

HUMBOLDT-UNIVERSITÄT ZU BERLIN



SLE Publication Series – S 242

SLE – Postgraduate Studies on International Cooperation

Study commissioned by Deutsche Gesellschaft für Technische
Zusammenarbeit (GTZ) and Kreditanstalt für Wiederaufbau (KfW)
Entwicklungsbank

The Small-Scale Irrigation Farming Sector in the Communal Areas of Northern Namibia – An Assessment of Constraints and Potential.

Markus Fiebiger (Team Leader), Sohal Behmanesh, Mareike Dreuße,
Nils Huhn, Simone Schnabel, Anna Katharina Weber

In cooperation with the Polytechnic of Namibia: Gomiz Diez, Latoya
Hamutenya, Sergius Kanyangela, Linda Kaufilua

Windhoek/Berlin, December 2010



SLE Publication Series S 242

Editor Humboldt Universität zu Berlin
SLE Postgraduate Studies on International
Cooperation

Hessische Straße 1-2
10115 Berlin
PHONE: 0049-30-2093 6900
FAX: 0049-30-2093 6904
sle@agrar.hu-berlin.de
www.sle-berlin.de

Editorial Dr. Karin Fiege, SLE

Print Zerbe Druck & Werbung
Planckstr. 11
16537 Grünheide

Distribution SLE
Hessische Str. 1-2
10115 Berlin

1. Edition 2010 1-200

Copyright 2010 by SLE

ISSN 1433-4585

ISBN 3-936602-46-8

Photos Top left: Irrigation farmers in Omusati
Top right: Etunda Green Scheme
Bottom left: Tomato production
Bottom right: Cabbage production in Omusati
(all made by team)

Foreword

SLE Postgraduate Studies on International Cooperation at the Humboldt Universität zu Berlin has trained young professionals in the field of international development cooperation for more than 45 years.

Three-month consulting projects conducted on behalf of German and international cooperation organisations form part of the one-year postgraduate course. In multidisciplinary teams, young professionals carry out studies on innovative future-oriented topics, and act as consultants. Including diverse local actors in the process is of great importance here. The outputs of this “applied research” are an immediate contribution to the solving of development problems.

Throughout the years, SLE has carried out over a hundred consulting projects in more than ninety countries, and regularly published the results in this series.

In 2010, SLE teams completed studies in Bangladesh, in the Dominican Republic, in Sierra Leone and in Namibia.

The present study was commissioned and co-financed by GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit GmbH) and Kreditanstalt für Wiederaufbau - KfW Entwicklungsbank.

Prof. Dr. Dr. Frank Ellmer
Dean
Faculty of Agriculture and Horticulture

Carola Jacobi-Sambou
Director
SLE

Acknowledgements

First and foremost we wish to thank the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH and the Kreditanstalt für Wiederaufbau (KfW-Entwicklungsbank) in particular Elisabeth van den Akker (GTZ Senior Planning Officer) and Ralph Kadel (KfW Senior Project Manager), for initiating and commissioning this study. Special thanks to Lydia von Krosigk (Project Manager, Sector Division Agriculture and Natural Resources KfW Namibia), Frank Gschwender (Advisor, Natural Resource Management and Land Reform, GTZ Namibia) and Christian Graefen (Sector Coordinator, Natural Resource Management, GTZ Namibia). We are very grateful for your logistical support, your technical advice and greatly appreciate your collegiality and sincere interest in the study's success.

We owe all interviewees a huge debt of gratitude, especially the numerous farmers in the Omusati and Kavango Regions. Their openness, cooperation and patience have been vital for our project. We hope that our work will be beneficial for them.

Many thanks also to the Polytechnic of Namibia, in particular to Lameck Mwewa (Dean, Faculty of Natural Resources and Tourism) for supporting the study right from the conceptualization phase and to our Polytechnic student research counterparts – Edmund Gomis, Latoa Hamutenya, Sergius N.L. Kanyangela and Linda Kaufulua – who worked with us during field research. Their input, translations and analysis were indispensable, as was the introduction they gave us to the people and culture of the Kavango and Omusati Regions.

”Dankeschön” to Peter Lenhard (Manager of Development Projects) and Chris Brock (Chief Executive Officer) from the Namibian Agronomic Board who acted as our institutional counterparts in Namibia and showed great interest in our study, providing valuable input and many important contacts.

Further gratitude is due to all our Namibian colleagues and friends, especially the entire staff at the GTZ office in Windhoek as well as John Mendelsohn, Silvanus Ngango, Raffael Kampanza and Johan le Riche for offering essential support in many different ways.

Last but not least, many thanks to Carola Jacobi-Sambou and the scientific staff at Postgraduate Studies in International Cooperation (SLE) – in particular Anja Kühn – for their advice, professional support and critical input. In addition we wish to express our appreciation to the SLE administrative staff and thank our 15 colleagues, who have been working elsewhere on other topics, for their friendship and moral support.

Nda Pendula! – Tangi Unene! – Baie Dankie! – Thank you very much! –
Dankeschön!

Executive summary

The emergence of small-scale irrigation farming in northern Namibia

Namibia is a semi-arid country in which 70% of its two million inhabitants depend on agriculture. Traditionally, forms of agriculture are subsistence-oriented and comprise livestock keeping, in the North combined with rain-fed staple crop production. This report deals with the recent development of small-scale irrigation farming (SSIF) and production of Horticultural Fresh Products (HFP) in the communal areas of the Kavango and Omusati Regions in the North of the country. Developments in irrigation farming on the one hand take place on a private level, where farmers take up mainly vegetable production on various scales. Farming ranges from bucket-irrigated micro-plots in river plains to mechanized drip irrigation production on plots sized up to 13ha. On the other hand, the Government of Namibia (GRN) promotes the production of HFP in the context of subsidized outgrower programs, producing with the help of a commercial service provider on so called Green Schemes.

Aim and context of the study

The German development agencies GTZ and KfW commissioned the study in order to fill an information gap on SSIF in northern Namibia and the current development in the production of HFP. Apart from describing the sector, the focus of interest was on the identification of its crucial potential and constraints. The acquired information should also serve as an identification and decision basis for potential future interventions by the agencies and other Namibian stakeholders.

Limitations of the study

The study does not assess capacities of natural resources like soil and water for an ecologically sound production of HFP. However, considering the risks of intensified irrigation production in a semi-arid environment, we advise to conduct a proceeding in-depth study of ecological capacities for decision-making. It should analyze possible negative impacts like pollution, salinization and erosion. Aspects of possible social impacts in the utilization of limited natural resources like potential conflicts between different forms of water use as well as potentially conflicting transboundary water interests are also not included in the assessment, but are advised to be taken into account when planning further activities.

Conceptual approach and methods applied

In order to examine the situation of the sector holistically and taking into account implicit hypotheses, the research team established four main fields of research (FoR), which approach the topic from different angles:

- FoR 1 – Policies and institutions: How do policies and institutions as well as their implementation influence small-scale irrigation farming?
- FoR 2 – Markets: What is the current market situation for HFP and how are SSI farmers positioned in the market?
- FoR 3 – Farm units and farmers: How do farm units operate and what are production patterns? What are livelihood strategies of small-scale irrigation farmers?
- FoR 4 – Synthesis: What are main constraints and potential of SSIF and what could be future fields of intervention for German Development Cooperation (DC) within the SSIF sector?

The methodological approach to answer the implicit questions of the FoRs was mainly composed of qualitative methods, complemented by some quantitative calculations and extrapolations. Methods applied for data collection comprised document analysis, semi-structured interviews and structured questionnaires, key informant interviews and Participatory Rural Appraisal workshops. Information was gathered on different levels and included the SSI farmers' level, regional as well as national level. A systemic analysis was applied as the analytical tool to identify crucial entry points for interventions.

Profiles of the study regions

The regions Omusati and Kavango are situated in a semi-arid to arid tropical climatic zone and are characterized by erratic rainfalls. The examined areas distinguish themselves from neighboring ones by the existence of perennial water bodies. The Kavango River is the water source for irrigation in the eastern communal areas, while farmers in Omusati derive their water from the Olushandja Dam and the Calueque-Oshakati Canal which are supplied by the Kunene River in Angola. Living conditions and livelihoods in both regions are mainly rural, however Omusati has a conglomerate of towns, while in Kavango Rundu is the only urban center.

Political & institutional framework

The GRN main objectives in the agricultural sector aim at reducing poverty and income inequalities by creating viable livelihood opportunities for the rural population and at achieving an ensured food security as well as sovereignty by the promotion of national agricultural production. The legacy of colonial and South African rule is still visible in the country's structures, especially regarding living standards and land tenure. The northern areas, formerly demarcated for indigenous people and still spatially delimited by the 'red line', are state-owned communal land and distinguished from commercially available, tradable land in other areas of the country. With regard

to agricultural production, Namibia still strongly depends on imports from the former mandate power South Africa, which is an anathema to the GRN. Hence, in addition to job creation and income generation, the reduction of imports is another underlying goal of existing policies.

The current (third) National Development Plan focuses on the production of fruits and vegetables in the country in order to substitute imports as well as on export of high value crops with international market appeal such as grapes and dates. A political tool to stimulate the national production and increase the competitiveness of local products is the Namibian Horticulture Market Share Promotion Initiative (MSP). Introduced in 2004 by the GRN and implemented by the Namibian Agronomic Board, it obliges retailers and wholesalers to procure a steadily increasing percentage – currently 32.5% – of all sold HFP from Namibian producers and requires permits for imports of horticultural produce. Furthermore, in 2003 the Ministry of Agriculture, Water and Forestry enacted the Green Scheme Policy (which was revised in 2008), involving subsidized business models for private entrepreneurs to maintain large-scale irrigation projects with associated SSI farmers, so called outgrowers. Another activity of the GRN influencing the sector is the planned establishment of marketing infrastructure hubs comprising cold storage facilities for HFP in the two areas of interest (Aols).

Policies with regard to land allocation and water use rights so far do not specifically address SSI farmers' needs. Land reform processes after independence are inertial and coordination between responsible implementing institutions like traditional authorities, Communal Land Boards and the Ministry of Land and Resettlement is problematic. Until now, water policies hardly touch the SSIF sector in the Aols. Some platforms for coordination and cooperation of different water users exist, but so far, activities are limited and do not influence SSI farmers. Water extraction in both regions is unregulated and unpaid at present. NamWater as the main state-owned bulk water supplier plans on introducing fees for the provision of water infrastructure in Omusti along the Calueque-Oshakati Canal and at Olushandja Dam.

The current market situation of HFP in Namibia

While traditional products consumed by the population in the North of Namibia comprise mainly mahangu, maize, meat and milk products in combination with some veldt fruits, the consumption of HFP in Namibia has become popular in the last ten years. Changing lifestyles and diets combined with increasing incomes add to a growth of demand for fruits and vegetables by 15-25% in the last 3-5 years. Also, the high-end tourism sector entails an increasing demand for fresh products. Projected developments in the mining sector will presumably attract well-off employees with high consumption standards creating further demand potential within the next years.

So far, 68% of all HFP sold in the country are imported mainly from South Africa and are mostly traded by large retailing companies. Supply of the national market by Namibian producers is so far dominated by large commercial farmers (73% of total inland production). SSI farmers – constituting 72% of all producers – supply only 15% of national HFP production. Of the nationally produced HFP the majority is vegetables, while 95% of all fruits are imported from/via South Africa.

The main marketing channels for HFP products were assessed on a national scale, as well as for the two Aols. In general, main product flows take place between limited numbers of stakeholders. Distribution centers of retail chains and wholesalers either import HFP from South Africa or procure from few large commercial Namibian farmers. Traditional marketing channels through open markets and street vendors complement the picture, but play a diminishing role. For HFP cultivated by SSI farmers in Omusati, the most important product flow is the cross-border trade to Angola. However, also open markets and local retail chains in local towns procure from local SSI farmers, while street vending is prohibited in many places. In Kavango, Rundu as the only town forms the main marketing hub for locally produced HFP. Open markets and street vendors are supplied with HFP by local farms and some of the main producers in other parts of the country, while supermarkets mainly procure from their distribution centers in Windhoek or import products from the fresh markets in Johannesburg. In contrast to Omusati, street vending plays an important role in Rundu itself, including products cultivated in more remote areas in the region. Deciding factors for the important retail sector not to procure from local SSI farmers include the lacking fulfillment of demand in terms of quality, quantity and continuity. In order to understand this fact, the market situation for SSI farmers has to be described.

With regard to farming inputs, SSI farmers in the North are in a disadvantaged situation. As Namibia is an input importing country, prices of inputs are high and availability suboptimal. This is aggravated by the remote location of SSI farmers and lacking services offered by input supplying companies that are mainly situated in Windhoek and target larger commercial farmers. The difficult situation of transport not only hampers the access to affordable farming inputs, but especially poses a major constraint for linking supply and demand with regard to the HFP market. On national scale, transport costs make up to 25% of the total price for HFP imported and about 15% of prices from Namibian producers. While large producers have their own transport and adjust their prices to standards of imported products, lack of transport services for SSI farmers in the Aol hinders access to large distributing HFP agencies in the 700km away Windhoek. Transport providers do not see attractive business opportunities in closer distances within the regions, as roads in remote

areas are unpaved and amounts to be transported for SSIF are small. Costs for current means of transport are high and products usually loose quality as they are exposed to the sun and remain unventilated for hours.

Closely connected to the transport situation is the lack of marketing infrastructure for SSI farmers. Farmers hardly possess any adequate storage facilities, which lowers their negotiation power against purchasers. Cold chains (comprising cold storage and refrigerated vehicles) do not exist. Most SSI farmers do not have packaging and labeling tools and sorting as well as grading is insufficient. As operational parameters on the marketing hubs planned by the GRN are non-transparent, their effect on the HFP market is heavily discussed and it remains to be seen, whether they will be beneficial for SSI farmers' marketing conditions or not.

SSI farmers and farm units

SSI farmers in the two Aols can be distinguished in state-supported Green Scheme outgrowers and privately operating producers with very heterogeneous characteristics. For a clearer description and overview of different types of farm units and their characteristics, the study categorizes the investigated SSI farm units into five different **clusters**:

- Cluster 1: Cooperatives & community gardens
- Cluster 2: Private farm-associated SSI farmers
- Cluster 3: Individual micro-scale irrigation farmers
- Cluster 4: Individual small-scale irrigation farmers
- Cluster 5: State-supported outgrowers on Green Schemes (here Etunda).

Privately operating SSI farmers (clusters 1-4): Whereas farmers in cluster 3 and 4 started irrigation farming on their own initiative, farmers in cluster 1 and cluster 2 were attracted to the idea of starting HFP production from projects or persons outside the communities. Despite all differences in performance and size, SSI farmers' motivation to produce HFP is to supply markets and to make profit (cash income). Most of the farmers are very motivated to make big efforts to be successful, to further develop their skills in production and marketing or to expand cultivated areas.

With regard to farm characteristics and production patterns the study describes farm units found in the Aol along the topics of land, water and irrigation, farming inputs, labor, mechanization, finances and investment behavior and the kind of cultivated HFP. Farm sizes range from 0.005ha up to 13ha. The majority of farmers had to make payments for their land to local traditional authorities. However, none had official confirmation over land-use rights. Irrigation techniques applied range from bucket irrigation, hosepipes and sprinklers (mainly in Kavango) up to drip irrigation

prevalent in Omusati. As water fees are not implemented in either of the two regions, irrigation costs only apply to energy needed to pump water to the fields and labor costs. Cluster 1 and 2 are characterized by joint coordination of irrigation between different producers, while others do it individually. SSI farmers have different procedures to access farming inputs. While farmers associated to large private farms are given leftovers by the latter, cluster 1 to 3 apply cow manure to their fields and partly combine it with chemicals procured from retailers in nearby towns. Cluster 4 farmers purchase from larger and more specialized farming input suppliers and order needed inputs by mail also. While farmers in cluster 1 and 3 rely on family labor only, all other farmers employ temporary workers or/and additional permanent laborers. Further differences between the clusters are found in their degree of mechanization. Cluster 2 and 4 use more advanced machinery, some of the latter category own tractors and tools like ploughs, others rent them. SSI farmers who have access to mechanization services of associated larger farms hire machinery if they can afford to. Finance generally is another important aspect for investment intensive irrigation farming. Only cluster 3 is exceptional as the farmers operate on a low production level and only need machetes, fences and buckets. All others and especially cluster 4 farmers make investments, depending on the degree to which they apply farming inputs and machinery. It is noteworthy that investments usually are made from profits generated by HFP production, as interviewed farmers did not take formal credits. Financial skills in general appear to be very poor and business planning and financial management like book keeping are hardly done. The same applies for a planning of market-oriented production. Although SSI farmers produce a variety of HFP and never cultivate in monocultures, they focus on crops with stable local demand (cabbage, tomatoes and onions) and usually produce the same crops at the same times. This leads to a situation of increased competition and low degree of diversified supply.

All SSI farmers use a variety of marketing channels, ranging from selling directly from the field to transporting the crops to relatively distant market places. Marketing of products is mostly done by the farmers themselves and a relatively high share of crops is sold directly from the field to individual customers (end consumers as well as traders selling on the streets and open markets). Some products are also sold to local supermarkets, however, this takes place on a limited scale. Cluster 4 farmers predominantly supply the informal cross-border trade to Angola. Guaranteed marketing opportunities (established, regular buyers, contract production etc.) are lacking for almost all farmers, which poses a problem for them.

All farmers rate production knowledge and skills as being very important. However, producers in cluster 4 and 5 have more detailed knowledge on production than the

remaining SSI farmers interviewed. Nevertheless, training opportunities are not available in all clusters. Learning from other farmers and experience-based learning are important sources of know-how for farmers. Cooperation plays a role for SSI farmers in so far, as there are HFP farmers' associations in both Aols. Within the clusters, informal coordination takes place also. Yet, opportunities to use this are not fully explored (e.g. for joint marketing, coordinated production, input provision, information exchange).

Besides the description of farm units, SSI farmers were also questioned about their perception on HFP production. In general, they appreciate the changes SSIF has brought along including higher incomes, improved nutritional status and higher social status.

SSI farmers on Green Schemes (cluster 5) generally face the same problems as other farmers but have an advantaged position in terms of knowledge through access to training, infrastructural endowment (irrigation technique, mechanization) and access to production loans. Special problems are related to the limitation to expand plots, input availability from the service provider, costs of services offered by the service provider and certain regulations stemming from the Green Scheme set-up, as they are not free to change irrigation technique or pre-assigned production plans. Their situation highly depends on the relation to and attitude of the service provider towards them. Despite outgrowers' advantages on the production side, they do not perform significantly better than privately organized SSI farmers.

Analyzing potential and constraints of the SSIF sector

The study uses the HFP market as a starting point in order to analyze the potential and constraints within the sector. On the one hand this is due to the fact that all farmers stated to produce for the market and not for self-subsistence. On the other hand there is a strong potential with regard to increasing demand for HFP through changing lifestyles and the raising MSP quota. It is intended to be increased to 60% within the coming years. In order to fulfill this quota, production in Namibia will have to double domestic production, and – if SSI farmers hold their present share of 15% of national production – the SSIF sector would have the opportunity to increase its production by 100% as well. This could happen via an intensification of SSI farming, an expansion of cultivated areas and an increase of SSI farms in terms of numbers. An intensification of production is more likely in Omusati due to limited land with direct access to water, while in Kavango an increase of farm units and an expansion of area can take place along the river bed. Here, also new Green Schemes are about to start operations. As already described earlier, important prerequisites for production are the availability of labor, farming inputs and access to financial means.

While labor is freely available, access to financial means is hampered by the lack of collateral for farmers due to the communal land right status.

By now, the Namibian production does not meet the demand for HFP in the country. Considering that SSI farmers find it hard to sell their products to retailers and wholesalers, the gap between supply and demand of HFP has to be analyzed. The assessment of market stakeholders' needs has shown that locally produced HFP does not meet requirements with regard to product range, quantity, quality and continuity and timeliness of supply. An important reason for that is the lack of information on market demands on SSI farmers' side, strongly interwoven with the lack of communication on standards on retailers' side. The lack of cold storage facilities and other post-harvest handling tools as well as the lack of appropriate transport services affect the quality of the perishable products. The fact that SSI farmers are rather badly equipped with market knowledge, communication tools and marketing infrastructure has effects on their negotiation power towards purchasers. The existing cooperation structures in the Aol therefore present an important potential that can be tapped into, not only with regard to negotiation, but also for facilitated transport and knowledge transfer.

Identifying entry points for interventions

In order to assess possible entry points for intervention of German Development Cooperation (GDC) and other stakeholders, the general eligibility of the sector is discussed.

The SSIF sector touches some goals of GDC. As semi-arid areas are generally considered as extremely vulnerable to effects of rainfall variations and climatic changes, irrigation agriculture can represent a possible adaptation strategy compared to traditional rain-fed production. As the latter usually is a subsistence strategy, HFP production also creates jobs and generates additional cash income. Through this, producers and laborers are enabled to purchase additional food and therefore have improved food security. Based on observations done during field research, there are approximately 210 SSI farmers in Kavango and Omusati, employing around 360 farm workers. As an average household in the rural parts of the areas comprises six members, a total of 3,420 persons would theoretically benefit directly or indirectly from supporting interventions in the sector. It is advised not to target any specific group of farmers with interventions, as the already limited number of potential beneficiaries would decrease dramatically. It could also distort competitiveness of non-targeted groups. This especially holds true for a support of the Green Scheme approach of the Namibian Government. Currently, there seems to be a trend within the GRN to loosen the restrictions for commercial service providers and allow them to produce HFP at a larger extent. Taking into account economies of

scale and advantages through state support, privately operating SSI farm units would have to struggle extremely against such increased competition and most probably not survive on the market. Before deciding on any intervention, potential negative impacts of such – like social impacts with regard to conflicts of interest as well as ecological impacts – have to be reflected.

Considering all precedent arguments, the study comes to the conclusion that development intervention – if conducted – should be very targeted (in terms of being problem specific), of clearly outlined extent and address those aspects that are crucial for the success of all SSI farmers, respectively the whole sector. This would have the advantage, that all SSI farmers – be it privately organized ones or those placed on Green Schemes – could benefit from the intervention into the sector.

These crucial aspects were identified in a systemic analysis and reoccurring key problems linked to these factors were detected:

- Lack of information and communication structures with regard to customer demand.
- Lack of production knowledge and know-how related to post-harvest handling in order to optimize and control production.
- Lack of management knowledge (bookkeeping, financial management and production planning).
- Lack of farming inputs and suitable/efficient irrigation techniques.
- Few lending institutions exist in the Aol.
- Lack of collateral (contracts, land titles, crop insurances) for loans.
- Insufficient degree of cooperation between farmers.
- Lack of pre-marketing and storage facilities.
- Lack of transport (availability, affordability, reliability and suitability).

With focus on these key problems, potential intervention approaches by GDC (and other stakeholders) were identified, also taking into account the existing portfolio and expertise of GTZ, KfW and DED as well as considering existing potential in the Aol.

The first approach suggests the promotion and establishment of communication platforms between producers, buyers and other market stakeholders. This can be in terms of round tables to develop quality standards. Another option is promoting the establishment of a platform that advertises unused (backhaul) capacities in trucks that go back South empty. A second suggestion relates to existing training capacities for SSI farmers by qualitatively and quantitatively improving Extension Services and adjusting training offers at the Mashare Irrigation Training Center to the needs of privately operating SSI farmers. Also, a mentorship program – based on experiences

of GTZ in the livestock sector – could be established, including models of linking credit provision to training. The Polytechnic of Namibia, a partner institution of the study, can support improved training of trainers. With regard to access to credit, a discussion process between banks and input suppliers should be initiated and facilitated in order to promote a targeting of SSI farmers by offering microcredit services or appropriate repayment modalities. A pilot project in mobile phone banking based on similar project experiences in other countries is suggested in order to promote the use of bank accounts among SSI farmers as a first step to access credits. As already mentioned earlier, existing forms of farmer cooperation present a potential which can be tapped when cooperating SSI farmers are supported supported in developing ideas for joint input procurement, packaging, collection points, transport or marketing between farmers. Access to pre-marketing and storage facilities can furthermore be supported by knowledge transfer on cheap, simple and small-scale storage solutions on farms and through consultation of implementing agencies on how to guarantee SSI farmers' access to state-subsidized marketing hubs. The transport situation should be tackled by promoting small- and medium-sized enterprises (SME) in the transport sector which target SSI farmers as costumers. Here, existing SME support programs can be broadened.

These recommendations advocate for a cross-sectoral approach, in which the role of GTZ could be to facilitate cooperation processes and start discussions among national stakeholders. These – inter alia the Namibian Agronomic Board and the Ministry of Agriculture, Water and Forestry – are explicitly suggested as implementing bodies of several of the recommendations, especially on farmers' level. However, futile contributions on other levels – such as the political and institutional level – should not be neglected in a holistic development strategy for the sector. Here, KfW could assist the GRN to develop a policy strategy to support privately operating SSI farmers also. Furthermore, KfW could have a facilitating role regarding the issue of credit provision for SSI farmers.

Concluding from a thorough description, discussion and analysis of the SSI sector, the study generally recommends the following steps: First of all, the implementing agencies have to decide whether to support the sector or not, based on the information provided and compared to other feasible intervention areas. Secondly, KfW has to discuss thoroughly, whether possible distorting effects of a one-sided financing of the Green Scheme approach are justifiable and how conditionalities could look like, that guarantee to avoid such effects. Thirdly, further research is advised. Ecological capabilities for intensified and expanded irrigation agriculture as well as its impacts have to be assessed thoroughly. To get a better understanding of

the economies of SSI farm units, production patterns and the training needs of farmers we suggest a long-term monitoring of representative farm units.

List of acronyms

AoI	Area of Interest
APU	Agro-Production Unit
BMC	Basin Management Committee
CLB	Communal Land Board
CLR	Customary Land Rights
CLRA	Communal Land Reform Act
DC	Distribution Center
EPA	Economic Partnership Agreements
Etuveco	Etunda Vegetable Cooperative
EU	European Union
FoR	Field of Research
GDC	German Development Cooperation
GRN	Government of the Republic of Namibia
GS	Green Scheme
GSP	Green Scheme Policy
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit GmbH
HFP	Horticultural Fresh Produce
IF	Irrigation Farming
KfW	Kreditanstalt für Wiederaufbau (KfW) Entwicklungsbank
KHAC	Kavango Horticultural Area Committee
LUP	Land Use Planning
MAWF	Ministry of Agriculture, Water and Forestry
MCA	Millennium Challenge Account Namibia
MITC	Mashare Irrigation Training Centre
MLR	Ministry of Land and Resettlement
MSP	Market Share Promotion
MTI	Ministry of Trade and Industry
N\$	Namibian Dollar
NAB	Namibian Agronomic Board
NAHOP	National Association of Horticultural Producers
NamWater	Namibian Water Corporation Limited

NDC	Namibia Development Corporation
NDP	National Development Plan
NPC	National Planning Commission
OHPA	Olushandja Horticultural Producer Association
OKACOM	Permanent Okavango River Basin Water Commission
PoN	Polytechnic of Namibia
RC	Regional Council
SACU	Southern African Customs Union
SADC	Southern African Development Community
SLE	Postgraduate Studies International Cooperation
SME	Small and Medium Enterprises
SP	Service Provider (on Green Schemes)
SSI farmers	Small-Scale Irrigation farmers
SSIF	Small-Scale Irrigation Farming
TA	Traditional Authority

List of tables

Table 1: Definition of key terms as understood within the study context	5
Table 2: Impact chain of the study	5
Table 3: Set of methods	13
Table 4: Omusati and Kavango Regions in figures.....	20
Table 5: Projected area under irrigation	30
Table 6: Water resource potential according to IWRM PLAN 2010	34
Table 7: SSI farm clusters, their main characteristics and numbers	54
Table 8: Irrigated area (individual plots) per cluster of SSI farmers	58
Table 9: Irrigation methods and water sources within SSIF clusters	60
Table 10: Types of labor and wages within SSIF clusters	62
Table 11: HFP prices within SSIF clusters.....	68
Table 12: Summary of constraints and potential.....	92
Table 13: Critical success factors in the SSIF sector in northern Namibia	98
Table 14: Definition of critical success factors in the SSIF sector.....	99
Table 15: Key problems of the SSIF sector in northern Namibia	100
Table 16: Key informant interviewees in Windhoek.....	118
Table 17: Key informant interviewees in Kavango Region	121
Table 18: Key informant interviewees in Omusati Region	122

List of figures

Figure 1: Map of Namibia with an extract of the Omusati and Kavango Regions	3
Figure 2: Overview of the study's structure.....	8
Figure 3: Fields of research and units of observation	11
Figure 4: Contents of chapter 4	21
Figure 5: Contents of chapter 5	35
Figure 6: HFP marketing channels via Windhoek.....	42
Figure 7: HFP marketing channels in Rundu	44
Figure 8: Contents of chapter 6	53
Figure 9: Location of clusters of SSI farm units in Kavango and Omusati	55
Figure 10: Content of chapter 7	81
Figure 11: Contents of chapter 8	93
Figure 12: Potential intervention approach 1	101
Figure 13: Potential intervention approach 2	102
Figure 14: Potential intervention approach 3	103
Figure 15: Potential intervention approach 4	104
Figure 16: Potential intervention approach 5	104
Figure 17: Potential intervention approach 6	105
Figure 18: Potential intervention approach 7	105

List of images

Image 1: State-supported irrigation farming in Namibia..... 25

Image 2: Water for irrigation 33

Image 3: Open market in Rundu..... 46

Image 4: Different methods of transporting HFP in the Aol 50

Image 5: HFP production with irrigation..... 57

Image 6: A rare case of active bookkeeping in cluster 4 64

Image 7: Pre-marketing steps..... 66

Image 8: Ways of learning 70

Image 9: Horticultural fresh produce..... 77

Table of content

Foreword	II
Acknowledgements	IV
Executive summary	V
List of acronyms	XVI
List of tables	XVIII
List of figures	XIX
List of images	XX
Table of content	XXI
1 Introduction	1
1.1 Study background and inducement	1
1.2 Study objective and scope	4
1.3 Limitations of the study	6
1.4 Study structure	6
2 Study concept and methodological approach	9
2.1 Conceptual approach	9
2.1.1 Hypothesis	9
2.1.2 Main fields of research	10
2.2 Methodological approach	11
2.2.1 Units of observation	11
2.2.2 Sampling of SSI farmers	12
2.2.3 Applied set of methods	12
2.2.4 Critical discussion of applied methods	14
2.2.5 Research phases	15
3 Profiles of the study regions	17
3.1 Kavango Region	17
3.2 Omusati Region	18
4 Policies and institutions framing the sector	21
4.1 Namibian agricultural policies	21
4.1.1 HFP production and marketing	22
4.1.2 Green Schemes	24
4.1.3 Mashare Irrigation Training Centre	24

4.1.4	Extension services	25
4.1.5	Agricultural finance	26
4.2	Land management.....	27
4.2.1	Integrated land-use planning	28
4.2.2	Land management in Omusati and Kavango.....	28
4.3	Water management.....	29
4.3.1	Basin and transnational water management.....	30
4.3.2	Water management in Omusati	31
4.3.3	Water management in Kavango.....	33
4.3.4	Water management on Green Schemes.....	33
4.3.5	Integration of land and water management.....	34
5	Market situation for HFP in Namibia.....	35
5.1	Demand for HFP in Namibia.....	35
5.1.1	Change in consumption patterns	35
5.1.2	Demand for HFP in different sectors.....	36
5.2	HFP supplied by Namibian producers	38
5.2.1	Namibian HFP exports.....	39
5.2.2	Production for the domestic market	39
5.3	Marketing channels and market stakeholders	40
5.3.1	HFP marketing channels on the national level.....	41
5.3.2	Marketing channels in Omusati and the north-central region.....	42
5.3.3	Marketing channels in Kavango	43
5.4	Marketing services.....	46
5.4.1	Farming inputs	46
5.4.2	Transport	48
5.4.3	Post-harvest and marketing infrastructure	50
6	Description of SSI farmers and farm units	53
6.1	Privately-organized small-scale irrigation farmers	56
6.1.1	Motivation, Logic of Action and livelihoods of private SSI farmers.....	56
6.1.2	Characteristics of privately-organized SSI farm units.....	57
6.1.3	Marketing strategies of privately-organized SSI farmers.....	65
6.1.4	Training, knowhow and organization of private SSI farmers	69
6.1.5	Farmers' perception of change, opportunities and challenges	71

6.2	SSI farmers on Green Schemes.....	74
6.2.1	Motivation, Logic of Action and livelihoods of outgrowers.....	74
6.2.2	SSI farm characteristics on Green Schemes	75
6.2.3	Marketing strategies of SSI farmers on Green Schemes	78
6.2.4	Training, knowhow and organization of outgrowers.....	79
6.2.5	Outgrowers' perception of change, opportunities and challenges.....	80
7	Analyzing potential and constraints.....	81
7.1	Summary of main empirical findings.....	81
7.2	The market as the driving factor in SSIF	84
7.2.1	Possible impact of MSP increase on the SSIF sector	85
7.2.2	A glance on export opportunities.....	86
7.3	Potential and constraints in supply and demand	87
7.3.1	Supply-side potential and constraints	87
7.3.2	Demand-side potential and constraints.....	89
8	A case for Development Cooperation?	93
8.1	Reflection on the SSIF sector's eligibility for GDC support.....	93
8.1.1	Is the SSIF sector relevant to GDC's goals?	94
8.1.2	How many beneficiaries might be reached?	94
8.1.3	Who could be targeted by intervention?.....	95
8.1.4	What would happen to the sector without development agency intervention?	96
8.1.5	What are the possible negative effects of intervention?.....	97
8.2	Potential approaches to intervention	97
8.2.1	Identifying critical success factors for the SSIF sector and starting points for intervention	98
8.2.2	Suggestions for potential intervention by German Development Cooperation	100
9	Conclusions and recommendations	107
	References	110
	Annex I – Glossary	113
	Annex II – List of key informant interviews	118
	Annex III – Examples of questionnaires	124
	General SSI farmer questionnaire.....	124
	Interview guideline for the MAWF	131

Annex IV – Main market stakeholders 137
 Main market stakeholders in Windhoek 137
 Main market stakeholders in Oshikango 138
 Main market stakeholders in Rundu..... 139
Annex V – The HFP sector in figures 140
Annex VI – Overview of SSI farm units’ main characteristics by cluster..... 141
Annex VII – Approaches and related key problems for interventions 145

1 Introduction

The document before you is the final report of a study concerning potential, constraints and success factors in small-scale irrigation farming (SSIF) in northern Namibia which was conducted in 2010 by the SLE – Postgraduate Studies in International Cooperation at Humboldt University in Berlin. It was commissioned by the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ, German Technical Cooperation) and the Kreditanstalt für Wiederaufbau (KfW) Entwicklungsbank (Development Bank of Germany) with support from the Namibian Agronomic Board (NAB) and the Polytechnic of Namibia.

This chapter will introduce the study's background, objectives, scope and limitations.

1.1 Study background and inducement

Agriculture plays a central role in the lives of Namibia's 2.13 million inhabitants. Around 70% of the population depends directly or indirectly on agrarian production. With an arable area of about 60 million hectares in this arid to semi-arid country, the predominant forms of agriculture are rain-fed cultivation and livestock production (north), cattle breeding (central Namibia) and small livestock holdings (south). The country's rate of grain self-supply is currently around 35-40%, whereas fruit and vegetable production meets just 32% of domestic demand. A key problem in agricultural production is water scarcity, as Namibia's geographical position makes it one of the most arid countries in the world. High evaporation rates, spatial differentiations in water availability, major variations in annual precipitation and erratic rainfall influence and impede production and farming conditions.

Nonetheless the Government of the Republic of Namibia (GRN) sees significant potential for production of horticultural fresh produce (HFP) through irrigation farming in northern communal areas, home to almost half of the Namibian population. This assumed potential focuses on areas along the perennial transnational rivers Kunene, Kavango and Zambezi. Small-scale irrigation farming¹ in northern Namibia is also considered an adaptation strategy for coping with rainfall variations. People who traditionally depend on rain-fed millet production could become less vulnerable² to

¹ According to the Government's definition, small-scale irrigation farming comprises plot sizes up to 20ha. The Government's benchmark of 20ha is based on traditional Ovambo homestead sizes. Areas smaller than 20ha are not officially regarded as productive for commercial purposes, meaning that farmers do not need to possess leaseholds (see chapter 4).

² Mahangu (pearl millet) is the most common grain cultivated in northern Namibia. Mahangu production can be described as a "low input – low output" system whereas irrigation farming proves to be the opposite – a "high input – high output" system. From this point of view, irrigation farming can be seen as a higher financial risk.

droughts by practicing irrigation farming. Nonetheless, irrigation farming has rarely been practiced to date, as there is no tradition for this method of cultivation in Namibia (MAWF, 2008).

The Namibian Government aims to develop the potential of irrigation farming through the Green Scheme Policy (GSP), which was approved in 2003 and revised in 2009. Through the implementation of Green Schemes (GS) (see Chapter 4.1.2) the GRN aims to develop an additional 9,750ha for irrigation (GRN, 2008b: 36). As the GSP sets the eligibility-threshold above 20ha per irrigation farm, the primary direct targets of the GSP are agricultural entrepreneurs or enterprises. Nevertheless, anyone wishing to make use of state support is obliged to allocate a certain part of their farmland to small farmers, so-called “outgrowers”. In general the present GSP aims at political and macro-economic goals such as food security, import substitution and export promotion (MAWF, 2008).

In contrast to the GSP, there is so far no governmental strategy explicitly targeting privately organized SSI farmers. In any case, aside from state-supported SSI farmers, the commissioning agencies GTZ and KfW see potential for non-state-supported SSI farmers, leading to a positive impact on food security (on a local level), as well as increased employment and subsequent decrease in poverty in the area of interest (Aoi).

The aim of this study is to verify and explore this assumed potential and to identify constraints and success factors within SSIF in order to close an existing information gap. Therefore the study will analyze the political-administrative framework, socio-economic and socio-cultural aspects of SSIF and farm units themselves (see Chapter 2.1.2). The information gathered may serve as a basis for identifying development opportunities in SSIF.

The study is focusing on two regions in northern Namibia where irrigation farming is already prevalent to a certain extent: the Omusati and the Kavango Regions (see Figure 1). In Omusati irrigation water is taken from the Olushandja Dam and the Calueque-Oshakati Canal, both sourced by water from the Kunene River. SSI farm units and larger irrigation schemes in Kavango Region are taking water directly from the Kavango River.³

³ For more detailed information on both regions see Chapter 3.

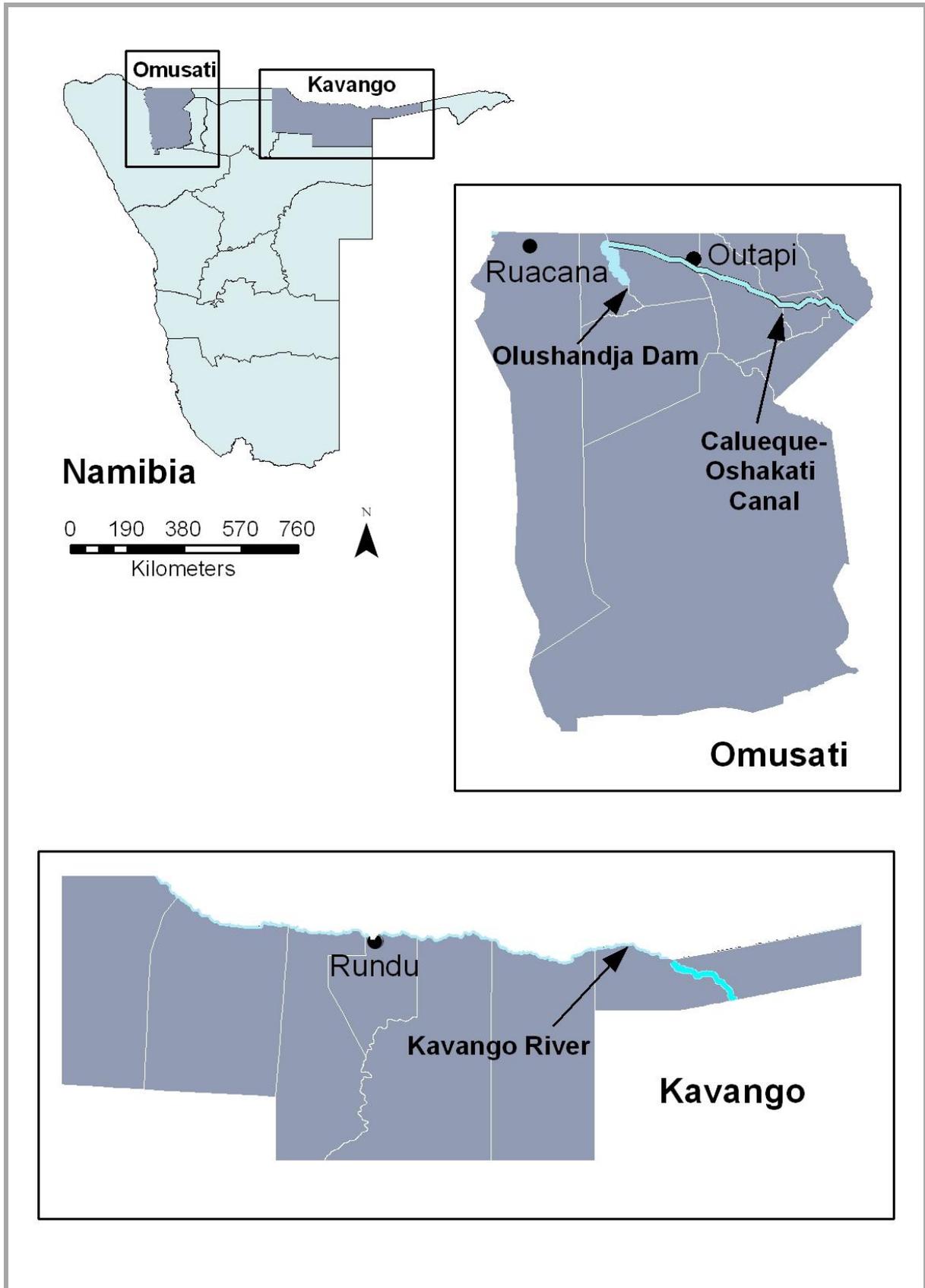


Figure 1: Map of Namibia with an extract of the Omusati and Kavango Regions

As it is in the specific interest of the GTZ and KfW to link any possible SSIF development strategy in the Aol with existing programs of the German Development Cooperation (GDC) in Namibia, the study's results may be integrated into a development and intervention strategy. Current GTZ development efforts concentrate on management of natural resources, enhancement of the transport sector (road construction) and stimulation of sustainable economic development (GTZ, 2010). The KfW complements this with infrastructure programs and by supporting cooperation between Angola and Namibia through cross-border water supplies from the Kunene River. Furthermore, the foundation of a micro-finance bank in northern Namibia by the KfW has improved access to microcredit and other saving products, particularly for women and informal employees (KfW, 2010). Promotion of the SSIF sector could thus be a complement to existing strategies, programs and projects (see Chapter 8.2).

At a later stage, the study may contribute to development strategies for the SSIF sector by the Namibian Government and other institutions, such as the NAB. Last but not least, the findings may as well be of interest to donors such as the Millennium Challenge Account (MCA, agrarian sector), the European Union (traditional agriculture sector) or the German Federal Ministry of Education and Research (climate change and land management).

1.2 Study objective and scope

After clarifying the study's terms of reference with the clients, the objectives of the study were defined in consultation with the GTZ and KfW as:

1. Closing an existing information gap regarding SSIF.
2. Identifying key potentials, constraints, success factors and possible partners of/for small-scale irrigation farming of horticultural fresh produce in northern Namibia.
3. Using the findings as a planning basis for potential intervention by GDC and other stakeholders in Namibia.

In the interest of greater common understanding of the objectives, key terms are described in Table 1.

Table 1: Definition of key terms as understood within the study context

<p>Small-scale irrigation farming (SSIF) includes:</p> <ul style="list-style-type: none"> • State supported farmers who farm on GS (outgrowers), as well as • privately-organized, non-state supported farmers on small farm units (ranging from approximately 50m² to 20ha).
<p>Horticultural fresh produce (HFP) is fresh fruit and vegetables, including potatoes and sweet potatoes.</p>
<p>Potential includes capabilities and opportunities for positive change. Within the context of this study, potential will be analyzed with regard to:</p> <ul style="list-style-type: none"> • The market demand for HFP, • the supply of HFP through SSIF, • the competitiveness of HFP produced by SSIF, • employment opportunities in SSIF and related service structures and • the income-generating/-raising potential of SSIF.
<p>Constraints are factors which hinder or impede the use of existing potential for SSIF. Like success factors, constraints can be found at the individual farmer level, the farm unit level as well as the institutional/structural level.</p>
<p>Success is understood as the achievement of a (personally) defined goal. Success can have a quantitative as well as a qualitative dimension.</p>
<p>Development is here defined as a process in which constraints are reduced and potential for SSIF identified, utilized and extended.</p>

In order to give a better idea of the study's scope, an impact chain has been developed for the study:

Table 2: Impact chain of the study

Activities	Field research (literature review, interviews with farmers and experts, stakeholder workshops and discussions, data analysis)
Output	Key potentials, constraints and success factors as well as partners, networks of the SSIF sector and production of HFP in northern Namibia are identified. This serves as a planning basis for future intervention by the GDC.
Use of Output	The GTZ and KfW use the findings and recommendations of the study as a planning basis for future activities.
Outcome	The GTZ and KfW support SSIF with appropriate context-specific intervention.
Impact	<p>The outcome contributes to:</p> <ul style="list-style-type: none"> • Job creation in the AoI • Poverty reduction in the AoI • Increased food sovereignty (in the sense of import substitution) on a national level • Improvement of food security on a household level • Adaptation of local farming techniques to climate change

The system boundary of the study is located at the ‘use of output’ level, since the SLE team cannot guarantee application of study results by the GTZ and KfW. However, use of the output can be influenced by increasing the likelihood that the study’s recommendations are considered. The study’s profound analysis of the sector and user-friendly design are key factors here.

1.3 Limitations of the study

Every study or assessment is subject to context-specific limitations. Regarding irrigation farming in Namibia, any far-reaching decision to promote the sector must be based on extensive, sound knowledge of the ecological potential and risk in the Aol. Soil salinization and erosion are particularly critical aspects with regard to irrigation in (semi-)arid regions. This area represents a limitation of the study, since time and personal capacities were not sufficient to explore these issues in detail. This information should be sourced from existing literature and generated in a separate study.

The study is also unable to provide an in-depth analysis of competing methods of water utilization in Namibia. This would be a further precondition for promoting extension of irrigation farming in the Aol, because water is a scarce commodity in Namibia and various interests compete for its utilization. As the Kavango and Kunene River⁴ are both shared between Angola and Namibia, the potential for conflicts of interest between the two countries must also be included in further planning.

1.4 Study structure

This study has a linear structure, with each chapter building on the preceding one. Nonetheless, composition of the text also allows reading of individual chapters for readers with interest in specific topics.

Chapter 2 introduces the study concept, the fields of research (FoRs), the units of observation and the set of applied methods.

Chapter 3 briefly gives some background information on the two study regions (the Kavango and Omusati Regions).

Following from this, the SSIF sector in the Aol is described in more detail, based on empirical findings (Chapters 4, 5 and 6). Chapter 4 introduces the political and institutional framework of SSIF and discusses the relevant agricultural, land and water policies and influencing institutions.

⁴ The Kunene River is not the direct water source of the Omusati Region, but water in the Olushandja Dam and the Calueque-Oshakati Canal originates from it.

Chapter 5 broaches the market and marketing situation for HFP in Namibia, including such aspects as the supply and demand situation for HFP, marketing channels and relevant stakeholders as well as marketing services available in the Aol and the country as a whole.

Next, Chapter 6 describes and compares different types of SSI farm units which can be found in the Aol and explores aspects such as farmers' motivation to start irrigation farming as well as their ways of production and marketing.

Chapter 7 summarizes the main findings in the descriptive Chapters 4 to 6, using this as a basis for identifying and analyzing potential and constraints in the SSIF sector. As the findings of Chapters 4 to 6 show that SSIF in the Aol is not a subsistence strategy, the market is considered as the driving factor in further development of the sector. Therefore, the assessment of constraints and opportunities must mainly focus on the market and marketing issues.

Chapter 7 serves as a basis for identifying entry points for intervention described in Chapter 8. After reflecting on the sector's eligibility for support it elaborates approaches for possible intervention by the GDC and Namibian stakeholders.

Chapter 9 provides final conclusions and recommendations, decisions that have to be taken by GDC and Namibian stakeholders as well as recommendations for further research.

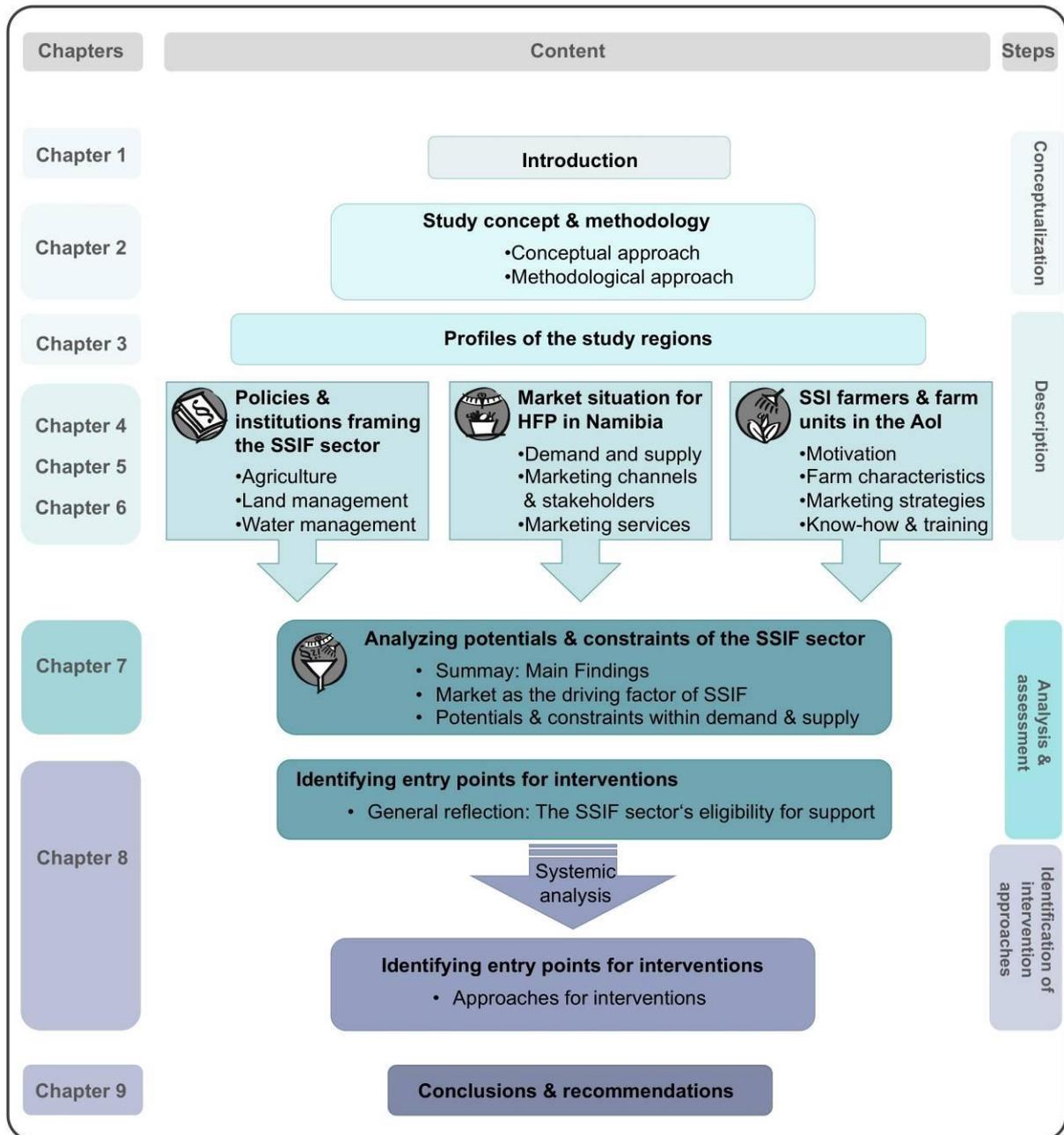


Figure 2: Overview of the study's structure

2 Study concept and methodological approach

So that the reader understands how the information in this study was gathered and how conclusions were drawn, this chapter will introduce the concept and methods behind study.

2.1 Conceptual approach

The conceptual approach describes the hypotheses deduced from the expected output of the study, the main fields of research (FoRs) and the respective overarching questions of the assessment.

2.1.1 Hypothesis

With regard to the expected output (see Chapter 1.2), assumptions of important dimensions and factors influencing the SSIF sector were formulated as hypotheses:

- The geographical situation and other conditions (i.e. regarding access to production factors) under which SSI farmers operate and the perception of these conditions, influence individual decisions on livelihood strategies.
- Potential and constraints of SSIF
 - can be identified within the livelihood strategies of SSI farmers (with regard to their economic strategies including operational parameters and their embedded socio-cultural Logic of Action⁵);
 - depend on the way SSI farmers manage their farm units;
 - are influenced by the form of organization as well as (informal) networks of SSIF and marketing actors;
 - depend on the market conditions for HFP;
 - lie within the structural framework conditions of national and supranational markets;
 - result from marketing strategies of different SSI farmers which can promote or hinder the successful development of HFP production;
 - are based on policies at the national and supranational level constituting structural framework conditions for SSI farmers;

⁵ The term Logic of Action is used to describe the way farmers behave and the respective reasons influencing their chosen way of living and farming.

- are affected by (non-) implementation of policies relevant to the SSIF sector through administrative structures.

2.1.2 Main fields of research

Based on these hypotheses, and with the aim of identifying success factors, potential and constraints of SSIF, the study covers four main fields of research (FoRs) answering the respective overarching questions:



FoR 1 – Political and institutional framework of the SSIF sector:

This FoR examines relevant Government policies (such as agriculture, land, and water policies), initiatives and finance schemes for the SSIF sector as well as their respective implementation through governmental and traditional institutions in the two regions. The main question within this field is: How do institutions, as well as policies and their implementation, influence SSIF?



FoR 2 – Market situation for HFP in Namibia:

The market-related FoR describes the current market conditions for HFP. It provides an overview of existing and projected demand and supply of HFP, marketing channels as well as market stakeholders and marketing services (including, transport, input provision and marketing infrastructure). This analysis refers to the Aol (Omusati and Kavango), but also covers cross-border trade with Angola and South Africa.



FoR 3 – Description of SSI farmers and farm units:

The description and analysis of SSI farm units aims to identify specific features of different farm categories and to identify particularly successful farm units as well as their constraints. It provides answers to the overarching question: How do farm units operate and what are their production patterns? In order to understand the livelihood strategies of SSI farmers, their socio-culturally embedded Logic of Action is analyzed.



FoR 4 – Synthesis: Potential and constraints of SSIF:

Within this field the main potential and constraints of SSIF are deduced from the findings of the previous three FoRs. The main linkages between the three FoRs are pointed out. This synthesis serves as a basis for the following recommendations for possible intervention by the GDC within the SSIF sector.

2.2 Methodological approach

This paragraph describes the methodological approach including the different units of observation, showing an example of the sampling procedure and critically discussing the applied set of methods. In general, the situation analysis of the SSIF sector is of a rather exploratory nature. There were few previous empirical findings or theoretical assumptions within the FoRs on which the study could build. Consequently, open research questions were formulated to enable an insight into the situation of SSIF. With regard to the exploratory nature of the study, the defined research methods were handled flexibly and adjusted in an iterative research process.

2.2.1 Units of observation

SSI farmers and the respective SSI farm units operate in a complex environment, shaped by political-institutional, ecological, socio-cultural and socio-economic realities. Consequently, information allowing analysis of potential and constraints in the SSIF sector had to be collected on various levels, from different units of observation⁶ and focusing on different thematic dimensions (see figure below).

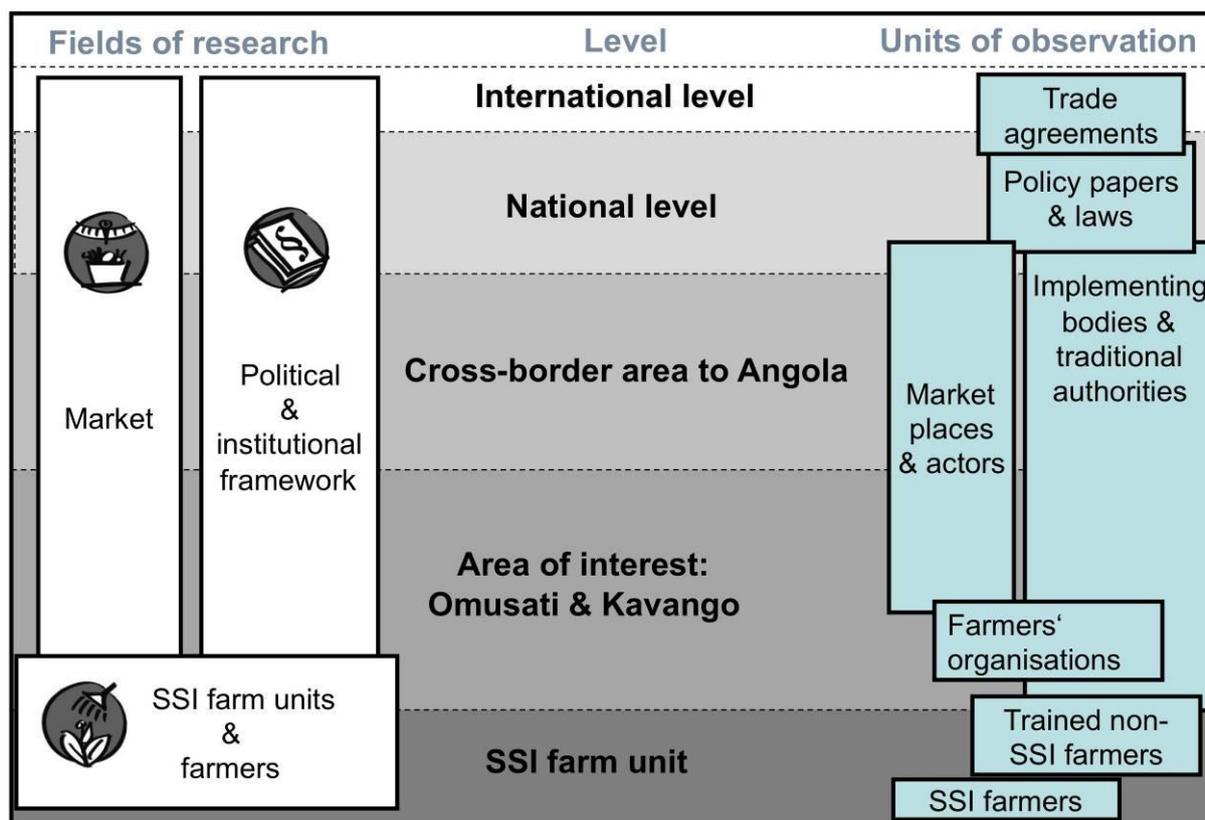


Figure 3: Fields of research and units of observation

⁶ Units of observation = from where/whom information is collected

The figure emphasizes the relationship between the location (levels) of the different FoRs and the respective units of observation. An example may illustrate the logic behind Figure 3: To analyze the current market conditions for HFP (FoR 2), for example, units located at all defined levels were observed:

- Documents, such as trade agreements and policy papers on the international and national level, were analyzed;
- interviews with policy-implementing bodies and market actors in the cross-border area with Angola and in the AoI took place;
- SSI farmers were interviewed about their personal marketing strategies.

2.2.2 Sampling of SSI farmers

Whereas key informants such as market stakeholders and political actors were identified through a snowball system (with first contacts generally provided by commissioners), a three-step method was applied for sampling SSI farmers: In the first step, SSI farm units were initially categorized based on information from an earlier fact-finding mission which recorded the following characteristics:

- Form of organization,
- size in hectares,
- state subsidized versus non-state subsidized farmers,
- location of farms and
- approximate number of farmers within each category.

In the second step, further information about the preliminary categories was collected through expert interviews with farmers' organizations. Preliminary categories were adjusted and supplemented accordingly. In the third step, the approximate number of interviews per SSI farm unit category was defined in relation to the total number of farmers in each category. Nevertheless the sampling remained open and flexible to other categories which occurred throughout data collection within the field and was extended during the field phase.

2.2.3 Applied set of methods

In order to answer the research questions of the study, a set of different methods has been applied and was adapted after a pre-test phase.

Table 3: Set of methods

Research method	Units of observation	Aim/relevant information	Number
Document review	Policy papers, trade agreements, various documents regarding the Aol and the agricultural sector of Namibia as well as markets	Current policies and trade agreements influencing the SSIF sector etc.	
Key informant interviews	Market stakeholders (retailers and wholesalers, transport, logistics, input suppliers)	Current market conditions and potential for HFP	27
	Political actors, ministries, technical and sector experts	Impact of policies (land, agriculture, water, finance) and their implementation on HFP and SSIF; general background information	71
Semi-structured interviews	SSI farmers	Potential, bottlenecks and success factors of SSIF (including Logic of Action and impact of SSIF on food security of farmers' households)	47 (+ 5 large commercial irrigation farmers)
Structured questionnaires	Market stakeholders (small traders and street vendors, market officers, middlemen)	Current market conditions and potential for HFP	31
PRA workshops (influence matrix and group discussions about potential and constraints in the SSIF sector)	Farmers' organizations, SSI farmers	Verify preliminary findings and discuss noteworthy aspects of research found in the interviews	2
Workshop: Systemic analysis	Consultant team/preliminary findings from interviews	Identify success factors for SSIF and possible entry points for intervention	1

After a detailed analysis of relevant policy papers and trade agreements, a total of 135 key informants – market stakeholders and political actors – were interviewed on the national level as well as on a regional level in Omusati and Kavango (see Annex II).

As interviews with SSI farmers are considered the heart of the study, farmers were interviewed within clear guidelines containing standardized, semi-structured and

open questions. On the one hand, interview guidelines for SSI farmers defined more standardized questions regarding such farm characteristics as input, production factors, marketing and transport. On the other hand, questions addressing personal topics such as farmers' attitudes and opinions were asked in a more open and less standardized manner (see interview guideline for SSI farmers in Annex III).

Structured interviews were conducted with market actors such as small traders, street vendors and market officers.

Participatory Rural Appraisal workshops (PRA) were held with SSI farmers and farmers' representatives in order to verify findings from previous interviews and to discuss noteworthy aspects regarding potential and constraints within the SSIF Sector.

The aim of this systemic analysis was to identify those factors which are essential to success within the SSIF sector. The resulting findings can be found in Chapter 8.

2.2.4 Critical discussion of applied methods

Major aspects limiting the assessment's findings relate to the availability of production data and to the lack of information regarding SSI farmers' Logic of Action.

Regarding production data, most farmers were not in a position to provide accurate data regarding plot size, water volumes or other inputs they apply, their yields and profits they gain. As a result, calculations which would normally be based on these figures, such as opportunity costs, could not be carried out as the study initially foresaw (see Chapters 6.1.2 and 6.2.2).

With regard to farmers' Logic of Action also foreseen within FoR 3, the exploratory assessment answered the main related research questions (see also Chapters 6.1.1 and 6.2.1). Nevertheless, one of the findings (differences in the performance of farmers between Omusati and Kavango), raised further questions which might be related to socio-cultural aspects: What are the reasons for these differences between regions? This could be explored further with a suitable set of methods and instruments, for example from the field of human resource development (including motivation structure, personality assessments, etc.) in a follow-up assessment.

Another methodological limitation lies within the previously described sampling procedure. Due to the preliminary categorization and its verification through interviews with farmers' organizations, the sampling could be biased towards better-organized farmers as they are better represented within these organizations.

Besides these specific methodological limitations, general limitations arise from working through translation. A potential loss of accuracy as well as bias caused by varying interpretations could affect the findings of the assessment.

2.2.5 Research phases

With regard to time and location, the study was divided into the following phases:

- Phase 1 in Namibia: Fact-finding mission (two weeks, May 2010)
- Phase 2 in Berlin: Conceptualization of the assessment (seven weeks, June/July 2010)
- Phase 3 in Windhoek: Visit to “National Horticulture Farmers’ Days” in Outapi, expert interviews and training of field facilitators (two weeks, August 2010)
- Phase 4 in Omusati and Kavango: Pre-test, semi-structured interviews and questionnaires; in Windhoek: continuation of expert interviews (four weeks, August/September 2010)
- Phase 5 in Omusati and Kavango: PRA workshops (one week, September 2010)
- Phase 6 in Swakopmund: Data analysis, report writing, systemic analysis (three weeks, September/October 2010)
- Phase 7 in Windhoek: Report writing, feedback to commissioners, national partners and stakeholders and feedback to interviewed SSI farmers (two weeks, October 2010)

3 Profiles of the study regions

The Omusati and Kavango Regions⁷ – the two areas in focus – are both located in the communal areas⁸ of northern Namibia. These regions account for around 25% of Namibia's population. Agriculture here is traditionally a subsistence-oriented combination of livestock breeding and rain-fed staple crop production (mahangu, sorghum, maize). The latter is characterized by a low input/low output strategy (Interview Mendelsohn). The evolution of this form of agriculture was mainly due to prevalent ecological conditions: Northern Namibia is a semi-arid area with erratic rainfall, high evaporation rates and predominantly sandy soil. Irrigation agriculture is a relatively recent phenomenon with no significant tradition in the Aol. During the 1960s and '70s, when the country was under South African mandate, initial agricultural irrigation infrastructure was developed by white farmers along the Kunene and Kavango Rivers. However these schemes were abandoned, and deteriorated throughout the 1970s and '80s, when the northern regions were the scene of struggles for Namibian independence. Production of HFP was revived on a larger scale in the 1990s, promoted in large part by the GNR and making use of existing irrigation potential deriving from water provided by the Kunene and Kavango Rivers.

3.1 Kavango Region

Kavango is one of 13 administrative regions of Namibia, Rundu being the administrative capital as well as the largest and fastest-growing town. Kavango is divided into eight constituencies, each with a political and traditional representative.

Kavango has a sub-tropical, semi-arid climate with rainfall patterns decreasing from northeast to southwest. Annual rainfall peaks between November and March, when monthly averages rise to 150mm, whereas there is barely any rainfall between May and September. The transnational Kavango River forms the border with Angola and runs for about 415km along Namibian territory before entering Botswana. It is one of four perennial rivers in Namibia. The river originates in the highlands of Angola, with peak water flows occurring in Rundu in April. The average maximum temperature is above 30°C throughout the year except for the winter months (May-August). Frost only occurs rarely in low-lying valleys (EL OBEID & MENDELSON, 2001).

⁷ Because of limitations in spatial capacities of this publication in the following the Kavango and Omusati Regions will be referred to as 'Kavango' and 'Omusati' only.

⁸ See Glossary in Annex I

Dominant soil types in Kavango are the so-called Kalahari Sands, nutrient-poor aerosols with low water retention (NAMIBIA NATURE FOUNDATION, 2010).

The population of Kavango Region has increased rapidly throughout recent decades and is unevenly distributed within the area.⁹ Two thirds of the region's total population live close to the river and inhabitants are densely concentrated around the most important infrastructure hubs (such as roads, schools and clinics). There is a steep increase in urban populations, mostly driven by migration from rural to urban areas and an influx of economic migrants from Angola. Nonetheless, 78% of Kavango has a population density of less than 1 person per km². In 2001 the demographic profile of the region showed a quite young population, with 75% of the population under 30, with a roughly equal gender distribution (EL OBEID & MENDELSON, 2001).

The majority of the population continues to live in rural households, most of which rely on locally-available natural resources for fuel and building materials. Livelihoods depend largely on agriculture. At the last census, 96% of all homes were involved in some kind of farming activity and 71% of rural households depended on agriculture as their major source of income. Horticultural production has no tradition in the region and only 1% of households cultivate fruit and vegetables exclusively (EL OBEID & MENDELSON, 2001: 29). The ratio of economically active persons to dependants is about 1:1 at the household level. In 2001, 19.6% of the population spent 80% or more of their income on food, while 34.6% did not have access to safe drinking water. Houses in Rundu have an average of 5-6 inhabitants, while rural households are slightly larger, with 6-7 people (EL OBEID & MENDELSON, 2001: 21). Household heads are predominantly male (62% in 2001).

3.2 Omusati Region

Omusati is one of four administrative regions which are together known as the "North-Central Region", "Ovamboland" or "The Four O's Region" (Oshana, Omusati, Oshikoto and Ohangwena). Omusati comprises 12 constituencies with Outapi as its administrative center. Important landmarks within the context of this study are the Olushandja Dam and the Calueque-Oshakati Canal. Both are located between Ruacana and Outapi and are pump-fed with water from the Kunene River in Angola (see Figure 9 in Chapter 6).

Omusati is situated in the semi-arid to arid tropics. The climate is characterized by very erratic rainfall, 96% of which occurs in the summer months from November to

⁹ Unfortunately, most available demographic data pertaining to the two Aols dates back to the national census of 2001 and therefore doesn't provide an accurate reflection of current conditions.

April, with total annual averages ranging from 350 to 400mm. The average temperature is 23°C, ranging from a mean maximum of 32°C during summer months down to 9°C in the winter months (FIEBIGER, 2002). There are occasional frosts in the south of the region (MENDELSON et al., 2000). The area is characterized by shallow drainage channels called Oshanas, which are the inland delta of the Cuvelai River System originating in the highlands of Angola. Consequently heavy rains in central Angola regularly result in flash floods in Omusati. Soil in Omusati is predominantly comprised of (deep) Kalahari Sands with low water retention and, to a lesser extent, loams and silts. They exhibit typical characteristics of semi-arid and arid soils: minimal organic matter and humus in the topsoil, nutrient deficiency, low fertility and – depending on the parent rock material – a susceptibility to salinization (FIEBIGER, 2002).

Population in Omusati is unevenly distributed, ranging from 100-300 people/km² around the towns of Outapi, Ruacana and Onesi to 10-100 people/km² in most of the remaining territory. In some areas insufficient permanent water and poor infrastructure result in even lower densities, excluding small concentrations around rural villages (NATIONAL PLANNING COMMISSION, 2007). Generally, 99% of Omusati's population lived in rural areas at the time of the 2001 census, with 82.6% living in traditional dwellings without electricity. The region has a relatively young population, with 44% under 15 and 45% between 15-59 years in 2001. Households headed by females are more prevalent in Omusati than in Kavango or Namibia as a whole (see Table 4). Possible reasons for this difference are significant labor migration patterns and the gender-specific impact of HIV/AIDS (NATIONAL PLANNING COMMISSION, 2007).

Table 4: Omusati and Kavango Regions in figures

Indicator	Kavango Region	Omusati Region	Namibia (whole)
Population	202,694	228,842	1,830,330
Proportion of total population (%)	11.04	12.5	100
Population density (inhabitants/km²)	4.2	8.6	2.1
Area (km²)	48,500	26,573	824,116
Area (%)	5.89	3.22	100
Life expectancy at birth (years)	Female: 42 Male: 42	Female: 50 Male: 46	Female: 50 Male: 48
Literacy rate (%; people over 15)	70	83	81
Average household size (people)		5.9	
Female-headed households (%)	41	62	44.7
Households that depend on agriculture as main source of income (%)	52	46	28
People that spend more than 80% of income on food	19.6	9	8.7
Human Development Index (2001-2004)	0.410	0.476	0.557
Human Poverty Index (2001-2004; %)	45	45	33

Source: National Planning Commission, 2001 (In order to ensure comparability of figures, this table only refers to this source, even though there are newer figures available for single aspects like the Namibian population.)

4 Policies and institutions framing the sector

This chapter gives an overview of policies relevant for the SSIF Sector such as agriculture, land and water management and takes a look at their actual implementation. It is based on policy reviews, interviews with representatives with relevant divisions of ministries, institutions and banks at national and AoI level as well as technical/sectoral experts and project staff of the German Development Cooperation.



Figure 4: Contents of chapter 4

4.1 Namibian agricultural policies

Agricultural areas in Namibia are divided into so-called commercial farmland (with freehold titles) and communal land¹⁰ – a legacy of the colonial era. Commercial farmland covers about 44% of the total land area and is home to 10% of the population. Communal areas comprise 41% of Namibia and represent about 60% of the population (GRN, 2008a: 1).¹¹ Both Omusati and Kavango are located in communal areas.

Four policies are of relevance for irrigation farming in Namibia: The Green Scheme Policy (GSP) of 2008 (see in detail in Chapter 4.1.2), the National Agricultural Policy of 1995, the country's main framework for long-term development summarized in Vision 2030 and the Third National Development Plan (NDP3). The latter gives a more detailed overview of strategies to implement the set goals in the previously

¹⁰ Apart from pockets of communal land in central and southern Namibia, the Veterinary Cordon Fence – also known as the 'red line' – represents the boundary between the communal areas in the north and the commercial land south of the fence. The fence aims to prevent the expansion of foot-and-mouth disease and migration of cattle from the north to the south

¹¹ For further information on communal and commercial land see Glossary in Annex I.

mentioned policy papers. Summarized, the papers reflect that Namibia's focus in agriculture basically lies in securing food security through staple crop production.

The Government's objectives in the agricultural sector derive mainly from the National Agricultural Policy (1995), with the aim of reducing poverty and income inequalities. The policy's objectives relevant to the study are as follows:

- Improving growth rates and stability in farm income, increasing agricultural productivity and raising production levels beyond the population growth rate.
- Ensuring food security and improving nutrition.
- Creating and sustaining viable livelihoods and employment opportunities in rural areas.
- Improving the profitability of agriculture and increasing investment in agriculture.
- Expanding vertical integration and domestic value-addition for agricultural products.
- Improving living standards for farmers and their families as well as farm workers.
- Promoting sustainable utilization of the nation's land and other natural resources (GRN, 1995: ii).

The northern communal region is seen as a particular focus of development potential for intensification and diversification: "Focusing on these areas will lead to increased productivity and the stabilization of yields and will contribute towards the attainment of household food security and a reduction in the need for food imports" (GRN, 1995: 14).

4.1.1 HFP production and marketing

To achieve these objectives as well as the goals set out in Vision 2030¹² the NDP3 for the period 2007/08 to 2011/12 was developed. With regard to HFP, NDP3 focuses on the production of fruit and vegetables sold in the domestic market in order to reduce imports, as well as export of high-value crops with international market appeal such as grapes and dates (GRN, 2008b: 34). Within its fifth program, NDP3 prescribes the facilitation of irrigation infrastructure, grain silos and marketing facilities for HFP and infrastructure (see Chapter 5.4.3) to address constraints faced by farmers, particularly in the northern communal areas and those located far from markets (GRN, 2008b: 36).

¹² For further information on Vision 2030 see Glossary in Annex I.

Key activities of the GRN in this regard are the development of Green Schemes (GS) (see Chapter 4.1.2) with an additional 9,750ha for irrigation alongside the existing 9,000ha and the construction of cold storage facilities in Ongwediva, Rundu and Windhoek beginning in 2010 (GRN, 2008b: 36; see also Chapter 5.4.3). Current programs targeting small-scale HFP production comprise the settlement of small-scale farmers on GS and the 'Integrated Initiative in Support of Urban and Peri-Urban Horticulture Development' for the urban poor. The Ministry of Agriculture, Water and Forestry (MAWF) has already committed 3 million N\$ to expand the initiative and include SSI farmers, mainly from communal areas.

In 2001, GRN introduced the National Horticulture Development Initiative to stimulate HFP cultivation in Namibia as well as the Namibian Horticulture Market Share Promotion (MSP) in 2004 to protect fruit and vegetable production from imports, particularly from South Africa¹³. The MSP requires permits for imports of HFP and obliges importers to prove that a certain percentage of produce sold is produced in Namibia. The MSP started at 2.5% and is now at 32.5%, with occasional amnesties. The aim is to reach 60% within the next years. The responsible implementation body is the Namibian Agronomic Board (NAB), created to support a marketing environment that is conducive to growing and processing crops in the country.

The Government's current initiatives – such as the MSP – are compliant with regulations established by the Southern African Development Community (SADC) as well as the European Partnership Agreement (EPA). There are no international restrictions on increasing MSP quotas for HFP imports so far. The country's membership in the Southern African Customs Union (SACU) allows free exchange of HFP products within its member countries. Although Namibia subscribes to the principles of free trade, there are still possibilities for measures to protect sensitive developmental products within existing trade agreements (BROCK, 2009).¹⁴ According to experts, there are no policies within the SADC, neighboring countries or any other regional body (such as the African Union) that might have a restricting influence on Namibian HFP marketing and trade policies.¹⁵

¹³ Reasons for current import rates date back to the pre-independence era, when 95% of products were imported from South Africa.

¹⁴ For further explanations of SADC, SACU and EPA see Glossary in Annex I.

¹⁵ So far, the only constraint for exporting fruit and vegetables to South Africa is a fruit fly problem affecting watermelons which is already monitored and addressed by MAWF measures. Recent fruit production in Etunda has been constrained by a fruit fly plague that has prevented exports to South Africa (Interviews MAWF).

4.1.2 Green Schemes

In order to increase agricultural productivity and social development as envisaged in NDP3 and Vision 2030, the MAWF developed the GSP in 2003, starting with the development of irrigation projects for domestic food production. In 2008 the policy was reviewed with the aim of attracting private investment and irrigation expertise to assist the GRN in achieving its objectives and to transfer skills to SSI farmers. The revised policy incorporates more business models for private entrepreneurs. So far, the GSP (2008a) with its outgrower approach is the only guideline for the GRN's activities in irrigation farming, with no other policy or strategy in place to support independently operating SSI farmers.¹⁶

Presently 9,000ha along the Orange River in the south and the Kunene and Kavango Rivers in the north are subject to irrigation under GS, administered either by the GRN or by so-called private service providers (SP). According to the MAWF, GS priority will remain the production of staple crops. However, current restrictions determined by the GRN are low and private service providers also focus on HFP production, with much higher financial rewards, since there are no ratios set by the GRN regarding staple crops versus HFP production on GS.

Current MAWF plans include the expansion of the Etunda GS (currently 600ha) by an additional 600ha as well as the development of medium-commercial areas of 9-20ha for successful outgrowers in Etunda. However, implementation of medium-sized farming will probably take longer as the MAWF is currently behind schedule in placing SSI farmers on GS.

The GSP constitutes the only programmatic initiative for the promotion of private sector involvement, but the Agriculture Investment Conference held in September 2010 represents a further attempt by the MAWF to welcome private (international) players. Although current land legislation does not prohibit foreign businesses from applying for leasehold in communal areas, some interviewees were critical of low incentives for private investors, especially for GS. Most schemes are currently run by Namibian companies, with additional input from South Africa companies and one from the Netherlands.

4.1.3 Mashare Irrigation Training Centre

The Mashare Irrigation Training Centre (MITC)¹⁷, founded in 2006, is the only training institution for irrigation farming (IF). It is funded by the MAWF. The 12-month training

¹⁶ For further explications of the GSP see Glossary in Annex I.

¹⁷ See also Glossary in Annex I.

courses are only offered to individuals looking to become outgrowers on GS. Training comprises farm management, irrigation techniques, administration, marketing, human resources, finance and technical management. The MITC has capacity to train 60 irrigation farmers a year. The MITC is currently closed because of a surplus of trained SSI farmers who have not yet been placed at GS – despite 44 free plots which currently exist on the Etunda GS. The present GS management in the MAWF appears to be weak in its coordination with the MAWF’s Directorate of Training as well as in plot development and placement of outgrowers.

However, ideas for opening the MITC to private SSI farmers and adapting courses to farmers’ needs have recently been developed. For 2011, short-term courses are planned as external training on a modular basis. Target groups are not yet set, but the format might first be implemented at Etunda with subsequent expansion to incorporate individual SSI farmers.

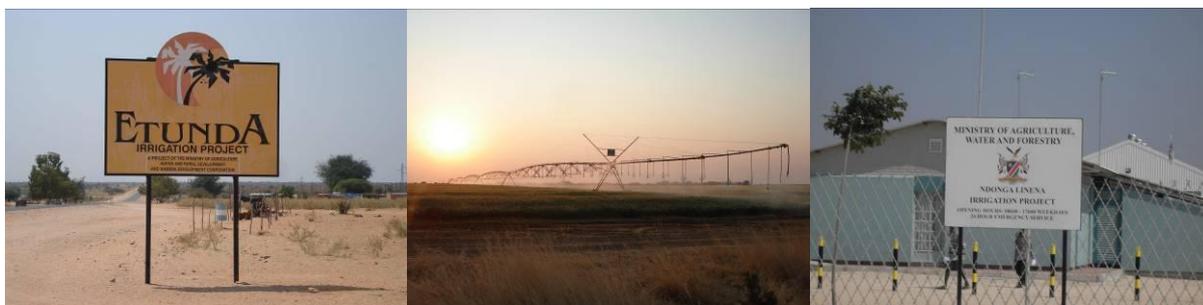


Image 1: State-supported irrigation farming in Namibia
(left & middle: Etunda GS; right: Ndonga Linea GS)

4.1.4 Extension services

Two main extension service programs of the GRN exist with regard to plant production: (1) The Dry-Land Crop Production Program aims to increase rain-fed staple crop production by providing subsidized input to farmers with a maximum land tenure of 3ha, and (2) the GS Program with the aim of increasing staple crop as well as fruit and vegetable production under irrigation. The MAWF so far only provides input to dry-land mahangu producers, while private HFP producers are not subsidized.

In general, the MAWF’s extension services are performing poorly due to a lack of human resources and expertise in vegetable production; each constituency in Omusati should currently have a dedicated extension officer, but they are only trained in staple crop and livestock production. This applies even on Etunda GS, where three officers are engaged exclusively for outgrowers. So far only Kavango has an officer trained in HFP production.

4.1.5 Agricultural finance

So far only the state-owned Agribank provides credit with subsidized interest rates for farmers in communal areas¹⁸. According to Agribank statements, around 160 million N\$ has already been distributed to approx. 7,000 small-scale farmers in communal areas under the National Agricultural Credit Program. MAWF is currently developing an agro-finance scheme with the aim of reaching the entire agricultural sector, including agro-processing. Products on offer will be tailored to fit the needs of all crop producers (staple crops and vegetables). The policy document is not yet public and the role of the private sector is as yet unclear. A special finance scheme exists for outgrowers on Etunda GS. They can apply for vouchers with a value between 50,000N\$ and 100,000N\$ from Agribank, which can be exchanged for farming inputs at the SP of the respective GS. Farmers who repay the loan after two years may apply for a further loan. Defaulting farmers are evicted, with the MAWF assuming responsibility for the outstanding loan. There is little transparency regarding eligibility criteria for these vouchers. Furthermore, there is no accurate monitoring of loan repayment from Etunda SSI farmers to Agribank.

Commercial banks do not yet service small-scale farmers. Since farmers in communal areas do not own the land they are cultivating, it can not serve as collateral for commercial banks – a fact which presents a huge obstacle to credit provision. Alternative collateral options may include crop production insurance or purchasing contracts, but farmers are as unlikely to have these to hand as they are to operate a bank account. However, strategies for targeting this sector with more flexible conditions are currently under discussion. Positive indicators include new branches in communal areas (Bank Windhoek, Development Bank of Namibia) and cooperation proposals presented to the MAWF (by First National Bank and Standard Bank, among others).¹⁹

An exception among commercial banks is the micro-finance approach practiced by Fides Bank, which so far only operates in Ovamboland. Instead of land titles or business plans, Fides requires the constitution of credit groups and assesses motivation of small entrepreneurs and their potential to generate income as a

¹⁸ According to interviews with Agribank, collateral is a pre-requisite for loans greater than 5,000N\$. Agribank interest rates for short-term loans are 4% for communal farmers and 8.5% for commercial farmers. The amount is repayable in one year (AGRIBANK, 2010).

¹⁹ Development Bank of Namibia opened a branch in Ongwediva, its first office outside Windhoek. They plan to provide various forms of credit e.g. for small and medium enterprises (SME) and project start-ups. Ideas have been put forward for a Public-Private Partnership between the bank and NamPost to provide small-scale credits, since NamPost has branches all over the country.

condition of access to credit.²⁰ However, Fides doesn't have farmers as customers yet. In the coming years the bank plans to expand within communal areas of Ovamboland. The only comparable activity in Kavango is an initiative of the Kavango Horticulture Area Committee to develop a more flexible credit formats for small-scale farmers, in cooperation with Agribank.

4.2 Land management

As outlined earlier, Namibia is divided into communal and commercial farmland. Formal land registration has traditionally only covered commercial farmland. In communal areas, current conditions are characterized by tenure insecurity and unregistered tenure, which affects small-scale farming by restricting investment behavior of farmers in communal areas (WUBBE, 2008).

Before independence in 1990, land in communal areas was allocated by traditional authorities (TA, usually tribal chiefs), following traditional principles. A land reform process in communal and commercial areas was implemented after 1990, with the aims of eliminating post-colonial inequalities and promoting economic development. Its implementation is still ongoing. In 1995 the Ministry of Land and Resettlement (MLR) drafted the Communal Land Reform Bill that was enacted in 2002 through the Communal Land Reform Act (CLRA). Its main objective is to facilitate and regulate land tenure and administration in communal areas. In addition, the 1995 Traditional Authorities Act regulates the function of TAs and embeds their role in governance structures established after independence. The CLRA and the TA Act constitute the most important policies for land management in communal areas (MEIJS, KAPITANGO, 2009: 6).

To implement land reform the MLR established Communal Land Boards (CLB) for the administration of land rights in communal areas. Nonetheless, TAs continue to play an important role in the administration of land rights. They are responsible for the allocation of Customary Land Rights (CLR) for subsistence farming, ideally in close consultation with the CLB. According to policy, the latter control the allocation, cancellation and registration of CLR by TAs as well as applications for leasehold.²¹ The TA must give his/her consent to leaseholds granted by the CLB. If applications for leasehold pertain to an area greater than 50ha or cover a period longer than 10

²⁰ A credit group comprising a minimum of ten people is required for a micro-finance business loan of between 500 and 7,500N\$ within a term of 10, 20 or 40 weeks. The interest rate is 1.5% plus a 1.5% door-step fee with repayment on a weekly or monthly basis. The system operates on the basis of mutual social control within the credit group, since the whole group is liable if a client defaults.

²¹ For further explanations of CLR and leasehold see Glossary in Annex I.

years, approval must be given by the MLR (MEIJS, KAPITANGO, 2009). In reality land governance differs in each administrative region and the existence and functions of local land institutions are influenced by various factors, such as the degree of fragmentation within the existing land rights system, internal power relations and the willingness to accept and integrate new management models (SEIPELT, 2009: 3). Current policy also hands responsibility for many details of land registration and regulation to the MLR, including criteria for issuing leaseholds for commercial farming on communal land. It remains unclear at which point farming and especially irrigation farming is considered commercial. A draft policy which seeks to synthesize CLR and the CLRA is currently under discussion by the MLR. The draft has the potential, among other things, to harmonize different responsibilities designated to TAs and CLB in the TA Act and CLRA as well as with other sector policies (WERNER, 2010).²²

4.2.1 Integrated land-use planning

Namibia lacks national policy or guidelines for land-use planning (LUP). Current LUP ignores both potential land-use conflicts and competing/incompatible forms of land use – e.g. different agricultural utilization of land. It also fails to prioritize land use according to spatial zoning (NAMIBIA NATURE FOUNDATION, 2010: 34). Integrated LUP is constrained by a lack of coordination between Regional Councils (RCs) and ministries in the regions and between different ministries at the national level. In practice, there are two planning procedures aiming at the country's development. On the one hand, coordination and responsibility for development plans fall under the National Planning Commission (NPC) with regional development planning divisions being the only institutions with a clear legal mandate to create Regional Development Plans (HAUB, 2009: 18). On the other hand, MLR has produced integrated Land Use Plans for eight of the 13 regions, including Omusati. However, they are not being implemented and there is little guidance for implementation. Responsibility for development planning and integrated LUP as well as coordination with other planning procedures – e.g. at the river basin level – remains unclear (WERNER, 2009).

4.2.2 Land management in Omusati and Kavango

So far, deadlines to implement CLRA in the communal areas have not been met. Only 2% of an estimated total of 230,000 land parcels in the northern communal areas have been registered. According to MLR, the main challenges are distribution

²² In any case the draft disregards both the National Land Policy of 1993 and Vision 2030, and so far only represents a simple combination of the two existing laws (Interviews MLR).

of information, resident reluctance, land disputes, and double allocation of land resources. In both regions a lack of CLB staff to facilitate the process also contributes to the slow pace of registration. This has led to a decrease in applications for land titles in the Aol. Challenges facing land registration in Kavango include uncertainty and misinformation about the process and the consequences of registration, while the majority of residents in the Four O's Region have already applied for CLR.

In the study region, the voting power of TA within the CLB is quite strong due to their high representation in comparison to other bodies, such as ministries (MEIJS, KAPITANGO, 2009: 9). According to interviews in the Aol, cooperation between TAs and CLB appears to be weak. Responsibility for land allocation and payment for land titles has not yet been consolidated. Land rights in densely populated areas along the Kavango River are particularly prone to arbitrary TA's decisions. Current land allocation still remains a cause for insecurity among SSI farmers, not least with regard to expansion of land for farming.

4.3 Water management

Main policies for water management in Namibia comprise the revised Water Supply and Sanitation Policy (2008) and the National Water Policy adopted in 2000. The latter provides the framework and principles for water resource management and water services. The Water Resources Management Act (2004) serves as a guideline for integrated water resources management e.g. through the establishment of Basin Management Committees (BMC). However, the act has not yet been implemented due to its high complexity and cost as well as a lack of human resources.

Main responsibility for regulation and management of water lies within the MAWF's Department of Water Affairs and Forestry. The ministry controls ground and surface water resources and allocates licenses for water extraction and borehole construction. The state-owned company Namibian Water Corporation Limited (NamWater) is the major bulk water supplier, operating the long-distance water supply network. The MAWF's Division of Rural Water Supply is responsible for water provision in rural areas, including construction of pipelines and establishment of local water-consumer groups. In communal areas, access to land title does not automatically include access to water due to a basic principle in Namibia's water policy which separates land and water ownership, meaning farmers have to share water resources with other users (WERNER, 2009: 29). Responsibility for development and operation of GRN-owned irrigation schemes as well as irrigation extension services lies within MAWF's Department of Agriculture.

At present irrigation agriculture absorbs 45.8% of Namibia's water resources.²³ MAWF has fixed prices for water used for agricultural activities at 0.17N\$/m³. This price does not cover costs for services and maintenance and therefore barely contributes to NamWater's profit.²⁴ According to interviews with NamWater, the GRN applies pressure to keep prices for irrigation water low in order to meet goals for domestic food production. Food production also dominates policies regarding water management for agricultural purposes, thus excluding such concepts for sustainable water management as water productivity. The long-term goal (food security or food sovereignty) of the GRN's agricultural policies and consequent impact on Namibia's water sector are unclear.²⁵ Furthermore, there are no MAWF programs or initiatives in place to encourage use of water- and cost-efficient irrigation methods which would maximize profit from low water volumes, as outlined in National Agricultural Policy (GRN, 1995: 34).

4.3.1 Basin and transnational water management

The Kavango and the Kunene are transnational rivers, requiring neighboring states to manage and use water according to international laws. Namibia has ratified the Revised SADC Water Protocol on Shared Watercourses (2001). It is the most relevant and regionally-recognized guideline for managing shared water resources in order to foster closer cooperation between nations. As irrigation farming in the two basins relevant for the Aol might increase in the future – see Table 5 – cooperation at the basin level will become increasingly important.

Table 5: Projected area under irrigation

Basin	Maximum Irrigable Area (ha)	Projected area under irrigation (ha)			
		2008	2015	2020	2030
Cuvelai-Etoshia	2,458	1,613	1,913	2,213	2,213
Okavango-Omatako	16,550	2,613	4,866	8,196	12446

Source: IWRM PLAN, 2010: 89

So far there are agreements for extracting water from Kunene River, but none for the Kavango River. However, a platform for cooperation with Angola is provided by the

²³ In total the agricultural sector absorbs 71.8% of water resources with irrigation comprising 45.8% and livestock 26% of water use (IWRM PLAN 2010: iii).

²⁴ In 2008, 35% of water supplied by NamWater went to irrigation but represented only 1.3% of the company's income (Interview NamWater).

²⁵ Achieving food security does not necessarily mean all products need be produced by the country; water can instead be used for more profitable activities. The goal of food sovereignty requires pressure to improve economic agricultural production (Interview NamWater).

Permanent Okavango River Basin Water Commission (OKACOM)²⁶ founded in 1994 with representatives from Namibia, Botswana and Angola. Nonetheless, integrating different national interests in a common strategic plan remains a significant challenge (Interview MAWF).

With regard to the Kunene, Namibia is permitted to extract water at the rate of 6m³/sec according to a treaty between Portugal and South Africa signed in the 1960s. Namibia currently extracts just 2m³/sec (approximately) due to current pump capacities. Angola still adheres to the agreement without major problems. Nevertheless, some interviewees have experienced a lack of cooperation from the Angolan side whereas the MAWF also seeks to profit as much as possible from the Kunene's water. Potential for conflict may rise along with demand for irrigation water, and further cooperative measures between Angola and Namibia are required.

In order to integrate the interests of different users groups at the basin level – including irrigation farming – the Water Resources Management Act of 2004 foresees establishment of BMCs. However, there is still a lack of proper implementation. So far, for the Kunene River the Permanent Joint Technical Commission with representatives from Namibia and Angola exists to coordinate development and rehabilitation of infrastructure, including water supply sanitation services for the communities along the border (IWRM PLAN, 2010: 8). A technical working group supported by the GTZ is currently founding a management committee for the Olushandja sub-basin planned to be established by the end of 2010.

Kavango's BMC is more consolidated and coordinates natural resource management among different stakeholders on various levels. Their activities encompass daily monitoring of water flows as well as training irrigation farmers in the use of pesticides, irrigation techniques and soil requirements in five pilot projects throughout the Kavango region. BMCs in general have the potential to act as a facilitator in the case of conflicts regarding land use as well as water extraction and utilization on both rivers. However, the Water Resources Management Act does not detail how local level stakeholders will participate in BMC functions (WERNER, 2009: 2).

4.3.2 Water management in Omusati

The water extraction agreement between Angola and Namibia regarding the Kunene River serves as a basis for water availability in the Calueque-Oshakati Canal, Olushandja Dam and on the Etunda GS. Farmers interviewed in Omusati take their irrigation water from Olushandja Dam and Calueque-Oshakati Canal. Olushandja

²⁶ See Glossary in Annex I.

Dam is part of a complex water distribution system operated by NamWater on both sides of the border. Water is pumped from the Calueque Dam in Angola to fill the Calueque-Oshakati Canal on the Namibian side, which supplies Oshakati and the surrounding areas with water (see figure 1 and figure 9). To minimize evaporation losses, the canal, which has a trapezoid profile, is usually not filled to its capacity of approx. 63 million m³. The main challenges for NamWater are in the area of maintenance due to damage caused by illegal extraction on the Angolan side as well high pumping costs caused by evaporation losses.

The Olushandja Dam is situated on a branch of the canal and was constructed as a strategic water reservoir during the period of conflict in the late 1980s. A number of farmers began irrigation activities along the dam in the 1990s and are estimated to number more than 50 by now. Today NamWater only uses Olushandja Dam to store surplus water accumulated due to the Calueque-Oshakati Canal's uneven volume capacity. One effect of this storage system is that the dam's water level sometimes sinks dramatically during the dry season when only small amounts of water need be stored in the dam, as a result of higher summer evaporation rates and higher demand in Oshakati and along the canal. Low water levels in the dam affect SSI farmers, as their pumps are not able to reach sufficient water for irrigation (Interview NamWater; HUGO, 2009: 2).

Water extraction by SSI farmers along the dam and canal is as yet unregulated and – since they don't pay for water provided by NamWater – essentially illegal. To date NamWater has lacked the technical means and political support necessary to stop this practice (HUGO, 2009: 2). However, the MAWF²⁷ recently ordered NamWater and the Omusati RC to resolve the problem and work on a solution which would serve farmers' needs as well as NamWater's interests.²⁸ SSI farmers along Olushandja Dam appear generally willing to pay for guaranteed water provision throughout the year.

²⁷ Since the GRN is the exclusive owner of NamWater, the MAWF has the mandate to instruct the company according to the GRN's/ministry's strategic goals. The discrepancy between the GRN's political goals (cheap water provision for agriculture in the communal areas) and NamWater's necessary profit orientation (which favors water provision to mining and industrial operations due to the higher revenues they generate) results in recurring tensions between the two parties.

²⁸ Two technical options for reducing evaporation loss and illegal water extraction from the canal are currently under discussion: (1) replacing the canal with a pipeline or (2) covering the canal. Both options would require the installation of official, strategically-placed water extraction points; water consumers (farmers, livestock farmers etc.) would be required to register and would be charged according to the amount of their outtake. There are also discussions aimed at establishing official, strategically located water extraction points with a meter for each registered farmer, to control and charge usage along the Olushandja Dam (Interviews MAWF, NamWater).



Image 2: Water for irrigation

Illegal water extraction from the Calueque-Oshakati Canal (left) and bucket irrigation along the Kavango River (right).

4.3.3 Water management in Kavango

The Kavango River is the main source of water for the people living along its banks. Of the approx. 22 million m³ of water extracted from the river every year, 15% is used by the rural population and their livestock, 11% to supply the town of Rundu, and 74% for irrigation of large agricultural schemes (NAMIBIA NATURE FOUNDATION, 2010: 31). NamWater doesn't provide water to irrigation farmers along the river, in contrast to SSI farmers in Omusati. They extract their irrigation water either individually or in cooperatives using pumps or buckets directly from the river. According to SSI farmers, water availability for irrigation is not yet a problem, but seasonal flooding of the plains is. Another concern regarding irrigation is river pollution caused by fertilizers and other chemicals, since all drainage flows back to the river. A multi-stakeholder meeting on integrated water management staged by the MAWF in Rundu in February 2010 proposed the establishment of a water use efficiency group as well as irrigation scheduling to control water pollution. According to farmers some water consumer groups are already in operation. Effective basin management requires clarifying the role of these groups as well as integrating existing farmers' organizations and ensuring compliance with the BMC.

4.3.4 Water management on Green Schemes

Water management on GS differs from region to region. GS Etunda extracts its water from the Calueque-Oshakati Canal and makes regular payments to NamWater. Prices for irrigation water are currently 0.17N\$ per m³ with some exceptions for GS in

southern Namibia.²⁹ Even if Etunda doubles in size, existing MAWF plans predict that sufficient water will still be available since NamWater currently uses approximately one third of the outtake allowed by the mentioned treaty with Angola. The GSs on the Kavango River draw their water for free directly from the river, as it is regarded as public. The MAWF should be monitoring this but appears not to.

Regarding existing water resources in general, there is potential to increase SSIF in both Aol as outlined in the table below (see Table 6).³⁰

Table 6: Water resource potential according to IWRM PLAN 2010

Basin	Water resource potential Mm ³ /a			Demand Mm ³ /a		Surplus Mm ³ /a	
	Surface	Ground	Total	2008	2030	2008	2030
Cuvelai-Etosa	180.0	24.0	204.0	63.7	85.6	140.3	118.4
Okavango-Omatako	250.0	29.6	279.6	58.1	215.1	221.5	64.5

Source: IWRM PLAN, 2010: vii

4.3.5 Integration of land and water management

Land and water management policies are not aligned, resulting in confusion regarding rights and responsibilities.³¹ Different sector objectives are not integrated into a comprehensive regional water basin development plan and no agreements exist on how competing demands on land and water can be solved (WERNER, 2009). This also affects SSI farmers in Omusati and Kavango. More and more farmers along the dam and canal as well as Kavango River have begun irrigating; meaning that land with direct access to irrigation water is slowly becoming scarce in Omusati. So far, there are no major conflicts with other forms of land use regarding access to water. However, conflicts may arise between residents with competing interests – e.g. plant cultivation versus livestock farming – in areas close to water sources (NAMIBIA NATURE FOUNDATION, 2010: 6).

²⁹ Other sources quoted 0.19N\$/m³ for irrigation water but could not be verified.

³⁰ However, as the numbers of the IWRM PLAN refer to the whole basin they cannot directly be compared to the ones mentioned regarding pumping and storing capacities.

³¹ E.g. individuals and local communities are empowered to different degrees in adjudicating land and water issues.

5 Market situation for HFP in Namibia

While the previous chapter focused on the political and institutional framework, this chapter describes the market conditions for HFP in the country.



Figure 5: Contents of chapter 5

Firstly, demand for HFP with regard to private consumption and developments in such sectors as tourism, mining and export is analyzed. The current supply situation of HFP in the Aol is then described and compared to market demands. Relevant marketing channels for HFP are depicted on a national scale and in the respective Aol. Since market conditions for farming inputs, as well as transport conditions and marketing infrastructure are important framing conditions for marketing, they are also described and analyzed.³²

5.1 Demand for HFP in Namibia

To give an overview of potential within the market, current developments in demand and consumption patterns will be described.

5.1.1 Change in consumption patterns

Traditional products consumed by the majority of the population in Namibia's north include staple crops such as mahangu and maize, meat and milk products as well as wild spinach and some veldt fruits. The consumption of HFP has grown beyond beans and tomatoes in the last 10 years, showing steady growth in the last 3-5 years. All market stakeholders interviewed have observed a considerable increase in demand nationwide. Estimations by interviewees suggest that there is a current

³² A more detailed description of different market stakeholders in Namibia can be found in Annex IV.

growth in demand of 15-25% annually. Demand for HFP is generally said to outstrip current domestic supply. Explanations offered for increasing demand for HFP include growing interest in healthy lifestyles as well as increasing awareness of the importance of healthy nutrition, especially in the light of high HIV rates.³³ Higher salaries for Government officials have also probably increased purchasing power for a larger part of the population. Restaurants and high-level catering also drive demand. This is ascribed to an increase in cash incomes among the domestic population as well as to tourism developments. Demand created by availability of new products is a further factor. "There is definitely a supply driven demand development" (Interview Fruit & Veg City). An example is the consumption of sharon fruit, unknown to consumers when it was introduced to the market four years ago. The retailer Fruit & Veg City now reports sales at the rate of thousands per day.

Some market stakeholders have also observed a growing consumer preference for Namibian grown products over imports. "People start to appreciate what is local" (Interview NAB). However, labels indicating product origin are still rare. Affordability is an important decision criterion in purchasing HFP. Despite a general increase in demand for HFP, they remain "the first products that are scaled down when there are economic difficulties" (Interview Freshmark). In Kavango Region, one retailer indicated that different products are purchased by different types of consumers. Local people tended to buy regularly but concentrated on products such as onions, potatoes, tomatoes, bananas and apples. In summer and the peak of the tourist season, foreigners and lodges came to buy other fresh products. The retail chains interviewed reported no region-specific demand for product lines.

5.1.2 Demand for HFP in different sectors

Demand is generally created by various actors, sectors and stakeholders; some of the more crucial ones will now be introduced.

Demand by retailers

More than 70% of all fresh produce traded within the country is purchased by Namibian retailers (NDC, 2010b: 132). Most of the retailers consulted reported that demand for HFP could not be met by local production with regard to various criteria. The most important factors were consistency of quantity, reliability, product quality, consistent on-demand delivery, quality of product handling as well as on-farm sorting, grading, packaging and labeling.

³³ Neither the Ministry of Health nor the Ministry of Environment and Tourism could provide data on nutritional or demand developments for HFP.

According to retailers, domestic demand for HFP peaks in the holiday seasons of December and April/March, while for wholesalers the high frequency of weddings and catered parties from May to August is an important factor.

Demand from tourism

In the tourism sector, lodges have specific demands for a variety of fresh products.³⁴ Of the ten lodges questioned, one had its own vegetable garden and ordered fruit seasonally. Five complained about fruit which wasn't available out of season as well as prices, which were high and increasing. Some reported off-season shortages of small potatoes, beans, butternut squash, beetroot, oranges and avocados. Others reported that cucumbers, butternut squash and mandarins were either very expensive or not available at all in August. Tourist facilities generally procured their HFP from major retailers such as Fruit & Veg City, Freshmark, City Produce or Shoprite. Criteria in choosing products included quality, price, availability, freshness and service. Geographic origin was not an important factor. Many of the lodges were situated far from urban centers and would therefore be interested in a delivery service or farmers situated nearby. All lodges stated that they would be interested in buying from local farmers if they were able to provide quality products for reasonable prices.

Demand created by the mining sector

Areva and Rössing, the two largest mining operators in Namibia, currently supply about 1000 meals per day for their employees in the Erongo Region. The HFP required by their catering services (e.g. ISS catering) are procured from Fruit & Veg City, Freshmark, Megasave and Spar in Swakopmund. Current developments in the mining sector indicate that demand will rise within the next few years. Positive results of exploratory projects will most likely lead to the establishment of twelve additional uranium mines by 2020. This will create about 12,000 new jobs, mostly for highly qualified mining specialists, which will in turn attract a further 50,000 people (including many specialists from abroad), doubling the population in coastal areas (BGR, 2010: 9). Such a development would result in a considerable increase in demand for food products.

³⁴ Vegetables in demand include potatoes, tomatoes, onions, lettuce, cucumbers, carrots, spinach, cauliflower, mushrooms, butternut squash, cabbage, beans, beetroot, green peppers and pattypan squash. Fruits in demand include apples, grapes, pears, pineapples, avocado, strawberries, bananas, oranges, mandarins, papaya, watermelon, pears and lemons.

5.2 HFP supplied by Namibian producers

There is a lack of reliable, sound data regarding supply and demand for HFP in Namibia. The figures quoted in this chapter are drawn inter alia from a study commissioned by the Namibian Development Corporation (NDC) and carried out by New Frontiers which aimed to identify opportunities in the fresh produce market. Unfortunately, figures are rarely explained and different figures do not always agree with each other. In addition, the data available from NAB differs and does not cover information necessary for a proper analysis of market potential.³⁵

In terms of total values, approx. 70% of the HFP consumed in Namibia is imported from South Africa. According to NDC estimates, their annual value is around 470 million N\$, representing a product volume of approx. 122,291t (NDC, 2010b: xxi). However, total Namibian demand for 2010 is estimated at 128,000t, raising questions about the validity of underlying data. Current domestic product output amounts to 54,904t³⁶, at a value of 279,3N\$ million per annum (NDC, 2010b: xxi). The NAB Annual Report estimates current domestic HFP production at 48,889t (NAB, 2009: 24) so in reality might be assumed to be around 50,000t. The major discrepancies regarding values per ton for imported and domestically-produced HFP are not explained in the study³⁷, and as the more expensive fruit products are generally imported, they can be discounted as a factor here. The country's maximum total production output potential is estimated at 134,470t per year (NDC, 2010: vii), drawn from field data collected for the NDC report. However, no indications are made on the type of information from which these conclusions are drawn.³⁸ Both the NAB and the NDC agree that due to climatic conditions and in some instances economies of scale, Namibia will not be able to achieve full import substitution, but the Namibian share of the domestic market and exports could increase dramatically.

Of the above-mentioned volumes, commercial farmers, constituting 22% of all producers, supply 39,949t of HFP per year (73% of total production). Small-scale producers are the biggest in terms of numbers (72% of producers) together producing 8,396t per annum (15% of total production), with Government farmers making up the remainder (NDC, 2010b: 116). According to the NAB, the MSP has led to an increase in domestic production, with NDC figures indicating a rise of 15% every year since 2004 (Interview NAB; NDC, 2010b: 12). However, there are still

³⁵ A summary of these figures can be found in Annex V.

³⁶ Excluding grape production.

³⁷ With a value of 38,285N\$ in the first instance and 50,870N\$ in the second.

³⁸ Except to note that land currently not allocated for agriculture was not included in determining the estimation.

many problems regarding supply of HFP to market by Namibian producers, particularly in the area of SSIF.

5.2.1 Namibian HFP exports

At present, larger export flows of HFP from Namibia are generally focused on grapes from the country's south which however are not taken into consideration in this assessment. Onions and potatoes, mainly from the Hochveldt area in central Namibia are increasingly exported in South Africa's off-season in May/June – which is the main harvest period in Namibia. Here, seasonal advantages over South Africa can be leveraged with targeted production. Since 2008, the fruit fly problem has meant that water and sweet melons can only be exported from certain regions of the country (see Chapter 4.1.1). If that problem can be solved, production could also take advantage of the earlier melon season in the north of the country. So far, exports of HFP to South Africa are at their greatest in times of production surpluses. Grape exporters sometimes add other HFP to their shipments to the UK. General demand for HFP from the Angolan side is very irregular. Recent shortfalls in the supply of potatoes and onions could also be targeted and met. On the other hand, large supermarket chains like Shoprite and Pick n Pay have already established themselves in southern Angolan urban centers in recent years, reducing cross-border trade demand in Oshikango (see also Chapter 5.3.2). Exports to Angola are also hindered by customs formalities which mean long waiting hours for trucks at border crossings.

5.2.2 Production for the domestic market

HFP production in the AoI is still in a somewhat experimental phase. Most farmers have only recently started to cultivate and only a very few conducted market analysis before deciding on production patterns and most simply copy the latter from neighbors. "Cabbage and tomatoes are on every farmer's mind" (Interview Freshmark). This concentration on a few common products leads to inconsistent supplies during certain periods and oversupply in others. As there is no coordination or communication between farmers with regard to production, there is greater competition between them and with local GSs. Farmers could have more success if they supplied a variety of crops throughout the whole year. However, due to lack of knowledge of and access to the market (especially supermarkets) the producers continue to rely on seasonal production of the safest and most in-demand products (onions, tomatoes, cabbage). Further promising production strategies could include targeted production of off-season products, focusing on peak demand times or organizing cultivation for year-round output, so that the farmers can at least serve as

reliable suppliers for certain crops. Additionally, supply by individual farmers becomes more attractive to retailers when they can simultaneously meet demand for different product lines (for example tomatoes in small packages, loose, etc.).

Supply shortages are caused by cold winters or late frosts in the country. At such times local retailers complain about shortfall in local products such as lettuce, carrots, sweet peppers and potatoes. Between May to August, especially, it is often “the onion that saves the MSP” as one retailer stated. On the other hand, with regard to frost and other weather events, the Aol has comparative advantages over southern Namibia and South Africa as it lies above the frost line, which means products like sweet corn are more readily available in the north during winter months.

As well as being poorly scheduled, products from the Aol often fail to meet retailers’ quality criteria. Even where quality is high, post-harvest handling is often inadequate, reducing shelf-life and visual appeal of products. In addition, a lack of standards and control measures with regard to chemical inputs poses a potential threat to consumers. In Kavango especially, where most HFP production takes place in the river plains and availability of affordable inputs presents a large challenge to SSIF, organic farming and alternative input methods such as the use of effective microorganisms³⁹ and controlled use of certified chemicals are recommended. This would also minimize the risk of increasing pollution and toxicity in river water.

The Namibian market is not very demanding with regard to packaging. Retailers indicated that simple packaging achieved with heat sealers or wrap machines are sufficient for their demands, but this is rarely done by the farmers.

Further bottlenecks to be addressed include administrative challenges such as a lack of banking details or physical addresses among farmers and poor phone and fax communication for weekly updates on prices and availability of products. Big companies are hesitant to deal with very small scale farmers as they require greater effort due to their small production quotas. Consequently they would generally prefer to deal with representatives of several farmers.

5.3 Marketing channels and market stakeholders

Domestic marketing of HFP in Namibia occurs within a rather limited framework. On local level, SSI farmers in the Aol have diverse marketing strategies for their HFP, which will be further elaborated in Chapter 6.1.3 and 6.2.3.

³⁹ They are used as an alternative approach to sustainable agricultural technologies.

5.3.1 HFP marketing channels on the national level

The most important logistical hub for the domestic HFP market is Windhoek. Main product flows come via Western Cape Province, as most of the HFP sold in Namibia is still imported from South Africa. NAB estimates indicate that about 68% of all HFP is procured from South Africa and 32% are Namibian products. However, marketing channels for various products can be differentiated. With the exception of watermelons, oranges, avocados, papayas and bananas, which are produced on a small scale in Namibia, nearly all other fruit is imported from or via South Africa (approx. 95% of total trade). The picture is more diverse when it comes to vegetables. There are few major private suppliers of Namibian grown vegetables, situated in Tsumeb, Grootfontein, Hochveldt, Okahandja and Stampriet. The GSs in the north that also have started to engage in HFP production are now adding to the picture.⁴⁰

Cabbage is the most important vegetable produced by Namibian farmers, followed by onions, tomatoes and potatoes. Other products include butternut squash, pumpkins, gem squash, green peppers, sweet corn, sweet potatoes, beetroot, spinach, cucumber and green lettuce. Depending on their network of established business connections, retailers can meet up to 100% of demand for certain vegetables, however only within season.

The most important stakeholders regarding the domestic HFP market are:

- The Namibian Farmers' Market, a commissioning agent which sells products from northern areas,
- wholesalers such as Fresh Produce Market, and exception as they offer contracts to local producers,
- retail chain distribution centers (DC) which procure most of their products from South Africa and the larger Namibian farmers mentioned above (see Annex IV),
- informal street vendors and traders in traditional open markets are agents of distribution.

Figure 6 below gives a schematic overview of the main product flows between main market stakeholders.

⁴⁰ However, only Etunda GS is currently noteworthy as a supplier (see also Chapter 6.2).

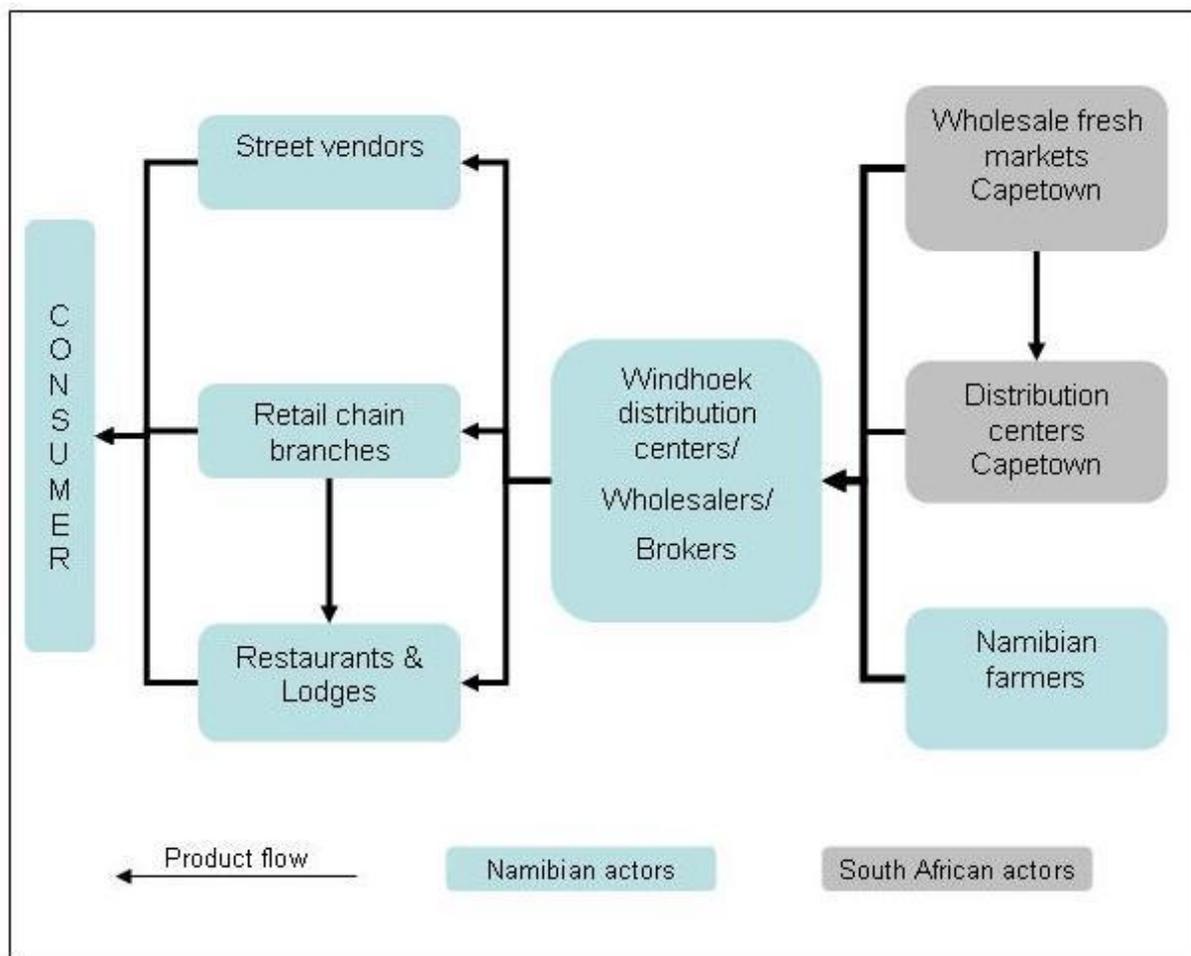


Figure 6: HFP marketing channels via Windhoek

(source: own graph)

5.3.2 Marketing channels in Omusati and the north-central region

Within the north-central region, the markets in Oshikango, Oshakati, Ongwediva and Outapi were examined. Even though they are not all situated in the stipulated AoI of Omusati, their inter-linkages with regard to product flows are significant enough to include them in the assessment.

Oshikango

Oshikango is the major shipment point for HFP to Angola. There are two major market channels: One is export by large wholesalers (mainly of fruit), while the second comprises smaller-scale and less formal cross-border trade. A large proportion of exported products come in transit from South Africa (the most important being apples, oranges, lemons, onions and tomatoes), crossing the border in trucks on a large scale. The major wholesalers responsible for these export flows are Fysal, SAMCO and Brenner. The second product flow is conducted by Angolan traders and takes place rather informally. In order to avoid customs fees which are added to bulk

imports, small private traders cross the border carrying products on their own or organize transport by bicycle or pushcart. On the Angolan side these purchases are sometimes bundled into larger trucks. One apparent target of these traders is the local informal market in the Angolan border town Santa Clara.

Namibian produced HFP sold in Oshikango come from Okahandja, Otavi, Tsumeb and the Aol. Products from the latter include cabbage, tomatoes, green peppers, onions and potatoes and are bought on a seasonal basis from Etunda outgrowers and the SP, farmers around Olushandja Dam and the canal as well as from Shitemo.

Oshakati, Ongwediva and Outapi

These three towns are important in supplying the local population of Ovamboland with HFP products. Marketing channels concentrate mainly on retail chain branches (combining centrally-imported products and some additional locally-purchased vegetables) as well as street vendors and open markets.

With regard to Fysal supermarkets, Oshakati and Outapi are mainly supplied by their main branch in Oshikango, which mostly imports HFP from South Africa and delivers to supermarkets. Local Fysal branches also procure HFP from Etunda and the Olushandja Dam farmers. Spar buys around 35% of vegetables directly from local farmers, mainly through a middleman. Pick n Pay procures products from its distribution center as well as from Tsumeb, Olushandja Dam farmers and Etunda.

A second channel of products from farm to consumer goes through open markets and is illustrated with examples from Oshakati and Ongwediva. These open markets supply consumers in the surrounding region and mobile traders who resell products in the villages. To prevent competition with the official open markets, there is a prohibition on informal street vending in some local towns, including Oshakati.

Typical HFP sold at open markets are onions, cabbage, tomatoes, potatoes, sweet potatoes and green peppers, butternut squash, spinach, pumpkins as well as apples, lemons, pears and oranges. In Oshakati, traders buy products directly from local farms or from middlemen who come and deliver products once a week. Fruit is procured from supermarkets or wholesalers. In the Ongwediva open market, traders buy their products in Oshakati from farmers selling their products in larger volumes off pick-up trucks. Farmers are not allowed to sell directly to consumers in the markets, as they would be able to sell at lower prices, so some sell their products to passersby from pick-up trucks near the open market.

5.3.3 Marketing channels in Kavango

The Kavango HFP market owes its distinct features to its geographical location. The sole city in the region is the relatively large, fast-growing Rundu, which is the most

important marketing hub. Products sold in Rundu include local production from the Kavango River banks and from the major HFP producers throughout the country as well as large-scale imports from Johannesburg. Outside of Rundu, HFP flows in small quantities, trade characterized by small radii in the vast rural regions of Kavango Region.

Rundu

The following section describes the major stakeholders in the fruit and vegetable trade and the main product flows. Figure 7 shows a simplified model of marketing channels in Rundu.

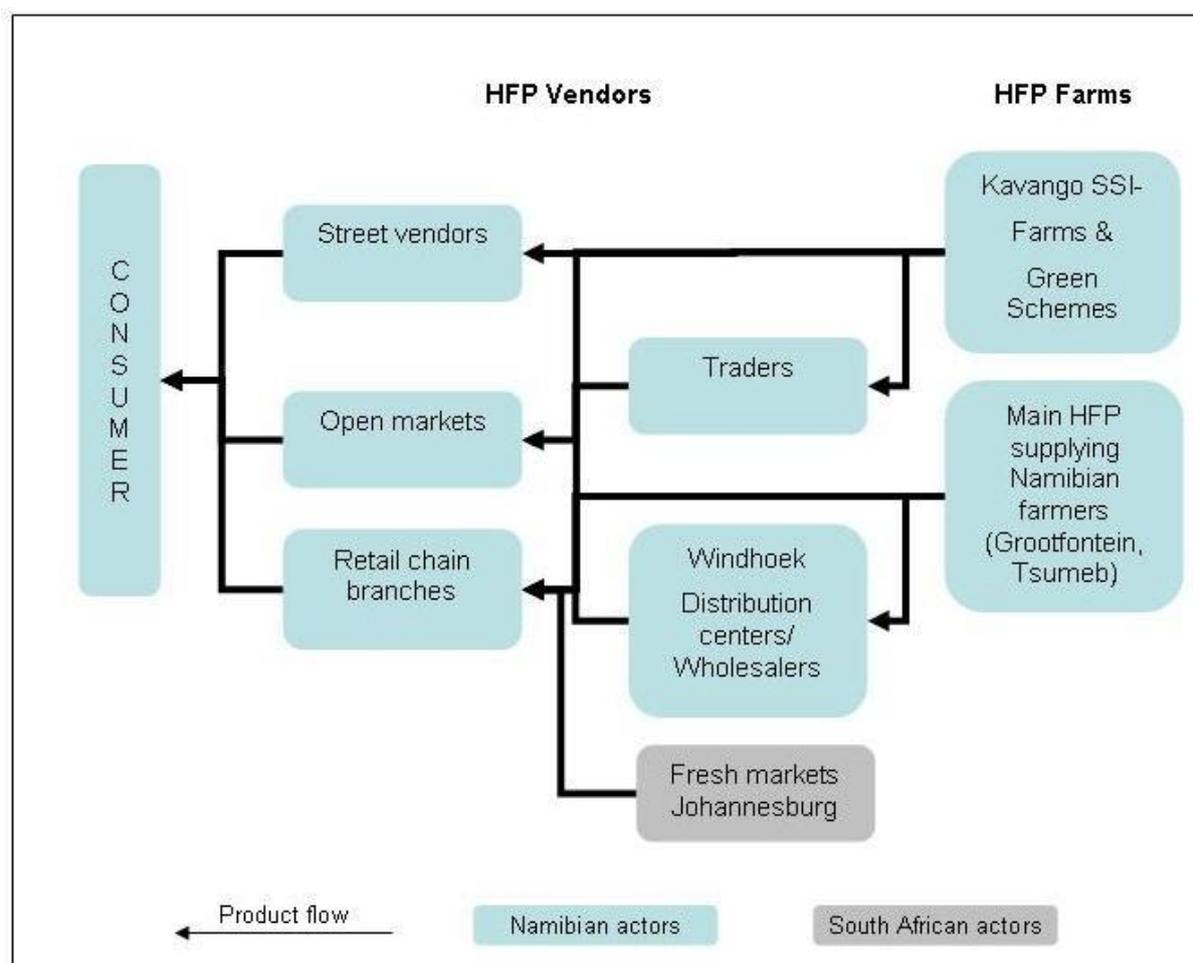


Figure 7: HFP marketing channels in Rundu

(own graph)

The two large retail chains Pick n Pay and Shoprite procure their fruit and vegetables through the companies' DC in Windhoek, as described earlier in this chapter. There are numerous restrictions on additional local purchasing: "If a local farmer from here wants to sell to Shoprite, he has to deliver to Windhoek, get a quality check there and then have the products transported back here" (Interview Shoprite Rundu). The

Kavango Horticultural Area Committee gave other retail chains (OK Foods, ColaCola, Woermann Brock, Spar) a list of contact details for local farmers to facilitate communication regarding supply and demand of local products. Retail outlets in Rundu also cooperate regarding the procurement of HFP from South Africa. Branches of various different retailers in town share transport facilities from the market in Johannesburg. In order to fulfill the MSP, retail chains also procure from national and local producers. Kavango farms which deliver to supermarkets include Salem Cooperative, Kampanza's Garden, Shitemo Irrigation Project, Shankara Farm, Mendez-Farming and Morrorani-Farming, Mussesse Farm and Nkurenkuru farmers, providing cabbage, green peppers, potatoes, onions, pumpkins and garlic within specific months. Farmers who own phones remain in contact with the supermarkets; otherwise farmers and vendors go to stores and offer their products. Product pick-up from farmers' sites only occurs when there is special demand from the supermarket and delivery is insufficient. The major Namibian HFP farmers from other regions are also important suppliers to Rundu supermarkets.

The second major type of marketing channel is the product flow through the three open markets in Rundu: Rundu, Sauyemwa and Kehemu. The range of HFP sold there is small. Kehemu market is the largest in size, while the number of vendors at the Rundu and Sauyemwa open markets did not exceed five or six. Products sold at open markets include onions, carrots, tomatoes, cabbage, green peppers and chilies. The majority of products here come from farms in Kavango Region, with a minority originating in Tsumeb and Grootfontein. Products are delivered either by producers or middlemen or bought at farm sites by the vendors themselves.

Informal street vendors play a more significant role in the sale of HFP in Rundu than in north-central towns. Women generally harvest products at surrounding farms such as Salem, transport them to town and sell them in the streets. As described in Chapter 6.1.3, some micro-scale producers from the river plains also sell their own products informally in the streets. Open market operators plan to stop informal markets by securing an official prohibition.



Image 3: Open market in Rundu

Product flows outside Rundu

Chapters 6.1.3 and 6.2.3 will describe marketing strategies from the farmers' perspective, demonstrating the existence of some short-range marketing channels comprised of small-scale producers in the Kavango river plains outside of Rundu. They primarily supply their own neighborhoods and villages, supplemented by some very small-scale trade with Angola. There is no large-scale trade with Angola, as the border can only be crossed by boat from Rundu and Kavango Region as a whole.

5.4 Marketing services

Following the overview of the supply/demand situation and marketing channels, the picture is now widened to give an idea about the service environment which frames market conditions.

5.4.1 Farming inputs

The information below is derived from interviews with major input suppliers throughout the country, namely AGRA, AGRI-GRO and KAAP-AGRI. Agrivet in Rundu represents the regional level.

Input supply chains

In order to understand the production situation for Namibian HFP on an international scale, it is important to consider farming inputs. The main input commodities are seeds, fertilizers, pesticides, herbicides and – less significantly for SSI farmers – machinery.

Namibia is an input-importing country and most inputs come from or via South Africa. Direct imports to Namibia from other countries are not cost-effective as the domestic market is too small.⁴¹ Inputs are traded by established companies, co-operatives and retailers which source at origin and deliver to distribution centers, warehouses and retail outlets in the production areas (MANICA, 2010). Supply chains from the mostly Windhoek-based companies vary. Primarily target groups of the major supplying companies are large farmers, who order directly due to the greater volumes they require. Small-scale farmers have a disadvantage here, as they need to buy off the shelf in small input supply stores or local branches of supermarkets (see Chapters 6.1.2 and 6.2.2). KAAP-AGRI, for example, supplies chemicals and fertilizers directly to Green Schemes around Rundu, while small- and micro-scale farmers along the Kavango River plains purchase their inputs from the Agrivet store in town, where prices are higher. Due to their small turnover, many products are delivered to stores by courier, meaning transport costs often exceed the values of the products themselves⁴².

Availability of seeds is problematic in the Aol. Buyers depend on the range offered by stores and have few alternatives. Local stores have waiting periods of 2-3 months for delivery of certain seeds: “Local suppliers need a more pro-active selling and planning mentality” for an improved availability of inputs (Interview Manica). To avoid such bottlenecks, some Omusati farmers purchase their inputs by mail order.

Knowledge of input application

Information regarding appropriate use of inputs is disseminated at events such as the Farmers’ Field Days and other information days linked to seasons and specific crops. Farm visits are sometimes arranged, to which experts from South Africa are invited. The companies provide farmers with written instructions for usage and volumes of chemicals. There is little personal consultation due to companies’ limited human resources. Information on sustainable soil reconstruction and water pollution is considered a task for the Government, although it offers no awareness programs on these topics.

Another problem cited by input suppliers is illiteracy among some farmers in northern areas. For example, gravity-drip irrigation could be much more cost-effective than mini-center pivots, but it is difficult to sell directly to the SSI farmers as application requires detailed knowledge. KAAP-AGRI, with its experience with emerging farmers

⁴¹ A ship load of 55,000t of seeds is the minimum quantity to justify a direct import which would meet the countries’ total demand for 5-7 years (Interview AGRA).

⁴² A bag of fertilizer worth 170N\$ can cost up to 188N\$ to transport.

in South Africa, is interested in filling gaps with regard to fund-administration and knowledge-transfer, but needs a clear mandate and support from the GRN or development projects.

Input finance services

The major input supply companies offer staggered payment schemes for farmers. AGRA negotiates delayed-payment arrangements with farmers. AGRI-GRO offers delayed repayment 30 days after purchase to reliable farmers with whom they have an established business connection. KAAP-AGRI subsidizes payments for Etunda and Shitemo projects in cooperation with Agribank. However these payments are irregular and the business model has so far proven dysfunctional.

5.4.2 Transport

As previous chapters have already indicated, transport is a key factor in HFP marketing. Various regional factors must be considered when discussing the transport situation in Namibia. Countrywide, a good network of primary roads links Namibia's agricultural centers with national and regional markets. There are connections to domestic and regional ports and airports, facilitating access to international markets. At a more local level, for example in the rural areas of the Aol, product flow is more difficult as roads connecting remotely situated SSI farmers to different markets are often unpaved and transport services scarce.

Transport of HFP to Windhoek

HFP products that are imported from Western Cape Province to Windhoek usually come in refrigerated vehicles over two nights. Major Namibian producers from Tsumeb, for example deliver overnight, but mostly in non-cooled trucks. None of the SSI farmers in the Aol delivers HFP to Windhoek so far.

Retailers and wholesalers in Windhoek indicated that transport costs amount to 15-25% of price/revenues of HFP, 15% applying to domestic deliveries and 25% to transport from South Africa. For long-haul transport, seasonality and varying harvest times for different HFP are problematic, as trucks must be fully loaded in order to remain cost-effective. On the other hand, empty backhaul transport presents a potential for transport services if logistical planning is coordinated more effectively. For example, return journey from Oshakati to or Caprivi to Windhoek or Walvis Bay, which could also be redirected to Windhoek, have considerable unused capacity. Other untapped transport potential includes backhaul from trucks (both refrigerated and bulk) delivering from South Africa to branches of retail chains in northern Namibia and Angola. Until now purchasers have had to cover costs for both legs of the journey, whereas they could be leveraging synergy effects to fill the backhaul.

Transporting HFP products in the Aol

Market actors in both Aols combine different forms and methods of transport, whatever is convenient and available in the actual situation (see image 4). Depending on volumes and distances, transport methods employed by SSI farmers and small-scale traders in the Aol range from carrying products on the head or on bicycles to 'public transport', which means waiting on the side of the road until someone driving by offers a lift in exchange for money. Some more pro-active farmers hire cars to transport their products to vendors. However, open vehicles are often the only option available, which can lead to loss of product quality, as most HFP requires closed and ventilated transport. While street and open market vendors often buy products from the field and arrange transport themselves, supermarket branches buying from local farmers avoid transport costs by leaving responsibility for delivery to the producers. Retailers only arrange pick-up from producers' fields when deliveries fail to meet demand. Supermarkets also cooperate within different branches (Fysal Oshakati and Outapi) and amongst different retail chains (Rundu) to leverage synergy opportunities.

HFP are highly perishable and have a limited shelf life, but there are as yet no refrigerated trucks and cold storage facilities in Omusati or Kavango. This means there is tremendous pressure on producers in the Aol to sell their products as quickly as possible. Profit losses among SSI farmers resulting from inadequate storage and refrigeration were estimated at around 12%. Collection points are an oft-cited problem area in the case of HFP, unless they can provide refrigeration (or at least shade) and ventilation. Transport immediately after harvest is still the best way to minimize losses. But there is little incentive for major transport providers to expand their services to HFP suppliers in the north. Low product volumes mean minimal profits for truck owners. Infrequent supply of products and unpaved roads in the rural north, with the potential to damage expensive refrigerated trucks, make the prospect even more unappealing. As not all farms are situated directly on main roads, vehicles are sometimes required to go off-road, a factor which would also work its way into the end price, making products less competitive. In addition, information flows between farmers and existing providers of transport are insufficient.



Image 4: Different methods of transporting HFP in the Aol

5.4.3 Post-harvest and marketing infrastructure

Namibia only has minimal post-harvest and marketing infrastructure for HFP, a fact which impacts negatively on production. A report commissioned by the NDC cites poor access to local markets and cold storage facilities for farmers as a significant factor in the country's low production levels (NDC, 2010b). Packaging facilities – where they exist at all – are very basic at the SSI farmers' level. Only some major farmers and GS have modern packaging facilities. The major retailers interviewed all stated that deficiencies in refrigeration, storage, packaging and labeling make products from the north unattractive. Retailers and wholesalers have the upper hand when negotiating with producers as farmers – lacking facilities to store their perishable products – are obliged to sell them quickly (NDC, 2010b). This leads to the current situation, in which “producers are price takers while wholesalers and retailers are price makers”. Hence, the “development of marketing infrastructure together with marketing and distribution channels within Namibia plays a significant role in opening local markets to local producers” (NDC, 2010: 157). The GRN plans to develop a horticultural marketing infrastructure to stimulate production by local farmers on various scales, with marketing hubs in Rundu, Ongwediva and Windhoek. However, even if marketing hubs are implemented properly, distances between SSI farmers' fields and hubs will remain a challenge. Clustering farmers into cooperative structures is one possible method for absorbing distribution costs.

The private sector has been highly critical of the GRN's proposal for marketing hubs. GRN-managed projects are generally the target of skepticism, and there is doubt as to the GRN's ability to subsidize hubs in the long run. “The only way to manage the hubs in a feasible way is to have throughput, because they will have to be financed on a commission basis.” Private stakeholders fear that they will be forced to take products through the hubs, which would interfere “heavily” with the free-market

system. Some major farmers also claim that no feasibility study was conducted with producers before setting out plans and that the needs of important actors were therefore neglected. Producers also complain that the levy proposed to pay for the infrastructure is too high when taken with the existing 1.2% market levy and will further disadvantage input-importing Namibian farmers in international competition. Wholesalers questioned whether quality can be maintained if marketing hubs are open to all SSI farmers. “If the products do not have to fulfill a standard, then buyers will have to have someone on that hub to check the quality of the products”. Private actors in the sector generally hope that the hubs will be operated by a private market agent. An alternative proposal for easing infrastructural deficiencies for HFP marketing has been tabled in the Omusati region. The Olushandja Horticultural Producers’ Association (OHPA) plans to establish a collection point at Epalela, which will be further elaborated in the following chapter.

6 Description of SSI farmers and farm units

This chapter describes SSI farmers and farm units in Kavango and Omusati, differentiating between privately organized SSI farmers (Chapter 6.1) and outgrowers on GS (Chapter 6.2). Both subchapters look more closely at how and under what circumstances farmers operate. They follow the structure shown in Figure 8. A general overview on the main findings for all SSI farm units is found in Annex VI.



Figure 8: Contents of chapter 6

Beyond distinguishing between state-supported SSI farmers on GS and private SSI farmers, the latter group is further broken down into four clusters characterized by different features, being very heterogeneous (see Table 7). This allows a more structured and detailed description of SSI farm units, noting their similarities and differences. Although clusters 1 to 4 are dominant in Kavango and cluster 4 is the most prevalent in Omusati, a solely regional differentiation is not feasible as the clusters themselves are too diverse. In this chapter, we refer to the following clusters of SSI farmers and farm units:

- Cluster 1: Cooperatives and community gardens
- Cluster 2: Private farm-associated SSI farmers
- Cluster 3: Individual micro-scale irrigation farmers
- Cluster 4: Individual small-scale irrigation farmers
- Cluster 5: SSI farmers on Green Schemes

The distinctive characteristics of each cluster and the total number of farmers in both Aols which fall under it are displayed in Table 7.

Table 7: SSI farm clusters, their main characteristics and numbers

Cluster	Main characteristics	Location	Total number of SSI farmers^a
Cluster 1: Cooperatives and community gardens	Active promotion or initiation of irrigation farming and its implementation by people/projects from outside the communities High share of female farmers	Salem Cooperative Rundu, Siyandeya/Heteka Garden Rundu, Tulikwate Seni Garden Project Nkurenkuru, Cooperative Nkurenkuru, Okuma Project Namtuntu	Kavango: 71
Cluster 2: Private farm- associated SSI farmers	Service provision by water services and input suppliers; assistance in marketing as well as transport by private commercial farms; not operating completely independently	Shitemo Farm and Shankara Farm (both located about 80 km east of Rundu)	Kavango: 20
Cluster 3: Individual micro-scale irrigation farmers	Marginalized locations on flood plains; comparatively small plot sizes, small harvest volumes and marginalized position in market High share of female farmers	Floodplains around Rundu	Kavango: ~12
Cluster 4: Individual small-scale irrigation farmers	Individually operating farmers; comparatively successful in terms of production Predominantly male farmers	Around Olushandja Dam and Calueque-Oshakati Canal Some exceptions in Kavango (between Rundu and Nkurenkuru)	Kavango: 5 Omusati: 50
Cluster 5: SSI farmers on Green Schemes	State-supported outgrowers on GSs, not independent (service provision by GS operator/SP)	Etunda GS (between Outapi and Ruacana) (In near future: Vungu Vungu and Ndonga Linea, both located about 80km east of Rundu)	Omusati: 52 (Kavango: 53 placed but not yet farming)
Approx. number of currently operating SSI farmers:			Kavango: 108 Omusati: 102

^a Source: Own estimation.

The map shown in Figure 9 indicates where SSI farm units of the different clusters are located within the Aol.

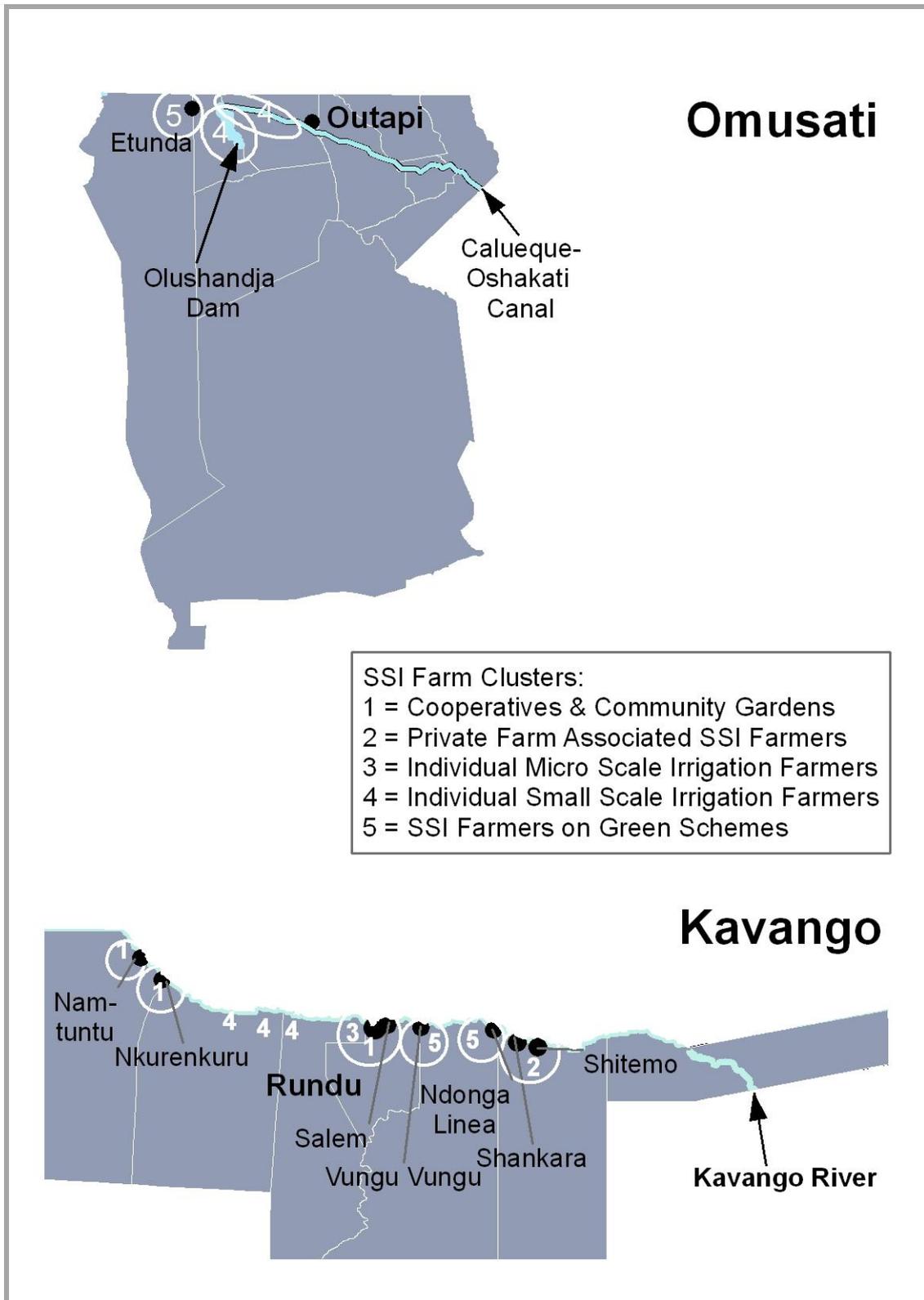


Figure 9: Location of clusters of SSI farm units in Kavango and Omusati

6.1 Privately-organized small-scale irrigation farmers

Empirical findings on cluster 1-4 are displayed in the following.

6.1.1 Motivation, Logic of Action and livelihoods of private SSI farmers

The following chapter describes the motivation, Logic of Action and differing livelihood strategies of privately-organized SSI farmers.

SSIF is a relatively new phenomenon in the two Aols. The longest experience can be found in Shitemo (cluster 2) and in Salem (cluster 1). The majority of interviewees in Shitemo had already begun production in the early 1980s or took over plots from their parents. The earliest farmers on Salem started in 1971, some in the 1980s. Some of them were able to profit from the experiences and knowhow of their parents or grandparents. For all other HFP farmers in the various clusters irrigation farming has no tradition at all within their families.

There are key differences in influence and motivation in deciding on SSIF. Whereas individual small- and micro-scale farmers started irrigation farming on their own initiative, farmers in cluster 1 and cluster 2 were inspired to start HFP production by outside initiatives. Farmers' reasons for starting IF were varied; dominant among them was the idea of making a profit by selling a marketable product: "People will always need food!" Further motives included a desire for new or alternative employment. Other farmers (especially within cluster 4) supported the concept of domestic food sovereignty and decreasing imports from South Africa: "I am proud to feed the nation."

Farming as a way of life

Although IF had no tradition among many of the interviewees, their families were proud of SSI farmers and appreciated the additional food and income they provided. Farmers themselves seemed to identify strongly with the work they were doing and to value the personal development provided by farming. It is worth noting that most of the farmers believed that dedication and hard work were the key to success in HFP production. This is nicely described in a farmer's statement: "Becoming an irrigation farmer is like becoming a Christian! You have to drop everything: drinking, women, bars and hanging around."

Livelihoods and market rationality

None of the SSI farmers produce for subsistence – the commercial, market-oriented purpose of production is absolutely dominant. Therefore deciding which HFP to

cultivate follows market rationale: SSI farmers produce what they regard as being in demand.

For many farmers, their actual household is not at the farm unit itself, but in the village they come from. There they often produce staple crops (maize, mahangu, sorghum) for household consumption and keep some livestock. Hence, farmers in the two regions combine traditional subsistence with a new livelihood strategy.

Within cluster 4, HFP production seems to be the main occupation, whereas in cluster 1 and cluster 3, especially, it provides additional household income (though sometimes only on a seasonal basis). Even though SSIF is market-oriented, HFP production of course provides products for farmers' household consumption: Farmers report that they needed to buy less additional food since starting SSIF. Although the number of people living from SSIF-generated income varies, it seems that farmers not only support their immediate family (spouses, children), but also the extended family, e.g. by paying school and hostel fees for children in secondary school.

6.1.2 Characteristics of privately-organized SSI farm units

As farm units are unevenly endowed with regard to production factors as well as cultivation patterns, they will now be described in more detail. Important features of farms within the different clusters are illustrated with respect to **land, water and irrigation, farming inputs, labor, mechanization, finances and investment behavior** as well as **varieties of HFP produced**.



Image 5: HFP production with irrigation
(left: onions; middle: cabbage; right: tomatoes)

Land

Private SSI farmers operate under very varied conditions. **Plot sizes** range from garden-like fields of 0.005ha at the Kavango floodplains to an exceptionally large 13ha farm at Olushandja Dam (see Table 8). Farmers with particularly small fields

(0.005-1ha) are found in cluster 1 and cluster 3. Farmers on Shitemo or Shankara cultivate slightly more land (on average 1.4-1.5ha), while those in cluster 4 have the largest fields with an average of almost 4ha. All in all, it was striking that there were farmers in each cluster who could not give nor even estimate their plot sizes.

Table 8: Irrigated area (individual plots) per cluster of SSI farmers

Cluster	Cluster 1: Cooperatives and community gardens	Cluster 2: Private-farm- associated SSI farmers	Cluster 3: Individual micro-scale farmers	Cluster 4: Individual SSI farmers
Irrigated area (per farmer)	Salem: 0.5-1ha Heteka Garden: 0.005-0.006ha (50- 60m ²) Community Gardens: 0.08-0.57ha	Shitemo: 1-2ha (average of 1.4ha) Shankara: 0.5-4ha (average of 1.5ha)	Rough estimation (farmers could not provide data): 0.045ha (450m ²)	1.25-13ha (average: 3.95ha; majority between 1.5 and 2.6ha)

The majority of interviewed farmers had to make **payments** of some kind to the TA for their land, except those farmers in cluster 3. The latter had only recently started to farm the unused floodplain along the Kavango without seeking approval from the TA. Farmers in cluster 4 generally obtained utilization rights from the TA and paid only once. These single payments vary dramatically: The lowest price stated was around 69N\$/ha, the highest 2,400N\$/ha.⁴³ Farmers renting land from neighbors or friends pay on a yearly basis. Farmers on Salem (cluster 1) also pay the TA annually, between 40-200N\$/year, although the land was given to the cooperative.⁴⁴ Farmers in community gardens (also in cluster 1) do not pay for land utilization, as plots are provided by co-farmers who have inherited usage rights. Farmers on Shankara got their land from the Rössing Foundation, which acquired the land and handed it over to them as a community. Payments for land in cluster 2 are diverse: While the majority made no payment at all, some pay between 60 and 150N\$/ha/year. In all clusters, those farmers that receive usage rights from the TA can use their land for at least as long as they live, or even pass it on to their children or other family members. Only those who rented their land from other 'private' individuals were unsure about the period they were able to stay on their plot.

In all the cases mentioned, it remained unclear why land payments differed so sharply and why some farmers within the same organizational form did not have the

⁴³ In cluster 4, on average fees for usage rights from the TA were 1088N\$/ha.

⁴⁴ There are indications that the municipality of Rundu claims the land. It remains unclear if negotiations between the TA and the Town Council will have an effect on farmers at Salem.

same regulations. Evidence suggests that TAs charge according to non-transparent criteria or even arbitrarily.

None of the farmers interviewed had yet received confirmation of his/her **land-use rights** by the CLB. Three farmers in cluster 4 had applied for it, but were still waiting for it to be processed (with waiting periods ranging from one to ten years). Land for Shankara's SSI farmers is also under leasehold registration. In any case, interviewees did not regard missing land titles as problematic.

Opportunities to **expand** production areas by accessing more land were assessed quite differently by interviewees: In cluster 4 some regarded it as possible, some mentioned that it would be difficult as plots near water sources have become relatively scarce around the Olushandja Dam and along the canal - "here it is full". This also applied to the community garden in Nkurenkuru (cluster 1). Salem farmers were pessimistic about the prospect of getting more land for irrigation, as the irrigation infrastructure which farmers share is already at capacity. In Okuma Project community garden, land for expansion was available, but there was no equipment to exploit it. Farmers in cluster 2 all stated that they could "easily" get more land if they wanted to expand production area. None of the interviewees in any of the clusters mentioned **competing claims** with regard to their land in terms of different land-use types (e.g. lodges for tourism, livestock, staple crops or commercial farming).

Water and irrigation

Farmers in Kavango generally tend to use either hosepipes or sprinklers for irrigation. In Omusati, drip irrigation and – to a certain extent – sprinklers predominate (see Table 9). While all farmers in cluster 1 use hosepipes to irrigate their crops by hand, at Salem Cooperative, the majority of farmers also supplement them with sprinklers. Watering plants by hosepipe is generally more labor-intensive than sprinkler or drip irrigation. Nevertheless, none of the farmers in this cluster was able to estimate labor input or irrigation costs. At Salem, pumps are powered by electricity and farmers pay around 10-20N\$/hour. As around 42 farmers share a single pump, the area is divided into three groupings and irrigation is done in turns: each group can irrigate two days a week and each individual farmer for about two hours per day (rotation principle). This amounts to just four hours of irrigation per week for each farmer. Some interviewees regarded limited irrigation time as problematic. This situation, where irrigation measures disregard plants' need for water and preferable irrigation hours within the day, is also found in cluster 2. Here, ten farmers share a single pump and divide the day into two irrigation intervals. All of the SSI farmers in cluster 2 use sprinkler irrigation. Management of private farms provides farmers with pumps, including the cost of maintenance and electricity. Farmers in community gardens used diesel to run their pumps with costs ranging between 10N\$/day/farmer

(Tulikwate Seni) and 71.43N\$/month/farmer (Okuma Project). Farmers in cluster 4 did not work together for water extraction. Drip irrigation is dominant in this cluster, with some using sprinklers and even fewer practicing furrow irrigation. Running costs for irrigation varied dramatically (from 0.01N\$/ha/day to 172N\$/ha/day).⁴⁵

In general, and for all clusters, the **variations in irrigation costs** can be explained neither by price differences between energy types nor by the various water consumption patterns required by different plants. None of the farmers interviewed monitored water volumes or labor input for irrigation.

Table 9: Irrigation methods and water sources within SSIF clusters

Cluster	Cluster 1: Cooperatives and community gardens	Cluster 2: Private-farm- associated SSI farmers	Cluster 3: Individual micro-scale irrigation farmers	Cluster 4: Individual small- scale irrigation farmers
Irrigation technique	Sprinkler, hosepipe	Sprinkler	Bucket irrigation	Drip irrigation, Sprinklers, (Furrow irrigation)
Use of Irrigation Infrastructure	Joint	Joint	Individual	Individual
Water Source	Kavango River	Kavango River	Kavango River	Olushandja Dam, Calueque- Oshakati Canal and Kavango River

As farmers do not pay **water fees** and extracted volumes are neither restricted nor monitored in either of the two regions, farmers can irrigate as much as they want – as long as they can afford the pumping costs and are not limited by irrigation infrastructure. Some farmers in Omusati (cluster 4) mentioned that water levels in the dam and canal were too low during the dry season. Here, some of the farmers were already aware of existing plans to introduce a pricing and monitoring system for farmers at Olushandja and the canal (for further information see Chapter 4.3.2).

In all clusters (and both regions) **water quality** was described as good. Only in some of the shallow wells at Heteka Gardens saline water was evident. Individual farmers along the Olushandja Dam and Calueque-Oshakati Canal complained about sand in the water but managed it using sand filters – which of course required higher investments.

⁴⁵ The reasons for this enormous range could not be verified. Observations suggest that they are the result of insufficient monitoring on the farmers' side rather than real differences in costs.

Farming inputs

Awareness of the importance of using high quality seeds appeared to be quite high among all SSI farmers. But farmers in all clusters considered farming inputs such as seeds, fertilizers, pesticides and herbicides to be expensive and – in the majority of cases – not readily available. Farmers in Kavango (clusters 1, 2, and 3) mainly buy their inputs at Agrivet (Rundu) or supermarkets (Rundu and Nkurenkuru). At Shitemo and Shankara, managers sometimes gave leftover inputs to farmers for free. Nevertheless, farmers interviewed in Kavango generally regarded the input supply situation as difficult, as they could not easily afford them and timely availability also posed a problem. This latter aspect often arises from required inputs selling out during production peaks; re-ordering takes time which farmers need for cultivation.

In contrast, the majority of farmers in cluster 4 purchased from larger and more specialized farming input suppliers in Windhoek, Tsumeb, Grootfontein, Okahandja and Otjiwarongo. Some also bought pesticides or herbicides in closer towns such as Outapi and Oshakati.⁴⁶ Another difference between this cluster and the others is that a third of the interviewed farmers ordered seeds, and to a lesser extent pesticides, by mail from Windhoek.

In cluster 1 to 3, it is worth noting that the majority of SSI farmers used manure to improve their soil; in cluster 3 this was the sole fertilization method. Other farmers combined organic and chemical fertilizer. This may be due to the price structure of fertilizers: Despite transport costs, locally purchased manure from cattle or goats is less expensive and more readily available. All interviewees complained about costs for fertilizers – even for organic varieties. Farmers in cluster 4 seemed to have the highest input of chemical fertilizers.

As with all farming inputs, it is transport that makes such products exceptionally expensive in northern Namibia (also see Chapter 5.4.1). And as the poor sandy soil in the Aols requires extra fertilizer, transportation costs for inputs have a very serious impact on farm budgets.

Pesticide application in HFP production is more prevalent than the use of herbicides as most farmers weed manually. Only a few farmers in cluster 1, 2 and 4 use herbicides at all. Pesticide use differs among farmers in all clusters, mostly due to individual economic factors.⁴⁷

⁴⁶ Only in cluster 4, there is a single engaged small farmer along the Calueque-Oshakati Canal who started ordering larger amounts of fertilizer from Windhoek and selling it to other SSI farmers.

⁴⁷ See also Chapter 5.4.1.

Labor

Despite the fact that HFP production in general is comparatively labor-intensive, clusters differ with regard to labor input (see Table 10).

Table 10: Types of labor and wages within SSIF clusters

Cluster	Cluster 1: Cooperatives and community gardens	Cluster 2: Private-farm- associated SSI farmers	Cluster 3: Individual micro-scale irrigation farmers	Cluster 4: Individual small-scale irrigation farmers
Type of labor	Salem: family labor; temporary workers; half of interviewees: one permanent worker Community gardens: family labor only	Family labor; Temporary workers	Family labor only	Temporary workers; 1-10 permanent workers (average: 5.2 employees per farm); Occasional family labor
Wages	Permanent labor: 300- 400N\$/month Temporary labor: 20- 30N\$/day	Temporary labor: 15N\$/day	None	Permanent labor: 300- 1.500N\$/month (average of 655N\$/month) Temporary labor: 20- 50N\$/day

Farmers in community gardens (cluster 1) and micro-scale irrigation farmers (cluster 3) do not hire any additional workers and rely solely on help from family members – although they use more labor-intensive irrigation techniques. Family labor is a significant factor in all clusters – in cluster 4 alone, half of the farmers get occasional help from relatives. Except for cluster 3, all SSI farmers hire temporary workers on a daily basis when there are labor peaks in production; wages range from 15N\$/day to 50N\$/day (the majority pay around 20-30N\$/day).

With regard to employment of permanent laborers, cluster 4 is exceptional: All but one of the farmers interviewed employ between one to ten permanent workers (average: 5.2 employees per farm). Wages for permanent laborers differ in cluster 4 and are paid according to experience and responsibility. Within the other clusters, only half of Salem farmers interviewed employ at least one permanent worker and wages are lower than in cluster 4 (see Table 10).

Mechanization

Clusters also differ with regard to mechanization. Only the farmers in cluster 2, and the majority in cluster 4, use advanced machinery such as tractors for soil preparation. Farmers at Shankara and Shitemo were able to hire mechanization services from the private farm with which they are associated. Costs vary from 60N\$ for the whole plot in Shankara (charged after harvesting season when farmers have

sold their crops) to 130N\$/ha on Shitemo. More than one third of interviewees in cluster 4 own a tractor and tools such as ploughs, chisels or reapers. The remaining rent tractors from other farmers or in one single case from the Etunda SP. The availability of machines and mechanization services does not in itself appear to be a problem within this cluster, although affordability is an issue for individual farmers.

In cluster 1, the majority of farmers interviewed own no machinery for cultivation at all. The few who hired mechanization services were limited to draught animals for plowing. The only machinery farmers own collectively are water pumps. Individuals only have simple tools such as hoes, rakes and spades, as well as their sprinklers and hosepipes. None of the farmers in cluster 3 own machines, except some simple tools and buckets for irrigation.

Finance and investment

Irrigation farming – especially drip irrigation – is generally investment-intensive. Nevertheless, differences in investment behavior can be found across the different clusters. Around half of farmers interviewed in clusters 1 and 2 had spent money on irrigation equipment (hosepipes, tubes, sprinklers), simple tools or fencing within the last five years. Cluster 3 is an anomaly with regard to investment behavior: As they generally operate on a very low level, they only invested in machetes, fences and buckets. All in all, SSI farmers interviewed in cluster 4 made greater investments than others: Many bought one or more pumps, pipes, drip lines or sand filters. Some even reported investing in cars, small pick-ups, tractors and farm buildings.

In all clusters, and in most cases, the means to buy equipment and other necessities came from personal savings and profits generated from HFP production. None of the farmers had taken loans or other forms of credit, although some farmers in cluster 4 had received informal loans from family or friends. Running production costs are not financed by borrowings. Few interviewees saw opportunities to obtain credit, for example from Agribank or other financial institutions, and information on availability and conditions of loans was very patchy. Some farmers from Shankara had previously sought financial assistance from Agribank but were unable to fulfill the conditions, as they had no leasehold papers at the time.⁴⁸

⁴⁸ See also Chapter 4.1.5.



Image 6: A rare case of active bookkeeping in cluster 4

Skills and activities related to business planning and financial management generally appeared to be very sketchy and sporadic. This observation is underlined by the attempt to collect detailed production data for several HFP (in order to calculate gross margins, opportunity costs and income for individual farm types). There was no reliable, differentiated data available and farmers were generally unable to supply such basic figures as planted area per crop or yields. Labor input and irrigation costs are not monitored or calculated per crop or cultivated area. The absence of basic bookkeeping was a striking factor among farmers in all clusters.

Cultivated products

SSI farmers of all clusters produce a **variety of HFP**: Cabbages, onions, carrots, tomatoes, sweet potatoes, butternut squash, spinach, pumpkins, green peppers, chilies, gem squash, beetroots and garlic. Fruit production is minimal, with watermelons predominating. Papayas, mangoes and guavas are cultivated to a very small extent in Omusati. Farmers in all clusters favor cabbage, tomatoes and onions due to high customer demand for these products. This demand orientation results in further incentives as named by interviewees: ability to sell year-round, better prices, higher profits and income. This reasoning underscores the market orientation of SSI farmers in all clusters.

Most SSI farmers practice some form of crop rotation. With few exceptions, farmers diversify their cropping patterns to some degree and monoculture is rare. Most of their crops have more than one season per year and only flood plain farmers (cluster 3) are limited to one season because their land cannot be used during flooding. Other farmers in Kavango appeared to be unaffected by floods, while some interviewees in Omusati (cluster 4) stated that flooding caused by heavy rains can be

problematic.⁴⁹ Frost did not appear to be a problem in Omusati, whereas in Kavango it limits production of some HFP (e.g. tomatoes) during wintertime.

Unfortunately, it was impossible to generate reliable data on **productivity** per hectare for HFP in any cluster, as farmers' information on harvested volumes and exact areas for different crops is sketchy and unmonitored, except for a few cases in cluster 4. However yields per hectare vary greatly here: Where such data was available at all it ranged from 4t/ha/season to 75t/ha/season in the case of tomatoes. Observation of fields and production methods suggest that these broad variations are not attributable to differing performance levels or skills among farmers so much as a lack of reliable production data. This holds true for other products as well.⁵⁰

Although SSI farmers produce a variety of HFP and never rely on a single crop, they generally focus on crops which are subject to local demand (cabbage, tomatoes, onions) and mainly produce at the same times. This leads to a situation of increased competition (supply situation) and low degree of diversified supply.

6.1.3 Marketing strategies of privately-organized SSI farmers

This chapter describes farmers' pre-marketing steps, marketing channels, and transport conditions as well as prices for HFP and pricing information systems. For a description of marketing beyond the SSI farmers' level, see Chapter 5.3.

Pre-marketing steps

Of the pre-marketing steps such as washing, sorting, grading, weighing and packaging, at least some steps are carried out by a large share of farmers throughout all clusters except cluster 3 (individual micro-scale farmers). Washing, sorting and packaging is regularly carried out by approximately half of the farmers interviewed in cluster 1 and the majority of farmers interviewed in cluster 2. Within cluster 4 almost all farmers sort their HFP according to quality and/or size, most of them packaging the goods in crates or sacks but only few weighing or washing their produce.

A common characteristic across all clusters is that none of the farmers has appropriate facilities to **store** the HFP, which affects marketing opportunities and can be a factor in post-harvest losses. Awareness of the need for proper storage facilities is still relatively low among SSI farmers in all clusters.

⁴⁹ Heavy rains increase the incidence of soil-born diseases (e.g. nematodes) and pests, drain nutrients from the soil and damage some vegetables.

⁵⁰ For cabbage, for example, data on productivity ranges from 8t/ha/season to 31.25t/ha/season (based on farmers' estimates at Shitemo).



Image 7: Pre-marketing steps

(left: storage and sorting of tomatoes; middle: bags for packaging; right: tomatoes in crates)

Marketing channels

Marketing strategies and channels for HFP among individually-organized farmers show similarities as well remarkable differentiations across clusters. Farmers generally use a variety of marketing channels, ranging from selling directly from the field to transporting crops to relatively distant marketplaces. Common across all clusters is the fact that farmers generally market their products themselves, that a relatively high proportion of crops is sold directly from the field to individual customers (end consumers and traders selling on streets and in the open markets) and that farmers did not enter into contracts with customers. These factors aside, there were differences across clusters and regions.

Alongside sales to individual customers, further marketing channels for the Salem cooperative (within **cluster 1**) include small supermarkets (such as ColaCola and Kavango) and catering companies, which generally buy directly from farmers' fields. Retailers (such as OK Food Store, Spar and Pick n Pay), schools and hostels represent another channel, although still relatively insignificant. The second cooperative, Heteka Garden, targets surrounding areas, including Angola: Farmers sell directly in open markets and to street vendors on both sides of the Kavango River.

Farmers associated with private farms (**cluster 2**) sell to a variety of customers from the plot as well as on the streets and in the open markets of Rundu. Shankara farmers can leverage the farm manager's infrastructure and marketing connections, with previous major buyers including Independence Catering.

Main marketing strategies within **cluster 3** are selling HFP on the streets and in the open markets in Sauyemwa and Rundu, although some refuse to sell there because they fear rejection in the market.

In **cluster 4**, which is mainly found in Omusati, farmers tend to market their produce to Oshikango, the major border crossing to Angola, where they supply the relatively informal cross-border trade.⁵¹ Individual farmers can sell up to 90% of their produce via this channel. Neighboring communities and villages represent another important channel, as does sales direct from the farm gate to private customers, middlemen, small traders and hawkers. Few farmers supply supermarkets (such as SPAR, Fysal, Pick n Pay) or catering companies (such as Ekatras, NutriFood, Atlantic), and then only occasionally. Sales to individual retailers also appeared to be problematic for farmers in cluster 4. One farmer said: "It's not easy because you are not able to supply on a regular basis." Aside from the issue of irregular supply, farmers also cited the absence of communication channels between themselves and retailers as a reason for this difficulty: "Retailers here don't know us and communication is bad." In cluster 4 there was much more awareness and utilization of varied marketing opportunities for different crops than in clusters 1 to 3. Even though farmers market predominantly to Oshikango, they are aware that other markets (such as Outapi, Oshakati, Ongwendiva, Ondangwa) sometimes offer better conditions for certain crops.

SSI farmers have differing **preferences** with regard to customers. Some find it easier to sell to middlemen and traders from the plot because they buy frequently and arrange their own transportation. Others prefer selling to customers directly because they can sell more regularly while remaining completely independent. Still others prefer selling to catering companies and supermarkets, which generally buy larger volumes and offer better prices.

There are no standardized selling patterns regarding the point at which **harvests** are marketed: Within clusters 1 to 3 farmers simply harvest and sell whenever crops are mature and there is customer demand (on Salem customers can even harvest crops themselves). Within cluster 4 strategies are more heterogeneous; some farmers follow the same harvest patterns as clusters 1 to 3, while others market their products more regularly (1-3 times per week).

The **share of the harvest** which can be sold differs from farmer to farmer. Within cluster 1, for example, half of the interviewees from Salem were unable to say how much of the harvest was sold and how much was lost to wastage, while the other half

⁵¹ For a more detailed description of this marketing channel see chapter 5.3.2.

reported that they sold most of their harvest. Farmers from the Heteka Garden cooperative said they were unable to sell their entire harvest due to transport problems and oversupply in markets (especially since the recent introduction of IF in Angola). Within cluster 4, more than half of farmers interviewed said that they were able to sell 100% of their harvests, while the others quoted figures of 15-40% for goods left unsold. These figures reflect differing marketing opportunities for individual farmers within specific clusters.

Organization of transport

Farmers with access to their own transport (pick-up trucks) are very rare in cluster 4 and all but non-existent within clusters 1 to 3. Almost all farmers were required to hire private transport to deliver their products. Consequently, transport is the most important contributing factor in marketing costs. Aside from the cost – which farmers perceive as very high – further problems include the availability, reliability and quality of hired transport. Farmers in cluster 2 emphasized that transport frequently arrives late, causing late delivery to customers or product spoilage.

Prices for HFP

Prices for HFP generally vary little between clusters, with price variations usually attributable to size variation (especially in the case of cabbages; see Table 11). The example of price margins for tomatoes within cluster 4 illustrates different factors: prices vary according to the point of sale (cheaper at the farm gate and more expensive if transported to more distant markets) as well as seasonality and consequent supply and demand within the market. This is a known fact among farmers, although they do not act on it by adapting production to demand peaks.

Table 11: HFP prices within SSIF clusters

HFP	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Cabbage	5-10N\$/head or 50N\$/bag of 20kg; 2N\$/bulk of leaves (cooperatives) 3-6N\$/head; 1N\$/bulk of leaves (community gardens)	5-10N\$/head (Shankara) 2-5N\$/head (Shitemo)	5-10N\$/head; 2 N\$/bulk of leaves.	3-8N\$/head or 40-70N\$/sack of 25kg
Onion	1N\$/big one or 30N\$/10kg	1N\$/big one	2N\$/big one	4-8N\$/kg
Tomato	1N\$/two big or three small ones (cooperatives) 5N\$/3-6 tomatoes (community gardens)		1N\$/3 big or 4 small ones	40-150N\$/crate of 25kg

Farmers obtained information on price and demand fluctuation by different means: Farmers in cluster 1 stated that they received this information from traders or other individuals, or not at all. Farmers in cluster 2 received information from the radio, other farmers, the KHAC (Shitemo), the Shankara farm manager or by checking in supermarkets. Farmers in cluster 4 received timely information by telephone or in person in the market (middlemen, supermarkets), from other farmers or Etunda's SP.

6.1.4 Training, knowhow and organization of private SSI farmers

All farmers interviewed regarded knowledge as a crucial success factor in producing HFP. Nevertheless, not all farmers had been trained in agricultural production, irrigation farming or horticulture. While farmers in cluster 3 had received no training at all, the majority of interviewees in cluster 1 had participated in some kind of training from MAWF officers or MITC staff. On Shankara, farmers had either joined training sessions held by the Rössing Foundation⁵² or provided by the former farm manager. Some of the farmers on Shitemo had attended training sessions or workshops at the MITC or received training from a MAWF extension officer. Only a third of the interviewees in cluster 4 had received some kind of training in agriculture or horticulture.⁵³ All in all, farmers who participated in training appreciated the knowledge they had gained and generally made use of it in their daily work. Although training varied in length and provider, the focus was usually on production-related knowhow.

For those farmers who did not have any training (as well as many who had), information sharing, knowledge exchange and advice from other (preferably more experienced) farmers was of particular importance. Farmers in all clusters cited observation of production methods among friends, neighbors and relatives as an important means of learning. Furthermore, all farmers interviewed emphasized that learning-by-doing and trial-and-error on their own plots, however risky, were very important in learning how to produce HFP.

⁵² The Rössing Foundation is a trust of the mining company Rössing Uranium Limited to implement corporate social responsibility activities. It initiated SSIF on Shankara.

⁵³ E.g. one-week training by NAB, two-year on-the-plot training at Etunda, UN Vocational Training Program, three-year MAWF training in agriculture in Mahenene.



Image 8: Ways of learning

(left: MITC in Kavango; right: learning from each other)

In the area of practical production-related knowledge, findings and observations point to variations among farmers in different clusters – regardless of whether or not they had been trained. Some of the interviewees in cluster 4 already had detailed knowledge on fertilization (amounts, types, application according to plant life cycle and other factors). The majority was aware of the importance of plant nutrition: “A farm is like a stomach: it needs to eat every day!” In contrast, farmers in cluster 1 did not apply nutrients in a planned and regular manner even though they had been trained. They mentioned fertilizing if plants failed to grow or if their leaves turned yellow – by which time it is too late.

Farmers, particularly those in clusters 2 and 4, complained of a lack of training in topics beyond agricultural basics.⁵⁴ They considered marketing knowledge (demand fluctuations throughout the year, researching and accessing new markets, pricing information) and bookkeeping to be important success factors in HFP production. It is worth restating that skills and activities with regard to business planning and financial management generally seemed to be sketchy and sporadic. As previously explained in Chapter 6.1.2, most farmers across all clusters monitored neither the costs nor the benefits of production.

Government extension services generally proved to be more active in training SSI farmers in Kavango than in Omusati. The MAWF in Rundu even has a dedicated extension officer especially trained in horticultural production. Extension services are an insignificant factor in providing information or training in HFP production in Omusati. They appear to mainly concentrate on staple crops and livestock and

⁵⁴ Only one interviewee in cluster 4 (Kavango) received training in financial management.

themselves mention a lack of detailed knowledge on irrigation farming (see also Chapter 4.1.4).

SSI farmers' organizations

Associations of HFP farmers exist in both Aols: the Kavango Horticulture Area Committee (KHAC) and the Olushandja Horticultural Producers' Association (OHPA) in Omusati. Both organizations still have relatively few members (KHAC: 20 out of 108 SSI farmers in Kavango; OHPA; 32 out of 102 SSI farmers in Omusati). These regional associations form a communication channel to the NAB and the newly-established National Association of Horticultural Producers (NAHOP). KHAC's aims are to distribute Government information to farmers, provide management and production assistance and to serve as a platform for knowledge exchange. The OHPA focuses mainly on supporting exchange between farmers and is a strong supporter of the proposed consolidated collection, storage and marketing point in Epalela.⁵⁵ Some of the farmers in Salem and Shitemo appear to be members of the KHAC; its head is one of the farmers interviewed in cluster 4. Half of the interviewees in cluster 4 are members of the OHPA. Others mentioned that they knew of the associations, but that they found the membership fee prohibitive⁵⁶. None of the interviewees from community gardens, micro-scale irrigation farmers (cluster 3) or Shankara were members in any kind of organization.

6.1.5 Farmers' perception of change, opportunities and challenges

In addition to the more general discussion of opportunities and constraints in the SSIF sector in Chapter 7, this subchapter summarizes how SSI farmers themselves assess the effects, opportunities and challenges of HFP production.

Even though most of the farmers had started irrigation farming from scratch, generally without detailed knowhow, most farmers stated that they would start this kind of production again. In general, they appreciated the **changes** SSIF has brought. Since starting irrigation farming they had experienced the following benefits:

- Higher income and employment rates,
- improved nutrition (HFP as additional food source and/or income enabling greater food purchases),
- small savings,
- investment in their children's education (school fees),

⁵⁵ Epalela Nawa is located north of the Olushandja Dam on the road from Ruacana to Outapi. See Chapter 6.1.5

⁵⁶ Member fees for KHAC are 150N\$/year, for OHPA 450N\$/year.

- investment in houses and cars,
- greater knowledge and experience as well as
- greater respect from others.

One farmer mentioned pride in the fact that by employing workers he was helping whole families; some farmers simply enjoyed the work in itself. Others cited the regularity of cash flow (in comparison to livestock farming) as a positive aspect of SSIF. Female SSI farmers, especially, mentioned the benefits of having their own income and the power to decide for themselves where and how to spend the additional income (financial empowerment).

SSI farmers interviewed identified **success factors of SSIF** especially with regard to HFP production itself. In their opinion the following factors were crucial for successful production:

- Availability of sufficient water and suitable irrigation techniques,
- availability and access to land near water sources,
- savings and credit (as means to investment),
- knowhow and information (regarding use of inputs, marketing, prices, etc.) and
- availability of affordable farming inputs.

Farmers interviewed saw **opportunities** for HFP production on a level appropriate to their personality, motivation and individual plans. They described themselves as highly committed and dedicated to their work. Farmers in cluster 4, especially, regarded their profession not just as a source of income, but as a way of life. As a consequence, their plans for the future are ambitious. These included not just continuing production but also intensifying, expanding and diversifying (for example, into fruit cultivation). Some farmers in cluster 4 also planned to invest in other economic activities such as livestock production, minimarkets, maize mills, rooms to rent or aquaculture.

Discussions with SSI farmers further revealed that they saw the success of individual farmers as relative to the degree of cooperation and coordination. Almost all SSI farmers are organized in some way, either informally (farmers on Shankara, Shitemo) or formally (cooperatives, association membership). This is seen as beneficial to the farmers' ability to solve problems. Nevertheless, opportunities arising from cooperation (such as reduction in competition, collective marketing, information exchange and joint purchase of inputs) have not yet been fully realized.

Still, problematic issues remain and are critically discussed by farmers. Major **challenges** from farmers' perspective are:

- **Marketing:** Farmers recognize the importance of functional marketing channels in the production of perishable cash crops like HFP, but finding and securing these channels remains a challenge. Another major issue is competition for customers. This is partly due to the fact that SSI farmers tend to produce the same HFP at exactly the same time: “Farmers are their own worst enemies.” Competition with big farms such as GS is another factor (Shitemo and Shankara, for example, are located between two big GSs, whom they regard as competition).
- **Transport** problems are another major marketing challenge. Farmers described difficulties regarding reliability, availability and cost of transport, especially privately-hired transport.
- Availability of affordable **inputs** – namely seeds, fertilizer and pesticides – was regarded as problematic. Furthermore, information and other services related to inputs were perceived as very poor.
- Although some farmers were already well equipped with **machinery**, others desired a more extensive or improved irrigation infrastructure as well as machines for cultivation.
- Shared **irrigation** (rotation principle in clusters 1 and 2) is particularly inefficient, failing to meet plants’ needs. Other techniques, such as bucket irrigation (cluster 3), are very labor-intensive.
- Another challenge mentioned is lack of access to **finance and credit**. Most farmers would like to expand their production but see lack of finance as a hindrance, especially as many farmers are unable to save significant amounts.
- The occurrence of **natural phenomena**, like floods in rainy seasons or frost in winter, is problematic for some farmers.
- As well as the aforementioned challenges, which refer to all clusters, there are some **cluster-specific challenges**. Farmers in cluster 2 for example, can access services and assistance from those private commercial farms. Although beneficial, this leads to relatively high dependency; the majority of farm units would most likely not survive without this support.

Some farmers have clear ideas and **solutions** for tackling these challenges. One of the most popular initiatives among Omusati farmers is the establishment of a joint collection, storage and marketing point in Epalela. This project is mainly promoted by the OHPA, with the aims of reducing the marketing burden on farmers and establishing good relations with customers. By collecting the produce at one point and employing a dedicated marketing manager, the association hopes to reduce transport costs for farmers, ensure steady supply for customers and establish a central point of contact for retailers and other potential buyers. One farmer suggested

another possible advantage of such collective marketing: Direct competition between farmers could improve the quality of HFP produced. Individual farmers are looking to the GRN or other donors to support this project. Other possible solutions for existing problems include regular farmer training, as well as transport and equipment support. Individual farmers said that the GTZ and KfW should not “just put money” into the sector, but rather into training and machinery. Competition with GSs is another problem for private farmers, illustrated by one farmer’s statement: “You should not put money into the GS, although that is the way you normally do it. That would kill us!”

6.2 SSI farmers on Green Schemes

This paragraph describes the situation of SSI farmers on Green Schemes according to the same structure used in Chapter 6.1:

- Motivation, Logic of Action and livelihoods
- Farm characteristics
- Marketing strategies
- Training, knowhow and organization
- Farmers’ perception of change, opportunities and challenges

There are three GSs located in the two study regions: the Etunda Irrigation Project (Omusati), Ndonga Linea and Vungu Vungu in Kavango (see Figure 9). While the 53 SSI farmers on Ndonga Linea and Vungu Vungu were only recently placed there (June/July 2010) and are not yet producing, 52 out of 96 potential outgrowers are currently operating on Etunda. This chapter therefore concentrates on the situation of farmers working and living on Etunda GS, which was established in 1992.⁵⁷

6.2.1 Motivation, Logic of Action and livelihoods of outgrowers

Anyone wishing to become a farmer on a Namibian GS must reply to a MAWF vacancy announcement and attend a one-year training course at the MITC. Training courses at the MITC were only introduced in 2006, meaning those placed before have not received specific training.

Farmers on Etunda have varying educational and professional backgrounds. These range from unemployment, high school graduation and MITC degrees to experience in teaching and engineering. Major **reasons for starting** IF have therefore included: Gaining employment, making money, desire for food sovereignty in Namibia and a

⁵⁷ For further information on the GSP see chapter 4.1.2.

general passion for agriculture. The monetary motivation is especially strong among farmers' reasons for producing for market. Length of IF experience varied greatly; some farmers had already started with IF at the end of 1990, whereas others had started just two years previously.

IF is generally seen as a **well-received innovation** within farmers' socio-cultural context. Even though none of the farmers' parents or grandparents was engaged in irrigation farming, they encourage their descendants in continuing with it. As there are rarely any other income-generating activities within the outgrowers' families (including parents etc.), IF is an important economic factor in farmer's households. IF was found to be the major source of household income even in cases where other family members were employed. Farmers interviewed made an annual profit between 10,000N\$ and 47,000N\$⁵⁸ from HFP production. Interviewees mentioned that the money supported five to eleven people (household members as well as extended family), although not all of them lived on Etunda.

6.2.2 SSI farm characteristics on Green Schemes

This chapter describes endowment and access to production factors on SSI farm units on Etunda GS, using the same structure as subchapter 6.1.2.

Land

The standard field size for outgrowers is 3ha. Farmers may apply for a maximum of 6ha, but most are yet to cultivate such extensive plots. The current situation, where fields are often abandoned, may offer existing farmers the opportunity to apply to the MAWF for use of these neighboring plots.

There is a surprising lack of uniformity regarding land titles on Etunda. According to farmers interviewed there is a lack of consistency in regulating land use payments, distributing certificates or defining the farmers' land tenure. Here farmers are confronted with uncertainty and contradictory information. Some farmers pay 500N\$/year, but couldn't say who they remunerate – MLR or Agribank. Those who had not yet been charged stated that they have to pay in future, although the moment was still to be determined. With regard to official land use certificates, some farmers already had a leasehold (from MAWF) whereas others had sent "some paper or other" to the MAWF or the MLR. There are even significant variations in duration of

⁵⁸ To put these numbers into relation it must be said that an untrained worker earns around 6,000-10,000 N\$/year (information based on interviews; a comparison of the GDP per capita would not be feasible as inequality in income distribution in Namibia is one of the highest in the world).

tenure, from three years to 99 years, or open-ended. When a farmer dies the land normally stays with his family – if they want to keep the land and can afford it.

SSI farmers at Etunda observed degradation in **soils** which were generally poor to begin with. They claim that it “loses quality” (fertility) and that “some fertilizers do not work anymore”. Unbalanced pH and nematodes were cited as additional problems.

Water and irrigation

Water for irrigation originates in the Calueque Dam. A network of pumps and pipes, maintained by the SP, supplies the farmers. Farmers pay a fixed price of 0.25N\$/m³ for this service and water extraction is monitored by a water meter on each individual plot. There are generally no restrictions on water usage so long as farmers can pay their monthly bill. SSI farmers at Etunda had no complaints about water quality. Sprinklers irrigate farmers’ plots, a fact which interviewees described as a bottleneck in production, as sprinkler irrigation isn’t appropriate for some cultivated crops (such as tomatoes).

Farming inputs

Availability and affordability of farming inputs such as seeds, pesticides, herbicides and fertilizer is similar for most farmers at Etunda. All farmers purchase from the SP as long as quantity and quality of inputs is sufficient. Some farmers even felt obliged or ‘forced’ to buy from the SP, a situation which apparently stems from a voucher system recently introduced by Agribank (see below and Chapter 4.1.5). Nevertheless, some SSI farmers get inputs in Oshakati (seeds, pesticides), Tsumeb (fertilizer) or Windhoek (seeds), where they are not available at Etunda. Overall, farmers face difficulties in getting inputs they need for HFP production. Prices are perceived as excessive and transport costs (if inputs are not available from the SP) further increase expenditure. Furthermore, necessary inputs are not always available at the right time, either from the SP or stores in Windhoek.

Labor

Family members as well as additional workers are involved in labor-intensive HFP production. Most farmers were supported by at least one additional family member, doing more or less the same tasks as the farm-owner herself/himself. Almost every farmer on Etunda employs additional labor forces (2-10 additional workers). But as these additional forces were only engaged during workload peaks, farmers couldn’t estimate how much money they spent in total on wages for casual workers. Day rates range from 25N\$ to 50N\$, although some workers even accepted payment in vegetables. Only a few farmers employ permanent workers (1-3 laborers). They earn between 300N\$ and 500N\$ per month (plus extra money after harvesting).

Mechanization

As far as mechanization is concerned, all farmers on Etunda used machines such as tractors pulling discs and chisels which they hired from the SP. Hire fees are based on diesel consumption, although some interviewees were confused by the billing procedure.

Finance and investment

All farmers face the same conditions in accessing finance. Currently, they may apply for production loans from Agribank. This loan is provided in the form of vouchers that can be used to purchase water, farming inputs and mechanization services from the SP, which are then directly reimbursed by Agribank. SSI farmers on GSs have ready access to these loans, as the Government stands surety for them and private collateral is not needed. There is no interest on credit and farmers can access additional credit as long as they pay back existing loans. In the event of default, farmers are evicted from the GS and the Government takes over the debt. Despite ready access to credit, it appears to pose a problem for many farmers: 44 of the 96 plots on Etunda are deserted due to (recent) evictions of farmers who failed to repay. Agribank aside, farmers were rarely aware of alternative credit institutions and their respective conditions.

Cultivated products

Production patterns in cultivating HFP can be described as highly diversified in terms of crop variety and rotation. The following crops are produced throughout the year: cabbage, tomatoes, sweet potatoes, onions, butternut squash, watermelon, carrot, beetroot, green pepper, gem squash and groundnut. Etunda farmers rate cabbage as their most important crop of as it is constantly in-demand, seeds are readily available and it is easy and cheap to produce (using affordable organic fertilizer). The area in which cabbage is produced ranges from 0.33ha to 2ha per farmer. The second most important crop, which differs from farmer to farmer, takes up just 0.17ha to 0.67ha per farm unit.



Image 9: Horticultural fresh produce
(left: cabbage; middle: tomatoes; right: pepper)

6.2.3 Marketing strategies of SSI farmers on Green Schemes

On Etunda, farmers carry out all additional **pre-marketing steps** themselves, including washing, sorting, grading, weighing and packaging – sometimes with support from family or additional labor. The cost of packaging material for cabbage, for example, is around 3N\$ for a 25kg bag.

Market conditions and **marketing channels** available to farmers are diverse and can be defined by three characteristics:

- Different products have different buyers.
- One crop harvest is usually sold to a variety of customers.
- Different farmers producing the same crops often have different customers for these products.

The range of buyers for cabbage includes individual customers buying from the plot, traders and middlemen buying from the plot to sell on to supermarkets (in Outapi, Oshakati and Windhoek), catering companies as well as open markets (in Outapi, Oshakati and Ondangwa). Supermarkets in the region occasionally buy directly. If crops such as tomatoes, onions, carrots and butternut squash are taken into consideration the list of customers extends to include informal market traders in Oshikango and the recently-established Farmers' Market Windhoek.

None of the farmers has a fixed contract with a supermarket. Farmers must keep themselves informed of demand from supermarkets and arrange transport. Some farmers favor selling to local traders and private customers buying directly from the plot, as it removes the need for transport. Others prefer selling to supermarkets or selling to a variety of customers to encourage competition among clients, but only if retailers arrange transport themselves.

No uniform selling patterns (when and how often products are sold) emerged from interviews with farmers. Options range from selling a whole harvest at once to marketing throughout the whole year. These differences stem from the current design of production patterns and marketing channels.

Where products cannot be sold immediately, lack of storage facilities on Etunda results in further post-harvest losses. Farmers estimate that around 25-40% of the harvest cannot be sold and is thus lost to spoilage (although these rates differ sharply among farmers and products).

With respect to **transport**, farmers are dependent on SP services or private hire transport. There is a shortage of trucks provided by the SP while public transport is

plagued by frequent breakdowns. Cost is another constraint: at a minimum of 10N\$/km (up to 14N\$/km)⁵⁹, transport provided by the SP is considered expensive. Public providers charge 10N\$/km or per volume. In the latter case fees depend on the products being transported, but can consume up to 30% of farmers' sale price.

There are similarities and differences between outgrowers with regard to **prices** for HFP. Examples include:

- Cabbage: 40-55N\$ per 50kg bag, consistent among almost all farmers,
- Tomatoes: 60-120N\$ per 25kg crate (seasonal price fluctuations),
- Onions: 25-50N\$ per 10kg bag (significant variation in prices among farmers).

Prices generally differ due to supply-and-demand mechanisms, product sizes and quality (freshness). Nevertheless, these deviations are surprising considering Etunda farmers claimed to have reached an agreement on price uniformity.

Farmers receive information on market prices from other farmers returning from market, by calling supermarkets and catering agencies or by visiting supermarkets themselves. The SP in Etunda promised to provide up-to-date pricing information in the future.

6.2.4 Training, knowhow and organization of outgrowers

Means of **learning** about irrigation farming are very heterogeneous among Etunda farmers. Some attended a professional training course at the MITC before settling on Etunda, others merely received 'on-the-job' training on Etunda from a previous manager whereas some had received sporadic lessons from extension officers on the plot. Observation and learning-by-doing were other common ways of gathering extra knowledge. Even though farmers received different training, the topics they learnt were in parts quite similar. Comparing these topics with what farmers themselves consider essential knowledge reveals both overlaps and gaps. On the one hand there is a broad range of production-related topics such as soil knowledge, irrigation systems, plant diseases, seeds and fertilization, which were covered at least roughly by most training sessions. On the other hand some topics of great importance to farmers, such as farm management (e.g. bookkeeping of expenditures and revenues) and product marketing were not offered in training sessions (exception: MITC). Extension officers and the SP should be providing training on all the above mentioned topics (especially those related to production). But in practice

⁵⁹ As in many other cases, interviewees were not aware of the respective units costs are charged for.

this seldom happens, especially since extension officers on Etunda are themselves not trained in horticultural production.

With regard to **organization**, all farmers on Etunda are members of the Etunda Vegetable Cooperative (Etuveco). The aim of Etuveco is to market collectively and thus accessing new and bigger markets and establishing stable market relations. Etuveco is not yet active beyond the occasional meeting.

6.2.5 Outgrowers' perception of change, opportunities and challenges

Farmers appreciate the significant changes which IF has brought to their lives. They report that since starting IF they earn more money or are at least more financially independent. All farmers said that they would start IF again if given the choice. As most farmers report that they require less additional food than they did before starting IF, cultivation of HFP appears to contribute to individual food security and nutritional diversity. Further benefits of IF reported by farmers included not being dependent on rain for production and ability to provide food and money to family and friends. Farmers' future plans aimed above all securing more land for production. All interviewees wanted to expand to at least 6ha, some to even 9 or 12ha.

Farmers regard market and customer conditions (including strong competition from farmers around the Olushandja Dam and from Tsumeb) as their greatest challenge. Other areas described as problematic included transport, the high cost and erratic availability of inputs from the SP, services at Etunda's office, a lack of price transparency in services, sprinkler irrigation, sustaining soil fertility and the fruit fly.

Suggestions put forward by farmers for easing at least some of these challenges include more organic fertilizer for soil, more farm tools and equipment as well as assistance from the GRN, such as new irrigation systems and provision of additional land.

7 Analyzing potential and constraints

This chapter begins by providing a summary of the main findings of the descriptive Chapters 4 to 6 to encourage greater understanding of the opportunities and constraints the SSIF sector is facing. In a second step, the sector's opportunities and constraints are assessed and discussed with reference to the market as a driving factor. Therein, both the supply and the demand side of HFP will be considered.

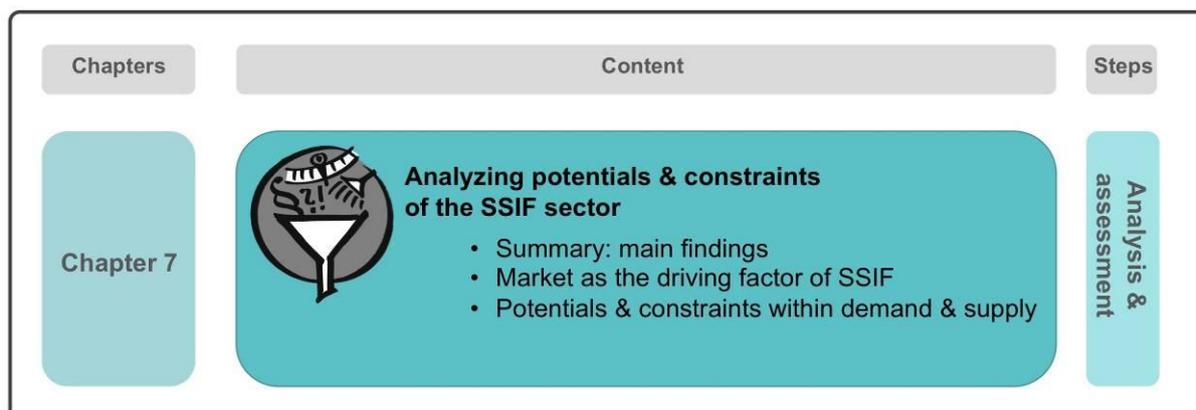


Figure 10: Content of chapter 7

7.1 Summary of main empirical findings

The gray box below summarizes the main empirical findings in this study's three fields of research (FoR):

FoR 1 – Political and institutional framework of the SSIF sector

FoR 2 – Market conditions for Namibian HFP

FoR 3 – Description of SSI farm units and farmers

Main findings FoR 1 – Political and institutional framework of the SSIF sector

- The National Green Scheme Policy remains the only guideline for irrigation farming in Namibia. So far **no policies exist to explicitly target individual SSI farmers**. But the GRN is growing increasingly aware of the private SSIF sector. This is reflected in **single initiatives** supporting marketing of domestically-produced HFP:
 - (I) The **Market Share Promotion Initiative**, which obliges importers and wholesalers to prove that a certain percentage (currently 32.5%) of sold fruit and vegetables is produced in Namibia.
 - (II) The planned **marketing hubs** in Windhoek, Rundu and Ongwediva, which should act as logistic centers for marketing HFP, comprising cold storage, marketing space and most likely processing facilities as well.

- **Land tenure** is still poorly regulated among SSI farmers, and the land they use cannot serve as collateral for financial institutions. Due to underperforming state actors such as the CLB, the communal land reform process so far had very little impact on SSI farmers. Land usually is allocated by TAs after informal payment.
- In general, **water extraction and pricing are unregulated** in the Aol, but are currently under discussion in Omusati, where irrigation water is illegally tapped from NamWater's infrastructure. In Kavango water is pumped directly from Kavango River and regarded as common property. Future monitoring and payments for water extraction are more likely to occur in Omusati, because this would guarantee year-round access to water, provided by NamWater. Considering that new GSs will soon go into production and that Angola is going to step up its IF activities, the quantity of water extraction at the Kavango River could become problematic, thus requiring **transnational regulation**.

Main findings FoR 2 – Market conditions for Namibian HFP

- Consumption of HFP has **increased** in the last ten years, a phenomenon supposedly linked to increased incomes and changing lifestyles. The current **demand** cannot yet be met by local production.
- 68% of HFP (fruit and vegetables) traded in Namibia come from or via South Africa and **32% is produced domestically** (NAB). Looking at fruit in isolation, 95% is imported.
- At the national level the market is dominated by a **small number of stakeholders** on the production side (large farmers around Tsumeb and Grootfontein) as well on the demand side (supermarket chains and a few wholesalers).
- **Marketing channels are diverse** within the Aol, including direct and indirect sales to street vendors, middlemen, open markets, catering companies, wholesalers and retailers.
- Open market vendors and informal street vendors struggle in competition with retail chains.
- Retail chains, which control 70% of total HFP trade, mostly procure from South Africa (often via centralized procurement centers) and major domestic farmers. Some retail branches occasionally buy additional goods from local small-scale farmers.
- Local **supply** of HFP products **does not yet meet requirements** from the main supermarket chains regarding post-harvest handling, consistent quality, quantity as well as reliable and consistent availability.

- **Farming inputs** are almost exclusively imported from or via South Africa. This results in **reduced availability** of inputs and high prices due to transport costs and longer input marketing chains. SSI farmers are additionally disadvantaged as they are not yet specifically targeted by suppliers.
- **Transport** is expensive and coordination of logistics as well as cooperation in product flows between stakeholders is poor.
- In the face of **minimal marketing infrastructure** in the Aol, marketing hubs are being planned for Rundu and Ongwediva. There is skepticism regarding the hubs, with some fearing distortion of the market and a lack of operational transparency.

Main findings FoR 3 - Description of SSI farm units and farmers

- **There are wide variations among SSI farms in the Aol** with regard to farm size, hired labor, inputs, infrastructure (irrigation infrastructure, mechanization) and investment behavior.
- While some SSI farmers had begun HFP cultivation on their **own initiative** (mainly in Omusati), others had been motivated to do so **by projects** and/or individuals from outside the community (Kavango), or were **attracted by the GRN's GS**.
- Despite differences in performance and size, SSI farmers' **motivation to produce HFP is to supply the market and make a profit** (cash income). Most farmers are very focused on success and on further developing their production and marketing skills, or even expanding their operations.
- Profits generated by SSIF are the main **income source** for some farmers (especially in Omusati) and **additional income** for others (especially Kavango). Although the purpose of HFP production is **not subsistence**, it contributes to greater **nutrition and overall consumption** among SSIF household members.
- Although SSI farmers produce a variety of HFP and never cultivate just one crop (no monocultures), they **focus on crops with stable local demand** (cabbage, tomatoes, onions). As farmers generally produce at the same time, this leads to a **greater competition** (supply situation) and **low diversity in supply**.
- Most farmers supply the local market (communities, open markets, local traders, minimal cross-border trade) and have difficulty supplying domestic retail chains and/or other larger buyers. Farmers suffer from a lack of **guaranteed marketing opportunities** (established, regular buyers, contracts, etc.).
- **Lack of transport options** and high associated costs represent another marketing-related problem for SSI farmers.
- **Input availability and affordability pose a problem for most farmers.**

- While there are degrees of formal and informal **cooperation** among SSI farmers, they have yet to fully explore the potential for cooperative activities (including joint marketing, coordinated production, input procurement and information exchange).
- All farmers rate production **knowledge** and skills as **very important**. Nevertheless, training opportunities are not available for all SSI farmers. Learning from other farmers, knowledge exchange and experience-based learning are important sources of knowhow and information for farmers.
- Book-keeping, financial management, production planning and monitoring **skills** are generally **very poor** among SSI farmers.
- **SSI farmers on GS** (Etunda) generally face the same problems as other farmers but enjoy a privileged position in terms of training, infrastructure (irrigation techniques and mechanization) and access to production loans. Special problems relate to limitations on plot expansion, input availability from the SP, cost of services offered by the SP and certain regulations stemming from GS set-up (restrictions in irrigation technique or pre-assigned production plans). Their situation is highly dependent on farmers' relationships with the SP. Despite outgrowers' advantages on the production side they do not necessarily perform better than privately organized SSI farmers.

7.2 The market as the driving factor in SSIF

Field research findings clearly indicate that SSIF is not a subsistence strategy in the Aol. All interviewed farmers described their production as market-oriented. The future of this sector in the Aol consequently depends heavily on the market for HFP; and so the market can be understood as the driving factor in the SSIF sector.

Over the last decade the Namibian HFP market has been characterized by growing demand for fruit and vegetables. Market actors interviewed and experts estimate a 15-25% annual increase in demand. NAB figures for the period 2006/2007 indicate an increase in domestic demand of 21% and total domestic demand for HFP in Namibia amounted to 108,000t in 2007 (NAB, 2008b). For 2009/2010 consumption within Namibia is projected at 128,000t (NDC, 2010a: 18). All sources identified higher incomes, growing awareness of healthy lifestyles, catering companies (e.g. for schools, hospitals and the mining industry) and tourism as the most important drivers behind this increase. They also saw no indication that this trend would change within the coming years.

On the supply side, Namibian local horticultural production output grew by an average of 15% per annum since 2004 (NAB, 2008b: 8). According to the NDC,

Namibian HFP production accounted for about 55,000t in 2009 (NDC, 2010b: VI).⁶⁰ This volume was produced by the following categories of farmers:

- Small-scale operators representing 72% of all Namibian producers produced 8,397t or 15% of total production.
- Large commercial farmers making up 22% of Namibian producers overall produced 39,959t or 73% of total production.
- Government farmers, 6% of Namibian producers, output about 6,548t or 12% of total production (NDC, 2010b).⁶¹

Comparing demand-side and local supply-side figures clearly indicate that current Namibian production is not able to meet domestic demand. This mismatch of demand and supply within Namibia is further aggravated by the export of part of Namibia's HFP production, especially to the neighboring countries of Angola and South Africa.⁶²

In order to bridge this gap between domestic demand and domestic production, HFP shortfall is generally made up with imports from South Africa.⁶³

7.2.1 Possible impact of MSP increase on the SSIF sector

According to the NAB 68% of the HFP sold in Namibia is currently imported from or via South Africa, with the remaining 32% coming from local production. The proportion of HFP imported from South Africa probably be even higher if it were not for the MSP Initiative implemented by the NAB in 2004 (NAB, 2009: 34). This market-regulating tool was introduced to give Namibian HFP improved access to the domestic market.⁶⁴ The MSP, which initially set a quota of 3%, is currently at 32.5% (NAB 2009: 34). Based on their own analysis of production and markets for Namibian HFP, the NAB plans to increase the MSP quota to 60% in coming years. This will require a dramatic increase in Namibian HFP production to meet domestic demand, a huge opportunity for farmers, including SSI farmers in the AoI. However, import substitution generally occurs through the small number of larger retailers, wholesalers and/or catering companies, as opposed to the smaller local (open)

⁶⁰ Excluding grapes.

⁶¹ For a detailed description of Namibian HFP producers see NDC, 2010b: 115.

⁶² In 2008 26,400t of HFP were exported, of which around 17,000t were grapes. Among HFP that are cultivated in the AoI, onions and tomatoes are the most important export goods (NAB, 2009: 25).

⁶³ In South Africa horticultural production has a very long tradition and over the centuries a highly organized and competitive vegetable and fruit producing sector has evolved.

⁶⁴ During South African rule in Namibia, very strong marketing linkages to Namibia were established by South African companies, which still are very hard to challenge by Namibian producers.

markets (see Chapter 7.3.2). This latter category represents SSI farmers' main market.

Existing data from Namibia must be viewed with caution, making it difficult to offer accurate, sound projections regarding future development of the SSIF sector within the country. The following **thought experiment, though particularly cautious and conservative**, should give a rough idea of prospects for the sector:

Assuming the current MSP quota of 32.5% is soon more or less doubled to 60%, this would require a two-fold increase in Namibian HFP production.⁶⁵ Further assuming that SSI farmers retain their present share of 15% of total Namibian HFP production, this would mean the SSIF sector could increase its production by 100% after introduction of the new MSP quota.

Theoretically, the SSIF sector in Omusati and Kavango could achieve this production increase in three different ways:

- Existing farm units intensify their production within present cultivated areas.
- Existing farm units increase production by extending cultivated areas.
- More farm units, meaning new SSI farms, are established.

7.2.2 A glance on export opportunities

This paragraph is called a 'glance', since the focus and time allotted to this study precluded in-depth analysis of export conditions for Namibian HFP. But some aspects should be mentioned to further complete the picture of market opportunities. According to many farmers in the AoI, especially Omusati, exports to Angola represent a significant market. However – and despite research sourced from farmers, existing literature, customs, the NAB and other relevant institutions – it was impossible to quantify exact export volumes. Critics pointed to an irrigation sector slowly gaining ground within Angola itself, predicting that the current window of opportunity for exports to Angola will be closed within the next 10 to 15 years.

On the other hand interview partners and literature repeatedly mentioned seasonal opportunities for Namibian SSI farmers to export to South Africa (e.g. watermelons and potatoes). In-depth exploration of this phenomenon is also outside the scope of this, but it was apparent that farmers in Omusati and Kavango were not yet making use of this opportunity which has the potential to substitute – at least to a certain extent – the projected loss of the Angolan market.

⁶⁵ The ongoing increase in total HFP demand in Namibia is not considered in this thought experiment.

7.3 Potential and constraints in supply and demand

To exploit marketing opportunities created by the still-growing demand for HFP and planned increase of the MSP quota to 60%, SSI farmers in the Aol must reach two fundamental goals:

- Increase and/or improvements in production and
- successful product marketing.

To reach these goals, they must tackle several constraints while simultaneously building on existing potential within and around the sector.

7.3.1 Supply-side potential and constraints

As previously outlined, there are three broad ways for the SSIF sector to increase production volumes: Intensifying production in existing cultivated areas, extending cultivated areas and establishing new farms.

The most likely outcome is a combination of all three scenarios, though proportions will differ between Omusati and Kavango. Production intensification is more likely in Omusati as **land with access to water** is already scarce. In addition, most farmers in Omusati (private farmers as well as outgrowers) already use more advanced irrigation techniques when compared to the majority of farmers in Kavango. This means intensification – in this case application of more sophisticated techniques – should be easier for them. Conversely, an increase in area and number of farm units is the more likely option in Kavango, since access to water and land is not yet a limiting factor and outgrowers will be placed on the new GS.

As this discussion has already indicated, water is – along with arable land – a key factor in raising production. Aside from periodical restrictions in Omusati arising from technical conditions that make full usage of the Olushandja Dam unnecessary in the summer months, water availability has been good to date and should suffice for production increase. However, farmers' access to water must be regulated and guaranteed in the future. It will also be important to consider Angola's water needs as well as river pollution from farm inputs and other ecological factors in an effective **transnational water management**. This could be implemented via existing water basin management committees, although they currently underperform.

Apart from the fundamental commodities of land and water, there are further important factors and prerequisites for achieving production increase/intensification: **labor, farm inputs** and **access to finance**.

The SSIF sector in the Aol has the advantage of an abundance of comparatively low cost **seasonal manpower**. This is a significant benefit since farm inputs pose a huge challenge for most farmers in various ways. Since **inputs** are almost exclusively

imported from or via South Africa, transport costs drive up prices for farmers in northern Namibia. In order to produce at competitive prices, low labor costs are an advantage. Another constraint regarding inputs is relatively erratic availability in the Aol. None of the input providers explicitly targets farmers here so procurement is a challenge. Inputs necessary for guaranteeing the range, quality and volume of HFP are frequently unavailable when required.

Another factor closely related to farming inputs, but reaching beyond them, is farmers' **access to finance** for farming inputs as well as investment in farming infrastructure or land reclamation. Apart from outgrowers on GS, the majority has no access to credit; farmers in communal areas have no land titles and consequently cannot provide the collateral required by commercial banks. Production insurance could prove an alternative source of collateral, but none of the farmers interviewed had such insurance and experts point to the high cost of premiums. Nonetheless commercial and Government-run banks have recently started discussing and partially implementing new ways to improve farmers' access to finance (such as micro-finance schemes).

An additional important factor in production increase and/or improvement is **farming knowledge**, which can be split into production, management and marketing knowledge. All farmers interviewed considered farming knowledge as a highly important success factor and showed great interest in improving their skills. Important aspects of production knowledge include plant disease control, crop-specific cultivation techniques as well as efficient irrigation techniques. Important issues in the field of management knowledge include the bookkeeping and production monitoring required for proper price calculation and cost-benefit analysis of cultivated products. Knowledge acquisition and training generally represents a constraint for SSI farmers. Means of knowledge acquisition have to date often been restricted to knowledge exchange with neighbors and rather risky, time-intensive trial-and-error processes. There are no coordinated initiatives or programs targeting the **training** needs of private SSI farmers. Extension officers themselves admit that agricultural extension services in the Aol offer little support, since almost all officers are trained in staple crop and livestock production rather than horticulture. Only the most recent generation of outgrowers placed on GS has received intensive, formal training in irrigation production, provided by the MITC which is currently closed due to a lack of coordination between the center and MAWF departments responsible for GS development. However, if it restarts operations, adapts courses to farmers' needs and accepts private farmers as well as outgrowers, this training center has significant potential to meet farmers' need for knowledge and training.

One aspect of farming knowhow has not yet been addressed – marketing knowledge. This topic leads to the second great challenge farmers face wanting to benefit from future market opportunities – bringing products to market.

7.3.2 Demand-side potential and constraints

On the demand side the Namibian HFP market is dominated by a **handful of stakeholders**: supermarket chains (Shoprite, Checkers, Pick n Pay, OK Foods, Woermann Brock, Fysal, Spar) and a few wholesalers (e.g. Fruit & Veg, Freshmark, Farmers' Market).⁶⁶ Some of the supermarkets procure via wholesalers, others via distribution (procurement) centers and some additionally straight from the producers. Catering companies (e.g. for schools, hospitals, mining industry) and the majority of upmarket tourist lodges are supplied by wholesalers.

Overall, supermarket chains and wholesalers handle 70% of HFP sales to end consumers in Namibia (NDC 2010b: 132). This quota is likely grow even further, driven by upcoming demand from the mining and tourism industries as well as a growing consumer preference for supermarkets over open markets and the start of prohibition for street vendors (e.g. in Oshakati). For these reasons supermarket chains and wholesalers should be the prime target of HFP produced by SSI farmers. But to be in a position to sell to these buyers, farmers need **marketing knowledge** about meeting requirements of wholesalers – especially supermarkets – with regard to product range, quantity, quality, reliability and timely supply. Most farmers lacked this knowhow. They don't align their production planning (product variety, planting times and volume) with demand. Only few grade, wash and pack their products appropriately and many farmers prefer quantity over quality production.

Closely related to marketing knowledge is of course **market information**. Before farmers can adjust production, they need information about supermarkets' and wholesalers' requirements in terms of production and quality standards, product range, post-harvesting steps and other factors. And of course they need to keep up with price developments. Field research indicates that such information is only communicated sporadically and informally, representing a major constraint on market-oriented production.

Other success factors in marketing to supermarkets and wholesalers include post-harvesting infrastructure, transport, negotiating power and farmer cooperation. Farmers require more than just knowledge about proper **post-harvest handling** to achieve product quality. They also require the necessary infrastructure – whether on-

⁶⁶ Spar and Fysal sometimes also act as wholesalers, Fruit & Veg also as retailer.

or off-farm – such as shaded, ventilated or refrigerated storage facilities. These are not yet found in the AoI.

However, recent GRN initiatives aimed at establishing **marketing hubs** in Rundu and Ongwediva, as well as the concept of a central collection and marketing point for HFP in Epalela (by OHPA), offer great potential to address these problems. It remains to be seen how these plans will be implemented, if at all. Privately-organized farmers fear it will advantage larger farmers and skew the market. It appears that small farmers are generally excluded from the decision-making process, and targeting of the hubs can be questioned. The effect of marketing hubs on SSI farmers and the sector as a whole is difficult to predict.

Transport is closely related to the issue of post-harvest quality; since HFP is perishable and quick to lose quality it needs to reach the customer as quickly as possible. Despite the relatively good condition of main roads in Namibia, transport in Omusati and Kavango represents a major bottleneck for farmers. For larger logistic companies (those that have refrigerated trucks) transporting to SSI farmers is not yet economically viable as volumes of HFP or input purchases from individual farmers are still too small. At the same time, most farmers lack individual transport means. Costs for alternative transport options – hiring small ‘private’ transport (taxis/passing pick-up trucks) – are too high for most SSI farmers while offering inadequate quality and reliability of services. Pooling produce and/or inputs on the farmers’ side to create a critical mass, leading to distribution and thus reduction of costs, could help overcome transport limitations. SSI farmers have not yet explored this possibility. Another – as yet untapped – option is to fill backhaul trucks which bring goods from Windhoek, Walvis Bay or South Africa to the north and then return empty. Therefore, improved coordination between producers, transporters and customers holds further untapped opportunities to improve product flows.

Negotiation power and **farmer cooperation** are two other important topics that need to be considered when looking at marketing success. As previously mentioned, the demand side of HFP in Namibia is dominated by a few, strong stakeholders. This makes it extremely difficult for individual small-scale producers to negotiate sale of their products. Their volumes may simply be insufficient or they may be unable to provide transport. Or they are disadvantaged by supermarkets’ obligation to buy from procurement centers – a mechanism which individual farmers are unable to break. And even if wholesalers or supermarket chains expressed interest, they would retain the upper hand in price negotiations.

Improved **cooperation** among small farmers could help tackle these constraints. Coordination of production ranges and times and pooling of products could help meet market demands. This would also make transport more economical for farmers and

more attractive for transport providers. Farmers would also have a strong, united voice when negotiating prices and articulating their needs and demands e.g. training requirements. They could also procure inputs collectively. Farmers are aware of the benefits of cooperation. However, there is presently still a lack of cooperation. Therefore formalized farmers' associations (OHPA, KHAC, other regional associations and the umbrella organization NAHOP) have the potential to facilitate improved farmer coordination and collective activities. Individual initiatives such as the OHPA's plan for collective product marketing (Epalela) could facilitate communication with potential buyers, strengthen SSI farmers' negotiating position and improve supply.

A further promising approach for coordinating supply with demand is the KHAC's initiative to distribute farmers' contact details to retailers in Rundu. Despite its still rather limited capacity, the NAB – which is increasingly engaged in promoting the SSIF sector – also has the potential to foster cooperation, coordination and organization among farmers. The annual National Horticultural Farmers' Days, for example, are an interesting way to bring farmers, input suppliers and customers together to facilitate exchange and communication. Nonetheless, it must be noted that better-off farmers are already better represented in and by formal associations of horticultural producers and therefore more easily targeted.

Table 12: Summary of constraints and potential

Constraints	Potential
<ul style="list-style-type: none"> Land with access to water is scarce in Omusati 	<ul style="list-style-type: none"> Water availability in Omusati Access to land and water in Kavango
<ul style="list-style-type: none"> Water Basin Management is weak 	<ul style="list-style-type: none"> Existing Water Basin Management committees for future transnational management
	<ul style="list-style-type: none"> Low labor costs
<ul style="list-style-type: none"> Lack of affordable inputs 	<ul style="list-style-type: none"> Existing formal and informal farmer cooperation
<ul style="list-style-type: none"> Lack of access to finance (credit) 	<ul style="list-style-type: none"> Initiatives to facilitate farmers' access to finance
<ul style="list-style-type: none"> Lack of knowledge and training in production, management and marketing Lack of initiatives or programs targeting farmers' training needs Risky trial-and-error learning method 	<ul style="list-style-type: none"> Farmers' awareness of training needs Farmers' interest in improving skills Existing training center with potential to meet farmers' training requirements (MITC)
<ul style="list-style-type: none"> Lack of market information (e.g. regarding customer demand) 	<ul style="list-style-type: none"> Existing formal and informal farmer cooperation
<ul style="list-style-type: none"> Lack of reliable and affordable transport 	<ul style="list-style-type: none"> Good condition of main roads Potential for better coordination between producers, transporters and customers
<ul style="list-style-type: none"> Lack of capabilities and facilities for on- or off-farm post-harvest handling 	<ul style="list-style-type: none"> Planned marketing hubs and joint marketing point
<ul style="list-style-type: none"> Low negotiating position of farmers 	<ul style="list-style-type: none"> Existing formal and informal farmer cooperation

8 A case for Development Cooperation?

Chapters 4 to 7 were concerned with the first and second objectives of the study: Describing the SSI sector and identifying its present and future constraints the sector has to face at present as well as opportunities for development. Chapter 8 will now go further and address the third study objective: Assessing eligibility of the SSIF sector for German Development Cooperation support and identifying potential intervention approaches.

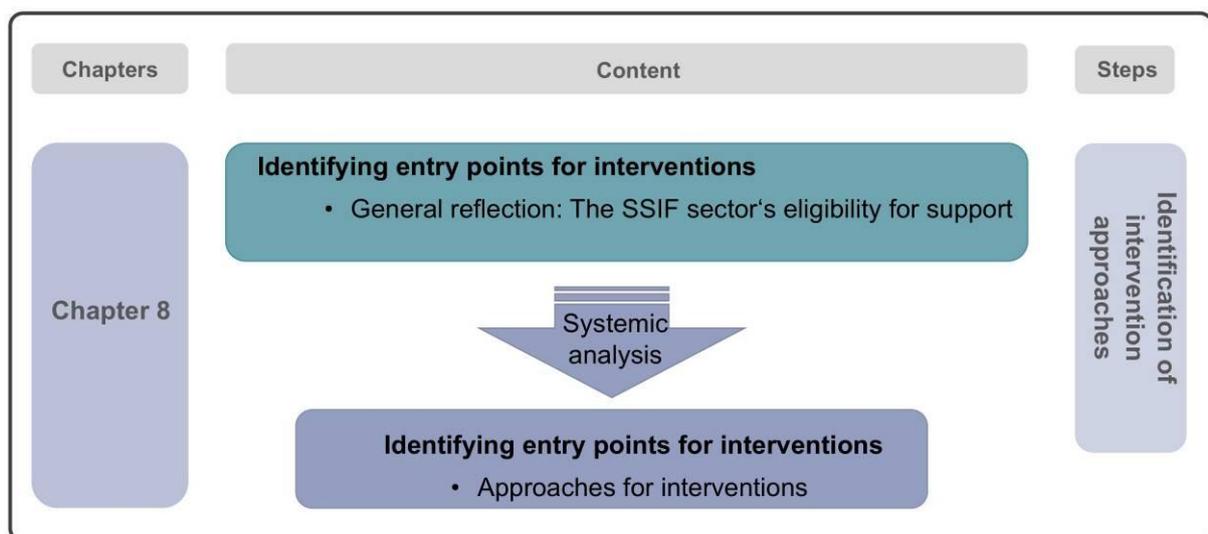


Figure 11: Contents of chapter 8

8.1 Reflection on the SSIF sector's eligibility for GDC support

Before discussing development intervention it is essential to consider whether such activities are justifiable, necessary or relevant. The ratio of cost to potential benefit must also be taken into consideration when making a comparison with other potential fields of intervention. This is a discussion which must be conducted by the development agencies. It is up to them to decide whether or not to intervene – and if so, how and to what extent. To support this process, this subchapter will highlight factors that prove helpful in discussion and decision-making. It considers five guiding questions:

- Is the SSIF sector relevant to German Development Cooperation's goals?
- How many beneficiaries can be reached?
- Who could be targeted?
- What would happen to the sector without intervention?
- What are the possible negative effects of intervention?

The following section considers these questions and provides relevant information for stakeholders weighing up intervention in the sector.

8.1.1 Is the SSIF sector relevant to GDC's goals?

As previously mentioned in this study, irrigation agriculture is a fairly new phenomenon in Namibia. Agriculture traditionally takes the form of extensive livestock holdings in combination with rain-fed cultivation of staple crops. This form of agriculture is extremely dependent on rainfall and thus prone to droughts. Irrigation farmers are not dependent on rainfall. Therefore, this type of agriculture can be regarded as a possible **strategy to reduce vulnerability to climatic events and climatic changes in the Aol.**

Irrigation farming is also a means for **creating jobs and providing cash income.** Many of the farmers interviewed, especially females, reported that they had been unemployed before taking up HFP cultivation. Apart from providing jobs to the farmers themselves, many farmers interviewed employed permanent as well as temporary workers (see also Chapter 8.1.2).

All farmers interviewed mentioned an improvement in food availability and variety within their households and even within their extended families since starting IF. This is not only due to the products themselves, but also to increased cash availability. Therefore irrigation farming can be understood as a strategy to **improve food security** at household level.

Adaptation to climate change, job creation, income generation and food security are all topics relevant to the goals of German, Namibian and international development goals. These include MDGs 1 (an end to poverty and hunger), 3 (gender equality) and 7 (environmental sustainability) as well as the goals of the BMZ and Namibia's Vision 2030.

8.1.2 How many beneficiaries might be reached?

A very important question to consider before deciding upon development intervention is: How many people will benefit from it? Such figures are usually rough estimates as is the case with the SSIF sector in Kavango and Omusati. No detailed figures can be given, only an estimate of the maximum possible number in question if intervention were to address the sector as a whole (as suggested in Chapter 8.2). Based on our experiences during field research, we estimate that around 210 SSI farmers currently operate in Kavango and Omusati, permanently employing around 360 farm workers.

This makes a potential total of 570 direct beneficiaries. As the average household in rural Kavango and Omusati contains six individuals, one could add an additional 2,850 indirect beneficiaries.⁶⁷ This makes a total of 3,420 persons who could theoretically benefit directly or indirectly from interventions in the sector. Assuming the SSIF sector has the potential to double its output (see Chapter 7.2.1) – a development which intervention could foster – the number of individuals who would benefit from intervention could double to 6,840.

Another group of potential beneficiaries are seasonal farm workers. Due to their characteristic as irregular laborers that are employed on demand only, it is difficult to see them as a constant in the thought experiment of calculating numbers of future beneficiaries. Nevertheless, an estimated number of around 1,070 people are hired in workload peaks by SSI farmers in both Aols. Following the previously made assumption of a doubling of the SSIF sector, more than 1,000 occasional jobs would be created.

Naturally such figures must be used with caution, as they are mainly based on assumptions. They can provide little more than a rough idea of how the real picture might look.⁶⁸

8.1.3 Who could be targeted by intervention?

Figures in the previous paragraph are based on an assumption that the whole SSIF sector will be targeted, as we recommend in Chapter 8.2. Development agencies could of course target more narrowly, such as

- outgrowers on GS exclusively (since this is the GRN's development approach)
- female SSI farmers exclusively (to facilitate gender empowerment) or
- individual, independent farmers (what would promise the largest impact on job creation).

The study team advises against such specific targeting within the SSIF sector for various reasons. The first reason is that specific targeting would dramatically reduce the number of beneficiaries, making intervention more difficult to justify. Another reason is that supporting a single group of farmers may disadvantage other groups and skew competition in the market.

We take a very critical view of current discussions aimed at supporting the GRN's Green Scheme approach with a significant financial loan from which would also

⁶⁷ Number of total beneficiaries (570) x 6 – number of direct beneficiaries (570) = 2,850 total indirect beneficiaries.

⁶⁸ Although estimations of permanent and seasonal farm workers are extrapolation based on empirical data collected in field research for this study.

theoretically benefit present and future SSI farmers (outgrowers) on GSs. One of the initial ideas behind the GS concept was to attract private enterprises in the form of managers (so-called SPs) for the GS. They were meant to produce predominantly staple crops in order to increase domestic food security and food sovereignty. It transpired that this option had little appeal for private enterprise, since profits from staple crops produced in Namibia are low. There consequently appears to be a trend within the GRN to loosen restrictions on service providers and allow them to increase HFP production, which is – from a profit perspective – more attractive. If this trend becomes standard practice, the GS will pose a significant threat to small-scale HFP producers. GS could flood the HFP market with their products and price existing SSI farmers out of the market. Even if the market were able to absorb additional product volumes from GS service providers, there is still a risk the current prices for HFP will deteriorate, since large operations such as GS can produce much more cost-effectively than SSI farmers. Anyone considering financial support for the GS approach must consider this risk as well as appropriate options for ensuring SSI farmers can withstand potential competition from GS.

8.1.4 What would happen to the sector without development agency intervention?

Another legitimate question when evaluating whether or not the GDC should intervene to support the SSI sector in the AoI is: What would happen to the sector without intervention? Answers to this question are – even where they are based on research experiences – relatively speculative but nonetheless worth consideration.

SSI farmers currently enjoy relatively stable conditions. They struggle with several constraints, but have nonetheless established themselves and found their market niches. But with increasing HFP production in Angola, ongoing prohibition of street vendors/street sales and increasing dominance of supermarkets over open markets (due to customer preference), those niches are under threat. These processes will most likely lead to the collapse of those SSI farms which depend on these niches.

On the other hand there are promising (potential) market opportunities for Namibian HFP, based on growing demand and the planned increase of the MSP quota to 60%. But to benefit from these opportunities SSI farmers have to secure supermarket chains and wholesalers as customers (see Chapter 7). For small-scale, relatively unorganized HFP farmers who currently face numerous constraints, this will be a huge, if not impossible challenge. This is where the GDC could come in and assist in making the SSIF sector more effective and attractive.

8.1.5 What are the possible negative effects of intervention?

A last topic that must be considered when weighing up the pros and cons of development intervention in the SSIF sector in northern Namibia is that of possible unintended, negative side effects. Since no concrete activities have been decided, negative effects can only be considered on a general level.

As argued in previous chapters, the future of the SSIF sector in the Aol lies in exploiting projected growth in market demand; development agencies could assist farmers with this challenge.

Exploitation of projected market opportunities by SSI farmers will inevitably require intensification and expansion of production (see Chapter 7). This process carries some general risks which need to be considered and countered by appropriate measures:

- Although water is generally readily available in the Aol, social, political and even transnational conflicts could arise from competition for water resources. Therefore effective regulation and monitoring systems must be established.
- Irrigation farming, especially in (semi-)arid areas, always carries a risk of soil salinization, which usually proves irreversible. Soil condition needs close monitoring and irrigation must be executed in a way that reduces salinization.
- Polluted drainage water from irrigation farms (from fertilizers, pesticides, etc.) can pose a severe threat to the ecosystem, especially in waterways in Omusati, Kavango and further downstream of the Kavango River. Appropriate cultivation techniques and close monitoring are therefore required to minimize this risk.
- Targeting individual groups could jeopardize the competitiveness of certain other farmer groups (see 8.1.3).

8.2 Potential approaches to intervention

In the event that GDC decision makers decide to actively support the SSIF sector in the Aol, the next, inevitable question is: What is the best way to support this sector? The following pages aim to answer this question.

After several months of extensive field research, and in the light of factors already discussed in this chapter, the study team has come to the following conclusion: **If development intervention is decided upon, it should be of clearly-defined extent and specifically address factors that are crucial to the success of all SSI farmers and the sector as a whole.** This would have the advantage that all SSI farmers, whether privately-organized or placed on GS, could benefit from the intervention. As previously mentioned, we advise against support of specific groups of farmers, because this can skew the market and competition. It might also

disadvantage other groups of farmers (e.g. small cooperatives run by women) to the extent that they can no longer operate.

We also advise against deploying large financial sums for intervention, which are difficult to justify when considering the number of potential beneficiaries as well as the general limitations of the SSIF sector in northern Namibia (see Chapter 7.3 and 8.1.2).

8.2.1 Identifying critical success factors for the SSIF sector and starting points for intervention

As mentioned in the previous section, the study team advocates intervention which addresses factors critical to successful performance of the SSIF sector as a whole.

To identify these crucial factors of success, we used an instrument from the systemic analysis toolbox: the **influence matrix** (see VESTER, 2004; WEINGÄRTNER ET AL., 2005). In the first stage, **21 factors** (see Table 13) were **selected, which** in the opinion of the study team **define the SSIF sector** in northern Namibia. The selection of these 21 factors was based on experience, findings and analysis arising from field research (including interviews and participatory workshops with farmers).

Table 13: Critical success factors in the SSIF sector in northern Namibia

<p>Factors on SSI farmers' side</p>	<ul style="list-style-type: none"> • Market-oriented production system • Management knowledge (production planning and financial management) • Steady cash-flow • Consistent supply regarding quantity and quality • Regular buyers • Information structures between producers and customers • Cooperation between farmers • Money for investment • Affordability of efficient irrigation techniques • Availability of affordable farming inputs • Reliable and affordable transport • Availability of land for expansion
<p>Factors on market side</p>	<ul style="list-style-type: none"> • Post-harvest handling/quality management (including cold-storage facilities) • Balanced power relations in the Namibian market (few stakeholders) • Competitiveness with HFP from South Africa • Coordination between stakeholders to improve marketing logistics
<p>Factors on the political and institutional side</p>	<ul style="list-style-type: none"> • GRN's support of private SSIF • Regulation of water extraction (with regard to water pricing and monitoring of pollution caused by IF) • Implementation of land reform

	<ul style="list-style-type: none"> • Transnational coordination of irrigation activities • Cross-sector planning
--	--

In the second stage, these 21 factors were incorporated into an influence matrix. Here the strength of influence of each factor within the system was determined. In other words those **factors which are most influential or crucial within the SSIF sector** were identified.

It is recommended that any GDC intervention address these six factors, as improvement in any one factor will have a positive influence on the whole system of SSI farming.

Table 14: Definition of critical success factors in the SSIF sector

Factor	Definition
Market-oriented production	SSIF farmers' production planning is oriented towards customer demand in terms of products, quality, quantity and time
Regular buyers	Farmers have reliable buyers of HFP (not necessarily the same buyers all the time)
Consistent supply	In terms of product quality and quantity, SSI farmers are able to provide a consistent, year-round supply of HFP
Money for investment	Loans/credit and savings for investments in on-farm infrastructure (excluding operational inputs) are available to farmers
Reliable and affordable transport	Affordable, reliable and appropriate transport is available to farmers
Post-harvest handling	Appropriate pre-marketing steps including sorting/grading, washing, packaging, labeling and storage are guaranteed (including the availability of post-harvest and storage facilities)

Having determined six factors critical to success in the SSIF sector, the next task was to **identify potential ways to strengthen these six factors**. Therefore, problem analysis was conducted for each of the six factors. In this process numerous problems were identified, but it soon became clear that some problems – called **key problems** – recur, meaning that they were relevant to more than one critical success factor. Conversely, this means that addressing or alleviating these key problems will have a positive effect on multiple critical success factors, thereby improving the SSI farming sector as a whole.

Table 15: Key problems of the SSIF sector in northern Namibia

Lack of information and communication structures with regard to customer demand
Lack of production and post-harvest handling knowledge to optimize and control production
Lack of management knowledge (bookkeeping, financial management and planning)
Lack of farming inputs and suitable/efficient irrigation technique
Lack of lending institutions in the AoI
Lack of collateral (contracts, land titles, crop insurances) for loans
Lack of cooperation between farmers
Lack of pre-marketing and storage facilities
Lack of transport (availability, affordability, reliability and appropriateness)

8.2.2 Suggestions for potential intervention by German Development Cooperation

In accordance with the motto “minimum effort/maximum effect” or – in other words – **effective and efficient allocation** of means, development approaches to improve conditions in the SSIF sector should **alleviate the key problems** identified above and would ideally also consider existing opportunities within the sector. With this in mind we will now introduce **seven potential intervention approaches**. Included are suggestions for contribution by the GDC and other parties. Recommendations for potential German involvement were based on missions, existing programs and projects as well as expertise offered by the GTZ, the KfW and DED.

The following Figures 10-16 depict the developed approaches, their relation to existing key problems and potential, parties to involve and ideas for concrete activities/contributions of different stakeholders.

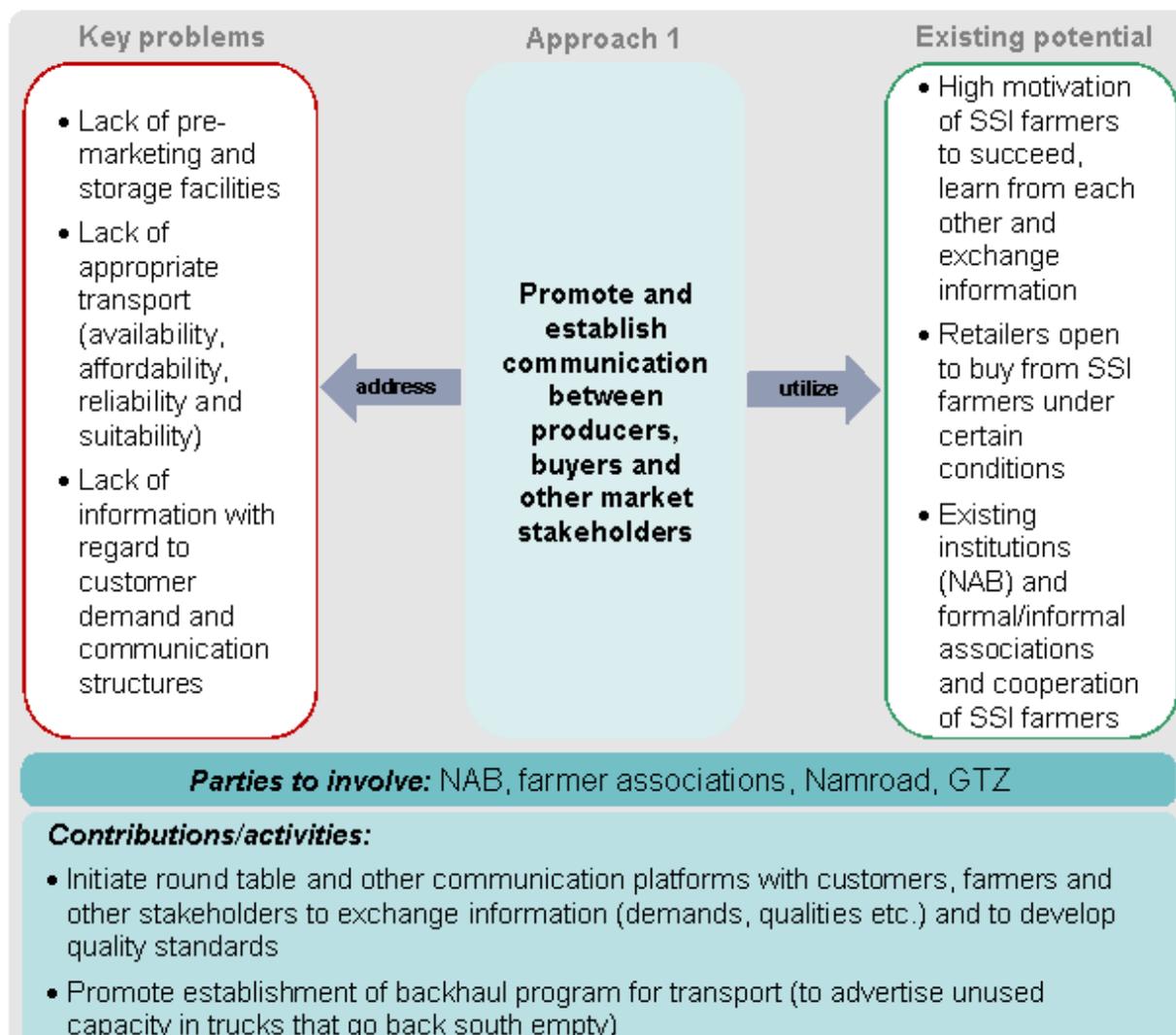


Figure 12: Potential intervention approach 1

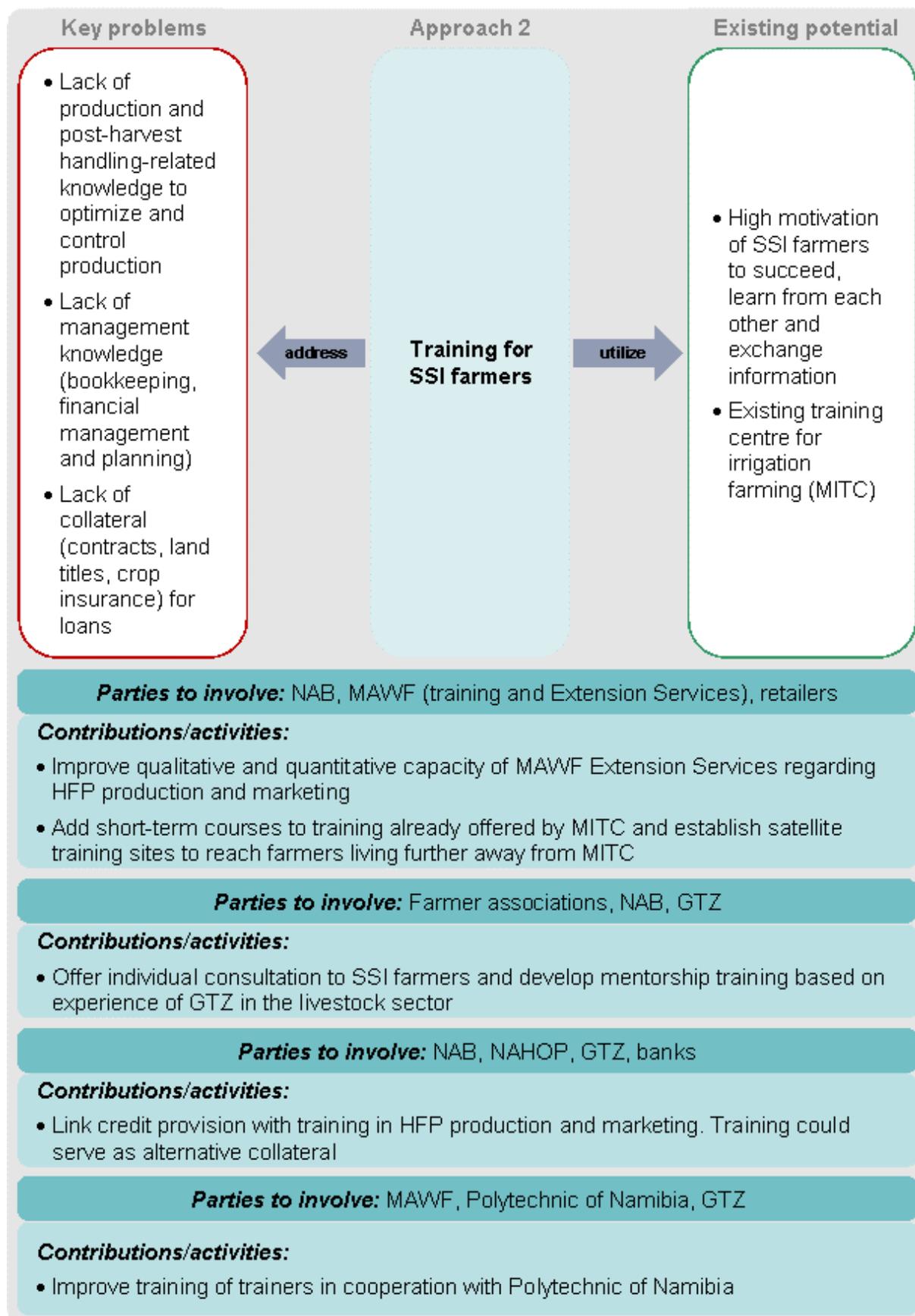


Figure 13: Potential intervention approach 2

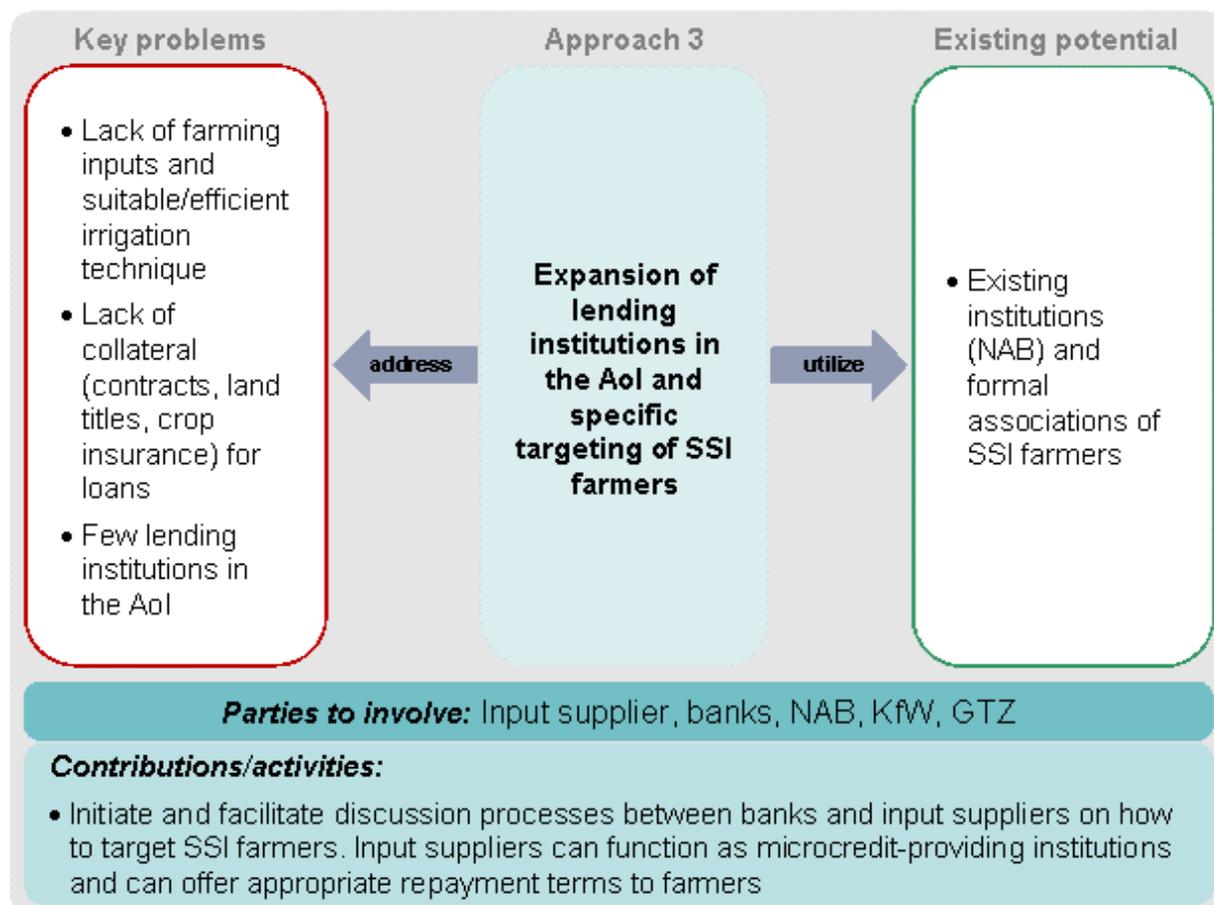


Figure 14: Potential intervention approach 3

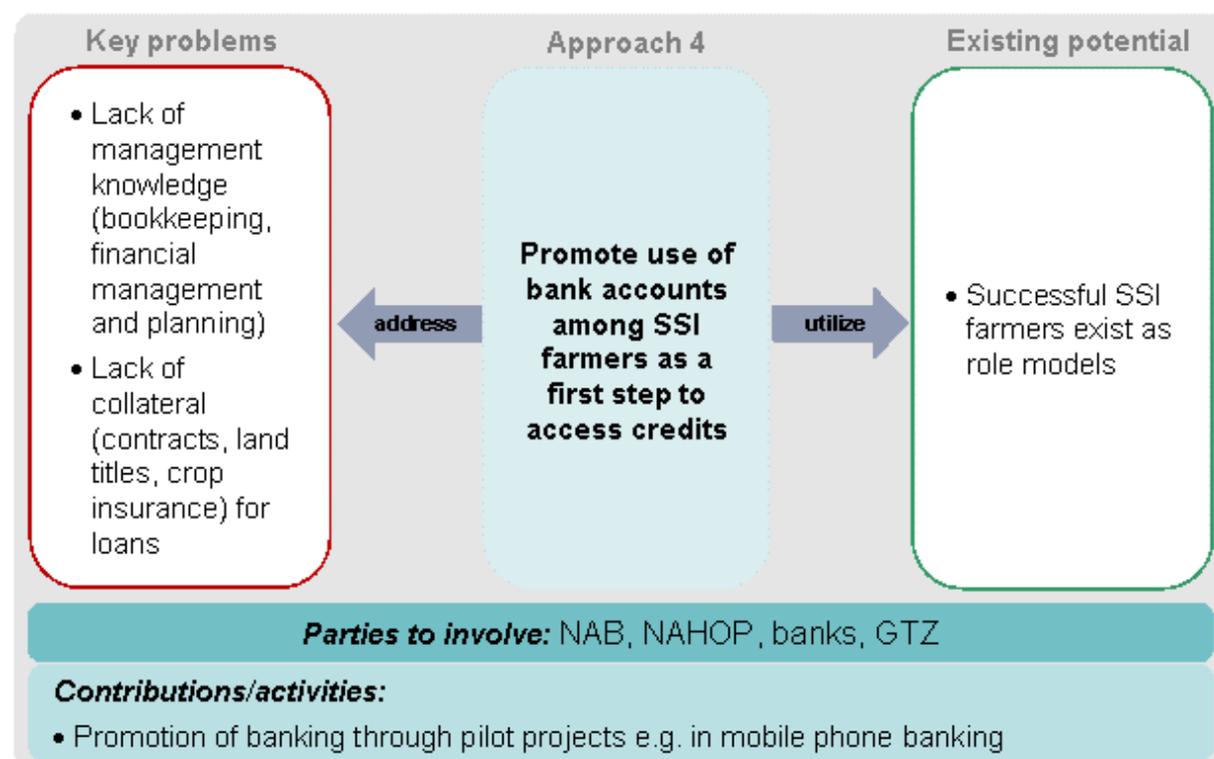
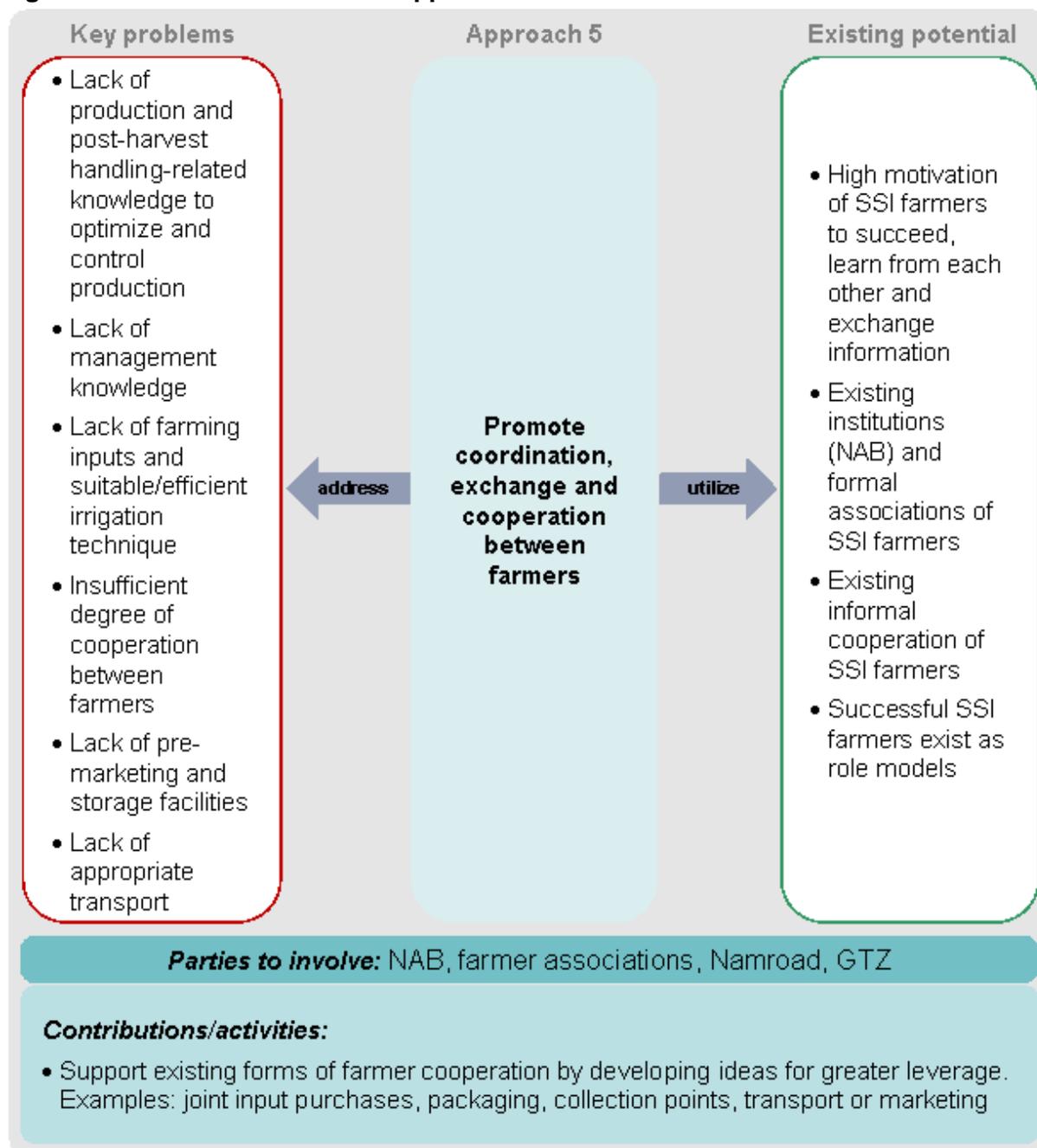


Figure 15: Potential intervention approach 4**Figure 16: Potential intervention approach 5**

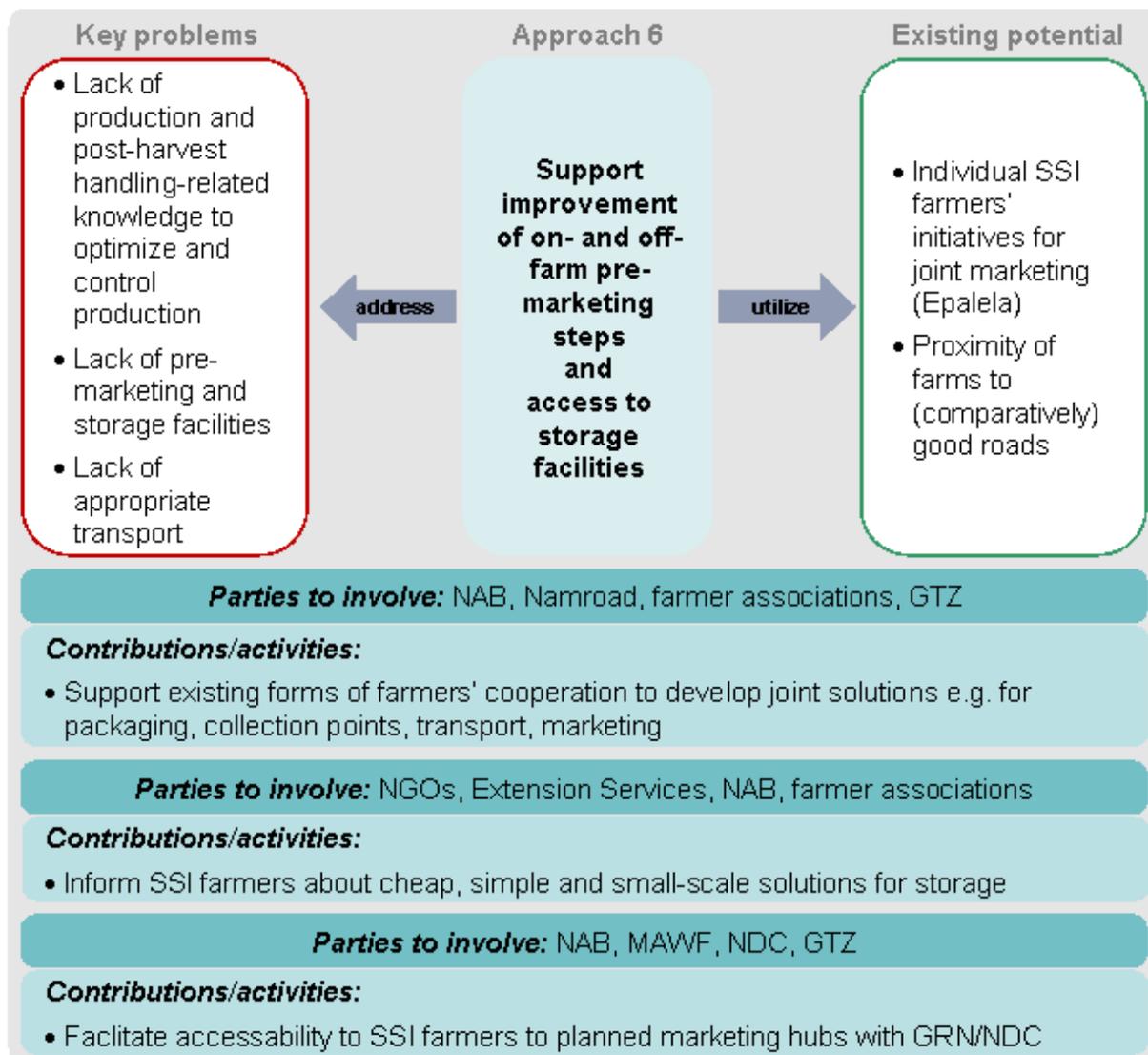


Figure 17: Potential intervention approach 6

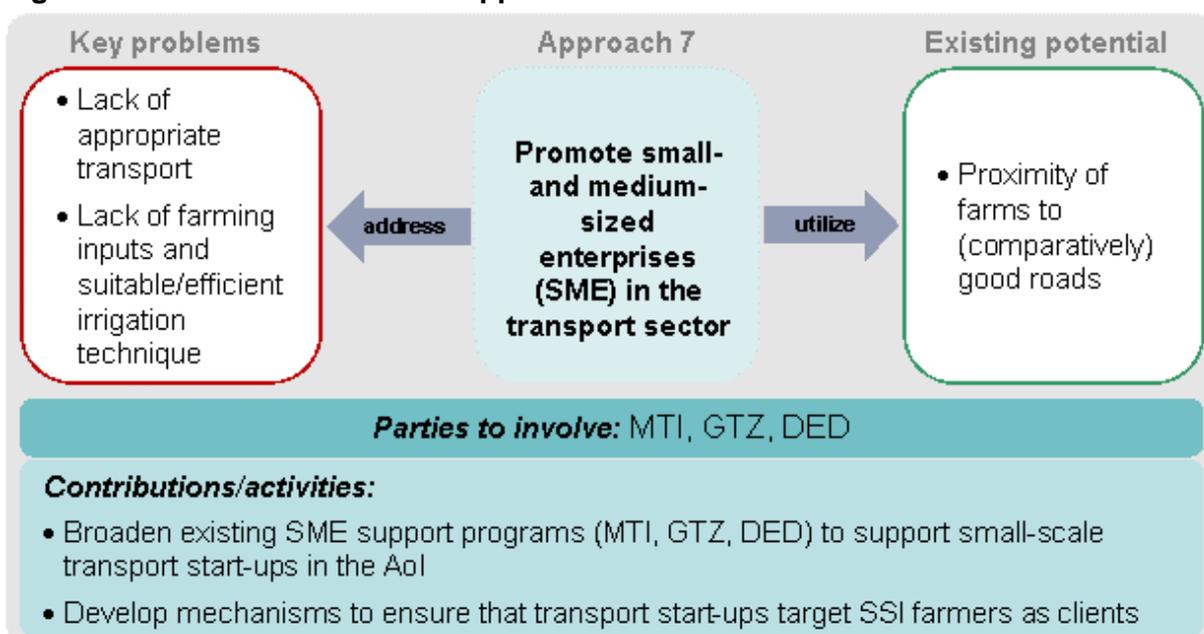


Figure 18: Potential intervention approach 7

A review of the seven proposed intervention approaches shows that they target a variety of issues such as agricultural production, marketing, transport, communication and training. If any institution of the GDC decides to become active in the SSIF sector, it would need to examine how one or more of these approaches **could be incorporated into its existing portfolio** (in the field of education and training, promotion of small and medium enterprises in the transport sector, credit provision). A **cross-sector strategy** is probably the most appropriate approach. An important role for the GTZ would lie in initiating and facilitating discussions among domestic stakeholders.

As most of the six crucial factors for a successful SSIF Sector and the related key problems are located on farmers' level, the intervention approaches primarily also address this level. However, it is generally expedient to focus on various levels when planning intervention. Contributions on e.g. the political and institutional level should not be neglected in a holistic development strategy for the sector. Here the KfW could assist the GRN in developing a policy strategy to support privately operating SSI farmers. Furthermore the KfW could have a facilitating role regarding the issue of credit provision for SSI farmers.

9 Conclusions and recommendations

The objective of this study was to identify potential, constraints and success factors and to provide a basis for potential GDC intervention.

In describing the northern Namibian SSIF sector and its conditions (Chapters 4-6) and identifying opportunities, constraints and success factors in the sector (Chapter 7) the first two study objectives were met. The third objective was to provide the GTZ and KfW with a planning basis for possible intervention. Based on systemic analysis of empirical findings, Chapter 8 provided relevant information in this regard.

Where this study differs from existing analysis of HFP production and IF in Namibia is in its detailed description of the sector with regard to various farm types, marketing mechanisms, the comparison of private farmers and outgrowers etc. based on extensive empirical field research and analysis of these findings in the context of socio-economic, socio-cultural and political-institutional conditions.

Bringing together information about different factors influencing the sector, the study provides a sound basis of largely qualitative⁶⁹ information for various stakeholders within the SSIF sector.

Besides serving as a planning basis for the GTZ and KfW, many Namibian actors may also find it useful in reaching their own decisions regarding the SSIF sector. Furthermore the study may bring this sector to the attention of stakeholders not yet involved, for example commercial banks, which have already showed great interest in the study's findings.

The research results and the broad interest generated by the study within Namibia also show that SSIF in the communal areas of northern Namibia is not just a flash in the pan. Instead it has become a credible branch of Namibian agriculture with a positive impact on job creation, food security at the household level within the Aol and as a strategy for reducing vulnerability to climatic events.

However, the SSIF sector in northern Namibia is still a relatively new phenomenon and is therefore still faced with numerous constraints (see Chapter 7). Competition from South African products, HFP-producing Green Schemes and the growing IF sector in Angola as well as restrictions on SSI farmer access to retail chains and wholesalers all represent major challenges which may jeopardize the sector as a whole. Targeted, limited intervention can be justified in consolidating the sector and

⁶⁹ Provision of extensive, sound quantitative data regarding farm units is unfortunately a limitation of this study, since farmers were unable provide the necessary information.

improving its standing. However this decision is not up to the study. It is up to a variety of stakeholders, including the GTZ, KfW, NAB, NDC and the Namibian Government to decide how to promote the sector, if at all. Two significant factors affecting the decision are the KfW's stand on Green Schemes and the GRN's attitude towards the privately-organized SSIF sector.

With regard to Green Schemes, support of outgrowers on GSs is one way to create jobs in agriculture and to improve food security of rural families. However, there is evidence that outgrowers do not perform significantly better than privately-operating SSI farmers. But development costs for irrigation per hectare are much higher on GSs than on private farms. This makes the GS approach questionable in terms of fund efficiency. Furthermore, restrictions on service providers producing HFP on GSs were recently loosened. This might mark the beginning of a process which could eventually force small-scale producers of HFP out of business (see Chapter 8.1.3). Therefore the GRN's entire approach to GS should be critically reviewed before any potential financial support from the KfW. Should the KfW wish to support outgrowers on GSs, it can do so by following the approaches introduced in Chapter 8, as they will support the SSIF sector as a whole.

The study revealed that the GRN has no clear position towards privately-operating SSI farmers. The as-yet unresolved question of how privately-operating SSI farmers will get access to planned marketing hubs, if at all, is just one illustration of the GRN's need to develop a strategy which integrates the privately-organized SSIF sector into national agricultural policies. Here the GDC could play an essential role in initiating discussion and indicating specific entry points for Namibian stakeholder intervention (see Chapter 8.2).

Finally we would like to recommend further research which would fill current information gaps regarding topics of importance to the SSIF sector:

Firstly, the ecological impact of SSIF in northern Namibia and the whole region should be assessed with particular emphasis on soil salinization, soil quality and drainage of farming inputs into water bodies.

A detailed assessment of seasonal advantages of Namibian HFP in comparison to products from South Africa would also be useful, with the aim of identifying unexplored export opportunities.

To calculate opportunity costs, gross margins etc. at the farm level, and to identify farmers' training needs, we recommend close, long-term monitoring (of at least 12 months) of representative farm units. Such information would represent a significant contribution in further improving irrigation farming systems in northern Namibia.

References

- Agribank of Namibia** (2010): Product Catalogue 2010. Windhoek.
- Agribank of Namibia** (2009): Annual Report 2008. Windhoek.
- Bundesanstalt für Geowissenschaften und Rohstoffe** (2009): Berichterstattung Modul Beratung des Geologischen Dienstes zum EZ-Programm Management natürlicher Ressourcen in Namibia PN 2008.2007.6.
- Brock, Christof** (2009): Creating Increasing Demand and Linking Producers to Markets: The Namibian Horticulture Development Initiative Presentation to the Regional Workshop on 'Aid for Trade Strategies and Agriculture: Towards a SADC Agenda'. Unpublished. Windhoek.
- Dirkx, Erik-Jan & Schade, Klaus** (2010): Namibia Status Report on Agriculture, Fisheries, Water, Livelihoods and Climate Change. FANRPAN Regional Secretariat. Pretoria.
- Donhauser, F.** (2007): Report on the Fact Finding Mission Support to the Government of the Republic of Namibia to Analyse the Potential for Irrigated Agriculture. Focal Area: Irrigation development and food production as envisaged by the Namibian Government under the Green Scheme Initiative. Windhoek.
- El Obeid, Selma & Mendelsohn, John** (2001): A Preliminary Profile of the Kavango Region in Namibia. Namibia Nature Foundation. Windhoek.
- Fiebiger, Markus** (2002): Evaluation of Crop Cultivation Potentials at the Brim of Rain Fed Agriculture by Means of an Agro-Ecological Crop-Simulation Model. A Method and its Application at the Example of the Central and Western Omusati Region, North-Central Namibia. University of Trier. Trier.
- Government of the Republic of Namibia**, Ministry of Agriculture, Water and Forestry (2008a): Green Scheme Policy. Windhoek.
- Government of the Republic of Namibia** (2008b): Third National Development Plan (NDP3). Windhoek.
- Government of the Republic of Namibia**, Ministry of Agriculture, Water and Forestry (2008c): Water Supply and Sanitation Policy. Windhoek.
- Government of the Republic of Namibia** (2004): Namibia Vision 2030. Prosperity, Harmony, Peace and Political Stability. Policy Framework for Long-term National Development. Windhoek.
- Government of the Republic of Namibia**, Ministry of Environment and Tourism (2002): Atlas of Namibia. A Portrait of the Land and its People. Windhoek.
- Government of the Republic of Namibia** (2000a): Traditional Authorities Act. Government Gazette of the Republic of Namibia. No. 2456. Windhoek.
- Government of the Republic of Namibia**, Ministry of Agriculture, Water and Rural Development (2000b): National Water Policy White Paper. Policy Framework for Equitable, Efficient, and Sustainable Water Resources Management and Water Services. Windhoek.
- Government of the Republic of Namibia**, Ministry of Agriculture, Water and Rural Development (1995): National Agricultural Policy. Windhoek.
- GTZ et al.** (2006): Economics of Land Use. Financial and Economic Analysis of Land-Based Development Schemes in Namibia. GTZ Namibia. Windhoek.

- Hugo, L.** (2009): Report on Irrigation Activities along the Olushandja Dam and the Possibility of Improving Water Supply for Irrigation. Windhoek.
- InWEnt** (2007): Landeskundliche Informationsseiten. Namibia. (<http://liportal.inwent.org/lis/?l=namibia>; 10.07.2010).
- IWRM PLAN Joint Venture Namibia** (2010): Development of an Integrated Water Resources Management Plan for Namibia. Consolidation of National Water Development Strategy and Action Plan. The Assessment of Resources Potential and Development needs. Windhoek.
- Manica Group Namibia (2010)**: Transportation and Haulage of Agriculture Produce, Inputs, Machineries and Plants. Power Point Presentation for the Agriculture Investment Conference 2010.
- Mendelsohn, John** (2008): Customary and legislative aspects of land registration and management on communal land in Namibia. Report prepared for the Ministry of Land & Resettlement and the Rural Poverty Reduction Programme of the European Union. Windhoek.
- Mendelsohn, John & El Obeid, Selma** (2001): A Preliminary Profile of the Kavango Region in Namibia. Windhoek.
- Mendelsohn, J., El Obeid, S. & Roberts, C.S.** (2000): A profile of north-central Namibia. Windhoek.
- Ministry of Agriculture, Water and Rural Development** (2010): Minutes of the Integrated Water Resource Management meeting held at Rundu on 16-17 February 2010. Rundu.
- Namibian Agronomic Board** (2009): Annual Report. 1. April 2008 - 31. March 2009. No 22. Windhoek.
- Namibian Agronomic Board** (2008a): Annual Report. 1 April 2007 - 31. March 2008. No 20. Windhoek.
- Namibian Agronomic Board** (2008b): Horticultural Production and the Maximum Possible Import Substitution. Final Report. Consultancy by PriceWaterhouse-Coopers. Windhoek.
- Namibian Development Corporation** (2010a): Fresh Produce Marketing Development Program. Business Plan Presentation. Windhoek.
- Namibian Development Corporation** (2010b): Fresh Produce Market Combined Consultancy Proposal. Phase Documents. Windhoek.
- Namibia Nature Foundation** (2010): Land Use Planning Framework for the Kavango Region of Namibia within the Okavango River Basin. Windhoek.
- National Planning Commission** (2007): Regional Poverty Profile Omusati. Final Report. Windhoek.
- National Planning Commission** (2001): Namibia 2001 Population and Housing Census. Windhoek (<http://www.npc.gov.na/census/index.htm>; 10.11.2010).
- Pannhausen, Christoph & Untied, Bianca** (2010): Regional Agricultural Trade in Southern Africa. The dominance of South Africa within the SADC region. GTZ. Eschborn.
- Phororo, Hopolang** (2001): Food Crops or Cash Crops in the Northern Communal Areas of Namibia: Setting a Framework for a Research Agenda. NEPRU Working Paper No. 80. The Namibian Economic Policy Research Unit. Windhoek.

- SADC** (2008): Revised Protocol on Shared Watercourses (<http://www.sadc.int/index/browse/page/159>; 30.08.2010).
- Seipelt**, Andreas (2009): Land Resources Governance, Customary Structures and Agrarian Change. GTZ Consultancy Report. Windhoek.
- UNDP** (2007): Trends in Human Development and Human Poverty in Namibia: Background Paper to the Namibia Human Development Report. Windhoek.
- UNDP** (2001): Namibia Human Development Report 2000/2001.
- Vester**, Frederic (2007): Die Kunst vernetzt zu denken – Ideen und Werkzeuge für einen neuen Umgang mit Komplexität; ein Bericht an den Club of Rome. 6. Auflage. München.
- Weingärtner**, Lioba et al. (2005): Poverty and Food Security Monitoring in Cambodia – Linking Programmes and Poor People's Interests to Policies. Berlin.
- Werner**, Wolfgang (2010): Missed Opportunities and Fuzzy Logic: A Review of the Proposed Land Bill. Institute for Public Policy Research. IPPR Briefing Paper No. 51. Windhoek.
- Werner**, Wolfgang (2009): Controlling access to water and land: *De jure* and *de facto* powers of Water Point Committees. CuveWaters Papers No. 5. Frankfurt/Main.
- Wubbe**, Martin (2008): Draft Roadmap 2009-2013. For the Land Registration of the Communal Areas. 'Registration of all the communal areas'. Ministry of Lands and Resettlement Namibia. Windhoek.

Internet sources

- Homepage of GTZ (2010) (<http://www.gtz.de/de/weltweit/afrika/namibia/1394.htm>, 21.07.2010).
- Homepage of KfW (http://www.kfw-entwicklungsbank.de/DE_Home/Laender_Programme_und_Projekte/Subsahara-Afrika/Namibia/index.jsp, 21.07.2010).
- Homepage of Ministry of Agriculture, Water and Rural Development (2010) www.mawf.gov.na, 30.09.2010).
- Homepage of the Permanent Okavango River Basin Water Committee (<http://www.okacom.org/>, 01.10.2010).
- Homepage of Southern African Development Community (<http://www.sadc.int>, 01.10.2010).

Annex I – Glossary

Commercial farmland

Commercial farmland is land that can be bought and sold by individuals. With regard to the Namibian land reform process, the Commercial (Agricultural) Land Reform Act (1995) constitutes the legal basis for land allocation in commercial areas through the MLR and is based on the ‘willing seller/willing buyer’ principle. It comprises two complementary approaches: Through the Affirmative Action Loan Scheme (AALS) the Namibian state uses subsidized credit to support Namibians in buying farms in commercial areas. Under the National Resettlement Scheme, the GRN buys commercial farms and divides them into middle-sized farms.

Communal farmland

Communal farmland is land that belongs to the Namibian state. Individuals cannot own communal land but have customary land rights or leasehold rights with regard to certain designated areas of land. The Communal Land Reform Act (CLR) of 2002 constitutes the legal basis of land reform in Namibia’s communal areas and defines the rights and responsibilities of relevant institutions in allocating and registering land titles. Furthermore, it defines the role and function of TA and CLB.

Communal Land Boards (CLB)

CLB were established to promote decentralized land-rights allocation in 12 of the 13 regions in Namibia. The boards are composed of ten to 15 members with regional council representatives, TA, organized farmers, women engaged in farming activities, a conservation representative as well as representatives from line ministries and an expert responsible for the functioning of the board.

Customary Land Rights (CLR)

CLR are essentially targeted at subsistence farms and cover rights to non-commercial residential and farming units with a maximum size of 20ha. Applications for CLR are first handed over to the TA of the relevant community and then to the CLB. The latter cannot deny rights, instead they refer the case back to the TA in the event of rejection.

Economic Partnership Agreements (EPA)

EPA are European Union (EU) supported agreements on free trade zones between the EU and the 79 current members of the ACP (African, Caribbean and Pacific Group of States; mostly comprised of former European colonies) as well as other developing countries. The basis of the EPA is the 2000 Cotonou Agreement which aims at establishing reciprocal trade agreements between EU member states and ACP countries. Non-discrimination and reciprocity underpin the EPA's work. The agreement seeks to eliminate existing trade disadvantages experienced by ACP countries as well as trade barriers between partner countries and the EU by providing free market access for all countries. The EU generally adheres to WTO agreements while also ensuring ACP countries can retain a level protection marketing their products, in recognition of their colonial past. According to interviews, countries such as Namibia can therefore exclude 20% of their products (including HFP) from EPA.

Furrow irrigation

Furrows are small parallel channels which carry water for irrigating crops. Furrows are flooded and the water infiltrates the ridges in between on which crops are grown.

Green Scheme Initiative

The MAWF's Green Scheme Initiative aims at encouraging development of irrigation-based agronomic production in Namibia with the further aims of increased food security, poverty reduction and eventual food sovereignty. The GSP (2008a) is designed to maximize irrigation opportunities in the maize triangle (Grootfontein, Tsumeb and Otavi) as well as in the north-central and north-east regions by utilizing the Kunene, Kavango and Zambezi Rivers while also promoting agri-projects in the south by utilizing the Orange River and dams such as Naute (GRN, 2008a: 3).

Important strategies of GS Policy (2008a) implementation include:

- Realizing the full potential of existing irrigated agricultural areas,
- identifying potential areas for agricultural irrigation,
- developing agri-projects in areas earmarked for irrigation,
- developing storage facilities and marketing infrastructure,
- mobilizing public and private capital,
- increasing capacity to ensure productivity and competitiveness,
- supporting research and technology transfer,
- implementing sound agricultural practices,
- promoting efficient utilization of agricultural land and water resources and

- diversifying agricultural crops and promoting exports.

The MAWF's mission with regard to the GS policy is "to create an enabling, commercially-viable environment through effective public-private partnership, stimulate private investment in the irrigation sub-sector and settle small-scale commercial irrigation farmers" (www.mawf.gov.na). Therefore, the MAWF encourages large-scale commercial farming enterprises to establish commercially-viable entities in remote undeveloped rural areas by offering various farming models including leasehold or profit-sharing agreements. These enterprises serve as service provider (SP) for the successful and sustainable settlement of SSI farmers. SPs are individuals or farming enterprises contracted to provide services to small-scale irrigation farmers or emerging farmers.

The process is as follows: the MAWF develops land for large-scale irrigation agriculture and issues tenders to encourage viable enterprises to manage the GS as an SP. Applicants must put forward a production plan proposal for approval by the MAWF's Agro-Production Unit (APU)⁷⁰. If approved, a contract is drawn up based on one of the five different farming models regulating ownership of capital and profit (Etunda GS, for example, is based on a profit-sharing agreement).

Leasehold

Leasehold is a form of land tenure under which land is leased. It allows the lessee to use a piece of land for a specific period in exchange for rent. Leasehold titles are issued by the CLB for designated under-utilized areas as well as for commercial use of land with a maximum size of 50ha and a maximum period of ten years. MLR approval is needed for leaseholds which exceed 50ha and/or ten years (up to 99 years).

Mashare Irrigation Training Centre

Training at the MITC started in 2006 and has so far trained around 70 outgrowers for GS. The MAWF's Division of Training advertises MITC courses in newspapers. If applicants pass a test, an oral interview is conducted in the respective regions. Criteria for application are: education to grade ten or higher and basic mathematic skills. Participants should have an agricultural background and speak English.

⁷⁰ The APU will replace the GS Agency which previously managed implementation as an outsourced agency of the MAWF.

Permanent Okavango River Basin Water Commission (OKACOM)

The main aim of the OKACOM, founded in 1994, is to facilitate sustainable management of the Kavango River Basin's water resources as well as offering advice with regard to water and land management. The Kavango River Basin stretches over an area of about 190,000 km² in Angola, Namibia and Botswana. All its water originates in Angola and drains to the inland delta in Botswana.

Southern African Customs Union (SACU)

Established in 1969, the SACU comprises five member states: Lesotho, South Africa, Swaziland, Namibia and Botswana. The SACU's key strategy is a common trade policy governing customs and excise duties, trade remedies and rules of origin. To encourage the development and economic diversification of less advanced member states, South Africa has issued compensatory payments to the governments of other member states through a common revenue fund, pooling tariff revenues of all five countries. Further, provisions for the use of instruments which support industrialization and diversification of smaller and less advanced member states have been initiated (PANNHAUSEN, UNTIED, 2010: 5).

Southern African Development Community (SADC)

The SADC comprises 15 member states: Angola, Namibia, South Africa, Botswana, Mozambique, Tanzania, Zambia, Lesotho, Malawi, Swaziland, Zimbabwe, Mauritius, Democratic Republic of Congo, Seychelles and Madagascar. The organization has its origins in a development conference – the Southern African Development Coordination Conference (SADCC) – founded in 1980 with the aim of reducing dependence on the Apartheid regime then in power in South Africa. Cooperative measures between member states include a trade protocol which came into effect in 2000 and a memorandum of understanding on macroeconomic convergence. The SADC's program for regional integration encompasses a free trade area (2008), a customs union (2010), a common market (2015), a monetary union (2016) and the introduction of a common currency (2018). Ratification of the Trade Protocol as well as the SADC Free Trade Area entails elimination of tariffs and non-tariff barriers, harmonization of customs rules and sanitary and phytosanitary measures as well as the implementation of international standards and liberalization of trade in services (PANNHAUSEN, UNTIED, 2010: 6)

The Revised SADC Water Protocol on Shared Watercourses (2001) regulates extraction from international shared watercourses such as the Kavango River. It establishes general principles as well as provisions for planning, environmental

protection and management of shared watercourses through various committees (www.sadc.int).

Service provider (SP)

A service provider (in this context) is a manager of a Green Scheme Irrigation Project which provides associated SSI farmers (outgrowers) with farming inputs, mechanization and/or marketing and transport services and production-related advice (mostly on a cost-recovery basis).

Traditional authority (TA)

The Traditional Authorities Act defines a TA as the chief or head of a traditional community, a senior traditional or traditional councilor (GRN, 2000a). TAs have the power to allocate and cancel CLR and approve allocation of leaseholds by the CLB established in each region. The CLB thus depend on the TA's approval regarding allocation of leasehold. Although TAs have limited powers with regard to development of unutilized communal land for farming, they administer land decisions taken at higher political levels, such as large scale land development projects. This form of governance dates back to the colonial era and was expanded to become a type of autonomous government under the Apartheid regime in the 1960s. Today, traditional structures are a major characteristic of pluralistic law in Namibia.

Vision 2030

Namibia's Vision 2030 provides a long-term development framework. National Development Plans are seen as the primary vehicles for translating the Vision into action and fully realizing it by 2030. In the field of agricultural production, Namibia aims at appropriate and equitable use of land which makes a significant contribution towards food security at the household and national levels. Vision 2030 also aims to support sustainable, equitable growth of Namibia's economy, while maintaining and improving land potential. The Third National Development Plan (NDP3) – with its main theme of "Accelerated Economic Growth and Deepening Rural Development" – is the first systematic attempt to achieve Vision 2030's objectives.

Annex II – List of key informant interviews

Table 16: Key informant interviewees in Windhoek

Name	Position & Institution	Date of Interview
Mr. Peter Lenhardt	Manager of Development Projects, Namibian Agronomic Board (NAB)	21.05.10
Mr. Bertus Kruger	GTZ Project Coordinator of Farmers Support Project, Agribank	24.05.10 & 23.08.10
Mr. Lameck Mwewa	Dean of School of Natural Resources, Polytechnic of Namibia	24.05.10 & 05. - 07.10
Mr. Patrik Klintenberg	Research and Training Coordinator, Desert Research Foundation of Namibia (DRFN)	24.05.10
Mrs. Lydia von Krosigk	Project Manager Sector Division Agriculture and Natural Resources, KFW Namibia	26.05.10
Mr. Pieter de Wet	Managing Director, Namibia Development Corporation (NDC)	02.06.10 & 07.09.10
Mr. Olaf Haub	CIM integrated expert, Department of Land Use Planning, MLR	02.06.10
Mr. Christian Gräfen	Sector Coordinator Natural Resource Management and Land, GTZ Namibia	02.06.10
Mr. Piet Heyns	Freelancing Water Consultant (Heyns International Water Consultancy), former employee of MAWF & NamWater	03.06.10 & 06.09.10
Mr. John Mendelsohn	Freelancing consultant	13.08.10

Mr. Heinrich de Klerk	Main Purchaser Pick and Pay Distribution Center Windhoek	17.08.10
Mr. Christoph Scholz	Main purchaser, Namibia Dairies	19.08.10
Mr. Martin Neumann	GTZ Project Coordinator Water Resource Management, MAWF	20.08.10
Mr. Peter le Riche	Manager Namibian Farmers Market	20.08.10
Mr. Piet Liebenberg	Deputy Director of Engineering Services, MAWF	23.08.10
Mrs. Joana Andowa	Deputy Director of Training and Agricultural Research, MAWF	24.08.10
Mr. Petrus Uugwango	Head of Agronomic Unit, MAWF	24.08.10
Mr. Gerhard Mukuahima	Agricultural Advisor, Standard Bank	24.08.10
Mr. Oliver Horsthemke	Head of Agri Division, First National Bank	24.08.10
Mr. Regan Mwazi	Marketing Manager, Agribank	25.08.10
Mrs. Sophie Kasheeta	Director of Extension & Engineering Services, MAWF	25.08.10
Mr. Norbert Shivoro	Horticulture Officer, Namibian Agronomic Board (NAB)	25.08.10
Mr. Paul Klein	Agronomist, AGRA Cooperative Ltd.	31.08.10
Mr. Jürgen Hoffmann	Trade Advisor, Namibian Agricultural Trade Forum	31.08.10
Mr. Harald Koch	Director of Water Supply and Sanitation Coordination (former Rural Water Supply), MAWF	01.09.10
Mr. Desmond Tshikesho	Under Secretary, Department of Agriculture, MAWF	01.09.10
Mr. Mesag Mulunga	Deputy Director Marketing and Planning, MAWF	01.09.10

Mrs. Maria Kasita	Division Land Boards, Tenure & Advice, MLR	02.09.10
Mr. Hanjörg Drews	Senior Manager Planning & Water Resources, NamWater	02.09.10
Mr. Ewan van der Merwe	Agri-Gro Namibia (Pty) Ltd.	03.09.10
Mr. Marcel Meijs	CIM integrated expert, Communal Land Registration, MLR	03.09.10
Mrs. Doufi Namalambo & Mr. Alois Sander	GTZ Communal Land Support Programme	03.09.10
Mr. Andre Botes	Freelancing consultant, former Green Scheme Agency	06.09.10
Mr. Wolfgang Werner	Freelancing consultant	07.09.10
Mr. Klaus Schade	Freelancing consultant, Chairman of Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN)	07.09.10
Mr. Albert Fosso	Consultant & horticultural trainer	08.09.10
Mrs. Bokkie Cloete	Manager National Sales, Bank Windhoek	09.09.10
Mr. Leon Nel	Managing Director Fruit&Veg City Namibia	14.09.10
Mr. Brock Christof	Chief Executive Officer NAB	14.09.10
Mr. Jacobs Cobers	Manager Kaap Agri	15.09.10
Mr. Diaz	Investment Center, Ministry of Trade and Industry	15.09.10
Mrs. Margery van Vague	Ministry of Health and Nutrition	15.09.10
Mr. Michael Iyambo	Managing Director Oshikoto fresh fruits and vegetables	15.09.10

Mr. Patrick Kohlstaedt	General Manager for Logistic Services at Manica Group Namibia	16.09.10
Mr. Humavindu, Michael	Portfolio Manager Development Bank of Namibia	16.09.10
Mrs. Sunita	Wholesale Manager Freshmark	16.09.10
Mr. Hannes Aransis	General Manager Namfo	20.09.10

Table 17: Key informant interviewees in Kavango Region

Name	Position & Institution	Date of Interview
Mr. Martin Müller	DED consultant to MLR, Extension Office Rundu	26.05.10 & 23.08.10
Mr. Rafael Kampanza	Market officer, Rundu Open Market; Chair of KHAC	27.05., 08.08. & 23.08.10
Mr. Terence Spyron	Manager, Shankara Irrigation Farm	28.05.10 & 05.09.10
Mr. Pinius Kandere	Lecturer, Mashare Irrigation Training Center	28.05.10 & 02.09.10
Mr. Vilho Nghipondoka	Former Permanent Secretary of Agriculture, now Head of Planning Division Namibian Agronomic Board and Head of North Producers Association	30.05.10
Mr. Manfred Buch	Team leader, GTZ Communal Land Support Programme	30.05.10
Mrs. Donna	Traditional Authority of Vungu Vungu Village	25.08.10
Mr. Daniel Sientu Mpati	Traditional Authority of Kwangali District	27.08.10
Mr. Gerhard Hamutenya	Project/Property Officer at Namibian Development Corporation Rundu	31.08.10

Mr. Thekusho Gerwasiius	Agricultural Extension Officer- Economics/ Horticulture MAWF	31.08.10
Mr. Sean Nicholson	Large scale private farmer Kavango	02.09.10
Mr. Mhanda	Agricultural Exentsion Officer- Crops/ Water MAWF	06.09.10
NN	Manager Namwater Rundu	06.09.10
Mr. Koos Ferreira	Managing Director of Namib Mills	08.09.10
Mr. Makongwa	Deputy Director of Rural Services, Regional Council Rundu	15.09.10
Mrs. Dorothy Wamunyima	Chairperson of Okavango BMC; Namibia Nature Foundation Rundu	15.09.10

Table 18: Key informant interviewees in Omusati Region

Name	Position & Institution	Date of Interview
Mr. Silvanus Ngango	Agricultural Extension Office Outapi, Secretary of Olushandja Horticultural Producers Association	31.05.10 & 30.08.10
Mr. Rene Azokly	Operations Manager, Fides Bank	01.06.10 & 31.08.10
Mr. Johan Le Riche	Manager, Etunda Green Scheme	09.08.10
Mr. Unona	Working group Olushandja sub-basin management committee Outapi	24.08.10
Mr. Mathias Polack	PhD Student, CuveWaters	31.08.10
Mr. Martin Enbudile	Head of Agricultural Extension Services, Omusati	01.09.10
Mr. Zacharias Embundile	Secretary of Communal Land Board Omusati	02.09.10

Mr. Protasius Andowa Amutenya	Director of Rural Development, Omusati Regional Council	02.09.10
Mr. Shikwa	NamWater Scheme Superintendent Northwestern Namibia	04.09.10
Mr. Daniel Shooya	Chief of Uunkolonkadhi (Traditional Authority), Onesi	06.09.10
Mr. Shivute & Mr. Eric	MAWF Extension Officers, Etunda GS	06.09.10
NN	Climate Change Adaptation (NGO), Outapi	09.09.10
Mr. Festus Shidute	Custom Chief Officer, Oshikango	14.09.10

Annex III – Examples of questionnaires

General SSI farmer questionnaire

Basic/personal data

1. Name of interviewee
2. Sex
3. Region/location/name of farm
4. Date of interview

Irrigation farming/HFP as an innovation

5. When did you start working with irrigation/HFP farming? Year:
6. What did you do before you started irrigation/HFP production?
7. Why did you start irrigation/HFP farming?
8. Did your parents/grandparents use irrigation in farming?
 Parents Grandparents No
 - If parents/grandparents: Do you know why they started irrigation farming/HFP production?
 - If no: What did they do?
 - If no: Why did you do it differently?
 - If no: How did your parents react when you started irrigation?
9. Where did you get the idea to start SSIF?
10. How did you learn to grow HFP/to irrigate?
11. Have you received any training?
 - If yes: Where and when?
 - What did you learn there?
 - Was it helpful to you? Yes No
 - What did you like/dislike about training?
12. What do farmers need to know for success in HFP farming?
13. Where can they get this knowledge?
14. Have there been any changes in your life as a consequence of irrigation?
 What kind of changes and why? (Differences between past and present)
15. If you were starting over, would you use irrigation? Why/why not?

Farm characteristics

16. How big is your irrigated plot? ___ hectares or m² or other unit:
17. Which HFP do you produce?
18. Which are your most important HFP types?
1: _____ 2: _____ 3: _____
19. Why is crop 1 more important than crop 2?
Why is crop 3 less important than crop 2?
20. Ask for the 2 most important crops and clarify following aspects with respect to the last season of the respective crop. Remember to request and record respective units and their equivalents (kg, tons, sacks, tanks, liters, N\$, etc.).

Crop (HFP)	1.	2.	Comments
a) Area (ha/unit/share of plot)			Exactly or estimated
b) Irrigation technique used			
c) Number of seasons/year			
l) Number of harvests per season			
m) Yield per harvest (kg/t/truckload?)			

Inputs

21. From where/whom do you get your seeds?
- Is it generally easy or difficult to get seeds? Easy Difficult
 - If difficult: Why?
22. From where/whom do you get your pesticides?
- Is it generally easy or difficult to get pesticides? Easy Difficult
 - If difficult: Why?
23. From where/whom do you get your herbicides?
- Is it generally easy or difficult to get herbicides? Easy Difficult
 - If difficult: Why?
24. From where/whom do you get your fertilizer?
- Is it rather easy or difficult to get fertilizer? Easy Difficult
 - If difficult: Why?

25. How do you know when fertilizer or herbicides/pesticides are needed? (Where do farmers get information on how and when to apply? Find out if farmers apply inputs randomly or in a purposeful/informed manner)

Labor

26. Do any other family members work in HFP production? Yes No
- If yes: Which family members?
 - What work do they do?
27. How many laborers do you hire for HFP production (excluding family members)? (Permanent or seasonal workers)
28. How much do you pay for hired laborers?
- For permanent workers:
 - For additional labor:

Organizations/networks

29. Are you a member of any organization (farmers' association, cooperative etc.)?
- If yes: Which organization?
 - What does your organization do?
 - How does membership of this organization benefit you?

Investment/finance

30. Have you bought anything (besides common farming inputs, i.e. "exceptional purchases") for your farm during the last three to five years?
- Yes No
- What?
 - When?
 - How long do you estimate these things will be working?
 - Where did you get the money from?
 - Do you have to pay it back? What are the conditions for that loan (interest rate, installments)?
31. Have you borrowed money for other things you need on your farm (e.g. to buy inputs)? Yes No
- For what and how much?

32. If you needed (further) credit: Where could you get it?

- What are the conditions of that credit (interest rates, collateral, repayment installments, amounts)?

Irrigation/water

33. Where do you get your irrigation water from?

34. Who else is using water from the same source?

35. Are you cooperating in any way with neighboring farmers in irrigation/water extraction? Yes No

- In what way? How exactly does it work?

(These questions serve to identify forms of cooperation, coordination, organization, user groups etc.)

- How many of you are working together?

36. Is the water of good quality? Are there any problems with the water (e.g. saline/alkaline water)?

37. Can you irrigate as much as you want to?

Yes No most of the time only sometimes

- If other than yes: Why?

38. Does anybody control how much water you use?

- If yes: Who?

39. Do you have to pay for irrigation (water fees/electricity/fuel for pumps, labor, etc.)? Yes No

40. How much for each?

Type of cost	Price for water (fees)	Electricity for pump	Fuel for pump	Labor input for irrigation	Others
Cost (N\$)					
Unit (time and/or volume)					

Mechanization

41. Do you use any kind of machine for cultivating HFP? Yes No

- If yes, what kind of machines?

- Do you own these machines yourself? Yes No

- If no: Do you hire these machines/mechanization services?

- From whom/where?

Land

42. Have you observed any changes in the soil? Yes No
43. What changes?
44. Do you have to pay anything for your land? Yes No
45. If yes: How much? N\$: _____ per _____
46. From whom did you get this land?
47. Do you have any kind of “paper” from the Communal Land Board? (Here we want establish whether the farmer has a leasehold or customary land right.)
48. How long are you allowed to stay on this land? (How long is the lease?)
Years: _____ uncertain
49. Are there competing claims for land in your area?
Yes No If yes: what are they?
50. Could you get more land if you so desired?
Yes No Don't know
51. In this area, what happens to land and infrastructure on that land when a user deceases? (To reveal structure/traditions of inheritance)

Marketing (differentiate between the two or three main HFP types)

52. How do you sell your harvests (where and to whom)?
HFP 1:
HFP 2:
HFP 3:
53. Do you prefer selling to one guaranteed buyer? If so; Which?
54. Why is it better to sell to that buyer?

Crop (HFP)	1.	2.	3.	Comments
When/how often do you sell your harvests?				
How long can your crops be stored? (Note down storage facilities if mentioned)				
What are the prices you receive (per kg, t, truckload, etc.)?				

How much of your harvest can you actually sell?				
Who carries out sorting, grading, washing, packaging and weighing?				
What are the additional costs associated with selling/marketing your HFP (e.g. transport, levies, market fees)?				

Transport

61. Who transports your products to markets?
62. Do you face any difficulties transporting your HFP?
Yes No most of the time only sometimes
63. If other than no: What difficulties?
64. How much do you pay for transport? (How are the costs calculated: by product, weight, time, etc.?)

Prices

65. Is there any change in the prices you get for your HFP?
If yes: Why and to what extent are they changing? How do you account for this change?
66. Does the price of your main HFP according to quality?
Yes No
67. If prices and/or demand in the market where you usually sell change – how (from whom) do you get this information and how quickly do you get it?

Household, income and food supply

68. Is your primary motivation for cultivating HFP/conducting irrigation farming selling or to provide food for you and your family?
69. What do you produce on your land for your own consumption (household consumption)? (HFP, staple crops and animal products)
70. How many months per year do these things last? Month/year: ____

71. How much do you have to spend per year on additional food? (rough estimate)
N\$:
72. Do you need to buy more or less additional food than you did before starting irrigation farming? More less no change
73. How much money per year would you estimate that you make by producing HFP? _____ N\$/year
74. Do you or your family members conduct any other income-generating activities (e.g. businesses, employment, livestock ...)?
75. What are these income-generating activities?
76. How much money do you make from these activities per year? (Where total figures are difficult to come by ask for figures compared to HFP income)
77. How many people live on that money?
78. Where do they live (on-farm, near the farm, city, homestead, in the same house etc.)?

Farmer assessments and opinions

79. What do other people (neighbors, friends and family etc.) think about your profession/ the products you cultivate/ irrigation?
80. Do you think cultivating xy/irrigation has changed your status (within your family, neighborhood, society)? (This is to evaluate the influence of traditional values and norms)
81. What do you like about HFP production and what is not so easy (challenging)?
82. If there are challenges: What could reduce these challenges?
83. What are your plans for the future regarding your life as a SSI farmer?
84. Do you want to expand HFP production (in terms of area)?

General information (rest)

85. Age
86. Educational level (years of schooling):
87. Where available: mobile number for further contact

For interviewer: Please record general impressions and observations

Interview guideline for the MAWF

National objectives and strategies

1. What objectives and strategies does the GRN have with respect to farming agriculture in the country?
2. What objectives and strategies does the GRN have with respect to SSIF?
 - Is there a policy paper/document for these strategies?
 - To what extent are strategies implemented?
 - Are there any region-specific SSIF strategies?
3. What strategies does the GRN have with respect to market-oriented production of HFP?
 - Is there a policy paper/document for those strategies?
 - To what extent are strategies implemented?
 - Are there any region-specific strategies for HFP within Namibia?
4. What are the objectives and strategies of the Green Scheme Policy?
 - What are the regulations for production on GS?
 - Are there plans for ongoing production of staple crops?
 - Are there plans for production of HFP on GS?
 - Are there any existing mechanisms to protect SSI farmers?
5. What role do foreign investors play in regard to HFP/SSIF strategies?
 - Are there any programs where the GRN cooperates with the private sector (e.g. PPP)?
 - How have these cooperative efforts turned out? (Have they been politically accepted?)
 - Who are the important players?
 - Does the GRN foresee increased cooperation with the private sector?
6. To what extent are strategies regarding production of HFP and SSIF in Namibia aligned with international agreements (SADC, NEPAD, CAADP)?
7. Are there any relevant changes in agricultural policies in the SADC region that could affect HFP in Namibia?
8. Are there any relevant changes in agricultural policies in South Africa that could affect HFP in Namibia?

Cross-sector coordination

9. To what extent are potentially limiting factors regarding SSIF such as water resources, land tenure and access to finance taken into consideration?
10. Which institutions are responsible for development planning, administration and allocation of resources regarding HFP on the national level?
11. Which institutions are responsible for development planning, administration and allocation of resources regarding HFP in the AoI?
12. How do entities/actors in the field of development planning and water and land management cooperate regarding strategies and activities at the national level?
13. How do entities/actors in the field of development planning and water and land management cooperate regarding strategies and activities at the regional level?

Farming inputs

14. What farming inputs (e.g. seeds, pesticides) are available to SSI farmers?
 - Where do these farming inputs come from?
 - Who provides them?
 - What are the criteria for access to these input services? (Are outgrowers and individual farmers treated differently?)

Finance

15. What financial services are available to SSI farmers? (Credits, loan schemes, loan securities, etc.)
 - Who provides them?
 - What are the criteria for access to financial services? (Are outgrowers and individual farmers treated differently?)
 - What are conditions for these financial services?
16. How many SSI farmers have so far used this credit?
17. How is the use of financial services monitored (personal, indicators, etc.)?

Extension services

18. What input services (e.g. extension services, mechanization, transport, irrigation techniques, marketing facilities) are available to SSI farmers?

- Who provides them?
 - What are the criteria for access to input services? (Are outgrowers and individual farmers treated differently?)
19. What specific extension services are available to SSI farmers?
- What are the criteria for access to input services? (Are outgrowers and individual farmers treated differently?)
 - What are the conditions for these services?
20. How many SSI farmers use these services so far?
21. Who (person/office) is responsible for extension services in the Aol/in Windhoek?
22. How is the use and outcome of the GRN's extension services monitored?
- What mechanisms are there to feedback the needs of SSI farmers to the national level (bottom-up)?
23. What current issues are there in extension services for SSI farmers (bottlenecks and constraints)?

Market and marketing

24. What objectives and strategies are there with respect to production, marketing and import/export of HFP?
- What are the constraints with respect to targeted, market-oriented production of HFP?
 - What strategies are in place to reduce transport and infrastructure shortfall?
25. Is the regulation of import permits to support domestic production a short-term or long-term strategy? Does it comply with SADC regulations?
26. Does the Government provide marketing services for HFP producers? Which?
- What are the criteria for access to marketing services? (Are outgrowers and individual farmers treated differently?)
 - What are the conditions of these services?
27. How many SSI farmers use these services so far?
- How many communal/commercial farmers use these services so far?
28. What are the main constraints with respect to HFP marketing from a national perspective?
29. How can HFP production be promoted among SSI Farmer in the Aol?
30. Should marketing be supported by the Government? If so: How?

Land

31. How is access to land for communal farmers regulated?
32. To what extent do the MAWF and the MLR cooperate in land allocation and land-use planning at the national level?
33. Who is responsible for land-use planning and decision-making regarding allocation of land resources as well as land use in the communal areas? Who has the right to use water on allocated land?
34. What is the role of TAs regarding allocation of land and land-use planning in communal areas? How do they cooperate with local/regional governments?
35. Which institutions operating in the Aol in the area of land management support SSIF?
36. To what extent are SSI farmers involved in land-use planning in communal areas?
 - Who within local government is responsible for involving SSI farmers in land-use planning?
 - When are they involved (periods of consultation)?
37. What are the current issues regarding access to land in communal areas? What are the current constraints?
38. Which institutions can SSI farmers turn to in the event of conflict over land tenure and land use in the communal areas?
39. What role do foreign investors play regarding use of agricultural land in communal areas? Are there any Government programs? Who are the important players?

Water and irrigation

40. What are the objectives and strategies with respect to IF in the Namibian water sector?
41. What measures and strategies does the GRN have to encourage irrigation for SSIF in the Aol?
42. What role does SSIF play regarding potential competition for water (livestock, industry, households, etc.)?
43. How is the allocation of water resources divided among the different water consumers at the basin/regional level (agriculture, livestock, industry, households)?

44. Which bilateral agreements regulate use of water from the Kunene and Kavango Rivers that affect SSIF?
 - Are there documents available?
 - How much extraction do they allow? For how long (years)?
 - How much water is currently extracted?
 - What technologies are used for extraction?
 - What are the current issues/constraints regarding extraction?
 - What mechanisms are in place for resolving extraction conflicts?
45. Which agreements regulate extraction from the Calueque-Oshakati Dam?
 - Are there documents available?
 - How much extraction do they allow? For how long (years)?
 - How much water is currently extracted?
 - What technologies are used for extraction?
 - What are the current issues/constraints regarding extraction?
 - What mechanisms are in place for resolving extraction conflicts?
46. How is the MAWF's position on illegal water provision from Olushanja Dam and Calueque-Oshakati Dam? Does it foresee strategies for regulation?
47. To what extent is water provision for GS regulated?
 - Are there any agreements between GS and water providers?
 - Are there relevant documents regarding water provision on GS?
48. Does the Government have measures and strategies for increasing IF water productivity nationally/in the Aol?
49. What is the role of BMCs regarding SSIF?

Water management

50. Who is responsible for management of water for IF at the national and regional level (tenure, extraction, delivery, sanitation)?
51. Who has the right to control water resources and allocate water to different users in the Aol?
 - How is control of water resources and water supply regulated in case of land leasehold?
 - How is control of water resources and water supply regulated where land titles do not exist?
52. What is the role of TAs regarding water management?

53. How does the state ensure access to water for SSI farmers in communal areas? How does the state ensure access to water for SSI farmers in communal areas without land title?
54. Which institutions can farmers turn to if the appropriate quality and/or volume of water is not delivered?
55. How are water services for SSI farmers charged (price systems)?
 - What mechanisms (sanctions) exist in case of non-payment?
 - What are the criteria for different tariffs?
 - Is there a distinction made between different types of land title?
56. To what extent are SSI farmers involved in water management?
 - What mechanisms are in place to incorporate SSI farmers' needs regarding water services?
 - Is there a distinction made between different types of land title?
57. Which institutions can act to resolve conflicts over water resources?
58. Which water management institutions operating in the Aol support SSIF? 59. What is needed in order to improve water management with respect to SSIF (policies, infrastructure, training, etc.)?

Annex IV – Main market stakeholders

Main market stakeholders in Windhoek

Freshmark (FM)

FM is part of the South African company Shoprite. Imported HFP comes through the FM Distribution Center in Cape Town. Namibian suppliers deliver to FM Windhoek, except for a very few who have established good long-term relationships with FM and supply directly to Shoprite Group branches (although FM controls ordering and invoicing). The company has cropping program agreements with Namibian producers. Depending on annual harvests, FM purchases from other farmers throughout the country. The two GSs Ndonga Linea and Etunda have recently signed up with FM as HFP suppliers. All Shoprite, Checkers and U-Save stores throughout the country are bound by contract to procure their HFP exclusively through FM via Windhoek. FM also supplies Sentra and OK franchises, but FM is only one among several suppliers. Those HFP products that cannot be sold to Shoprite group stores are sold to street vendors.

Fresh Produce Market (FPM)

FPM is associated with the Namibian retailer Fruit & Veg City. In addition to products imported from South Africa, the Windhoek-based wholesaler receives goods from 47 Namibian. FPM is an exception in that it offers contract to producers. Because FPM has its own transport facilities, it delivers to buyers all over the country, including retail chains such as Woermann Brock, Pick n Pay as well as restaurants. As FPM has a very good supply situation, it has applied to the NAB to receive 100% Namibian invoice, enabling them to sell to other retailers and meet their 32.5% domestic product procurement quota required by the MSP initiative.

Namibian Farmers' Market (NFM)

NFM is a commissioning agent which started operating in 2009. NFM regards itself as a relief for the marketing of Namibian-grown products. Farmers deliver their HFP to the warehouse in Windhoek and state their prices. NFM has cold storage facilities and serves as a collection point for various products, giving it a better negotiating position in regard to purchasers. The latter comprise the large retail chains and wholesalers (Pick n Pay, Fruit & Veg City), street vendors, restaurants, catering companies and Government institutions (such as the army). Only end consumers are excluded as buyers. NFM currently exports Namibian gem and butternut squash to France and butternut squash to Zimbabwe. It also exports onions and potatoes,

however these originate in South Africa. NFM is a major and expanding stakeholder in the sector. It not only has its own farms already, with more to come, but is also currently expanding its vegetable pre-packaging facility. A packaging center for bulk goods is under construction.

Stampriet Farmers' Market (SFM)

Windhoek-based SFM is a distribution point with its own warehouse for HFP products supplied by a group of farmers in Stampriet, a village on the Auob River in the country's south.

Retail chains

The major retail chains which offer HFP on a national scale are Pick n Pay, the Shoprite Group (Shoprite, Checkers, U-Save) the Spar Group, OK Foods, Woermann Brock and Fruit & Veg City. The following example illustrates distribution center structure:

Pick n Pay DC in Windhoek is a franchise of a South African owned company. Nearly all fruit, as well as longer-lasting, high-quality vegetables as well as off-season vegetables come via the Pick n Pay Distribution Office in Cape Town, South Africa. Pick n Pay Windhoek procures its domestic HFP from NFM, FPM and SFM. Some of the HFP produced in southern Namibia is bought by Pick n Pay Cape Town as it is within their procurement radius, and it is then -re-imported to Namibia. All 17 Pick n Pay stores in Namibia consolidate their orders through the DC in Windhoek, however it is possible for stores to additionally buy locally-sourced goods.

Main market stakeholders in Oshikango

Formal trade

Oshikango is home to a major middleman (Mr. Shimi) who operates in a similar way to a wholesaler. The regional scope for product distribution ranges from cities throughout Angola to regional open markets in Ovamboland as well as retail outlets in the surrounding towns.

The head office and export hub of Fysal is also located In Oshikango. This retail chain, which also acts as a wholesaler, has a transfer permit for South African products which they sell directly to Angolan customers, by-passing Namibian buyers. Main export products are potatoes, apples and onions. The latter are sometimes bought in the Aol and then exported to Angola, but in very small volumes.

Brenner Wholesale trades in HFP and concentrates primarily on export. Its Namibian costumers comprise supermarkets and restaurants. Traders and middlemen who

supply small traders in the open markets only account for a minor part of the business.

Portugal Wholesaler is another retailer; it procures products from South Africa via other wholesalers.

Informal cross-border HFP trade with Angola

Farmers in the region sell their products either directly or through a middleman to a small informal wholesale street market, operated by local women in Oshikango. This is where Angolan traders buy HFP in bulk, transporting them by bicycle across the border in small volumes, where they are loaded onto trucks. Small volumes (such as a bicycle-load) can cross the border without incurring customs duties as long as the items do not exceed a certain size and weight. Goods valuing less than 500N\$ can pass through the “nothing to declare” channel. However, the amount of times a person can cross the border and how much HFP they can carry with them seems to be arbitrarily decided by border officials. “Custom rates change from day to day” as “there is very little transparency in Angola”. As an example, traders pay an import tax of +/- 30N\$ for a 10 kg crate of tomatoes.

Main market stakeholders in Rundu

OK Foods imports all its fruit and about 80-90% of its vegetables through this channel, exporting some of it to Angola. The ColaCola supermarket targets low-income earners and has a very limited, basic HFP range. Woermann Brock Rundu offers a wide range of HFP in contrast with Woermann Brock Oshakati, which does not sell Namibian HFP at all, procuring it primarily from Johannesburg using its own transport facilities. The same applies to Spar for fruit and off-season vegetables.

Annex V – The HFP sector in figures

This is a summary of data available at the national level (NDC, 2010a, 2010b; NAB, 2009). As already indicated in Chapter 5, there are differences and incongruities between and occasionally even within data sources. Also, sources do not always indicate which year figures refer to. Nevertheless, this summary provides at least a rough idea of the extent of the sector in figures.

HFP demand	
Total Namibian HFP demand in tons (projection for 2010)	128,000
HFP imports	
HFP imports in tons	122,291
HFP imports by value (N\$)	468,200,000
Namibian HFP production	
Total Namibian HFP production by value (N\$)	279,300,000 ^a
Total Namibian HFP production in tons	48,889-54,904 ^a
Production potential in tons	134,470
Namibian HFP production	
HFP exports in tons	26,400 ^b
Structure of Namibian HFP producers^c	
Proportion of commercial producers	22%
Production from commercial producers (tons/a)	73% (39,949)
Proportion of small-scale producers	72%
Production from small-scale producers (tons/a)	15% (8,396)
SSI farmers in the Aol (HFP producers)	
Number of SSI farm units in Omusati ^d	102
Number of SSI farm units in Kavango ^d	108
Number of permanent employees on SSI farm units in the Aol ^e	364
Development costs for SSIF plots	
Development costs per hectare for SSIF plots on Green Schemes (N\$) ^f	65,000-300,000
Private development costs per hectare for SSIF plots ^g	20,000-25,000

^a Excluding grape production.

^b With reference to the 15 most important HFP exports including grape exports, which alone amount to 16,914t.

^c The remaining are "Government farmers" (NDC, 2010b: 116).

^d Estimate drawn from interviews and observation.

^e Extrapolation based on data drawn from our own interviews.

^f Figures vary significantly from source to source (DORNHAUSER, 2007; GTZ et al., 2006).

^g Estimates/data from interviews with private SSI farmers; costs for preparing the land and equipping it with drip irrigation infrastructure.

Annex VI – Overview of SSI farm units' main characteristics by cluster

	C1: Cooperatives and community gardens	C2: Private farm-associated SSI farmers	C3: Individual micro-scale irrigation farmers	C4: Individual small-scale irrigation farmers	C5: SSI farmers on Green Schemes
Approx. number of SSI farmers	71 (Kavango)	20 (Kavango)	12 (Kavango)	55 (Omusati: 50; Kavango: 5)	<ul style="list-style-type: none"> • 52 (Omusati) • (+ 53 in Kavango that are not producing yet)
Main characteristics	<ul style="list-style-type: none"> • Idea of irrigation farming and its implementation actively promoted or initiated by people/projects from outside the communities 	<ul style="list-style-type: none"> • Service provision with water, inputs and assistance in marketing as well as transport by private commercial farms • Not operating completely independently 	<ul style="list-style-type: none"> • Marginalized land location on flood plains • Comparatively small plot sizes, small harvests and marginalized positions in markets 	<ul style="list-style-type: none"> • Individually-operating farmers • Comparatively successful in terms of production 	<ul style="list-style-type: none"> • State-supported outgrowers on GS • Not independently operating (service provision by GS operator/SP)
Location	<ul style="list-style-type: none"> • Kavango (Rundu, Salem, Nkurenkuru, Namtuntu) 	<ul style="list-style-type: none"> • Kavango (80km east of Rundu) at Shankara and Shitemo irrigation farms 	<ul style="list-style-type: none"> • Kavango (near Rundu) 	<ul style="list-style-type: none"> • Mainly located around Olushandja Dam and Calueque-Oshakati Canal (Omusati Region) • Exceptions along Kavango 	<ul style="list-style-type: none"> • Active outgrowers only at Etunda GS so far • In future: outgrowers in Kavango as well

Motivation	<ul style="list-style-type: none"> • Salem: some tradition (since 1970s) • Community gardens: new phenomenon • Profit and income generation as main motive 	<ul style="list-style-type: none"> • SSIF tradition at Shitemo • SSIF as an innovation at Shankara: attracted by advertisement of Rössing Foundation • Profit and income generation as main motive 	<ul style="list-style-type: none"> • Own initiative to start • Profit and income generation as main motive 	<ul style="list-style-type: none"> • No tradition of IF • Own initiative to start • Profit and income generation as main motive 	<ul style="list-style-type: none"> • No tradition of IF • Profit and income generation as main motive
Logic of Action / livelihood strategy	<ul style="list-style-type: none"> • SSIF as main income or source to diversify incomes • Staple crop production for subsistence still relevant 	<ul style="list-style-type: none"> • SSIF as main income or source to diversify incomes • Staple crop production for subsistence still relevant 	<ul style="list-style-type: none"> • SSIF as source to diversify incomes • Staple crop production for subsistence still relevant 	<ul style="list-style-type: none"> • HFP production as main occupation and source of income • Staple crop production for subsistence still relevant 	<ul style="list-style-type: none"> • SSIF as main occupation and source of income • (Continued staple crop production on irrigated plots)
Knowledge / training	<ul style="list-style-type: none"> • Majority: training by MAWF officers or MITC staff 	<ul style="list-style-type: none"> • Received training from Rössing Foundation, MAWF or at MITC • Observation and knowledge exchange with experienced farmers 	<ul style="list-style-type: none"> • No training received (learning by observing others and trial-and-error) 	<ul style="list-style-type: none"> • Only few farmers received training (different durations) • Learning-by-doing and knowledge exchange between farmers as most important ways of learning 	<ul style="list-style-type: none"> • Training at MITC or on the plot training at Etunda GS

Farm size	<ul style="list-style-type: none"> • Salem: 0.5-1ha • Heteka Garden: 0.005-0.006ha (50-60m²) • Community gardens: 0.08-0.57ha 	<ul style="list-style-type: none"> • Shitemo: 1-2ha (average of 1.4ha) • Shankara: 0.5-4ha (average of 1.5ha) 	<ul style="list-style-type: none"> • Rough estimate (farmers could not provide data): 0.045ha (450m²) 	<ul style="list-style-type: none"> • 1.25-13ha • (Average: 3.95ha; majority between 1.5ha and 2.6ha) 	<ul style="list-style-type: none"> • Majority: 3ha; • Exceptions: 6ha
Land	<ul style="list-style-type: none"> • Unclear tenure situation: usage rights from TA, but existing claims by municipality • Differing payments to TA 	<ul style="list-style-type: none"> • Shankara: application for leasehold at CLB • Inconclusive data on payments 	<ul style="list-style-type: none"> • No usage rights from TA sought yet • No payments • Highly insecure tenure situation 	<ul style="list-style-type: none"> • No land titles, just usage rights from TA • Large differences in payments to TA • Applications to CLB not being processed 	<ul style="list-style-type: none"> • Heterogeneous and non-transparent regulation of land certificates and payments
Water and irrigation	<ul style="list-style-type: none"> • Source: Kavango River • Irrigation technique: sprinkler, hosepipes (managed by hand) • Joint use of pump and tubes • No water fees paid 	<ul style="list-style-type: none"> • Source: Kavango River • Irrigation technique: sprinkler • Pump provided by private farm (covering costs for electricity), water and irrigation free of charge 	<ul style="list-style-type: none"> • Source: Kavango River • Irrigation technique: bucket irrigation • No water fees paid 	<ul style="list-style-type: none"> • Source: Olushandja Dam, Calueque-Oshakati Canal; some: Kavango River • Irrigation technique: drip irrigation prevalent, fewer sprinklers or furrow irrigation • No water fees paid, extraction not monitored 	<ul style="list-style-type: none"> • Source: Calueque Dam (provision to farm gate: NamWater) • Irrigation technique: sprinklers • Water and pumping costs paid to SP (0.25N\$/m³)

Labor	<ul style="list-style-type: none"> • Salem: family labor, temporary workers; half of interviewees: 1 permanent worker • Community Gardens: family labor only 	<ul style="list-style-type: none"> • Family labor • Temporary workers 	<ul style="list-style-type: none"> • Family labor only 	<ul style="list-style-type: none"> • Temporary workers • 1-10 permanent workers (average: 5.2 employees per farm) • Occasional family labor 	<ul style="list-style-type: none"> • Family labor (majority: 1) • Additional labor used widely (2-10) • Only some permanent labor
Inputs	<ul style="list-style-type: none"> • Affordability as main problem; not always available 	<ul style="list-style-type: none"> • Sometimes provided by manager free of charge • Affordability as main problem; not always available 	<ul style="list-style-type: none"> • Affordability as main problem; not always available 	<ul style="list-style-type: none"> • Access to farming inputs, but difficulties in terms of affordability and transport (distances) • High awareness of importance of quality inputs 	<ul style="list-style-type: none"> • Availability on time and dependency on SP pose a problem; long distances to alternative purchase locations (transport costs)
Crops (+ three most important crops)	<ul style="list-style-type: none"> • Cabbage, onion, carrot, tomato, sweet potato, butternut squash, spinach, watermelon, pumpkin, green pepper and garlic • (1. tomato, 2. sweet potato, 3. butternut and watermelon) 	<ul style="list-style-type: none"> • Cabbage, onion, butternut, tomato, sweet potato, watermelon, green pepper, spinach • (1. cabbage, 2. onion) 	<ul style="list-style-type: none"> • (1. cabbage, 2. tomatoes, 3. onions) 	<ul style="list-style-type: none"> • Tomato, cabbage, onion, butternuts, green pepper, pumpkin, chili, gem squash, carrot, beetroot, spinach • (1. tomatoes, 2. cabbage) 	<ul style="list-style-type: none"> • Cabbage, tomato, sweet potato, onion, butternut, watermelon, carrot, beetroot, green pepper, gem squash and groundnut • (1. cabbage)
Transport	<ul style="list-style-type: none"> • Lack of own transport • Reliant on public transport 	<ul style="list-style-type: none"> • Lack of own transport • Reliant on public transport or manager 	<ul style="list-style-type: none"> • Lack of own transport • Reliant on public transport 	<ul style="list-style-type: none"> • Few have own transport • Reliant on public transport 	<ul style="list-style-type: none"> • Lack of own transport • Reliant on public transport and/or SP

Annex VII – Approaches and related key problems for interventions

Possible approaches	Key problems	Existing potential	Contribution of GDC/Namibian stakeholders	Actors	Possible negative impacts
Promote and establish communication between producers, buyers and other market stakeholders	<ul style="list-style-type: none"> Lack of pre-marketing and storage facilities Lack of transport (availability, affordability, reliability and suitability) Lack of information with regard to customer demand and communication structures 	<ul style="list-style-type: none"> High motivation of SSI farmers to succeed, learn from each other and exchange information Retailers open to buy from SSI farmers under certain conditions Existing associations and institutions (NAB) Existing informal cooperation of SSI farmers 	<ul style="list-style-type: none"> Initiate round table and other communication platforms with customers, farmers and other stakeholder (transporters, etc.) e.g. to exchange information and/or to develop quality standards 	GTZ, NAB, farmer associations (FA), Namroad	<ul style="list-style-type: none"> Biased targeting of already organized SSI farmers
			<ul style="list-style-type: none"> Promote establishment of backhaul program for transport (to advertise unused capacity in trucks that go back south empty) 		
Training for SSI farmers	<ul style="list-style-type: none"> Lack of production and post-harvest handling-related knowledge to optimize and control production 	<ul style="list-style-type: none"> High motivation of SSI farmers to succeed, learn from each other and exchange information Existing training centre 	<ul style="list-style-type: none"> Improve qualitative and quantitative capacity of MAWF Extension Services (ES) regarding HFP production and marketing 	NAB and MAWF (training and ES), retailer	

Possible approaches	Key problems	Existing potential	Contribution of GDC/Namibian stakeholders	Actors	Possible negative impacts
	<ul style="list-style-type: none"> Lack of management knowledge (planning, financial management, bookkeeping) Lack of collateral (land titles, contracts, crop insurance) for loans 	for irrigation farming (MITC)	<ul style="list-style-type: none"> Add short-term courses (which allow targeted vocational training) to training already offered by MITC and establish satellite training sites to reach farmers living further away from MITC 		<ul style="list-style-type: none"> Exclusion of farmers from training due to specific conditions (location, fees, grade of education).
			<ul style="list-style-type: none"> Offer individual consultation to SSI farmers and develop mentorship training based on experience of GTZ in the livestock sector 	FA, GTZ, NAB	
			<ul style="list-style-type: none"> Link credit provision with training in HFP production and marketing. Training could serve as alternative collateral 	NAB, NAHOP, GTZ, banks	<ul style="list-style-type: none"> Risk: Motivation of SSI farmers for training based exclusively/mainly on receiving access to credit
			<ul style="list-style-type: none"> Improve training of trainers in cooperation with Polytechnic of Namibia 	GTZ, MAWF, Polytechnic of Namibia	

Possible approaches	Key problems	Existing potential	Contribution of GDC/Namibian stakeholders	Actors	Possible negative impacts
Promote use of bank accounts among SSI farmers as a first step to access credits	<ul style="list-style-type: none"> Lack of management knowledge (planning, financial management, bookkeeping) Lack of collateral (land titles, contracts, crop insurance) for loans 	<ul style="list-style-type: none"> Successful SSI farmers exist as role models 	<ul style="list-style-type: none"> Promotion of banking through pilot project in mobile phone banking 	NAB, NAHOP, GTZ, banks	
Expansion of lending institutions in the Aol and specific targeting of SSI farmers	<ul style="list-style-type: none"> Lack of farming inputs and suitable /efficient irrigation technique Lack of collateral (land titles, contracts, crop insurance) for loans Few lending institutions in the Aol 	<ul style="list-style-type: none"> Existing associations and institutions (NAB) 	<ul style="list-style-type: none"> Initiate and facilitate discussion processes between banks and input suppliers on how to target SSI farmers. Input suppliers can function as microcredit-providing institutions and can offer appropriate repayment terms to farmers 	GTZ, KfW, input supplier, banks, NAB	<ul style="list-style-type: none"> Indebtedness of SSI farmers due to high investments and high production risk in irrigation agriculture

Possible approaches	Key problems	Existing potential	Contribution of GDC/Namibian stakeholders	Actors	Possible negative impacts
<p align="center">Promote coordination, exchange and cooperation between farmers</p>	<ul style="list-style-type: none"> • Lack of production and post-harvest handling-related knowledge to optimize and control production • Lack of management knowledge (planning, financial management, bookkeeping) • Lack of farming inputs and suitable /efficient irrigation technique • Insufficient degree of cooperation between farmers • Lack of pre-marketing and storage facilities • Lack of transport (availability, affordability, reliability and suitability) 	<ul style="list-style-type: none"> • High motivation of SSI farmers to succeed, learn from each other and exchange information • Existing associations and regional institutions (NAB) • Existing informal cooperation of SSI farmers • Successful SSI farmers exist as role models 	<ul style="list-style-type: none"> • Support existing forms of farmer cooperation by developing ideas for greater leverage. Examples: joint input purchases, packaging, collection points, transport or marketing 	<p>GTZ, NAB, Namroad, FA</p>	<ul style="list-style-type: none"> • Biased targeting of already organized SSI farmers and neglect of non-organized farmers

Possible approaches	Key problems	Existing potential	Contribution of GDC/Namibian stakeholders	Actors	Possible negative impacts
Support access to on- and off-farm pre-marketing and storage facilities	<ul style="list-style-type: none"> • Lack of pre-marketing and storage facilities • Lack of transport (availability, affordability, reliability and suitability) 	<ul style="list-style-type: none"> • Individual SSI farmers' initiatives for joint marketing (Epalela) • Proximity to (comparatively) good roads 	<ul style="list-style-type: none"> • Support existing forms of farmer cooperation to develop joint solutions e.g. for packaging, collection points, transport, marketing 	GTZ, NAB, Namroad, FA	
			<ul style="list-style-type: none"> • Inform SSI farmers about cheap, simple and small-scale solutions for storage 	NGOs, ES, NAB, FA	
			<ul style="list-style-type: none"> • Advise GRN/NDC on how to make planned marketing hubs (Windhoek, Rundu, Ondangwa) accessible to SSI farmers 		<ul style="list-style-type: none"> • Potential distortion of market through exclusion of SSI farmers from access to hubs
Promote small- and medium-sized enterprises (SMEs) in transport	<ul style="list-style-type: none"> • Lack of farming inputs and suitable /efficient irrigation technique • Lack of transport (availability, affordability, reliability and suitability) 	<ul style="list-style-type: none"> • Proximity to (comparatively) good roads 	<ul style="list-style-type: none"> • Broaden existing SME support programs (of DED, Ministry of Trade and Industry and GTZ Local Economic Development Program) in order to support transport start-ups • Develop mechanisms to ensure that transport start-ups target SSI farmers as customers • Inform potential applicants about those programs 	MTI/NDC, GTZ, DED	

