the only phase I association, did not want to cooperate with the researcher.

First, in order to get acquainted with the research area, field observations were done to get an idea of the size and measurements of different farming systems and to find the locations of the smallholder schemes. The estate spatial plan was already available and was used as spatial information tool for the rest of my research.

Second, three interviews with AdX management staff (project and financial manager) who are involved in the smallholder developments were conducted. These interviews were intended to gain a general overview on the company's experience with smallholders and their vision with the project. Furthermore information about current contracts between the company and farmer associations as well as financial overviews and yield data were obtained. Finally, a number of contact details of field management staff were obtained in order to make appointments for interviews and/ or field trips with them. These field trips, which comprised a combination of semi-structured interviewing and observation formed the basis of this research, as most of the interactions, especially a large part of the daily management practices between company and associations is concentrated around them.

Third, semi-structured interviews with farmers and farmers associations leaders from the different farming systems were conducted, asking them about their relation with AdX, their role in the association, their current agricultural practices and their livelihoods. Within every association, 10 of such interviews were conducted.

Fourth, field trips were done to the smallholders' fields, especially to the phase III associations, where smallholders are having the least amount of experience with sugarcane cultivation and AdX/Agricane performs most of the management practices. Here, observations and interviews were mainly focused on production management practices and the training(s) and supervision smallholders receive from AdX/Agricane. These interviews were usually combined with the interviews as described above.

Fifth, as the different organisations studied are not expected to be single entities, also three group meetings of farmer associations as well as AdX field staff meetings were attended. With these attendances, I had the possibility to observe and listen to group interactions and relations between individuals or sub-groups within the larger entity they made up. I expected that group meetings and trainings are events in which conflicts that arise during interactions between different actors will be discussed. However it is unclear what the frequencies normally are of either staff or association meetings, how they usually proceed and who is involved (and who is not).

In Appendix 1 List of interviews with key persons a list of key interviewees can be found, including the date of the interview and the function of the interviewee. Appendix 2 Interview blueprint provides the reader the interview blueprint, which formed the basis for my semi-structured interviewing. Finally, Appendix 3 Interview guide provides the interview guide, containing the interview topics for different groups of interviewees.

1.5 Limitations and reflection of the research

1.5.1 Cultural limitations

This research has been done for the partial fulfilment of the masters degree of international land and watermanagement, hence the researcher had only limited experience with doing social-economic and socio-technical research in a developing country. Therefore the researcher and also the reader resp. is and should be aware of the constraints and limitations that come with it.

First and foremost with doing research in such countries there is the issue of a language barrier, which had to be overcome by either learning the local language or by hiring an interpreter. As there was only limited time available to become familiar with the official language spoken (Portuguese), while most actors in the area spoke the local language of Shangaan, it was found infeasible to put a lot of efforts in learning Portuguese, as an interpreter would be needed anyway to translate from Shangaan to Mozambique. With only limited understanding of Portuguese, overcoming two language barriers would introduce too many inaccuracies in the data acquisition process. Therefore an interpreter who could speak both Portuguese and Shangaan as well as English was hired. However, this interpreter had no experience with translating nor did he have extensive knowledge on agriculture, irrigation or management/ sociological research. Especially during the first weeks this proved to be an extra challenge as a great amount of elaboration on the research and its components had to be done, and during the first interviews it was difficult to point him into the right direction of phrasing his questions.

Second, the researcher had a limited knowledge on homestead dimensions, characteristics and resource flows. This limitation was partly overcome by trying to deconstruct the concept of a homestead to get a better grip on its dynamics. Having an accommodation which was situated within one of the communities/ associations studied would have further overcome this, but accommodation in a local hostel in a central location was chosen instead.

1.5.2 Time constraints

The field work that was performed for this research was done in a period of 8 weeks. As no permission to enter the study area was given yet on my arrival in Xinavane, I had to reside in the capital and wait until clearance was given. This time restriction limited my research to study only 3 associations in the study area. These associations were chosen based on their age, their funding modality, irrigation system and the number of members/association size, as was assumed that these were the main components influencing association experience and interactions. Furthermore, the distances to be covered between accommodation and associations or between different associations limited the number of interviews that could be done per day by 2-3. Therefore, 10 smallholder interviews for each association were assumed to represent the majority behaviour and spectrum of opinions of its members within them.

1.5.3 Scientific limitations

As mentioned above, with the interviews held with smallholders, association leaders and AdX and Agricane field staff I assume that I've captured the majority of opinions and behaviour within the units of research studied (a selection of three associations) and assume that these people properly represent their organisations they belong to. However, some of these actors may tell different stories or may exhibit so-called social desirable behaviour. This was overcome by complementing interviewing with observations and interviewing other actors closely related to them in order to triangulate data obtained from interviews.

Furthermore, I assumed -from a rational perspective- that associations were willing to become self-sufficient and assumed that the company had a vested interest in the self-sufficiency and self-reliance of associations. However, these assumptions, as further explained in this thesis, did not always held, but this was partly overcome by the use of several concepts which focus on interpreting behaviour that seems to deviate from these assumptions.

Although explorative research was already done by Jelsma (2010) of which his main findings were already reported to the researcher, as a newcomer into the study area is was found difficult to dive deeper into some of the findings already done. As I didn't had built up a trust relation with the actors, I had to be more patient if I wanted to uncover and dive one layer deeper. This sometimes required me to perform an additional interview with some actors or phrase my questions differently.

Also it was found that people did not or could not elaborate into detail about a specific process that had taken place or was part of every day practices. Typical examples of these were topics related to the establishment of an association and the actors that were involved and the stakes that were negotiated. Possible causes for this may be a taboo on such processes, especially in situations where uneven power relations between negotiators were present. It is highly possible that individual smallholders were not informed into detail

about such processes, and community/association leaders didn't want to tell, given the outcome of such processes/ negotiations, as will be explained later in this thesis.
Also initially the contacts with AdX didn't go smooth. From interviews with AdX project related staff it seemed that AdX interpreted this research as an association and even project assessment, which caused them to be very vigilant in their statements. This calculating behaviour of some of their staff required the researcher to take their PR statements with some grains of salt and to cross-check the data given with interviews and observations in the field.

Looking at the data collection period with a retrospective view, a number of aspects could have been done better:

- Community members outside the association were not interviewed, however, this might have yielded a better insight into community dynamics, the establishment of the association and the selection process of members joining the association.
- Most smallholders have been interviewed while working in the fields of the association. However, more insights into homestead characteristics may have been obtained when some of these had been interviewed when they were at home.
- All the smallholders interviewed were to some extent involved in the production process of sugarcane, as they were interviewed while working on the association's fields. However no association members were interviewed that did not (wanted to) work. This point is also related to the previous point made, although this one is more aimed at individual livelihood strategies of smallholders while already being a member.

From these limitations and this retrospective view on the data collection period in the field, a number of recommendations are drawn up, which -together with recommendations based on the outcome of this research- can be found in chapter 9 – recommendations.

1.6 Outline of this thesis

This thesis proceeds with an outline of the concepts used, which has resulted in the framework for analysis, found in chapter 2. Chapter 3 describes the status quo of sugarcane activities, both smallholder and estate in Xinavane. This chapter is followed by a descriptive chapter (4) on cane production practices, a chapter dedicated to a more detailed elaboration on the different production modalities of sugarcane in Xinavane, in which similarities and differences between associations and between association and estate will be highlighted. Chapter 5 then discusses the interactions and emerging conflicts that occur between company and associations during the production process of sugarcane, in which the role of AdX/ Agricane field staff will be given special attention. Chapter 6 then discusses the autonomy or dependency of the associations, their ability to self-organise and the influence their establishment has on current association management. Chapter 7 is dedicated to the smallholder and his livelihood and the impact sugarcane contract farming in an association has on him and his homestead. Chapter 8 will then summarise all findings and conclusions and will discuss these with two cases of sugarcane outgrower farming in neighbouring countries (South Africa and Swaziland). Finally in chapter 9 recommendations will be drawn up for future research and policy and corporate measures.

2 Concepts and theories

2.1 Assumptions

For this research, but also for the smallholder outgrower projects done in Xinavane, the following key assumptions are made, both by the researcher as well as by the Government of Mozambique:

The introduction of irrigation to smallholders is believed to reduce poverty. Irrigation can, according to Lipton et al. (Lipton, Litchfield, & Faurès, 2003), increase the productivity of farmers and their agricultural outputs. With irrigation, smallholder will have the availability of a more reliable source of water than rainfall, and chances on crop failure will therefore be reduced. Second, irrigation, in contrast to rainfed farming allows for multiple cropping, extending a smallholder's agricultural activities. Third, irrigation allows for a larger area to be cultivated and/or a higher crop density in a smallholder's existing plot(s). A final reason accounting to increased production are the increased chances of the successful use of complementary inputs such as fertilisers and high yielding varieties, which can further boost production levels. Smith (2004) adds to this the increased opportunities for rural livelihood diversification and the availability of other uses of water through the irrigation infrastructure.

Supporting smallholder agriculture strengthens rural economies (Van Damme & Dirckx, 2000) by focusing on their internal capacities and developing their internal strengths. The GoM therefore considers commercial agriculture as a frontrunner for rural development. However foreign knowledge, skills and capital will have to be brought in and will then be able to extract the maximum profitability of the agricultural potential (Instituto Nacional do Açúcar (INA), 2000). One important aspect of commercial agriculture that is depending on these is irrigation, but the technology here is then externally imposed.

Within development studies and land and water management these statements are highly debated ones and it is questionable which one comes first. Chambers (1991) makes a comparison between conventional thinking and livelihood thinking. He concludes that conventional irrigation thinking states that irrigation reduces poverty through the improvement of field output (crop yields) on account of securing a more reliable source of water than rainfall, while livelihood thinking states that irrigation is a way to increase a more stable income and an increased availability of employment opportunities.

As already mentioned in the regional background, there are various models of contract farming. Eaton & Shepherd (2001) have defined five general modi operandi:

- The centralised model;

In this mode, the company is supplied by a large number of small farmers. The final product needs a high level of processing before selling it on the market. In this mode, farmers are subject to tight quality control and quotas, which give the contractor a high level of certainty. Sponsoring ranges from minimal input provision to total company control over all production aspects.
In Xinavane, the sugarcane yields are tested on their quality and sugar content. Total company control is most prevalent in phase 3 associations, but AdX says they will hand over these inputs and services gradually when all members of an association are fully trained in sugarcane production (Jelsma et al., 2010).

- The nucleus estate model;

As an extension to the centralised model, the company also manages an estate to secure its throughput. The estate can also be used to conduct research. Estates are often used within resettlement or transmigration schemes to provide labour to migrants. A high level of material and managerial inputs is required here.
In Xinavane, the nucleus estate is the main source of sugarcane which is processed at the mill. The estate is owned by the company and is used to secure a stable influx to the mill and therefore a mill operating at more or less its production capacity. As it becomes more and more difficult to expand the area included in AdX's core estate, contract farming with smallholders is the only way to increase prevalent production rates.

- The multipartite model;

This model can develop from the nucleus estate model through the organisation of farmers making use of financial institutions or (by the creation of) farmer cooperatives (e.g. a farmers association). It often involves numerous organisations that have official rights and registrations with respect to land and water claims.

- The informal model;

In this mode small companies (in this case farmers, either smallholder or commercial) supply on a seasonal basis, often using informal contracts. This brings in a risk of extra-contractual marketing.

- The intermediary model.

Intermediaries are used here between farmers and the company to outsource input management, payments and contract management. This could bring in a risk of losing control of the quality and production and the prices paid to farmers.
From explorative research on smallholder outgrowers done by Jelsma (2010), I conclude that only the third mode applies to Xinavane. However since this multipartite model results from development in the centralised and the nucleus estate model, I have taken into account all aspects of these first three models. I will not use these models as a classification tool, but rather as an indication/orientation of what contract farming looks like in the study area.

2.2 Working concepts

2.2.1 Institutional arrangements of outgrower schemes and the role of farmer associations

As many outgrowers are smallholders, most of them do not cultivate more than 3 ha ((AdX, 2010; ISO, 2008) see Table 1), which makes transaction costs for a company very high. Therefore, smallholders are organised in farmers associations, organisations able to represent all the farmers within them. In this way, an agribusiness company can make one contract with all farmers, which makes the administration of and payments to cane suppliers easier to manage and will reduce these transaction costs (Sartorius & Kirsten, 2007).
Other advantages associated with the establishment of farmers associations are the centralisation of services and support provided by the company. As a lot of farmers do not have any experience with sugarcane growing, the company provides most of the inputs and services. These services may include:

- land preparation services;
- input supply and application (e.g. provision and application of herbicides/pesticides and fertiliser);
- weeding;

- harvesting;
- transport (haulage);
- infrastructural maintenance;
- extension services (ISO, 2008).

In the meantime, members of the associations are to be trained in their skills to commercially cultivate sugarcane. Next to these field services, a company may also include the provision of credit in a contract in the form of loans or grants. This funding is mainly intended as an incentive for farmers associations to invest in their assets. In this way, an association can improve its production efficiency by slowly taking over services that were previously provided by the company. This can greatly reduce dependency on the company and counter unequal power relations (Sartorius & Kirsten, 2007). If credit facilities are included in a contract, a scheme trust is usually established which is owned by the farmers, the company and sometimes also by external investors (ISO, 2008). Figure 2 provides a general example of institutional arrangements that can be made between a sugar mill company and a farmers association; the actual arrangements that (are going to) apply to Xinavane are displayed in Figure 3.

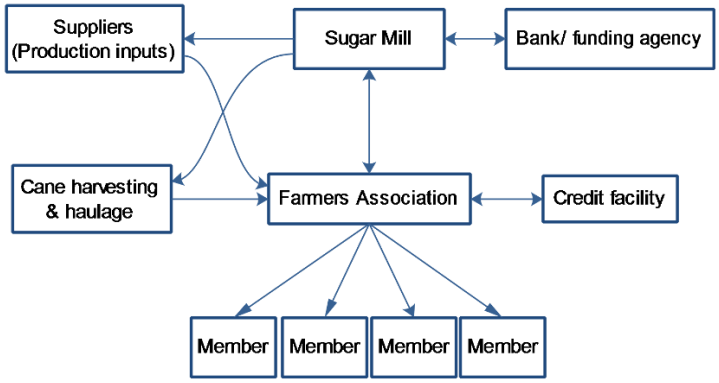

Figure 2: Example of institutional arrangements in an outgrower scheme ((ISO, 2008) (edited))

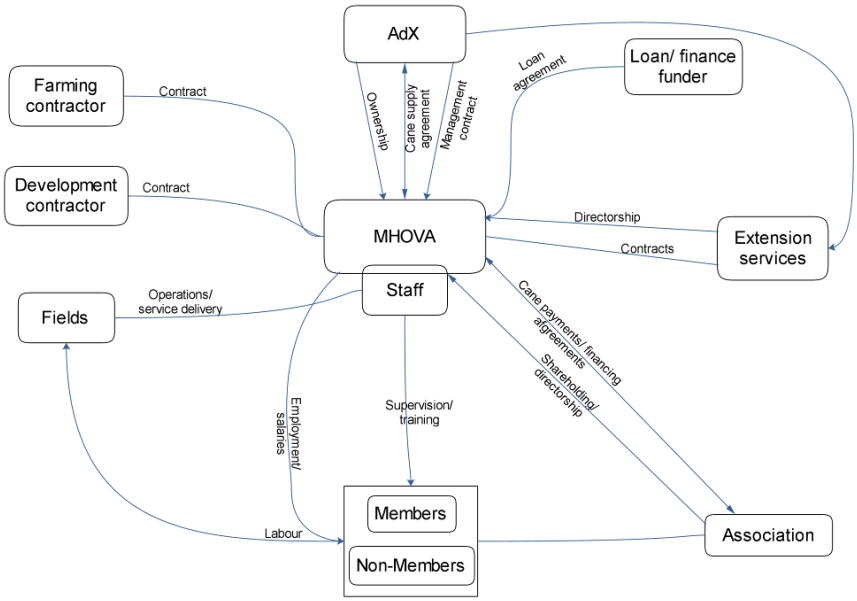

Figure 3: General institutional arrangements for AdX (AdX, 2010) (edited)

2.2.2 Using an actor-oriented approach in an intervention

Intervention has long been viewed as a linear process, going step-wise from policy formulation to implementation to outcomes, after which an ex-post evaluation is made. Interventions should however not be seen as simple processes in which the intervener implements a top-down project, but as an ongoing process of negotiation between different parties about conflicting goals and means (Long & van der Ploeg, 1989).

The actor oriented approach however is not focused on the project and the goals itself, but focuses on the way people and groups experience and actively shape an intervention and its outcomes. Therefore an intervention must be seen in the light of broader institutional changes pursued and consequently is not restricted in space and time. It studies not only the intervened, but also the interveners and it takes into account the fact that people and groups have their memories about past events and adjust their strategies towards new or follow up interventions. Hence, beneficiaries are not considered as passive recipients of such an intervention, but pursue different strategies to exert social agency and use experiences from past interactions to strengthen or maintain their agency. When applying this to a farmers association or to the company, the functions and behaviour of individuals in a group, such as an association board or company department can be clarified. Also groups of people or organisations should not be considered uniform entities, but should be deconstructed to study differences within them. In this research, this is done by unpacking the black boxes of company, association and, to a smaller extent homestead. For example, the company consists of a number of departments, such as the milling and agricultural department, each having their own interests, motives and strategies. In an association on the other hand, groups may be less distinct, but it least comprises one (or several) association board(s) and a group of members, which is also composed of individuals pursuing different (livelihood) strategies (see below).

2.2.3 Arenas of interaction

The actor oriented approach can be further extended by acknowledging that as intervention is an on-going process, its interactions will take place on a daily basis. To further study individual and group behaviour in the study area it is also necessary to study day-to-day interactions between various actors. These interactions take place at different stages of the production process, and also at different levels, i.e. in different arenas. In these arenas people negotiate, struggle and battle over current management practices and hence shape and reshape their organisation. These arenas, or so-called interfaces can be either clearly defined as a definite area in space, such as offices or meeting places, but can also be more abstract interface levels, for example between different management layers of field management or between association members and leaders. Mollinga (1993) argues that the concept of such arenas can also be applied at various levels of an organisation or an irrigation/ smallholder system and manifests itself by negotiations, struggles and battles. The following levels seem relevant to the study of company-smallholder partnerships:

- between different departments of AdX;
- between different management layers within an AdX department;
- between association and AdX (field staff or project managers/ employees);
- between association leaders;
- between association members and their leaders;
- between members of adjacent associations in the same scheme (inter-scheme level);

- between smallholders owning neighbouring plots (tertiary level);
- homestead level (plot level).

Questions that can be asked about these arenas are:

- Who are the actors participating in the arena, who is excluded?
- What is at stake, what do actors negotiate about?
- Which resources and strategies do actors employ?
- How is the arena shaped in time and space? When do interactions take place?
- What is the outcome of the interaction: what effects does it produce?

2.2.4 Control

For contract farming, various modi operandi exists as already indicated, with varying levels of vertical integration (from full to almost zero). The amount of influence (i.e. control) buyer (milling company) and supplier (smallholder or association) can exert over the production process mainly defines the level of vertical integration. According to Mockler (1970), (management) control is the systematic effort of performance measuring and comparing with predefined standards, plans or objectives, and assessing whether this measured performance is in line with these standards, taking corrective measures if performance does not live up to these standards, in order to restore and/or optimise the effective and efficient use of human and corporate resources. Hence, control can be divided in:

- Design of standards;
- Performance measurement;
- Comparing performance with standards;
- Assessing performance;
- Applying corrective measures.

This implies that the amount of control either side has over the production process depends on whether supplier and/or buyer has any authority over these five control components.

2.2.5 Autonomy vs. dependency

However, managerial control does only cover the influence of either side on the process. For some contract farming modalities, there is also a strong resource component which should not be overlooked. Control over these resources therefore also defines a supplier's dependency or autonomy from the buyer, who is usually the supplier of these resources.

2.2.6 Institutional design

Historically, irrigation systems were owned by governments or parastatals who exerted full state control over these systems. However, in the late 1980's there was increasing discontent about the performance and the financial viability of these systems. In order to cut public expenditure governments were encouraged to transfer operation and maintenance management (and in rare cases also the ownership of the system) to the end-users of the irrigation system. However, if the governance of water and the infrastructure that it conveys would be left to the free market economy, Hardin (1968) and later also Ostrom & Gardner (1993) argue that individuals will always try to maximise their gains from a common pool resource (i.e. water, the O&M of an irrigation system), but then there is a high risk that tragedy of the commons will occur, in which such a resource is overexploited and eventually depletes (Hardin, 1968). To prevent exploitation institutions (i.e. rules) must be designed and installed to regulate the use of them. In the literature of new institutional economics,

which is situated in between state control and free market economy, institutions are seen as constraints and rules that people place on themselves. These rules are created to assure that other members will behave in a certain way that can be predicted. They will then also create incentives for individual and collective action.
Ostrom (1992) in Mollinga et al. (2003) distinguishes three types of rules for governing common pool resources (CPRs):

- Operational rules that serve as a guide to day-to-day practices
- Collective choice rules that regulate decision-making and conflict resolution
- Constitutional rules that regulate membership and define users' rights

This process of developing a set of rules for collective action is called institutional design, the result of this design is a community's social capital (Coleman in (Mollinga et al., 2003)).
To prevent opportunistic behaviour and rent seeking of these commodities, associations must either create these rules themselves or they must be guided in implementing and developing their own rules and institutions.
In Xinavane, individuals within smallholder associations are however not expected to deplete water if the rules are found to be totally absent, but there are a number of resources on which they collectively depend. The most important resource is the association's labour reserve present to work in their fields. However, in a number of associations individual farming is practices, but this seems to conflict with the harvest, cane testing and payment modality used by the company, which are all done association-wide. As a result, when an association member decides not to work on his own fields, the results of the decline of his labour input will be shared with all members.
By comparing official association rules with current day-to-day practices and interactions, successful and faulty institutional design can be highlighted. The results can then be used to make future recommendations for better institutional crafting of farmer associations, making them more self-sustainable.

2.2.7 Livelihood strategies

Livelihood thinking was developed by Chambers (Chambers & Conway, 1991) as an alternative to conventional production thinking. Chambers argues that when looking at rural development and irrigation in particular, livelihood thinking focuses on the object (the poor) itself, instead of focusing on the economic productivity of the object. This concept uses the amount of labour that is available to a farmer, his relative income and his entitlements to land and water. The concept of livelihood thinking is especially useful for this research, as it provides more insights into the implications and consequences of contract farming on farmers "way of living", taking a more holistic approach and not limiting itself to production or profitability.
According to western thinking, a household is bound to certain fixed characteristics, that often do not apply in non-western countries. For example, many studies and projects assumed that the man was the head of the household and also the main contributor of a household's income. This idea of a nuclear family has often led to wrong assumptions in the past when irrigation schemes were designed or rehabilitated. An example of this is reported by Carney (1988), in which the donor did not take into account the current division of labour between men and women as well as the local system of land tenure. In many traditional African cultures namely, both men and women often have their own plots for different purposes. Such confusions, generalisations and assumptions could lead to great

misunderstanding of the current situation in the study area. The concept of a household should be deconstructed to find out how it is comprised.
Hence, a household may not only look different than our "standard" nuclear family, the means of making a living can be different within the household as well. Individual members of one household may pursue various activities which contribute to a household's livelihood security. In general, as a livelihood strategy (members of) a household can choose to either specialise or diversify. In order to make a classification, Barrett et al (2001) propose a basic typology that is able to distinguish this behaviour. For this he uses the terms income, assets and activities, since they complement each other and cannot hold as measures of livelihoods on their own. When financial systems are incomplete or weak, people have a strong incentive to diversify in order to spread risks. This perspective is called the push factor perspective. The opposite, which is called the pull factor perspective, is also possible through diversification. Here, diversification is seen as a way to increase income with more specialised labour (Barrett et al., 2001).
These livelihood strategies will then have their effects on the intensity of this behaviour. For example, if a farmer (or the household as a whole) is uncertain about his/their crop yields and the resulting income from this, he/ she/they might put less effort in it, so that more efforts can be spend on more secure livelihoods. Hence, the term "efforts" can again be split into activities (time), income (money) and assets (possessions), but in opposite direction. Using this typology, I studied the contribution of sugarcane production as a strategy to a household's livelihood, but also tried to draw up a relation between the effects of partnerships on smallholders' efforts in growing sugarcane.

Figure 4 shows the relationships between all concepts that will be used in this research.

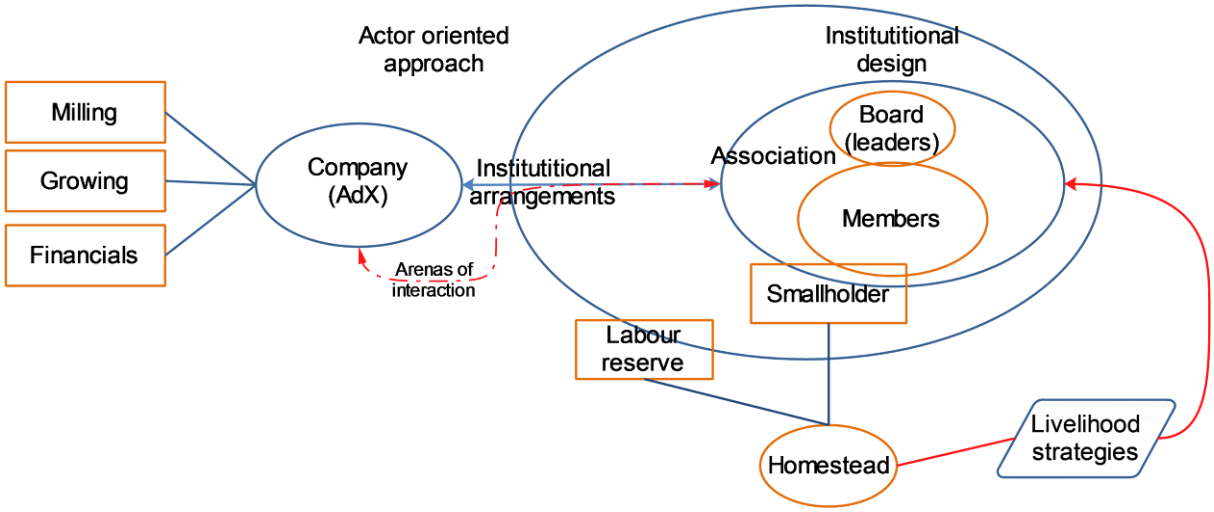

Figure 4: Graphical representation of conceptual framework

3 Sugarcane developments in Mozambique and Xinavane

3.1 Introduction

This chapter deals with all general developments on sugarcane in Mozambique and in Xinavane specifically. For Mozambique, Xinavane appears to be representative for the rest of the sugarcane developments in the past and the present. Also, the situation in Xinavane can be used as an example for future developments in the sugarcane sector in Mozambique and possibly for other Sub Saharan African countries as well. Some sources (ADE, 2009) have already marked Xinavane as such an example, and the experience gained with smallholder inclusion can be used in the development of smallholder schemes elsewhere in Mozambique.

Since the smallholder schemes were not created as entities on their own, but as part of bigger projects, they must also be studied as such. For that reason some aspects of the current activities in the estate will also be elaborated in more detail, because they have an influence on developments and activities in smallholder schemes and management.

Finally, the reasons for this rapid growth and these expansions will be discussed here, as well as the current challenges that come along with these expansions.

Note that from here onwards, the term smallholder, small scale grower and farmer all refer to the same, but are used by different persons, and sometimes have different meanings. Smallholder (outgrower) is the term mostly used in academic literature for a farmer having a small piece of land, small scale grower (or SSG) is used by company staff and farmer is a common term for every independent farmer. To prevent confusion, the former two will be used when describing growers inside an association, while I will use the general farmer term as the occupation for someone who is an independent grower mainly on a subsistence basis.

3.2 The rise and fall of the Açucareira de Xinavane

The Xinavane sugar estate, officially named Açucareira de Xinavane (abbreviated AdX) is situated in the Incomati river basin (25° 02’ 41’’S, 32° 48’ 20’’E) and is currently the largest sugarcane producing area in Mozambique. The sugar mill and estate are now owned by Tongaat Hulett, a South African sugar company, that took a 49% share in the mill in 1998, and augmented their ownership to 88% later on. The remaining part (51% in 1998, 12% currently) is owned by the government of Mozambique (GoM).

3.2.1 Rise

Xinavane has the second oldest mill and estate of Mozambique, which were founded by a British company in 1910, but taken over in 1954 by a Portuguese enterprise. At that time, sugar was mainly exported to European markets (Portugal) (Marini, 2001). In 1971, sugar production in Mozambique achieved its peak production level of 326,000 tonnes of sugar per year (OFID, 2006), of which Xinavane produced a mere 53,000 tonnes.

3.2.2 Fall

After a bloody war for independence, Mozambique finally gained its independence in 1975 from Portugal. Shortly after, many high skilled Portuguese employees fled overnight, fearing repercussions from the Mozambicans for almost seventy years of colonialism. Many companies were left without managerial capacities, causing production levels to drop

dramatically. Also the establishment of state management under the new socialist regime and the collapse of the Mozambican currency caused a further decline of productivity. The civil war that followed the economic decline lasted for twenty years and had a devastating effect on the infrastructure as well as on the sugar mills and estates (Marini, 2001; OFID, 2006).

In the 1980s, Mozambique was facing the greatest economic decline it ever experienced: the guerrilla war, the destruction of infrastructure and the lack of agricultural production led to great famine and the edge of bankruptcy. In order receive international and IMF support, Mozambique had to change its economic attitude. In 1987, Mozambique adopted a PRE (similar to a Structural Adjustment Programme or SAP) to reduce the state budget. Government subsidies on wages and resources were reduced, prices were deregulated and measures to stimulate the private sector were implemented. In 1990, the Enhanced Structural Adjustment Facility (ESAF, also drafted by IMF) was implemented to open up the economy to foreign investment, especially from the private sector. This had to bring in the necessary tools for the economic restoration of the country. Especially the sugar sector and the agricultural sector as a whole were pinpointed by the government as front runners for (rural) economic development. Foreign investments can provide the knowledge and capital to develop a modern agricultural sector able to exploit the country's large agricultural potential. However, it was agreed that the rural population, mainly engaged in agricultural production as its mainstay source of livelihood, must also be given a role in the developments by gaining access to these resources. In this way they will reinvest their returns in the local economy (LMC International, 2006).

3.3 Motives for sugar investments

But not only economic changes and environmental conditions made Mozambique a promising country for foreign investors: also its status as an LDC (least developed country) has permitted Mozambique to export any goods to the EU without paying import taxes. This is done under the EBA (Everything But Arms) initiative, which allows Mozambique to export sugar for € 335,20 per ton instead of € 168 per ton until 2015. Next to this is the EPA (Economic Partnership Agreement) between the EU and the SADC (Southern African Development Countries) which also grants preferential access to European markets. However, due to the nature of EU agricultural subsidies, EPA and EBA regulations still have a maximum quota. Second, under the US GSP (Generalised System of Preferences) Mozambique qualifies to export goods duty-free to the US (Schut, Slingerland, et al., 2010). Third, but more particular for sugar production is that the country is a beneficiary of the EU ACP sugar protocol (ISO, 2008; Tongaat Hulett, 2010). For Mozambique, this means that it can supply sugar to EU countries at prices above the world market price for an indefinite period of time (Garcia-Duran, Casanova, & Millet, 2009). But due to agricultural reforms in the EU these preferential prices are decreasing (€ 632 in 2004, €422 in 2008), which will require higher efficiencies to be made in the production of cane in order to stay competitive with countries such as Brazil (ISO, 2008; Ryan, 2004; Wall Street Journal, 2007).

Recently, also the need for an alternative for conventional fossil fuels plays a role in the process: the EU has set a target of 10% addition of biofuels to normal fuels before 2020, which will increase the demand on that market. At the moment the prevalent addition percentage is 4%. However, the EU obliges the production of ethanol and biodiesel to be sustainable, both in an economic and environmental way (Schut, Bos, et al., 2010). This is

where smallholder outgrowers come into play, as the criteria for the production of biofuels for the EU are to be pro-poor. One last remark with regard to biofuels is Mozambique's interest in the development of such installations, as this will help reduce the need to import fuel from outside the country.

The favourable investment climate Mozambique has created is but one of many reasons why the sugar sector and Xinavane in particular is developing so rapidly. Mozambique has comparative advantages for growing sugarcane as described by INA (2000) and Batidzirai et al. (2006), which are a good climate and soil conditions for cane growing, a surplus of labour in the rural areas, and the presence of mills and estates that only had to be rehabilitated. In recent years, policies and labour laws in neighbouring South Africa have changed as well, which made it more difficult for South African sugar companies to produce cane there. Especially changes in minimum wages and the anti-apartheid policies to give back land (and water) to black communities (Ten Napel, 2009), made Mozambique a better alternative with lower production costs (interview Agricane field manager, 22-10-10). In South Africa, the production costs per tonne is around € 203, while Mozambique produces at € 133/ tonne (Lourens, 2007). Peter Staude, CEO of Tongaat Hulett added the presence of railway connected harbours as an additional advantage (Wall Street Journal, 2007).

3.4 ....and rise

For Xinavane, the South African company Tongaat Hulett entered the area in 1998 and took over the estate's management that same year. In the past twelve years following the takeover, sugar production in Xinavane has experienced a strong revival. In 1998, a large project to rehabilitate and upgrade the estates and mill was approved and once completed in 2003, it resulted in a steady growth in production, and extending the cultivated area from 2,100 ha to 5,300 ha of fully irrigated sugarcane fields (OFID, 2006).

Currently, Mozambique has six sugar estates and mills of which five have been (partly) taken over by foreign investors, mainly companies from South Africa and Mauritius. This has led to the rehabilitation of 4 estates and mills: Marromeu (Sena, Mauritius), Mafambisse (Tongaat Hulett, South Africa), Maragra (Illovo, South Africa) and Xinavane (Tongaat Hulett). Marini (2001) characterises this rehabilitation as first phase redevelopment, which has a strong focus on vertical integration in order to increase sugar production and secure the supply. The rehabilitation and continued investments into the sugar estates has led to a large increase of sugarcane production as can be seen in Table 2: Mozambique sugarcane annual production (FAOSTAT, 2011).

Table 2: Mozambique sugarcane annual production

Annual production (tonnes)	item	2000	2001	2002	2003	2004	2005	2006	2007	2008
Mozambique	Sugarcane	397.276	675.623	1.586.260	1.940.799	1.873.262	2.246.985	2.060.317	2.060.667	2.451.170

FAOSTAT | © FAO Statistics Division 2010 | 11 August 2010

However, according to Marini (2001), full rehabilitation and expansion by foreign investors would leave no more room available for domestic investment, although this mode of miller-cum-planter production has traditionally been the standard. Shifting to a mode where private outgrowers co-exist next to the estates would, according to INA (2000) have the advantages of higher incomes and more investments in the agricultural sector as well as a starting point for investors in the sugar sector, who may not have the resources to invest in

processing, but do have those to invest in agriculture. Unfortunately, no domestic investors that had the finances and the managerial experience to grow cane were found for Xinavane. As a result, the Vamagogo estate (1,370 ha) was the first estate that moved into the hands of a commercial South African owned business by a sublease contract. Although this estate is now not domestically owned, subleasing land to a foreign private grower can be seen as a risk sharing and risk reducing strategy for the company. Given the huge investments made into their rehabilitation projects, it is preferable for a company to have one or more private growers to share their investment risk with, as they already have the managerial skills to grow cane and can thus be seen as a reliable partner.

3.5 Second expansion project

Currently AdX is finalising their second project of estate expansion, investing USD 160 mln to extend the total estate size to almost 16,000 ha, making it the largest irrigated sugarcane producer in Mozambique. After completion AdX's production capacity of the estate and mill is anticipated to rise from 69,000 tons to 208,000 tons of raw sugar annually (AdX, 2010).
Figure 5 shows the map with the geographical spreading of the expansions and current estate fields. As sugarcane is a heavy consumer of water, a reliable water source is necessary for optimal cane production. The maps shows that all fields are situated in the vicinity of the river Incomati, to have a reliable source of irrigation water. The irrigation technology used in Xinavane varies per location: the oldest fields close to the mill are irrigated by furrow (flood) irrigation, while most fields close to the village of Magude and further west have center pivots or dragline sprinklers installed.

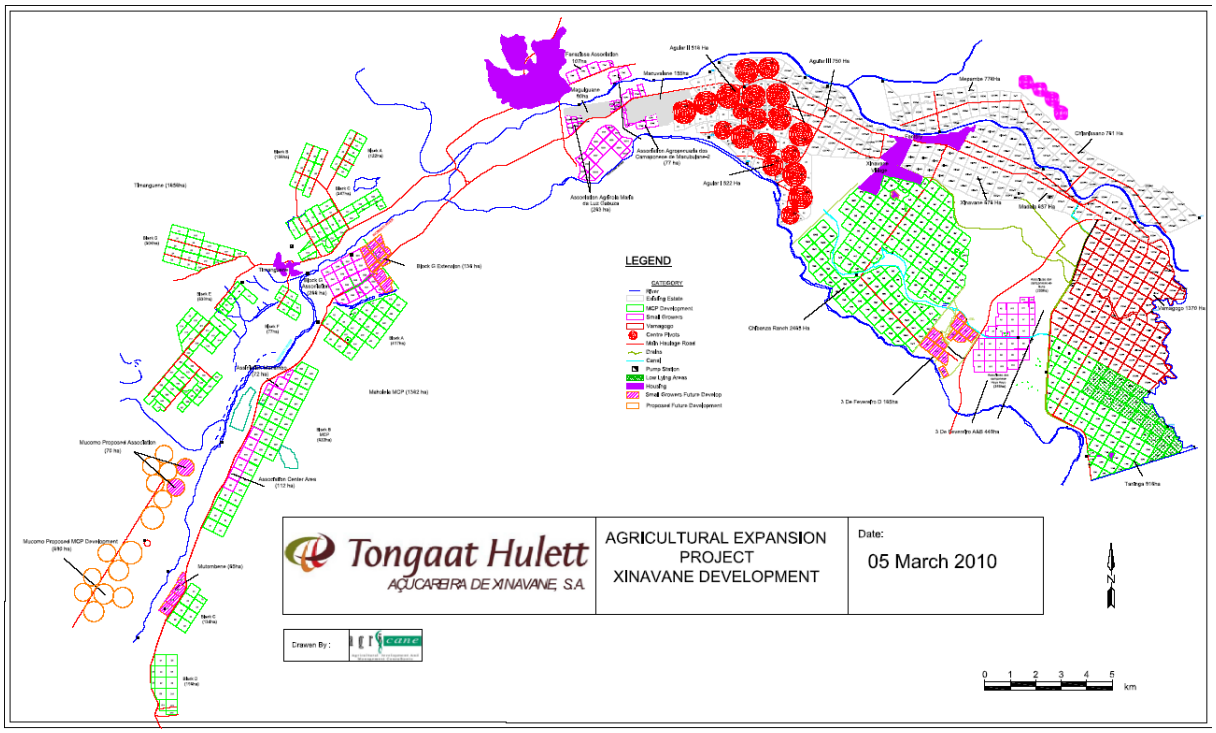

Figure 5: Map of the Açureira de Xinavane Sugar Estates, showing company estates (grey), smallgrower plots (grey boxed) and new estate (Miller-Cum-Planter) (green) and smallholder ((hatched) pink) development plans. Based on Agricane/ Tongaat Hulett map, 2010.

3.6 Third expansion

But that wasn't all. In November 2006, the GoM arranged the land use rights and water rights for another project, called the COFAMOSA (Committee for the Facilitation of Agriculture between Mozambique and South Africa) irrigation project (AfDB, 2007). In this project, 29,000(!) ha in the districts of Moamba and Magude will be developed for the irrigated production of sugarcane, partly for sugar production, but also for ethanol production. COFAMOSA is going to be a joint venture between South Africa and Mozombique and aims for more cooperation between South African and Mozambican smallholders by sharing business and agricultural knowledge and skills. Though AdX will not become owner of this project, it will most likely result in an enormous increase of sugarcane supply to their mill. This third expansion is yet another illustration of the GoM's plans with the sugarcane industry as one of its economic pillars and the way Mozambican nationals can profit from it, as well as the amount of FDI that is necessary for such investments. Also the opportunities for biofuel production for both export and domestic use are clearly highlighted with this project.

3.7 Land use rights and negotiations

Most of the latest estate expansions in Xinavane were made on the far west side of the mill, west of the town of Magude. This was going at an incredible speed: during my 3 months fieldwork in the area, in Mucombo, over 800 ha was converted from bushland into sugarcane fields. Most of these areas were scarcely populated and had no clear land use, which probably made land acquisitions easier than in areas close to the mill where population densities are higher and where land use and land entitlements are more pronounced. However, some areas that may not seem to have any land use, could still have an unofficial occupation. Also, when a community is situated outside the boundaries of the built up area of a town or city, but is officially registered as a community, a DUAT (land lease) (see Box 1) cannot be obtained by a company (PLMJ, 2010). In such cases, the company will have to negotiate with the communities to obtain such parcels of land and obtain a DUAT for that area. This implies that regardless of the size of a project or its proposed profitability, local communities in principle still should have a strong vote in land deals. Although local communities have the right to claim their lands, negotiations with AdX didn't always lead to satisfactory results. For the Mucombo expansion area, the communities living there negotiated with AdX that would receive a number of drinking places for their cattle as a compensation for ceding their lands to AdX. AdX agreed with this and installed these tap points, but on the same piping network as their own irrigation

Box 1: Land law in Mozambique

In Mozambique, "all land is owned by the state and cannot be sold, alienated, mortgaged or encumbered" and can only be subleased by the state for a renewable period of time (Schut, Slingerland, & Locke, 2010). Such a land lease is called a DUAT, which is an abbreviation for Direito de Uso e Aproveitamento da Terra, and can be acquired through several ways:

"Existing occupation established by customary norms and practices" (Land Law article 12; regulation Land Law article 9);

"Existing occupation established when people have occupied the land for at least 10 years without challenges (ibid; regulation Land Law article 10)" (protection for displaced people as a result of the civil war);

By a formal request to the state (ibid; regulation Land Law article 11).

Furthermore, article 13 of the regulation of the land law states that along a formal request to the state, also local communities should be consulted. This ensures the communities of having an opportunity to negotiate some sort of compensation or benefits (Schut, Slingerland, et al., 2010).

systems. When power failure occurred or when no irrigation was necessary, farmers also couldn't get water from the taps (interview AdX area manager 15-12-10).

3.8 Cattle grazing and other expansion issues

Now that large parts in the western expansion area have been ceded to AdX, the area for cattle grazing has significantly declined. This area was originally well known for its production of cattle, but as many areas have now been converted to sugarcane, overgrazing occurs. Especially during the dry season, when vegetation is scarce or already eaten, cattle is driven into the cane fields at night by the local people. Especially the sides of the fields get badly damaged by this. In reaction to this, AdX has begun to install a 40 km fence around the affected fields (interview AdX area manager; Jelsma, 2010). It is unclear whether this problem is directly related to land rights negotiations and the resulting ceding of land to AdX, but it would be a logic response.

Another disadvantage of expanding on this side of the mill is the greater distance to cover which has a negative impact on transport duration. Next to this, roads have to be upgraded or newly constructed in order to guarantee a safe and reliable transport as well.

The speed at which these expansions were going also have downside effects for AdX. Because some of them had a significant influence on the associations as well, I will briefly list the most important effects here and further elaborate on them in later chapters:

- An expansion of the total sugarcane area also requires an expansion of the machinery fleet. However, Mozambique doesn't produce any machinery itself, which makes importing from elsewhere necessary. This was told to be expensive and a time consuming process as well (interview area manager). As the expansions went so rapidly, machinery is not always available, which means not all activities can be undertaken at the desired time.
- Also the availability of skilled managerial labour is very limited in Xinavane. Some of the field staff working at AdX are expats from South Africa and Zimbabwe, while others have just been assigned a bigger area size to *fill up the gaps*.

3.9 Smallholder inclusion

Although no expansions have been effected in the more populated areas close to the mill, some of the sugarcane is now being grown in populated areas where it previously would have been difficult to do so. This is achieved by involving local smallholders through an outgrowers arrangement with the processor. This is not a new concept, but in the sugar sector in Mozambique it is not practiced elsewhere. In Maragra and Mafambisse, outgrowers do produce cane for the mills, but these outgrowers have land sizes that are too big to consider them as smallholders (Marini, 2001). Xinavane is currently the only place in Mozambique where smallholders produce cane under contract.

By engaging in a contract with smallholders, AdX

Box 2: Land entitlement

As land registration in developing countries has always been done very poorly, it turned out that many land deals between foreign agribusiness companies and national governments resulted in the deprivation of local people from their lands. In some situations, local people even started revolting. Also AdX has had bad experiences with this, even in the case of new outgrowers (Jelsma, 2010). According to the AdX outgrower project manager, AdX now has come to realise that maintaining good relations with local communities is of vital importance for doing business (interview 14-10-10).

hopes to supplement their current production from their nucleus estate in order to operate their mill at a higher capacity/efficiency. Through such arrangements, AdX now has implicitly got access to lands that could otherwise not have been obtained, because they were previously registered as communal land (Box 1). The inclusion of smallholders is also a way to avoid scenarios as those described in Box 2 (Jelsma et al., 2010) and provide smallholders with the means to benefit from the presence of foreign capital at the same time.
Another advantage for the company (although not mentioned as such) is the externalisation of production risk, since now the outgrower and not the company carries the responsibility for possible crop failure. When outgrower fields are close to the mill, transporting risks and transport durations will be reduced as well.

Since the completion of the Xinavane Small Scale Grower Development Project there are 16 smallholder schemes and 17 associations in the Xinavane area, with 1,539 smallholders producing cane on 2,091 ha. The ultimate aim is to create a 22% share in cane production by smallholder outgrower schemes (AdX, 2010). All farmers in the schemes are organised into farmers associations, in which a number of activities and responsibilities are centralised, such as payment distribution and irrigation management. Table 3 shows all farmers associations currently in operation.

Table 3: Overview of smallholder associations. Based on AdX (2010) and Jelsma (2010), updated.

Phase	Year	Association	Size sugarcane area (ha)	No. of Small-holders	Ha/ small-holder	Irrigation system	Funding agency	Loan or grant
1	1998	Maguigane	90	66	1.4	Dragline	GoM and Southern African Development Bank (DBSA)	Grant
2	2005	Macuvulane	185	180	1.03	Dragline	GoM and African Development Bank (AfDB)	Grant
	2008	Chihenisse I	200	40	5.0	Pivot		Grant
	2010?	Chihenisse II						
3	2008	Macuvulane II	73	89	0.8	Dragline	AdX, with funding sought at the European Investment Bank (EIB) and other parties which are interested to support these developments.	Loan
	2009	Maria de Luz Guebuza	263	200	1.3	Dragline		Loan
	2009	Olhar de Esperança/ Facasize	107	250	0.4	Dragline		Loan
	2009	Hoyo-Hoyo	189	150	1.3	Dragline		Loan
	2009	Buna	218	110	2.0	Dragline		Loan
	2009	Maholele Macambo	72	4	18	Semi-solid set		Loan
	2009	6 de Janeiro/ Colo	74	200	0.4	Semi-solid set		Loan
	2009	Maholele G 1st Stage	266	6	44.3	Dragline		Loan
	2010	Chichuco	95	150	0.6	Dragline		Loan
	2010	Maholele Mutombene	56	4	14.0	Semi-solid set		Loan
	2010	Chulemati	133	10	13.3	Dragline		Loan
	2010	Ngoyene						
	2010	Mucombo Est.	70	80	0.9	Pivot		Loan
Total			2,091	1,539	1.4			

In 1998, there was only limited experience with the inclusion of smallholders, with only one association (Maguigane) being active in the Xinavane area. They were financed by a grant from the Southern African Development Bank and the GoM. In 2005, the small scale irrigation project (SSIP) was started, funded by the AfDB and the GoM, and was targeted to benefit the communities of Chihenisse and Macuvalane. The phase III project, officially called the Xinavane Smallscale Grower Development Project with a total cost of USD 15,7 million was launched in 2007, and was only recently finished. With these projects, the Government of Mozambique (GoM) hopes to stimulate rural development in the area by promoting smallholders producing cane under contract, but currently only have taken up the role as a facilitator (AdX, 2010). The GoM also hopes to reap the benefits from the presence of a foreign investor. Normally, many foreign investors deposit company profits in their country of origin and pay –due to the favourable investment climate- very little taxes. Projects like these are a way of retaining some of this money for Mozambicans and increase local incomes from sugarcane production, that otherwise would be exported from the country in the form of company profits.

Contrary to the first two projects, the role of the GoM in this project is rather limited. While the first two phases were financed with grants by the GoM and two development banks, this project is financed through a loan on the account of TH/AdX, which partly needs to be paid back by the smallholders in a ten year period. Some sources however (IFAD, 2003; ISO, 2008) have indicated that outgrower projects like these are not feasible if they are not financed through a grant. Also Jelsma (2010) indicated that a feasibility study before starting the SSIP project showed that a smallholder debt of more than USD 7,000 was not feasible. High financial burdens would leave farmers with very small revenues, after which they will become uninterested to continue cane growing. Therefore SSIP decided to cover the costs through a grant. AdX however claims the project will spread the financial burden for the smallholders as much as possible and will, after finally result in an income of USD 1307 per year/ season. Moreover, the first three years of cane growing have been marked as a grace period in which the emphasis is more on the learning how to grow than on paying back the loan. AdX expects that in these years, cane yields and payments will be low, and imposing a loan in that period would result in a situation where farmers would hardly receive any revenues from the harvest, which would make them uninterested to continue further cane growing.

After the grace period, associations will have to pay back TH/AdX part (47,57%) of the total investment of USD 15,7 million (AdX, 2010). Their loan covers all the costs for converting and developing old land into new outgrower schemes. Table 4 illustrates that after the loan has been paid, the smallholders will become the owners of all infrastructure and land. AdX expects that the loan will be paid back within 10 years with an interest rate of 6% and a

CAPITAL SCHEDULE	COSTS	
POWER SUPPLY		
Power reticulation	USD	339.409
Plant hire - roads, bulk water	USD	862.800
Bulk water supply - civil	USD	1.606.931
Earthworks - drainage	USD	233.333
Subtotal	**USD**	**3.042.473**
IRRIGATION		
Subtotal	**USD**	**4.231.891**
OTHER		
Housing/ buildings	USD	141.356
EIA/ secondary	USD	29.314
Contingency	USD	838.600
Vehicles, machinery, equipment	USD	196.873
Land forming	USD	897.669
Cane establishment	USD	3.017.013
Bush clearing	USD	2.118.090
Subtotal	**USD**	**7.238.915**
Total MBB estimate	**USD**	**14.513.279**
Project management	USD	959.526
Initiation fee THS	USD	292.684
Total	**USD**	**15.765.489**
Total area under sugarcane		1616
Total area		1811
Costs/ hectare	**USD**	**9.756**

Table 4: Project capital cost overview (AdX, 2010)

cession of 10%, which will be withdrawn from their net proceeds. Table 5 shows a financial plan for all phase III associations that gives an indication of the costs and income per growing year/season. The costs listed here are operational costs, which are an estimate of the costs per growing season to grow cane. The grace period of three years the associations are taught and trained how to grow cane. For this a management fee of 9% on the gross proceeds is charged for the complete takeover of all cane activities. As most of the phase III associations do not have any experience with cane growing yet, AdX arranges both management and labour in these three years to ensure a reliable production. However, operational costs will still be deducted. After these three years, a 4% management fee is charged, but now AdX deducts 16% of the net proceeds for the repayment of their loan.

Table 5: Cost/ revenue overview for a 1 ha smallholder. Here, 1 USD is assumed 28.5 Mtc (AdX, 2010), Annex D)

		During 3 year grace period		During 10 year repayment period		After repayment period
Proceeds and costs from 1 ha (=105 tons)		3675		3675		3675
Costs in USD						
Planting		138		138		138
Ratoon cultivation		812		812		812
Irrigation		632		632		632
Harvesting + haulage		983		983		983
Road maintenance		44		44		44
Management fee	9%	331	4%	147	4%	147
Repayment (16% of proceeds)		0		588		0
Sum of costs		2940		3344		2756
Proceeds minus costs		735		331		919
Equity to AdX	28,5%	209,5	28,5%	94,3	28,5%	261,9
Revenue for smallholder		525,7		236,7		657,1

However, the projected incomes and costs in Table 5 are not all realistic. First, for the proceeds, AdX assumes a very optimistic sucrose content of 14,2% which is much more than the average of 11,7%. Second, world sugar prices are subject to fluctuations while natural conditions (influencing production costs) vary in time and space as well. One association for example may face higher costs for irrigation due to a leakage or due to sandy soils, while others do not. Third, cane yields are assumed to be stable throughout these 13 years, while especially the first years this will be lower due to a lack of skills and knowledge of association members on how to grow cane. Although AdX wants to overcome this by taking over day to day management from the associations and setting up a strong management structure (AdX, 2010), still its members are supposed to work and learn on their fields. Field staff confirmed that they're facing great difficulties in getting the same quality of activities performed as is achieved in the estates, which also results in lower yields. More on production management interactions can be found in chapter 5. Finally, AdX assumes an average field size of 2 ha per smallholder, which would result in a final income of USD 1,307 annually. Table 3 shows that this is not going to be the case for every smallholder. Also this figure is the final income after the repayment has been fulfilled.

Following Table 5, it appears that small scale growers are going to experience a decline in their revenues during this 10 year repayment period, but it is questionable whether they are aware of this. Jelsma (2010) pointed out that at least one association (Macuvalane II) was already aware of declining revenues due to repayments. More on this in chapter 5 and 6.

In their feasibility study (AdX, 2010) AdX expects that another 24% of their investment will be funded by a grant by the European Investment Bank (EIB), in order to recover another part of their investment. From a Europeaid study, it was even found that, when smallholders in a project are included in the production of sugarcane under a set of conditions, Mozambique can even profit from higher export prices as well (ADE, 2009). Currently, AdX is still negotiating with EU delegates on the fulfilment of these conditions, and this opportunity seems to be the most important driver for smallholder inclusion. It is unclear whether the company already had an informal agreement with EU/EIB before starting or not. Although the figure of 24% has already been determined, no official agreement has been made yet, but AdX says they are in an advanced stage (interview AdX SSG project manager). The high number of cancelled interviews with AdX and the local NGO due to meetings with EU officials during my stay illustrated the negotiation process. In their feasibility study, AdX also would like to have an outside financier to carry the risks and costs for the loan they're giving to the smallholders. Due to high inflation and high interest rates in Mozambique, AdX considers financing unattractive and risky. The remaining 28,5% will be used by AdX as an equity investment into the project, making AdX become a shareholder and provides them a claim on the profits.

It looks like the intensions with the phase III developments are different from the first two projects. While the latter were clearly development oriented, the phase III developments are much more business oriented, with a dominant role for AdX, in which it is not only the supplier of finances, but -when finished- will also be shareholder. This last point shows that AdX would like to retain its influence in the associations' businesses as much as possible in order to secure a steady flow of good quality cane to their mill. Using this mechanism, the company does have the extra burden of that investment, but if the project succeeds, 1,600 ha have been developed for less than 1/3 of the real costs, and will also bring in almost 1/3 of the production revenues, although they do not fully carry the accompanying risks. If AdX succeeds in transferring the smallholders' loan to a government or development bank, they have managed to reduce their risks even further.

The developments also show that AdX is looking for ways of increasing their cane supply to the mill other than the classical Miller-Cum-Planter nucleus estate model, as they have reached their expansion limits with this mode of production. The definite period of time for exporting sugar to the EU at above world market tariff have further hastened the expansions in Xinavane. Finally, one may even argue that AdX also discovered the (EU) interest in the sustainable production of sugarcane for biofuel purposes. As most of these requirements (Schut, Bos, et al., 2010) comprise economic conditions, the idea smallholder involvement may meet those conditions. In this way, further trade agreements for exporting sugarcane products to the EU could be secured.

3.10 Requirements for association establishment

Table 3 shows numerous organisational differences between phase 3 associations, but according to the AdX smallscale grower project manager there were no specific reasons for that (interview 20-10-10). The only restrictions AdX has for the establishment of a new association is the size of the association to be at least 45 ha, and its location must lie in the vicinity of the mill. Furthermore, the association must be officially registered at the local government in order to claim their land rights (interview 20-10-10). However decisions

about the number of members and the plotsize per farmer are left to the community and its leaders. Also no restrictions were made on age, income or occupation.
This way of non-involvement appears to be a typical attitude for AdX during the negotiations with the communities. Jelsma (2010) also reported that negotiations were mainly done between AdX and community leaders, who then signed contract papers for terms and agreements they didn't fully understand. This resulted in social unrest in some of the communities when they found out that the outcome of the negotiations were poorly communicated by the leaders. AdX however states that informing future small scale growers is not their responsibility, but one of the communities' leaders. On the other hand does the assistant outgower project manager acknowledge that a community consists of risk takers and risk avoiders, and that the former group is more likely willing to negotiate than the latter.

Although no modus operandi has been imposed or used during these negotiations, the lack of involvement of AdX on plot size per smallholder did have clear provable negative consequences for some of the associations. Table 3 shows that some of the associations have average individual field sizes far below two ha, which was used as a base line in the feasibility study. It is obvious that members in these associations will be disappointed with the revenues, which may also lead to a declined interest in further cane growing activities. Other factors that may have an influence on cane growing activities, association management or livelihoods will be further discussed in chapters 5, 6 and 7 respectively.

3.11 Setup of Small Scale Grower Development Company

Next to the individually established associations in the different communities, AdX (2010) also reports all these associations will become members of a Development Company. This development company, called MHOVA (Shangaan for sugarcane), is going to manage the business affairs of all the associations and will become the primary speaking partner with AdX. This means that MHOVA is partly going to become responsible for contracts and financials, which are now covered by AdX or the associations. Unfortunately MHOVA was not functioning yet during fieldwork, but AdX officials expect MHOVA to be running in mid-2011 (interview AdX financial manager). Several officials within AdX have indicated that part of the daily functioning of the grower structures, but also the financing can only succeed once MHOVA has been established. It seems logic that AdX would like to have these responsibilities externalised. But also the EIB has indicated that the associations were still too weak to function properly, which suggests that this is actually their requirement for financing the project. Also AdX (2010) states that the creation of MHOVA is required to obtain any external funding for the whole project. A strong overarching structure, supported by both the company and all associations could cover for and counteract these weak structures. Moreover, this same company can secure financial flows to the individual associations. More information on MHOVA's final structure and its implications on current and future cane growing, the associations' relation with the company and on association management can be found in chapter 5 and 6.

3.12 Management structure of the Açucareira de Xinavane

To be able to understand the management mechanisms of a company with a size like that of AdX, it is important to grasp its management structure and the divisions of labour.

In the first three years of the phase III associations AdX takes over the day to day management from the associations. For that, the same cane growing methods and management structure as in AdX's own estate are used. Therefore, an analysis of AdX's company management structure is necessary if we want to make any comparison.

AdX is divided in 3 divisions, which comprise the departments of transport, milling and agriculture, of which the latter one was the most important in my research. Although confusing, the department of transport does not transport any cane to the mill, but is only concerned with the transport of equipment and the transport of employees from and to the fields.

The department of Agriculture is situated at Chibanza Ranch and is run by the agricultural manager, who has 3 **field manager**s under his supervision. Two field managers are for the estate, the third field manager manages the small scale growers (SSG). Every field manager has a number of area managers under him. The **area manager** is responsible for an area of approximately 800-1000 ha, and on his turn has a number of section managers under his supervision. He has an administrative, coordinating and facilitating role: he signs attendance and overtime forms from each section, checks the section manager on the measures he proposes and makes sure that machinery and other inputs are delivered in time. The **section manager** is the one responsible for executing the cane growing programme at section level (for the smallholders, a section equals one or two associations). A more detailed description of field, area and section manager is found in chapter 6.

Other divisions within the agricultural department are the technical department and the department of administration. Figure 6 gives an overview of the management structure described. The technical department makes decisions about technical implements like irrigation, weed control and (re)seeding. The last division of importance is the training department, who are responsible for giving training on specific activities, such as the application of herbicides using knapsacks. These trainings are mostly single based events for a group of workers, in which a specific trainer explains how a specific activity must be carried out. After the training is finished the section manager has the responsibility of making sure tasks are done in the way workers were instructed.

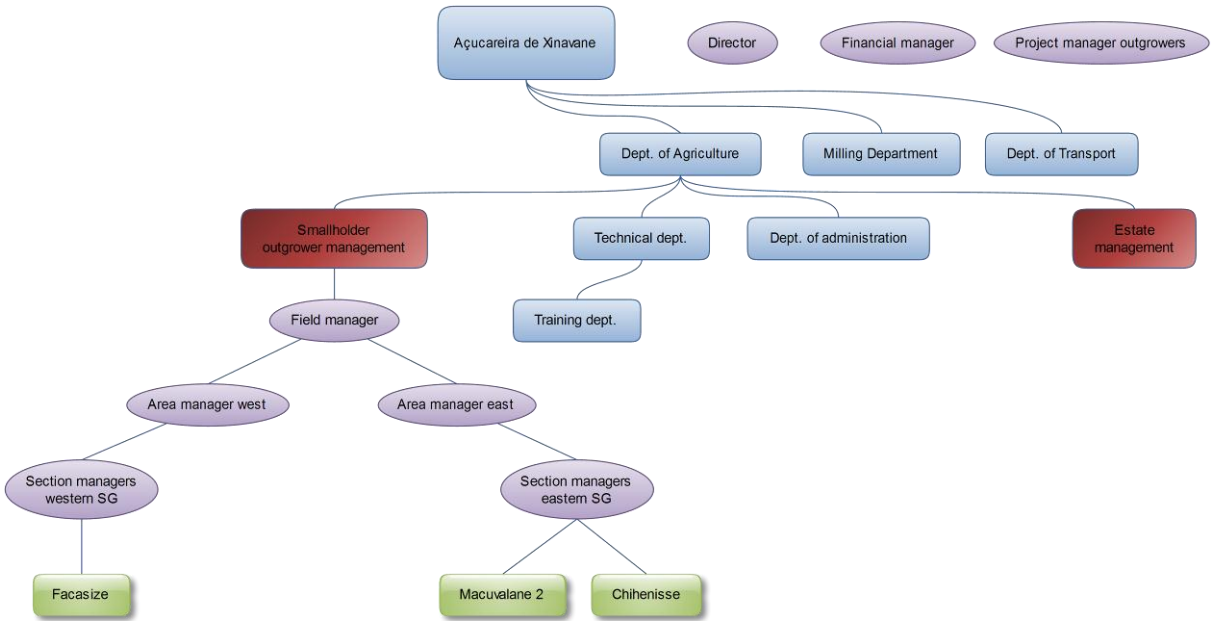

Figure 6: AdX management structure (based on interviews)

3.13 Outsourcing and contractors

Another aspect that urged me to dive more into AdX's management structure was the presence of multiple contractors at work in the area, ranging from transport, cane cutting to complete project management companies.

The most important contractor for the small scale growers is Agricane, an agricultural consultancy company, that is hired to develop and implement the agricultural expansions for the smallholders as well as for parts of the estate. Contractors like Agricane are called EPCM companies, which is an abbreviate for Engineering, Procurement and Contract Management. An EPCM contractor is hired to manage a project on behalf of the client (Wikipedia.org, 2010). The contractor on its turn hires other specialised contractors to do specific parts of the project, and supervises the whole process, making sure that the project is finished in time. For the second expansion project in Xinavane it means that Agricane does all project management and they made the designs of the expansions. For the implementation other contractors were hired to perform certain specialised activities that must be done. EPCM contracts seem to be something typical for the agricultural sector, as a project like this requires many specialised labour which is not always available. Another contractor named PGBI has also been active for AdX in 1999 and in the period 2006-2009, respectively rehabilitating and expanding the factory from 150 tcph (tons of cane per hour)to 380 tcph (PGBI, 2010).

Although some of the people from Agricane get paid by Agricane, they are embedded in the management structure of AdX. This is for example the case for the field manager of the small scale growers. The term field manager is a term that is used within AdX, and not within Agricane. However, vice versa confusions also occur: the two area managers of the associations said they work for Agricane, but get paid by AdX. As Agricane's position is only temporary they will occupy positions within the AdX management structure, so that after completion, management can easily be transferred to AdX. This may suggest that, although it is obvious that a company like AdX will build upon their own trusted/proven management structure, the smallgrowers may become incorporated into AdX for a longer time and will be treated as such.

Not all contractors work on an EPCM basis, most of them work on a permanent basis and have the responsibilities of one part of the production process. The most important and largest one is Unitrans, a South African contractor that has a permanent contract for all loading and haulage activities in Xinavane. During my stay in the field, they were also active in land preparations in the Mucombo expansion area. Another contractor in land preparations is CLM, a civil contractor from South Africa that does land preparations on existing estate and smallgrower fields. Also Joubert & Seuns, a civil contractor (also South African) was active in the field, but they were mainly working on roads and infrastructure. This company was in some occasions also contracted by either AdX or Unitrans to tow trucks from the fields if they got stuck. Finally, for burning and cutting the cane, there are several contractors active in the field, but it seemed that they do not work year-round on the same place, but travel around the country. The number of hostels (2) for seasonal workers in Xinavane further illustrates the presence of seasonal workers in this area.

Figure 7: (left) CLM tractor performing land preparations at Chihenisse; (right) Unitrans truck hauling cane from Macuvalane 1.

3.14 Current challenges in smallholder management and developments

Although the Açucareira has come a long way in a very short time, and is now on paper the sugar mill with the highest production in Mozambique, the rapid developments in Xinavane also have some negative side-effects, of which I have some already described above. In this section I will give a short overview of these challenges, and I will argue why some of these side effects become more explicit for the smallholder associations. In chapter 6, these challenges will be further elaborated and discussed. However, the question remains whether these challenges are more disturbing for AdX, Agricane or for the smallholders.

3.15 Smallholders' management by AdX/Agricane

As most of the smallholder associations are not familiar with cane growing activities yet, AdX concluded that only giving support was not sufficient for acceptable cane production and yields. To overcome this, AdX decided to manage the smallholder fields exactly the same as its own estate fields. The advantage of this is that smallholders' sugarcane is produced according to a proven method, which in principle should benefit both AdX and the smallholders with good cane quality and high yields. Next to this, smallholders do not have to worry about the cost efficient procurement of any inputs themselves; AdX acquires them and delivers them at cost price (interview financial manager AdX). This does not only concern commodities such as herbicides, fertiliser and spare parts for irrigation infrastructure, but also machinery, as can be seen from Table 4.

However this also means that associations have become dependent on AdX' decisions. Especially in the first three years, Agricane and AdX decide how cane growing activities shall be carried out. Although their decisions may be for the benefit of better cane, they don't necessarily need to be for the benefit of the associations: especially the use of machinery may be more expensive than doing an activity manually, since the associations/ communities have a labour surplus to provide. The use of machinery would lead to more deductions afterwards and therefore lower net proceeds for the individual smallholder.

However, several section and area managers indicated that the availability of machinery is regularly causing problems, because they are already in use for the estate. Although machinery for the smallholders has been ordered, their number is still limited. The field manager from Agricane confirmed this, but also mentioned that this has just started. It

is unclear whether Agricane or AdX is responsible for the procurement of machinery for the smallholders. If unavailable, Agricane taps into AdX's machinery, but here they get second priority, which results in the delay of certain activities (interview Agricane field manager). Also several section and area managers mentioned this issue as problematic. Also for the delivery of certain services such as land preparations and harvesting, which are done by contractors, smallholders are getting second priority.

Currently AdX seems to be giving priority to their estates, while leaving the smallholders' responsibility to Agricane. Agricane however, is partly dependant on AdX for some of their services and decisions. Also from Figure 6 it is clear that Agricane has to suit themselves into AdX' management structure. One of the main constraints here in the operability of Agricane is the poor availability of machinery. This appears to be related to the large estate expansions that have been done in the last few years. With the estate size growing ever more bigger in a short time, AdX has great difficulties in scaling up the production process as well. Another result of the rapid expansion is that many fields have been planted at the same time, which means that most agricultural activities coincide with each other as well, which requires a lot of machinery of the same type to be available simultaneously. The timing of these activities is of course going to spread out in the future, but this will take some years. A more thorough review on production management practices can be found can be found in chapters 4 and 5.

3.16 Conclusion

Sugarcane developments in Mozambique have experienced a strong revival. The main reasons for this were a favourable investment climate created to attract foreign investment, and a set of trade agreements especially targeted to benefit LDC's. Also its agricultural potential, abundant water for irrigation, good soils and a large labour reserve able to provide cheaper labour than in for example South Africa caused South African and Mauritian investors to overhaul Mozambique's existing sugar estates and mills. Xinavane has now, also thanks to its favourable position close to the South African border and the harbour of Maputo the largest production of the country. An extra stimulus that has further accelerated these developments are the EU policy on sustainable biofuel production and the decline of agriculturual subsidies in Europe. After a full rehabilitation of the mills and an expansion of the estates to 16,000 ha aimed at vertical integration, the Açucareira de Xinavane has now begun to involve smallholders in the production of sugarcane on a contract farming basis.

With the inclusion of smallholders, the Açucareira wants to supplement their own production and operate their sugar mill at a higher efficiency, but also to obtain access to nearby situated fertile land that was otherwise not available. Also the involvement of local communities should improve their relationship with the company and reduce conflicts. After completing the Xinavane Smallscale Grower Development Project, which will be referred as the third phase project, there will be 17 farmer associations growing irrigated sugarcane on 2,091 ha. As smallholders in this third phase project are indebted through a loan that has to be paid back within 10 years, it appears that AdX has made a company investment using a business approach rather than a development approach. This minimum (financial) risk approach is first and foremost reflected by the company seeking other financial institutes (EU/ AfDB) for loan transfer and cost sharing. But second, by imposing their own management structure and grower method on the smallholder associations and taking a nearly 30% share in their grower company. Since AdX is too busy with the expansions of

their own estate, they have given the EPCM contractor Agricane the responsibility of the smallholder developments and management. Based on the experience AdX had with the phase I and II associations, Agricane is tasked to operate the smallholder associations within the management structure of AdX. AdX is divided in several departments,of which milling and agriculture are its core activities. Agricane seems to be limited in their freedom of movement, which occasionally hampers sugarcane production in the associations. AdX currently gives its own estate more priority, which appears in Agricane/smallholders having to wait for machinery, inputs and services to become until AdX is finished.

4 Production process of sugarcane

Introduction

This chapter describes how sugarcane is grown in general, and how this is put into practice in Xinavane. It also describes the different modalities in cane production that can be observed both between associations and between associations and the estate. To that end a general overview is given of the labour organisation of different associations. The chapter will follow the consecutive stages of the production process of sugarcane, going from planting to harvest and haulage and payments to the associations. Chapter 6 will follow up on this chapter by discussing the relations between associations and various levels of management staff.

Cane growing in a nutshell

Sugarcane cultivation probably dates back to 8,000 BC, when people in New Guinea were already working on the domestication of the plant (Bakker, 1999). After domestication, its cultivation spread along migration routes South East Asia and India. Arabs were the main responsible for the spread of sugarcane by taking it around the Mediterranean as they advanced to Egypt. Crusaders in the 12th century discovered its use in the Levant and brought it home naming it the "sweet salt" (Ponting, 2001). Commercial cultivation only started after the Portuguese took sugar to Brazil and started producing the crop at large plantations. Nowadays, sugarcane production is modernised and increasingly mechanised, especially in Brazil. The commercial production of sugarcane is a process that consists of several individual processes, of which each one can be performed in several ways, with most of the differences occurring in the rate of automation and the use of machinery for this when labour costs reductions are necessary (Ritchiewiki, 2010).

Sugarcane is a ratoon crop, which means that it regrows after harvesting. This self-ratooning allows seeds to be used up to 8 times in Xinavane. In more industrialised countries however, the number of seasons is less (2-4 ratoons) as yields slowly decline for every next ratoon. The growth period of a first season seed takes up to 13-14 months, while a ratoon seed is quicker and can be harvested after 12-13 months (interview Agricane field manager, 22-10-10), because a ratoon crop already has a fully developed root system.

In the meantime, the crop requires sufficient moisture availability in the soil, since cane growth, especially in the crop development stage, is proportionally related to the amount of water transpired. As it has a long growing period, crop water requirements are between 1500 and 2500 mm per season, which makes it a heavy water consumer (FAO AGL - Land & Water Management Division, 2002). In Xinavane, all cane is therefore grown under irrigation, although sugarcane can be grown under rainfed conditions as well. Rainfed cultivation of sugarcane in Mozambique is done in Marromeu, North Mozambique, in the province of Sofala, where rainfall is higher.

Table 6: Differences in monthly rainfall and evapotranspiration expressed against reference ETo between two sugarcane growing locations (FAO Aquastat, 2011).

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Xinavane														
Precipitation	mm/m	116	164	94	78	42	37	23	25	39	56	76	111	860
Wet days	days	10.1	10.6	9.9	8.6	6.1	6.1	5.0	4.4	4.1	7.3	8.7	9.2	
ETo	mm/m	164	139	132	102	83	64	71	92	116	138	144	160	1 405
Marromeu														
Precipitation	mm/m	215	188	155	78	43	41	37	22	12	20	77	166	1 053
Wet days	days	14.7	14.8	14.9	11.5	8.8	9.2	9.3	5.9	3.5	4.7	7.8	13.1	
ETo	mm/m	157	135	136	113	97	77	80	107	137	169	169	159	1 536

The table shows that in Marromeu the overall chance of rainfall is more evenly spread over the year than in Xinavane which reduces the need for irrigation there. Also rainfall probabilities (expressed in no. wet days/ month) are higher.

4.1 Smallholder management experiences

In order to establish a better understanding of cane growing activities among the associations and to give them a period to learn, AdX has decided to take over all executive management tasks of the phase III associations for a period of three years. The reason for doing so isn't self-evident, but is based on the experience AdX had with the old associations of Maguigane, Macuvulane and Chihenisse. The setup of cane growing activities in these associations was quite different: most of the cane growing activities to be undertaken were the responsibility of the association and its members: every member was supposed to cultivate his/her own plot. Unfortunately, in many cases this led to people not showing up to perform the activities in time, which resulted in very low yields and poor sugarcane quality.

Although the assistant project manager denied that AdX was having difficulties with them, it was decided that the phase III associations should receive more intensive assistance than the older associations in order to secure a better cane production. For example, the yields in Chihenisse were, until recently, below 60 tonnes/ha, which is very low compared to the estate where 105 tonnes/ha for the estate is average (AdX, 2010); (interview SSG area manager east). Also for Macuvulane I, yields and cane quality were very poor (interview Agricane field manager 29-10-10). However, AdX does have more than one interest in the new associations. Not only do they want to transfer technology and knowhow to the associations, they also have a mill to supply. Besides this, associations have to repay their loans indebted by AdX with the revenues from cane growing. Imposing their own standards and procedures could then also be a way to secure their supply and ensure that loans are being repaid.

Following my own observations and interviews and according to Jelsma (2010), it appeared that there are many smallholders in the associations who are too old to do the job. This was not only observed in the old, but also in some of the new associations. As there is no social security in Mozambique, plots are often used as a kind of social security for people's retirement. Others do own a plot, but are living outside the Xinavane/ Magude area. AdX and Agricane also cited a lack of discipline and competition from other demands for labour that play a role in unsatisfactory individual labour performance. The relatively high amount of attention for the crop required and the long time of waiting before smallholders could see the benefits of their efforts have probably played a role in this. More on individual livelihood strategies can be found in chapter 7, while more on management-association interactions can be found in chapter 6.

For the phase III associations, AdX and Agricane have decided that this individual responsibility should be taken back from the associations, and replaced by an estate type of management. This implies that now labour teams and not individuals are responsible for separate types of activities. These labour teams consist of association members or community members who are now employed and paid by AdX, but work on the fields of the association.

This way of working has several advantages for AdX, but also for individual smallholders and the associations:

- AdX can now ensure that activities will be performed association wide and according to schedule. AdX expects that now the associations will work according to AdX's standards, whereby it is assumed that the quality of work is higher which should lead to higher yields and higher cane quality.
- For the smallholders it has the advantage of learning to perform one type of activity instead of all at the same time. It also gives them the possibility of earning a monthly salary on top of their seasonal cane revenues.

4.2 Planting

As sugarcane is a ratoon crop, (re)planting only takes place after 7-8 growing seasons, or when fields experience a very low productivity caused by other factors. Replanting activities were only observed in Chihenisse, where one of the association's fields was severely damaged due to drainage problems. However, in some new associations intensive planting activities were observed.

For planting, the stem of the sugarcane is used as seed, which is why AdX has its own seed nurseries where they grow cane primarily for (re)planting purposes.

First, a field is ploughed to open up the soil and to bury weeds and crop stubbles. Then, a land marker machine makes lines in the field where the seedcane can be put in to. The pattern of lines is a double line followed by a 1.8m gap. This results in two lines of sugarcane and another two lines of sugarcane separated by a path where irrigation equipment can be placed and moved. When the seed is put into these lines the cane is manually cut into 30 cm pieces. The first batch of fertiliser is then applied in the lines at the same time the cane is covered with earth. All these activities (ploughing, lining and covering) are performed by CLM, a South African civil contractor specialised in land preparations using mechanised equipment. This company was hired by AdX to perform land preparations in the estate expansions and for the small scale outgrowers. The seeding itself however is manually done by the associations, usually by the people who also do the weeding (interview area manager west 03-12-10).

The process of seeding is a timely process and requires the cane to be brought on time and in the right quantities, because the seed cane field has to covered within a few days to prevent the seed from drying out. If the seed does dry out, it will have a negative influence on germination and also on later ratoon cultivation.

4.3 Fertiliser application

The application of fertiliser is another process which can be performed in various ways. While in some places, fertiliser is mixed with the irrigation water (fertigation), in Xinavane all fertilisers are granular products that are either applied manually or with a fertiliser

applicator (jamboo) equipped tractor. The first batch of the fertiliser, diammonium phosphate (DAP), is applied simultaneously during seedcane covering, with an application rate of 150 kg per ha. As it is done during the covering by the contractor it does not require any input from smallholders. The tractor with the covering machine puts in the fertiliser and covers the lines automatically afterwards. However, for ratoon cultivation, this does not apply, and smallholders manually have to apply a different type of fertiliser (called 101) after cleaning their fields. In later crop stages, a fertiliser called urea, which enhances vigorous growth of the sugarcane has to be applied by the smallholders. In the estate, all fertiliser applications are done mechanically.

4.4 Irrigating

After seeding and covering, irrigation will start to bring in sufficient moisture into the soil and to let the germination process start. In the associations, dragline irrigation is the most common type of irrigation used, however two associations use center pivot instead.

Dragline sprinklers are installed on top of a 3 m high tripod and receive water through a long hose (~50 m) which is attached to a hydrant in the ground. This long hose allows the irrigator to move (drag) the sprinklers to another position in the path between two rows of sugarcane without shutting off the water supply and unplugging the hose from the hydrant.

With center pivot irrigation, fields have a circular instead of rectangular shape and receive their irrigation water from a set of overhanging pipe segments with several sprinklers. These pipe segments are attached to trusses with wheels and rotate around a pivot, which is in the center of the field. Center pivot irrigation is fully automated and therefore in principle does not require any labour at all, except for some occasional troubleshooting, for example when one of the wheels gets stuck or if there's a leakage. A larger area can be irrigated at once.

In the estates, another type of irrigation which is also often used and similar to dragline, is the semi-solid set (interview AdX area manager Timanguene 15-12-10). See Figure 8 for a comparison between dragline and semi-solid set.

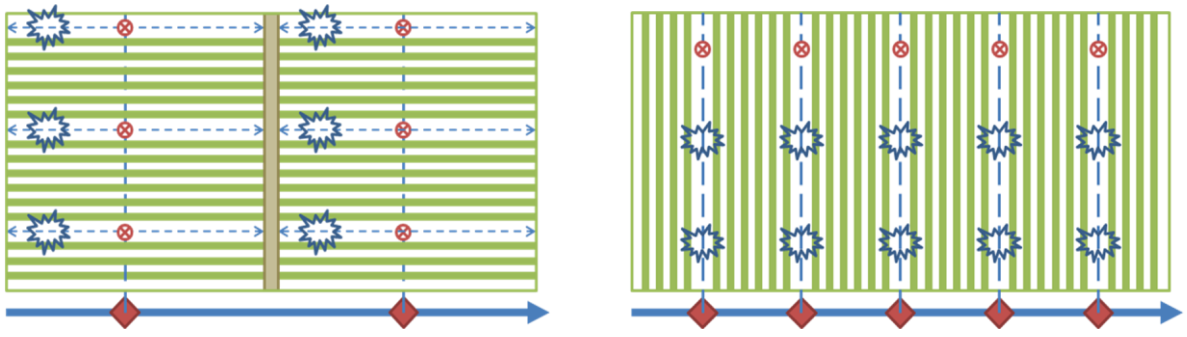

Figure 8: Dragline irrigation (L) vs semi-solid set irrigation (R). The water flows from the mains (blue lines) through the valves (red diamonds), into the laterals (dashed blue). The green lines indicate rows of cane, while the sprinklers (blue) are moved along the open lines (paths). The red dots are hydrants that connect the sprinklers to the laterals. The brown lines are paths to reach the tripods.

The main difference between them is the amount of sprinklers used to irrigate the same area. For dragline irrigation, the long hose allows the sprinkler to be moved to the next

position, which is about 18m distance. In total, the distance to be covered with one sprinkler is 90m, which equals 6 positions. In contrast, semi-solid set sprinklers have a short hose for connecting the sprinkler to the hydrant, and are not made for sprinkler movement to the next position: they have to be unplugged before being moved to the next hydrant/ position. This results in higher project capital costs (more sprinklers, more laterals and more hydrants), but it requires less labour, because a larger area can be irrigated at once.

In a feasibility study for the Xinavane Small Scale Grower Development project, dragline was chosen as the cheapest option. This assessment was based on the following factors:

- Project capital costs (USD/ha installed);
- Yield potential (tons of cane/ha);
- Operating costs (USD/ha harvested);
- Management requirements (skills and costs) (AdX, 2010).

In a project capital comparison of different suitable irrigation types, drag line irrigation was found to be the cheapest option with an investment rate of USD 1500/ha, while pivot irrigation was estimated at USD 2,400/ha (AdX, 2010); (Agricane & Inyoni Africa Records (2006) in AdX, 2010). Factors influencing operating costs were depreciation of the equipment (USD/ha/year), water use efficiency and power use (m pressure head). Also from here, dragline was chosen as the best alternative, although power usage was highest for dragline, but this cost has to be covered by the associations. Though listed, a comparison was not made for labour requirements between different irrigation types, while large differences exist here. For center pivot irrigation, only one operator is required per one or two pivots (interview irrigator Chihenisse), which equals roughly 50-100 ha; for dragline irrigation, an irrigator is responsible for 18 ha (interview section manager Facasize 25-11-10). It seems that AdX has economised on project capital costs, but not on labour requirements for operating, as this will be the task of the association members.

The reason for the high labour requirement for dragline irrigation in comparison with center pivot irrigation is that the sprinklers need to be moved every twelve hours. In the meantime when sprinklers do not have to be moved, the irrigators have to look after them, checking for leakages, falling tripods and other faulty equipment. One irrigator is responsible for 50 sprinklers, which covers around 18 ha and equals the standard AdX field size. For the associations where AdX/ Agricane has taken over management, labour teams are responsible for this. There are two shifts looking after the sprinklers, one in the morning, that works until 13:00 and one that starts off just before the afternoon and works until 17:00/18:00. For the associations where individual labour is mobilised (Macuvulane I & II, Maguigane and Maria de Luz Guebuza), members are organised in blocks of roughly 5 ha. In these blocks, sprinklers are collectively managed.

After 12 hours the soil is replenished (4 mm x 12h = 48mm) and the sprinklers have to be moved to the next position. This is done early in the morning (±5:00) and just before sunset (±18:00), allowing to irrigate around the clock. However irrigators said no irrigation is done at night, but pump operators contradicted this by saying they also worked at night. This does explain the double sprinkler movement, and probably illustrates a typical irrigation operation limitation of night irrigation. If night irrigation was to be done, no supervision would be present. A full irrigation cycle consists of 6 sprinkler movements, which brings the irrigation interval to 6 days (+ no irrigation on Sunday) (interview section manager Facazisse 25-11-10).

AdX and Agricane carefully monitor irrigation requirements for every association or section to define how much irrigation a section needs. This happens according to well-known crop water requirement standards. Before planting, several samples have been taken to define the total available moisture (TAM) per soil type. The TAM is replenished and depleted by respectively rainfall, irrigation and evapotranspiration. This also means that if there has been more than 58 mm of rainfall, irrigation activities are stopped. Therefore, every section has a rain gauge installed close to the pump station to measure rainfall per day. Also when some fields are sprayed or fertilised, no irrigation is done in these fields. Since all dragline sprinklers have the same properties (4 mm/hour), irrigation discharge should always be the same. This allows an easy moisture reservoir calculation per sprinkler position.

The irrigation water is pumped unfiltered from the river Incomati into the system. Nearly every association has its own pump installation, which is staffed by a pump operator. He has to make sure the sprinklers are operating at the right pressure and he has to guard the pump station.

The main reason why the association of Chihenisse is using center pivot irrigation is that they had a different funder. Chihenisse is not part of the phase III project, but was part of the SSIP, which was funded by AfDB and the GoM and not by AdX. However Macuvulane I was in that same project and is using dragline irrigation. A possible explanation for this is the minimum circular area required for center pivot irrigation; for dragline irrigation, fields can be much smaller than the minimum area of a center pivot field, which is limited by the minimum radius of the pivot. Another reason could be the soil type, which is more clayey than in Macuvulane. Nevertheless it does suggest that in phase III AdX wanted to economise on investment costs as much as possible, unless external funding would be available.

Apart from the differences in labour and project capital costs, the choice of irrigation type also produces a number of consequences for everyday management, of which the most important consequence is the visibility of individual plots. For center pivot irrigation, individual plots disappear completely after land preparations have been completed, while for dragline irrigation, the changes are less rigorous. Here, some members still know where their old plot was (interview 7-12-10);(Jelsma et al., 2010). In some cases this has resulted in a different division of labour. As for center pivot irrigation, individual plots are not visible anymore and so each member is entitled to a “piece of the pie”, however members cannot claim a piece as theirs. As a result, all members work on all fields and share the collectively obtained proceeds. For dragline irrigation, in some associations members are still performing the tasks on their own plot. This has numerous consequences which will be elaborated later in chapter 5.

Another clear managerial difference is the intensity of attention/monitoring required to irrigate. For center pivot irrigation, the system (Figure 9) requires an operator to switch the pivot on and off, and to check for wheels that may got stuck. For dragline irrigation, the sprinklers have to be moved every twelve hours, while an operator is supposed to check and survey on any leakages, falling tripods (due to occasional heavy wind gusts) during his shift. During field trips, a Chihenisse irrigator was found most of the time in the fields,

Figure 9: Operating panel of Chihenisse center pivot

while in the case of Facazisse irrigators were often found absent in the afternoon, although sprinklers were operational. In such instances faulty equipment, such as leakages, clogged sprinklers or falling tripods are not fixed. Also in some instances it took a long time before leakages were fixed. Irrigators could not do this themselves, as it required a set of spanners, which only one association employee had, who only worked in the morning. This suggests that center pivot irrigation implicitly puts a higher responsibility on an irrigator than dragline irrigation. He must be around in the field, because one very expensive piece of equipment could break down if one irrigator does not intervene when, for example one of the wheels gets stuck. If the pivot would break down, 50 ha of sugarcane cannot be irrigated. For dragline irrigation, the figures are different, as it requires a lot more sprinklers and irrigators to irrigate 50 ha at the same time. If one sprinkler falls or breaks down, this will only produce a temporary localised effect, which does not require immediate action from the responsible irrigator. The ease of replacement adds an additional dimension to this, because dragline sprinkler parts are easily replaced and plenty parts are kept in stock, while for center pivots the degree of specialisation is much higher and the parts must be ordered (and imported) through South Africa from the US (interview SSG area manager west). Jelsma (2010) reported that two of the four pivots of Chihenisse were broken during his stay, which were only fixed shortly after my arrival (taking a minimum of 3 months).

4.5 Weed control

Weeding is an on-going process in growing sugarcane and a field needs to be kept free from weeds for the following reasons:

- Weeds compete with sugarcane for the same space, water and nutrients which results in lower cane yields;
- If the paths between the cane are covered with weeds, controlled cane burning is difficult (see harvest). If this is not done properly, irrigation hosepipes and hydrants have to be buried to prevent them from burning down during harvest;
- Paths can become overgrown, which hampers sprinkler movement, while they also become hiding places for snakes (interview AdX area manager Timanguene 15-12-10).
- If weeding has been done properly before the crop canopy closes, a field will be free of weeds until shortly after harvest, which reduces labour inputs shortly after harvest.

When the first irrigation cycle has started, not only new cane, but also weeds will come up, and need to be removed. However, weeding is a time consuming process requiring high labour inputs. It is also found to be a heavy process as it is done manually using a hoe. Therefore it is only done in the morning when temperatures are still relatively low. In the associations with labour teams, a team of weeders (mostly women) are responsible for all association fields with Agricane instructing them which fields have to be done. In the other associations, members are individually responsible for keeping their plots weed-free.

However, currently AdX and Agricane are promoting the use of herbicides at certain crop growth stages as weeding performance was found to be very low. The use of herbicides allows application on a larger scale and produces better results (interview Agricane field manager, 29-10-10; interview area manager eastern development, 29-10-10). For these applications either a boom spray equipped tractor or knapsacks are used. According to the

eastern development area manager, a boom spray is able to cover a larger field size (20 ha per day and requires only 2 workers instead of 6 workers when weeding manually.

Shifting to the use of mechanised equipment seems logical, as tractors are more easily managed than labour force. However, this shift implies that for all associations the costs of inputs will be higher, since it requires a tractor and herbicides instead of labour. This is at least true for the associations where plots are individually managed, as weeding was their own responsibility. For the labour team managed associations, herbicide application may be more cost effective, but this of course, depends on the efficiency of the weeders.

For the application of pre-emergent herbicides (i.e. herbicides coming up before cane germination) shortly after harvest, Agricane uses a tractor equipped with a boom spray. If pre-emergent herbicides cannot be applied or when weed control was not satisfactory, (post-emergent) herbicides are applied using knapsacks at a later crop growth stage. If weeding would be done manually, there is a risk of weeding the cane instead of the weeds. The boom spray cannot be used here, as the plants have become too high and the nozzles would destroy the cane as well. After some time, the cane has grown higher than the weeds and the canopy closes, leaving no more sunshine for the weeds, which eventually kills most of them.

4.6 Tongaat Hulett – Safety first

AdX seems to be well aware of the risks of growing and milling sugarcane. For this, they seem to have a well implemented SHE policy (Safety, Health and Environment). AdX staff, but also association members are required to wear AdX safety clothing appropriate for the activity they're undertaking. Blue is for irrigators, red for supervisors, yellow for tractor and truck drivers and green for all other activities, such as weeding. This clothing protects the workers from the sharp leaf edges of the cane and possible chemical spilling. Besides this, chemical applicators (herbicide, pesticide) also have to wear gum boots, gloves and respirators (interview SSG area manager east). These inputs also have to be procured by the associations if they perform any of these activities themselves. In the case of labour teams, protective clothing is provided by AdX, as association members are now AdX employees.

4.7 Ripening

When the cane has grown tall enough, chemical ripeners are applied to optimise the ripening process of the crop. During ripening, vegetative growth should be reduced so that simple sugars (mono-sacharides) in the stalks such as glucose are converted into sucrose, which is a disaccharide. A chemical ripener can accelerate this process and inhibits further growth of the cane. Also, it prolongs the period of optimal sucrose content (Odero, Rainbolt, Gilbert, & Dusky, 2011), which increases the flexibility of planning the harvest. During fieldwork, ripener was applied two months before the harvest in Chihenisse and in Macuvulane II by airplane. It appears that this is the only possible way to apply, as the cane's height can reach over 3 m. When ripener has to be applied, the members have to mark these fields with plastic bags so the AdX pilot can see which fields need to be sprayed. It appears that application by airplane is the only possible way to apply, as cane height in Xinavane can reach over 3 m. After application, irrigation stops, because the plant needs some water stress to direct its energy from vegetative (leaf) growth to sucrose production (FAO AGL - Land & Water Management Division, 2002);(Netafim, 2011b).

4.8 Harvesting and haulage

After ripening, the fields are ready for harvest. Harvesting is done manually in Mozambique. First, a field is set on fire to burn off the excess biomass (such as leaves) from the plant, so that the stalks, which contain the sucrose, remain. After burning, the stalks are cut with a cutlass/machete by one of the many contractors that are active in Mozambique. According to several interviewees and my own observations, harvesting is a heavy job to do, and even AdX doesn't have its own cutters. Working conditions are poor, working in high temperatures and with a high working pressure. Also cane needs to be cut close to the ground level, it needs to be de-topped and cleaned, which makes proper cane cutting a difficult technique to master (Netafim, 2011a). Out-sourcing the cane cutting is therefore a way to minimise the risk of low quality cutting and poor labour performance. The Agricane field manager said that he would be surprised if he would see any association proposing to do the cutting themselves (interview 22-10-10). Also in other parts of Southern African contracted cutting is common practice (Meyer & Nothard, 2005; Murray, 2008). More about cane cutters can be found in Box 3.

Box 3: Sugarcane cutting contractors

Cane cutters are found to be folk of its own kind. Many cane cutters do not live in the area, but somewhere else in the country and travel around to do cane cutting in different sugarcane growing areas. From the local population, they receive both respect and repulsion for the work they do.

A policeman in Xinavane: "Cutting is a tough job to do, but even after a 10 hour day of non-stop work, these guys are still able to make love with their wife."

Figure 10: Unitrans grabloader loading cane at Macuvulane II field

After cutting, the stalks are picked up by grab loaders (see Figure 10) and transported (hauled) by lorries and trailers. Loading and haulage for both the estate and the associations is done by Unitrans, a South African based company specialised in cane transport.

As the mill requires a steady input flow of cane (8,000 tons/day), cane harvesting and haulage require strict planning. Within the AdX milling department, the cane supply manager is responsible for this. According to the SSG field manager, 6,000 tons per day has to come from the estates, 1,000 tons from Vamagogo and 1,000 from the associations. In consultation with the cane supply manager, the department of Agriculture defines which fields of the estates, the small growers and Vamagogo will be harvested. The associations do not bear any influence on this decision, they are only informed when the harvest is going to take place.

Another difficulty in the planning of cane harvesting is the fact that during the second expansion many fields have been planted at the same time. This means that these fields will also obtain the optimal sucrose content simultaneously, both in the estate and in the associations. This sometimes leads to field harvesting at moments when sucrose contents are not optimal. It seems that AdX makes a risk assessment between fields ready for harvest: distance to the mill, quality of the roads, soil type and wetness and the crop itself all influence this decision.

4.9 Gleaning and trashparting

After the first batch of transport, there's still some harvested cane left in the fields. This cane needs to be picked up manually by the members and piled up in large heaps so that the transporters are able to pick these up. When gleaning sugarcane, workers have to make the right distinction between good stalks, which are still in one piece, and bad stalks, which are crushed by the wheels of the lorries. It is up to the members whether they do the gleaning or not. In Chihenisse, gleaning was done collectively by a group of women directly after harvest, while in Macuvulane II, every member is responsible for gleaning his own plot. After the second batch of loading and transport is done, the fields have to be cleared from any other crop remainders, a process called trashparting. All the cane trash has to be moved in lines, so it can be picked up later. After that, a new ratoon crop can be grown for a new period of approximately 12 months.

4.10 Payments

After harvest, the payments have to be done on the account of the associations. According to the AdX financial manager, the associations receive two payments: one is about 82.5% of the Economic Recoverable Crystals (ERS), while the second payment of 17.5% is done after the sugar price for that year is known and can be used to adjust the final payments done and so compensate for price fluctuations on the national and international markets.

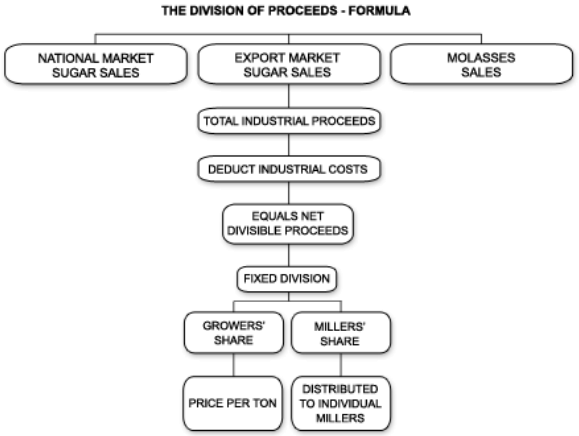

Figure 11: Division of Proceeds division scheme (AdX, 2010)

All payments are made based on the Division of Proceeds, a standard formula of dividing the turnover (proceeds) between miller and planter (Jordan, 1992). Figure 11 shows that total sugar industrial proceeds consist of national, international and molasses sales. However, AdX cane payment rules have incorporated the revenues from raw sugar only (Jelsma et al., 2010). After deduction of industrial costs (packaging, storage, transport and insurance) the net revenue is split into a 60% share for the grower (i.e. the associations), and a 40% share for the miller (AdX) (AdX, 2010). According to Jordan (1992) usually the costs for refining are also included here. The amount of raw brown sugar produced by each association is calculated by multiplying the amount of sugarcane delivered with the estimated percentage of Economic Recoverable Crystals from these fields. The gross revenue is then the amount of raw sugar produced times the average price per tonne through national and international sales (AdX, 2010).

Members who applied for a job at AdX to perform labour activities on the association's fields receive a monthly salary on top of their seasonal payments. According to AdX's financial manager, salaries of these people are exactly the same as estate workers. Monthly incomes range from 1,700 Mtc (USD 40) for a weeder/ lorry checker, 2,500 Mtc (USD 55) for an irrigator and 3,000 Mtc (USD 65) for a pump operator. These salaries are handed out monthly by AdX administrative staff at the association. More on salaries and payments and their influence on smallholders' livelihoods will be discussed in chapter 7.

4.11 Conclusion

For the phase III associations, AdX has decided to implement a type of management and standard that is more in line with estate management. AdX denies that the reason for this change was poor labour performance in the old associations, and state that they are still in a process of experimenting with the setup of a proper management structure. However, the Agricane field manager's judgement on the old way of dealing with associations is a lot more explicit stating labour performance is a big problem there. AdX now hopes that their estate management structure and standards will also work for the associations, which would then lead to the same high yields and cane quality. It is clear that AdX doesn't have a proper idea of what works yet, but their implementation of own standards and structure suggests that they are limiting their experiments by staying on the safe side (by doing what they know best). One striking characteristic of this is the increasing use of machinery and the use of chemicals, thereby reducing the need for (unreliable) labour. Whether this implementation actually works for the associations will be discussed in Chapter 6, where AdX's management structure and the day to day interactions between AdX/Agricane management and the associations will be further elaborated.

5 Production management relations and interactions

5.1 Introduction

This chapter will act as the second part of the description and analysis of day-to-day interactions between the associations and AdX/ Agricane management. While in chapter 4 an overview of all cane growing activities for the associations is given, this chapter elaborates on day to day interactions that occur when performing these activities. These interactions will be placed in the context of the management structure in which they occur. This chapter tries to draw relationships between these interactions and the management structures and modus operandi which are currently in place in the associations studied. Although one may already presume a master-apprentice relation between management and associations, it would be short-sighted to study their relation as such. Therefore, also the bargaining power of associations vis-à-vis AdX and Agricane will be scrutinised.

The chapter will start off with a formal description of the main management functions within AdX that deal with the associations as they were observed by the researcher. As already mentioned in chapter 3 and 4, these functions are more or less straight copies from AdX estate management structure, so special attention will be paid to differences between these functions in an estate and smallholder context. This chapter will follow the production process of sugarcane as a main theme to discuss the consequences of these formal relations and working standards for both management and associations, going from planting to haulage to payments.

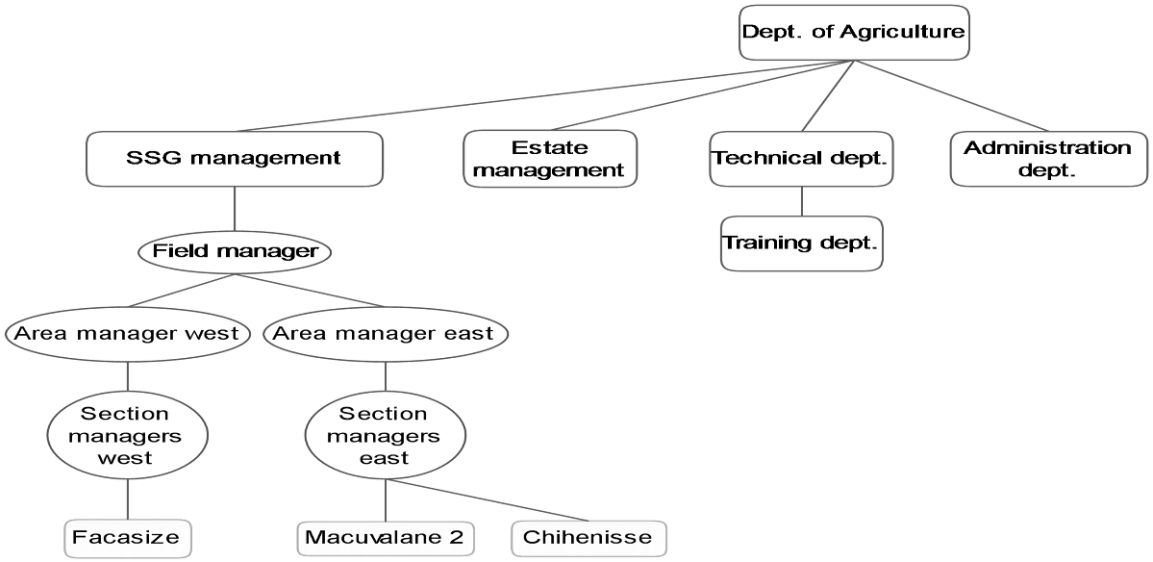

Figure 12: AdX agricultural department and SSG organogram (Sonneveld, 2012).

5.2 Field, area and section manager; block supervisor and trainers

Now that AdX has integrated the associations into their own company structure and has imposed its working standards on most of the phase III associations, there are a number of persons and functions involved in the way associations are managed by Agricane and AdX.

For easy integration of smallholder management into AdX's own activities, AdX has implemented its management hierarchy untouched in the associations, which means that the responsibilities of the positions described below are exactly the same as in the AdX estate. These are -in order of importance for the associations- the following positions: the section manager, block supervisor, trainers, area manager and field manager.

In the following part of this chapter, these management functions will be further discussed. Next to this, the influence of this integration of associations on cane growing activities will be scrutinised.

5.2.1 Section manager

The section manager is, as already described by Jelsma (2010), the primary responsible person for the daily cane growing activities in an association. The section manager has the programme schedule from day to day, and knows which activities have to be done per day. In the newly established associations, the section manager defines how much labour is required for a day and based on their availability he makes a selection of labourers. The section manager is also responsible for the procurement of other inputs such as fertiliser or the use of a tractor for certain chemical applications. He has to order these inputs with his supervisor (the area manager) before he can get them.

In the estate, a section manager has about 100 ha under his supervision (interview AdX area manager Timanguene 15-12-10), which is roughly the same figure for the smallholders. Unfortunately Agricane has indicated that it is very difficult to secure sufficiently qualified labour for these positions. This is why some section managers have two associations under their supervision. This is the case for Macuvulane, where the section manager supervises both Macuvulane I and II. In Tres de Fevereiro one section manager is currently managing four(!) associations. In other associations, AdX/ Agricane decided to employ managers with limited skills and managerial capabilities. Most of these people were technicians for AdX and did have some experience with sugarcane growing. Others are even less qualified than that. Currently these people are in training and do not have the qualifications yet to be called a section manager, which is why they also receive more supervision from their area managers (see below). Although it is difficult for Agricane to hire skilled labour for these functions, Agricane seems to refuse the 100 ha per section manager division as AdX standard. According to them, 100-130 ha is too small to be managed by a section manager and should be supervised by a someone of a lower position (interview Agricane field manager). Unfortunately quite some associations have a field size ranging between 70 and 120 ha or are situated too far from each other making it very difficult to be managed by one section manager. This is why some associations (e.g. Facazisse) with a command area size of 107 ha have one section manager. The failure to secure appropriately qualified personnel is the most probable reason for having larger areas per section manager. Also some section managers are not native Mozambicans (but Zimbabwean). Another reason for having more associations per section manager may be the limited budget for management Agricane is allowed to spend.

In the associations observed and studied, the section manager usually starts at the same time as the labourers and instructs them specifically what they have to do for that day. When new activities need to be performed or when an activity is slightly altered he also gives the labourers a kind of hands-on training. Trainings are however strictly limited to the activity to be done by a labourer: as now all labour is employed by AdX, a smallholder will only receive training directly related to his activities. This may pose a risk on smallholder understanding of cane growing, as association members will become dependent on each other's knowledge and skills once the three year contract of management takeover has finished. In chapter 8, a comparison is drawn up between this situation and smallholder outgrower assistance and extension services in neighbouring countries.

In some of the associations, especially the older associations, the above described structure of labour teams does not apply. In this old structure, the whole association collectively received training from either a section manager or a trainer, after which they were supposed to have a basic understanding of cane growing and have acquired some skills to perform the activities that must be done for that. Here, members only need to be instructed by the section manager when to do what activity. Although former plot demarcations are not visible anymore, Jelsma (2010) reports that many members from the older associations still know the boundaries of their own plots very well. In Macuvulane II, smallholders could exactly pinpoint their plot boundaries and also those of their neighbours. Some of the newer associations that are situated close to these associations have copied the old individual farming way of working. For example, the association members of Macuvulane II are from the same community as Macuvulane II and it seems only logical that they have regular contact with each other, which implies they also share their experiences on sugarcane growing. Unlike the other old associations the Maguigane association does not have anything to do with the SSG structure. Unlike Macuvulane (I and II) and Chihenisse, here Agricane bears no influence on day to day activities, and association members undertake most of the activities themselves. Their supervisor, Mr. Guriguri, was said to be the former AdX agricultural manager, but was removed from his position. He made his return in Xinavane through the government funded project of Maguigane. Mr. Guriguri is not a section manager officially, but more an extension worker (interview SSG area manager east). He seems to be in direct contact with AdX. Unfortunately the exact relations between Maguigane and AdX could not be investigated, as the association did not want to cooperate with me as they didn't saw the added value.

During his shift a section manager is primarily concerned with monitoring and troubleshooting. He checks the labourers' work and corrects them if necessary. Also people can call on him when problems occur or if they're having a question. Especially for irrigation related problems, people occasionally call the section manager. In order to remain mobile, most section managers have a quad bike to drive between fields or between fields and Chibanza Ranch, an office complex close to Xinavane town which accomodates the offices of Agricane and the department of Agriculture. Usually a section manager is able to fix problems himself, however in more complicated situations, such as the breakdown of a pivot in Chihenisse, a section manager has to inform his superior.

According to the area managers and the Agricane field manager, one of the key qualities a section manager must have is the ability to manage the labour properly. Besides this, it is essential that he is able to think ahead of situations and plan his activities and the inputs required for that properly. However when a section manager is still in training he needs extra supervision and assistance with that from the area manager, who supports him when inputs are not delivered or when he falls short on authority (interview Agricane field manager; interview SSG area manager east). It was found that some associations are not satisfied with their section manager, because some section managers lacked the skills, while others had multiple associations to manage. Jelsma (2010) also reported that the section manager of Colo had to be replaced due to the association's discontent. The Agricane field manager responded that he was found to have insufficient experience while also his area was too large and to remote to supervise. However, at that moment there was no one else who could be placed there. An important underlying issue is that while associations can choose their own leaders, they can bear no influence on the selection of a section manager; they are simply assigned one by Agricane.

In the case of misbehaviour or mal-performance, procedures seem to vary. In Chihenisse it is the section manager who is informed, whereas in Macuvulane and Facazisse the association leaders are informed. Although members work on their own fields, they are now AdX employees and are supposed to be treated as such, which means the section manager and not the association management should decide about disciplining measures in cases of mal-performance.

Besides all these tasks, the section manager also performs an administrative function. At the start of the day he has to check the list of attendances, with which he keeps track of the employees that come to work or fail to pitch up. At the end of the week this list has to be checked and signed by the area manager and then goes to the department of administration of the agricultural department, where it is processed to determine the employees' salaries and the size of deductions for the association. When inputs are delivered or collected, he also has to sign a form confirming that he properly received them in the right quantities. Next to this (human) administration and monitoring, a section manager also keeps track of the sugarcane quality and growth itself. There are forms for weed density and height, irrigation and herbicide application. These forms need to be checked by the area manager who can, based on the results, adjust the growing and activity schedule, for example if a certain herbicide application didn't produce the right effect or when rainfall is higher than expected.

5.2.2 (Block) supervisors

In the associations studied, the section manager can sometimes delegate some of his supervising tasks to an employee or association member who has proven to work well. Delegating responsibilities can be useful in cases when a section manager has finished his working day, or when he has other tasks to look after. Although a supervisor, in the case of AdX employed labour teams, will not receive a higher salary for increased responsibilities, many other association members/employees do have more respect for these people than for other members. This may suggest that promotion of association members to a higher status can be a good incentive as a reward for people's efforts. Simultaneously they can act as role models for others, too. Also the Agricane field manager is in favour of the use of supervisors, as it lifts part of the responsibilities of the section manager allowing him to be able to manage a larger area (i.e. oversee more than one association). Also they could be used as agricultural frontrunners that are exemplary for the rest of the association (interview Agricane field manager).

Depending on the labour structure applied in the associations these persons are called supervisors (for labour teams) and block supervisors (for individual labour). Supervisors monitor a specific labour activity, while block supervisors have supervision over a small group of smallholders, a so-called block of 8-10 ha.

5.2.3 Trainers

While most of the instructions for the smallholders are provided by their section manager, in some instances, a trainer visits the associations to give additional training. These trainers are AdX staff who work for the AdX training department (see Figure 6 and Figure 12). The AdX training department consists of several sub-sections, such as irrigation, weeding and fertiliser application, which means that trainers are specialised in one specific occupation only. In the labour team situation, association workers said they received training from company staff they hadn't seen before they started working for the association. These

trainings usually take no more than 3 days. Trainings are especially given in the case when working circumstances are dangerous (e.g. the application of herbicides) or when an activity requires more skills and background information. In these trainings smallholders are instructed on why they need to wear protective clothing, how they can safely dilute herbicides in water and how they need to use knapsacks (see photo cover page). However, training sessions usually occur only once per section/association, and can be seen as a sort of lecture for smallholders/employees, during which they are instructed on how a specific activity must be done. After that, the section manager should further take over and monitor and correct smallholder's activities. Also, trainings are only provided for the people who applied for a specific job, and not for the full membership of the association.

As the associations do not have a fully operational structure in place yet, Agricane also makes use of the expertise of the training department, although this is not intended in the envisaged final set-up. In the envisaged ideal situation when MHOVA has been established there will be a so-called cane officer who will offer training sessions for the associations (interview Agricane field manager).

Also the section managers receive their training from the training department. Most of these trainings are intended as refresher courses, but especially when a section manager is still in training himself and does not have the qualifications to be called section manager yet, the training department takes up a considerable part of a section manager's education. The other (monitoring) part is covered by the area manager.

5.2.4 Area manager

In the estates the area manager is responsible for managing a host of sections, which covers a command area of around 1,000 ha (Interview AdX area manager Timanguene). The area managers in the associations, however, cover a smaller area, which is around 800 ha. On the other hand, here associations are situated further away from each other, which makes travel more time demanding. The Small Scale Grower (SSG) area is, like the AdX estate, divided into two areas, a western and eastern area, each area having his own area manager with an equal amount of associations to supervise.

As he has to supervise 8 associations, supervision of his section managers is the core task of an area manager. As some of them are still in training, he has to check what they are doing, how they are doing it, and correct them when necessary. To assist them in these tasks, AdX has developed several forms to monitor cane growth and labour performance. These forms have to be filled in by the section manager and handed over to the area manager, who checks them and gives comments and suggestions on certain results. Also visual inspections are made by an area manager, to check and see whether section managers comply with the rules of AdX estate operations.

As he has regular contact with both field staff (the section managers) and his superior at Chibanza Ranch, he finds himself situated between field level and desk work. This makes him one of the key persons in the chain between AdX management and on the ground activities. Besides giving supervision, he also regularly holds staff meetings with other area managers, field managers and people from the technical department. In these weekly held meetings the workload for the upcoming days is discussed and current working progress is evaluated. The manager of the technical department acts as a chairman, asking all area managers present about their activities and issues they're facing. In this way an area manager also knows what kind of activities are happening in other areas and how certain issues are solved there. The technical department manager (an agronomist from Swaziland)

has a high influence on the way issues are solved, but heated discussions between him and area managers are not uncommon, implying that area managers themselves, including SSG area managers have a strong position vis-à-vis the technical department manager. As AdX is currently facing a shortage of machinery, also issues like the allocation of these resources is discussed in these meetings.

In quite some situations (see below), the area manager is engaged in a lot of troubleshooting in the different sections/associations. Especially when section managers are still in training, they often make small mistakes or they do not plan ahead of the situation. Problems that occur are often related to quality, input delivery and to administration. In these cases the area manager has to assist the section manager and make the right arrangements to remedy the operational damage caused. If there are problems in an association, an area manager will size up the situation and support the authority of his section managers, defending their actions. This can occur in two ways: by backing up his section manager vis-à-vis his superiors (the field manager and others in the agricultural department) and vis-à-vis the association management. The former happens in the meetings that take place between area and field managers and the AdX technical manager. In the latter situation, the area manager is also the main person who offers the association management an explanation when things are not going as planned. His troubleshooting tasks requires him to be even more mobile than a section manager and therefore he has a 4WD to quickly move from association/section to association. Also he receives more allowances for cell phone credit/airtime.

Area managers mainly consider themselves as facilitators and fire-fighters, because they're constantly visiting places where problems occur. Both area managers indicated that currently the primary focus of their activities is assisting section managers in the procurement of resources. As also mentioned in chapter 4, AdX is currently facing a shortage of machinery, and section managers do not have the bargaining power and the overview to secure these resources by themselves. In such cases, area managers have to back up the interests of their section managers to get these resources assigned to them instead of for another area (i.e. one of estate areas). One area manager even said that he sees himself as a person who empowers the associations. In situations in which the delay of input delivery has had serious negative consequences for the associations he explains what he has done to get the resources, and tells the associations they have to address their complaints to AdX next time. However, it seems that associations have difficulties in making this distinction between Agricane/SSG and AdX, for them it's all the *empresa*.

5.2.5 Field manager

For all associations, except for Maguigane, the field manager is responsible for the cane growing related activities taking place in these associations. Currently, this position is occupied by an Agricane manager, as Agricane was contracted for the smallholder developments. As the technical establishment is now finished, Agricane's (and therefore the field manager's) main task is to manage the associations on behalf of AdX. The field manager supervises his two area managers and checks on their reports from the field. Besides this, he is also present during staff meetings between area managers, field managers and staff from the technical department. In some situations, the field manager has to support his area managers and has to defend their interests and therefore, in fact defends the interests of the associations, in terms of cane production. This implies that although SSG is a separate entity in relation to estate operations, the Agricane field manager and therefore SSG has to

operate within the AdX management structure and according to AdX standards. The associations, on the other hand, do have very little bargaining power in the decisions made for them. This will be elaborated upon further in this chapter.

Besides operational management, the field manager is also responsible for the employment of new staff for SSG/MHOVA. However the field manager said they are facing great difficulties in securing appropriately skilled labour for management and training functions. Most of the section managers and area managers that now work for SSG were former AdX staff and were assigned to SSG, but even AdX is having difficulties securing skilled labour, and the Agricane field manager said they're not going to get any additional staff. Therefore he has to temporarily overcome these shortages and solve related issues otherwise. During the three year contract Agricane has with AdX it is his task to ensure the cane supply to the mill, thereby enabling smallholders to repay their loans. In the meantime he tries to pass on cane growing skills to the associations.

5.3 MHOVA

As already mentioned in Chapter 4 and also here in the description of the field manager, MHOVA (In full: Mhova Canavieiros Associados de Incomati Limitada) hasn't been fully established. In the final situation, MHOVA will become the sole contract partner of AdX, while all phase III associations will become member of MHOVA. According to various sources ((AdX, 2010; Jelsma et al., 2010); interview AdX financial manager;) AdX will have a single cane supply contract with MHOVA, while associations are being paid by MHOVA for the cane they've delivered to the mill and will become shareholders of MHOVA based on their sugarcane growing area (see Figure 13).

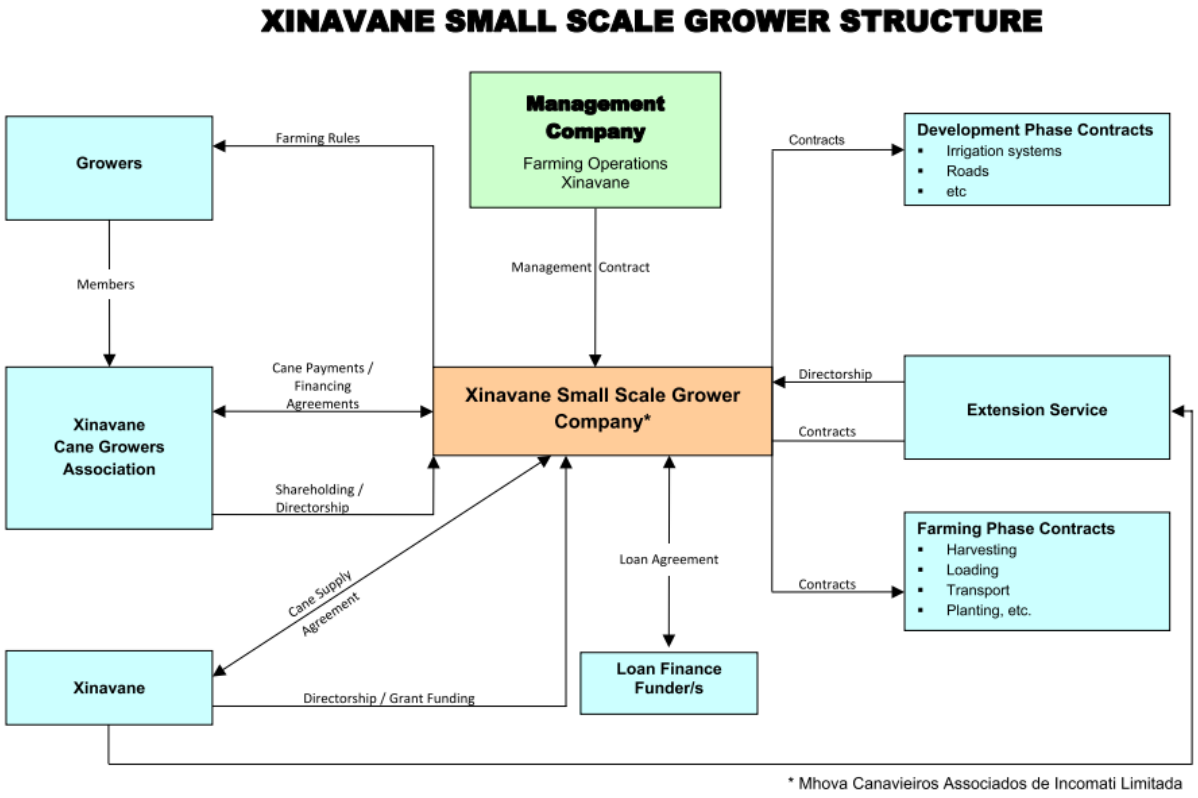

Figure 13: MHOVA intended grower structure (AdX, 2010).

Next to this, MHOVA is also envisaged to manage other contracts, such as contracts for cane haulage, cutting and land preparations, as well as contracts for expansion developments, if new -yet to be- established associations want to join in as well. However, AdX will not only become the contract partner of MHOVA, it will also become a 20% shareholder of MHOVA. This new management structure may have several implications for the smallholders as well as for the company:

1. MHOVA is treated as one single entity, which makes contract, but also conflict negotiations easier. Moreover, a single small scale grower company of united associations may have more bargaining power vis-à-vis the company than a single association. Conflicts with the company that may occur in one association may also happen in another;
2. Scale advantages can be achieved by centrally arranging contracts with companies such as Unitrans and CLM;
3. MHOVA is able to provide more direct support to the associations, both in terms of sugarcane growing assistance as in institutional strengthening;
4. Associations will become less directly dependent on AdX, as SSG will have its own resources (machinery, staff, chemicals, etc.) at its disposal;
5. AdX/Agricane will be relieved of its managerial responsibilities of dealing with individual associations;
6. AdX will partly be relieved of the financial burden of the investment done. Part of the investment is now handed over to MHOVA, while another part will be taken care of by an external private bank, most likely the EIB, which has set the formation of an overarching management company as a requirement for any funding;
7. An extra layer between associations/members and AdX may decrease the involvement of members into sugarcane cultivation;
8. As Jelsma (2010) puts it, secondary associations, such as MHOVA could be more vulnerable to corruption, because they require delegations from all associations and could form an extra barrier between association members and AdX.

The latter two points will be further discussed in chapter 6, while the reality and constraints of the other points will be discussed below.

5.4 Current daily cane growing management realities in three associations

5.4.1 Planting

In Chihenisse, two of the four pivots had to be replanted after the second harvest due to a number of issues, which will be elaborated under paragraph “irrigation”. While replanting activities were started by the end of October (2010), planting was still not concluded by the end of December. First, seedcane was supplied from part of the AdX estate of which part is designated as seedcane nursery. Ten tonnes of seedcane is required for (re)planting one hectare of sugarcane, while a dump truck can transport only 4 tonnes per load. However, AdX was at that time still in the process of establishing part of its own estate expansions, which put a high demand on the seedcane supply. Due to the limited availability of seedcane, but also of dump trucks, it took a long time before planting activities were finished (interview area manager 29-10-10; meeting area managers 03-12-10). Even though AdX had hired several contractors to supply additional dumptrucks, there were still not enough. Also in Ngoyene, one of the newly established associations where planting activities were just starting, there were shortages in seedcane and dump trucks. Second, for

(re)planting activities fields had to be marked and covered, which should be done by the civil contractor (CLM). However, also the contractor was too busy with land preparation and planting activities in the estate expansions. Although ordered by both section manager and area manager, the machinery appeared to be unavailable. As a result, a large part of the seedcane, after it was finally put in the lines, could not be covered and dried out in the sun, rendering it useless for sugarcane cultivation. More than half of the field (>25 ha) had to be reseeded. Although these delays and crop failure has significant implications on crop payments, the reactions of association management were resigned to this. They accepted the explanation given by their area manager and decided to accept it as a risk being part of growing sugarcane.

Both situations suggest that AdX either gives a higher priority to its own estates or has made a poor estimation of seedcane, dump trucks and land preparation demands. During meetings between AdX and SSG area managers, field managers and the technical manager, it is decided which resources will be allocated to which areas. This also includes the delivery of seedcane and the allocation of dumptrucks to different areas. AdX and SSG staff all have to decide which areas will receive priority over others. Agricane/SSG does not have its own machinery, but is using AdX's machinery instead. However, on many occasions they get second priority and have to wait before machinery is available. The Agricane field manager said that machinery will only come in once MHOVA has been fully established. Apparently the procurement of machinery is not possible otherwise, the most likely argument being the necessity of an overarching legally acknowledged organisation able to purchase and administer the machinery. Unfortunately, in situations like these the constraint of MHOVA/ SSG not having any machinery of its own has put serious limitations on cane growing activities in the associations.

For the Facazisse association, the Agricane field manager decided to allocate part of their fields for seedcane growing purposes. The seedcane could then be used to fill up the gaps that were showing in some of the other fields. He argued that buying seedcane from AdX was too expensive as the quantities necessary were too low to be delivered. Also here, members and management reacted resigned and duly noted the decision taken by the area and field manager.

Also in the newly established Chulemati association there were large gaps showing up in the fields where no sugarcane was germinating. The SSG area manager east explained that these fields were hastily planted by the contractors (Agricane is an EPCM-firm) with too little attention and precision. Then management was handed over to SSG before all the necessary activities (1st irrigation cycle, 1st herbicide application) were finished. This was found out when seedcane and weeds were coming up simultaneously. In some fields there were even large gaps where the crop was not germinating at all. These gaps were also present in Facazisse suggesting that a similar situation has occurred there as well. Intensive weeding and quick gap filling are then required in order to prevent the fields from getting overgrown with weeds, rendering these areas in the fields unproductive.

5.4.2 Irrigation

In the Macuvulane I and II association, but also in the Maguigane association, association members perform the irrigation operation themselves. For the Maguigane and Macuvulane I association, the modus operandi of labour teams was not yet in use, and therefore association members were supposed to cultivate their own plots, which comprised taking care of weeding and irrigation only. For these activities all members collectively received

training from their section manager and a trainer from the training department. Other activities were performed by the company for which the costs were deducted afterwards. For Macuvulane II however, who is part of the phase III project, there appeared to be some sort of an argument between AdX/SSG and the association. In Macuvulane II labour teams were also proposed and promoted by the Agricane, as they concluded that labour performance by association members in the old associations was very poor. However, the association found out it was very difficult to get a better understanding of the deductions and what the costs were for these labour teams. After asking the AdX financial manager for a clarification on the deductions, he said he couldn't give them, because these cost overview sheets were all in English and not in Portuguese. As a result, the association management decided to reduce their deductions as much as possible and thereby rejected the estate style modus operandi having labour teams performing the activities.

Currently Macuvulane II has shifted back to their old practices, and carry responsibility for weeding and irrigation activities themselves again. Also the nearby situated association of Maria de Luz Guebuza is now rejecting the use of labour teams. Although the SSG area manager east understands the reasons of Macuvulane II, he still tries to convince them of the advantages of using labour teams. According to him, their irrigation performance is still weak, because many members do not operate their sprinklers well and change the position of their sprinklers too late. He has talks about these issues with the association management and with the section manager of Macuvulane. This problem is now partly overcome by the section manager of Macuvulane by engaging a number of block supervisors who monitor these activities in a block, which were selected based on their presence in the fields and dedication to perform their activities. The block supervisor has to make sure the members in his block change and monitor their sprinklers properly. Other reasons for not having labour teams will be presented under "Weed control".

In the Facazisse association, irrigation performance was facing similar challenges as in Macuvulane II. Unlike Macuvulane II, here labour teams perform all the irrigation activities, which means that a maximum of 6 irrigators work simultaneously. As the sprinklers have to be moved every twelve hours, irrigators are supposed to work either from 5:00 till 12:00 or from 11:00 till 18:00 and therefore timely sprinkler movement can be secured. For dragline irrigation supervision is just as important as timely sprinkler movement, especially in Facazisse where, due to the topography, wind gusts sometimes can blow down tripods. Another problem that regularly occurs is the presence of leaks. However, the Facazisse fields were often found deserted in the afternoon whereby sprinklers were left unsupervised. The main reason appears to be the absence of the section manager who finishes working at one in the afternoon. Having left the fields, there is no supervision anymore and workers can easily leave the fields as well. Part of this may also be caused by the high percentage of employees recruited from outside the association: they probably feel less responsible for the work they deliver. Several association members and leaders argued that they are either too old, they have other occupations or they find the working conditions too harsh. Recently, the association also has been assigned a new section manager, but he's still in training and receives little respect from the association. This suggests that hiring labour with no direct interest in crop productivity results in lower labour performance, while it equally suggests in situations where this occurs more supervision is necessary.

In Chihenisse, center pivot irrigation is used to irrigate their fields. Unfortunately, two out of the four center pivots broke down in early 2010, which impeded further cultivation of these fields. As the spare parts were neither available in Xinavane, nor in Mozambique, they

had to be ordered and imported from South Africa. It took more than three months before the pivots were operational again. The reason for this may have been that Chihenisse has a different relation with AdX than the phase III associations as they were funded by the AfDB and the GoM. The GoM (Ministry of Agriculture) has a representative working in this district (Manhiça) to monitor the activities of a number of associations that were funded by GoM/AfDB. This representative reported the issue of the broken pivots back to the government to arrange money to fix this and request AdX to order spare parts. This extra step of decision making may have prolonged the time between breaking down and being operational again. A further explanation of his function will be given in chapter 7. It seems that AdX doesn't feel responsible for associations that haven't been funded by them, while a double dependency of Chihenisse towards AdX and the GoM creates a coordination problem, which results in the delay of delivery.

Another problem found in Chihenisse which hampered sugarcane production were the poor drainage conditions in their third and fourth pivot. When drainage in a field is insufficient, it will have a negative effect on cane yields and even on the seed itself. Therefore the Agricane field manager and the section manager (in training) proposed to the association management to improve the drainage works in these pivots. However, both fields had to be ploughed out before this could happen, and had to be replanted after the works were finished. The improvement of field drainage had to be done anyway, because future ratoon harvests would be even lower than their last year's (2009) harvest. In pivot 3, only new tile drains were dug to discharge excess water to the sides of the field. In pivot 4, also natural drainage directions were further deepened and in some places drainage pipes were installed. Unfortunately for the association, no sugarcane could be grown during the execution of these operations. Moreover, all the costs for ploughing, drainage works and replanting also had to be paid by them, which will lead to much lower net payments than normally. However, it is neither the association nor the company, but the project contractor who could be blamed for the inaccurate estimation of the climate and soil conditions, which obviously caused these problems. It is unclear what their reaction was to this, but the association management accepted that they had to cover the costs for the restoration of their fields (interview section manager Chihenisse, 02-12-10).

5.4.3 Weed control

During the start-up of the smallholder projects, associations were supposed to perform weeding and irrigation activities themselves, while the rest was being covered by the company. However, as mentioned in chapter 5, weeding performance was found to be very low by Agricane/AdX, and the use of herbicides was considered a better alternative to efficiently control weeds in the associations. Therefore, the SSG area managers are promoting the use of herbicides in the associations. According to them, especially in the first stages of the growing process the use of herbicides can be effectively used to reduce the necessity of manual weeding in later growing stages.

One of the associations where weeding had poor results was Facazisse. Although weeding activities were observed, part of this was replaced by herbicide applications. Part of this application is done by tractor, and hardly any (labour) input is required from the association or its labour reserve. The other part is done by a small team that uses knapsacks.

However in the Buna association, the focus on the use of herbicides has resulted in the opposite effect: due to the unavailability of a boom spray, pre-emergent herbicides could not be applied shortly after harvest. A boom spray only became available to them

after four weeks as SSG does not have its own machinery yet and has to use AdX's machinery. According to both area managers and the Agricane field manager, at AdX they get second priority, which probably caused the delay. If they would have decided to do the weeding manually, this problem would not have occurred. However, as AdX employs their labour, association members have to have an ID before they can be employed. The area manager said this was found to be a problem, as members could not effort buying one, and also did not see the use of it, since they were not travelling outside the country.

This example illustrates a number of issues that have a direct effect on the associations. First, with the estate management structure and standards imposed on the associations, a rigid working structure emerged, which obstructs the deployment of and search for alternatives. Although surplus labour was available, AdX's strict rules prohibited the use of it by SSG. If MHOVA would have been established, conditions would have been different. Second, AdX's working structure also seems to obviate the initiative of and the obligation for smallholders to undertake the weeding themselves. If they would do it themselves, at least their crop quality would be secured. However, if done voluntary they wouldn't get paid, and a structure to reward or penalise individual member activities is missing. The SSG area manager however had several talks with the company asking for an exception for these associations, as otherwise the job could not be done, which would make crop cultivation at later stages even more difficult. Finally the AdX administrative department agreed and now association members without ID can still work and get paid. Finally, also the consequences of SSG not having its own machinery are becoming more evident. As MHOVA is not officially established yet, SSG is not allowed to procure any machinery, but this has put serious limitations to their operability. Only recently SSG has been assigned one boom spray and a fertiliser applicator by AdX, but these are still not in their possession. The most probable reason for this is that MHOVA does not exist as a legally entitled entity and therefore cannot purchase anything for itself. However other investments have been made as well and also a reservation on the project budget for the procurement of machinery has been made.

In the Macuvulane II association, only hand weeding was done by individual members on their own plot to control weeds. However, the SSG area manager convinced the association to start using herbicides as well. Also here, labour teams were initially employed by AdX, but were rejected by the association for the same reason as mentioned under "irrigation". As a result they now have their own employed labour for large scale application activities instead of AdX paid labour teams. In addition to some herbicide applications they moved back to individual responsibility of supplementary weeding activities.

The underlying cause of this struggle is the way labour is employed in most of the associations. The labour teams (which will partly consist of association members) that work on the fields of the association are supervised by SSG staff, while being paid by AdX. This dichotomy poses a number of issues for the association, namely the weak control over labour performance and the weak control over payments/deductions. As daily management and supervision now has been taken over by Agricane on behalf of AdX, associations themselves have little control over the individual labour performance of individual employees. It is the section manager who assesses labour performance and decides about dismissals. Moreover, Mozambican labour law states that an officially registered employee can only be fired when he has been marked absent for 15 days successively. See Box 4 for more information. This makes disciplining measures even harder to enforce. Now that Macuvulane II has employed its own labour they have bypassed both constraints: they have

Box 4: Labour law

Mozambican labour law has always been very strong since the socialist system in the 1970s. It has become an annoyance especially to some large companies, since it prohibits that labour can be easily fired in the case of mal-performance or not showing up for a longer time. According to one of the SSG area managers Mozambican law states that in the case of prolonged absenteeism someone has to be marked absent for 15 days consecutively, before he can actually be fired (interview 14-12-10). Next to that, one of the estate area managers also mentioned that in the case of mal-performance, three official warnings are necessary before a person can actually be dismissed. But all these warnings need to be registered at the AdX office, and according to him, this sometimes takes up to three weeks before an employee is disciplined with an official warning, a letter or a temporary suspension. However, he does think that although Mozambican labour is well protected, it is possible to fire someone properly and as quickly as possible, as was done in his previous job at the Illovo sugar estates of Maragra. Here the processing of official warnings only took 3 days (interview AdX area manager Timanguene, 15-12-10).

This does not only has its influence on estate workers, but it also has its consequences on association employees and field staff. As AdX/ Agricane now employs their labour, they are under that same system. All lower field staff indicated the only thing they can do is to not renew an employee's contract and wait until the current contract is finished.

direct influence over labour performance and can dismiss employees directly when they are unsatisfied with their functioning. Also they can now see what they're paying for.

Both the SSG area manager east and the AdX estate manager's frustrations didn't appear to be unjustified. During a field trip to one of the newly established associations at Tres de Fevereiro (Chulemati) the SSG area manager was given a number of attendance forms that had to be signed by him. The attendance forms were filled in (putting in a P for present and an F for absent) by the section manager, but the boxes that were not filled in were all crossed out. When this was not done, people could manipulate the forms by marking themselves present although this was not the case. Even when these forms have been sent to the AdX administration department, misuse still occurs, but then at a different level and scale. Here, it was claimed that AdX accountants were charging associations for more labour than they had actually received. According to the SSG area manager east this has also influenced the decision of Macuvulane II association management to shift away from labour teams and AdX deductions.

5.4.4 Fertiliser application

For fertiliser application a similar situation prevails. However, weed control can be done manually without the necessity of requiring chemicals and therefore it can be done without additional inputs. For fertiliser application this is different, because it cannot be replaced by a low capital input activity. Fertiliser can be applied manually by labour teams, but also here it was observed that in some cases, SSG management stimulates or imposes the application with a fertiliser applicator equipped tractor. No delays in the availability of this equipment have been observed here, but it's highly probable that similar situations as for herbicide application occur. However, the application of fertiliser appears to be less time bound than herbicide application, making this activity less vulnerable to a degradation of the crop quality.

An issue that was observed in the Buna association is that the tractor driver is a standard AdX employee and -contrary to manual application- not a member of the association or a community member. This is also the case for herbicide application and the associations have been allocated the same driver as well. During several occasions, it was found that the driver refused working, because he was claiming that he either did not have enough fuel or there were not enough chemicals (interview SSG area manager east). This

issue seems to be related to the labour management by the section managers. As some of the section managers are either too busy in another association (because they're working with two or even more associations) supervision cannot always be guaranteed. Also some of the section managers, such as the Facazisse and Chihenisse section manager are still in training and seem to have difficulties with their authority over both association members and external employees such as the tractor driver. In situations like these, opportunism is inevitable. Another reason for this complaint by the driver is the strict allocation and control over fuel spending by AdX giving the driver only a minimal amount of fuel that is required to perform the activity. Fuel misappropriation regularly occurs in the Xinavane estates (interview SSG area manager west).

5.4.5 Ripening

As described in chapter 5, no special input for ripening is required from the associations or its members. The section manager only informs them when fields are going to be sprayed. AdX has a special airplane for this activity in order to cover a large area at once. Furthermore, the section manager asks the association to mark the designated fields with bright coloured jerry cans so the pilot can see which fields need application. During spraying no one is allowed in the fields, since the chemicals may have a negative influence on health. It is the technical department that decides when fields are going to be sprayed with ripener.

5.4.6 Harvest/ haulage/ gleaning

Before any cutting or burning is done, it is the AdX technical department that makes a planning which ripened fields will be cut and hauled when. During a 32 weeks crushing season, the mill must receive a continuous influx (8,000 tonnes per day) of sugarcane, which must come from company estate, the smallholders and the private outgrower at Vamagogo. Officially, 6,000 tonnes should come from the estate, 1,000 from the associations and 1,
000 from Vamagogo, but these numbers are not cast in concrete. Assuming an average yield of 100 tonnes per ha, this division would imply only 10 ha per day can be cut in the associations. In reality, these figures were found to be unrealistic: all fields of Macuvulane II (77 ha) were harvested and hauled in less than three days, which would come down to 2,500 tonnes per day, which is far above the target supply.

In Chihenisse, harvesting only commenced two weeks later than the announced date. According to AdX and the SSG area manager east this was due to the weather conditions at that moment. Due to heavy rainfall, the haulage roads to the Chihenisse fields became inaccessible and also trucks would get stuck in their fields due to their heavy clay content. Therefore the technical department decided to harvest other fields with better accessibility first. Instead, the fields of Macuvulane II were harvested as their fields are situated close to the main tar road and were closer to the mill. Also the soils there have a higher sand content, which made it comparably easier to haul there. It appears that AdX makes a risk assessment for every field based on distance to the mill, the condition of feeder roads and the soil type of the fields. Two weeks later Chihenisse's fields were harvested, but after commencing weather conditions changed again, and haulage trucks got stuck in the fields, but also on the road. However, sugarcane is a perilous crop and must be transported quickly to prevent the stalks from losing their sucrose content. A delay between cutting and haulage of more than two days already results in a decline of a few percent, which eventually has a serious influence on the amount of sugar and therefore the total payments received from it (interview SSG area manager east). In Chihenisse cutting started on Saturday, but on

Tuesday a lot of harvested cane was still not transported due to these poor field and road conditions.

For a perishable crop such as sugarcane, both the miller and the planter have to accept the risks involved in the cultivation and harvesting of it. Both actors have a mutual interest in the production of a high quality crop and high yields. This is also reflected in the payment division formula the sugar industry uses. The Division of Proceeds (in Xinavane) allocates a 60% share for the grower while the remaining 40% is for the miller. This payment formula may work when there's a single grower involved in the production, but its function becomes questionable when there are multiple growers in play. First, the miller makes the final decision whose fields are harvested when. The case of Chihenisse may suggest that the miller can minimise the risk for poor cane delivery and prioritise on other growers. They make the final decision, securing a stable supply is their ultimate goal and seems to overrule any other. Second, the miller can hereby spread its risks over multiple growers. Good harvests can compensate for poor harvests. For the grower however, this is not the case, unless he has several large fields to spread his risks or has other occupations as well. For smallholders such as in Xinavane, it is however their only source of income. Both arguments suggest an unequal interest between grower and miller in the delivery of good quality cane.

For Chihenisse specifically, this implies that the miller (i.e. AdX), who is the owner of the feeder roads has to put more effort in road maintenance and improvements to reduce the risk for the grower. It is also the grower (the association) who pays AdX for road maintenance, although it seems he can bear no influence on road maintenance decisions made by AdX.

Although these events produced a serious influence on Chihenisse's final payments, the Chihenisse executive management reacted resigned to this. They doubted whether they could do anything about it. It seems that they have accepted the situation as it is and accepted that AdX is currently in charge of most of their actions.

During loading and haulage on the association's fields lorries and trailers were carefully counted by the association members of Macuvulane II. For this, the license plate number and the number of trailers was noted down. Moreover, Macuvulane II members told they even had an association member stationed at the weighbridge who was in contact with the other counter. He, on his turn, noted down the weight per lorry and reported this number back by cellphone. However, there's no direct communication between Unitrans employees and association members. Lorry counting is not required by AdX or Agricane/SSG, as Unitrans and the cutting contractor should take care of these activities. Cane testing and registering at the mill is done per association, so even here, no counting is necessary. However, the association says they are afraid of lorries not being registered at the mill. Assuming a similar load per lorry/ trailer as for planting and an average number of loads per truck of 4, every missed truck results in a 16-20 tonnes of cane lost, equalling almost 20% of the average yield per field.

Lorry counting appears to be an activity that was initiated by the association itself. In this way the association can make an estimation of the height of the payments. This activity suggests that Macuvulane II wants to get a better grip on the payments made by AdX and wants to see some relation between their efforts and the amount of cane harvested per field. Also in the Chihenisse association, lorry counting was observed, but then for the delivery of seedcane. Also it is a way to ensure that all lorries that come from the association are registered as such. Shortly after harvest, the Macuvulane II accountant goes to the AdX

financial manager to hand over their counting to AdX and compare it with the company's registration.

5.4.7 Payments

As mentioned in chapter 4, payments to the associations are made in two terms, of which the first term is 82.5% of the ERC value, while the other 18.5% is withheld to compensate for price fluctuations and expenses made during growing. These should include inputs, such as chemicals (fertiliser, herbicides, ripener), water, electricity, management costs and of course the deductions for labour teams (interview AdX financial manager). After the deductions have been done, the remainder will be transferred in the second payment to the association's account. However, When they owe money to AdX, associations are not asked to pay this back, but AdX levels these costs with the payments done after the next harvest.

However, looking at the costs in table 4.4, it appears that the annual costs per hectare for an association are substantially higher than this 17.5% can cover. Assuming gross proceeds of USD 3,675 per ha and total annual costs of USD 2,940 (excluding any repayments), an association should receive USD 3,032 for the first term and USD 643 would be withheld to cover the costs, which is only 20% of the total costs. If production costs for an association must be recovered by AdX, then deductions for that should be done already before the first payments are made. The AdX financial manager probably described a situation in which the inputs required from the association for AdX are much lower, for example when they only have to pay for road maintenance, planting and the costs for management, while all other inputs are acquired by the association itself. Another scenario, which was partly confirmed by the Macuvulane II accountant is that associations are paid a lower percentage first (70% in their case), while 30% was withheld to cover for the costs. However, this 30% would still be insufficient to cover all the projected costs as indicated in Table 5.

Some of the associations are trying to reduce these deductions as much as possible to gain more control over their expenditures and maximise the payments. This was only seen in Macuvulane II, where they asked AdX for further clarification on the deductions and payments made, but did not receive any. Another reason for doing so is that although section managers have to ask permission from the association leaders when they want to acquire inputs, the leaders do not get to see the costs for these inputs. The acquisition forms the section managers use are all the same as in the estate, where costs are not considered important as it is the same company that spends and earns. For the associations, this is not the case. Another contradiction in this is that currently SSG management and not the associations are the final user of the inputs, while they are not the ones who pay for it. To partly overcome this, the Macuvulane II accountant said that he and the president are now going shortly after every harvest to the AdX financial manager to update themselves on the payments and the costs for the past season. After that, they inform the members. It seems that, although the cost overview files are in English, the financial manager eventually tells them. Other associations seem to be more hesitant in their attitude towards cane payments. Chihenisse and Facazisse members and management both indicated they had their ideas and expectations of how high payments will be, but they do not take further action.

5.5 Conclusion

The current daily management practices and interactions between associations, SSG staff and AdX illustrate that the current management structure and modus operandi is far from perfect and often results in conflicts between the different actors. Agricane points the formation of MHOVA which has yet to be fully established as one of the key shortcomings in this. Although the structure in Figure 13: MHOVA intended grower structure (AdX, 2010). reflects the desired situation on the part of the company, currently relations are quite different and could be summarised as the organogram presented in Figure 14. A comparison between Figure 13and Figure 14 shows that until MHOVA is operational AdX retains control over all MHOVA's resources (machinery, inputs, salaries, proceeds, management staff, employees, loans, operational costs). When these resource flows between the company and associations are converted into flows of money, it shows that many of these flows go indirectly from AdX to association. Although these resources are necessary for daily management and cane production, AdX is not primarily responsible for daily management, and most of these flows bypass the primary responsible actor (i.e. Agricane) in this. This causes the relations between AdX, Agricane and the associations to become even more lopsided.

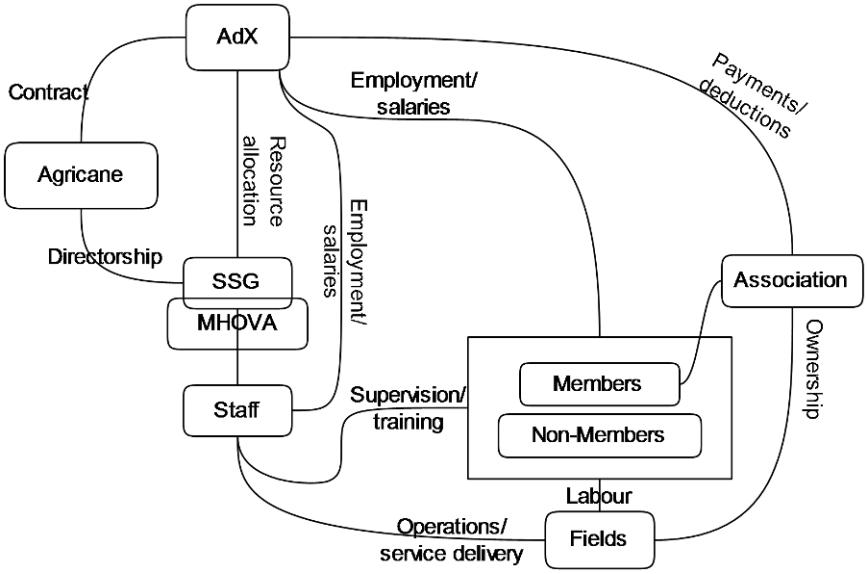

Figure 14: Current SSG organogram as observed by the researcher

A second reason explaining current interactions are the different interests and motives of AdX, Agricane and the associations that conflict with each other.

The delay and prioritisation on machinery, planting, staff and harvesting show that AdX is currently too busy with its own expansions and is having difficulties of its own scaling up their own activities. Agricane was therefore contracted to establish and manage the smallholders on their behalf. The daily management practices show that Agricane is not given a free reign, but has to comply with and fit into the estate structure and standards. AdX has done this to ensure cane production is done according to a formula that is well known to them, has a proven record of success and therefore ensures a stable supply of cane to their mill. In this way they can also ensure smallholders are able to pay their loan back. However, the interactions and conflicts described in this chapter illustrate that this estate style of management does not always seem to work for the associations. There are a number of reasons for that.

1. In the estate, standards and structure are optimised for large scale production, which means economies of scale are applied wherever possible. Examples of this are the focus on use of machinery instead of labour to optimise production efficiencies. However, in the associations, there is a labour surplus, and in fact, a shortage on capital. Moreover, Agricane is not allowed to purchase any machinery for the associations, and has to use/rent these from AdX and gets second priority causing delays and operational damage.
2. AdX has standardised most (if not all) production processes in their estate. Here, the assumption is made that all estate fields are all the same and thus can be managed the same. The associations and their members however should not be regarded as passive employees following orders, but as active individuals and groups having their own interests. What may work in one association may not always work for all the associations.
3. Large companies, due to lower social cohesion and the large number of employees need a large overhead and a large administration to prevent misuse/fraud. In the case of AdX, but also for the smallholders, there are 3-5 layers between executive management and decision making. Also currently not all executive management positions can be occupied or they are not held by the people that meet the qualifications causing this structure of tight supervision to *become weak.*

Agricane currently finds itself in a difficult position, because they have to satisfy their customer (AdX), but have to maintain a good relationship with the associations as well. Although executive SSG staff cannot be dismissed by an association, Agricane will have to take the interests and wishes of an association into account when making any decisions. In Macuvulane for example, Agricane wanted to improve the labour performance, but they are bound to the rules and standards of AdX (i.e. the formation of labour teams), which were rejected by this association. Another example is the replacement of a section manager from Colo to another association after increased discontent in the association about his presence and capabilities. Another important issue that hampers their operability is the reality of being treated as equal in the estate management, but having a lack of resources (machinery and skilled personnel) to operate fully functional as if associations were the estate.

The associations' interests seem to vary per association. Their primary goal is defending the interests of their members, but currently their functioning is limited, because executive management is now done by Agricane/ SSG. Especially in cases of labour management, this contrast leads to conflicts, because it is the association and its members that own the fields, but it is Agricane who manages it and who manages the labour, which are also members. One of the interests the associations can defend is the height of their net payments. In Macuvulane II, they concluded that their payments could be much higher when they would cut on expenses and reduce deductions. This conflicts with the company's interests of standardisation and large scale production. Some associations have a hesitant attitude towards AdX and Agricane and do what is been asked. Other associations do already have more experiences with AdX. This is either due to experience sharing with neighbouring associations or due to their own experience with the company, in which they found out they had to step up to defend their interests. A further elaboration on internal association management will be done in chapter 6.

Although all main actors involved in the production process of smallholder sugarcane cultivation have their own interests and motives, AdX, in all situations found seems to have an overriding interest and for that retains control in order to synchronise all activities in tune

with the mill's capacity and harvest planning. This interest regularly clashes and even contradicts any attempts in making associations become independent. Rather associations are used as a buffer to compensate fluctuations in the estate's cane production or to supplement them and to maintain or optimise the mill's crushing capacity. This also explains why associations receive a lower priority than estate production. Unfortunately associations have become completely dependent on AdX for their resources and are now captive. Also Agricane is affected by this, as they need these resources as well to properly perform the necessary tasks. But also they are, both in the resources needed as in the implementation of practices, dependent on AdX, who retains control over them.

6 Internal Association management

6.1 Introduction

This chapter further delves into the relations between association management and the company (AdX). Where in chapter 5 and 6 the sugarcane cultivation activities and interactions during day to day management were discussed, this chapter focuses on the role of the association leaders and their activities and responsibilities. In order to gain a better understanding of this, this chapter first describes how each of the three associations studied was established. Special attention is given to the main actors involved in the establishment process and the previous situation of a community before they entered into sugarcane farming.

Following Ostrom and her guidelines/ principles for crafting collective action within an association, an analysis is made of the associations' constitution and by-laws while comparing these with association governance in action, paying special attention to internal issues currently dealt with. Subsequently the associations' constitution (i.e. role of the association and its leaders) vis-à-vis the current and (envisaged) future management structure of AdX's outgrowers, as found by the researcher will be compared . Implications of both structures on internal association management will be further analysed.

At the end of this chapter I will argue that Ostrom's principles for crafting collective action do not work for the associations in Xinavane. In effect, I will propose an alternative approach that does better explain current association behaviour and its effects on management by the company by placing it in its historical context.

6.2 Establishment of Chihenisse

Before growing sugarcane, the community of Chihenisse consisted mainly of fishermen and rainfed farmers. This community lies isolated between AdX's north eastern estates (part of the estate is named after this community) and the Incomati river, and does not have easy access to main roads. In 2005, the community was approached by the SSIP (Small Scale Irrigation Project) to grow sugarcane and the community leader, Mr. Augustinho Cossa decided to join in, as they owned large pieces of land (207 ha in total) that were only partly utilised. Following Jelsma (2010), it appears that the SSIP management has done some explorative negotiations with the company first before they approached the community. After that, Mr. Cossa, now association president, said he went to officials of different administrative levels (Xinavane administrative post, Manhiça district office and finally the ministry of Agriculture) to negotiate with the company and SSIP about the area and number of members for the association. Following on these negotiations SSIP management decided that 200 ha would be converted to sugarcane, while the remaining 7 ha would be prepared for irrigated food production to compensate for the loss of area for rain-fed food production.

The SSIP project appears to be larger than just benefiting the communities of Macuvulane and Chihenisse: in a project appraisal document for the SSIP, the project specifically aims for the increase of household income and food security (not limited to sugarcane) by improving agricultural productivity through the establishment or rehabilitation irrigation infrastructure. Furthermore the project should not only benefit the communities of Chihenisse and Macuvulane, but also 22 other communities in the provinces of Maputo, Zambezia and Sofala (AfDB, 1998). Also the document reports that, although the

benefiting communities would receive the instalments as a grant, the bulk of the project funding was arranged through a soft loan of USD 12,43 mln, which has to be paid back by the GoM to ADF (African Development Fund, which is a financial institution of the AfDB) within a period of 50 years. Unlike the phase III project, here MBB (a South African civil contractor) and Hidroafrica (a Mozambican contractor) were contracted to perform/execute the infrastructural operations (Figure 15) ; Agricane at that time was not active in the Xinavane area yet. It is possible that these contractors were responsible for the poor land preparations in Chihenisse (chapter 5), but as drainage measures were now installed by AdX and paid by the association, it seems that they can't be made responsible anymore.

Figure 15: SSIP Project description attached to Chihenisse pumping station

Currently, Chihenisse is also receiving assistance from an agricultural officer, who represents the Ministry of Agriculture and Fisheries. The officer said that he was tasked with monitoring the association's activities, and to report issues to the government. It appears that, as the GoM has to back pay the loan for this project, they would like to see its long term success ensured by somebody keeping an eye on them. The officer said he was involved during the negotiations between AdX, SSIP and the community and assisted in legalising the association. He said he also taught a selection of members how to become leaders, after which all members could choose their leaders. By pre-selection potential leaders, the agricultural officer seems to have biased and flawed the elections of the association's first leaders.

Another case in which he assisted the association was when two pivots broke down and had to be replaced (interview agricultural officer 21-10-10). It is most likely that this agricultural officer functions as an intermediary between AdX and the association, as Chihenisse was initially not under direct supervision of AdX/ Agricane when it started. In the first year of sugarcane production, the GoM/ AfDB funded the labour costs, but after that funding stopped. The association concluded they were not able to produce cane on their own, financing the labour costs from members' fees or revenues. Hence the association subsequently asked Agricane to assist them (interview Chihenisse fiscal president, 10-12-10). Although Chihenisse has been given the payment of the capital costs (i.e. the irrigation infrastructure) free of charge by the GoM/AfDB, the modus operandi for production practices is now exactly the same way as in the other associations.

From Table 3, it appears that the number of members in Chihenisse remained limited (40), while the average plot size is higher (5 ha) than in most other associations. According to some community members, the GoM had planned a fixed number of members to ensure higher wealth creation, while only one person per household was allowed to enter the scheme as official member in order to evenly spread wealth among the community. Initially, the total member count was limited to 40, but one year later, another 18 community members requested to become association members as well, which brought the association to a total number of 58 members. Still some community members claimed that the community leader, regardless of these limiting conditions handpicked its members, giving

priority to community members of his own kin. This indicates that nepotism may have influenced the final selection of members and hence the wealth distribution in the association.

After having established the sugarcane fields in 2008 the SSIP management found out that both sugarcane producing associations (i.e. Chihenisse and Macuvulane I) required additional training in order to have their internal organisation functioning properly. Therefore the associations were approached by KULIMA, a Maputo based NGO who had experience with establishing and assisting associations (KULIMA, 2006a). Most of the trainings were supposed to focus on literacy, bookkeeping and accountancy, but for Chihenisse, KULIMA had only one year to give these which was not enough. The reason for this short period was the late deployment of the infrastructure and thereby the start of sugarcane growing activities. In Macuvulane however they had three years to train, indicating that KULIMA was only given a contract with fixed start- and enddates. (Jelsma et al., 2010; KULIMA, 2006b). According to the association president, KULIMA told them they had to organise themselves and be united as one, and work hard in order to generate wealth (interview Chihenisse president 25-10-10). Part of that was shown when the leaders went to Macuvulane to get the idea. The actual functioning of the association could only be explained, but could not be trained, as KULIMA didn't have the time to do so (interview Chihenisse association president 25-10-10) . Also several association members indicated the association's statutes were crafted by KULIMA. Currently KULIMA is no longer active in either Macuvulane I or Chihenisse.

6.3 Establishment of Macuvulane II

Unlike other communities, the community of Macuvulane, situated on the northern banks of the south branch of the river Incomati, did already have experience with collective agriculture. Before any Macuvulane association started to grow sugarcane, this community already had a cooperative in which they were growing wheat under irrigation on a large piece of land (467.8 ha), that was given under concession by the colonial government to Swiss missionaries in 1911. This plot was owned and managed by the church, in an attempt to prevent male outflow migration to South Africa by entitling them to commercial land and agriculture. In this way the missionaries hoped to get a better grip on the community and convert them to Christianity. The missionaries taught them how to work together. After the Mozambican independence in the 1970s, the missionaries left the country, but the community continued following their teachings (interview Macuvulane association management, 22-10-10;(Gengenbach, 1998)).

When the community was asked to participate in the SSIP project in early 2008, the community leaders indicated that they had this large concession on which they wanted to grow sugarcane. Unfortunately also here the SSIP/ AfDB had a maximum number of members and hectares planned (interview Macuvulane II accountant, 09-12-10) although there were also restrictions here on the number of members per homestead. As a result 185 ha was converted for sugarcane cultivation for 180 homesteads, so not all homesteads/ families could benefit from the SSIP project. The community leaders therefore asked the company if it was possible to have another area converted to sugarcane, but there was no more funding available for this. But when the Small Scale Grower Development (phase III) Project was started, Macuvulane I was one of the first being informed about the possibilities for expansion. However, for this project funding modalities were different than in the SSIP

project (resp. a loan vs grant), and the association of Macuvulane I decided it was better to create a new association, in order to prevent financial confusion. When elections were held, the son of the president (who is also the community leader) of Macuvulane I, Mr. Ephraim Cossa was unanimously elected to become the new association president for Macuvulane II. Like in the Chihenisse case, it is questionable why one person receives unanimous votes and why no other competitor was available.

For the establishment of the cane fields, the community decided that the remaining available part of the concession plus any additional available land should be converted to the sugarcane. Also a part (30 ha) that was allocated to sustain the church was then allocated to members who had no land to cede to the association (interview Macuvulane association management, 22-10-10). All the preparations were done in a relatively short time span, as the negotiations started in February that year, while land preparations commenced in June and sugarcane production commenced in September.

For the establishment and strengthening of the phase III associations, AdX asked the NGO ORAM to assist. According to Jelsma (2010), ORAM has extensive experience with land use rights issues (community land delimitations), and mainly assisted the associations in legalising their association and drafting their own statutes, but also gave organisational trainings similar to the ones given by KULIMA. ORAM was also active in the associations of Maria de Luz Guebuza, HoyoHoyo and Buna. Unfortunately they haven't been able to fully accomplish their tasks in these associations and no office or other presence of ORAM was observed in the surroundings of Xinavane or Magude. The Macuvulane II accountant confirmed that he did receive training from ORAM, but according to him, ORAM's contract with AdX was finished, because AdX considered ORAM to be too weak to operate (interview 09-12-10). According to the AdX outgrower project manager, their contract with ORAM had finished (interview 20-10-10), but ORAM commented that contracts terms were only for a few months, which is -according to their director- too short to measure the impact of the training (Jelsma et al., 2010). Also AdX considered the costs for training and capacity building to be too high for the associations, which explains the (short) length of the contracts. As Macuvulane II was still not officially legalised Gwevhane, a Xinavane based community organisation, was asked to jump in. Shortly thereafter, the association was legalised and registered and was able to open a bank account as well. Jelsma (2010) reports that Gwevhane is probably also financed by AdX, which could be arranged through a contract. More on Gwevhane can be found in Box 5.

Box 5: Gwevhane

Gwevhane is a community based organisation that started its activities after discovering several disturbing events related to sugarcane developments and land rights conflicts. They have become actively involved in the legalisation process of associations, especially when ORAM and KULIMA's contracts were finished. The AdX outgrower project manager said that he prefers to work with Gwevhane, since they have an office in Xinavane and were found to be more mobile and continuously present, while KULIMA and ORAM's offices were in Maputo and Macia, respectively. Gwevhane is also actively involved in conflict resolution between company and associations as can be found later in this chapter. For these activities they have received an EU grant of € 95,000. Jelsma reports that it is possible that Gwevhane is funded by AdX as well. Currently they have started other activities as well, such as a periodic newspaper and educational trainings. Although Gwevhane claims to be more a grassroots organisation run by volunteers than an NGO, they receive considerable amounts of funding. Not only from the EU, but also the Worldbank. Gwevhane has received an additional € 198,600 for various purposes (Openspending.org, accessed 2-2-2012) and USD 5,000 for education specifically for women (Worldbank.org).

However, contact with Gwevhane was difficult due to rent seeking behaviour of the director (interview 12-10-10).

6.4 Establishment of Facasize (Olhar de Esperança)

The name Facazisse originates from some of the communities that are part of the association, however the real association name is Olhar de Esperança ("view of hope" in Portuguese). The fields of the association are situated on the south eastern side of Magude, along the banks of the Incomati river. Before the association was established the fields belonged to the communities of Facazisse, Chocotiva and Magude Ex Block 4. The name block (bloco) 4 refers to an old state farm that was in use during FRELIMO's socialist regime in the 1970s and 80s (Gengenbach, 1998). Facazisse appears to be the only association that consists of several communities, and also it is the only association whose fields border a relatively large town.

According to various sources, historically this area has been subject to repeated struggles over the fertile *nyaka* lands situated on the riverbanks of the Incomati, as these grounds were situated in the vicinity of economic activity, infrastructure and security while other parts have very sandy soils and are generally less fertile (Gengenbach, 1998; Hanchinamani, 2000). Due to the relatively high population density, and their relative fertility as compared to other soils, pressure on and disputes over these lands have always been much higher here than in areas further away from the river. The establishment of this association appeared to be no exception from this. According to the association president, Mr. Paolo Cossa, the association was subject to land grabbing as a business man struck a deal with the local government to start growing a crop. But this man wanted to have more land than was allocated to him, especially the fertile fields of these communities. When the community chiefs went to the administrator to discuss the problem, they were told that it would be better to establish an association to prevent this from happening. However, the association's secretary of the executive board contested the association president's claim, and said that AdX was interested in the lands of these three communities, but made a deal with the district government about this instead of consulting the community representatives first. They only found out about the deal when land preparation machines entered their fields to start the conversion. At that moment there were rumours in the communities of setting up an association for cultivating food crops, but not for sugarcane cultivation purposes. The community leaders considered the implications of this event, and discussed what they preferred: either continuing rain-fed maize cultivation or going along with AdX's plans. They decided in favour of the latter. Similar to the other two associations, the community chief of Ex- Block 4 became the first association president. The most probable interpretation of both histories was the existence of a small family association in one of the communities (Ex-Block 4) that was created to prevent land grab, while AdX entered the area several years later. Unfortunately, the Magude administrator was not available for any comments on this issue. Currently, the association has nearly 290 members, which indicates that most community members who had a plot in the sugarcane cultivated area (107 ha) also joined the association. However Gwevhane, the organisation that was involved during the legalisation of the association, did not agree with this high number of members, and allowed them only to legalise the association with 96 members. Only these members have officially been granted membership. It is however unclear on what criteria these people were granted over others. Nevertheless this is, according to association management, only the case on paper; in reality all members are treated equal and payments will be subdivided through these official members. This indicates that although Facazisse has been legalised with official papers such as the constitution and membership registrations, they seem to have little meaning to them yet. However the association's high number of members and its

workaround on the restriction does pose a risk on decision-making and possible manipulation of payments to de-facto members.

6.5 Associations and collective choice

Following Ostrom's principles of collective action, institutions are one of the key requirements necessary for the performance of collective action within a water users or a farmers association. Institutions are seen as a set of rules that people place upon themselves, which allow people to predict other people's behaviour. If absent, Ostrom & Gardner argue that individuals will always try to maximise their (individual) gain (at the expense of others) and exploit the use of a so called common pool resource (CPR) (Ostrom & Gardner, 1993). Although Ostrom has written a considerable part on collective action about irrigation systems, the examples she gives are related to surface water irrigation systems, where classical head- and tail end problems occur in the distribution of scarce water, which are not the main constraints for sprinkler irrigation in general and for Xinavane specifically. However the concept is still applicable, as the main resource to be contributed is the labour effort individual members have to invest. It was found that the application of this resource is contested in the associations, as smallholders can choose not to farm their plot, while the consequences of this decision (i.e. the yields) are shared among all members, as cane testing and payments are done association wide.

The rules necessary to govern common and private pool resources are distinguished by Ostrom as:

- Operational rules, which serve as a guide to day-to-day practices,
- Collective choice rules, which regulate decision making and conflict resolution
- Constitutional rules, which regulate membership and define users' rights.

These rules must be understood, agreed upon and supported by the users, after which they will comprise the organisation's social capital (Ostrom 1990 in (Mollinga et al., 2003)). Cernea and Meinzen-Dick (1994) further stress the importance of rule-making as the domain of its users and not that of government/NGO alone.

One of the primary sources in which these rules are described are the association's statutes. Statutes are: "1: a law enacted by the legislative branch of a government; 2: an act of a corporation or of its founder intended as a permanent rule; 3: an international instrument setting up an agency and regulating its scope or authority" (Merriam-Webster.com, 2012). Hence, the constitution of an association could yield valuable information related to constitutional and basic decision-making rules. In some cases, operational rules may also be found here, however these are usually described in the regulations. Unfortunately, no statutes were available for Chihenisse, as their statutes were lost during the legalisation process. All statutes were crafted with the assistance of an NGO, either KULIMA, ORAM or Gwevhane, as was indicated by both members and association leaders. Also the use of legal language and phrasing proves either the use of a standard template or the work of a legal specialist. However, it is unclear what the influence of the associations on the contents of their statutes has been. Some association leaders claimed that they made the statutes themselves, but Jelsma (2010) reported that in the associations where ORAM was active, a standard government document has been used, according a much smaller role to the association in defining its contents.

The Macuvulane II statutes are very concise, and only describe the minimal necessities of the association: its objectives (production of sugarcane), the association's

main bodies (general assembly, directive board, and fiscal commission), the voting system, the frequency of meetings and the membership fee. However, it lacks a specific explanation on the competences of these bodies, nor does it elaborate on conflict resolution or treatment of misbehaviour (GoM, 2010a). The Facazisse statutory document, although larger in size and description, lacks a clear objective related to sugarcane production. It does however contain a number of general objectives, but none of these is directly related to a sugarcane outgrowers organisation. Although Facazisse was assisted by Gwevhane, this NGO also seems to have used a (government) template for the creation of Facazisse's statutes. In a period government report where newly established associations are mentioned (i.e. chamber of commerce report) the exact same format was used for the constitution of another association established in a nearby village. Also the constitution contains objectives such as: "preventing and combating HIV/AIDS" and "promoting and stimulating democratic values and human rights" (GoM, 2010b). These objectives clearly illustrate the NGO's (i.e. Gwevhane's) influence on the drafting process and Gwevhane's underlying policy aims that are to a large extent prescribed by their donors (i.e. the EU). See also Box 5. This provides another strong indication that the influence of associations on the formulation of their statutes has been very low. If these indications hold, then this part of the association's social capital becomes questionable as it has been imposed on them by external parties. Although it is possible that an association still agrees with its contents, the lack of specificity in both documents shows that the process of statute development has rather been a process of blueprinting than one of matching local aspirations and circumstances.

6.6 Constitutions vs. practices

However in reality, the decision-making and constitutional rules may be practised more flexibly than what is stipulated on paper. This was found in Chihenisse, where a meeting was held concerning an internal conflict threatening the association. A number of community members wanted to become association member as well, as they were claiming that the association's fields were situated on their own land, and therefore they had been expropriated from their lands by the association. These people had addressed their complaints to the local administration officer, who managed to force the association leaders –with the help of the agricultural officer- to cede two pivots to the people whose lands were taken. During this meeting, a written summary of these events was read out aloud for all attending members by the executive president, in order to explain what had happened. While association members said that everyone can have a say in these meetings, it were mainly the association president and vice president who were speaking most of the time, while the members were listening. Also the general assembly was not consulted before the decision to handover was taken: the decision was simply taken by the association president, while the members simply acquiesced the decision. This illustrates that the decision power in this association does not lie with the assembly (i.e. its members) but with the leader(s), while the members simply consent. Also members in Facazisse said that leaders can take decisions without informing their members, although their constitution stipulates differently. Furthermore, the present situation in Facazisse shows that although officially Facazisse should have only 96 members, in practice there are 290 members who seem to have equal rights.

6.7 Current and future structure implications for internal management

I'll extend my analysis on the role of associations and their leaders by further scrutinising the management relations present between AdX, the associations and any additional actors involved. When the phase III project was initiated, AdX decided to take over association management for the first 3 years after field establishment. This is not a peculiar idea, looking at the difficulties they had with the associations of Macuvulane, Maguigane and Chihenisse. When these associations were ready to start producing, AdX assumed that some activities, such as weeding and irrigation could be taken care of by the associations themselves, an approach similar to that used for smallholders in South Africa (Ten Napel, 2009). However, labour performance was found to be very low, and as a result the cane yields as the final performance criterion for a field, area or association, were very low (AdX, 2010)).

For AdX, the resulting decision of management takeover can be seen as a form of vertical integration to ensure cost efficiencies and quality standards, gaining more control over the production process. This has now caused, as already mentioned in chapter 4 & 5, associations to produce in exactly the same way and according to the same standards as in the estate.

Speaking in Ostrom's rules and institutions for collective action, it is not the association, but the company who now has defined the operational rules. It is also AdX that has commissioned Agricane to enforce these operational rules. This does not only have implications for daily management, but also for internal management of the associations. This can be further illustrated by examining the current relations between the different actors (Figure 16) paying special attention to the role of the associations versus the role of AdX. From this figure, the following conclusions can be drawn with respect to association and company influence:

- Labour is supplied by the associations, managed by SSG, but paid by AdX;
- Cane production management is de facto performed by SSG/ Agricane, but the costs made for this are deducted from the payments made by AdX to the associations;
- Section and area managers are under supervision and control of SSG, but when operations were started in the associations, they were supplied by AdX and are also currently paid by AdX;
- Machinery and commodity inputs are used by SSG, but are owned, administered and allocated by AdX. Also deductions for these commodities are made by AdX, and not by SSG.
- Although Agricane is the main responsible actor for the smallholder developments, they are contracted by AdX and not by the associations.
- Contracts for farming operations, such as land preparations, harvesting and haulage were made between contractors and AdX, not between contractor and association.

The role and the responsibilities of the associations thus remain very limited, while AdX's control over assets and capital remain high. AdX has not only imposed operational rules and enforcement on the associations, the current structure also impedes associations from having an actual role to play at all. One example that illustrates this, is the structure of indirect cost recovery between AdX, SSG/Agricane and the association and its members. The above described points show that an association treasurer's tasks are completely absent, as he has no control over the expenditures made and the inputs delivered; only the total amount of money paid to the association and the amount of cane trucks the association has counted may give a clue about final costs and yields.

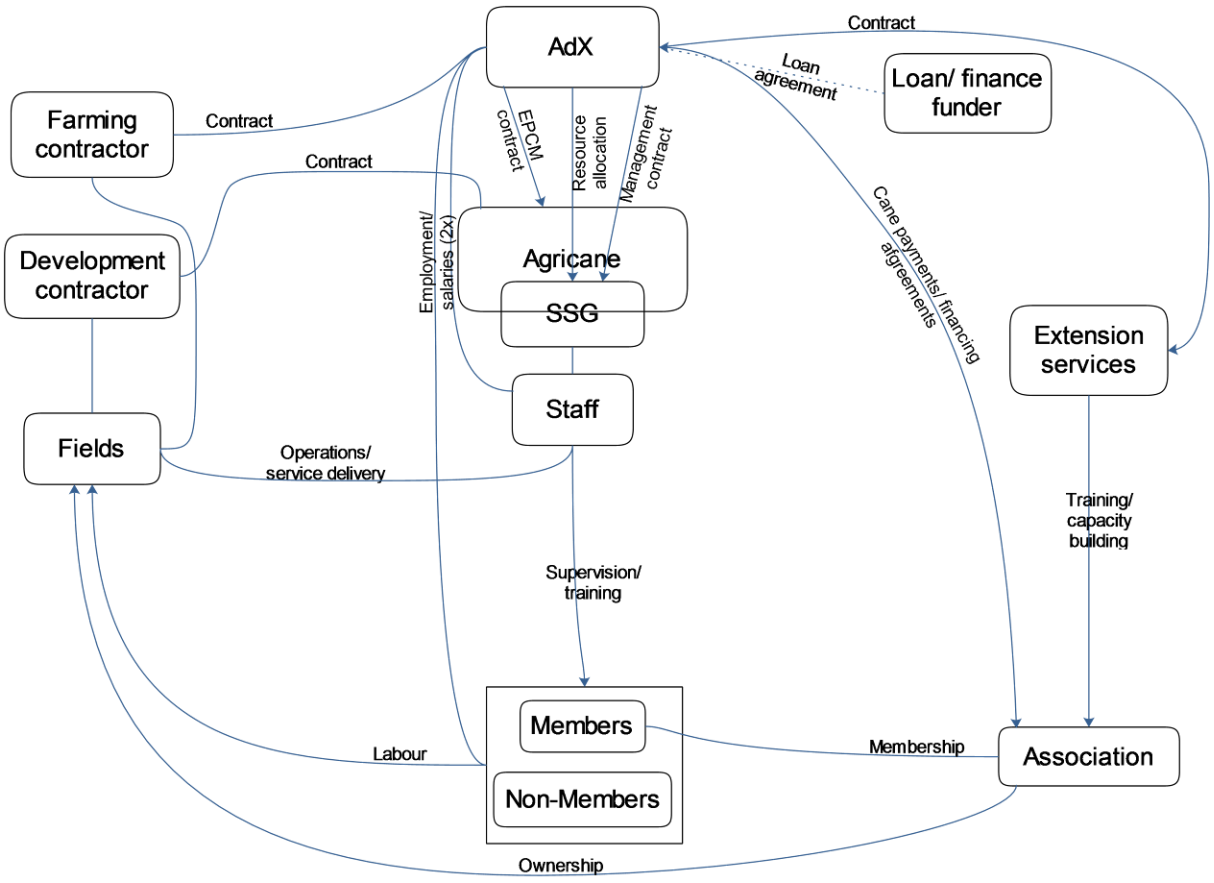

Figure 16: Current actor relations between AdX and associations

Furthermore, the statutes of the associations prescribe that an association should have an executive management board, but as SSG performs the operational management, also their role is currently unnecessary. As for accountability, when association members or the whole association is dissatisfied with procedures, they address their complaints to the area and section managers, however these do not have full control over changes that must be made, since they do not administer any resources themselves nor can they change AdX rules and standards. When complaints are addressed at AdX, associations are told to go to Gwevhane so they can centralise them and speak/negotiate with the company on behalf of the associations.

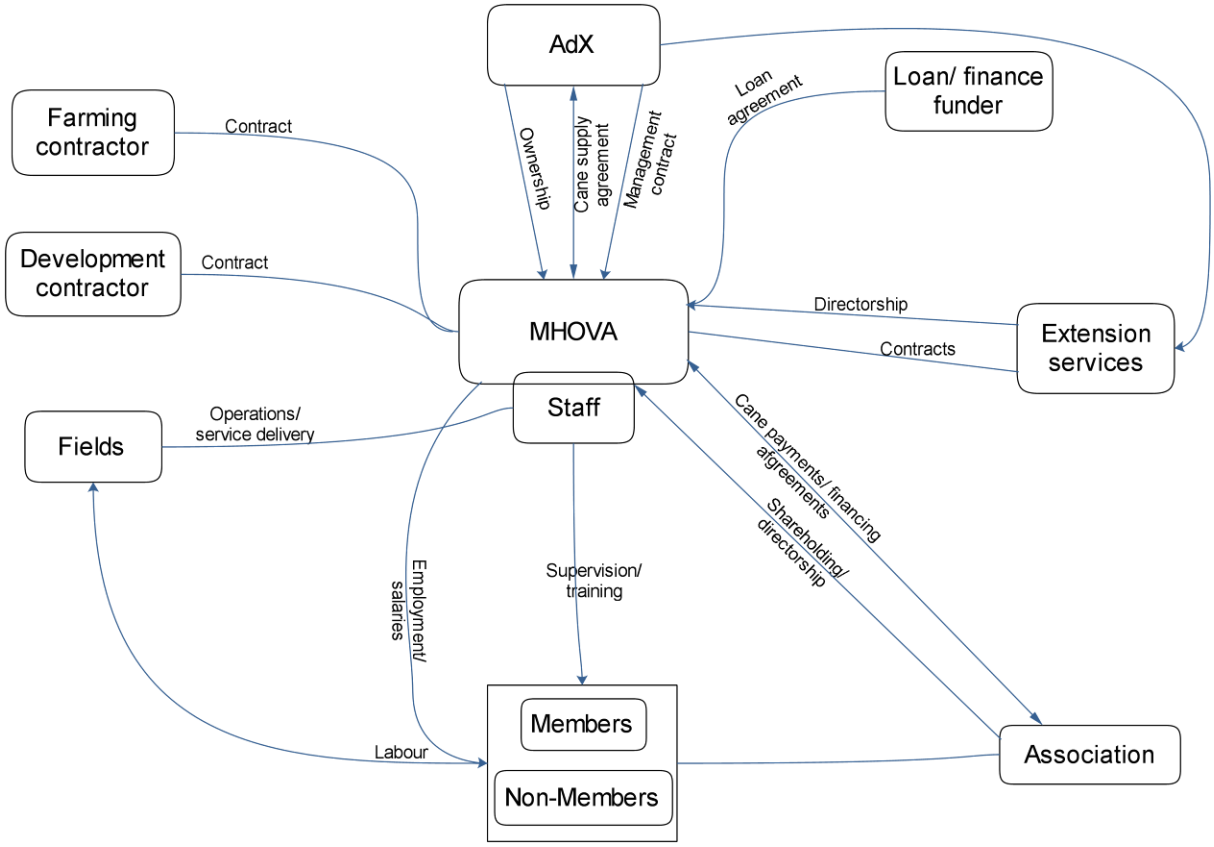

Figure 17: Future smallgrower structure, as proposed by AdX in AdX (2010) (redrawn).

Although the current management relations are different from the proposed situation (Figure 17), this produces very little effect on associations' self-reliance. The figure shows that most resources and assets will be transferred from AdX to MHOVA, a JMC (Joint Management Company) for all phase III associations. All phase III associations will become shareholders in MHOVA, while MHOVA is going to be the single speaking partner of AdX. Therefore all agreements related to cane delivery and production will go through this JMC. Although MHOVA is going to take over these responsibilities, MHOVA and AdX are bound through a management contract and AdX will remain shareholder (20%) in MHOVA too. This means that AdX still retains a high level of control over the production process. Furthermore the SSG outgrower manager indicated that MHOVA is going to replace or take over the current SSG management. This means that MHOVA will, just like SSG/Agricane does now, remain in control of supervising and staffing the labour. Not only will Ostrom's operational rules remain in the hands of AdX, also the rule enforcement in the new setting will never become the association's task. Also the responsibility of employment and salaries will not be handed over the associations, but will become a task for MHOVA. Although associations, represented by their leaders, will be part of this JMC and will be the major shareholders in this company, MHOVA is first and foremost a company-induced initiative. Some association leaders said they've heard rumours about it, but most of them have no idea what MHOVA is going to do and how their association is going to relate to it.

Also it is questionable how associations, although they represent the majority shareholders in MHOVA, are going to represent the interests of their members, while the internal organisation of their own association is still underdeveloped. This could bring in an additional risk of power corruption or misrepresentation, as was described earlier in this chapter. Another risk present is that the introduction of MHOVA will bring in an extra

governance layer between AdX and the assocations, which widens the distance between AdX and the final growers.

It is clear that Ostrom's principles for collective action, the development of three sets of rules, agreed and preferably developed by the members of the association, do not hold at all. Operational rules and enforcement are currently imposed by AdX and Agricane, while decision making rules and constitutional rules were probably government or NGO blueprints, far from being situation- or association-specific. It seems that these latter two were merely a government prerequisite before an association could be legalised. For AdX, the legalisation was just another hurdle that had to be taken to comply with national laws.
Most of the rules and management bodies found in the statutes have no meaning at all in practice, not now and not in the future either, as either AdX or MHOVA (will) prescribe(s) these rules and carries out the tasks that ideally should be the associations' responsibility.
Associations, now and in the future will not have any more meaning than simply the official formation of groups of small landowners willing to cede their lands to a farmers collective. Especially the employment of association supplied labour by AdX to work on their own fields gives the impression that association members have rented out their fields to AdX through the association. Livelihood implications on this will be further discussed in chapter 7.

6.8 An alternative to Ostrom in a Mozambican context

In the remaining part of this chapter I want to propose an alternative concept which does apply and explain the current actor relations as found in the Xinavane outgrowers structure. One element that strongly points in the direction of this alternative is the always recurring presence of uneven power relations, and hence also the manner how the main actors deal with each other and perceive each other. These can be explained by the presence of patron-client mechanisms, which Eisenstadt and Roniger characterise as an informal or not fully legal or contractual vertical relation, based on 'strong elements of inequality and differences in power', involving 'the simultaneous exchange of different kinds of resources' (Eisenstadt & Roniger, 1980). These resources may be instrumental, economic, but also political, primarily in some form of loyalty (i.e. protection, votes, support). Another important element receiving too little attention in Ostrom is land tenure and the entitlements to land. However, in order to further understand these power relations and its underlying cause we must place the development history of Mozambique in its historical context.

6.9 Mozambican power relations through history

During Portuguese occupation (since 1530), communities were under customary reign, where a chieftain was the ruler over a small kingdom and the supreme authority of the collectively owned land resources. At plot level, land allocation and division was done through kinship networks in which women introduced their daughter(s)-in-law to local cultivation practices allowed them to pick and cultivate their own plot (Gengenbach, 1998).

However, social mixing occurred between these traditional systems and *prazos*, large plantations established by the Portuguese and granted to settlers. These settlers were allowed to exploit the *prazos* and the indigenous labour force in return for an annual fee paid to the crown (IIASA, 2001). However, Lisbon's legitimacy was low and alliances (through intermarriage) made with local chiefs became more important. As no export crop was found

yet to produce on their fields, settlers remained dependent on tribute in kind from the local population. In exchange for his own protection, a local man could choose to attach himself to a *prazero* (settler) and become his client (Wrangham, 2004). In this way settlers (the protectors) built up large slave armies to protect their fiefdoms. This system remained in place until the mid-19th century (Encyclopædia Britannica Online, 2012).

In the late 19th century Portugal began to consolidate its presence in Mozambique. However, Portugal's grip on Mozambique was weak and its financial resources were low. While in the north of Mozambique, Portugal shifted the administration of these lands to large companies such as the Niassa, Zambezia and the Mozambique company, who were given concessions to exploit the land and its people (Encyclopædia Britannica Online, 2012), the south of Mozambique has long remained under the rule of Soshangane, the first ruler of the Gaza kingdom and later on his grandchild Ngungunyane. The people of this kingdom originated from the north of Zululand in South Africa, but had to fled the country in the 1820s in order to escape Shaka Zulu's armies. During this escape Soshangane managed to persuade chiefs of nearly 200 tribes to become his vassals, trampling and slaying everybody who refused to cooperate, even the small Portuguese population residing along the Mozambican coast. Finally the Gaza kingdom was established in the 1860s in the lands between present-day Maputo and the Zambezi river. Although the Portuguese wanted to sign a peace treaty Soshangane didn't see the benefits of it, and continued his violent ruling. The Portuguese, together with threatened chiefs and neighbouring Boers, decided to overthrow the Gaza kingdom, in order to strengthen their presence over, what was decided in Europe, their share in African occupation. Only in 1895, the Gaza kingdom fell and Ngungunyane was taken captive to Portugal by a large colonial army (Newitt, 1994).

After that, local chiefs became under direct control of the Portuguese, but were not always the original tribal leaders (West & Kloeck-Jenson, 1999), but were appointed by the Portuguese for their collaborative behaviour. In the Magude area for example, the pre-colonial royal kingdom of the cooperative Magudzu Khosa was carved up in 1900 by the Portuguese into small chieftaincies of Magudzu's descendants in order to gain more control over the local population and its labour force (Gengenbach, 1998). With a system of licensed contract labour, Africans were obliged to do underpaid work in one of the many plantations or in the construction of infrastructure, bringing *chibalo* (forced labour) into a new stage. The Portuguese made a set of conditions that prescribed when Africans were not bound to do this work, but these were impossible to be met. In practice, the District Officer, on request by private companies or the colonial state sent out recruiters to the village to get the necessary number of recruits. In order to ensure this the DO instructed the village chief to cooperate and use force if necessary (Anderson, 1962).

After gaining independence, FRELIMO (*Frente de Libertaçao de Moçambique*) transformed the country into a socialist state, and completely abolished the customary system, arguing that the chiefs did not only collaborate with the Portuguese by imposing taxes and conscripting labour, but also gained personal benefits and power from it . In some instances chiefs were expelled from all socialist benefits and their systems were replaced by new FRELIMO-led administrative posts, who were now in charge of land allocations. It was in this period that many land tenure systems were changed to state farms, which is why one of the communities in Magude goes by the name of Ex Block 4, named after one of these state farms. However, local officials could not completely achieve the elimination of traditional networks and much land was retained and managed through kinship networks (West & Kloeck-Jenson, 1999).

The civil war in the 1980s and early 1990s between FRELIMO and RENAMO (*Resistencia Nacional Moçambicana*) demanded a high price on the rural population and many people fled their lands and homes. Also RENAMO, standing for all that FRELIMO was against and vice versa, tried to re-establish traditional authority to obtain the sympathy of anybody who had been aggrieved by FRELIMO's centralisation policies, but at the same time to further their own interests (West & Kloeck-Jenson, 1999). After peace was signed in 1992, there were large struggles over land that previously belonged to people who had fled the area and now returned to their homelands. Many of these struggles resulted from the traditional land entitlements, but these were never registered. Following these struggles, the new Land Law (*Lei de Terras*) that was introduced in 1997 now explicitly acknowledges land tenure systems through customary rights and traditional authority (Hanchinamani, 2000). As these communities have to give an official explanation of their "representation mechanisms" and leaders, their power has now been legalised. This has allowed chiefs to (partly) restore traditional customs and power structures. It is no coincidence that all community leaders in the associations studied bear the *Khosa*[1] surname and can be considered descendants of Magudzu Khosa, who was under Portuguese control. This further strengthens the idea that also the formation of associations and their management are used as a way to further institutionalise and strengthen these power relations.

Ironically, the protection of these traditional structures in the new 1997 *Lei de Terras* ignores the fact that these chieftaincies came into existence because of colonialism (Gengenbach, 1998). This also questions the meaning of traditional authority, as its structures and leaders, through Mozambican history have been altered and corrupted several times. Hence, the formal recognition of any kind of traditional leadership could lead to a repetition of history (West & Kloeck-Jenson, 1999).

6.10 Patron-client relationships at work in Xinavane

The Xinavane case is no different from this. Here, Tongaat Hulett entered the arena and rehabilitated the estates and mill, and became the largest shareholder of AdX in a short time span. Due to expansion limitations for their own estate and due to policy measures from the government, AdX started to approach local communities (i.e. chiefs) for the cultivation of sugarcane on their lands using an smallholder outgrower structure. The leaders then negotiated with the company about the pieces of land available to them for sugarcane cultivation (Jelsma, 2010). However, all association establishment histories illustrate that in such situations current power relations and information imbalances as well as previously established organisational forms pose risks for strengthening, institutionalising, retaking, or retaining that power. Once approached, the chief starts functioning as a messenger of good tidings from *a empresa* and the communty regards him as a facilitator for development. However nepotism in the selection of members causes some members (through kinship) to benefit, while others cannot, showing the gatekeeping function of a chief for anyone who wants to benefit from this. In a response to this the AdX outgrower project manager said that communities always consist of risk takers and risk avoiders. With this he assumes these

[1] The origin of the name *Khosa* goes back in linguistics, meaning king/ chief in Zulu *(nkosi)*

leaders properly represent their communities and simply reduces these issues to rational economic decisions while ignoring any further internal group dynamics.
From several interviews, both with smallholders as with association leaders, it was found that although elections were held for the leadership of the association leaders, these gatekeepers also became the associations' first presidents: in Macuvulane II and Chihenisse both leaders were unanimously elected.

For the phase III associations, contracts were still not finished, and currently AdX and the associations have an informal cane supply agreement, indicating the lack of transparency in the agreements made with associations. The new management structure in Figure 17 shows that MHOVA will be the final contract partner. After that, the contracts last at least until an association's loan has been paid back, which will last at least 10 years, as long as their yields are high enough. This shows that also proves the informal/ not fully legal agreements and their long-term duration being characteristic for patron-client relationships (Eisenstadt & Roniger, 1980).

Once established, AdX assumes that associations will be capable of carrying out a number of tasks themselves and have some kind of organisation power. This approach is also used by AdX's parent company Tongaat Hulett with smallholders in South Africa. However in Mozambique this assumption seems to conflict with people's local perceptions of AdX: many people in the area still regard *a empresa* as a colonial/ state company which is run by white people (Portuguese, English; now South African) more powerful than they are. To them *a empresa* can provide them employment and a livelihood, while they wait on AdX's instructions and supervision. Unfortunately, this hesitant behaviour is often interpreted by AdX staff as lazy (interview AdX area manager 15-12-10; interview SSG area manager east 29-10-10), giving AdX the impression that making associations responsible for part of the cane growing process was/is too risky for a new project (i.e. phase III) that would further expand its sugarcane production potential. As a result AdX decides to impose estate management on the associations, not only securing production process and standards, but also inputs and (financial) resources, in order to retain control over their investment and to ensure its success. However, this leads to monopolisation of these resources and also a complex and almost inseparable exchange of resources (harvest payments minus all costs). Another consequence of this estate management is that association labour is now employed by the company, and supplied by the association. For some people this *construction* works well, because it does give them that *secure livelihood* by receiving a monthly income. But it also increases their dependency on *a empresa*, who decides about the quantity and the duration of this labour. Having ceded their land to the association, members without any other occupation have become dependent on their association leaders, who divide the payments after harvest. For the labour supply, Macuvulane II forms an exception to this, as they handle the labour requirement for some activities internally, while weeding and irrigation should be taken care of by individual members.

6.11 Conclusion

In my analysis I have shown that Ostrom's rule sets for collective action do not hold for the associations in Xinavane. The associations' statutes, comprising most of the decision-making and constitutional rules are too general in its context and lack specificity to local association context. Even though these are the most important legal document for an association and a government prerequisite for legalisation, it is most likely that the influence of associations

during the process of crafting these documents has been negligible. Furthermore, official government documents show that other non-Xinavane based associations use the same format and layout proving the blueprinting of NGO or government templates.
Also operational rules have not been made by the associations, as AdX has implemented their own estate management set of rules on the associations.
Mozambique's historical context however shows that uneven power relations and the way people respond to them and perceive their own position has been an ever recurring pattern. With Eisenstadt and Roniger's concept of patron-client relationships this past and current behaviour can be explained. In this, traditional leaders have played a pivotal role in the relation between patron (i.e. the (colonial) state, Portuguese settlers or current foreign agri-investors) and client(s) (i.e. local communities), fulfilling a double role of being both a client and patron at the same time.

7 Livelihood strategies

7.1 Introduction

This chapter deals with current and past livelihoods of the members from the Chihenisse, Facasize and Macuvalane II associations. The chapter will start off with two typical stories describing the impact of sugarcane cultivation for two individuals. Then the traditional labour divisions and occupations as were found in the study area will be discussed, comprising gender, labour allocation, and migratory influences. Also typical land tenure characteristics and a description of the typical homestead will be discussed.
Furthermore this chapter tries to give a better understanding of the (individual) motives for becoming involved in sugarcane and the process of joining an association. Building on the first two stories given, the socio-economic impacts of becoming involved in sugarcane cultivation through an association will be outlined, such as spending behaviour, food security and labour allocation. This will finally lead to a conclusion on whether partnerships between AdX and individual smallholders results in improved livelihoods for smallholder farmers. Assessing whether an improvement of a homestead's livelihood was achieved after joining an association proved to be a difficult task, since so many activities people did and do besides growing sugarcane cannot be scaled against each other. Therefore I limit my analysis to strategies adopted by individual members and their perceptions about their past, current and future livelihood. As a statistical summary does not provide a realistic impression of the past and current life of smallholders, I open this chapter with two illustrations of opposing livelihood strategies.

Box 6 and Box 7 both provide real life examples of past and current lives of farmers who are members of the studied communities and joined an association.

Box 6: Facazisse irrigator

Before she joined the association, she was a farmer cultivating 1 ha with dryland vegetables which she sold on the market. She joined the association in 2009 and ceded her 1 ha as a condition to join She has a husband and 5 children, who are all going to school. Her husband worked in South Africa in the mines, but now he's not working. He's the chef of Machabe, which is part of Facazisse. Her husband owns 1 ha of irrigated land, which he also ceded to the association to become member, but he is not employed to work in the association's fields, because he's the chef of the community, a kind of representative.
The woman is now having a job as an irrigator, for which she had to put her name on a list of applicants at the association. She only does irrigation controlling, no other jobs. She works every day, sometimes even on Sunday. She starts at 5:00 in the morning and ends at noon. After she's done she goes home to do domestic work.
....
They've had one harvest, but they haven't received any payments yet. They had this harvest last December (2009), but she's doesn't know how much she's going to receive, because of all the deductions the company makes. Everyone gets paid according to the number of hectares he/she ceded to the association. For the meantime, they're working on all fields. For now, she doesn't know yet how she's going to use these payments.
.....
The woman gets paid monthly, she receives 2,000 Mtc (approx. 74 USD). She thinks this way of making a living is better, because otherwise she had to wait for the rain to grow crops, and now she takes advantage of the irrigation system. In this way she has a more reliable income security from which she can buy food (Facasize woman, interviewed 3-11-2010).

Box 7: Macuvulane II farmer

He ceded 1 ha of his land to the association, where he was growing maize and pumpkins and he pays a yearly fee of 150 Mtc (5,50 USD). He doesn't have any other fields. The reason that he joined was that he didn't have the right machinery to work on his fields: he says his plot was too big for hand hoeing, so the association was an advantage for him. There are also community members who did not join either Macuvalane 1 or 2. The company had a fixed number of members and hectares planned for the outgrower schemes, so not all could join. But the people that failed to qualify didn't get angry; some of them now work for association members who cannot do the job themselves or when additional weeding labour is required. He usually works 8 hours a day, and also on Sunday sometimes (especially when it's harvest). He starts at 7:00 and ends at 16:00...

...

From last harvest he received 18,000 Mtc (USD 665). He's not sure whether he's satisfied or not, at least it's money that he receives now. The cane looks better this year, so he expects that he's going to receive 20-25,000 Mtc (USD 740). Of the money from last harvest he brought 14,000 Mtc to the bank, and he used 4,000 Mtc for food consumption. From the payments this year he's going to build a house. His household has 3 members: he, his wife and they've got a son. His wife doesn't work, and his son is too little to work. Before he started growing cane he was a soldier, and he was also in the RSA working as a carpenter and a welder. Sometimes he was doing other small jobs in the dry season so that he could buy food with these earnings. Life is changing now in a good way, but he thinks 50-60,000 Mtc a year will be enough. Some people in the association already had experience with cane growing because they were working for the company before (6-12-2010).

1 USD = 27 Mtc (Jan. 2012)

7.2 Past livelihoods and current local practices

Xinavane and its surrounding areas has always been characterised by sugarcane cultivation since the establishment of mill and estates in 1911. Currently the Acucareira de Xinavane employs 4,181 permanent and 3,908 seasonal workers (AdX, 2010), bringing the total number of people directly involved in sugarcane activities to over 8,000 on a total of 20,000 inhabitants. Strangely enough very few interviewees already had experience with sugarcane growing when they joined their association.

The majority of South Mozambique is populated by the Shangaan, an ethnic group that originates from South Africa's Zululand, but had to escape the country northward fleeing from Shaka Zulu's armies (Harries, 1981). Traditionally, Shangaan people are agro-pastoralists, who keep cattle for manual tilling while they keep other livestock for their livelihood sustaining needs (Rutazihana, Wanyama, & Bradley, 2006). Nowadays. especially the Magude area (which is part of the study area) is well-known for its cattle production and population, even in Maputo capital. In most interviews people confirmed this by mentioning subsistence agriculture as mainstay of their livelihoods.

As mentioned in chapter 6, Shangaan societies are headed by a patriarch, the *hosi* (chief), who is the principal authority over all the land in his chiefdom. The chief divides his kingdom and land over his sub-chiefs or *tindhuna*, who on his turn further divides the land among the village headmen, the *munumzane*. The *munumzane* is the head of a homestead, a family group that all belong to the same patrilineal as the *munumzane*, consisting of the *munumzane* and his wife or wives and their offspring, his brothers and their married sons. Also other people may be part of the homestead, and it is the responsibility of the *munumzane* to allocate everyone will have enough land for farming purposes, as least for subsistency (Gengenbach, 1998). For my research, I will not use Gengenbach's definition of homestead, as it involves multiple families, but I will refer to homestead as an entity primarily denominated by family members that live in the same house, or belong (through

kinship) and contribute (through labour migration) to the members in that house. As polygamy in this area is frequent, special attention is given to the relation between the head of the homestead (and his land entitlement(s) and his wife/wives.

Although the Shangaan land division and allocation system is patrilienal, historically women are de-facto the caretakers of land, who obtain a piece of land in the community of their husband through bride wealth (Gengenbach, 1998). Over time, a woman derives her status from the amount of land she can physically cultivate. However, it is usually not allowed for women to hold land independently. Men on the other hand are more involved in cattle herding, an occupation also often associated with someone's status: in contrast to women only men reported they were holding a number of cattle or were planning to buy (more) cattle with the money they earned from sugarcane revenues (Comaroff & Comaroff, 1990). However, since the discovery of gold in the Transvaal and the agreements on contract labour between Mozambique and South Africa, many men became involved in seasonal migration working in the mines or (since 1857) in one of Kwazulu Natal's sugar plantations (First, 1983). Therefore many households became female headed, which further strengthened women's position as primary cultivators (Gengenbach, 1998). Especially in the Facazisse association, many households were found to be female headed, and many women interviewed in this association indicated their husband or (one of) their sons was/is working in South Africa. Unfortunately the reasons for coming back to Mozambique are vague, most farmers indicated that returning is "part of life". Possible reasons for their return may have been the better socio-economic conditions in Mozambique (end of civil war, economic revival), while in the past years also the frequency of furlough has been increased to several times a year. This migrant labour still remains a very important source of livelihood for Mozambican families, and therefore Mozambique still remains an important supplier of migrant labour to the SA mines. Others have been serving in the Mozambican army before they joined their association (First, 1983).

If her husband is not involved in this seasonal migration, there also appears to be a division of labour in terms of crops grown: women traditionally grow more vegetable crops and groundnuts, where men primarily grow maize for the production of xima[2], as well as sweet potatoes and pumpkins. A homestead can thus have more than one plot, but they are all under rainfed conditions, limiting most agricultural activities to the rainy season. This starts in late October and lasts until late March: by half November people start planting maize (which is the staple crop in Mozambique) in every strip of land that seems fertile to them. Even strips of soil next to the road and next to the sugarcane that seemed bare land before are then used for growing maize. The size of these plots is in most cases not more than 3 ha, although some farmers said they had more, but I didn't check on the sizes. In the dry season most of them had other occupations such as fishing (in the Incomati river) (especially in Chihenisse), brick making (in Facazisse and Macuvulane) and cattle herding (in Facazisse), as it is hardly possible to cultivate a crop without a reliable source of water.

[2] Xima is Mozambique's staple food: it's made of maize flour stirred with boiled water.

7.3 Motives for joining an association

Most of the farmers who joined the association said they wanted to gain more control over their fields, both financially and physically instead of "waiting for the rain to come"[3]. To some interviewees, the irrigation system is an advantage for farming, because they lacked the capital to purchase the irrigation system themselves. Especially women see rain and drought as God-given things which are hard to control. Gengenbach (1998) also reported women performing certain rituals when rain remained absent. In the 2010 growing season, rainfed yields were very low, due to prolonged drought, while this 2011-2012 season is characterised by the impacts of tropical storm Dando and cyclone Funso, which resulted in the flooding of the Incomati and Limpopo rivers, destroying crops and houses killing at least 6 people (GlobalPost, 2012). Last two seasons' climatic extremes illustrate the high risk of rainfed farming for smallholders. However, taking advantage of irrigation does pose a number consequences for them, such as ceding individual land to a collective and growing a cash crop instead of a staple crop.

However, it was found that the motives individuals gave for joining the association did not fully coincide with the realities associated with it. Theoretically, if every community member holding land would have total freedom of choice, then some people may have decided not join. However, this would have resulted in fragmented fields with isolated rainfed plots in between, not feasible for implementing an irrigation system. Regular sized fields with regular geometry are needed for AdX to keep the development costs low and to make straightforward calculations on the crop. This makes either land consolidation or some form of social pressure inevitable. Since the former did not transpire from my interviewing, I argue that these so-called communal relations have played a vital role in the why-question of joining an association. The previous chapter already described the relation between association/ community leaders and their members, while the following part of this chapter further illustrates influence of communal relations on individuals' livelihood strategies.

7.3.1 Facazisse:

As already mentioned in the previous chapter were the three communities of Facazisse not aware of company interest in their lands (Magude Ex-block 4, Chocotiva and Facazisse) until land preparation machines entered their fields to clear them. The company had, instead of approaching the communities negotiated with district administrator of Magude. The only thing the communities could do was to start an association after all, and check whose fields would be affected by AdX's plans (interview president, 01-11-2010 and secretary Facasize, 08-12-2010). Individual members in Facasize confirmed this by stating they joined because their leaders asked them to cede their lands as the company was interested in them. Some association members also said that people who did not hold land in the area of interest of the company could not join the association, indicating that little internal negotiations were possible.

7.3.2 Chihenisse:

In Chihenisse, the size of the area to be developed was fixed and facilitated the establishment of four centre pivots of 50 ha each. Also the membership size was fixed to 40

[3] This expression was always used when people mentioned rainfed farming as an occupation.

members by the AfDB. However the selection process of beneficiaries was flawed, as the association leader -who is also the community leader- was accused by several members of nepotism, favouring members of his own kin over other members. Shortly after association establishment, 18 additional community members were admitted. However it took a few years before unrest started, as only then differences in wealth began to protrude. At first, people didn't see the benefits of growing cane, but then they noticed association members constructing *brick built* houses and riding new motorbikes. During a meeting of the Chihenisse association, I was informed that 52 non-members were claiming their benefits and wanted to become members as well, because their lands had been taken to become part of the association's fields. The association leaders refused them to join, so the *complainants* demanded that two pivots were to be handed over to them, so they could start their own association instead. A number of these 52 community members work for the association[4], so they still benefit by drawing an income, and their relationship with association members did not appear to be hostile. These workers could tell me they were going to become a member of Chihenisse II, but none of them could indicate when this would happen and who its leaders would be. Also following a written summary of these events composed by the association (assembly) management, the people within this group are reported to be internally divided and also consisted of old people incapable of doing any sugarcane related activities. It is most likely that this group of people were headed by opportunistic stragglers. However in contrast to the situation of Macuvulane I and Macuvulane II where the latter had to be established to prevent financial confusions with the former (resp. grant vs loan), there seems to be no financial reason in Chihenisse for splitting the association in to two. It is possible that patron-client relations within the community have caused the refusal of the association leaders to let these 52 join. In that case, these "internally divided" people (i.e. the clients) were not allowed to join by the community leader(s) (i.e. patron) as they had never belonged to the group that followed their Cossa patron before, while their rebellious behaviour also didn't show any signs of loyalty towards the patron. As a result of this unrest, even members within the association indicated that they were not satisfied with the situation and the choices made by their leaders.

7.3.3 Macuvulane II:

Macuvulane II appears to be a somewhat different story, because this association started after they saw the impact of cane production for AdX on the livelihoods of members of Macuvalane I. People that were interested in growing sugarcane for AdX could write his name on a list. The future association leader used this list to negotiate with the company

However also here not all remaining members from the community could join, as the company had a fixed size in mind. From Figure 18 it appears that most land that the community owned through a land concession done by the church mission had already been allocated for Macuvulane I. The remaining part of that minus the populated areas in between was then used for Macuvulane II

[4] The division between association workers and non-association workers was around 60% - 40%.

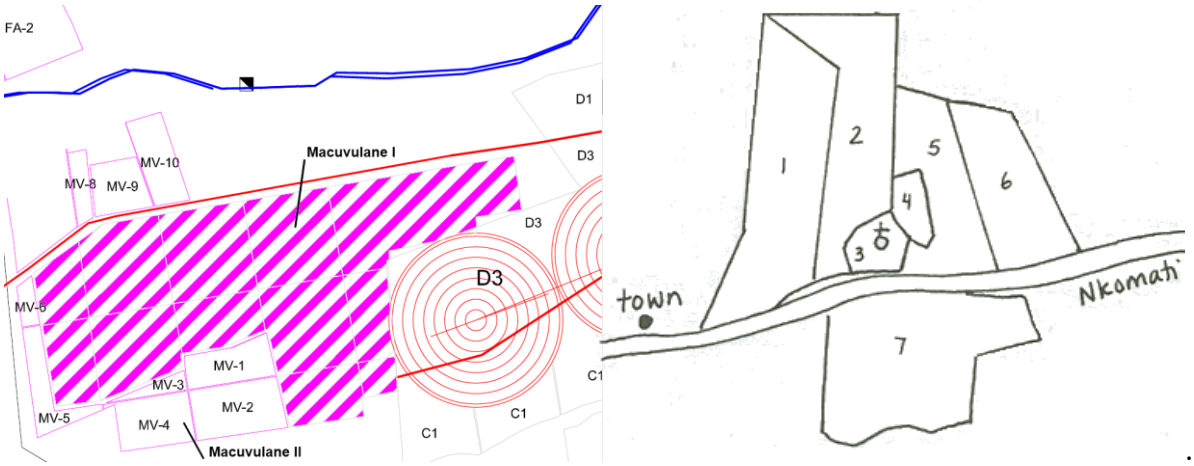

Figure 18: (L) Macuvulane I (hatched pink) & II pink) fields (AdX, 2010) (edited); R: Magude land concessions (Gengenbach, 1998). No. 7 is the Macuvulane land concession that was given to the church; no. 4 is Bloco 4.

As a result, the fields' geometry of Macuvulane II, as compared to other associations (see Figure 19) look different from the rest: they are highly irregular and have differing field sizes, which may indicate that the process of negotiation and representation was done better here. Also the fact that fields are fragmented and are situated on both sides of the main road points in this direction. This could be the result of a learning process, however newer association schemes still have standardised fields of approximately 18 ha each. As some of these schemes were developed in areas which were covered with savannah vegetation (short trees and bushes), there appeared to be no need to negotiate on whose land was to be ceded.

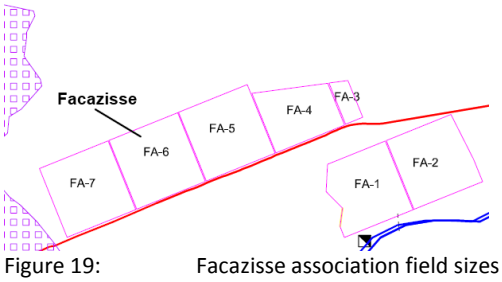

Figure 19: Facazisse association field sizes and geometry ((AdX, 2010) (edited)

In all three associations studied, the association president/ community leader has a high status. In Chihenisse, some people kneeled down for him, while in Facazisse and Macuvulane II people spoke of their leader as the single authority who makes the decisions, instead of the section managers, who are regarded as boys without authority. Although their opinions do not reflect reality (as it is the section manager who makes most of the operational decisions), they do reflect individuals' power distance to their leaders.

The final element that influenced individuals' decision for association membership was the limited number of members that were allowed by either the government or the NGO. In Chihenisse the maximum of members was defined by SSIP/ government, but most of them appeared to be men, although we concluded from Gengenbach's work that most of the fields ceded to the association must have been held by women. In the area however, polygamy does still occur frequently, which may explain why either the Chihenisse leaders or SSIP project workers have decided that only the head of a homestead is allowed to become association member. As a result, the women's unwritten authority over land has become a male business, but still most people found in the field remained women. In Facazisse, a

similar case was observed, although this area was more subject to seasonal male migration, relatively raising the number of women in that association. However the association said it had around 290 members, but according to Gwevhane this number was too high, and had to be brought down. Now the association is officially registered with 96 members, also indicating transferable property rights going from women to men.

7.4 Current livelihoods

With the exception of the Macuvalane (I and II) and Maguigane associations, AdX has taken over most of the management tasks that come with the growing of sugarcane. This means that now AdX also decides about the amount of labour that is required. Based on the experiences with other associations AdX has decided to employ members of the associations on their own fields. In this way people will have the advantage of receiving a monthly salary on top of their annual payments, while a positivist may also argue that a salary can work as an incentive to stimulate association members to learn how to grow sugarcane. The costs for these salaries are then deducted afterwards, just before the effectuation of annual cane payments.

Depending on the size of the association, the irrigation technology used and the management efficiency, the section manager, through his area manager informs the directive board of the association how much labour he needs to fulfil a certain job. Then the directive board informs the association members about the labour requirements and makes a list on which people can apply for the job. In case the number of applicants on the list is insufficient the directive board has to find other people in the community. In most cases the list will then be filled up with people who are closely related to association members, for example family members, especially when the members themselves are too old or too busy with other occupations. If not enough, community members from outside the association are asked to work.

To give an example on the labour requirements, according to their section manager currently around 35 employees work in the Facazisse association, each employee fulfilling one task. As the intensity of activities varies throughout the growing season this number may vary proportionally. This is especially the case for the number of weeders, who fulfil other tasks such as planting[5] as well. For their own task also the presence of weeds varies strongly. Therefore contracts durations for these jobs are shorter (3 months) than those for irrigators and pump operators who all have a one year contract with AdX.

Payments are done by AdX at the end of the month. According to the agricultural administrative manager they receive the same salaries as estate workers, since they are doing the same work, and are employed by the same company (AdX). Also no distinction is made according to experience or age, but salaries differ between activities. A weeder earns 1,800 Mtc/month (€ 40), while a pump operator earns about 3,000 Mtc/month. Although in theory everyone can apply for any job, I observed a clear gender division between the different activities being performed: weeding was mainly done by women, while pump operators, irrigators and herbicide sprayers were mostly men. The payments of association guards appears to to be a bit shady, as they are paid by the association instead of by AdX, a

[5] During planting activities in Chihenisse there were over 30 people involved in dragging, lining and cutting of seedcane. Normal weeding intensity is around 8-10 weeders per day.

similar construction also used by the association employed labour in Macuvulane II. Guards are hired to prevent theft of equipment or cane and to prevent strangers or cattle from entering their fields. None of them actually had a contract with either AdX or the association, a thing which made some of them anxious about their income certainty.
Table 7 gives an overview of monthly payments and contract durations:

Table 7: AdX/SSG employee monthly income and contract duration

Function	**Salary (Mtc/month)**	**Contract length (month)**
Weeder	1800	3
Irrigator	2500-2800	12
Pump operator	3000	12
Chemical applicator	n/a	6
Guard	2800	n/a
Section manager	4000	12

According to the field manager of the small growers, all work (except for irrigation and pump operation) is task-based, which means that every day an activity with a given *extent* has to be finished within the labour shift, which is about 7-8 hours, starting at 5:00. Most of the labourers will then be finished between noon and 14:00, depending on the time reserved and the time they start. Due to high temperatures in the afternoon no labour intensive activities are done in the summer. Irrigators however are an exception to this, they do have an afternoon shift, but employees alternated weekly between working the morning and afternoon shift. When an employee finishes early, he still gets paid according to the 7-8 hours scheduled. If he takes longer than planned, he only receives overtime from the section manager if there's a legitimate reason for the delay. Although this may seem like a nice construction to promote a hard working ethos to incentivise finishing earlier, the reality is different. It often occurs that people leave earlier when they have other tasks to fulfil. Also, in the case when the association fields are far away from employees' homesteads, people leave the fields as soon as the transport comes to pick them up. Even though this can be considered mal-performance of employees, Mozambican labour law makes it very difficult to punish this opportunistic behaviour, and supervision by section managers is weak (interview Cees Baars, 15-12-10 and Ges Bester, 29-10-10). The only way of disciplining labour is by not extending the contract of malperformers at the end of its term. Transport however is not an issue in the associations studied where farmer's homesteads are at walking distance from the fields. Yet, the results of weak supervision were noticed – fields were often deserted in the afternoon after the section manager had finished working, even though people had to irrigate.

7.5 Stimulating members to work

While in Chihenisse the division between members and non-members is about 60/40 on a labour reserve of 60 workers on a total of 40 members, in Facasize the share of employed non-association members is much higher. One of the Facazisse executive board members could not give a reason for the low involvement in his association. He thinks that people don't want to work, because they consider the working conditions to be too harsh. Some may consider themselves too old, while others are just too busy with other activities. However, he is worried about the period when the three years of management takeover are finished. For associations this presents a big problem, because in the three years that their members are supposed to familiarise themselves with growing cane, they refuse.

Two important aspects may have played a role in Facazisse's low involvement of members in labour activities. First, the Facazisse association has a relatively high member count not only in comparison with other associations, but also in relation to their total field size and related labour requirement. Of the 290 members, only 35 are required by AdX to do the work on the fields, of which the majority is female. With so many members, but such a small labour requirement, members will not feel stimulated to work on their fields, as there are enough others who can also do it. This is in contrast to Chihenisse, where a shortage of labour was found. Second, its location, contrary to other associations is directly bordering Magude town and a main road, giving members relatively more opportunities for other livelihood strategies than other associations. The community of Chihenisse however is isolated, giving people fewer livelihood options. A final reason for Chihenisse's higher involvement is probably the higher control by the government on this association, but also the extra -though limited- support they have received from KULIMA. Most of the people interviewed also considered the work and the trainings they received from the section manager and trainers as positive and as an advantage to them. Also the CEOs of this association indicated that in these three years they will be taught by the section and area manager how to grow cane. In Facazisse however, their respect to the section manager is very low.

In Facazisse, there is a risk that the plots members have ceded to the association are simply becoming another asset (i.e. a milch cow) from which they can derive money at the end of every season, while proceeding with other occupations from which labour investments will directly pay off.

7.6 Macuvulane (I & II) exception

In the case of Macuvalane II, the above described impact on *labour allocation* does not apply. Here, as earlier mentioned in chapter 5, every farmer is supposed to perform weeding and irrigation activities himself, which implies that he has a bit more flexibility in planning his labour. Especially when labour intensity in parts of the season is low, people make optimal use of this. One lady indicated that she sometimes goes to South Africa for some days to buy cloths to sell them here when she returns. If it turns out that a specific tasks needs to be carried out, she can ask her neighbour to do it for her instead of coming back to do it herself. She explained this labour exchange as a matter of doing each other a favour: when her neighbour is gone, she would do the same thing for her as well.

The area manager from the eastern section explained that for certain activities Macuvalane II members sometimes hired extra labour from inside the community, copying the modus operandi of their fellow members who are in Macuvulane I. After repeated discussions with the area manager, the association has decided that activities such as herbicide and fertiliser application will be carried out association wide. As the association employs and pays this labour directly, they have full regained control over the result. In the case of mal-performance or prolonged absence the association can easily dismiss an employee, whereas otherwise they were dependent on AdX's decision who are bound to national labour law. In this way the association has also gained more control over their labour spending in relation to the results produced.

7.7 Livelihood strategies since sugarcane involvement

All the smallholders interviewed mentioned that ceding a piece of land to the association was the basic requirement for becoming a member of the association. This means that a plot that was previously used for food production is now used for growing a cash crop, which provides the farmer with a different income situation, namely a seasonal payment of cash. However, a considerable portion of Chihenisse and Facazisse members (i.e. AdX employed) have compensated their loss of food production by becoming AdX employed labour on the association's fields. For them sugarcane growing has become a fulltime occupation, and also a mainstay source of income. They are quite satisfied with their new livelihoods, as they now have a more reliable source of income with which they can buy food while also having a yearly payment. While the salaries earned with employment on the outgrower scheme are mainly used for daily expenditures increasing the degree of food security experienced, the money from seasonal sugarcane payments is only scarcely used to secure food consumption. While the salaries earned with employment on the outgrower scheme are mainly used for daily expenditures increasing the degree of food security experienced, the money from seasonal sugarcane payments is only scarcely used to secure food consumption. However there is another group of people who could not become employed for the association, but I expect that this group will be very small for the three associations studied since both associations had to employ a considerable part of their labour from outside the association.

In addition to this, a substantial number of interviewees, especially in Chihenisse and Macuvulane II also undertake other activities when they finish working, although these are mainly limited to subsistence agriculture (during the rainy season) and domestic work.

They did not cede all their land to the association, but kept a (small) part of their land property for staple/ food crop cultivation. This behaviour can be seen as a risk aversion strategy for when cane payments turn out to be lower than expected. Especially in Macuvulane II and Facazisse people weren't certain about the height of the seasonal payments. This fear appears not be unfounded: in Macuvulane cane payments turned out to be low, while smallholders are supposed to allocate relatively most of their own labour to sugarcane cultivation. The production of food still is one of their primary concerns, which may explain why they did not cede all their lands.

7.8 Revenues from sugarcane harvest

As already mentioned in chapter 5, payments to the association from sugarcane revenues will be based on the Division of Proceeds (DoP), which means that 60% of the total sugar sales will go to the smallholder (planter) and 40% is for AdX (miller). Individual smallholders indicated that they only receive one payment, of which it is unclear how much they are going to receive. Most farmers said that they have no clue of how much they're going to receive, because of the difficulty to understand the payment system and all the deductions that are going to be made. Individual estimations by smallholders of payments varied between 7,000 Mtc and 18,000 Mtc per ha, while some members of Chihenisse said they even received more, most likely because Chihenisse's costs in the first year were also paid by the government/ AfDB. In brief, the following factors influence the height of the payments made to individual smallholders:

- ERC (Economic Recoverable Crystal) rate (eq. to tons sugar/tons sugarcane) (i.e. quality)
- Tons/ha harvested (yield)

- The domestic and preferential markets' sugar prices
- Interest rate on the loan (or no loan at all)
- Management fee (4% in the case of partial takeover or 7% for full takeover)
- Individual labour or collective labour
- Whether Agricane/ SSG capitalised on labour or machinery
- Inputs used
- Plot size ceded by individual members

All these factors together make it very difficult for individuals nor association management to make an estimate of the height of the payments to be made to them. Not only the height of payments appears to be a mystery to farmers, also the time of payments is not always the same. Although the AdX financial manager states that the time between harvest and payment should be no longer than 3 months, this seemed to vary somewhat. For Chihenisse and Macuvulane II, it took more than half a year, while for Facazisse there were already rumours of payments after 4 months. For a farmer who is completely dependent on sugarcane revenues to sustain his livelihood, there is no other option than to wait and see or to find himself an alternative source of income.

7.9 Sugarcane revenue spendings

To assess the success of a partnership like the one between AdX and smallholder outgrowers associations, it is also essential to analyse its financial impact on the life of an individual smallholder and his/her household. For example, revenues generated from sugarcane activities could contribute to the whole household, but also to just the individual. As the timing and the height of the payments after the harvest are very uncertain, farmers consider them as something extra on top of their normal income and activities. Some of them have pinned really high hopes on their payments, which allows them to start working on projects that otherwise could not be started. Some examples of this concern people that started building a new house, either for themselves or for one of their relatives. Especially in Chihenisse and Macuvalane 2, I observed many new brick houses or houses that were under construction. As most houses in rural Mozambique are made up of reed, mud and some masonry, this is an investment that contributes to the well being of the whole homestead. Other long term investments mentioned are the purchase of a car or a motorbike, although these are also status related and do not necessarily contribute to the well-being of everyone in the homestead. On the other hand, transportation also opens up the door for more job opportunities and income generating activities.

Another typical strategy is that people don't spend their earnings yet, but put (part of) the money on the bank to create a financial buffer for when times are worse. The other half is then used to buy food and/or clothes. Combinations of these two main strategies are also used.

7.10 Conclusion

Originally, the local Shangaan communities living in the Xinavane area are known for their strong gendered division of labour and occupation. Traditionally, men are mainly involved in cattle herding and seasonal migrant labour in South Africa, while women relied on dryland cultivation in the rainy season. This division of labour also had a large influence on land entitlements: although men are officially entitled to the land through networks of kinship,

women are de-facto the caretakers, a status-quo enhanced by the absence of men when doing migrant labour, for example in the mines of South Africa. With the introduction of sugarcane outgrower cultivation, these labour divisions were drastically changed. With the establishment of the associations and the selection process of members, only the head of the homestead was allowed to become an official member. Due to this labour division and the presence of polygamy in the area, it is most likely that much land that was transferred to an association belonged to women, but became in the hands of men, being now legally entitled to it. However the decision for joining the association must not be seen as an individual decision based on rationality, but more as the result of complex communal relationships in which decisions are made by its leaders who negotiated with the company about the area of interest.

Upon joining the association, many members only (could) cede(d) part of their plots when they were having more than one, while retaining another plot which was reserved for food production. This livelihood strategy is used to buffer the uncertainty on the height of cane revenues: when these turn out to be lower than expected, a smallholder is still able to sustain in part of his food production/ security. In this way they have moderated their dependency on the company.

When assessing the influence of sugarcane cultivation on the individual farmer and his/her homestead, a clear deadlock is slowly emerging. On the one hand there is clear separation of spending behaviour noticeable between monthly income and seasonal cane revenues for smallholders who applied for a job as AdX employed worker on the associations' fields. Here monthly salaries are used for food and recurring costs and seem to compensate the loss of arable land for food production, while sugarcane revenues are mainly used for long term investments or as financial buffers. Sometimes these are also used for the purchase of luxury articles such as motorbikes and cars, a typical answer given by male members. It is these members who both work and earn a salary who are most satisfied with their new livelihood: instead of being dependent on rain fed agriculture they now have a reliable source of income and a seasonal cane payment. On the other hand there is the strategy of smallholders who -due to this estate type of management- do not feel obliged to work and choose to retain most of their previous livelihood portfolio. This negatively influences the efforts and dedication to sugarcane cultivation and has reduced a smallholder’s ceded fields to nothing more than a milking cow from which they can seasonally withdraw money. This is also one of the concerns of the association leaders, as the company is anticipated to pull back its presence in the associations and then these people will have to do it on their own.

8 Conclusion and discussion

8.1 Conclusion

Sugarcane developments in Mozambique have experienced a strong revival since the slump in the mid-1980s. The main reasons for this were a favourable investment climate created by the Mozambican government to attract foreign investment, and a set of trade agreements especially targeted to benefit LDC's. Also the country's agricultural potential, its abundant water availability for irrigation, good soils and a large labour reserve able to provide cheap labour caused South African and Mauritian investors to overhaul 4 existing sugar estates and mills. After a vertical integration approach by fully rehabilitating the mills and expanding the estates to 16,000 ha of irrigated sugarcane, the Açucareira de Xinavane has now the largest production output of the country. An extra stimulus that may have further accelerated these developments are the decline of agricultural subsidies in Europe, leading to a declining sugar production in the EU and therefore to export opportunities for low production-cost countries such as Mozambique. Furthermore, the EU policy on sustainable biofuel production, which creates a separate assured market for bioethanol (which can also be made from sugarcane) has put a more long term future stimulus on these developments.

With the inclusion of smallholders producing sugarcane on a contract farming basis, the Açucareira de Xinavane has found a way to supplement its own production, and as a result has also implicitly obtained access to nearby situated communal land and water. Since the completion of the Xinavane Smallscale Grower Development Project, which is referred to as the third phase project, there are 17 farmer associations growing irrigated sugarcane on 2,091 ha. Contrary to the first smallholder outgrower projects that had a clear development approach and were funded by development banks, this third phase project is a company investment implemented through a business oriented approach. Smallholders are indebted through a loan that has to be paid back within 10 years for the establishment of their cane fields. This minimum (financial) risk approach adapted is first and foremost reflected by the company's preliminary investment done while still seeking to meet EC/EIB's conditions for grant funding of smallholder inclusion. When these are met, AdX is then not only relieved of part of their investment debts, but can also profit from higher EU sugar export prices. Second, AdX's business oriented approach is also reflected by the AdX management structure and grower method imposed on the smallholder associations as well as AdX's shareholding of nearly 30% in the grower company constructed. Based on the negative experience AdX had with the phase I and II associations AdX has decided to implement a type of management and standards which are more in line with its own estate management.

However, as AdX is too busy with the expansions of their own estate, they have given the EPCM contractor Agricane the responsibility of the smallholder developments and management. Agricane thus has to manage the smallholders on behalf of AdX, and has to fit into its management hierarchy. For daily practices the section and area manager play a vital role in implementing this type of management. While the former is mainly responsible for labour supervision and training, the latter has to coordinate and facilitate the implementation of the cane growing schedule. Contrary to the old associations where association members are individually responsible for irrigation and weeding activities, in the newly established associations AdX has employed labour teams consisting of association members and others perform the tasks. In this way AdX hopes to better secure their cane supply to the mill and hopes to ensure that loans are being repaid. Although AdX states that

they are still in a process of experimenting with the setup of a proper management structure, the Agricane field manager states that labour performance still is a large problem. It is clear that AdX doesn't have a proper idea of what works yet, but their implementation of own standards and structure suggests that they are limiting their experiments by staying on the safe side (by doing what they know best). One striking characteristic of this company control over the production process is the increasing use of machinery and the use of chemicals, although there is a large labour reserve available in the associations. The increased mechanisation in the associations must be seen as yet another company strategy to avert production risks by reducing the need for labour, which -to them- is perceived to be unreliable.

However Agricane/SSG and with them the associations are facing difficulties during every day production practices which results in conflicts: machinery and external services and inputs are not available in time causing delays and crop damage or failure. Also associations have to be managed by insufficient and/or under skilled section managers, though associations cannot bear influence on neither selection nor performance evaluation of these managers.

A first reason for these conflicts is pointed out by Agricane who states that the formation of the supra-association MHOVA is the main cause for this shortcoming. MHOVA has yet to be fully established, and until then AdX administers all MHOVA's (i.e. the associations) resources (machinery, inputs, salaries, proceeds, management staff, employees, loans, operational costs). However Agricane and not AdX is currently primarily responsible for daily management practices in the associations, but most of the resources necessary for these practices bypass Agricane and flow directly between AdX and the associations.

A second reason explaining current interactions are the different interests and motives of AdX, Agricane and the associations that conflict with each other.

The delay and prioritisation on machinery, planting, staff and harvesting show that AdX is currently too busy with its own expansions and prioritises on its own estates. AdX has contracted Agricane to establish and manage the smallholders on their behalf. The daily management practices show that Agricane is not given a free rein, but has to comply with and fit into the estate structure and standards. However, the interactions and conflicts described illustrate that this estate style of management does not always seem to work for the associations. There are a number of reasons for that.

1. In the estate, standards and structure are optimised for large scale production, which means economies of scale are applied wherever possible. Examples of this are the focus on use of machinery instead of labour to optimise production efficiencies. However, in the associations, there is a labour surplus, and in fact, a shortage on capital. Moreover, Agricane is not allowed to purchase any machinery for the associations, and has to use/rent these from AdX and gets second priority causing delays and operational damage.

2. AdX has standardised most (if not all) production processes in their estate. Here, the assumption is made that all estate fields are the same and thus can be managed the same. The question is whether a company can treat association land as if it was a single section of an estate. It seems preposterous to treat a smallholder scheme that consists of a group of people and their fields as another piece of arable land that comes with a labour reserve of passive employees following orders. Rather they are active individuals and groups having

their own interests and who have taken an enormous financial risk. What may work in one association may not always work for all the associations.

3. Large companies, due to lower social cohesion and the large number of employees need a large overhead and a large administration to prevent misuse/fraud. In the case of AdX, but also for the smallholders, there are 3-5 layers between executive management and decision making. Although smallholder outgrowers have a personal interest in the performance of their fields and could operate at better cost efficiencies through family farming, AdX's emphasis on tight production control has achieved the a less efficient labour productivity. In other words, the company does not make use of this smallholder inclination in the present management modus. Furthermore, AdX's management structure is weakened by the lack of qualified staff that can occupy the positions necessary to maintain this control.

Agricane currently finds itself in a difficult position, because they have to satisfy their customer (AdX), but have to maintain a good relationship with their end-users (i.e. the associations) as well. Although executive SSG staff cannot be dismissed by an association, Agricane will have to take the interests and wishes of an association into account when taking any decisions. In Macuvulane (I and II) for example, Agricane wanted to improve the labour performance, but is bound to the rules and standards of AdX, which were resisted by these associations. Another example is the replacement of a section manager from Colo to another association after increased discontent in the association about his lack of attendance and his incapability to manage. Another important issue that hampers their operability is the reality of being treated as equal in the estate management, but having a lack of resources (machinery and skilled personnel) to operate fully functional as if associations were the estate.

The associations' interests seem to vary per association. Their primary goal is defending the interests of their members, but currently their functioning is limited, because executive management is now done by Agricane/SSG. Especially in cases of labour management, this contrast leads to conflicts, because it is the association and its members that own the fields, but it is Agricane who manages it and who manages the labour, which are also members. One of the interests the associations can defend is the height of their net payments. In Macuvulane II, they concluded that their payments could be much higher when they would cut on expenses and reduce deductions. This conflicts with the company's interests of standardisation and large scale production. Some associations have a hesitant attitude towards AdX and Agricane and do what is been asked. Other associations do already have more experiences with AdX. This is either due to experience sharing with neighbouring associations or due to their own experience with the company, in which they found out they had to step up to defend their interests.

Although all main actors involved in the production process of smallholder sugarcane cultivation have their own interests and motives, we can conclude that AdX, in all situations found, has an overriding interest and retains control in order to synchronise all activities in tune with the mill's capacity and harvest planning. This interest regularly clashes and even contradicts any attempts in making associations become independent. Rather associations are used as a buffer to compensate fluctuations in the estate's cane production or to supplement them and to maintain or optimise the mill's crushing capacity. This also explains why associations receive a lower priority than estate production. Unfortunately associations have become completely dependent on AdX for their resources and are now captive. Also Agricane is affected by this, as they need these resources as well to properly perform the

necessary tasks. But also they are, both in the resources needed as in the implementation of practices, dependent on AdX, who retains control over them.

The origins of the three associations studied all seem to differ, but they do share the similarity of uneven power relations between community leaders vis-à-vis their community members, resulting in nepotism, *gatekeeping* and power struggles by current power actors. However it was found that communities which already had experience with collective farming or communities that were isolated from nearby socio-economic activities have a higher degree of commitment to sugarcane farming than others. Also suspicions of company land grabbing and power struggles over the leadership of an association consisting of multiple communities seem to negatively influence smallholder commitment.

In an analysis to test the associations' ability to organise themselves with the use of Ostrom's principles of crafting institutions for collective action, it was found that these do not hold for the associations in Xinavane. The associations' constitutions and bylaws, comprising most of the decision-making and constitutional rules are too general in its context and lack specificity to local association context. Even though these constitute the most important legal documents for an association and a government prerequisite for legalisation, it is most likely that the influence of associations during the process of crafting these documents has been negligible. Furthermore, official government documents show that other non-Xinavane based associations use the same format and layout proving the blueprinting of NGO or government templates. Although these formal documents prescribe certain practices for internal management, decision making and conflict resolution, current informal practices show that these prescriptions only hold on paper, and were rather a prerequisites for the legalisation of associations, enabling them to engage in loan agreements, which is a key interest of the company. Also operational rules have not been made by the associations, as AdX has implemented their own estate management set of rules on the associations.

Mozambique's historical context however shows that uneven power relations within communities and between communities and outside "interveners" and their resulting behaviour have been an ever recurring pattern. Every time such an intervener who is perceived to have more power enters the scene, Mozambicans have responded by rallying around their leaders who could not only represent and protect them, but were also able to collaborate with the intervener. These leaders then brought in the goods or provided protection for anyone who owed their allegiance to them. The leaders, on their turn also became dependent on the more powerful intervener for their protection and the power they were assigned.

Now that Tongaat Hulett, as an outside (South African) intervener has entered the Xinavane area and engages with smallholders, smallholders' behaviour follows that same pattern. Traditional leaders are approached by the company and are regarded by the communities as facilitators for *desenvolvimento*, development supplied from outside actors that comes in a package of western technology (e.g. tractors, irrigation). If this package is to reach individuals, it has to go through these leaders. Hence, people sign up to the association, although they become heavily indebted and lose their individual entitlement to their field. When an association is established, these same leaders on their turn are officially

acknowledged by their legal status as association representatives. This past and present behaviour within associations and between associations vis-à-vis the company can only be explained with Eisenstadt and Roniger's concept of patron-client relationships, in which traditional leaders play a pivotal role in the relation between patron (i.e. the (colonial) state, Portuguese settlers or current foreign agri-investors) and client(s) (i.e. local communities), fulfilling a double role of being both a client and patron at the same time.

In the study area, traditionally women are the *de-facto* landowners and cultivators while men were mainly involved in cattle herding and seasonal labour migration to South Africa. For many association members interviewed this was indeed the case: most of them were having plots ranging between 0.5 and 3 ha on which they cultivated a number of food crops in the rainy season, while engaging in other occupations such as fishing, brick baking or cattle herding in the dry period. The decision for joining the association must not be seen as an individual decision based on rationality, but more as the result of complex communal relationships in which decisions are made by its leaders who negotiated with the company about the area of interest. Also the government, funders and NGOs have played a role in the selection process of members, limiting the maximum number of members to the heads of the homestead, which resulted in intra-household property transfers (i.e. land tenure) from women to men. When members joined or were asked to join the association, many of them only ceded part of their plots when they had more, while retaining the other for food production. This risk aversion strategy is a way to buffer the uncertainty of cane payments: when these turn out to be lower than expected, people can still sustain in (part of) their food production. In this way they can moderate their degree of dependency on the company.

When assessing the influence of sugarcane cultivation on the livelihoods of individual smallholders, a clear deadlock is slowly emerging. On the one hand there is clear separation of spending behaviour noticeable between monthly income and seasonal cane revenues for smallholders who applied for a job as AdX employed worker on the associations' fields: while salaries are used for food and recurring costs, sugarcane revenues are mainly used for long term investments, as financial buffers, but also for the purchase of luxury articles such as motorbikes and cars. It is these members who are most satisfied with their new livelihood: instead of being dependent on rain fed agriculture they now have a reliable source of income and a seasonal cane payment. On the other hand there is the strategy of smallholders who -due to this estate type of management- do not feel obliged to work and choose to retain most of their previous livelihood portfolio. This negatively influences the efforts and dedication to sugarcane cultivation and has reduced a smallholder's ceded fields to nothing more than a milking cow from which they can seasonally withdraw money.

Unfortunately, very few members are aware of the magnitude of their financial commitment they have made to the company and how much has to be repaid every year. Instead, they only see the height of the payments at the end of the year, which, when found to be too low, negatively influences their efforts in and commitment to cane cultivation. However if this also negatively influences cane production in an association, smallholders will be left with highly indebted, and in the worst case associations even have to cede their lands to the company.

8.2 Discussion – Is Xinavane representative for the region?

Typical for case studies is the remaining question of whether the findings and main conclusions drawn from these studies are applicable to other locations/ situations as well.

For this case study a similar question can and must be asked, since Xinavane is first of all part of a larger region where sugarcane cultivation and smallholder inclusion are widespread. Especially South Africa and Swaziland have extensive experience with sugarcane cultivation, but also with (development) projects to include smallholders in commercial cultivation and irrigation. A second reason for the applicability testing is the high amount of shareholding of South African agro-processors in this whole area, including Xinavane (Tongaat Hulett is a 88% shareholder in AdX). Therefore, the Xinavane situation will be compared with two large cane growing areas in South Africa and Swaziland, respectively.

8.2.1 Nkomazi Irrigation Expansion Project (NIEP) – Mpumalanga, South Africa

During Apartheid, only white farmers could benefit from water resources and therefore commercial irrigated farming in the Nkomazi area was primarily reserved for them. After the abolishment of apartheid, new policies from the ANC government have caused large black resettlements and a more equitable division of land and water resources throughout the country. Large land reforms have been induced that will finally lead to a 30% transfer of agricultural land to black ownership in 2014. The Nkomazi Irrigation Expansion Package (NIEP) was such a government initiated project to promote small scale sugarcane farming for black farmers, generating employment and expertise among them and let them escape the poverty trap. The NIEP was primarily government funded with an initial budget of ZAR 180 million (eq. USD 23.4 million), of which bulk infrastructure (e.g. pipelines, perimeter fences, canals, roads and bush clearing services) was supplied and installed. Irrigation infrastructure was funded by a provincial development cooperation. Smallholders, when they wanted to join were obliged to pay back a loan of 20,000 ZAR/ha. Loans are repaid through deductions that are made after harvest. Also they can apply for a retention fund that was deployed by TSB, in order to spread their sugarcane revenues more evenly in monthly payments, which allowed smallholders to procure inputs through year better.

Currently 1500 smallholder firms with an average farm size of 7 ha are benefiting from this project and supply sugarcane to one of the three sugar mills of Mpumalanga, which are owned and operated by TSB sugar (formerly known as Transvaal Suiker Beperk). TSB sees the smallholder projects as an important supplement (22% of all cane is now supplied by smallholders) to their current cane supply, of which the bulk (60%) is delivered by commercial (mostly white) farmers, owning plotsizes of 150 ha+, and a number of TSB estates (18% of the total supply) (Ten Napel, 2009). In order to regulate supply, smallholders are given a supply quota, prescribing them how much cane they have to deliver. This in combination with the restriction of not growing any other crops than sugarcane on their plot for a period of 10 years constitutes a farmer's contract with TSB.

As the government wanted to have as many people to benefit, they encouraged individual ownership. This was put into practice by dividing the irrigation system into blocks of 6-9 ha, of which demarcations are clearly visible. Individual smallholders, as a result, have a great deal of ownership in the management of their plots. Although they are dependent through the irrigation scheme of which they were part of (schemes were on average 250 ha), they are supposed to perform all growing activities themselves; except for harvesting and haulage, which are provided for through contractors. Also most of them are member of farmer associations, but these do not have direct influence on farmers' plots through collective farming; the farmer is (supposed to become) "boss on his own field".

As most farmers in the area were unfamiliar with neither irrigation, nor commercial farming nor sugarcane, extension services are provided through TSB and SASEX, a department of

SASA (South African Sugar Association). Extension services comprise free technical support, advice and training from TSB (Movik, 2012).
Although several sources have heralded the NIEP as a success, large problems have been found here too. One of them is the inability for farmers to pay back their loans, as their yields are dropping while the input costs have increased. Reasons for this drop were the lack of farming knowledge people had and the amount of work they have to put into.
Currently smallholdings' yields in the NIEP differ widely, but show average yields of 68 tonnes/ha, but the breakeven point lies around 81 tonnes/ha (Ten Napel, 2009).
Another issue was the flawed selection process of farmers. Similar to Mozambique, chiefs were made responsible to appoint sugarcane plots to farmers. However these chiefs mainly favoured close kin and relatives over others . In this way the project was used by the seven tribal authorities in the Nkomazi area to recognise or reinforce its power structures in the community. The same applies for the gender relations: although the NIEP should specifically promote the role of women, it was found that the de-facto decision-makers and controllers were their husbands, sons or fathers in law (Movik, 2012).

8.2.2 Vuvulane Irrigated Farms (VIF) and Usunthu Smallholder Irrigation Project - Swaziland

In Swaziland UNCTAD (2000) describes a similar modality under which the Swazi smallholder system works. In Swaziland, a similar land tenure system to that in South Africa is used, of which a large portion of land is Swazi Nation Land (SNL) that is ruled by chiefs, as delegated authority of the Swazi king. Since the 1960's the national government has been involved in the development of irrigated agriculture schemes in order to stimulate economic development for the rural poor. Especially sugarcane has been used as crop for these schemes as it is regarded the nations' most valuable export crop. With the funding from the Commonwealth Development Corporation (CDC) the Vuvulane Irrigated Farms were established which led to 264 new smallholdings with farm sizes between 3 and 7 ha (Sifundza & Ntuli, 2001). CDC later transferred ownership over the scheme to the Swazi government, but remained in place as managers.
Atkins & Dlamini (1999) report that for the Usunthu Smallholder Irrigation Project, also growers are subject to delivery quotas, which are specified by the weight of the sucrose extracted from the cane. The miller has to accept all cane up to the agreed quota. When the grower delivers more than agreed, a lower price is paid for the surplus. This instrument of cane quotation is used to ensure the restriction of national sugar production in order to maintain sales at satisfactory prices and to spread production capacity evenly over the farmers (Masuku, Kirsten, Van Rooyen, & Perret, 2003). Both systems described demand a high rate of self-sufficiency from the smallholders with a few exceptions for certain operations that are too costly to perform them individually (e.g. land preparations, harvesting and ripening). Similar to the Nkomazi area, no estate management is imposed, but extension services are provided by the government, the Swaziland Sugar Association (SSA) and the millers to support and train the smallholders. However, Masuku et al. (2003) states that the millers still have a strong estate-approach in their trainings, which relies on a high input/ high output paradigm, and lack the commitment to this new orientation of small scale farming.

8.2.3 Differences with Xinavane

Both cases show that most differences between them and Xinavane occur in the operational practices of the developed schemes. However, these differences can be traced back to the single underlying motive of the development of these schemes.

First, both situations show a greater amount of self responsibility for the smallholdings. As the schemes were not designed for collective farming, the farmer himself is the sole responsible for his actions and decisions. With the exception of irrigation rotation and a number of services that are necessary to perform them scheme wide, such as harvesting, ripening and land preparations, he is not dependent on what other farmers do in his scheme. This means that differences in management practices can become more apparent. This also eliminates the risks for rent seeking which are present in collectively operated schemes, such as in Xinavane. Here it was found that members choose not to work, while still holding land and receiving an income. In the associations where individual members cultivate their own plot, this risk is still present as cane harvesting, testing and payments are still done association wide. When a smallholder chooses not to perform his tasks on time, the results (i.e. yields and payments) are shared by the whole association.

Second, unlike the estate management practices in Xinavane, here smallholdings are free to make their own decisions about weeding, irrigation and chemical applications. Although the miller has a clear interest in a farmer's production level, they employ fewer means to control this productivity. The reason for that may be the funding modality of these projects in South Africa and Swaziland. In these countries, many of these projects (and specifically the NIEP and VIF) were government or development corporation funded, and had a stronger focus on poverty alleviation while the phase III associations were found to have a clear business orientation. In other words, no company investment was involved or had to be recovered in the former while the latter was exclusively funded by the company. The choice of production modality (outsourcing or vertical integration) therefore seems to reflect the interest of the milling company involved. Instead, a relatively large support base is present in both countries in the form of overarching unions/ associations, such as the SASA and SSA organisations that are (still) absent in Mozambique.

8.2.4 Similarities with Xinavane

However the situation as found in Xinavane does also have clear similarities with South African and Swazi projects. Same as in Xinavane, land allocation in the NIEP and VIF was done through tribal authorities who have used these projects to further their own interests and to reinforce their own power in the communities. Gender issues are present here as well: although most women are formally registered as the owner of a farm, it is the men who make the final decisions. A second issue also found in the Swaziland and South African projects is the effects sugarcane cultivation has on livelihoods: due to the relatively long term contracts a farmer has with the miller, he is locked into sugarcane at least for the duration of his contract, a similar effect also observed in Xinavane, especially when smallholders farm their plots individually: his main occupation and time spending will be with sugarcane cultivation practices and has to keep producing to repay his loan. In the Xinavane case, the only option a smallholder has is to leave the association, however then his land will be lost.

9 Recommendations

One of the main constraints in making recommendations for the smallholder outgrower situation in Xinavane is the fact that all phase III associations have been integrated into AdX's management hierarchy. As this is due to AdX's own company investment and would like to retain as much control as possible over their investment return and repayment, they are unwilling to break down this structure. Also it seems unrealistic for a national government like that of Mozambique to take over this investment as a condition for management handover and decentralisation, since the investment done may be too high to bear. However there are a number of chances and possibilities to optimise the cane growing activities, association management and livelihood security within the current structure. These recommendations will be listed and sorted below by the specific actor they are aimed at.

Agricane, as intermediary between associations and company can introduce and promote the concept of association employed labour as was found and applied in Macuvulane I and II. Although there has been a struggle between Agricane and the association with respect to labour performance, Agricane field staff acknowledges that individual plot labour can work if supplemented with association employed labour for certain activities that should be done association wide. By handing over this responsibility to associations, they have gained more control over the labour and the costs associated with it, and do no longer depend on AdX employed labour.

Another issue that could be solved is the acceleration of machinery procurement and own field staff. However, the formation of a legal overarching organisation (i.e. MHOVA) might still be required to administer these, but -as AdX also seems to be having difficulties with scaling up their machinery fleet- they could be brought under the administration of AdX, but remain dedicated/ reserved for association use.

Another option to overcome the purchase and administration of machinery by a legally recognised organisation is by giving associations insights into the costs for the use and purchasing costs of machinery and comparing these with manual labour, of which they have a surplus to provide. This immediately would cut down deductions and raise their net revenues, an effect which is felt immediately (within one year) in their pockets. AdX/Agricane could also introduce a construction in which they let associations themselves purchase their own machinery.

As Agricane is currently responsible for the daily management practices, but acknowledges that it's also partly their task to teach the associations how to cultivate sugarcane, Agricane should more actively involve and train the executive management of the associations, as these people are going to be primarily responsible for the planning and organisation of cane growing activities in their association. This could also be done by starting handing over a number of tasks from the section managers to the executive management board, lifting some of their burden. In the existing management structure, these people should then become (block) supervisors, instructed and trained by section managers. In this way section managers' tasks will slowly go from monitoring to providing extension services.

For AdX, it would be advisable to provide associations with monthly cost overviews, so that associations (especially the fiscal board) will become familiar with the resource flows necessary for sugarcane production. In this way, associations (like in the Macuvulane case) will realise that cutting on expenditures will result in higher revenues, especially for the use of labour, machinery and, to a smaller extent, also chemicals (herbicides).

The dedication of part of the machinery fleet to the associations as mentioned above will also result in fewer conflicts and delays, which will increase cane yields and quality, thereby increasing the seasonal revenues as well. It was found that smallholders will become and will remain more involved when cane proceeds are high, which contributes to the success of their project. However, in order to implement these measures and the ones as described above for Agricane, AdX will have to deviate somewhat from their estate style management control. Especially the labour control by employing labour teams may better be changed to the promotion of family labour or having the labour organised, but also the cane testing organised per field (i.e. 18 ha).

Gwevhane, being currently the only NGO active in the field should become more involved in strengthening associations' internal organisation, and provide literacy, administration and bookkeeping and leadership trainings to the associations. It is however unclear whether they have the capacities for that, but this should be possible given the amount of funding they have received from multilateral donors (i.e. EU and WB). In order to get a better understanding on what has been done so far and what has worked, Gwevhane can consult KULIMA and ORAM for evaluations on the association assistance they have provided.

Furthermore Gwevhane could intensify their meetings with association leaders, and organise them on a regular basis, providing associations a platform where they can address and discuss their problems and conflicts they have with the company.

CEPAGRI, being the agricultural promotion centre of Mozambique and a key actor in the facilitation of sugarcane developments in the country, the institute could draft policies for streamlining and optimising smallholder inclusion in these developments. First, for the development of new schemes it is preferable that these will not compete or replace land where crops were cultivated for food production, as sugarcane may then compete with food security. This will also prevent issues with respect to land consolidation and the selection of members to an association.

However, if this is not possible, land consolidation between members in a community is inevitable in order to overcome plot contributions too small to be able to return a significant contribution to individuals' livelihoods. Land consolidation also reduces the risk that a large portion of the labour surplus of the association remains uninvolved in cane production. By increasing the number of ha per smallholder, the labour surplus will be smaller and members' seasonal revenues will be higher.

Second, the local government should be given a larger role in the establishment of new associations in order to counteract and prevent future conflicts related to land and water rights and entitlements, exclusion of community members with little agency (due to nepotism).

Finally, following up on the support smallholder receive in neighbouring countries as South Africa and Swaziland, the establishment of a cane growers association initiated by CEPAGRI and/or the Ministry of Agriculture and Fisheries can further support smallholder associations and provide extension services on a more independent basis. This overarching association can help associations with choosing and optimising their own management practices, providing them with alternatives to estate style management and control.

For the EIB/EU, it has become clear that the presence of smallholder institutions and legal frameworks are insufficient to create strong management organisations. In order to prevent

weak associations taking place in a company induced supra-association, association boards should be given more training and -if necessary- should stay on function for a longer term, allowing them to grow in their function and to pass on these skills when a new board is elected.

However, with the limitations described at the start of this thesis, there are still some elements on which further research is needed in order to increase understanding of the social relations between company and associations and internal association dynamics. Although their structure and relations have been deconstructed to some degree by the researcher, they still appear to be black boxes: even Gwevhane doesn't want to burn its hands on internal association affairs (Jelsma, 2010). More research is needed on the power relations within a community and how these relate to an association as an entity within it. Also it is unclear what resources are exactly exchanged between members and leaders. Cane revenues are received by association members through their leaders, but what are the (softer) elements returned in this exchange and how have they come about? Also it may be interesting to see what influence a change of association leaders has on internal association dynamics and the exchanges of resources between patron(s) and clients. Finally, it would be interesting to further unpack the black box of association boards and gain insight into how these board members relate to each other, what are the power differences between them, and whether board members are all individual patrons or are also clients of one central patron.

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Appendix 1 List of interviews with key persons

Interviewee	Organisation/function	Date(s)
Mr. Sancho Cumbi	AdX – Project manager	14-10-10
		20-10-10
Michael Mapisane	AdX – administrative manager agric. department	30-11-10
Mr. Tony Ferronha	AdX – financial manager	07-12-10
Mr. Cees Baars	AdX – area manager Timanguene	15-12-10
Mr. Ges Bester	Agricane – SSG field manager	22-10-10
		29-10-10
Mr. Adriano Fejao	Agricane – SSG area manager east	29-10-10
		14-12-10
Mr. Benias	Agricane – SSG area manager west	03-12-10
Mr. Pedro	Agricane – SSG section manager Facazisse	25-11-10
Mr. João	Agricane – SSG section manager Chihenisse	27-10-10
		26-11-10
		02-12-10
Mr. Efraim Cossa	association president Macuvulane II	22-10-10
Mr. Fernando	association accountant Macuvulane II	03-12-10
		09-12-10
Mr. Paolo Cossa	association president Facazisse	01-11-10
Mr. Ali	secretary of exec. board Facazisse	08-12-10
Mr. Augustinho Cossa	association president Chihenisse	25-10-10
Mr. Silva Cossa	president exec. board Chihenisse	27-10-10
		26-11-10
Mr. Daniel	president of fiscal board Chihenisse	10-12-10
Mr. Boane	association leader Maguigane	26-10-10
Mr. Felix Wangla	Gwevhane – financial manager	11-10-10
Mr. Olivio Catela	Gwevhane – director	12-10-10
Mr. Ricardo	NholucoGoM extension officer Manhiça (Chihenisse)	21-10-10
Association meeting	Chihenisse	05-11-10
Work meeting	AdX & Agricane area & field managers	29-10-10
Work meeting	AdX & Agricane area & field managers	03-12-10

Appendix 2 Interview blueprint

In this research, interviewing supplemented with making observations is used as the primary form of data collection. This was usually done by interviewing individuals, although some group interviews (done in group meetings) were also performed.
The research questions as formulated in chapter 1 were translated into the following objectives, which formed the basis of the topic list to be discussed with the interviewees.

Objectives:

Q: What is the status quo of the sugarcane outgrower activities in the Xinavane area and what are the institutional arrangement made?

O: Gain understanding of:
AdX's past experiences with smallholders;
Past institutional arrangements: cane payment rules, extension services provided, funding modalities (loan, grant, deductions), cane production practices, institutional capacity building;
The factors/ aspects influencing AdX's assessment of smallholderoutgrower schemes;
Company motives and incentives for starting a large company induced project
Selection process of beneficials and agricultural land;
Associations' motives and interests for joining this project;
Process of association establishment: selection and negotiation with communities selection of members, modi operandi (max number of members, field size/ member, irrigation system used);
Current institutional arrangements: cane payment rules, extension services provided..... etc.

Q: How is sugarcane cultivated in the Xinavane area?

O: Gain understanding of:
Production (management) practices/ modalities of planting, weeding, irrigating, chemical application, harvesting and haulage, payments (how)
The actors involved during these practices (who)
The resources/ inputs necessary for these practices (machinery, labour, water, electricity etc.)
Differences in these practices between associations
Differences in these practices between associations and the estate

Q: What are the underlying reasons for conflicts between associations and the company and how do they relate to control or dependency over production practices and resources?

O: Gain understanding of:
The way AdX assists in/controls the production process of sugarcane in the associations (who is involved, what do they do, how do they do it);
The manifestation(s) of struggles over this production process between the actors:
Location of these struggles, resources at stake, actors involved/ excluded, the way these struggles are solved, the winner/ loser;
Differences between conflicts and their solutions between different associations

The influence of the production practice modalities on conflicts and company/ association behaviour.
The reasons why conflicts/ struggles are solved in a certain way;

Q: How are Ostrom's principles for institutional design implemented in the associations and what influence does the association's resulting social capital have on its relations with the company?

O: To gain understanding of:
The different rulesets in place: constitutional, decision-making and operational rules)
The process/ development of these rule sets;
The influence of different actors (GoM, NGOs, association leaders, AdX, members) on the development of these rulesets;
The differences between formal rules (on paper) and current practices in the associations;

Q: How does sugarcane contract farming in associations in Xinavane influence the livelihood strategies of smallholders?

O: To gain understanding of:
Typical livelihoods of smallholders in the Xinavane area;
The gendered division of labour;
The contribution of agriculture (cattle vs. crop production) to smallholders' livelihoods vis-à-vis other livelihood options (time/labour allocation vs. income generation);
The reasons for individual members for joining an association and becoming involved in smallholder sugarcane production;
The current impact of smallholder outgrower sugarcane cultivation on a farmer's:
- Labour allocation;
- Income generation;
- Food security;
- Spending behaviour;

The current opinion of association members on their changed livelihoods.

For this research, several populations had to be studied in order to give an answer to the research questions, of which the most important were AdX, the associations and Agricane. Most of these populations were expected to consist of subgroups.

AdX

As AdX is a large agroprocessing and -producing company, its core activities and probably also its structure will be organised around these two businesses. Moreover, the smallholder projects are not directly owned by AdX, therefore it is expected that there will be also a separation between estate management and smallholder (project) management. It is obvious that I will focus on interviewing people from the latter subgroup, although I will try to interview people from the estate and possibly from the milling company as well.
A final note to these subgroups is the presence of a company hierarchy within these subgroups. For example, field staff interviewees will most likely answer questions differently than project managers.

Within this population, I will look for AdX representatives able to inform me on smallholder inclusion practices (which are considered/ assumed factual information), but also their opinion will be asked on their experiences with smallholder outgrower inclusion. I suppose most of these people will be easily accessible, as AdX will grant me permission to do this research and has allowed me (with some delay) to access the research area. It is however possible that some of these people are very busy, and scheduling an appointment could be difficult.

Associations

In this research 3 associations are studied. These associations are expexted to consist of one (or several association) boards and their members. Also within this last group it is expected that there will be different sub-groups, with respect to, among others age, field size ceded, gender, their opinion on sugarcane contracted farming and their relation with leaders.

Within this/ these population(s), I am especially interested in the internal dynamics within the associations, both with respect to daily practices as in internal organisation, which is why I will focus on the more odd cases and will try to see for outliers, both in practices as in people, as only then I hope to get a better grip on these dynamics, both internal between members as well as between members and leaders, and leaders and AdX. Another aspect that directly relates to this population is the livelihood strategies individuals pursue and what influence sugarcane contract farming has on them. This aspect will also have a focus on odds, although it would be nice if a relative division of members between different strategies could be drawn up at the end. However, the use of a questionnaire would be more appropriate here.

Some of these people will probably more difficult to approach or to make an appointment with, as not all of them are always in the field and not all of them have a cellphone. I these sitauation I will just have to get into the fields and find my interviewees manually. Furthermore, I will use a telephone list made by Jelsma which provides a number of association leaders. I will use these as a starting point.

Agricane

Following Jelsma (2010), Agricane is expected to be the primary actor on the field giving assistence to the associations and their members in how to produce sugarcane. Until the start of the research it was unknown to assess Agricane's position and the presence of sug-groups in this company.

Appendix 3 Interview guide

AdX keypersons

Project manager AdX smallholders
Financial manager AdX
Administrative manager AdX estate
Other general/managerial/administrative staff
Area manager AdX estate
Section manager AdX estate
Other estate field staff

Interview topics

Function, background
Activities for AdX
Involvement with smallholder outgrowers
Experiences with earlier done smallholder outgrower projects
Motives for smallholder inclusion
Institutional arrangements made with phase I & II associations vs. phase III associations
Process of association establishment phase III: time, actors involved, community selection process, negotiations AdX vs community representatives, criteria for associations, strategies pursued to convince communities, outcome → arrangements
Reason for small average plotsizes (<2 ha)
Reason for large differences in relative plotsizes (wide spectrum of options)
Contracts made between company and association

Organisation of and production modalities in associations
Differences in production modalities between associations
Differences in production modalities between associations and company estate
Association complaints and issues: subject of complainance/ conflict, actors involved, solution to these conflicts, result of the solution (behaviour, satisfaction, costs etc.)

Process of payments
Difference between yearly and monthly payments/salaries
Costs and deductions and periodic overviews
Additional costs
Force majeur – responsibilities
Actors involved in payments (connection between them)
Actors involved in administration (connection between them)
Loan repayment by smallholder (associations) – ownership of the system
Awareness loan repayment
Influence harvests on loan repayment
External (EU/EIB funding)
Yield overview associations
Credit provision

Cane production process in estates: planting, irrigating, weeding, chemical application, ripening, harvest and haulage, cane testing, cane yields

Labour management: monitoring and supervision
Relation between different levels of field staff and differences between them
User of machinery
Current issues – how are they solved
Sugarcane productivity: during production and after harvesting

Constraints in setting up MHOVA
Reasons for establishing a supra-association
Future activities of MHOVA
Association and company representation within MHOVA
Association influence on MHOVA
Implications of MHOVA on current management practices and company smallholder relations
Current MHOVA developments

Agricane key persons

Agricane project manager(s)
Trainers and extension workers
SSG area managers
SSG section managers
SSG field manager
Others

Interview topics

Function, background;
Activities for Agricane;
Agricane company profile;
Involvement with smallholder outgrowers (establishment of association, production, cane fields establishment, legalisation, training (production practices/institutional), technical support;
Reason for being contracted by AdX for managing smallgrowers;
Involvement in what ways;
Reason/ motives of AdX for smallholder inclusion;
Recruitment of staff (arrange field, section and area managers who organise and supervise the activities that need to be performed in the fields);
Relation between different levels of field staff and differences between them;

Cane production process in associations: planting, irrigating, weeding, chemical application, ripening, harvest and haulage, cane testing, cane yields;
Actors involved in production process;
Sugarcane productivity: during production and after harvesting;
Explaination for differences in cane productivity between estate-smallholders and between associations;
Labour management: monitoring and supervision;
Labour teams vs. individual labour
Recruitment of labour;
Use of machinery;

Management of phase I and II associations

Relation with association boards/ individual members, associations' response to management takeover by Agricane;
Conflicts: machinery/ irrigation system breakdowns, delays, labour management, payments;
Current issues – how are they solved;
Learning progression of the associations – 3 year contract, indications of self management;
Relation Agricane with other actors assisting the associations – overlap;
Assessment and estimation of smallholder selfreliance
Motives for experimenting with different production modalities (irrigation system, plot sizes, number of members etc.);

Association key persons and members

Association president
Association vice president
" " treasurer
Executive board members
Members

Interview topics
Association establishment (who/who not, when, how, requirements)
Requirement for membership of the association
Land consolidation/ expropriation
Land entitlement (change) – division men/women
Composition of boards and leaders
Election/selection of leaders
Daily cane growing practices
Labour employment/ selection (work obligation)
Conflict resolution with AdX/ Agricane staff
Training by AdX/ Agricane (frequency, duration, how)
Training/ extension services by NGOs (idem)
Labour supervision by association/Agricane/AdX
Individual labour vs. labour teams
Labour division AdX/Agricane vs. association
Influence on cane growing process

Homestead characteristics (no. of members, age, gender)
Labour occupation(s) expressed in income/assets/activities (dry vs. wet period difference, contract labour etc., field size(s), livestock count, crops grown)
Previous livelihoods
Requirement for joining association (payment, cede land)
Implications sugarcane contract farming on livelihoods (labour allocation, income/earnings, food security)
Job employment in sugarcane cultivation
Assessment of new livelihoods (perceived)
Payments/ salaries (height, when, by who)

Meetings (frequency, topics discussed, influence of members/leaders, membership presence)
Decision power (voting system)
Subgroups of members (elders, living outside the community, factions)
Leadership (board member) elections
Description of activities of individual board members

(Local) government/ NGO key persons

Gwevhane representative
ORAM representative
KULIMA representative
Xinavane municipality representative
Magude municipality representative
CEPAGRI/ Ministry of Agriculture and Fisheries

Interview topics
Background/ profession
Smallholder outgrower sugarcane involvement (how, who, what, how long)
Involvement local government in association establishment
Assistance provided to associations
Contact with AdX
Cooperation/overlap/conflicts between different actors
Extension work contracts
Legalisation of associations