Green Economic Development in the Lake Naivasha Basin

Assessing potential economic opportunities for small-scale farmers

Roger Bymolt, Rik Delnoye

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Roger Bymolt r.bymolt@kit.nl
Rik Delnoye r.delnoye@kit.nl

All photos by Roger Bymolt

Research conducted by the Royal Tropical Institute (KIT), Amsterdam, 2012

With support from the World Wide Fund (WWF). Thanks to Bart Geenen, Mohamed Awer, Robert Ndetei, Josephat Nyongesa and Peter Muigai

Royal Tropical Institute

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Abbreviations

CFA	Community Forest Association
CSF	Civil Society Forum
CSR	Corporate Social Responsibility
KIT	Royal Tropical Institute, Amsterdam
KFS	Kenya Forest Service
LNGG	Lake Naivasha Growers Group
LNRA	Lake Naivasha Riparian Association
MOA	Ministry of Agriculture
MOFD	Ministry of Fisheries Development
PES	Payment for Environmental/Ecosystem Services
WWF	World Wide Fund for Nature
WRMA	Water Resources Management Authority
WRUA	Water Resources User Group

Executive summary

In late 2011 and early 2012, the Royal Tropical Institute, Amsterdam (KIT) engaged with WWF in a research trajectory on issues around 'Green Economic Growth' for the Lake Naivasha basin in Kenya. This paper has sought to identify potential economic opportunities for small-scale farmers in the Lake Naivasha basin, whilst taking seriously into account environmental sustainability. This research will inform the design of intervention strategies in the near future, and recommends changes and refinements to current strategies, policies and practices. Recommendations are presented in context throughout the main paper and are also summarised here in this executive summary. Should the reader find a recommendation to be particularly pertinent , he or she should refer to the chapter in the main paper for more information.

Specifically, the research looked at economic development for smallholders in the context of sustainable development; farming structure of smallholders and their challenges; opportunities for and constraints to closer linkages between smallholder farmers and large scale farmers/exporters; as well as the Payment for Environmental Services (PES) scheme initiated by CARE and WWF. The research consisted of literature reviews, semi-structured interviews and focus group discussions, which were validated in a one-day multi-stakeholder workshop in Naivasha town.

Recommendations

The following is a summary of recommendations drawn from the research findings:

Conservation

- Many reasons were given by stakeholders for contributing to declining water quality and quantity in the basin. Non-sustainable smallholder agricultural practices in upstream areas contribute to the current conservational problems but are only part of the water problems face in Lake Naivasha basin. Thus, smallholders can only partly contribute to a solution to the wider problem. The same counts for the commercial farmers.
- Checks & balances (including enforcement) need to be strengthened. For example, many smallholders do not yet pay water usage fees, while downstream we heard of some new development investments that have skirted regulations and management plans as they do not practice sustainable, efficient use of water.
- Capacity of the WRUAs and CFAs must be built if the momentum and excitement of these bottom-up initiatives is to be sustained. This includes sufficient financing and resources as well as management capacity building. This is currently in doubt as many community based organisations depend on NGO donors to survive. For example, the WRUAs need funds to be contributed by WRMA (as legislated) for the WRUAs to be sustainable and well-functioning.
- Addressing current conservation challenges in the Lake Naivasha basin requires a coordinated multi-sectoral and multi-stakeholder effort. Imarisha is well positioned to take the lead in coordinating multi-stakeholder efforts as it appears to be well accepted by a wide range of

stakeholders. Nevertheless, as a relatively new body it will require sufficient capacity to effectively coordinate multi-stakeholder processes on a range of issues. The next five years are crucial for Imarisha to demonstrate its impact and thereby consolidate its position as a coordinator of development in the basin.

- Other sectors (tourism, forestry, road construction, energy) could get more explicitly involved in conservation efforts. For example, environmentally sound road construction would prevent rivers of mud down the roads. The Forestry Department can engage in promoting species that have a positive effect on the hydrology of the area in addition to rapidly increasing forest cover.
- Upstream, riparian areas need to be rehabilitated in many instances to improve the quality and quantity of the water reaching downstream. Some farmers perceive that not cultivating to the edges of their land represents and opportunity cost, when it can in fact enhance the environment while having a positive impact on their production levels.
- Farmers want to see direct benefits from their own efforts, not just hearing about how conservation is important to the wider area, or to downstream stakeholders. Often farmers understand why conservation is important – soil erosion is exposing stones on their land and fertility may be falling. The economic case for conservation should be used to promote more sustainable farming practices (carrots instead of sticks). For this reason, extension agents and NGOs may want to think about how they communicate the conservation message to farmers. It may be more effective to talk with farmers about 'boosting production through good practices', than about 'conservation' per se, especially when initially conservational benefits are not clearly understood and a loss of productive land may be feared.
- We recommend greater caution regarding promoting and planting Eucalyptus, particularly in riparian areas of the basin. Other economic tree crops should be considered that are more efficient with water usage. One example is clumping bamboo, which is native to Africa and would be a more appropriate tree crop when taking into account economic, hydrological and soil erosion challenges of the area. Eucalyptus can have its place – such as management of land prone to landslides or rehabilitating rocky land – but in each case the question should be asked, 'what tree species is most appropriate'. Eucalyptus need not be the default answer.

Payment for Environmental Services (PES)

- An in-depth cost-benefit analysis of PES should be conducted. Such an analysis must include not only payments made by downstream buyers to upstream sellers, but also the costs of the full costs of setting up and running the PES programme, such as those paid by CARE and WWF through their donors (e.g. extension, monitoring etc.). This will help to establish the efficiency of the programme in achieving environmental objectives, versus other options.
- If PES payments were to be stopped for any reason in the near future, we recommend that quality extension should still continue for a transition period to consolidate gains made in conservation and to firmly establish good conservation as normal farm practice.

- We recommend for WWF and other stakeholders to continue engaging closely with policy makers (at sub-national and national level) to advocate for institutionalising PES good practices. Policies should recognize, support and appreciate private sector stakeholders that actively engage in PES schemes. Likewise, non-sustainable behaviour by large and smallholders must be held to account if it is not to undermine the positive efforts of PES actors.
- Introduce basic record keeping training into the PES program, both as a way for farmers to be more professional and informed about the farming choices they make, but also to demonstrate empirically that conservational farming in PES can have a positive impact on production levels and income
- Reconsider the future buying structure of PES. For PES to scale up, it needs to a) look for more buyers from a wider group of stakeholders, if possible and/or b) seek greater contributions from existing buyers/donors, both of which it has had difficulties doing. PES can also develop and trial alternative contributions (other than financial) from buyers, such as technical assistance to smallholders through technology transfer (e.g. technology transfer or market intelligence) or marketing opportunities (e.g. outgrower arrangements). Institutional actors (WRUAs, NGOs, Imarisha) should discuss with current PES buyers their interest in such an alternative arrangement, and potentially play a match-making role to link buyers with small-scale farmers.
- Reconsider the future reward schemes, looking also for non-financial rewards. More inclusive rewards benefiting all/more farmers engaging in conservational practices should be considered in order to encourage the expansion of good practices. Alternative PES rewards can be a step toward overcoming the core constraints and challenges faced by smallholder farmers notably i) low organisational levels and ii) marketing of their produce. Farmers can be rewarded at group level by which members jointly agree to adopt sustainable farming practices. This is proposed as an efficient option because groups can motivate, encourage and 'police' each other. Farmers expressed an interest in such an idea when it was floated to them, although details of how this could work were not available.
- Consider an annual 'awards' for outstanding PES farmers from each area to introduce an element of competition and sense of achievement.
- Quality extension services are vital and improvement in these services could surely help farmers to adopt environmentally sustainable practices. However, extension officers (and NGOs) should be smart in the ways that they promote these practices. Good communication is key. Farmers are more interested in adopting good practices when they understand that this can improve their on-farm productivity and profits. Farmers are much less interested in carrying out sustainable practices for the benefit of downstream stakeholders. In terms of PES benefits, farmers are generally more excited by the changes they have seen on their land and in their production levels compared with receiving the PES payment voucher. It follows then that investment in building extension service capacity is itself a requirement for scaling up the delivery of PES-related activities.

- At present it is doubtful whether the number of private buyers and the level of their contributions can have the desired impact downstream. While not abandoning the good work being done already on finding buyers for environmental services, alternative approaches to PES payments might also be considered. On such approach could be to look at opportunities presented by carbon markets. The maturing of the voluntary carbon market means that several certification standards are now targeted at small-scale projects related to forestry and land-use which would suit the Lake Naivasha context. Some of these certification standards (eg. Plan Vivo, Carbon Fix) promote their services within a PES framework and may well be complementary to the existing PES scheme.
- It is likely that there will be an on-going discussion on the proper balance between investing in PES activities and investing in quantitative research studies. The view of the authors of this report is that investments in PES activities are already showing on farm changes, and so greater investment in more farmers will very likely increase the impact of PES. On the other hand, investment in quantitative research into the impacts of PES downstream presents some risk in that it may not encourage new buyers. We hypothesise that downstream impacts will not be measurable at this time (due to the relatively small number of farmers engaged in PES, the relatively short time that has elapsed, the complexity of the environmental system and the long distances involved). We further hypothesise that on-farm and localised impacts will be measurable (based on observations, interviews and focus groups discussions in the course of this research). The risk is that if scientific research into downstream impacts does not show positive results for buyers yet, then this may discourage existing buyers and put off potential new buyers.

Linkages and Mutual Interests

- Small-scale farmers were found not experienced in formal marketing and proactively making market linkages. Third party (intermediary) assistance is needed to facilitate linkages between large growers with small-scale farmers. Where possible, intermediary actors might also be able to make reputational assurances that both large growers and small farmer groups are fair and honest actors.
- If small-scale farmers are to enter marketing agreements with larger growers then they must be organised into groups with sufficient capacity to sustain supply and meet quality standards. Training to groups by NGOs and government extension agents should be in line with export health and safety standards. Strong farmer groups need to become the norm rather than the exception in order to give greater confidence to large growers/exporters that are interested, but still unsure, about dealing with smallholders.

Production Issues

- Hail and frosts are a problem at night during certain times of the year only, when temperatures drop. Could cheap technologies, such as portable plastic sheet structures, be designed to break the hail stones and protect high value crops from damage?

- Investigate whether there is an opportunity for a crop insurance scheme to cover small-scale farmers for losses to crops from extreme weather events.
- NGOs and government extension agents should a) work to provide information on estimated return on investment to farmer groups in formats that are understandable to them, as well as b) training them on the essentials of record keeping so they can better make their own decisions c) consider the viability of constructing a demonstration site to showcase research from the Kenya Agricultural Research Institute (KARI).
- If fish farming is to take off as an alternative livelihood option then marketing links must be established. If the clusters (groups) are strengthened farmers may be able to reduce transport costs and regularly supply buyers, such as supermarkets in the centres. Alternatively, fish farmers could be linked with the business units around Lake Naivasha which deal in fish caught from the lake, as small traders already operate here.
- A campaign could be started to sensitise local consumers on the nutritional value of fish and how to prepare fish (especially as red meat dominates consumer diets). If sufficient demand is stimulated, a small market structure could be set up to cater for local fish as a first step.
- Consider trialling Catfish as an alternative to Tilapia as it breeds well, can survive in water scarce conditions and can more easily be kept alive for longer transport distances.

Smallholder Group Structures

- Strong farmer groups are fundamental to identifying and implementing solutions to a range of issues. The formation and capacity building of groups requires its own attention. Presently groups are looked to as a convenient way to deliver a service, however this is not sufficient. Group strengthening per se requires attention. A recommendation is for capacity building to specifically target more effective and sustainable group functioning. This should include components of governance and conflict management /resolution when issues arise.
- Concentrate on group formation beyond a single issue (e.g. to access a water pan); build on experiences, consolidate the group, don't try to build numbers too fast because the group needs to regulate itself. Then begin to move towards strategizing on group marketing – cited by most farmer groups as the most difficult activity.
- Group solidarity is vital for nascent, low capacity groups. Focus on solidarity over group growth, and build capacity of group leaders to develop a realistic medium term vision for the group. On-going sensitization is required as to why farmers can do better as a group than by themselves

Marketing Issues

- Identify how vegetable value chains can be shortened and made more efficient. Identify if/where price gouging is occurring by some chain actors which could be putting downward pressure on prices paid to farmers.

- Semi-formal relationships can be established between farmer groups and reliable traders. This is particularly important in the low season when traders are scarce because they believe there is little produce in the area. However, if these traders know they can procure efficiently from several farmer groups in an area then trade can be profitable for all groups. For this to work, NGOs and MOA can assist farmers to organised into groups, build group stores or aggregation points, and provide assistance linking groups with traders, and facilitate trust building between stakeholders.
- When farmers are organised into groups they have the best chance of persuading traders to accept only legal sized bags of not more than 110kgs. Law enforcement is virtually non-existent on such issues. Group members can police and enforce their own group rules that no individual members shall give in to such trader demands. Better still, groups can seek agreement on this with other groups in the area.
- Another way is for the government to enforce the 110kg regulation at selling points (such as at Malikiti market in Nairobi).
- Negotiating on price is notoriously difficult for farmers because they lack bargaining power. This was found to be true for individuals as well as groups. Despite assertions by the MOA, NGOs and even farmers themselves there is little evidence that groups are able to exercise much negotiating power in practice. Perhaps a first line of focus for empowerment in negotiations should be farmer solidarity to not agree to unfair trader demands, such as using unconventional containers or supplying 'bonus' volumes of produce without payment. Farmer groups evidently need support to assert themselves in their negotiations because as much as they dislike unfair practices these practices continue because each farmer feels they have no choice but follow the norms.
- Government and NGOs should be careful not to overstate the benefits of IT in rural communities. Contrary to the belief of some NGOs, farmers say they are not using mobile technology to access price information. Farmers and farmer groups require improved access to pricing information in order to be confident in their negotiating position. If farmers are able to get access to up-to-date price information in the future, they also need to know what prices they can expect to receive locally in relation to the (Nairobi) market prices cited in the media.
- One farmers group expressed that they would like to trace their produce from the farm to the pack house of the company so they can feel that the process is transparent. They feel that if they can see for themselves then they will have a better idea of where problems might arise and more confidence in the company. After all, farmers note that they are paid only for the produce that is accepted by the company.
- Trust is vital to an efficient chain. It is slow to build and easy to break. A role for NGOs is to reiterate repeatedly to both sides the consequences of 'opportunism' such as side-selling, and the benefits of building long term relationships.
- NGOs and MOA say that farmer groups need not look to exporters when seeking a contractual arrangement. However, because it is not clear to farmers where and how they can find other

formal buyers, work needs to be done by MOA and NGOs to facilitate linkages between farmers and formal buyers.

- Farmers are generally risk adverse, and for good reason. They have few livelihood assets to make investments and some are only one failed harvest or so away from poverty. Therefore, so long as a current practice is marginally profitable, they will not easily be tempted into a new risky venture where they lack knowledge and experience, or where they have not seen the benefits to others. If contract farming encouraging farmers into new crops is to be successful then a serious effort needs to be made to mitigate risks for the small farmer. This includes focused extension and attention to good practices in marketing and honouring (contractual) agreements to build trust over time.
- Develop a database of farmer groups that are seeking outgrower arrangements, or other formal contracts with buyers. The database can include, for example, crop preferences, capacity, and prior or current experience. This could be accessed by large growers interested in contracting farmer groups, and could increase competition for produce grown by small farmer groups. In turn, interest from new large farmers/exporters would give farmer groups more options as to who they sign with. If well managed and publicised, such a database could even spark a race to pay higher prices to groups with a reputation for being reliable suppliers.
- Work is needed to develop guidelines for a 'good' contract that is suitable for outgrower schemes in the Lake Naivasha context. If contracts are co-written then small-scale farmers are likely to feel more 'ownership' of the terms and are more likely to honour the agreement.
- Sensitise farmer groups to request the presence of a third party at contract negotiations. Third party signatures are recommended on new contracts to ensure that contractual implications are understood. Open dialogue with large brokers that contracts be signed with a witness from a third party (e.g. MOA or an NGO).
- Poor infrastructure, storage and coolers constrains access to markets. Improvements to roads can be expensive and are likely not to be of strategic government priority. Improved storage at the level of groups should be considered for reducing postharvest losses and maintain the quality of their produce. For example, on-farm storage of potatoes can help in price levelling because farmers can wait several weeks when prices plummet (assuming that lack of appropriate storage rather than immediate cash needs is the main reason for selling potatoes straight from the field).
- There are several options to respond to challenges involving a glut of supply. One is to move more farmers into contract farming of various crops with guaranteed buyers and higher profit margins (large growers, processors). Another is to look at storage options so that farmers can hold their produce for a few weeks while prices plummet.
- Farmers should understand that there are two ways to get a large buyer: one is to sit back and wait, and the other is to actively promote the group. Farmers need support to be organised, get registered, perhaps advertise with a sign board (as a few are doing), and certainly to scout for and approach large buyers themselves.

- An opportunity exists to formalize some of these contracts if small farmers are able to better organize in groups and promote themselves to supermarkets. There appears to be little proactive marketing from farmers and farmer groups, who tend to take a waiting approach for larger buyers to come to them.
- One large wholesaler recommends for farmers to form stronger groups and associations and selling through their Savings and Credit Cooperative (SACCO), who can then sell to large buyers like himself. He says he would pay a slightly higher price just for the efficiency saving this would create for him.
- One large grower recommended that NGOs (such as WWF) work with small farmer groups to help them become certified to the minimum standards. In this way large growers can be more easily linked to small farmer groups that are already certified, and thus demonstrate a certain level of capacity.
- Many farmers have experienced training on record keeping previously. But very few farmers are actually putting this training into practice. Many don't recognize the benefit of it, or found it too complex. A recommendation is for trainings on record keeping to be done in stages, and very basic at first: Profit = production x price – costs; price tracking; production per acre. More emphasis needs to be put on why record keeping is important and how it can help them make better decisions. Some farmers don't fully understand the point of such an exercise. Furthermore, training in record keeping needs to be more than a one-off event. Over the short term, it requires several sessions with checks and refreshers as to how participants are implementing their training.
- If producers want to achieve greater profits over the long term they need to find ways to mobilise into groups who can market more directly, cutting out middlemen and improving their own margins.
- There may be an opportunity to sensitise the hotel and restaurant industry that foreign guests value ethically procured foods. They could better promote to conscientious guests that they source their goods locally and that this has benefits for the community and local farmers in particular. This could encourage the wholesalers/vendors supplying to hotels and restaurants to actively look to source more produce from local small-scale farmers in the area. However, this would be difficult to verify.
- Consider linking new fish farmers to established BMUs to sell fish. Alternatively, fish farmers need to strengthen their clusters so that they can do group marketing. Presently they have no reliable marketing channel so they need to be proactive in identifying large buyers. The Ministry of Fisheries should assist with this, given that they encouraged farmers to enter into fish farming.

This report concludes with two further recommendations which have been elaborated on in more detail. One regards the facilitation of market linkages, and the other suggests an complementary payment model to the existing PES scheme. These should be read in context at the conclusion of the main document.

Introduction

Research objectives

This research was conducted by the Royal Tropical Institute, Amsterdam (KIT) in early 2012 and is part of a larger research trajectory being undertaken by WWF Netherlands which looks at 'Green Economic Growth' models for the Lake Naivasha basin (WWF- Netherlands, 2012).

The objective of this research is to identify potential economic opportunities for small-scale farmers in the Lake Naivasha basin, whilst taking seriously into account environmental sustainability. This research will inform the design of intervention strategies in the near future, and will recommend changes and refinements to current strategies, policies and practices.

Lake Naivasha is a thoroughly researched area with regards to the environmental challenges that it faces, in particular with regards to water use and quality. Much, too, has been written about the booming large scale floriculture and horticulture operations in the downstream areas of Lake Naivasha Basin. However, considerably less has been written about economic opportunities for small-scale farmers in this area, the main purpose of this research.

Throughout this research we have sought opportunities to link economic development with an environmentally sustainable model and an appropriate social model. Acting on these opportunities is expected to result in i) improvement of small-medium farmer livelihoods in the Lake Naivasha Basin, ii) improved conservation practices, and iii) closer linkages between value chain actors, particularly upstream (small-medium scale farmers) and downstream (large growers/exporters) stakeholders.

Specifically, the research looks at:

- Economic development for smallholders in the context of sustainable development (forests, water, land use and governance etc.).
- Understanding farming structures/linkages with the local market and challenges faced by smallholders
- Exploring opportunities/constraints for closer linkages between (upstream) smallholder farmers and (downstream) large scale farmers/exporters
- And developing recommendations based on research findings

The researchers were also asked to look into the Payment for Environmental Services (PES) pilot programme as part of the research. The PES pilot, initiated by CARE and WWF, is one such current effort to develop an invention model that links conservation with sustainable economic development. Analysis and recommendations on the PES programme also feature in this report.

The conducted field research took place between the 22nd of February and the 2nd of March 2012.

- Carried out by Royal Tropical Institute (KIT), Netherlands
- Funded by WWF Netherlands, co-funded by the KIT
- Supported by WWF Kenya

Methodology

Participatory methods were employed throughout the research. The research combines an initial literature review with semi-structured interviews and focus group discussions. The preliminary findings were validated in a one-day multi-stakeholder workshop in Naivasha town. A broad range of stakeholders were interviewed and their views and opinions are reflected in this paper. In particular, a strong focus was given to the perspectives of the smallholder farmers during focus group sessions. The applied research methodology was primarily qualitative, with a focus on understanding why stakeholders make the decisions they do, and how they function.

Semi structured interviews

Semi-structured interviews were conducted with a broad range of stakeholders:

- Imarisha
- Government agencies: Ministry of Agriculture (MOA), Water Resource Management Authority (WRMA), Kenya Forest Service (KFS), Ministry of Fisheries Development (MOFD)
- NGOs: WWF, World Vision, CSF
- Community Based Organisations: 3 Water Resource Users Associations (WRUAs), Community Forest Association (CFA)
- Large growers/exporters of flowers, vegetables, fish
- Hotels
- Wholesalers
- Local market traders

= 20 interviews of between 1 and 2 hours each

Focus groups

Focus group discussions were conducted with individual farmers and farmer groups in the upper catchment and Kongoni division.

- Small-scale farmers and farmer groups: vegetables, flowers, PES

= 8 focus groups of approximately 2 hours each, roughly 75 farmers

Box 1: Focus Group Discussions: KAP and Gender

In facilitating the focus group discussions a Knowledge Attitude Practice – KAP questioning approach was used. This KAP approach is common in assessing behavioural change processes. Firstly the knowledge about the issue at the table is discussed (for example conservation or PES), followed by discussing the attitude towards the topic before entering into discussions about what is actually done in practice. Special attention was paid to actively involving the women present in the discussions by inviting them to share their thoughts and opinions for each question asked.

Validation workshop

At the conclusion of the field research, a validation workshop was held with around 50 participants in attendance, representing a broad cross-section of stakeholders (smallholder farmers, government agencies, large growers, Imarisha, WRUAs, NGOs etc.). The researchers presented preliminary results and were followed up with participant discussions on each topic. In the afternoon, participatory exercises were conducted around three central themes:

- Out-grower schemes targeting international markets
- Improving domestic value chains
- Scaling the PES pilot

During these exercises participants engaged in identifying root causes of various challenges and jointly came up with ideas for responding to these.

Limitations of the research

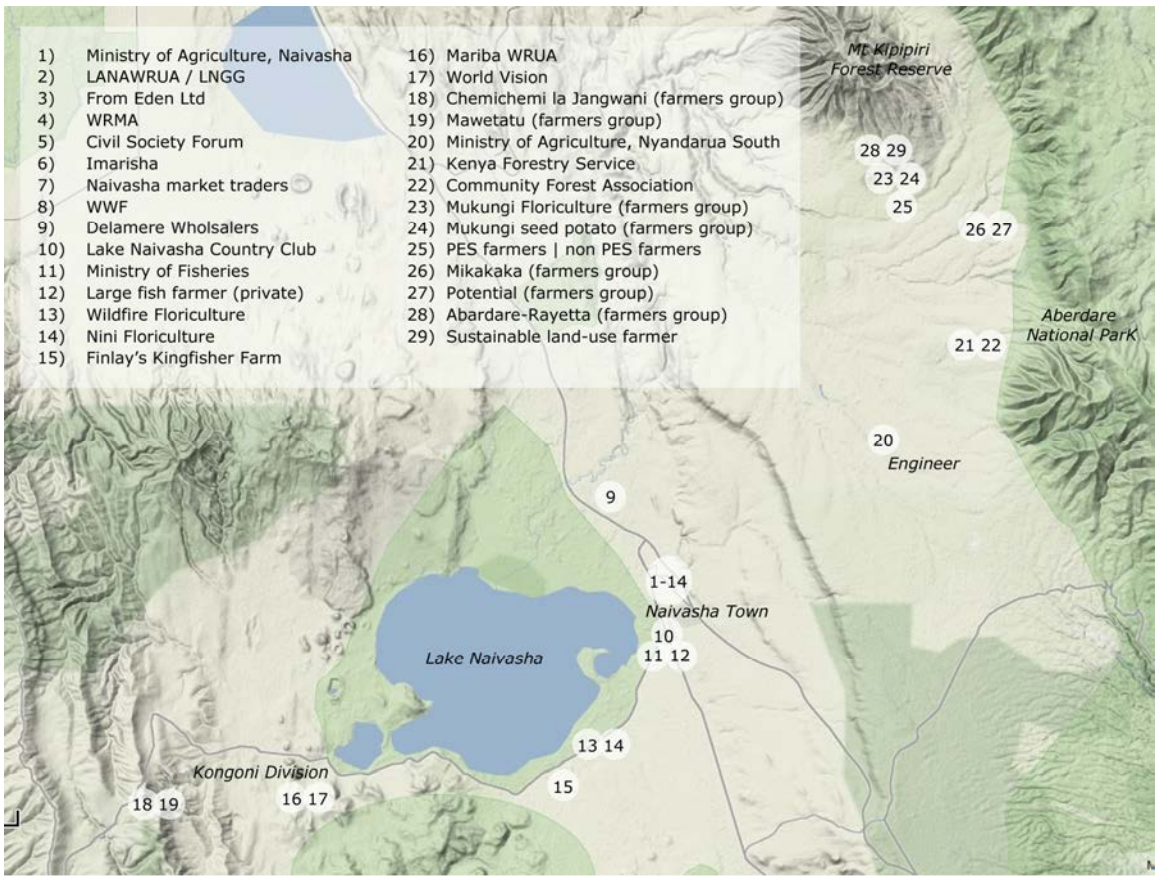
The research was logistically supported by the WWF Naivasha office who did an excellent job in gaining access to the necessary stakeholders for interviews and focus groups. Considering the time available for the fieldwork, the number of interviews and focus groups conducted was substantial; nevertheless it is still a relatively small sample. The selection of farmers and farmer groups was not randomised, as most had prior contact with WWF Kenya in some way. In a purely scientific sense, the opinions and views reflected in the research cannot be regarded as representative for the entire stakeholder groups. In practice, the sampling was strategic, where the researchers asked WWF Kenya to help them gain access to a selection of different farmers and farmer groups (e.g. groups in PES, groups not in PES, groups working with outgrowers for flowers or vegetables, groups not working with large farmers etc.).

It is possible that the presence of a WWF representative during the interview / focus group discussions may had some influence on the research, although the WWF representative did not actively interfere. In general, the researchers had the impression that interviewees were open and honest in their answers and discussions. Answers were cross-checked in discussions and outlier or unusual responses were always probed further. The final validation workshop gave us further confidence in the reliability of participant responses.

Partly due to the limited time available, the research method was predominantly qualitative, although some facts and figures were collected (e.g. on prices and margins). We recommend that for greater detail

to be added to our major findings that this research be complemented with more systematic quantitative data and analysis, particularly regarding out-grower schemes and crop choices.

Figure 1: Research Areas in Lake Naivasha Basin



Interviews and focus groups were carried out in the sites indicated below (locations are approximate).

Background to the research

General conditions for conservation, based on sustainable economic development

The many inter-connected challenges faced in the Lake Naivasha basin require a structured and collective process that brings together all major stakeholders in order to problem solve around jointly perceived problems. In 2012, WWF published a paper 'Green Economic Development in Times of Raising Land and Water Claims' which looked at the critical conditions for the effectiveness of a joint multi-stakeholder response. These conditions are outlined in Box 2. This background section discusses whether and how these conditions apply to the context of Lake Naivasha.

Stakeholder ownership at Lake Naivasha

In terms of ownership, both conditions were found to be generally present in the Lake Naivasha context – i.e. a common sense of urgency and shared ownership of the problem. This was confirmed at both the individual level (often with farmers) as well as at institutional level (NGOs, Government, Community Based Organisations).

Box 2: Critical conditions for the effectiveness of a joint multi-stakeholder response

Ownership

-A commonly felt sense of urgency (trigger)

-The recognition of stakeholders being part of the solution/ sharing the challenges

Lead agencies & change agents

-The presence of an organisation that can facilitate the process in terms of being impartial and accepted by all parties and having sufficient convening power.

-Presence of "change agents" in the form of a stakeholder (-group) that has the commitment, capacity and acceptance to lead the multi-stakeholder process (convening power)

Business case

-The presence of a feasible economic potential for sustainable economic growth and private sector actors that can catalyse sustainable growth.

-The potential to come to joint long term development vision for the area, including potential for quick wins

Enabling environment

-A conducive enabling environment in terms of political commitment and support at local and national levels.

-In Lake Naivasha basin, many of the critical conditions for effective multi-stakeholder responses were found to be present (see below).

Lead agencies and change agents

Both conditions are present in the Naivasha case – i.e. accepted organisation to facilitate the process, and committed change agents.

During interviews and the validation workshop, stakeholders in general expressed an acceptance and trust in WWF and Imarisha as facilitating agencies. WWF has an established record in bringing together major stakeholders on a range of issues, including most recently a joint 'Plan of Action' and in spearheading the PES scheme. Importantly, WWF appears also to have the respect and acceptance of private sector actors such as the Lake Naivasha Growers Group (LNGG) and large growers such as Finlays and From Eden.

The role of the Lake Naivasha Growers Group (LNGG) is illustrative for the importance of a private sector stakeholder group in "getting things moving". By taking up a role as frontrunner in investing in sustainable economic development in terms of on-farm management as well as in supporting activities beyond their own farm (participation in PES), the LNGG has set an example for corporate social responsibility by the private sector. The commitments of the LNGG should be looked at as a role model for responsible development by large growers, and recognised by policy and decision makers when setting benchmarks. It is not clear that 'good practice' by these actors is rewarded over less sustainable (or unsustainable) practices of new investors who come in to the area hoping to make a quick buck rather than contributing to a sustainable future. The proper oversight and regulation of new large investments is fundamental to securing the on-going commitment by other large actors to operate sustainably. Poor consultation practices, allowing loopholes and bending of the rules, is a threat to long term sustainability in both an economic and environmental sense.

A feasible business case for sustainable economic development

In the Lake Naivasha basin, there is both the presence of a feasible economic potential for sustainable economic growth with private sector actors that can catalyse sustainable growth; and the potential to come to a joint long term development vision for the area.

Lake Naivasha is the centre of Kenya's horticulture industry, accounting for 70% of the country's cut flowers exports and accounting for about 9% of Kenya's total foreign exchange revenue (WWF, 2011). This second largest lake in Kenya has traditionally been a valuable resource for irrigation, fishing, farming, livestock grazing, and geothermal energy. Moreover, the lake and its surroundings hosts a vibrant tourism industry, water service providers who supply potable water to local residents, and commercial users (such as the state utility KenGen who use water for geothermal electricity). All major economic activities directly (large scale flower and vegetable industry, smallholder farming, geothermal power) or indirectly (tourism) depend on the lake's water resources. The dependency on the lake as well as profitability of the sectors make a business plan based on long term sustainability vision feasible as well as necessary. The above mentioned ownership and commitment of stakeholders add to this feasibility.

Quick wins for smallholder farmers are not easy to realize due to a range of challenges elaborated on throughout the paper. One notable example is that smallholders who are supported in conservational practices report big farm improvements in a relatively short time (production levels, availability of grasses for fodder, fruits from trees etc.).

Enabling environment

In the past decade or so, the enabling environment has been dynamic and undergone many changes which have been largely positive.

Lake Naivasha Growers Group (LNGG) and Lake Naivasha Riparian Association (LNRA), comprised of local land owners and particularly larger farms, formed in response to the declining ecosystem. They have developed a comprehensive management plan to control human activity in the basin, which was gazetted under the 1999 Environment Act and led to the formation of the Lake Naivasha Management Committee (LNMC) in 2004. (Hepworth et al., 2011; WWF, 2011).

The Water Act of 2002 led to the establishment of The Water Resources Management Authority (WRMA) falling under the Ministry of Water and Irrigation. The WRMA district office in Lake Naivasha is now the responsible body for water related issues in the Naivasha Basin. WRMA has appointed twelve Water Resource Users Associations (WRUAs) in the Naivasha basin (WWF 2012) Under the Water Act, a proportion of the water charge is allocated to the water service trust fund (WSTF), which WRUAs can apply to in order to access funding for capacitation. However, the WRUAs argue that in reality it is almost impossible to get the trust fund to release money for capacity building despite multiple applications. WRMA counters that the WRUAs haven't followed the correct processes. While this may well be true in some cases, a bigger issue is the WRMA is itself supposed to be self-sustaining and its funding from central government decreases each year. WRMA thus faces its own funding pressures, and has a direct interest in protecting its control over its principal revenue source – fees from water users (WWF 2011, p.24). Unfortunately, the consequence of this is that the capacity of most WRUAs remains low, with the exception of LANAWRUA who are supported by large downstream growers.

The drought of 2009 triggered further coordination and alignment. The concerns of the stakeholders after the drought resulted in an informal joint action, which was a Public, Private, People Partnership (PPPP) which was closely supported by the WWF. This joint action led to a pilot initiative that in 2011 eventually resulted in a Lake Naivasha stakeholder organization called Imarisha. The immediate goal of Imarisha is to halt and reverse the degradation the lake and the deterioration of economic base of communities living in Lake Naivasha basin. Imarisha with its long-term goal to restore the lake and its catchment areas to its past glories and secure future economic investment, is the latest institutional innovation, crowning the institutional set up that leads the way for the future development of Lake Naivasha.

Progress with institutions

Despite the progress made on an institutional level, some critical comments were made by interviewed stakeholders particularly regarding the involvement of the public sector. Policies and operations of core public departments such as infrastructure and forestry are not yet well aligned to the vision for sustainable economic development. Examples mentioned included the quality of roads, and the choice of commercial tree species - in particular Eucalyptus - instead of species having higher eco-system values (indigenous species or, for example, bamboo in for restoration of watersheds).

Over the past decade or so, significant progress has been made regarding policies, regulations, new institutions and coordination. However challenges remain, particularly regarding building the capacity of

new institutions to function effectively. A case in point is over the management of water. Following the Water Act (2002), water resource users groups (WRUAs) have been set up to collect payment for water permits and to advocate on behalf of water stakeholders in their area of the catchment. Unfortunately the first WRUAs were only set up in 2005 and still have a low capacity to both collect fees and manage the resource and advocate for best practice. Some WRUAs that we met with do not yet have a functioning office space. Interactions between the WRUAs and the government Water Resource Management Authority (WRMA) were also felt to be strained, particularly over control and access to income generated from water permits.

Regarding enforcement, proposed water management plans for the lake area are not yet enforced. Some large growers as well as other water users spoke of how the WRUAs could be too easily bypassed for consultation, and how the position of the WRUAs could easily be over-ruled regardless. In interviews we heard how this particularly applied the provision of licenses and approvals to major new investments, especially when politics or large amounts of money are in the mix. This is already threatening to undermine the commitment of other stakeholders to the bottom-up process that the Water Act was supposed to establish. When there is a perception that there are rules for some and not for others the result will be dysfunction in the system and a return to, or persistence of, unregulated water usage.

Conservation

Introduction

Increasingly there is a recognition that economic growth needs to be based on sustainability principles regarding the natural limits of ecosystems. A sufficiently long-term perspective needs to be taken into account, while applying adaptive management to deal with the dynamic nature of ecosystems and knowledge gaps we have. At the same time, poverty and global food price volatility have raised renewed concerns about food and nutrition insecurity in developing countries, particularly in Sub-Saharan Africa.

In the recent past, agricultural growth and conservation were regarded as incompatible; hence strategies and policies regarding agricultural growth and conservation were completely separated and even seen as mutually antagonistic. Agricultural development objectives ranged from high input production intensification to claiming for agricultural production through deforestation or drainage. Conservation on the other hand was based on damage mitigation and restoration of forest, water, land and soils through, for example, re-forestation, establishing ecological corridors, extending natural parks or decommissioning of dams. Thus basically taking natural resources out of the (economic) production function to be put under strict conservational mandates (Leslie Lipper and Benadette Neves, FAO, 2011).

Sustainable economic development approaches try to combine both objectives: economic development with conservation and/or regeneration of natural resources. The basis of sustainable economic development and food security is the management of land and water resources in such a way that production capacity and ecosystems services are sustained. In landscapes with complex land and water managements systems an integrated, holistic approach to resources management is required in order to integrate the multiple dimensions and interests, that impact on resource use and scarcity. Agricultural value chains, for example, are land-bound and their growth potential is determined by sustainable management of natural resources, alongside market development.

Sustainable economic development is the core concept around which stakeholders in Lake Naivasha have organized themselves and leading in their joint efforts for improved management of the natural resources of Lake Naivasha. For example, the PES pilot programme in Lake Naivasha basin is designed on the basis of the acknowledgement that conservation and livelihood improvement cannot be seen as two separated objectives and in fact can mutually reinforce each other.

Perceptions of causes of changes in water resources

Many reasons were given by stakeholders for contributing to declining water quality and quantity in the basin:

- Abstraction from the lake by commercial flower growers and vegetable farms
- Water use and stream diversion by unregulated small holder farmers in the upper catchment
- Eucalyptus plantations in the upper catchment, particularly near streams and riparian areas

- Deforestation in the upper catchment leading to erosion and siltation
- Increasing use of agro-chemical in the upper catchment as soil productivity declines
- Water transfer out of the basin via the Nakuru pipeline
- Natural fluctuations in water levels
- Climate change and reductions in rainfall (sometimes cited as been exacerbated by deforestation)
- Destruction of papyrus and riparian areas by smallholders cultivating to the edges of their land, and by large scale farmers around Lake Naivasha
- Water use by a proliferation of Water Hyacinth plants in Lake Naivasha
- Human waste discharge from growing human settlements

Non-sustainable smallholder agricultural practices in upstream areas contribute to the current conservational problems but are only *part* of the water problems face in Lake Naivasha basin. Thus, smallholders can only partly contribute to a solution to the wider problem. The same counts for the commercial farmers.

Some large growers are practicing advanced water conservation and quality management

Economic development and environmental sustainability

The concept of economic development on the basis of environmental sustainability was found to be broadly shared by the various stakeholders around Lake Naivasha. Interviews confirmed that there is a shared awareness of environmental challenges and the need for concerted conservational efforts at all

levels. Both smallholders and large growers who continue to make serious investments in conservation (relative to their size and capacity) make both conservational arguments *and* productivity/economic arguments for these investments.

Large grower perspectives

Large growers/exporters (some of whom are members of the Lake Naivasha Flower Growers Group - LNFGG) express a high sense of importance, urgency and ownership concerning the need for sustainable management of land and water resources. At farm level significant investments to increase efficiency of water use including water cycle management are taken. For example, at one large scale farm visited a water purification system was co-financed through DGIS-Agentschap funds with a demonstration purpose in mind. But also the export farmers extend their concerns and commitment towards sustainability beyond their own farms. The financial participation of the LNGG in the PES pilot scheme is illustrative of this commitment. A significant number of commercial growers invest seriously in conservation measures at their farms (water efficiency / recycling, moving towards production on substrate etc.)

Institutions and policy

At institutional level our research found that:

- Coordination and alignment between stakeholders is slowly increasing
- Laws and regulation in place but enforcement can be weak (at all levels)
- Alignment within the public sector is still weak or absent (agriculture, forestry, road construction etc.)
- Legally binding master water management plans are not yet approved

Recommendation: Checks & balances (including enforcement) need to be strengthened. For example, many smallholders do not yet pay water usage fees, while downstream we heard of some new development investments that have skirted regulations and management plans as they do not practice sustainable, efficient use of water.

Institutional dynamics around Lake Naivasha have been responding to the urgency for improved management by:

- Establishment of new institutions (Environmental Act, Water Act, establishment of WRUAs, LNGG, CFAs, Imarisha)
- Increased coordination and alignment

Community based organisations including the WRUAs and CFA are perceived positively by the community despite their present low capacity. Unfortunately, our findings agree with those of

Isyaku, Chindo & Ibrahim (2011, p.108), who argue that "a major barrier to the community activities around Lake Naivasha is inadequate funding". Nevertheless, the approach that people "are part of the solution" rather than the problem is resonating positively.

Recommendation: Capacity of the WRUAs and CFAs must be built if the momentum and excitement of these bottom-up initiatives is to be sustained. This includes sufficient financing and resources as well as management capacity building. This is currently in doubt as many community based organisations depend on NGO donors to survive. For example, the WRUAs need funds to be contributed by WRMA (as legislated) for the WRUAs to be sustainable and well-functioning.

Recommendation: Addressing current conservation challenges in the Lake Naivasha basin requires a coordinated multi-sectoral and multi-stakeholder effort. Imarisha is well positioned to take the lead in coordinating multi-stakeholder efforts as it appears to be well accepted by a wide range of stakeholders. Nevertheless, as a relatively new body it will require sufficient capacity to effectively coordinate multi-stakeholder processes on a range of issues. The next five years are crucial for Imarisha to demonstrate its impact and thereby consolidate its position as a coordinator of development in the basin.

An adequate policy response, striving for sustainable economic development, is required. The intensive use of natural resources and its consequences in Naivasha Lake is well researched and documented. But the data and research results have not always been efficiently used in management planning and decision making around Lake Naivasha. It is of the utmost importance that policy dialogue is informed by scientific evidence, rather than a politics of special interests or convenience. Imarisha can be a crucial player as a hub for knowledge and communicating key messages. The formation of new institutions and linkages for better management during the past decade is encouraging, however many still lack capacity to operate effectively and efficiently. The expressed desire of Imarisha to link actors and bring together research together is a recent positive development for the area.

Recommendation: Other sectors (tourism, forestry, road construction, energy) could get more explicitly involved in conservation efforts. For example, environmentally sound road construction would prevent rivers of mud down the roads. The Forestry Department can engage in promoting species that have a positive effect on the hydrology of the area in addition to rapidly increasing forest cover.

Small-scale farmer perspectives

During focal group discussions with smallholder groups, farmers were asked a sequence of questions regarding the importance they give to conservation. Farmers were asked what conservation means to them, how important it is to them, and if and how they do conservation in practice. In general, smallholders have increased awareness about the importance of sustainable use of natural resources and about the correlation of non-sustainable land use and current problems in terms of decreasing soil fertility and water availability. They indicate that these are relatively new insights. Farmers have been sensitized by MOA, WWF, WV, KenGen (national power company), among others.

Basic knowledge

All farmers interviewed (PES and non-PES) generally showed a reasonable knowledge of basic farm conservation practices. Farmers frequently described how conservation was about "planting trees" or "planting grasses" on their own fields in order to protect soils from erosion. Fewer farmers mentioned protection of the greater environment, such as tree planting to "increase rains". Regarding trees, farmers expressed a preference for planting indigenous species over Eucalyptus, which they believe dries out the soils. Nevertheless some farmers discussed how they have been encouraged to plant Eucalyptus in the past by the Forestry Department as a fast growing economic tree crop. Those who have had more intensive training in conservation, particularly PES farmers, also spoke of not cultivating down to water flows, and of intercropping with fruit trees. Regarding soils, farmers discussed how soil protection means terracing and establishing grass strips along contour lines and the use of cover crops.

In practice

However when asked how much conservation they actually do on their farms, most farmers (with the exception of PES farmers) responded that they did "some" rather than "a lot". A frequent response was "I try" or "I do as much as I can". When pressed, farmers seemed well intentioned with regards to conservation, but did not do more because either more immediate farming challenges trumped environmental concerns, or they thought that spending their efforts in other ways would benefit them more than conservation activities.

However, those farmers who were committed to conservation efforts (particularly PES farmers) reported substantial (and sometimes unbelievable) benefits. For example, practitioners of soil conservation on sloped land frequently reported a 50% increase in yields, with some even claiming a 100% production increase. These figures were based on before and after yields per acre of a number of common crops, as claimed by farmers and their factuality can be questioned. However, even if some farmers have over-claimed the benefits, this at least demonstrates their enthusiasm and commitment to good agricultural practices, and for some the desperate condition of their soils previously. For example, we heard stories such as "before we thought stones were growing on our slopes, and now we know this was from soil erosion".

Recommendation: Upstream, riparian areas need to be rehabilitated in many instances to improve the quality and quantity of the water reaching downstream. Some farmers perceive that not cultivating to the edges of their land represents and opportunity cost, when it can in fact enhance the environment while having a positive impact on their production levels.

Furthermore, farmers who were engaged in conservation practices spoke how they particularly appreciated the 'extra' benefits these activities could bring. For example, inter-cropping with fruit trees yielded fruit which was usually consumed at the household level. Napier grasses were desirable as they could supplement feed for their own, particularly in the dry season, or sold or given to neighbours.

Upper catchment: Example of a riparian area in need of being rehabilitated to improve both the quality and quantity of water downstream.

The takeaway here is that where conservational activities gave farmers economic benefit – either through higher yields or alternative income – conservation has been embraced. If farmers have concern that conservation means either additional effort or taking away some productive land for no economic return, then the enthusiasm and uptake of such practices is likely to be much less.

Recommendation: Farmers want to see direct benefits from their own efforts, not just hearing about how conservation is important to the wider area, or to downstream stakeholders. Often farmers understand why conservation is important – soil erosion is exposing stones on their land and fertility may be falling. The economic case for conservation should be used to promote more sustainable farming practices (carrots instead of sticks). For this reason, extension agents and NGOs may want to think about how they communicate the conservation message to farmers. It may be more effective to talk with farmers about 'boosting production through good practices', than about 'conservation' per se, especially when initially conservational benefits are not clearly understood and a loss of productive land may be feared.

Intercropping with fruit trees, Upper catchment, Lake Naivasha Basin

Automatic transmission of knowledge

There is a school of thought among some NGO and government staff that good conservational practices can be somehow be 'automatically transmitted' by farmers doing conservation to those not doing conservation. The thinking goes that when these other farmers witness the benefits of good conservational practices then they will copy this and do it too. In practice the evidence of 'automatic transmission' appears weak in the upper catchment.

When farmers actively practicing conservation were asked whether other neighbouring farmers had copied their environmental practices, some initially said 'yes, many'. However, when probed with more detailed questions about how, how many and the extent to which neighbouring farmers had copied conservation practices, responses were moderated to "one or two farmers" or "they are thinking of starting", responses which were fairly unconvincing. Indeed several farms were observed where one farmer had clearly made an effort with planting trees, or terracing with grasses, and the adjacent farm showed no such practices. Instead, two other drivers are suggested as stronger drivers of conservation transmission: i) Quality extension by either NGOs or MOA, and/or ii) group formation, where farmers are more close knit and share ideas in a supportive manner for interventions that work, including conservation.

It seems safe to conclude that conservational agriculture has mitigated further soil degradation where it has been well practiced, and has even begun to turn declining trends in productivity into a positive one.

Two farms showing a combination of A) horizontal terracing with Napier grass B) less effective vertical Napier grass planting C) no planting of grasses on slopes

Eucalyptus in the upper basin

Research in the upper catchment took us through many areas where Eucalyptus is being grown as an economic tree crop. Eucalyptus has advantages over indigenous trees, in particular its rapid growth and low maintenance. This makes it ideal for farmer fence posts and power poles, among other uses. It is also strongly promoted by the Kenya Forest Service in the publication 'A Guide to On-Farm Eucalyptus Growing in Kenya' (2009), where the Kenya Forestry Service attempts to dispel claims that the species consumes a lot of water resulting in decreasing water flow and in some cases the drying of rivers and springs. The guide, written by Kenya Forest Service in consultation with "the key stakeholders in the Forest Sector", does however concede that "planting of Eucalyptus is not recommended in water scarce areas, riparian areas, wetlands and marshy areas". This statement aside, the guide does little to point out negative attributes of Eucalyptus cultivation. Water consumption by Eucalyptus trees has implications for the Lake Naivasha basin, in that water usage and management is a primary concern for all stakeholders in the area.

A more neutral guide on the cultivation of Eucalyptus is 'Eucalyptus in East Africa, Socio-economic and environmental issues' (FAO 2011) which states that "the alleged negative environmental impact of Eucalyptus is a global concern" and that the FAO has thus tried to provide unbiased views by commissioning several global, regional and country level studies. The FAO report notes that there seem to be three groups involved: growers, environmentalists and researchers. Eucalyptus growers obviously support its planting, while environmentalists, backed by agriculturists, emphasize the negative impact (in Kenya this includes the Green Belt Movement and World Rainforest Movement). Researchers, the third category, argue for a cautious and fair evaluation of the pros and cons. The main arguments against the eucalypts include: 1) it drains water resources 2) it enhances soil erosion 3) it suppresses undergrowth 4) it depletes soil nutrients 5) it introduces allopathic effects (Davidson 1985; FAO 1988; Demel 2000; Amare 2002; Nduwamungu et al. 2007). The arguments supporting the genus include: 1) it is a fast growing tree 2) it requires minimum care 3) it grows in wide ecological zones and poor environments 4) it coppices after harvest 5) it resists environmental stress and diseases 6) the seeds are easy to collect, store and no pre-sowing treatment is required (FAO 1979; Zerfu 2002; Mekonnen et al. 2007; Nduwamungu et al. 2007).

Certainly, in the upper catchment farmers we spoke with believe that the Eucalyptus is having negative effects on the hydrology of the area. The FAO report and even the Kenya Forestry Service guide confirm that Eucalyptus is not suited to areas where water scarcity is an issue. This strongly suggests the Forestry Service's promotion of Eucalyptus in this area runs counter to the efforts of other government agencies to improve the hydrology and water use in the Lake Naivasha basin.

Recommendation: We recommend greater caution regarding promoting and planting Eucalyptus, particularly in riparian areas of the basin. Other economic tree crops should be considered that are more efficient with water usage. One example is clumping bamboo, which is native to Africa and would be a more appropriate tree crop when taking into account economic, hydrological and soil erosion challenges of the area. Eucalyptus can have its place – such as management of land prone to landslides or rehabilitating rocky land – but in each case the question should be asked, 'what tree species is most appropriate'. Eucalyptus need not be the default answer.

Observations in the upper catchment show the widespread use of Eucalyptus trees in the basin. While a fast growing tree crop with economic value it is also known for its high water usage.

Payment for Environmental Services (PES)

Introduction

The concept of PES has been internationally proposed as a simple scheme to reward land users who adopt practices that generate environmental services, hence promoting sustainable land use (Mayrand *et al.*, 2004). Environmental services are benefits that humans obtain from natural and cultivated environments (Wertz-Kanounninoff, 2006). For example, hydrological services can be obtained through river flow regulation, flood control or protection against soil erosion (Wunder, 2002; Wertz-Kanounninoff, 2006). PES can include both monetary and non-monetary transactions. Transactions generally include either an individual or a group of people who provide services (sellers) and an individual, or a group, who pays or compensates for the maintenance of these services (buyers).

There are several examples of systems, practices and technologies currently being implemented which generate benefits to both agricultural production and environmental public goods (FAO 2007a). Sustainable crop and livestock practices maximizing synergies with ecosystem functions governing water and nutrient cycling, nitrogen fixation, and pest management can improve soil quality and make more efficient use of available water, increase resilience to climate change and improve food production and income, while providing or protecting environmental services. (Royal Society of London 2009; FAO 2007b; Pretty et al. 2006; FAO 2009c). Sustainable land management (SLM) is one broad category of such practices. These practices aim to reduce soil disturbance and maintain permanent soil cover, increase water retention and minimize the use of synthetic inputs by resorting to integrated pest management and plant nutrition systems (FAO 2002b). Their goal is to maintain long-term productivity of ecosystem functions (land, water, biodiversity) and increase productivity (quality, quantity and diversity) of agricultural goods and environmental services (TerrAfrica 2006, cited in FAO 2008a).

In theory, PES is a tool to add a voluntary but contingent, incentive-based additional layer of natural resource management investment over an appropriate regulatory base. Key principles of PES design that distinguish the tool from other natural resource management mechanisms are: (i) additionality of PES investments: payments or in-kind contributions are only targeted at land managers that can deliver environmental benefits additional to a baseline or "business as usual" scenario; (ii) conditionality: payments are only released following appropriate verification of adoption and maintenance of the agreed practices; and (iii) permanence of interventions: a special important condition when dealing with regenerating ecosystem functions that requires extended time frames (Wunder 2005; GEF 2008).

PES in Lake Naivasha

Several focus group sessions were held with both PES and non-PES farmers and the discussions led to some remarkable insights about smallholder's perspectives and motivation around PES. The PES scheme focussed on three different intervention areas:

- Supporting agricultural extension officers to seriously and professionally take into account conservation in their advisory work

- Demonstrating best practices in sustainable farming and bench-marking conservational farming within the smallholder communities

- Directing conservational farming to those geographical spots that are most vulnerable and important in terms of sustaining the water eco-system (most vulnerable to bad practice)

In addition, the PES scheme has fostered improved linkages between up-stream smallholders and downstream commercial farmers via their respective WRUAs. This is said to have created a better understanding and goodwill among both groups regarding their specific situation and could become a kind of basis for future cooperation.

However, it is important to note that PES has not brought small holder farmer groups and large growers together directly, so care needs to be taken not to over-claim the inter-linkages formed in PES. The established linkages between the upstream and downstream WRUAs however could in the future be instrumental to capitalizing on the goodwill from PES in order to broaden the collaboration between upstream smallholders and downstream commercial farmers.

In Lake Naivasha, Payments for Environmental Services (PES) is a pilot programme. In this scheme upstream small-scale farmers are 'paid' with KSh1200 ($17) vouchers to perform certain environmental services. In practice these services amount to sustainable farming practices such as rehabilitating and maintaining the riparian zones, planting trees and grass strips, and reducing fertilizer use. The services are paid for by the downstream large scale growers (and possibly in future other actors), who in theory benefit through improved water quality and quantity. Payments are facilitated between the upstream WRUAs Wanjohi and Upper Turusha, and downstream LANAWRUA.

The implementation of the PES pilot scheme began in 2009 and currently involves 785 small-scale farmers (initially 565) delivering environmental services, and more than 21 major buyers belonging to the Lake Naivasha Growers Group (LNGG) and some non-LNGG companies (Kenya Roses, Maraju and Maridadi). The Lake Naivasha Growers Group (LNGG) reports that they have so far collectively contributed $13,000 to PES[1]. Negotiations with new buyers (water company, additional growers) are under way.

The PES scheme as piloted in the lake Naivasha basin is based on the principle of sustainable land management through applying conservational farming to improve productivity while sustaining the delivery of environmental services. The PES pilot principally involved:

- CARE and WWF (project implementers)
- Lake Naivasha Water Resource Users Association (downstream buyers)

[1] http://lngg.org/index.php?option=com_content&view=article&id=55&Itemid=65

- Lake Naivasha Growers Group (downstream buyers – the principal participant in the project
- among the buyers)
- Upper Turasha-Kinja Water Resource Users Associations (upstream sellers)
- Wanjohi Water Resource Users Associations (upstream sellers)
- Ministry of Agriculture
- Water Resources Management Authority
- Kenya Forest Services
- Provincial Administration[2]

The earlier mentioned survey on PES by the FAO (Lipper L. & Neves B., FAO, 2011) highlights three critical features of current PES programmes, discussed below. In the light of global assessments done on the effectiveness of PES schemes, the PES pilot in Lake Naivasha responds well in general (design, process) to major challenges identified.

Box 3: High hopes for PES

The world's leading development agencies are eying PES as a promising policy instrument. The World Bank, in its World Development Report on Agriculture, considers the emergence of PES programmes to be a promising approach that should be pursued by local and national governments as well as the international community (World Bank 2008). The Scientific and Technical Advisory Panel (STAP) of the Global Environment Facility (GEF) stated that "As the only multilateral committed to the sustained flow of global environmental benefits, the GEF should consider longer-term funding of PES payments" (GEF 2008). In GEF and World Bank portfolios, PES is increasingly being integrated into wider rural development and conservation projects, as a component to bring in a source of sustainable financing (Wunder et al. 2008). The Organisation for Economic Co-operation and Development (OECD) in 2010 noted the proliferation of PES programmes across developed and developing countries, mobilizing increasingly greater amounts of finance and supporting international dialogues on efficient means of improving ecosystem services.

[2] http://www.un.org/waterforlifedecade/green_economy_2011/pdf/session_4_biodiversity_protection_cases_kenya.pdf

Box 4: Illustration of PES roles

Figure 2 and Figure 3 illustrate what farmers quite unanimously report: without introducing conservational practices in their fields, productivity has been declining over time.

Figure 2: Decreasing production levels prior to PES

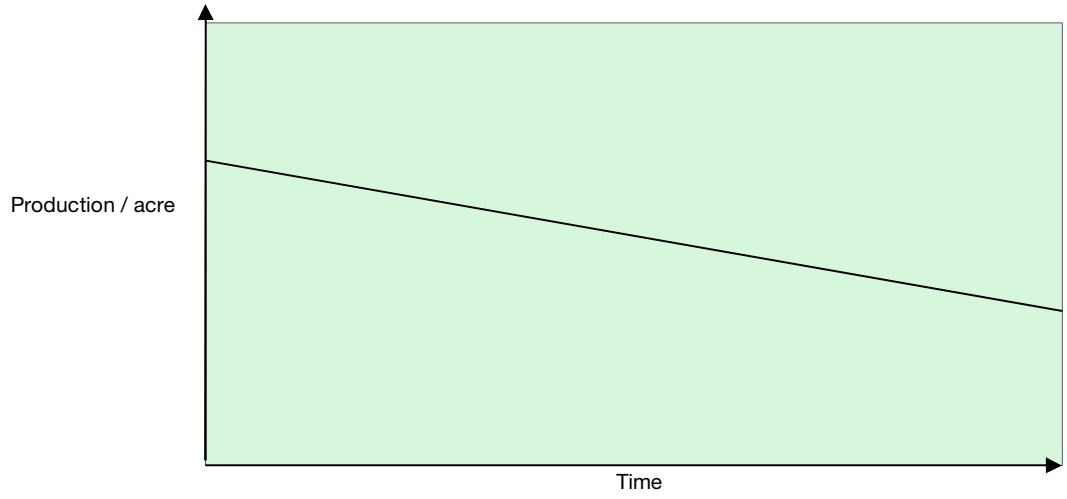


Figure 3: Production levels after PES conservation

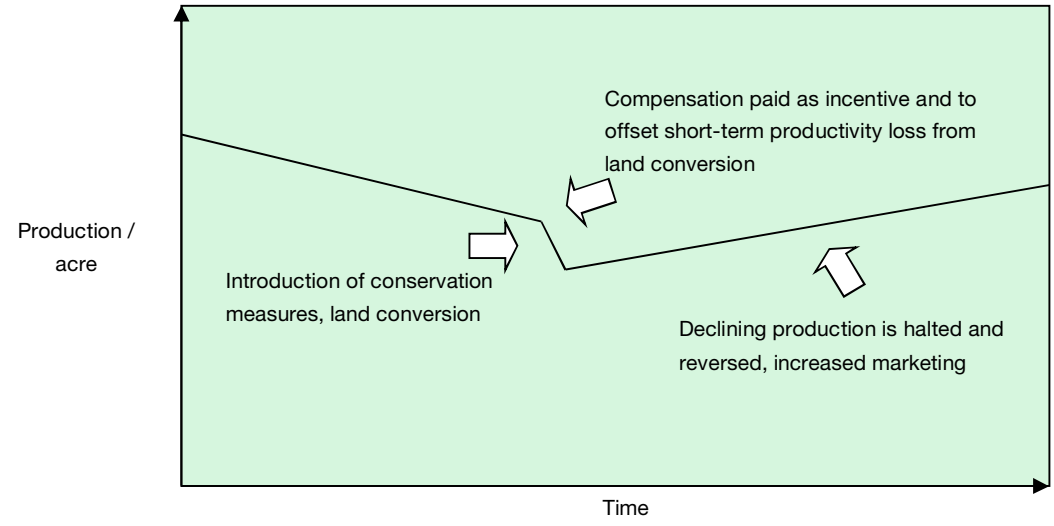


Figure 3 shows how after adapting conservational practices production levels may decrease for a short time (2 years) due to the conversion of land to contours, terraces and trees, especially near streams and rivers. However, after some years of good conservational practices farmers report that productivity improves, positively affecting impacting on their livelihoods. In addition, PES payments can help to offset a possible drop in production levels immediately after implementing the first conservation activities, due to the conversion of productive land.

Appropriate targeting

According to Lipper & Neves (2011), most PES schemes do not demonstrate additionality and suffer from a lack of appropriate targeting. The capacity and costs of supplying environmental services are heterogeneous, yet most PES programmes do not reflect this variability in their payment schemes, especially when it comes to different provision costs. In fact, one of the main recommendations from a recent OECD workshop on increasing the cost-effectiveness of PES programmes was to better target suppliers of such services (the farmers) and discriminate in payment levels.

This applies also for the Naivasha PES scheme. Payment to smallholders is not differentiated in terms of type and level of on-farm investments or in terms of environmental impact measured. Differentiation could be considered rewarding farmers that demonstrate more-then-average efforts or are outstanding in terms of demonstration / dissemination of conservational practices to other farmers.

Multiple objectives

Lipper & Neves (2011) argue that most PES schemes are designed with multiple objectives. In particular, many PES programmes combine poverty reduction with environmental goals. While some argue that PES is not a poverty alleviation tool and will lose its value if it compromises its efficiency, others argue that PES should incorporate other equity objectives.

In the Naivasha PES scheme, environmental considerations are primary. PES farmers are selected upon the physical condition and hydro-ecological importance of their plots and not upon socio-economic conditions. However, additional PES remuneration models could be developed that benefit farmers in other ways. For example, groups of PES farmers could be given more intensive support with marketing – a key challenge identified by farmers, and which would potentially bring considerably greater benefits than the $17 inputs voucher offered now.

PES funding

Lipper & Neves (2011) further discuss how most PES programmes remain primarily or entirely funded by the public sector. This has implications for the sustainability of PES schemes dependent on public funds.

The Lake Naivasha Growers Group (LNGG) has been the frontrunner in financially supporting PES, and have so far contributed $13,000[3]. Besides financial contributions, in-kind contributions could be considered (see point 2, above) broadening the scope of supporters / buyers and the range of allowances/benefits offered. However, it should be recognised that the setup costs of PES have been largely borne by WWF and CARE and funded through their respective donors. These costs, while not known to the authors of this report, are likely to be considerably more than the voucher payments contributed by LNGG buyers. Other costs involve the extension to smallholder farmers to carry out the

[3] http://lngg.org/index.php?option=com_content&view=article&id=55&Itemid=65

PES activities and the monitoring of this. A cost-benefit analysis of both public funds and private funds contributed is important to understand how efficient PES has been in achieving its objectives.

Recommendation: We recommend that an in-depth cost-benefit analysis of PES be conducted. Such an analysis must include not only payments made by downstream buyers to upstream sellers, but also the costs of the full costs of setting up and running the PES programme, such as those paid by CARE and WWF through their donors (e.g. extension, monitoring etc.). This will help to establish the efficiency of the programme in achieving environmental objectives, versus other options.

While the LNGG buyers have done well to support PES in the pilot phase there will need to be substantially more buyers and/or greater contributions to scale up the number of farmers involved in order to have an impact at the downstream level. If this cannot be done, then the project risks suffering from 'drift', wherein PES continues at the level of the pilot having very limited impact downstream, and where existing buyers may pull out. We are not convinced that sufficient private buyers can be found to support the purchase of smallholder environmental services at a level required to have a quantifiable impact downstream.

In terms of environmental sustainability, the Naivasha PES scheme has helped farmers into sustainable agricultural practices which, in the long run, generate higher agricultural incomes than prior practices. Such benefits suggest that long-term payments for environmental services should not be necessary in order to ensure the permanence of benefits from the scheme. While the vouchers are appreciated, all PES farmers interviewed said that they would continue with PES activities even if they stopped receiving the vouchers, such were the other benefits observed on their farms.

Recommendation: If PES payments were to be stopped for any reason in the near future, we recommend that quality extension should still continue for a transition period to consolidate gains made in conservation and to firmly establish good conservation as normal farm practice.

The FAO paper on PES discussed above (FAO, 2011), concludes that PES programmes cannot reach their potential to support sustainable agricultural development without an overall enabling public policy environment. The FAO study distinguishes three important areas where public-sector involvement could improve the capacity of PES programmes to support sustainable agricultural development: i) reducing transaction costs and fostering replication; ii) providing an enabling policy environment; and iii) ensuring equity and capturing multiple benefits. In Lake Naivasha there appears to be a level of public support for PES, particularly at local level. However, according to participants at the validation workshop of this research, a broader legislative framework supporting PES and its scaling is lacking.

Recommendation: We recommend for WWF and other stakeholders to continue engaging closely with policy makers (at sub-national and national level) to advocate for institutionalising PES good practices. Policies should recognize, support and appreciate private sector stakeholders that actively engage in PES schemes. Likewise, non-sustainable behaviour by large and smallholders must be held to account if it is not to undermine the positive efforts of PES actors.

Smallholder PES farmer perspectives

Knowledge of conservation before PES

Among PES farmers we found a range in the prior knowledge (i.e. before PES) about conservation and sustainable farming (such as terracing, tree and grass planting, not cultivating to the edges of riparian areas etc.). Some farmers said they had no knowledge, some a little, or even a lot. But nevertheless, these farmers were brought into the PES scheme because of the nature of their land (sloping, close to streams) and because they weren't then practicing adequate conservation activities.

Impact of PES on the environment

Measurable and verifiable results of the PES pilot at the level of overall eco-system cannot be expected due to the limited duration (2 years) and scale (785 upland farmers) of the current PES pilot. The scale of upstream conservational activities is much too small to expect quantifiable impact downstream.

However, smallholder farmers do report promising results on their farms in terms of decreased erosion levels (improving water quality) and even increased water availability (although the latter is a perceived difference and has been taken with caution). Decreased soil erosion has been measured and observed through pegs farmers installed in their fields when they began PES activities. These pegs were placed along contours on the land with graduations marked on them in centimetres. Over time they have seen the build-up of soil from erosion control measures. Currently more advanced measurement of sedimentation levels are being conducted at three locations in the Lake Naivasha basin. Over time these are building up an evidence base for objective measurement of improved water quality at these sites. A quantitative survey of changes from PES is said to be scheduled in later 2012.

Impact of PES on smallholder production

The PES programme has greatly helped farmers to recognise the importance of such activities, as without the PES promoted practices farming was becoming unsustainable through soil erosion and the drying up of water sources. Farmers have seen for themselves that adopting certain conservational measures like terracing and contour planting improves the production capacity of the land thus increases productivity. In some cases the reported production increases were nothing short of amazing, with increased yield of 50-100% reported. These percentages (calculated by asking about per acre yields for various crops before and after) should be taken with a grain of salt as they cannot be verified, but most importantly in the farmer's minds PES has been successful in showing them that sustainable farming has direct benefits to them, quite apart from any benefits that might also be felt downstream.

Other advantages frequently mentioned was the production of Napier grass for fodder purposes and fruits. Smallholders in Rayetta community also cited the decreased vulnerability of crops to diseases/pests and better drought tolerance (explained by better soils and healthier plants).

Recommendation: Introduce basic record keeping training into the PES program, both as a way for farmers to be more professional and informed about the farming choices they make, but also to demonstrate empirically that conservational farming in PES can have a positive impact on production levels and income

PES voucher payment

Unsurprisingly, PES farmers welcomed the 'payment' of a voucher in return for their work on conservational practices. Farmers in one focus group said that the incentive of the voucher was a nice motivation to take the PES activities seriously. However, these farmers also said that the payment was not really sufficient for the work that it entailed. Nevertheless, they continue with PES because they have seen other on farm benefits (discussed below).

However, a separate group of PES farmers made clear that the voucher was *not* the initial motivation for them the undertake conservation efforts on their farms. In fact, during this particular focus group it was some time before the farmers even mentioned the voucher. It was only after the interviewer eventually asked whether they had received any voucher or payment that they expressed their appreciation of this. This group of farmers said that until the end of their first year participating in PES they did not even know they would receive a voucher payment for conservation work. For this reason the group preferred to refer to the voucher as a 'gift' (rather than a payment) for a job well done. As with the first focus group, the vouchers were appreciated. However the main driver for the farmers to continue with conservation work was that they are realising benefits on their own farms from doing PES activities. The voucher is not a major driver for them. Farmers said that they would continue to do PES activities even if they no longer received the payment because the activities as primarily benefiting their own farms, quite aside from any benefits it may provide downstream.

Most PES farmers indicate that they would rather receive assistance in marketing their produce than receive a small voucher under PES. Doing this through groups would divide the benefits more equally among the community members engaging in conservation agriculture.

Recommendation: Reconsider the future buying structure of PES. For PES to scale up, it needs to a) look for more buyers from a wider group of stakeholders, if possible and/or b) seek greater contributions from existing buyers/donors, both of which it has had difficulties doing. PES can also develop and trial alternative contributions (other than financial) from buyers, such as technical assistance to smallholders through technology transfer (e.g. technology transfer or market intelligence) or marketing opportunities (e.g. outgrower arrangements). Institutional actors (WRUAs, NGOs, Imarisha) should discuss with current PES buyers their interest in such an alternative arrangement, and potentially play a match-making role to link buyers with small-scale farmers.

Recommendation: Reconsider the future reward schemes, looking also for non-financial rewards. More inclusive rewards benefiting all/more farmers engaging in conservational practices should be considered in order to encourage the expansion of good practices. Alternative PES rewards can be a step toward overcoming the core constraints and challenges faced by smallholder farmers notably i) low organisational levels and ii) marketing of their produce. Farmers can be rewarded at group level by which members jointly agree to adopt sustainable farming practices. This is proposed as an efficient option because groups can motivate, encourage and 'police' each other. Farmers expressed an interest in such an idea when it was floated to them, although details of how this could work were not available. Another idea: consider an annual 'awards' for outstanding PES farmers from each area to introduce an element of competition and sense of achievement.

Quality extension

The PES farmers interviewed clearly had close engagement with an extension officer to implement the PES activities. Furthermore the farmers also knew that there would be follow up on his or her performance carrying out these activities. The extension officer also had a stake in the farmer doing these activities well because this would show up as 'successes' in the pilot. We believe that quality extension is thus a one major reason why a relatively high percentage of farmers with these activities in the first year(s) until they were convinced of the results themselves. WWF and CARE also seemed to be perceived well by the farmers who expressed trust in their opinions. Therefore, we suggest that quality, focussed extension has been more important to the relative success of PES at the farm level than the voucher.

Recommendation: Quality extension services are vital and improvement in these services could surely help farmers to adopt environmentally sustainable practices. However, extension officers (and NGOs) should be smart in the ways that they promote these practices. Good communication is key. Farmers are more interested in adopting good practices when they understand that this can improve their on-farm productivity and profits. Farmers are much less interested in carrying out sustainable practices for the benefit of downstream stakeholders. In terms of PES benefits, farmers are generally more excited by the changes they have seen on their land and in their production levels compared with receiving the PES payment voucher. It follows then that investment in building extension service capacity is itself a requirement for scaling up the delivery of PES-related activities.

Non-PES farmer perspectives

Non-PES farmers (who were interviewed and knew of PES) explained that they did not participate in PES because they did not meet all the requirements: a) steep slope b) vicinity of water source / flow c) cultivated land d) no conservation measures in place yet.

Some of these non-PES farmers had adopted similar conservational practices in their farms prior to the PES pilot. At the community of Rayetta, the smallholders concluded that some of the best farms in terms of conservational practices belonged to farmers that were not part of the formal PES scheme but were farmers that adopted conservational farming methods a long time ago, with guidance from the Ministry of Agriculture. In this sense the current PES scheme discriminates in a sense against the early adopters, as they don't receive vouchers. Nevertheless, farmers that had made their own conservation efforts prior did say that the PES farmers do have an important function in a) demonstrating best practices to colleague farmers and training colleague farmers in applying conservational technologies in their fields and in b) raising and distributing seedlings of indigenous tree species to colleague farmers.

Farmer perspectives on scaling PES

According to interviewed farmers (PES and non-PES), further adaptation of sustainable agricultural practices and conservation measures by smallholders does not depend entirely bringing more farmers into the voucher payment system. Just as importantly, it requires more awareness raising and focussed training to smallholder farmers. This is an important point because some NGO actors seem to believe that PES activities will at some point become self-replicating as knowledge is shared among farmers in the wider community. In practice, automatic transmission of knowledge should not be assumed (see Automatic

transmission p.29). If this was the case then farmers who had already implemented similar conservation efforts prior to PES would already have disseminated this knowledge and results would be realised in the wider community. In reality this has not happened, hence the need for PES.

When asked, PES farmers did initially say that "yes", other neighbouring non-PES farmers had begun copying the activities of PES farmers in order to realise the same benefits. However when probed further it was obvious that non-PES farmers could only very recently have seen the results of the PES farmers (since it was only the second year of PES), and hence only just begun trialling their own conservation. When probed further again, the PES farmers modified their answers, saying that only 1 or 2 farmers in their area were actually now trying some conservation activities, and the extent of these efforts seemed variable. This suggests a) that NGOs must not get over-excited by PES farmer claims of knowledge transmission without evidence, and b) that transmission that does occur is likely to be uneven, and there is no evidence of sustained conservation practices of non-PES farmers simply because it is too early to tell.

Small-scale PES farmer farming on sloped land and terracing with Napier grass

The buyer's perspective

At present, the Lake Naivasha Growers Group (LNGG) is the main buyer involved in the PES pilot. (Other new buyers include Kenya Roses, Maraju and Maridadi). Members voluntarily participate through the group but contribute financially at an individual level.

The LNGG members interviewed confirmed their commitment to the PES arrangement in the foreseeable future. Their commitment is grounded on the belief that only consistent and joint responses will be effective in addressing environmental challenges. The LNGG buyers recognise that at the level of scale in the pilot it is unlikely that there will be measurable benefits downstream. The pilot at this stage, with the number of farmers and buyers, is more about 'proof of concept' and witnessing changes in water quality at source than it is about measuring impact at the lake level. Impact at the downstream level is generally recognised to require significant up-scaling of smallholder farmers practicing conservation through PES-type activities.

Furthermore, the buyers perceive their participation in PES as a business responsibility towards the area/eco-system from which they make a living. As such, their participation in the PES pilot could be regarded as corporate social responsibility. Buyers do not expect direct benefits to themselves in the short term, and hence it is not their only reason for contributing at this time.

The LNGG, and LANAWRUA who is working with them, are actively approaching other downstream stakeholders to contribute as buyers. However, presently there has been little sign of buy-in from a diversified group of buyer stakeholders beyond the LNGG. This must be of concern if PES is to be scaled up and have real impact downstream.

Interviewed buyers indicate that besides the current payment they would be open to other forms of payment like in-kind assistance to upstream smallholders involved in conservational farming. Examples given include technology transfer and assistance in marketing of their produce.

Recommendation: At present it is doubtful whether the number of private buyers and the level of their contributions can have the desired impact downstream. While not abandoning the good work being done already on finding buyers for environmental services, alternative approaches to PES payments might also be considered. On such approach could be to look at opportunities presented by carbon markets. The maturing of the voluntary carbon market means that several certification standards are now targeted at small-scale projects related to forestry and land-use which would suit the Lake Naivasha context. Some of these certification standards (eg. Plan Vivo, Carbon Fix) promote their services within a PES framework (see p.90 for more).

PES results on water

Up to now, thorough scientific research has not been done quantifying the benefits of PES. However, during interviews with WWF Kenya, it was mentioned that a quantitative survey of the results of the pilot on water quality and quantity is likely in 2012. Downstream buyers (LNGG) have invested in PES because they believe in the intervention logic – that such investments are important to the long-term sustainability of the system from which they will benefit. It is a credit to the investing downstream buyers

that they have taken a pragmatic approach - investing scarce resources in starting the scheme and 'learning by doing' rather than undertaking expensive scientific research.

Recommendation: It is likely that there will be an on-going discussion on the proper balance between investing in PES activities and investing in quantitative research studies. The view of the authors of this report is that investments in PES activities are already showing on farm changes, and so greater investment in more farmers will very likely increase the impact of PES. On the other hand, investment in quantitative research into the impacts of PES downstream presents some risk in that it may not encourage new buyers. We hypothesise that downstream impacts will not be measurable at this time due to the relatively small number of farmers engaged in PES, the relatively short time that has elapsed, the complexity of the environmental system and the long distances involved. We further hypothesise that on-farm and localised impacts will be measurable (based on observations, interviews and focus groups discussions in the course of this research). The risk is that if scientific research into downstream impacts does not show positive results for buyers yet, then this may discourage existing buyers and put off potential new buyers.

Linkages and Mutual Interests

Introduction

"Stakeholders must recognise that their own objectives cannot be met to the exclusion of others – a common interest" (Large grower)

A desire for stronger linkages of various kinds (e.g. environmental, trade related, public-private etc.) was expressed by virtually all stakeholders in the Lake Naivasha Basin, and such desire is fundamental if stronger linkages are to become reality. Numerous stakeholders in the catchment all rely on each other to some extent for their livelihoods. Many of the large, downstream growers recognise that if only a few large stakeholders reap benefit from the basin to the exclusion of others it will attract disharmony. Furthermore, downstream farmers understand that they are affected by the behaviours of small-scale upstream farmers, particularly regarding water use and conservation. All stakeholders recognise that good behaviour by upstream farmers is more than a simple matter of enforcement, not least because capacity for enforcement is generally weak at all levels. Rather, upstream farmers are far more likely to carry out conservation of land and water resources if, in addition to benefits downstream, these farmers are able to realise economic and livelihood benefits for themselves through good practices.

View of downstream large farms, with Lake Naivasha in the background

Much has been made of mutual interests and interdependency in the Lake Naivasha basin by many stakeholder types – government, NGO, large growers and user associations. Our research has found that linkages have been increasing and improving in the past decade and in more recent times. However, progress in linking large scale and small-scale farmers should not be over-stated at this time. There are

some promising arrangements, such as PES and some outgrower schemes. But in all cases these arrangements are presently functioning at a very small-scale. The challenge in the near future is to assess what is working and what is not, in order to scale up to a level that can have a larger impact on, say, downstream water quality, or on far greater numbers of small-scale farmers in the basin.

These initiatives and opportunities need to be supported if they are to take root and facilitate more inclusive economic development and consensus on environmental conservation. However, such opportunities can only be taken advantage of if institutions are in place (e.g. WMA, WRUAs) to work with large grower groups (e.g. LNGG) and functioning small and umbrella farmer groups. Likewise, it is crucial that institutions that can facilitate these linkages – particularly the WRUAs and Imarisha – have sufficient capacity to function and expand. Else, the best intentions, planning and strategy will lead to nothing more than a 'drop in the lake'.

Small-scale farmer perceptions of linking with large growers

Unanimously, small-scale farmers say they feel like they "don't really know" large scale farmers and exporters. This is not surprising as many have never had engagement with each other, or have only done so through proxy agents on occasion.

This lack of familiarity has meant that meaningful trust does not exist in most cases, particularly with regard to marketing arrangements. In practice, where small-scale farmers have engaged in marketing relationships with large growers, they argue that they have very little power to negotiate fair terms. Seemingly out of frustration, a number small farmers spoke of a desire to export themselves as a group, despite the fact their farmers groups have insufficient capacity and output to do so. Nevertheless, farmers still expressed a strong interest in building marketing relationships with large growers, not least because the alternative of being beholden to traders is more unappealing.

Another issue with unfamiliarity is that small-scale farmers have little idea about how to proactively market their produce. Their attitude is usually to wait for a large buyer to discover them, rather than to seek a market themselves. This is partly understandable, given a lack of experience in formal marketing, and that large growers may appear daunting, housed behind large fences. Likewise, few farmer groups said they had meetings with supermarkets, despite saying they would like to sell to them. There is a vital role here for intermediary actors such as government extension officers and NGOs to play a role facilitating linkages between large growers/exporters and small-scale farmers and negotiating fair terms of trade. Without intermediary actors facilitating linkages, many farmer groups will continue to wait for a big buyer, or jump at the first deal that comes along rather than making a calculated choice.

Recommendation: Farmers are not experienced in formal marketing and proactively making market linkages. Third party (intermediary) assistance is needed to facilitate linkages between large growers with small-scale farmers. Where possible, intermediary actors might also be able to make reputational assurances that both large growers and small farmer groups are fair and honest actors.

Large scale farmer perceptions of linking with small-scale farmers

Large scale farmers also lack trust in small-scale farmers, particularly regarding reliable supply and opportunistic side-selling to traders when market prices spike. Furthermore, regulations for exports to the EU also require certification and traceability, which are risks and costs that the large growers need to factor in. Small-scale farmers do not keep good records, and may even procure from neighbouring farms to satisfy an order despite neighbouring farms not meeting the necessary standards. This places the exporter's contract at risk if he/she procures through small farms that don't meet required export standards.

Nevertheless, several large scale growers spoke of wanting to "put something back into the community" and "solidarity" as reasons why they want to work with small-scale farmers in order to lift their livelihoods. This suggests that large growers wish to establish marketing links with small-scale farmers not only to fill their pipeline, but for corporate social responsibility (CSR) reasons and a genuine desire to see the basin's economic opportunities at least trickle to the upstream farmers.

Recommendation: If small-scale farmers are to enter marketing agreements with larger growers then they must be organised into groups with sufficient capacity to sustain supply and meet quality standards. Training to groups by NGOs and government extension agents should be in line with export health and safety standards. Strong farmer groups need to become the norm rather than the exception in order to give greater confidence to large growers/exporters that are interested, but still unsure, about dealing with smallholders.

Production side

Introduction

Small-scale farmers described several challenges on the production side that constrain them from enhancing their production levels. These include unreliable access to water, a lack of water harvest facilities, declining soil fertility and expensive inputs (fertilizers, seeds, sprays), and an absence of storage facilities for crops (potatoes, maize). In some cases the production challenges were closely linked to the climate of the area –particularly regarding the differences between the upper catchment and the Kongoni division. Technologies used by smallholders are also simple, with the great majority relying on rain fed irrigation, and hand tools. Nevertheless, due to the small size of the plots (due to repeated, often unofficial, subdivisions) some farmers say that the lack of mechanised methods is not a major constraint to them.

Drip irrigation in Kongoni division

Typology of small-scale farmers

Table 1: Typology of small-scale farmers and farmer groups

	Upper-middle catchment	Kongoni area
Farmer land	1-4 acres, generally good soils	1-20 acres, on larger farms much land is not arable. Often loose, less productive soils than upper catchment
Farmer groups	Some small groups of 15-25 members, many farmers not in groups. Most groups of very low capacity, cyclical patterns of groups forming and breaking. No larger umbrella associations really functioning here.	Similar to upper catchment - groups have very low capacity, 15-25 members (although one group claims over 100. Perhaps farmers are less well organised here than in upper catchment (unverified).
Technologies	Simple hand tools, rain fed irrigation, sometimes gravity fed from streams. Farmers who grow snap peas are more likely to have drip irrigation	Simple hand tools. Rain fed agriculture. Some groups have plastic lined water pans and foot pumps to move water to tanks for drip irrigation. A few groups have been donated a small greenhouse
Crop choices	Wide variety, predominantly potatoes, carrots, cabbages, beans. Maize is a (cultural) food staple, but reducing production due to lower productivity in climate. Snow peas/snaps are usually grown for formal contracts, occasionally flowers.	Tomatoes, capsicum (high demand, niche), indigenous vegetables, spinach, Kales. Maize (being phased out due to poor rains and only one harvest/year.
Marketing channels	Primarily small brokers, who often work for larger traders. Road side marketing, village markets. Some farmer groups have formal contracts with exporters/large growers	Primarily small brokers, road side marketing, local markets. Few farmers with formal contracts because soils are not so good and the climate more challenging.
Institutional linkages	NGOs (e.g. WWF), WRUAs, CFA, MOA, small farmer groups, Imarisha, Some large vegetable growers (weak)	NGOs (e.g. WWF, WV), WRUAs, MOA, small farmer groups, Imarisha

Small-scale farmer crop choices

One of the original working ideas for this study was to identify promising crops that might be more profitable for farmers in the Lake Naivasha basin than those they are growing now. It was found that the diverse geography and climate of the Lake Naivasha basin must be strongly taken into account, and as such need to be tailored to specific areas. For example, the area around Kongoni is much drier and the soils looser, whereas in the upper catchment higher rainfall is experienced and there are risks of frosts and hail at certain times of the year.

Furthermore, price crashes at times of harvest are just as likely to be a problem for any 'magic crop'. Farmers need assistance to identify promising crops for their own conditions and to have market knowledge as to the returns they can expect. It has been suggested by NGOs and the MOA that farmers should focus more on one or two cash crops, believing that this would be more profitable. However, many farmers spoken with reject this idea because they are so risk adverse. Farmers with few livelihood

assets to fall back on are less likely to transition to a monoculture because they do not want to be exposed when things go wrong – such as a price crash, the loss of a major buyer, or a weather event such as a hail storm.

Small-scale farmers do make rational decisions about what crops to grow. This is based on their own experiences, neighbour behaviours, recommendations from extension agents, contracts from large growers, or the little formal information they have available. If farmers are to be convinced that they should shift to fewer crops, or to another of higher value, then they require information that describes production costs, expected yields and returns. Unfortunately few farmers keep their own written records to make comparisons and make informed decisions.

Recommendation: Hail and frosts are a problem at night during certain times of the year only, when temperatures drop. Can cheap technologies, such as portable plastic sheet structures, be designed to break the hail stones and protect high value crops from damage? This should not be too expensive for small plots of only 1 or ½ acre, and certainly cheaper than greenhouses.

Recommendation: Investigate whether there is an opportunity for a crops insurance scheme to cover small-scale farmers for losses to crops from extreme weather events.

One crop that farmers mentioned they are moving away from is maize. Maize is culturally important and a household staple and so production persists. Maize is the main staple food in Kenya, accounting for 65% of total staple food caloric intake and 36% of total food caloric intake (FAO, 2009). But the fact that it is only harvested once a year and is prone to drought and frosts mean the increasingly farmers understand that it is better to grow something else and simply buy your own maize. This is a big step for some farmers because maize is often a crop they have always grown and feel attached to it culturally, as well as feeling reliant on it for food security.

Farmers, and even NGOs, should remember that access to niche markets does not necessarily mean looking to the export market. One farmer group near Kongoni had the initiative to do their own market research, and through good record keeping found that tomatoes and capsicums are very profitable in their area.

Recommendation: NGOs and government extension agents should a) work to provide information on estimated return on investment to farmer groups in understandable formats, as well as b) training them on the essentials of record keeping so they can better make their own decisions c) consider the viability of constructing a demonstration site to showcase research from the Kenya Agricultural Research Institute (KARI).

Small-scale farmer who is engaging in about eight different agricultural activities. Shown here with snap peas. Upper Catchment.

Small-Scale Farmer perspectives

Inputs

Farmers who are producing for large growers expressed concern about the cost of their inputs, such as seeds and fertilizers. After these costs are taken into account, they fear they will hardly make a profit. What concerns them most is that premium quality seeds to grow the produce demanded by large scale buyers is usually only available from the same buyer. This means, they say, that "we are dependent on buying seeds from large growers who we supply to, as the seeds are not available on the open market". Small-scale farmer fear being locked into this relationship with no way out if something goes wrong. One farmer group interviewed said that this dependency relationship was the reason why they recently turned down a contract with a large grower. Clearly trust is an issue here.

To keep fertilizer costs down some farmers have tried to use manure from their cows to replace conventional fertilizers. Some have also tried to propagate seeds themselves but year on year they have found that quality declines when doing this.

Infrastructure and technology

Some communities in the upper catchment have been able to tap streams for gravity fed agriculture, however most rely on rain fed agriculture. For communities in the dry areas of Kongoni, they are dependent on their water pans in the dry seasons, and even these are reported to dry out. Small farmers in all areas cited frosts as a serious problem in the dry seasons which, depending on the severity, can destroy most crops. Farmers believe that if they had access to piped water then drip irrigation would be effective for fighting the frosts in the evenings. Greenhouses were mentioned as being even better, but these are too expensive for farmer groups to buy themselves.

Large grower perspectives

Inputs

Large growers say that relationships with small-scale growers must be "two-way traffic". They say that they need to provide the right inputs (chemicals, fertilizers) in order for their export markets to accept their produce.

Furthermore, large farmers have made careful calculations about expected demand. They sell inputs (seeds, fertilizers) on credit to small-scale farmers based on these calculations. Therefore, large growers are concerned that if small-scale farmers side-sell their produce to other traders, then this will leave them short of meeting the export demand. Large scale farmers say that they put in a lot of effort to deal with small farmers, such as supervising spraying and keeping records for them, because they cannot reliably do these themselves.

Infrastructure and technology

Large growers say that access to small farms is a problem because of the poor state of some roads. Long distances and the high price of fuel and transport make buying from more remote farmers cost prohibitive. After the rains the roads are in a particularly bad state and "flow like rivers", which can result in vehicles getting stuck.

Large growers also point out that small farmers don't usually have their own grading sheds. Well maintained aggregation points and grading sheds are highly desired by large growers because they reduce costs and make marketing much more efficient. Small farmers also lack basic cooling facilities, such as charcoal coolers. "A small farmer needs intensive technical care".

Large scale farming near Lake Naivasha

Fish farming

The Fish Farming Enterprise Productivity Programme (FF&EPP) is a recent initiative funded by the government as an alternative farming practice, and has the potential to take pressure off the lake. About 300 farmers have been recruited to the pilot programme in Nakuru district following an assessment of interested farmers with sites that have access to a good water source and relatively flat land. To start farmers off, the government is subsidising fingerlings, giving away 1000 in the first year, 700, the next and 500 in the third year, before the farmer can sustainably manage his or her fish farm.

However, while the production side appears to be functioning well enough at this time, marketing has emerged as a challenge that was not adequately prepared for. Fish farmers have not been linked to a market – there are few large fish farms in the area through which farmers can sell, there are no fish traders in fish in the upper catchment, and local consumers are not familiar with preparing fish making the local market a poor option. Furthermore, fish farmers have been organised only into loose cluster groups and are not able to support each other in production and marketing at this time.

Recommendation: If fish farming is to take off as an alternative livelihood option then marketing links must be established. If the clusters (groups) are strengthened farmers may be able to reduce transport costs and regularly supply buyers, such as supermarkets in the centres. Alternatively, fish farmers could be linked with the business units around Lake Naivasha which deal in fish caught from the lake, as small traders already operate here.

Recommendation: A campaign could be started to sensitise local consumers on the nutritional value of fish and how to prepare fish (especially as red meat dominates consumer diets). If sufficient demand is stimulated, a small market structure could be set up to cater for local fish as a first step.

A further consideration is the type of fish that should be farmed. Currently this is Tilapia, a popular choice among consumers around Africa and is also served at hotels and restaurants as a whole fish. However, one large fish farmer interviewed believes that Catfish would be a much better option for small fish farmers. This is because Catfish can survive in mud when drought conditions make water scarce, and can be kept alive in very little water, making it an ideal fish to transport to markets that are a greater distance from farms.

Recommendation: Consider trialling Catfish as an alternative to Tilapia as it breeds well, can survive in water scarce conditions and can more easily be kept alive for longer transport distances.

Fish farming demonstration ponds at the Ministry of Fisheries in Lake Naivasha

Smallholder group structures

Introduction

Farmers are still being sensitised to the idea that they should not be competing with each other per se, but should be cooperating with each other more. Competition between neighbouring producers can lead to farmers accepting low prices to ensure a trade, or accepting trader demands to sew on a several kilograms of bonus produce onto their bags for free. In other words, competition at the expense of cooperation can lead to a 'race to the bottom'. Instead farmers need to better support each other through forming and functioning within group structures. Forming strong groups is the best bet for farmers to exercise greater power in the chain.

Often farmers struggle to look in the longer term. Many have not strategized with a long term vision before, as they rely on short term buyer-seller relationships with traders. Farmers are also faced with short term needs (paying school fees, health care, buying inputs etc.), have relatively few assets to fall back on, and lack trust in formal buyers. Farmers are increasingly seeing how being organised in a group can bring benefits that individuals cannot access, such as group trainings, bulk purchasing of inputs and group marketing. A major challenge is to bring more farmers into small group structures, build their capacity to improve (from production to marketing), and eventually to form umbrella organisations that can support multiple small groups at a higher level. The present state is that many farmers are not organised in groups, that groups that do exist are (very) low capacity, and that they still have very little power in negotiations and marketing.

Building institutional capacity

In addition to the formation of farmer groups, group formation is also being stimulated in sectors. Over the past decade, water resource users groups (WRUAs) and the forestry users groups (CFA) have been formed. These nascent institutions and are presently growing into their roles of bringing people more into the decision making process. A common refrain was "Before people were part of the problem (in a command and control structure), and now people are part of the solution". While this is certainly a positive, it was clear from interviews that these users groups are low capacity and under-resourced which is a constraint for them to function as envisaged when they were set up.

Forming and breaking… and forming

Typically farmer groups form for a particular purpose (e.g. accessing a government or NGO service) and once this is met the group may become dormant or break up when a tension arises. This can be cyclical, where farmers may again attempt to form another group to receive a different service in future.

The challenge is for farmer groups to consolidate and strengthen from their beginnings, and then grow. They need to have shared ambition, and the will to share knowledge and best practice and to support each other. Up to now, few small-scale farmer organizations in Lake Naivasha have managed to significantly build their membership and capacity and successfully engage in group marketing. One reason is that a supporting environment isn't always fostered within a group. When farmers see each other as

competition rather than supporting actors then they will unlikely form stronger bonds. NGOs and government extension agents need to reiterate to farmers repeatedly that farmers will always be stronger as a group.

Function of farmer groups

Farmer groups are increasingly being seen as important for more efficient markets and to promote the more sustainable use of natural resources through good farming practices. The MOA and NGOs also recognise that strong farmer groups can help to produce a "multiplier effect", meaning that farmers are more likely to share and copy good practices with each other. This is because they work more closely and share ideas with each other, and discourage each other from 'bad practice'.

Recommendation: Strong farmer groups are fundamental to identifying and implementing solutions to a range of issues. The formation and capacity building of groups requires its own attention. Presently groups are looked to as a convenient way to deliver a service, however this is not sufficient. Group strengthening per se requires attention. A recommendation is for capacity building to specifically target more effective and sustainable group functioning. This should include components of governance and conflict management /resolution when issues arise.

Large grower perspectives on farmer groups

Large growers/exporters are supportive of the idea of strengthening small farmer groups. For them, farmers really need to be organised before they consider working with them in outgrower arrangements. For them, stronger farmer groups are believed to lead to more organised and reliable supply. Furthermore, the existence of group stores or aggregation points make procurement is more efficient because the large grower doesn't need to visit individual farmers. Large growers spoke of the need to "reinforce linkages and logistics to get from farm to buyer. Farmers needs to know what the market needs, and hence what to grow".

Responsibility for farmer groups

One reason that farmer groups are weak in the Lake Naivasha area is that there is a lack of clarity about who is responsible for forming and strengthening farmer groups per se. Should this be led by MOA or NGOs who have a mandate to support farmers? Should it be large growers who stand to profit from building outgrower relationships with these groups? Or should this simply be left to farmers themselves to work out? Each of these supporting actors faces one constraint or another. MOA and NGOs have limited resources, large outgrowers have limited experience in supporting group functioning and have other business to deal with, and farmers themselves are constrained by a lack the knowledge, experience and capacity to organise themselves –else more would have done this by now.

Box 5: Case study – Chemichemi group

Chemichemi began in 2003 as a self-help group, with the singular aim of farmers coming together to fight water scarcity through roof water harvesting. Since then, they have grown into a Community Based Organisation (CBO), and have continued as a group with a longer term vision and new objectives, such as farm tree planting. They can be classed as an established group of low-medium capacity.

The group was formed after the chairwomen had the idea of forming a group. "The idea of forming a group came to me like a dream" she said, and approached a women from California for support. That lady was able to donate to them 100 water tanks to get the farmers going. Before this there was only 1 borehole in the area, and farmers and households could spend the whole day fetching water. Now the group has grown to 286 members, all women.

The group say that they also try to help others outside of the group. "We could see it was not good for us alone to enjoy the benefits of our work alone, and we wanted others to taste what it was like to have water near them. We say in our culture "to be alive is luck, dying is a must". So we remember those less fortunate and work also to support the community".

With help from NGOs such as World Vision and WWF the group have built their management capacity are able to develop proposals to donors, both for their own needs and to lobby for assistance to the wider community. The women's group themselves identify the needs of vulnerable groups e.g. HIV, widows, orphans.

Chemichemi is an excellent example of group formation that has expanded beyond the single issue that they were founded on. They now work on other issues such as water pans and greenhouses, have done their own surveys into the best crop types, have built links and networks with NGOs, and have involved other non-members in the community to access the benefits. Chemichemi argue that this has contributed to making their society more cohesive, and cite the lack of election violence here in 2008 as evidence of this. Furthermore, they have a vision for the future, and have survived and thrived for almost ten years already. The keys here are a determined leadership bringing other farmers with them, a supportive environment from NGOs who offer capacity building, and a long term vision for the group, with members understanding that they are almost certainly better off standing together than on their own.

Recommendation: Concentrate on group formation beyond a single issue (e.g. to access a water pan); build on experiences, consolidate the group, don't try to build numbers too fast because the group needs to regulate itself. Then begin to move towards strategizing on group marketing – cited by most farmer groups as the most difficult activity.

Box 6: Case study - Mawetatu group

Mawetatu formed as a group only one year ago (in 2011) in response to the issue of the drought. Following the drought the group decided to stay together to harvest water. They had heard of another group in the area doing this well, and so had the idea to do the same. The core group of 10 farmers committed to this group project, and a further 7 joined. They then official registered their group with the Department of Gender and Social Development, and registered the group with the local WRUA so they don't have to pay water usage fees as individuals. It was at this time that they learned about WWF and submitted a proposal for support.

The group members told of how before the group was formed some farmers in the community were selling their land in order to move to another area in the upper catchment where the soils might be more productive. Households were sometimes faced with the necessity of sending their children or wives to work in the upper catchment and bring back food, resulting in children dropping out from school. This is not what the farmers wanted, and they knew that if they could improve their farming practices then their children could go to school more regularly. Farmers also spoke of the dangers of sending their wives and daughters to the upper catchment. For example, when it rains heavily and their wives have to stay overnight they "don't know what happens to their wives and girls". Since the formation of the group they have collectively decided to switch to horticultural farming and away from maize, in order to realize more profitable harvests.

The group began by digging water pans together as they felt they could not excavate their water pans alone. Group members helped each other until all members had a water pan. They also knew that by making this progress they could approach MOA and WWF for lining materials, because the soil is so loose that it can't hold the water. The group digging of water pans was their contribution to the project and also a condition for WWF support because this helps to build ownership and encourages farmers to maintain the infrastructure as it is part of their investment.

Just as importantly, the group spoke of a vision beyond this single issue. They told of how they wanted to be a 'change agent' for other issues such as better conserving the environment. As a group they believed they could better learn from each other and copy good practices, and to influence more people even outside of the group. "Before you could do something on your own farm but you had no influence on the environment just by yourself".

Group challenges

While forming a group is desirable, group members described many challenges to sticking together. In their own words, "it's not easy to be in a group".

Committing to a group versus using a group

During focus group discussions, farmers spoke of how "Not all members are devoted and don't always attend meetings or give reasons for absences". The challenge is to maintain the cohesiveness of the group so that everyone is working together. "Some just join for a single reason, such as to get a water tank and then they disappear from the group. This is not a big problem if only some disappear from the group, but we need to stick together".

Political interference

Another challenge cited was political interference. "We have seen that when a politician has done nothing for farmers and a group has, then 'he' may feel threatened by the group. We have seen that he wants the

group to disintegrate so he has the power again. Politicians do this by using certain group members to create trouble so they separate. Also the politician may try to set up other groups to counter this one". The suggestion was that groups believe that politicians want them to fail because the group delivers on promises to its members, but politicians do not making them look bad. Politicians are said to entice votes from hand-outs and want people to be dependent on him.

Labour and monetary contributions to group functioning

When farmers pull together in a group there is the opportunity to all help each other. But as one group found, the labour of digging water pans is hard work, especially for women. Also group members agreed to pay a small membership fee so the group could operate, but some could not afford this. The group further agreed that when meetings are called and members don't attend they have to pay a small fine. However, sometimes members don't pay, or can't pay. When asked whether the issue of contributions and payments puts a strain on the functioning of the group, the members agreed. "We don't even want to mention the debts owed to the group because it will demoralize us".

Group size

Group size is also an issue, and group success whilst growing the group membership base can become a challenge. Low capacity farmer groups said that 20-40 members is a good size. Beyond that there can be a "management crisis" if the group grows too fast. People need to be close together so that they can act as "watchdogs" for each other. For example, "Not everyone in the group is trusted" as some farmers might side-sell some of their produce, impacting on a group's commitment to supply a buyer.

Recommendation: Group solidarity is vital for nascent, low capacity groups. Focus on solidarity over group growth, and build capacity of group leaders to develop a realistic medium term vision for the group. On-going sensitization is required as to why farmers can do better as a group than by themselves

Farmer perspectives: benefits of group formation

Farmers identified several ways in which they benefit from groups:

Commercial: Interested large growers/exporters can contact the group and work with them to engage in contract farming. Together farmers have a better chance of meeting supply demands, and can set up grading sheds and aggregation points.

Conservation: Group members encourage each other to use good conservational practices that benefit both the individual farmers and other farmers in the basin.

Capacity development: Groups are more accessible to government extension, NGOs, and commercial growers for training.

Knowledge transfer/information sharing: The closer interactions of farmers in a group makes knowledge transfer easier than if farmers are left by themselves to observe their neighbours practices. Farmers say that in a group they are able to get ideas among themselves as everyone has strengths and weaknesses, enabling them to improve faster as a group.

Social Cohesion: Several groups reported that groups have enhanced the social cohesion of the farmers in the area. One group mentioned that greater social cohesion meant that the 2008 election violence that afflicted surrounding areas did not affect them directly.

Box 7: Theory: General rules for group formation

Group membership should be voluntary and based upon the wish of the member to be part of a group. The decision to become a member should be based on neutral and un-biased information.

Expectations of group members should be made explicit and discussed jointly. Not doing this leads to disappointment and frustration in later phases.

Members should feel ownership over group: ownership leads to sincere commitment which leads to responsible being a condition for successful group establishment and operations. So members choose their representatives, jointly formulate regulations to manage the group, decide on priorities and activity agenda.

Groups should be formed around activities and an agenda that delivers concrete and tangible benefits to members of the group.

It is better to start with a small group of committed, well informed members than with a larger group of which part of the members is still reluctant about joining and/or badly informed about the groups' objectives and responsibilities. Increasing membership numbers is always easier once a group can show tangible results and achievements. Clear regulations and procedures for new members to join should be established and endorsed by the initial group members.

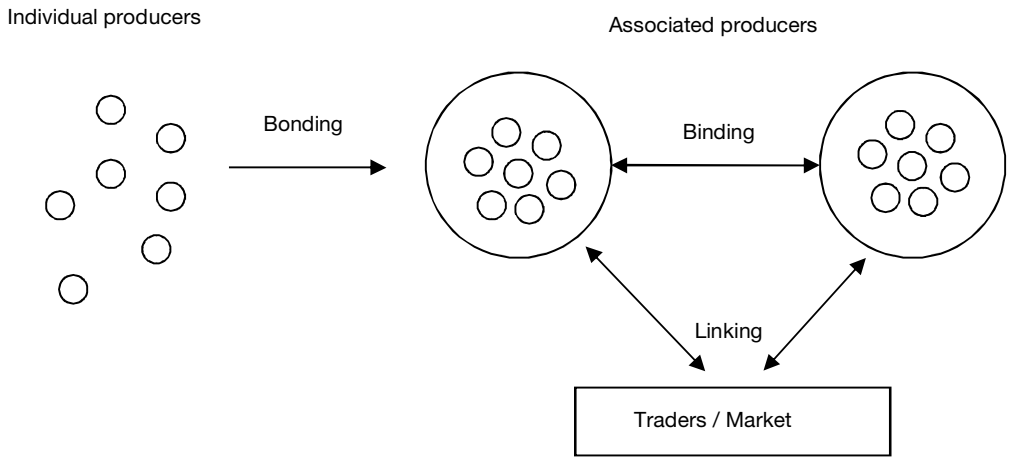
Box 8: Bonding, binding and linking

Farmer organisations have in principle bonding (between members), binding (horizontally between groups) and linking (vertically, e.g. to traders) functions. The social capital of a producers' organisation includes all three: bonding, binding and linking capacities (see Figure 4).

The bonding social capital (strong ties of trust amongst members) helps to reduce transaction costs by enhancing accountability and contract enforcement. Moreover, bonding social capital is the basis and a perquisite for internal control systems. The linking social capital is based on vertical trust and requires reputation building. Linking social capital helps in screening suppliers and customers. The binding function makes producers organisations key leverage points for information dissemination and capacity building and allows effective advocacy and lobby.

The costs for organizing farmers can be relatively high and across a long time span. The investment is however justified by expected future gains from repeated transactions between farmer groups and formal buyers, eventually leading to lower transaction costs and risk. Investments can also be justified for their environmental benefits, where good practice is transmitted and policed by the group members.

Figure 4: Bonding, binding and linking



Farmer organisations are key leverage points for delivering training, technical assistance, market facilitation, inputs and market information. Building a collective institution of farmers between individual growers and the buyer will reduce moral hazards. Social control and the feeling of ownership of the contract and its terms reduces the risk of default.

Moreover, producer organizations are not as anonymous as individual farmers are. Farmer groups care about their reputation as they desire re-orders and contract extensions. The (legal) entity of associations provides large growers and other formal buyers with a certain level of assurance because contracted transactions are supposedly legally binding (although contract enforcement can be problematic).

Marketing

Introduction

There is a broad consensus among small-scale farmers interviewed that their biggest challenge is not production, but marketing. The dominant market arrangement for most small-scale farmers is still local spot-markets. In practice, this involves farmers selling individually and directly to small brokers, who may themselves be working for a larger trader.

There is a general asymmetry of price information in the market. Small-scale farmers interviewed believed that they knew roughly what a good price was based on what their neighbours were selling for, a feeling of the season, and sometimes what the prices were in local markets. However, even the MOA acknowledged that farmer knowledge of prices is largely based on "hearsay" rather than precise market movements.

The selection of trade partners with whom farmers are engaging is primarily opportunistic. If a broker or trader visits the farmer usually he or she will sell. If he or she chooses not to, there is a risk that another trader may not come for several days and crops can spoil. Such trade relations are usually informal and short term.

In some cases farmer groups have signed outgrower contracts with large growers/exporters. Even in such cases mutual trust is not strong and there is a tendency for even contracted trade agreements to be perceived as 'soft' contracts.

The chain from the farmer to consumer can be long and inefficient, passing through up to five middlemen. Each trader has their own transport costs and margin, which inflates the price for the consumer. It is not clear whether a shorter chain of middlemen would result in better prices for farmers, for consumers, or both. Interviews with small traders at the local market in Naivasha town did not identify any excessive price gouging at this level, and it appeared that for small traders their margins were also tight and that small traders experienced their own risks in trading perishable goods. As an example of the high cost of transport, one large vendor interviewed in Lake Naivasha town said they pay farmers 15% more if they delivered produce themselves compared with the wholesaler arranging the pickup of goods.

Recommendation: Identify how vegetable value chains can be shortened and made more efficient. Identify if/where price gouging is occurring by some chain actors which could be putting downward pressure on prices paid to farmers.

Ad hoc trading

Access to traders

There are several types of trader procuring from small-scale farmers. Some are small brokers who themselves work for larger traders, or even exporters. However some are independent small-scale traders

who may even travel to farms by way of bicycle or public transport. Farmers report that traders are only reliable in the area during harvesting season. Therefore when farmers have produce to sell at other times traders can be difficult to find, resulting in farmers accepting prices lower than market price. At such times farmers may try to sell in local markets or roadside themselves.

Recommendation: Semi-formal relationships can be established between farmer groups and reliable traders. This is particularly important in the low season when traders are scarce because they believe there is little produce in the area. However, if these traders know they can procure efficiently from several farmer groups in an area then trade can be profitable for all groups. For this to work, NGOs and MOA can assist farmers to organised into groups, build group stores or aggregation points, and provide assistance linking groups with traders, and facilitate trust building between stakeholders.

Potato trader, Upper Catchment

Trust and honesty

Ad hoc trading with brokers and traders is characterised by low levels of trust. This situation has come about because trade relationships are informal, irregular and traders and farmers do not know each other well on a personal level. Furthermore, there is little negative consequence of trying to 'cheat' or squeeze out some extra profit. For example, traders may demand additional small bags of potatoes sewn for free onto large sacks, or use incorrect weighing scales. Farmers may in turn pack bad produce at the bottom of their bags, or even put stones in the bags.

Standardised measurements

For some crops, such as potatoes, standard measurements are supposed to be enshrined in law; however, in practice this is not enforced. Potato bags, for example, are supposed to weigh no more than 110kgs. However it is common for traders to ask or demand for additional nets to be tied onto the top of each sack. This can amount to 10-50kgs of additional produce supplied at little or no extra cost. While farmers obviously do not like this practice, many are simply resigned to the fact that this is business as usual. They feel that if they do not give in to the trader, then the trader will simply buy from his or her neighbours.

Recommendation: When farmers are organised into groups they have the best chance of persuading traders to accept only legal sized bags of not more than 110kgs. Law enforcement is virtually non-existent on such issues. Group members can police and enforce their own group rules that no individual members shall give in to such trader demands. Better still, groups can seek agreement on this with other groups in the area. Another way is for the government to enforce the 110kg regulation at selling points (such as at Malikiti market in Nairobi).

Farmers also believe that traders sometimes have scales that have been tampered with, meaning they are being paid for less than they are supplying. Another "trick" claimed by farmers is asking them to put their produce in a supplied, unconventional container which is actually larger than the broker says it is, again meaning that a farmer is being paid for less than he or she is supplying. Farmers mentioned nothing of their own 'tricks' such as putting the worst quality produce in the bottom of the bag.

Price negotiation

The MOA describes farmer price transmission as being based on "hearsay". This was corroborated by farmers themselves who say that they receive market prices by looking around their communities and know what others are selling for. However, the most frequent response by farmers as to how they get their price, is "we are told what the price is by the broker, that is the price". In a few cases, farmer groups that were close to a marketplace had the luxury of being able to say 'no' to traders who didn't offer a good enough prices.

Furthermore, many farmers claim that prices are fixed because brokers work under a "cartel", or rather a larger trader. In this case all brokers are buying at fixed price through the area. In such circumstances, not selling to one broker will unlikely result in being able to sell to another broker at a higher price.

Bags of potatoes with additional 'nets' sewn on top, Upper Catchment

Recommendation: Negotiating on price is notoriously difficult for farmers because they lack bargaining power. This was found to be true for individuals as well as groups. Despite assertions by the MOA, NGOs and even farmers themselves there is little evidence that groups exercise negotiating power in practice. Perhaps a first line of focus for empowerment in negotiations should be farmer solidarity to not agree to unfair trader demands, such as using unconventional containers or supplying 'bonus' volumes of produce without payment. Farmer groups evidently need support to assert themselves in their negotiations because as much as they dislike unfair practices these practices continue because each farmer feels they have no choice but follow the norms.

However, some NGO's and MOA staff asserted that farmers do, in fact, know the market price and that knowing this gives them some negotiating power. For example, it was mentioned that farmers can download prices on the MOA website[4], use a Safaricom SMS service[5], or refer to MOA price boards that are put up in some rural areas. In reality, farmers were found to be overwhelmingly price takers, not price

[4] MOA prices available here: http://www.kilimo.go.ke/index.php?option=com_content&view=article&id=94:market-information&catid=169:market-information&Itemid=110

[5] http://www.safaricom.co.ke/index.php?id=484

makers. No farmer said they had access to prices on the internet, had heard of the Safaricom Sokoni service, or knew of any MOA boards reporting prices in the area.

Furthermore, farmers said that even if they got the market prices in Nairobi, that wouldn't mean much to them because they don't know the margins between their local market and Nairobi (e.g. taking into account transport costs). Perhaps most surprisingly, few farmers said they use their mobile phones to call farmers and friends in nearby districts to get prices.

This means that it should not be assumed that mobile phone and internet technology is an effective means of price dissemination for small-scale farmers at this time. With the growth of IT in Africa, mobile and internet technologies can be expected to become more important the future, but presently in Lake Naivasha the benefits of IT in relation to pricing information is not widespread.

Recommendation: Government and NGOs should be careful not to overstate the benefits of IT in rural communities. Contrary to the belief of some NGOs, farmers say they are not using mobile technology to access price information. Farmers and farmer groups require improved access to pricing information in order to be confident in their negotiating position. If farmers are able to get access to up-to-date price information in the future, they also need to know what prices they can expect to receive locally in relation to the (Nairobi) market prices cited in the media.

Contract farming

Prices

Trust is also an issue between farmer groups engaging in contract farming and large growers. It was found to be common for farmer groups to sign a contract to supply without negotiating the terms or the price. In some cases prices were absent from the contract, in some they were subject to floating market prices and in others contracts had a fixed price. To farmers there appeared to be little transparency in price setting by large growers. Lake of price transparency creates a risk: when prices inevitably spike in times of high demand and opportunistic traders come along offering to pay substantially higher prices to contracted farmers, farmer loyalty is weak and the temptation to side-sell increases.

In terms of payment models, farmers were split on which price model they preferred – market price or fixed price. Arguments for market price reflected the optimism of getting paid bumper prices in times of high demand, versus the argument of getting a better price on a fixed contract in times of low demand. Fixed price, in addition, was argued to be favoured because it allowed farmers to plan on expected profit from a single planting. This suggests that some farmers are beginning to look to the longer term, a positive sign.

Pickup schedules

Regarding pickup schedules, farmers complained that during the rainy season when supply was high, pickups did not reliably happen as and when agreed with companies. It may be, for example, that only one pickup occurs in a week, not two. In the case of the small flower farmers spoken with, waiting a day or two means the flowers are at risk of wilting and being rejected when pickup does happen. Their efforts

to preserve flowers by putting them in large buckets of water overnight have sometimes resulted in thefts. Similarly, when snow peas are not picked up as scheduled they too are at risk of damage and rejection, a cost borne by the farmer, not the company.

Higher rejection rates in the high season

Small-scale producers of snow peas also reported that they experienced higher rejection rates during periods of high demand. Farmers only receive payment for the produce that is accepted by the exporter, and when it is rejected it is returned to farmers some days later without payment. By this time it is only good for animal feed. The suspicion among farmers is that high return rates are a company's response to oversupply for its own contracts. This suspicion is raised because farmers do their own grading first, and they argue that they grade the same all year round.

Recommendation: One group expressed that they would like to trace their produce from the farm to the pack house of the company so they can feel that the process is transparent. They feel that if they can see for themselves then they will have a better idea of where problems might arise and more confidence in the company. After all, farmers note that they are paid only for the produce that is accepted by the company.

Lack of trust in transport

Another issue is that some farmers suspect that drivers of transport vehicles sometimes switch their 'good' produce for someone else's lower quality produce in order to do their own side business. These suspicions are difficult to prove but they do demonstrate some of the areas where this is a trust deficit.

Restrictions on farmer access to management

One farmer group said that when they have a complaint they are only able to access a low level case manager at the export company. If the case manager doesn't take their case forward then the farmers feel that there is nothing more they can do. Frustration was expressed at this, and was said to contribute to the impression of the farmer group that the company are not really serious about the contract they signed, undermining trust.

Trust and honesty

Small-scale farmers lack trust in large growers. There were a range of responses, such as "we trust them 50%" down to "we don't trust them at all". However, despite such low levels of trust and even lower levels of satisfaction, farmers still said that selling to large growers was a better proposition than selling to traders, who they describe as "more exploitative". There is a lack of honesty on both sides. This is undermining everyone – the chain can't function efficiently without trust. Contracts are not really enforceable and the terms are stacked on side of contract writer.

Recommendation: Trust is vital to an efficient chain. It is slow to build and easy to break. A role for NGOs is to reiterate repeatedly to both sides the consequences of 'opportunism', and the benefits of building long term relationships.

Large grower perceptions

Large growers partner with small farmers when they require additional supply to meet their (export) market demands. But why not partner with other large farmers instead? The response of one exporter was they "do not want to put all eggs in one basket", adding that snow peas, for example, do not do well in all areas.

For large growers/exporters, there is a perception that small farmers can be unreliable suppliers when market prices increase dramatically at times of low supply. Large growers have seen that farmers are tempted to side sell to traders who offer higher prices in these times, thereby threatening their pipeline. (Small-scale farmer groups themselves confirmed that this can happen at times of extreme price spikes, as can happen with snow peas for a few weeks each year).

At such times of high demand/low supply some large growers seek to source additional produce by using traders to pay higher prices to secure supply. Unsurprisingly, this leads to traders seeking to buy produce from the same farmers who are under contract with other large scale growers. The result is that farmers are encouraged to side sell to these traders offering higher prices rather than fully meet their contracts with large growers. At such times farmers do not understand how traders can offer to pay them more than the large grower pays them. This leads small farmers to suspect 'dishonesty' in price setting (this is true of both fixed and floating price contracts).

One large buyer said that they understand this issue and have responded by paying farmers "a little extra at these times", even for fixed price contract. Most farmers spoken to expressed a loyalty to large grower with whom they had a contract, adding that they understand that the consequences of seeking short term gains with a trader is that the large buyer could leave and that traders will not offer good prices at other times of the year.

Large growers have expressed that small-scale farmers need to be brought together into stronger groups for marketing purposes and at present most are too weak. This is a limiting factor for large growers to either scale up with existing farmers or expand the number of outgrowers they work with. To exporters who have fixed price export contracts all year round, small-scale farmers should also be able to sell reliably at a fixed price too. But large growers believe that this may be wishful thinking- "farmers always think they lose out when the price goes up and they have a fixed price contract."

Contract farming for which market?

The MOA agrees that contract farming is the way to go for most farmers. They can get an assured price, better plan production, and money is paid in an assured way to meet livelihood needs. However, contract farming is not thought to be specific to exporting, even though this is where most small farmers perceive the profits to be. NGOs and the MOA note that contract farming to sell in Nairobi is just as useful. The key is for farmers is to have a good contracted arrangement. While this is easy to say, it is not clear to farmers where these other large buyers might be.

Recommendation: NGOs and MOA say that farmer groups need not look to exporters when seeking a contractual arrangement. However, because it is not clear to farmers where and how they can find other formal buyers, work needs to be done by MOA and NGOs to facilitate linkages between farmers and formal buyers.

Reasons for farmers not choosing contract farming

Some farmers have consciously rejected contract farming opportunities and have rational reasons for doing so. One particular group appeared relatively well informed that there was another farmer group in the area growing flowers for export, and they knew that growing flowers could bring in more money per acre. However the group consciously chose not to start flower farming because they expressed a lack of knowledge about flower cultivation, they had learned of the high costs of inputs to begin flower cultivation, and had heard of bad experiences that other farmers in their area had with buyers which put them in a dependency relationship. The farmers believed they had no other market outlet if a relationship with a large flower buyer soured because very few flower traders operate in the upper catchment. These farmers therefore determined that while flower farming may be profitable, it is also very risky for them ("we can't eat flowers"), and while potato growing may be less profitable "it is still profitable and less risky".

Another group in the Kongoni area expressed that in the future they would like to export on their own, but presently they don't have the volumes. When asked why they don't do contract farming, they argued that the "big ones" will just act like brokers and they will always give them a "raw deal". This perception stems from prior discussions with large growers; "we have asked them before what varieties are the right ones to grow, but they only say they will supply them the seeds on credit, and then have to sell to them exclusively. This farmers group wanted information to purchase their own seeds and inputs and then decide who to sell to, not be "trapped" into a relationship with one large buyer.

Recommendation: Farmers are generally risk adverse, and for good reason. They have few livelihood assets to make investments and some are only one failed harvest or so away from poverty. Therefore, so long as a current practice is marginally profitable, they will not easily be tempted into a new risky venture where they lack knowledge and experience, or where they have not seen the benefits to others. If contract farming encouraging farmers into new crops is to be successful then a serious effort needs to be made to mitigate risks for the small farmer. This includes focused extension and attention to good practices in marketing and honouring (contractual) agreements to build trust over time.

Contracts

The success of any contract farming scheme depends on the degree of trust built among contracting parties. Unsurprisingly, not all contracts are equally 'good' for producers. Nearly all farmer groups that we met with had no support from MOA or an NGO in the contract process. These farmer groups from themselves in a 'take it or leave it' situation with the companies. Companies prepare the contracts with the conditions set out. We viewed several contracts and farmer leaders said that prices are either set without negotiation, or are not mentioned in the contract at all, although the obligation for farmer to supply is.

One farmer group put the dilemma of signing a contract like this: "If you don't sign you are not farming together. Even if you ask for time the contract stays the same, we have no negotiating power on the contract. If you don't sign you need to find another company but this is so difficult because you cannot make another come for you because of the low quantity".

One large grower, From Eden, has taken a different approach, engaging small farmers in two way dialogues, and agreeing on key issues, ensuring all farmers (not just the leaders) read and understand the contract before signing, and WWF and/or the MOA have co-signed as witnesses. Both group of stakeholders say that this process makes them take the contract seriously, and not just as a 'soft' agreement. However, both the farmer groups and the company involved in this case are new players and don't yet have the experience to prove that such a negotiated approach can work.

Recommendation: Develop a database of farmer groups that are seeking outgrower arrangements, or other formal contracts with buyers. The database can include, for example, crop preferences, capacity, and prior or current experience. This could be accessed by large growers interested in contracting farmer groups, and could increase competition for produce grown by small farmer groups. In turn, interest from new large farmers/exporters would give farmer groups more options as to who they sign with. If well managed and publicised, such a database could even spark a race to pay higher prices to groups with a reputation for being reliable suppliers.

One problem with contracts is that they are not binding in the sense that parties cannot take each other to court. This means that the relationship that is developed between small farmer and large buyer is just as important, or more so, than the actual contract. If trust is undermined by either party then increasingly both parties will see this as merely a 'soft contract'. For example, if farmers come to believe that buyers are not reliable in their pickup dates, then they may also seek a win-win situation and side sell to traders when the price is high. Unfortunately, when this happens persistently and the exporter realizes he cannot get enough supply, then he will usually leave the area.

Recommendation: Work is needed to develop guidelines for a 'good' contract that is suitable for outgrower schemes in the Lake Naivasha context. If contracts are co-written then small-scale farmers are likely to feel more 'ownership' of the terms and are more likely to honour the agreement.

Recommendation: Sensitise farmer groups to request the presence of a third party at contract negotiations. Third party signatures are recommended on new contracts to ensure that contractual implications are understood. Open dialogue with large brokers that contracts be signed with a witness from a third party (e.g. MOA or an NGO).

Box 9: Guiding principles for contract design

The following principles are usually recommended to be followed in the design and formulation of a contract:

- The contract should be written to be binding.
- It should be written to be enforceable in a court of law and mention under which law/legislation it is covered
- It should clearly define the parties
- It should clearly specify the product under consideration (quantity and quality specifications)
- It should state a time of delivery (for inputs to farmers in case included and final produce to buyer)
- It should clearly establish prices, payment obligations and other financial issues. The parties should determine the price paid for the product transacted or establish rules for price determination, including adjustments for variation of quantity, quality and timing of payment.
- It should indicate the mutual obligations, specifying the responsibilities of all parties
- It should have an indication of its duration
- It should establish a legal instance to govern the contract (district, provincial, national) and refer to the legislation framing its legal status.
- Refer to a dispute settlement mechanisms or an arbitrator to resolve dispute
- Include a clause clarifying procedures or stipulating the re-negotiation process in case of natural disasters or other causes of complete crop failure.
- It should have a clear signature clause.

The contract is ideally drawn up in a joint exercise. Contract stipulations, conditions and consequences are must be transparent and fully understood by all parties, particularly by all the involved farmers. Contracts should be written without using jargon or unclear formulations and favour language which is clear, concise and easy to understand by all parties to the contract. As concluded by Simmons (2002), the prospects of contract farming depend to large extend on the competency and motivation of the investing company.

Infrastructure

Roads

Road infrastructure is cited as a general challenge in the upper catchment. In the rainy season roads can become impassable and farmers struggle to get their crops to market. Large growers/exporters prefer working with farmers close to better roads, as so those that have poorer access are hindered from accessing better markets. Apparently some road have recently been improved with government investment.

Storage

Farmers lack good individual storage and most groups too lack grading and storage sheds. Charcoal coolers (or similar) for perishables are also not commonly available. All of these challenges increase the risk of postharvest losses.

Recommendation: Poor infrastructure, storage and coolers constrains access to markets. Improvements to roads can be expensive and are likely not to be of strategic government priority. Improved storage at the level of groups should be considered for reducing postharvest losses and maintain the quality of their produce. For example, on-farm storage of potatoes can help in price levelling because farmers can wait several weeks when prices plummet (assuming that lack of appropriate storage rather than immediate cash needs is the main reason for selling potatoes straight from the field).

Small-scale farmers as exporters?

Several small farmer groups expressed their future desire to become exporters themselves. Reasons for this were usually given as wanting to access lucrative markets directly, and cut out the middleman. While it is great that some small groups have a future vision (many lack this), it cannot be recommended that small farmer groups pursue exporting at this time. There are various reasons: Farmer groups currently are of very low capacity, sometimes with only a few years of experience in formal marketing, have little experience in certification standards, would struggle to meet setup costs, have no experience in relationship management, lack basic infrastructure including stores and vehicles, and do not produce sufficient quantities for export. For these reasons and others, the best export channel for small-scale producers at present is through large scale growers/exporters.

A second reason is that domestic markets are experiencing growth in demand, and there appears to be sufficient demand in market centres such as Nakuru and Nairobi for Lake Naivasha's small-scale farmers to supply. Small farmers need to be able to prove they can consistently and reliably supply high quality produce to formal buyers before even considering export. As one interviewee said, "they need to be able to walk before they can run".

Umbrella marketing organisations

Some farmers have heard of the tea[6] and coffee[7] marketing agencies in Kenya, and have a belief, or at least a hope, that such a board for vegetables will improve their situation[8]. Farmers recognise that they need to be organised and have a large body advocating on their behalf to exercise power in the chain. While an umbrella organisation for vegetable farmers working in the Lake Naivasha is desirable, a first step would be to strengthen the capacity of existing farmer organisations in the area.

[6] See http://www.teaboard.or.ke/

[7] See http://www.coffeeboardkenya.co.ke/

[8] For challenges in agricultural marketing boards see: http://www.jstor.org/discover/10.2307/1236903

Glut of Supply

Perishable goods often come to the market all at once and a glut of supply means spot prices will be lower. There is an argument that some farmers need to diversify so that not everyone harvests staple crops (such as potato and maize) at the same time so as not to impact on the price so much. The other side to this argument is that many farmers already are quite diversified on small plots for precisely this reason, and cannot diversify further. Farmers also choose to plant staple crops because it can also be used for home consumption.

Recommendation: There are several options to respond to challenges involving a glut of supply. One is to move more farmers into contract farming of various crops with guaranteed buyers and higher profit margins (large growers, processors). Another is to look at storage options so that farmers can hold their produce for a few weeks while prices plummet.

Wholesalers and supermarkets

One wholesaler spoken with described how he sometimes comes into contact with small-scale farmers at local open air markets which are held 2-3 times a week. It is here where he builds relationships and networks, and considers including new farmer groups in his regular procurement.

Recommendation: Farmers should understand that there are two ways to get a large buyer: one is to sit back and wait, and the other is to actively promote the group. Farmers need support to be organised, get registered, perhaps advertise with a sign board (as a few are doing), and certainly to scout for and approach large buyers themselves.

Some wholesalers say that they are trying to support local farmers. This is also because large farms tend to supply more expensive produce because their goods are export quality and already graded.

Large wholesalers described what is most important to them when procuring from small-scale farmers. Most important is availability and reliability of produce so that the wholesaler can get meet customer demand. Second, is that produce needs to be procured at a competitive price so that customers purchase the perishable goods before they expire. Furthermore, wholesalers have their own fixed price contracts with hotels and these cannot be changed for a year. When market prices go up and down the wholesaler has to manage for this. A third factor is transport. The price of fuel can be an expensive cost and although wholesalers have their own transport they prefer farmers deliver to them. When doing pickups, wholesalers try to source from relatively nearby to keep costs down. When a farmer delivers directly one wholesaler said that he pays a farmer about 15% more than if a pickup is required.

Recommendation: An opportunity exists to formalize some of these contracts if small farmers are able to better organize in groups and promote themselves to supermarkets. There appears to be little proactive marketing from farmers and farmer groups, who tend to take a waiting approach for larger buyers to come to them.

Recommendation: One large wholesaler recommends for farmers to form stronger groups and associations and selling through their Savings and Credit Cooperative (SACCO), who can then sell to large buyers like himself. He says he would pay a slightly higher price just for the efficiency saving this would create for him.

Challenges with flowers

Large growers expressed that meeting certification standards required by exporters and customers in Europe is paramount to their business. In particular certification is important for health, safety, and the environment. Standards include MPS-ECAS, Eurep-GAP, Global Gap[9] and Fairtrade. Often these certification requirements restrict large growers from using small farmers, who cannot afford to be certified themselves. Where large growers see small farmers as being either a risk or a cost, they are less likely to look into this option.

Recommendation: One large grower recommended that NGOs (such as WWF) work with small farmer groups to help them become certified to the minimum standards. In this way large growers can be more easily linked to small farmer groups that are already certified, and thus demonstrate a certain level of capacity.

Record keeping

All farmers spoken to kept poor records, or none at all. Nearly all farmers could not accurately show whether they were making a profit or loss after taking into account all costs. Furthermore, no farmers kept a record of volumes sold and the price per unit throughout the year.

One implication of this is that when a fixed price contract is proposed to farmers by a large grower, they have no way to know whether this is a good deal or not. If farmers could see from their own record keeping that a fixed price contract gets better returns year round than market fluctuations they may well be less tempted to side sell and risk their relationship with the large grower/exporter.

When training in record keeping is done well and taken up it can have dramatic results. One women's group received training from WWF, and say they "saw how it helps to know the status of your business". They then had the idea to do a 'survey' themselves and experimented with small plots of other crops, notably tomatoes and capsicums. Their records showed them that these crops were profitable and they have cautiously scaled up their production of these.

Other farmer groups too have had one-off trainings, but the group has not followed through on record keeping. For some farmers it appears to be a lot of work, without an understanding of the usefulness. For others the training was clearly never well understood.

[9] http://www.globalgap.org

Recommendation: Many farmers have experienced training on record keeping previously. But very few farmers are actually putting this training into practice. Many don't recognize the benefit of it, or found it too complex. A recommendation is for trainings on record keeping to be done in stages, and *very basic* at first: Profit = production x price – costs; price tracking; production per acre. More emphasis needs to be put on *why* record keeping is important and how it can help them make better decisions. Some farmers don't fully understand the point of such an exercise. Furthermore, training in record keeping needs to be more than a one-off event. Over the short term, it requires several sessions with checks and refreshers as to how participants are implementing their training.

The Domestic Market

A number of the large growers, NGOs and government ministries believe that there is a "huge opportunity" for small-scale farmers to gain better access to the local market. However, one of the biggest challenges is the number of actors in the chain trading and transporting to the consumer. Each actor has their own costs and profit margin that pushes the final price up by hundreds of percent (up to 1000 percent in the case of Mombasa, according to one large grower). The problem is not exploitation as such, by these traders (although this can happen too), but the pressure on each actor to make a profit. In short, inefficiencies in the chain squeeze everyone's margins.

Recommendation: If producers want to achieve greater profits over the long term they need to find ways to mobilise into groups who can market more directly, cutting out middlemen and improving their own margins.

Marketing to Hotels

Hotels use local vendors for everyday vegetables and fruits. Hotels say that the advantages of using large vendors are 1) Reliable supply 2) A 'one stop shop' 3) Fixed price contracts for goods for one year 4) credit facility allowing payment every 1-3 months. Small holders then cannot realistically sell directly to hotel operators because they would struggle to compete on each of these points. Even well organised and determined small farmer groups would struggle to reliably supply the quantities, groups are not a one stop shop for ordering a wide variety of produce, a fixed price is not familiar to farmers and some could be encouraged to side sell when market prices are higher, and small farmers would struggle to wait for payment for more than 1 month, unless they established their own line of credit with banks.

Interestingly, where hotels do source locally (through vendors that have procured directly from small farmers), hotels do not promote this to their customers. Hotels have not considered promoting their food sourcing as 'locally sourced' (fresh and benefiting the community), low food miles, CSR etc.

Recommendation: There may be an opportunity to sensitise the hotel and restaurant industry that foreign guests value ethically procured foods. They could better promote to conscientious guests that they source their goods locally and that this has benefits for the community and local farmers in particular. This could encourage the wholesalers/vendors supplying to hotels and restaurants to actively look to source more produce from local small-scale farmers in the area. However, this would be difficult to verify.

Marketing Fish

The hotel spoken, Lake Naivasha Country Club, procures its fish from a vendor in Nairobi, who in turn sources from Kisumu and Lake Victoria, and even from Lake Naivasha, meaning that fish are moving back and forth over long distances. The hotel expressed clear criteria for its fish – they must be able to be filleted and the ideal fish are Nile Perch and Snapper. However Tilapia is also desirable as a whole fish, and there may be an opportunity to supply this fish to hotels. The preferred size is 'plate size' and between 200-250gm. Also hotels do not want the hassle of procuring from individual fish farmers, so there needs to be some work done on building the capacity of fish farmer groups for marketing, or linking fish farmers to Business Management Units (BMUs) which facilitate trade of fish caught in Lake Naivasha.

Recommendation: Consider linking new fish farmers to established BMUs to sell fish. Alternatively, fish farmers need to strengthen their clusters so that they can do group marketing. Presently they have no reliable marketing channel so they need to be proactive in identifying large buyers. The Ministry of Fisheries should assist with this, given that they encouraged farmers to enter into fish farming.

Small fish traders at the Business Management Unit near Lake Naivasha

Small trader perspectives

Traders are often held up as the villains in the chain – making decent profits while the smallest margins go to the producer. The truth is more nuanced than this. Poor transport infrastructure and high fuel and vehicle costs make the role of the trader vital to getting produce to market. Small brokers buying from farmers at the gate are often said to be acting for larger traders, who farmers and others have described as price fixing 'cartels'. However, in many cases the large number of traders and transporters in the chain accounts for much of the price of produce to end consumers. While it was not possible to speak to any large trader in the short time available for this research, we spoke with a number of smaller traders at Naivasha Market. The stories of these small traders painted them as small business men and women making a small profit on tight margins and taking their own risks with perishable products.

Cabbage trader

The small trader rents his own transport and buys directly from farmers around Naivasha. Prices depend on the season, size of cabbage and other factors. But today he says that a cabbage for which he has paid 10ks can sell at the local market for 15ks. In his simple open air space, he says that business is not so good. Consumers, he says, put pressure on his prices. "As soon as it rains consumers demand a lower price, even before there has been any change in supply […] either you sell to them for a lower price, or they will buy different produce". The trader claims that prices *are* negotiated with farmers and that while he does not have favourite farmers as such, there are those who are most reliable. He sometimes sells to large traders for the market in Nairobi, but this requires high quality for supermarkets and is not easy to get. If his produce doesn't sell on market day, he must then wait for the next market day in two days' time. His only means of storing his produce is in the open market under banana leaves. He hopes for the best – that his produce won't be stolen and that it won't perish in the meantime.

Small cabbage trader, Lake Naivasha market

Garden peas

The small trader describes her difficulties; "In times of drought and high demand it can be difficult to source; in times of high supply during the rainy season the price can crash to 5ksh". She knows the market price by comparing the prices asked by others around her, and based on this she determines what she can pay farmers. At the moment she is able to buy 1 kg of garden peas for 50ksh and sell these at the market for 70ksh. She also engages in a little value addition, pealing the peas for customers.

Tomato trader

The small tomato trader travels and transports her produce by matatu (public mini bus). She claims that the price is negotiated with famers, and when pressed if there is actually serious negotiation says "Yes, some do". She buys 4 crates of tomatoes every 3 days for the market in Naivasha. At present she pays 2500ksh per crate and sells this for 3500ksh worth at the market. She also sometimes sells to large traders but says there is more profit selling herself at the local market.

Small potato trader

The small potato farmer sometimes procures from farmers himself, but more often from large traders who arrive early in the morning and sell to the smaller traders at the market. She has a relationship with some of these larger traders and communicates with them on the phone. She works in partnership with

her husband who is at the other end of the marketplace to get other customers. His market space is sheltered so it is there that they can sort the produce into sizes and quality. As well as selling to local consumers, hotels also come to the sheltered area to purchase the higher quality potatoes. Sometimes she is called by hotels or supermarkets for orders she can't fulfil because she lacks the quantities. Every 3 days she buys 20-30 110kg bags. From each bag she separates the potatoes into 10kg buckets, which is the measure by which she sells to consumers. She says that she determines the price by talking to colleagues at the market. Today she says she is buying each bag for 3700ksh and sells the bag for 4500ksh (or 450 ksh /bucket). While this is a small profit per bag she says that over the day the profit is ok, and she can afford a reasonable living and send her children to school.

Small potato trader, Lake Naivasha market

Recommendations for future interventions

Throughout this paper, recommendations have been offered in context with specific findings of this research. In this section, we have attempted to elaborate further on two intervention ideas that could potentially provide a great boost to small-scale producers. These interventions are based on i) marketing and ii) conservation. The following recommendations are presented below as an initial outline of our thinking and attempt to link stakeholder groups already working in the Lake Naivasha basin, particularly small and large growers.

Recommendation 1: Facilitating market linkages

Marketing challenges were cited by all stakeholder groups interviewed during the course of this research. Our first major recommendation is to focus on improving market linkages for small-scale farmers.

Coordinated and competitive value chains in theory

Eaton, Meijerink and Bijman (2008) distinguish different institutional market arrangements based on levels of coordination and formalization of arrangements between chain partners, ranging from spot markets at one end to vertically integrated value chains at the other end of the spectrum (Table 2). In the Naivasha basin, the opposing arrangements of spot marketing and vertical integration (outgrower schemes) are both present. Both arrangements have pro's and con's in terms of their contribution to sustainable, local economic development. Therefore, future interventions involving smallholders should be tailored according to present arrangements.

Table 2: Institutional Market Arrangements

Typology	Spot market	Personalized market	Multi-lateral contracting	Hybrid bi-lateral contracting	Vertical integration
Trade feature	Open market	Preferred supplier	Producer organisation	Contract farming	Firm
Relationship	Anonymous	Personal	Personal	Personal	Personal
Duration	Once-off	Repetitive	Repetitive	Once off / repetitive	Repetitive
Formalisation	No	No	Yes	Yes	Yes
Coordination	Individual	Individual	Multi-lateral	Bi-lateral	Uni-lateral

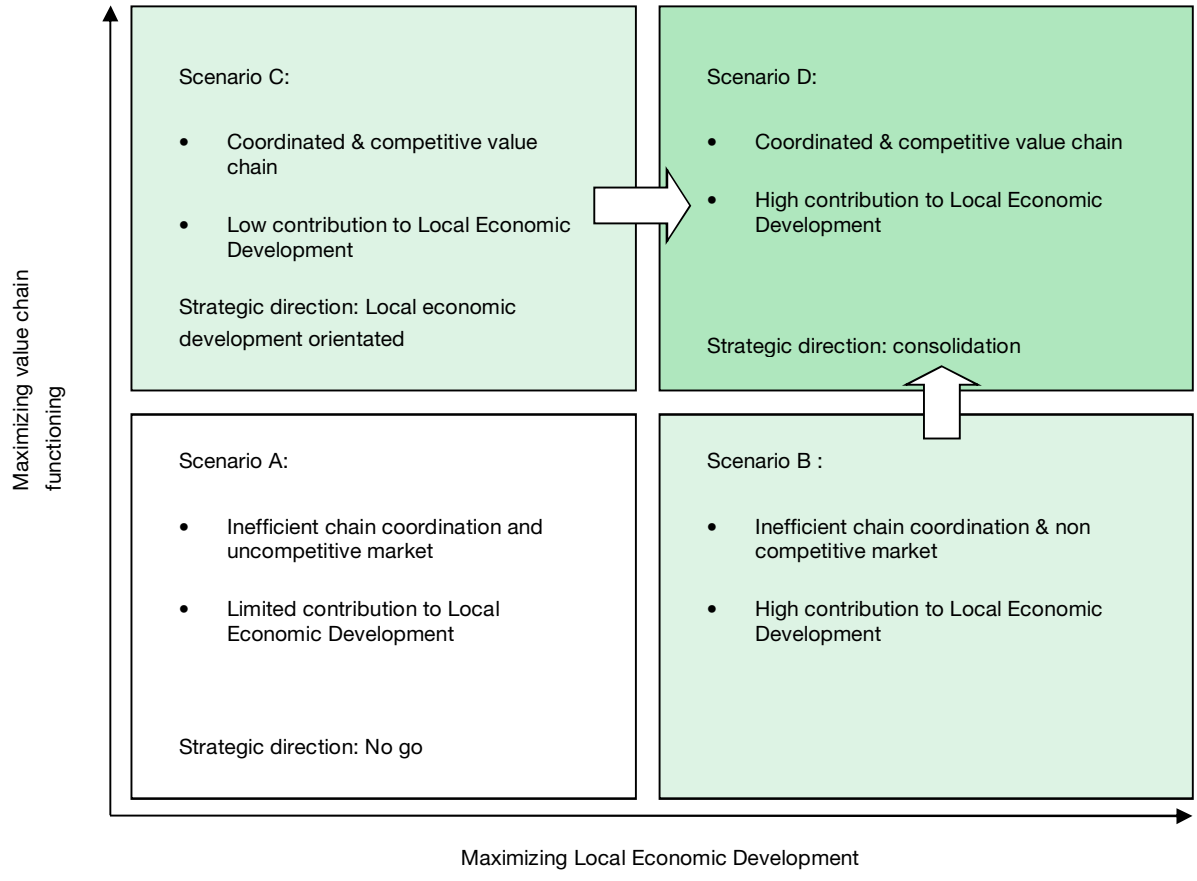
Source: Eaton, Meijerink & Bijman, 2008

In theory, **Maximized value chain (VCD) performance** is achieved by i) efficient chain coordination and chain functioning leading to ii) high levels of competitiveness and iii) growing market shares iv) tax revenues at national level (contributing to national GDP).

Maximized local economic development (LED) is captured through i) high levels of local value adding, ii) generating significant income and employment at local levels, iii) inclusiveness in chain participation and iv) sustainability of the economic activity v) tax revenues at local level (benefitting local government authorities)

In Figure 5, the ideal scenario is scenario D in which both the contribution to local economic development is maximized while the chain is efficient, profitable and competitive resulting in maximized contributions to sustainable local economic development. Generally speaking, upstream farmers around Lake Naivasha presently exhibit the characteristics of scenario A. Scenario D is the kind of development that should be aimed for in the Lake Naivasha basin. As discussed throughout this paper, smallholder farmers would greatly benefit from improved coordination and better access to competitive markets. Building farmer's capacity to farm as a business will also lead to a higher contribution to local economic development.

Figure 5: Four scenarios for value chain functioning and economic development



Increased use of outgrower schemes

In the case of Lake Naivasha, the *export oriented sector* is obviously operating as an efficient and coordinated value chain. Its contribution to local, sustainable economic development could be even greater (additional to providing a significant number of jobs / contribution to GDP) if more large growers/exporter adopt

a business model that engages smallholder farmers through the development of out-grower / contract farming schemes as a sourcing/business model. Direct stakeholders include large growers/exporters and small-scale farmer groups. Supporting actors might include NGOs, such as WWF Kenya, MOA, and Imarisha, among other who can facilitate linkages between smallholder and large growers/exporters.

There are of course challenges and risks involved in forming outgrower schemes with low capacity farmer groups, and through the course of this paper specific recommendations have been given as to how these can be mitigated. However, for such schemes to be economically sustainable, large growers need to see outgrower schemes as more than corporate social responsibility. Instead large growers should see this as an untapped economic opportunity through which large growers can also insist on best environmental practices which may lead to quantifiable changes in water quality and volumes downstream and an enhanced reputation with consumers abroad.

The recommendation would be to improve the linkages between small-scale farmers and larger companies in line with the crops that they are already producing. As engagement with the outgrower schemes deepen, farmers will be able receive market signals from the large growers which could lead them to intensify production of certain commodities or encourage them into new commodities. The scope of this research does not allow for specific recommendations on 'best bets' for certain commodities over others. Furthermore, in a climatic context as varied as Naivasha, farmers and supporting organisations need to be making these choices based on local conditions.

Box 10: Outgrower schemes in practice – a potential model

Several outgrower schemes already exist in the Lake Naivasha although these are not widespread and some function better than others. WWF, for example, has to some extent being able to play a brokering role between smallholder groups and large growers/exporters in the development of out-grower business models. For example, in a recent pilot with the company From Eden, WWF has played a pivotal role in initiating the collaboration and in assuring checks and balances in the process of negotiations, contract development, contract signing and compliance. Both the company and the small farmer groups have high hopes that this will lead to a long standing relationship. This is based on the fact that negotiations have been open and transparent and the contract was developed with the assistance of the WWF and in close consultation with the farmer group. The contract entails a minimum price and transparent conditions in terms of services rendered by the company, stipulations of volumes (assigned per participating farmer), delivery conditions and measures taken in case of default. Also the local agricultural office has co-signed the contract.

The potential advantages can be great in terms of local economic development. Economic interdependency allows for more than the transfer of produce from smallholders to export-oriented farmers. It facilitates the transfer of skills and knowledge, such as on sustainable farming practices and marketing, and capital goods, such as farm inputs. Moreover, formalization in terms of contracts make smallholders eligible for financial services, such as credit and loans. This may contribute to solving the problem of a general undercapitalization of smallholder agriculture.

Furthermore, the company required that the group's farmers adopt sustainable farming methods (similar to those applied by PES farmers) as a pre-condition for joining. The group applies an internal control system to ensure compliance.

The From Eden advisor we interviewed expressed his expectation that this is only the start and that other export companies (in the vegetable sector) will follow and up-scale their out-grower schemes in the near future. We support this approach, and believe that it can open up both economic opportunities for smallholders *and* have a positive impact on land and water use in the Lake Naivasha basin through the buyer's insistence on good conservational farming practices.

Improving the efficiency of local value chains

In developing countries, domestic urban markets are considered to be much more important than export oriented chains, in terms of their contribution to the local economy, food security and poverty alleviation.

In 2002, the outputs of small and medium producers in developing countries were estimated to contribute to only 3% of exports. (Reardon, 2007). Despite policymakers putting a strong emphasis of on export oriented value chains, domestic value chains are still the engine of the local economy and of local food systems in developing countries.

The local agro-markets around Naivasha are contrary to the export oriented chains, characterized by inefficient spot marketing arrangements and a long chain of actors. Their contribution to local economic development (incl. sustainable production practices) could be increased through the development of more coordinated value chains.

In moving from spot markets to a more coordinated market arrangements, it is necessary to build trust between chain actors. This requires a longer term vision on trade, moving from one-off to repetitive deals to stronger relationships between traders and small farmers. Only in this manner reputation and routine can be built within the chain. Building on these first steps, farmer groups should be strengthened in order to negotiate more formalised arrangements with large traders, which would benefit both in the longer term. For such an intervention, direct stakeholders include smallholder farmer group and other local chain actors such as traders and wholesalers. Supporting organizations could include NGOs and MOA, as well as IFDC (see box below).

Box 11: Accessing local markets: developing domestic value chains

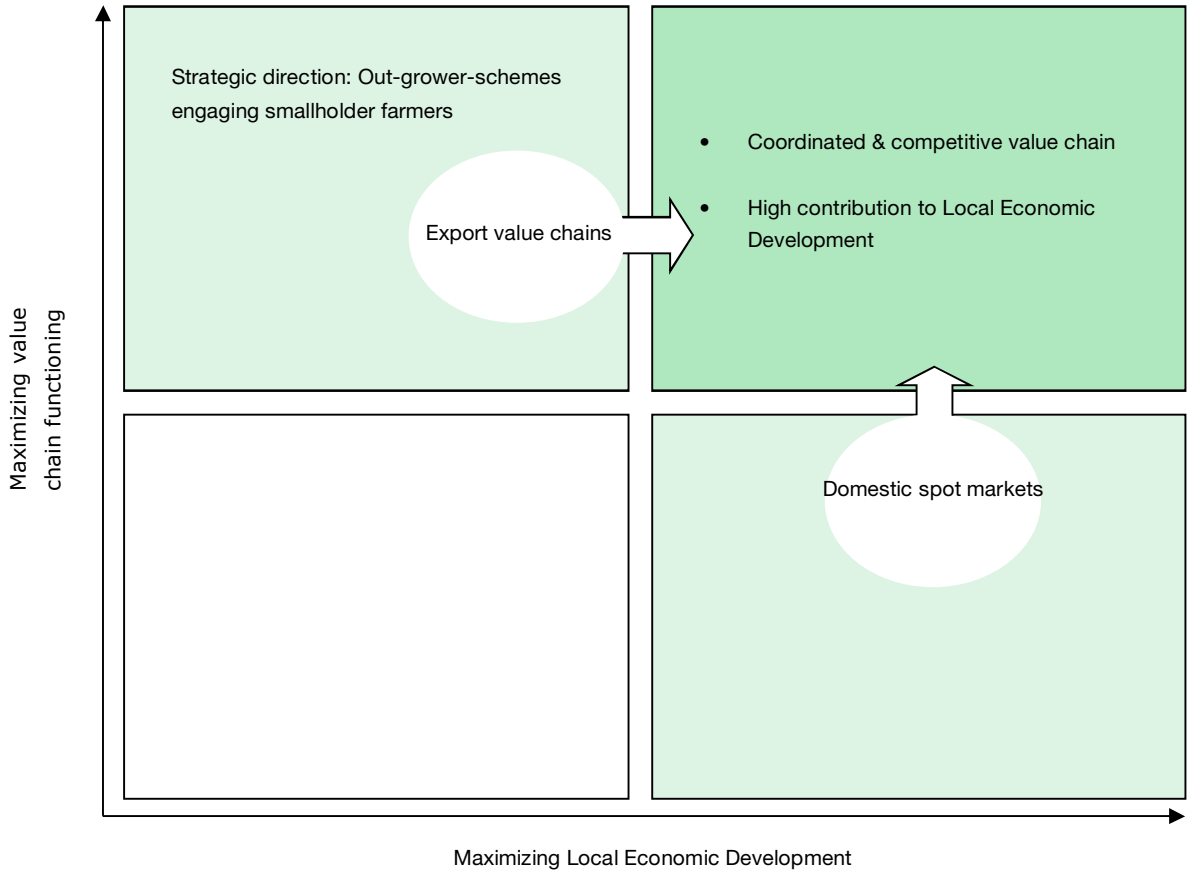
A parallel trajectory recommended is to develop efficient domestic value chains. Here, new players like the IFDC could be playing a pivotal role. The IFDC approach is characterized by the development of so called 'agri-business clusters' (clusters of small farmer groups) around selected crop value chains that have a high potential at the level of domestic markets. At KIT, we suggest that developing value crop value chains for the domestic market would be a complementary strategy to the above mentioned out-grower arrangements which focus on export markets.

The development of agri-business clusters, which bring together existing low capacity farmer groups, can help ensure access to quality inputs, necessary services (extensions, financial services) and link smallholders to domestic markets. In order for such an approach to become successful, well targeted interventions at value chain level, including investments in the establishment of functional producer groups is crucial.

We foresee an intervention that can a) build up functional small farmer groups for production support and capacity building and b) establish higher capacity farmer associations/'agri-business clusters' for the purpose of building market linkages with traders and wholesalers, and advocating for infrastructure investments and access to financial services.

Such an investment in these farmer groups can potentially benefit *both* out-grower schemes oriented to export markets *and* domestic smallholder supply chains (Figure 6).

Figure 6: Maximizing value chain functioning and economic development



Enabling interventions / arrangements

We have identified two institutional arrangements / interventions that can benefit a) efficient and inclusive out-grower schemes and b) the development of efficient local value chains. These arrangements are 1) the formation and strengthening of farmer organisations 2) the establishment of a multi-stakeholder platform.

Table 3: Arrangements reducing transaction costs & increasing competitiveness in outgrower schemes and of spot markets

Arrangement	Description
1. Forming and strengthening Farmer organisations	Leverage point for capacity building & training of producers Reduce transaction costs (economies of scale, internal quality control, group stores for aggregation) Investing in long-term trade relations & reputation building with a) large growers b) traders and wholesalers Increased bargaining power for small farmers
2. Multi-stakeholder platform	Encourage dialogue and trust building measures between trade partners Improve information flow along the chain Introduce and enforce standardized measurements and regulations Facilitates coordination in supply chain

Arrangement 1: Forming and strengthening farmer organisations

In order to develop both inclusive and efficient out-grower schemes and local value chains (supplying to traders/wholesalers), the presence of smallholder farmer groups with sufficient capacity is crucial.

For outgrower schemes:

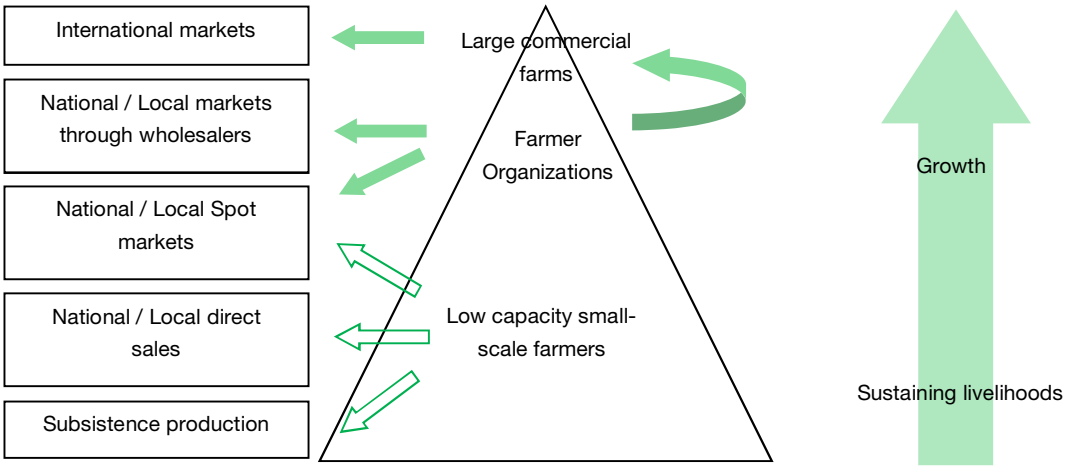
At the outset of this research, a working hypothesis was that only middle-size farmers would have sufficient assets to engage in outgrower schemes. However, during the research, we encountered farmers (both men and women) producing on between one and four acres (and sometimes even half and acre). The small farmers who were well organised into groups were able to supply snow beans and sugar snaps to large growers/exporters for markets in Europe through an out-grower arrangement. Through our research we found that to access better markets it was more important whether or not farmers were organised in strong, functioning groups than their absolute access to land or capital. This does not diminish the importance of access to land or capital, but is meant to emphasise that *the strengthening of farmer groups is fundamental to improving value chain functioning*, and that farmers groups should be thought of as much more than a convenient way for MOA and NGO extension to reach individuals for capacity building or training sessions.

For spot markets (traders, wholesalers):

On the spot markets, a lack of trust between individual farmers and brokers/traders is one underlying cause of an inefficient value chain. Trust is very much connected with reputation and routine building between trade partners. The longer a relationship between two actors lasts the more opportunity these actors have to build trust between themselves. In the local spot market there are very few long-term, constructive relationships between individual farmers and traders / buyers. Every harvest the cycle is repeated or looking for buyers/suppliers, bargaining, etc.

Farmer groups are not as anonymous as individual farmers. They can promote the reputation of their group as they seek re-orders and formalisation of contracts with traders and wholesalers. Furthermore, their (legal) entity allows helps to provide confidence with buyers that agreements will be honoured because group members 'police' each other's behaviour, and in some cases contracts may be enforceable by law (although this typically proves difficult).

Figure 7: FO market opportunities



Moreover, farmer groups are key leverage points in delivering of training, technical assistance, and inputs. This is the primary way that farmer groups have been looked at by MOA and NGOs up to the present. Other reported advantages discussed through this paper of farmer groups are economies of scale, increased access to financial services, ability to group market together (aggregation and storage as desired by large growers) and increased knowledge transmission (including on environmental good practices). In theory, the bargaining power of producers may also be enhanced, however we found little evidence of this in our research, and may be more a perception. Finally, strong farmer groups and eventually umbrella groups can help to shorten a very long and inefficient value chain. This is because marketing can be done more directly, for example by large traders travelling to farmer groups on specific days for contracted pickups, rather than relying on numerous small brokers who are all seeking profit margins.

The Royal Tropical Institute (KIT) has considerable experience in advising on farmer group formation and strengthening in specific contexts.

Arrangement 2: Multi-stakeholder dialogue & coordination

The establishment of a multi-stakeholder platform in which trade partners / chain actors are grouped around common interests is a possible way out of the circle of distrust and 'hit and run' attitudes in the market place. Developing multi-stakeholder forums allow for dialogue between trade partners and fostering an attitude of trust, collaboration and development of long term trade relationships.

The Imarisha initiative is an excellent example of a platform developed to foster trust and linkages between stakeholders in Lake Naivasha and to coordinate development. The kind of multi-stakeholder platform that we envisage for marketing would be outside the scope of Imarisha's present functions,

however might be based on a similar model. However there is clearly a need for a platform to facilitate matchmaking between trade partners, whether they be upstream smallholders with downstream commercial farmers/exporters, or with traders and wholesalers.

The Royal Tropical Institute (KIT) has previously worked extensively to develop several such platforms around Africa (see Nederlof, Wongtschowski & van der Lee, 2012).

Box 12: Developing local market places – example from Tanzania

The Rural Market Development Programme, implemented by the National Federation of Farmers in Tanzania (MVIWATA) has established a multi-stakeholder arrangement in which chain partners are joined in a multi-stakeholder platform around a commonly managed rural market. The general objective of the program was to increase the outlets for agricultural produce in rural areas. Four rural bulk markets have been improved, established facilities including improvement of feeder roads. Three key areas of improvement are:

- Transparency (transactions, market rules, standardization of measurements, taxes)
- Accessibility (improve communication & product flows)
- Security (of transactions ,cash, people, assets and produce)

The markets are managed by Marketing Boards representing all major stakeholders (chain partners: farmers, traders, transporters and local government). The Marketing Boards function as innovative institutional arrangements allowing for bridging distrust between marketing parties and moving from a supply chain built on conflicting interests between chain partners and very competing behaviour towards a chain fostering common interests and mutual trust and collaboration. From the beginning the program took a multi-stakeholder perspective which partly explains its success. The market provides advantages to all stakeholders including local governments as rules of the markets dictate proper pay of local taxes and levies and default in measurement is absent. The traders find plenty of supply, good loading conditions and safe storage facilities, transporters are assured of load and accessible roads, and farmers have access to a competitive market in which they gained bargaining power by increased knowledge of pricing.

MVIWATA does approach the marketing problem in an integrated way, improving not only market conditions but enhance farmers entrepreneurial capacities (amongst others by establishing study groups of farmers) and access to price information (radio, bulletin) and improve access to financial services by promoting the establishment of saving and credit groups in the area. Furthermore, farmers groups exchange information about their intended supply to the markets, collectively planning supply in order to avoid over-supply and thus low prices.

Additional conditions for the establishment of out-grower schemes and the successful development of local value chains are centred around increasing smallholder farmer's capacities and access to supporting services including input supply, advisory services, financial services and transportation services.

Recommendation 2: Conservation and PES

This research has shown that conservation and environmental good practice is valued and implemented by small-scale farmers when these farmers see tangible benefits to their land and for themselves. Typically, this was expressed through reduced erosion and improved soil quality, as well as benefits from fruit trees and grasses which can be used for fodder. PES, as an intervention, was valued by farmers because a) it educated them how to implement good practices (and receive the benefits described above) through focussed extension but also b) because farmers were paid a voucher, or given a 'reward' for actually carrying out these practices. In some cases farmers perceived the voucher as a motivation, for others it was a sign of appreciation for their efforts. It also offset to some extent the cost to farmers of removing some of their land from production.

For all that is good about the present PES scheme and the impact farmers say that it is having on their land, there are several problems with scaling it up to a level that a) will have an impact downstream and b) will reward a far greater number of farmers than those currently in the pilot scheme. The main problem with scaling up in future is that there is a very limited pool of current buyers in the Lake Naivasha Growers Group (LNGG), and that it is unlikely that sufficient new buyers can be found, paying a sufficient sum, to pay for the environmental services of thousands, or ideally tens of thousands of farmers. Efforts are still being pursued to find more buyers, as they should be, but bringing in new potential large buyers such as KenGen is far from certain. Furthermore, while LNGG buyers have contributed US$13000 in payments, considerably more has been contributed through donors and CARE and WWF implementing PES. Only a separate cost-benefit analysis study can show how efficient the PES scheme has been to date.

PES could potentially benefit from a different payment model that could reach a far greater number of farmers and share the cost among more and larger buyers. *We propose that carbon markets can be an alternative payment mechanism for environmental services.* In proposing this, we do not mean that the PES conservation activities should change, but that activities that have the potential to sequester significant amounts of CO_2, such as tree planting and soil management, can be structured to find new buyers who might be outside of the Lake Naivasha area.

Both the compliance and voluntary carbon markets have matured in recent years and now cater for relatively small-scale projects, including to those related to forestry and land use change, which apply to the Lake Naivasha context. We suggest that if this option for PES was pursued, that the UNFCCC standard, CDM, is *not* used due to the fact that it is extremely strict, takes considerable time and cost, and that farmers would not receive payments until many years later when trees mature. The Green Belt Movement, Kenya, experienced this first hand when they recently undertook a project in the nearby Aberdare range[10].

Instead, we suggest developing a project that is certified to a voluntary standard such as CarbonFix or PlanVivo. There are several advantages of using one of these standards: farmers can receive payment for

[10] http://www.greenbeltmovement.org/sites/default/files/GBM_climate_finance_report_2011%283%29.pdf

carbon emission reductions through tree planting from an early stage and even *before* actual emission reductions have been verified. Yet the standards are still rigorous and accepted by the market. They feature a 'buffer' system to ensure that emission reductions are actually achieved, even if some trees are lost to disease or fire. A PES scheme that engages with the carbon market can be designed to optimise environmental benefits to the basin through the planting of indigenous species and fast growing indigenous bamboo (a much better economic and environmental option than Eucalyptus). There is now an approved methodology for receiving carbon credits for bamboo and other indigenous species, which is very likely applicable to Lake Naivasha. The value of these carbon credits can be further enhanced by seeking additional certification to an add-on standard, such as the Climate, Community & Biodiversity (CCB) standard[11]. This can add a premium of several dollars to each carbon credit. CCB certification is awarded to projects that deliver significant additional benefits to enhance the well-being of local people, to conserve biodiversity and to assist with adaptation to the effects of climate change.

The buyers for this environmental service (i.e. the carbon sequestration from trees, in addition to other conservational activities beneficial to the basin etc.) will include international buyers who want to purchase the credits to offset their own carbon emissions. Buyers can also be found within Kenya, including large vegetable and flower growers in the Lake Naivasha basin. By purchasing carbon credits from this scheme, they can claim to their own markets that they are offsetting their own carbon emissions while enhancing the social and environmental sustainability of the basin. Hotels and other tourism operators are other potential buyers, and are likely to be more interested in purchasing carbon credits than they in contributing to the present PES fund. This is because they would be buying certified carbon credits rather than being asked to contribute for an uncertified PES service.

Some critical comments should be addressed here. While such a carbon project would be focussed around forestry, there is also scope for it to include the carbon captured in soils, say through low-tillage practices. It would be envisaged that such a carbon project would be complementary to other conservation activities – carbon markets have the advantages of generating additional revenues to help with the scaling up of PES related activities. Carbon credit generating activities would have to be balanced with the production imperative for small scale farmers. The intention is not for more land to be taken out of production, and small-scale carbon projects such as those accredited to PlanVivo or CarbonFix are accustomed to projects that work with inter-cropping.

KIT has published a book 'Demystifying Carbon Markets: A guide to developing carbon credit projects' (Arnoldus & Bymolt, 2011), and has experience working on carbon credit agroforestry projects in Africa.

[11] See http://www.climate-standards.org/

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