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

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 AoIs. 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
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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 AoIs. 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 AoI 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 AoIs 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 AoI 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 AoIs. 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 AoI 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.
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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 AoI.
- 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 AoI.

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 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.