

Integration of smallholder farmers in international CO₂-markets by applying tree growing/ agroforestry practices in Western Kenya

Key words: Smallholder farmers, institutions, international CO₂-markets, tree growing activities/ agroforestry practices, Western Kenya.

Abstract: The integration of smallholder farmers in international CO₂-markets by targeting carbon sequestration projects is currently highly discussed, but still not really implemented. In order to get a better idea on driving and constraining factors, local level institutional arrangements have been surveyed during almost two months of data collection in two catchment areas – Nyando and Yala – in Nyanza Province/ Western Kenya. In each of the areas ten farmer groups as well as twenty individuals out of the groups have been targeted, either in informal group meetings or in semi-structured in-depth interviews. Additionally to this a case study on by-laws has been organised by addressing six of the groups. Major outcomes of the research result in emphasising the importance on available land, labour and capital in order to carry out tree growing activities/ agroforestry practices properly. The division of individual tree growing and common nursery establishment and management as well as common training and extension in most of the groups has to be emphasised as well. Due to this farmer groups have an important role in transferring knowledge and skills and therefore in mobilising and empowering individual farmers as well as local communities. Beyond also group compositions and processes as well as the provision of external support are of major importance. Having a sustainable land use practice in mind, effective group by-laws have been defined, by strongly focussing on a participative approach in most of the groups. In order to be integrated in international CO₂-markets, knowledge and skills in proposal writing, addressing donors and funds as well as implementing development activities – which is fulfilled by some of the groups – are preferable. Coming last but not least to the end, the success of tree growing activities depends also on the distribution of benefits. Therefore the 'maturity' as well as the need of farmer groups should decide if benefits are given in advance or gradually, respectively in cash or in kind.

A. Background and justification

Presently no day is passing without having headings in the paper on changing climate and its consequences for life on our planet. These are consequences that cause negative implications on our daily living. Droughts as well as flooding are two phenomena that are rather visible to our perception, more than the upcoming global warming caused by enhanced emission of greenhouse gases. The accumulation of greenhouse gases in the atmosphere is less traceable than intense solar radiation or powerful rains. Nevertheless it's not deniable anymore that climate change is present and anthropogenic greenhouse gases are the main source of pollution.

Due to the isolation of source and sink of the phenomenon called climate change, environmental problems of this extent are not anymore of local, regional or national concern, but in fact of international and global concern. With the enactment of the Kyoto protocol in 1997 and its ratification 2005, a milestone of global justice could be reached. Flexible

mechanisms as emission trading, joint implementation, clean-develop mechanism and burden sharing have been developed in an international policy process in order to meet the objective to reduce greenhouse gas emissions drastically compared to the base year 1990.

If focussing on strategies to mitigate climate change, measures on rational use of energy, renewable energy sources as well as carbon sequestration have been identified. Projects targeting these measures can be both designed and implemented in countries of main pollutants or in countries of technological, respectively environmental “imbalance”. Especially developing countries are suffering presently on the implications of climate change. In order to approach this imbalance, those countries are identified as one of the target areas to mitigate climate change.

The focus of this paper deals – by targeting the more general objective of sustainable development – on measures of carbon sequestration by tree growing activities/ agroforestry practices in order to mitigate climate change, but also due to the integration of smallholder farmers on strategies for an improved livelihood to generate some income and therefore alleviate poverty. This is equivalent with the achievement of the declared Millennium Development Goals (MDGs) till 2015, i.a. to eradicate extreme hunger and poverty by reducing half of the proportion of people living on less than a dollar a day respectively suffers from hunger.¹

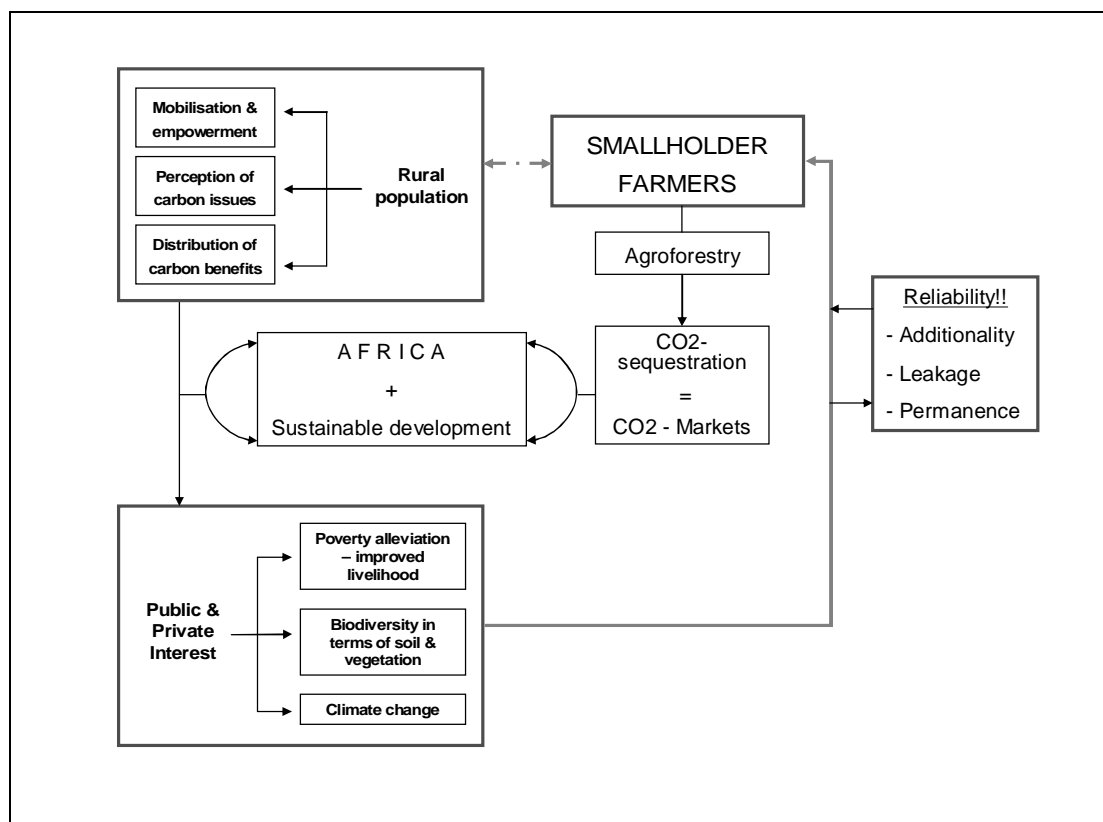


Fig. 1: Conceptional framework targeting the integration of smallholder farmers in international CO₂-markets by having the focus on rural population in Africa and the fulfilment of public as well as private interests according to sustainable development.

¹ <http://www.un.org/millenniumgoals>

In order to meet this target – mitigate climate change & alleviate poverty – by addressing public and private interests, international CO₂-markets will be of major importance in this paper. Besides having in mind internationally required institutional arrangements in order to meet CO₂-markets, like provision of baseline data on carbon potentials, proof of additionality, permanence and leakage, the focus of this paper will be exclusively – as far as it's possible – placed on local level institutional arrangements by addressing smallholder farmers and therefore rural population in Western Kenya/ Africa (cp. fig. 1).

Targeting international CO₂-markets and in particular the Clean-Development-Mechanism (CDM) as an instrument of the Kyoto-Protocol or voluntary markets as the Chicago Climate Stock Exchange, the integration of smallholder farmers by applying tree growing activities or agroforestry practices has been so far mostly neglected. Having in mind, the present difficult status of projects integrating smallholder farmers in international CO₂-markets, however the generated outputs of this research will make it easier to discuss future issues on project design and project implementation. This is in particular of interest in order to achieve one of the basic objectives of international CO₂-markets, sustainable development of developing countries.

Objectives

The objective of the paper is to figure out key institutional arrangements on the local level that are relevant for the *integration of smallholder farmers in international CO₂ markets by applying tree growing activities/ agroforestry practices in Western Kenya*. According to this the questions will be targeted, which are driving and constraining factors affecting the integration of individual smallholder farmers in international CO₂ markets? And is the integration of smallholder farmers due to enhanced tree planting activities/ applying agroforestry practices in Western Kenya possible?

In order to narrow down the perspective, the main focus will be laid on the i) Mobilisation & empowerment of individual smallholder farmers for tree growing activities/ agroforestry practices, ii) perception of individual smallholder farmers towards climate issues in terms of design, implementation and enforcement of adequate activities, iii) as well as distribution of benefits gained by tree growing activities/ agroforestry practices in terms of improved livelihood of individual smallholder farmers.

B. Methodology

Outline

In order to get an idea on local level institutional arrangements targeting the integration of smallholder farmers by enhanced tree growing activities/ agroforestry practices, the geographical focus of this research has been defined within lower regions of two water catchments, the Nyando and the Yala in Nyanza province/ Western Kenya. The research is based on the structure of the “Western Kenyan Integrated Ecosystem Management Project” (WKIEMP), which is funded by the Global Environmental Facility (GEF). In total the WKIEMP

comprises three complete – lower, middle, higher part – water catchments, beside Nyando and Yala, also Nzioa.²

During almost two months of data collection, ten farmer groups plus twenty individuals (out of the groups) have been targeted in each of the regions, lower Nyando as well as lower Yala (cp. tab. 1). The farmer groups were approached by having group meetings, based on an interview guideline, the individual meetings by using a semi-structured in-depth interview form. Additionally to this information on local level institutional arrangements, i.e. having group meetings as well as in-depth interviews, a small case study on local group by-laws has been carried out, including six of the farmer groups, four from Nyando and two from Yala. By conducting the group meetings as well as in-depth interviews the following points were targeted: i) Mobilisation & empowerment of individual smallholder farmers for tree growing activities/ agroforestry practices, ii) perception of individual smallholder farmers towards climate issues in terms of design, implementation and enforcement of adequate activities, iii) as well as distribution of benefits gained by tree growing activities/ agroforestry practices in terms of improved livelihood of individual smallholder farmers.

Project area

The project area comprises two water catchments – the Nyando and Yala river basins – by focussing in each case on the lower sites. The area in Nyando is mostly characterised by an extended gully that is dividing the area, however also close to a main road. The area in Yala is characterised by its hills and its remoteness, i.e. that's rather far from the next main road. In general both areas are extreme rural areas. Beside the high population density, they are in particular characterized by badly degraded soil and vegetation patterns, caused by conventional cropping practices, overgrazing as well as an increased number of unpredictable rainfalls. Especially in Nyando the level of degradation is quite severe.

As a result these conditions have led to extreme poverty among rural households such as smallholder farmers. In order to improve rural livelihoods as well as mitigate climate change, tree growing activities/ agroforestry practices are also due to the WKIEMP on the way to find further application in the region around Lake Victoria. Facing the local level institutional arrangements both areas have rather different organizational and cultural structures among smallholder farmers, which include individual and common activities as well as participation of various actors out of the communities, e.g. women and youth. In order to target the challenges demanded by requirements of international CO₂-markets, driving and limiting factors affecting the integration of smallholder farmers will therefore be described by focusing on local-level institutional arrangements.

² For further information: www.gefweb.org

Identified groups

In each of areas in the Nyando and Yala water catchment ten groups have been identified on base of the WKIEMP structure. Both Nyando and Yala are in their lower areas dominated by the Luo tribe. Despite this dominance, one group in Nyando belongs also to the Kipsigis tribe due to the crossing of tribe borders. In Nyando all the groups that have been chosen are located along the mentioned gully, whereas in Yala the groups are more scattered around, and chosen by a vague homogenous distribution over the project area. All of the groups are smallholder farmers and deal with natural resource management. In terms of group activities, in Nyando the focus is mainly on management of degraded sites, plus some additional activities like tree nurseries, horticulture and livestock keeping, mostly poultry. In Yala the focus is mainly on management of crops and vegetables, tree nurseries as well as some livestock keeping, also poultry. In both areas farmer groups also practice partly some off-farm activities like basket and sisal weaving, pottery, sand mining etc. In Nyando the groups are mixed groups, whereas in Yala some of the groups are exclusively youth groups, one is a purely women group, respectively one a group dominated by members affected by HIV/ Aids or widowed (cp. annex 1).

C. Generated hypotheses & results

In the following chapter generated hypotheses as well as first results will be presented. The generation of hypotheses is based either on field observations or on a literature review. The literature review focused on the mobilisation and empowerment of smallholder farmers as well as the present situation of smallholders and CO₂-markets, respectively on the issue of carbon sequestration more in general.

The chapter 'generated hypotheses & results' is therefore according to the objectives subdivided in three parts: i) Mobilisation & empowerment of individual smallholder farmers for tree growing activities/ agroforestry practices, ii) perception of individual smallholder farmers towards climate issues in terms of design, implementation and enforcement of adequate activities, iii) as well as distribution of benefits gained by tree growing activities/ agroforestry practices in terms of improved livelihood of individual smallholder farmers.

i) Mobilisation & empowerment of individual smallholder farmers for tree growing activities/ agroforestry practices

Hypothesis 1: Common group motivation of smallholder farmers towards tree growing activities/ agroforestry practices is constrained due to other more promising short-term economic enterprises:

Due to deforestation and the primary focus on crop production, both food and cash crop – tree growing activities/ agroforestry practices are still at the beginning to develop in most farmer groups in Nyando & Yala. In order to enhance tree growing activities/ agroforestry

practices three major important factors by focussing on basic infrastructure have been identified: land, labour and capital.

Following tree growing activities/ agroforestry practices within farmer groups in Nyando and Yala means mostly having a common nursery, whereas the tree planting itself is done on individual land. Exclusions are degraded sites in Nyando, where farmer groups work collectively on the reclamation and rehabilitation of those areas, i.a. by planting trees. However according to the opinion of smallholder farmers in Nyando and Yala individual land is more preferable for tree growing activities due to the fact that groups don't have own common land. **Land** is either rented by the group or individually owned land is given to the group. In this respect, combined with partly insecure land titles, smallholder farmers do not feel enough confident to plant trees as a group. Beyond one group from Yala mentioned the doubt of not having the right to convert the land after being stocked once with trees. Basically the need to grow food and cash crops as short-term activity of three months time is seen, despite the uncertainty of crops compared to trees. These activities are important for daily nutrition as well as income generating activities as long as trees are still in juvenile stage. This need is especially seen in the area uphill lower Nyando, where the *Kipsigis tribe* is located that has to be defined by high poverty. Associated is this situation to the restriction of land in some areas due to high population density. Some of the groups especially in Yala favour therefore agroforestry practices compared to pure tree growing activities in woodlots, which are part of upcoming common farming practices on an individual base in some of the groups in Nyando. In general it can be said that tree growing activities/ agroforestry practices are pushed by most of the groups as well as some of the individuals, also due to the insecurity in crop production. Basis is the establishment of common tree nurseries and the distribution of seedlings to individual group members, respectively the selling to communities or external bodies like NGOs. This is mostly grounded in the belief that trees are long-lasting investments that can easily substitute the production of crops.

Labour capacities in order to serve both tree growing activities as well as crop production, respectively to serve group as well as individual activities are considered differently. While most of the groups argued to have enough manpower to serve both – i.e. tree growing activities/ agroforestry practices and crop production, respectively group and individual activities – due to a clear division between trees & crops as well as group and individual activities due to a distinct schedule, in contrast others expressed the need to hire additional people, respectively saw constraints in doing both, individual and group work. However one group in Nyando argued that temporarily restrictions in labour are there due to inefficient planning (“don't handle time well”), i.e. although enough manpower is there, the planting of trees is not done properly. Closely related with managing the workload is the availability of knowledge and skills. Some of the groups mentioned that activities haven't been initiated properly, respectively failed due to a lack of knowledge and skills. One reason for that is according to one group in Nyando existing poverty. “Three quarter of the people in the area don't have a long-term thinking; equally don't think on resources to do the daily cooking. They often rely exclusively on crop production on individual land. This goes along with the lack of training and extension, but also the need to sensitize and mobilise. In order to benefit

from identified higher economic value of trees compared to crops, not just the group, but also the whole community have to be targeted. If tree nurseries are not managed well, the failure is predetermined. Therefore not only the provision of seeds and seedlings is important, which was mentioned by some groups, but also the provision of a frame consisting out of both, training and extension as well as sensitisation and mobilisation.

In terms of **capital**, mostly all the groups mentioned restricted resources. Beside technical support in form of training and extension/ mobilisation and sensitisation, the need to be supported with additional benefits mostly in kind like has been mentioned by all the groups. Needed benefits are seeds/ seedlings and materials or access to adequate markets/ market information in order to generate own financial resources. The latter one has been mentioned in particular by groups that have already established well managed nurseries (cp. H 5/ H 10).

Hypothesis 2: In terms of tree growing activities smallholder farmers see disadvantages in common long-lasting group activities due to different expectations in terms of having an effective individual outcome:

The success of common group activities, equal to often mentioned identity & unity within the group, depends primarily on the performance of the group and therefore the motivation of individual group members. However motivation depends again on the framework of each activity. E.g. group activities don't work properly, according to the group from the *Kipsigis tribe*, if there is a "deficit in unity due to not following the agreed objectives from the beginning". In terms of having successful tree growing activities/ agroforestry practices, the main focus is set by thinking on an ideal framework on training & extension, selection of tree species, products and technologies, tree nursery establishment and management as well as marketing activities. In order to be a "good example to others", as some of the groups argued, this framework depends highly on external support, also due to having "quick success stories and therefore to be known, respectively change the attitude in the community towards tree growing activities" (cp. H 5).

Major measure in this respect is **training & extension**, although many groups refer on seeds & seedlings, respectively other material, too. Giving training & extension to groups facilitates the communication to many smallholder farmers and fastens up the process to meet the objective of having more trees within a region. Beyond the gain in knowledge & skills is balanced and transparent within the group. According to a group from Yala common training & extension is also a "self-learning process" during which the group is working on a common group expertise, i.a. where „slow-learners gain from fast-learners". Basically this means that due to limited knowledge & skills beforehand, the group as well as individuals within/ outside the group gain from this common group expertise. Groups can be compared therefore with schools – "collective learning and individual practising" – i.e. acting on basis of a common group expertise compared to following individually gained knowledge & skills. One common practice in this respect is the giving of training & extension to each other without having a common group focus on a certain activity. Examples are common meetings to discuss individual issues, respectively having training & extension on the site, by visiting each other.

In order to measure the success of an newly introduced activity as e.g. tree growing activities/ agroforestry practices, supervision and follow-ups of transferred knowledge & skills have been mentioned by the groups, also due to the fact that some members also “oppose or have no interests in new inputs”.

The ***selection of tree species, products and technologies*** has mostly been practiced so far by external expertise. Mostly ideas on needs and demands have been exchanged and discussed within the groups after receiving some training & extension, respectively before requesting seeds to generate own seedlings or being given directly seedlings. Having once gained the knowledge & skills on tree growing activities/ agroforestry practices as well as the seedlings, it has been given depending on the group either to individual group members or additionally to community members/ members of sub-groups. In terms of individual group members, it has been passed either on an equal share or according to manageable workload, i.e. in case of a group from Nyando according to holes being dug, including a follow-up. However besides relying on external expertise, also the need to rely on local knowledge has been mentioned by one group. This means sharing of ideas, but also exchange of seeds by working as a network.

In terms of ***establishing and management tree nurseries***, common group approaches has been favoured by all the groups. Some of the groups relied exclusively on common group tree nurseries, whereas some of the groups favoured to have individual tree nurseries, too. According to one group from Yala, if common tree nurseries do function well, they can serve as a “role model” for smallholder farmers in the area, but also address visitors, both ending in the strengthening of the community. Due to their easier management like lower workload, shared responsibility and reduced risk of failure compared to individual tree nurseries, common group tree nurseries can generate quick benefits for the groups and group members. These experiences are valuable in terms of transferring knowledge and skills as well as seeds and seedlings in order to initiate individual activities based on common group expertise. However compared to the management of common group tree nurseries, individual tree nurseries allow own decision-making, timing and in particular the generation of own income. The generated income can either be used to cover individual demands, but also ‘partly’ be used to sustain the group. Latter one is practiced by one case in Nyando, where individual tree nurseries are compulsory due to established by-laws.

Focussing on ***marketing activities***, experiences are rather divers and primarily not targeting tree products so far, but selling of crops and vegetables, fruits as well as off-farm products. Some of the groups have no experiences at all in marketing activities, whereas others have advanced marketing structures. Recognized advantages of common group marketing activities are more transparency, better results and therefore higher benefits to groups and individuals. In case of seedlings, existing markets do target mostly surrounding communities as well as NGOs working on the sites. In case of some groups, besides selling seedlings from common group tree nurseries, also seedlings from individual tree nurseries are sold via the group. If organised as a group, it’s easier to access appropriate markets and organise transport. As mentioned before this leads to better results and higher benefits. Giving an example of one group from Yala, common group marketing activities are done by its farm

manager, supported by an assistant member. Both are in charge to carry out the sales after consulting the group. In common discussions they have to agree on market places as well as on market prices on which the product has to be sold. However there are also identified difficulties in common group marketing activities. Besides the division of benefits, a major difficulty is the reliance on group decisions in terms of timing and pricing of products and therefore the prolonging of the whole process. One group also mentioned in regard on improving the process of common marketing activities that additional training would be necessary. Due to improved transparency, which means better control on prices, better results could be gained. In order to have optimised common group marketing activities, one group from Nyando has expressed the need to install a resource centre, where people of the group can easily cooperate with people of the community/ sub-groups in order to place their products. This should be easily accessible – also via email and internet – close to roadside.

Having a more general perspective, plus a summing up of common group activities, several specific advantages as well as disadvantages have been identified during the group meetings in Nyando and Yala (cp. tab. 1).

Advantages of groups	Disadvantages of groups
Higher commitment/ Loosing of idleness of individuals (unity & identity)	Irregularities in attendance of group members/ no time consciousness
Self-sustainability/ independence from others	Opposing of group activities, discouragement of some group members, risk of failure
Sharing of knowledge, skills and ideas (two-way support/ assistance)	Feeling not to gain something
Easier to push something/ to test activities	High burden on women in terms of time
More manpower/ lower workload/ motivation/ encouragement	Transparency within group
Reduction of risk to fail/ higher benefits	Imbalance of achieved work and received benefits
Easier to address external support/ better access to markets & m. information	Less freedom in decision-making and timing as well as division of benefits
Collection of contributions/ benefits in order to open bank account	Divergent values and therefore risk of corruption
Easier training & extension	Focus primarily on IGA and not on daily needs
Lower burden for men to feed family	No control
Support of widows/ orphans	

Table 1: Advantages and disadvantages focussing on common group activities

Focussing on the question on **improved livelihood** either gained by individual or common group activities, in both areas – Nyando and Yala – most of the addressed groups mentioned the ‘big change’ that has taken place through the work being done in the groups (cp. tab. 1). Some of the groups mentioned that it is good to rely on group activities, but also on individual activities. E.g. in terms of tree growing activities, one of the groups from Yala argued that training & extension as well as nursery establishment and management can be easily done within a group, whereas tree planting and management itself is preferable done as a individual, however the follow-up in order to have development in a long-run again done by

group. Another group from Yala argued that due to present instability within the group, it's better to rely on individual activities in terms of improved livelihood, i.e. "it's better to make own decisions according on upcoming individual problems". This argument corresponds also to the idea of "first serving individual interests before serving group interest", due to different problems, there shouldn't be "sacrifices of own desires due to group". However by working in a group it's also necessary to "share problems and experiences". According to the *Kipsigis tribe* an example can be shown, where this sharing hasn't worked any longer and common group activities broke down temporarily: "Due to famine common group activities have stagnated and the group members became individual again ... everybody has been looking for something". Despite those kind of examples, all of the groups' belief in common group activities in terms of further development. However – following the comment of one group from Nyando – in order to overcome such kind of problems a "proper management both in time and activities is necessary".

Beyond common group activities also the focus on **common activities within the community or with other groups** gives an idea on the importance of common activities in terms of improved livelihood. Various targeted groups in Nyando and Yala have already been active in working together with the community, respectively with other groups. The idea of having a transfer from group to individual activities refers also to the community and to other groups. In this respect major efforts are transfer of knowledge & skills, sharing ideas and problems as well as rising awareness. Examples from Yala are the information of local communities during a field day ('tree planting day') on benefits of trees as well as the distribution of seedlings free of charge, including a follow-up carried out by the group. A second example – directly not related to trees – is the realisation of a farmer-field-school with community members, organised by one group. A third example is the addressing of communities via NGOs by addressing groups, i.e. the "group as a link" in order to provide primarily knowledge & skills. Other examples from Nyando are the foundation of a new group out of a mother group, respectively the close interlinkages of a community based organisation (CBO) with several sub-groups.

Hypothesis 3: Motivation towards common group activities is constrained in particular due to lack of decision-making power, respectively due to the high burden in terms of serving common group activities as well as individual daily tasks:

In order to understand conflicts in common group activities and its lacking recognition, group structures of targeted groups in Nyando and Yala will be presented beforehand. The focus is set therefore on the particular **group compositions** like officials & members as well as on particular **group processes** like decision-making, carrying out of activities and taking over of responsibility.

Most of the groups have a rather simple composition, i.e. chairperson + possible assistance chairperson, secretary + possible assistance secretary, treasurer + possible assistance treasurer. Beyond some groups especially in Yala have a farm-manager, respectively a development chairperson, an activity leader, an auditor or an organising secretary. This

person is mostly in charge of supervision and monitoring of group activities. Some of the groups especially the bigger ones like in Nyando have also committees, which are a kind of advisory board towards group officials, respectively in particular in charge of subdivided activities. Beyond one group in Nyando has also a contact farmer that is in charge of external communication, i.e. towards the community, governmental agencies or NGOs.

Decision-making is both in Nyando and in Yala made either by consensus principle or by majority rule on base of voting (in one group in case no consensus is reached, voting; respectively in another group $\frac{3}{4}$ majority by sitting members). However in Nyando the consensus principle is prevailing. The process itself is partly divided by an ex ante consultation of officials and committee, respectively by a common consultation by the group, i.e. the group sits down, raises an issue, discusses this issue and agrees or votes. Similar to the process in one of the groups in Yala, but with having the exclusion that everybody has to give a comment after raising an issue.

Carrying out of common group activities is both in Nyando and in Yala done by the whole group, including some exceptions like one youth group where some members just work on Sundays due to school or like a widow group where some of the work is outsourced, respectively adapted to specific activities like e.g. group nurseries due to extent of physical pressure of workload. In order to manage especially divers' group activities and to avoid conflicts some of the groups have formal structures like duty raster, working plans, sub-groups & sectors as well as specific working days with a clear focus. In case of common group tree nurseries or sub-groups – both examples from Nyando – the work is done on a rotational basis. This means group members are in charge for a specific activity for a certain time, in terms of the nursery on a daily basis, in terms of the sub-groups, led by two committee members, depending on the workload.³ Another form of structuring is the assigning according to personal strengths or preferences or additional subdivision in terms of upcoming workloads. In terms of managing both common group activities as well as individual activities, most of the groups have mentioned that both activities are strictly divided. In terms of individual work, which is prioritised by some of the groups in terms of improved livelihood, the assisting of each other in case of individual shortages has been agreed by the group members. Due to this agreement, no conflicts have been seen so far. Against it, supporting each other is seen as a part of transfer of knowledge and skills from the group to individuals and vice versa.

Taking over of responsibility has to be distinguished between overall and individual responsibility. In terms of group activities each group member has to fulfil its duties properly, whereas the overall responsibility is taken over by clearly selected persons. In Nyando taking over of responsibility is either done by the chairperson assisted by the officials or by the committee members, respectively in terms of one group, subdivided in different sectors: nutrition, crops, livestock, water, environment and led by the sector chairperson. In Yala, in some of the groups, not the chairperson, but specifically selected persons are in charge of

³ Following an example from Nyando, five sub-groups have been established that focus on tree nursery, water, terraces, planning and clearing activities.

taking over responsibility, which means mostly monitoring & supervision of activities as well as reporting to the group, i.e. if everybody is attending group work, if group work is done properly, if the tools are maintained properly etc. These people are selected either according to their personal interest or by the given training and gained expertise in i.a. agriculture & leadership, development issues etc.

Coming to **constraints** and therefore to conflicts between group and individual activities. Before listing findings of the identified groups, one definition as well as one example of group dynamics given by a chairperson in Yala has to be mentioned first: "Members are in groups due to expected benefits, they are stubborn and don't participate, they don't comment but complain, but there are also some that are very committed and supportive"; Example: "After introducing the idea of having a tree nursery, some were interested in receiving skills, some others not ... However it's important to work with everybody, i.e. after opposing, giving seedlings free of charge to encourage them. Now they are motivated."

Having in mind the just given illustration of group dynamics, especially on the individual basis of each group member, groups are facing constraints in decision-making, carrying out of activities as well as taking over of responsibility.

Constraints in decision-making are given due to ...

- group members who just listen, but don't want to follow when law is passed,
- long discussions which make it difficult to find a way, especially during work,
- group members who are supportive during discussions, but during work don't come or oppose,
- ideas that are not shared among the whole group.

à But constraints are also not given due to possibility to discuss some of the constraining issues with the group members with the result of having improvements; due to the belief in no penalising to fulfil the objective of the group to improve the situation of the whole community; due to approving the feasibility/ marketability of a specific activity beforehand, e.g. introduction of fast-growing trees.

Constraints in work carried out are given due to ...

- group members low attendance or coming late during meetings and work,
- group members who don't want to pay fine,
- lack of labour during droughts,
- high workload of women, e.g. in lacking adequate water sources & tools, which causes regular delays on group activities with the consequence of having a lack on knowledge & skills that leads to problems in doing the work properly.

à But constraints are also not given due to sufficient capacities; due to introduction of specific working days, respectively a working plan to manage workloads in terms of conflicts between group/ individual work; due to motivation of chairperson to guarantee the same benefits to everybody that is participating; due to not receiving weekly benefits

Constraints in taking over responsibility are given due to ...

- imbalance of group members in their achievements caused by age & sex,
- different characters of group members as well as officials,
- do permanent/ daily follow-up, i.e. monitoring and supervision on work and tools,
- lack of knowledge & skills in order to do work properly,
- problems in follow-up (e.g. attendance),
- lack of understanding, e.g. transfer of responsibility on trees being planted to kids; blaming of responsible person in terms of failure of activity,
- poverty, "people are like birds, look everyday for food".

à *But constraints are also not given* due to expecting benefits, i.e. group members come; due to the exchange of responsible persons, in case he/ she doesn't perform well

Hypothesis 4: Motivation towards tree growing activities is constrained in particular among poor smallholder farmers due to their strong cultural ties, which i.a. don't allow women to plant trees.

Not worked out yet!

Hypothesis 5: In order to carry out tree growing activities successfully in a sustainable manner, smallholder farmers need external start-up support:

External start-up support can have a wide diversity; either by giving **benefits in cash or in kind**, respectively either by giving training or material, or just a mixture of different types of contributions. According to the experience of two groups from Yala, the provision of external start-up support gives them essential knowledge due to their own limited resources. E.g. due to external start-up support the group "learnt something about the real importance of trees ...has now more benefits than in the life with ... crops. The group also didn't know how to grow sweet potatoes ... now production is high." Another example shows the improvement of tree nursery management due to better results, the group "used to prepare soil in the tree nursery like for vegetables, therefore no effective germination took place". These two examples just give a small impression on the change realised through the provision of external start-up support within the groups. In almost all the cases, external start-up support was provided as in kind contributions, i.e. as seeds & seedlings, material like tools, tubes, permanent water sources, food in the 'food for work' approach, which was implemented exclusively in Nyando as well as training & extension. According to the groups especially the latter one – training & extension – brought a 'big change' to the groups in order to initiate activities as well as motivate group members. Objectives have been training & extension on modern farming technologies like planting & management of crops, application of farm-inputs, nursery establishment & management, soil conservation, but also on capacity building like group management & dynamics, leadership, project & finance management, services & credits/ bookkeeping, marketing etc. In some of the cases training & extension was given via funded facilitators or by inviting individual group members for a common 'umbrella' meeting, where 'farming as a business' was introduced via various selected activities. The **link**

between the groups and governmental bodies/ NGOs was partly given in this respect through assistant chiefs or through addressing of each other (cp. also H 9).

External start-up support is mainly seen as direct benefit to the groups, which allows them to have a “better access to resources”. ***Identified changes*** so far have been primarily an increased level of motivation & moral, due by better attendance as well as increased amount of members, also due to be active in mobilising and convincing people through pointing out of benefits. Following this, one example that refers on the mobilisation of young people can be given: “There was no belief in working as a team till the addressing of the ‘governmental enterprise development fund’, then the young people recognised and were convinced that something good is going to happen within the group”. Beyond receiving start-up support means also to have the chance to initiate something, respectively to extend group activities. External start-up support is seen by the groups as assistance for their common as well as individual activities or as defined by one group from Nyando like “a contract for a long-run, i.e. ~ 5 years”. In order to meet the target, i.e. the mission and vision of the groups, this doesn’t have to be necessarily the provision of capital. The preference however is set following the argumentation of a group from Yala mostly on own initiated activities, which “will succeed if there is enough support”, compared to activities initiated from outside.

Constraints due to not having access to external start-up support means a lack of basic infrastructure like tools, seeds & seedlings, farm-inputs, capital, knowledge & skills etc. These general conditions make it difficult to the groups to manage their activities effectively, to generate some income in order to sustain the group, to extend their activities as well as not to loose their motivation. This means as one group mentioned, they “just do their work, but not for the best”. E.g. due to a lack of external start-up support, respectively not receiving appropriate start-up support, two group nurseries failed. One group had no access to certified seeds, water and insecticides; another group received no access to training. However there is a “need to have expert knowledge, to do things right”.

Having an ***assessment of carried out external start-up support*** by the groups, it has to be mentioned that some measures haven’t been thought through properly. An example is the promotion of individual as well as group nurseries, however without having adequate markets, respectively provision of seedlings to the farmers from purchased or self-owned governmental/ NGO nurseries. Further criticism refers on 1) made, however not fulfilled promises by a governmental agency, which led to the failure of an activity and the question of lacking coordination, respectively on 2) the coming of governmental agencies/ NGOs, having meetings, but without doing follow-ups or asking for feed-backs or 3) on bad timing, i.e. distribution of seedlings, training on tree planting, nursery management, provision of tools – “however after planting seedlings dried up due to timing” (in dry season). In this respect the “loss of tree seedlings to the group is also a loss for the project budget”. This leads to decreased level of motivation as well as having the position of “uncertainty of external start-up support”.

ii) Perception of individual smallholder farmers towards climate issues in terms of design, implementation and enforcement of adequate activities,

Hypothesis 6: Focussing climate change and its consequences on conventional land use practices prosperous as well as higher educated smallholder farmers are more eager to have a change in land use practices by enhanced tree growing activities (training & extension):

Not worked out yet!

Hypothesis 7: In terms of enforcing sustainable land use practices by enhancing tree growing activities effective by-laws play an active role pursuing common action:

Hypothesis 8: Establishment of effective by-laws elaborated on a participatory basis by the community will ensure the guarantee of secure carbon stocks for future investors by planted trees:

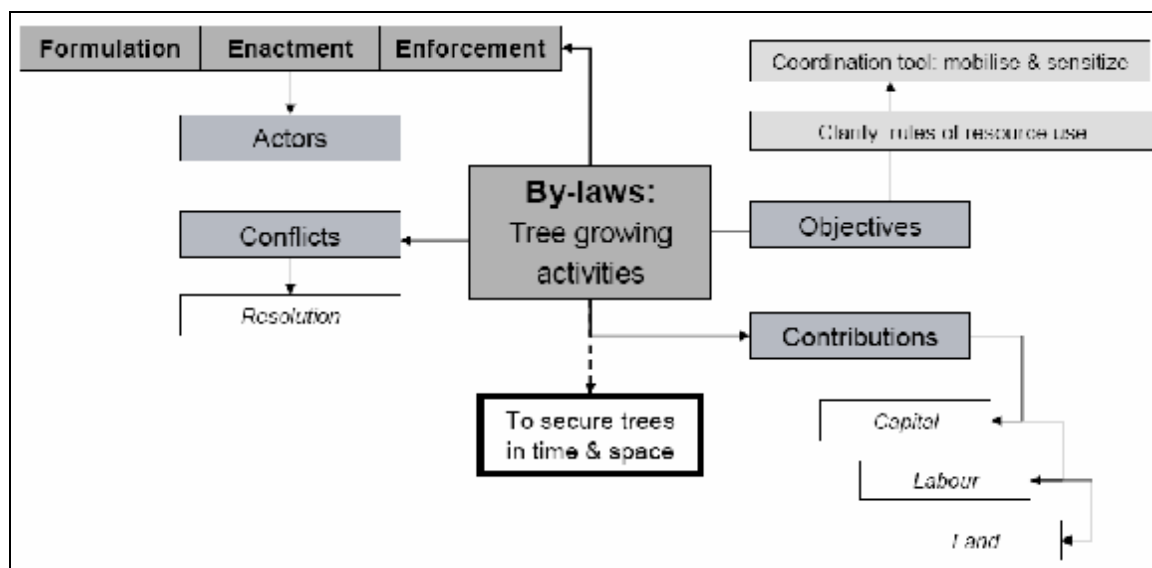


Figure 2: Conceptual by-law framework

To ensure trees in time & space traditionally **customary laws** have been practiced, e.g. big and old trees were prohibited to be cut down due to their importance as dwelling place of gods or as attraction of rains. If somebody was not following, he/ she were punished by a bad omen that could lead to death. In the past land was also kept under communal ownership, i.e. trees were not allowed to cut, but being used for specific purposes like medicine, fencing, fruits by everybody. However beside upcoming 'Christianity and westernization', which caused already a change in thinking, mostly due to upcoming land pressure that caused poverty and an increased need to generate some income by using wood, e.g. to burn charcoal, these customary laws became more and more neglected, which has led to extreme deforestation. In order to introduce a legal base on natural resource management, the government has established own laws, which regulates i.a. the use of trees. Beside these laws, in the course of time, farmer groups have established their own by-laws in order to follow set up objectives. Despite still practising some customary laws in individual cases – like some specific tree species are just used at certain places for certain purposes, or being exclusively planted by men, e.g. some acacia species are just grown

outside the homestead, or euphorbia are just used for fencing the homestead (both not used for firewood) – most of the people focus nowadays either on governmental laws or locally established group by-laws.

In order to have the focus on sustainable land use practices, primarily the **objective of formulated group by-laws** of the targeted groups have to be mentioned. Due to the fact that in Nyando most of the established group by-laws focus on degraded sites, their objectives are adequately directed, compared to those in Yala.

- Rehabilitation of degraded sites by achieving the recovery of the vegetation cover, i.e. stop of soil erosion, sedimentation to Lake Victoria.
- By-laws as guidance to support group mission & vision, i.e. to protect degraded sites, improvement of the local environmental status by preventing soil erosion (run-off of top soil) as well as by planting trees to attract rain, to create income generating activities, to give a good example for individuals as well as future generations (knowledge transfer to individual land, practice the same, however not a must).
- By-laws as guidance and protection of individual property of group members as well as respect towards degraded sites, i.e. by creation of peace within the community – to meet the vision of soil conservation and to govern property.
- Maintenance of dam & avoidance of tree cutting.
- Having a healthy environment, conserve it by having trees, i.e. getting benefits, avoid misuse of trees, create awareness, encourage towards trees in community.
- Avoidance of unnecessary destruction of trees & natural resources (in order to be pioneers in tree growing activities within the community, first just targeting group, then if accepted, transfer to community, to set example for community, create awareness by distributing seedlings, also in order to sensitize as well as mobilise community).

The established by-laws have primarily the target to govern the groups, in order to have a proper way of natural resource management. Therefore the focus is mostly set on group activities, whereas in some groups, also individual activities are included. This is practiced especially if seedlings are given from the group to its members or to community members. In order to get an idea on the form of **written by-laws**, tab. 2 lists all of the mentioned by-laws of targeted groups.

Examples of written by-laws
In fenced area, no animals are allowed to enter & nobody is allowed to pass.
Trees going to be planted on degraded site have to be drought-resistant, e.g. acacia – just used as fencing material, not used as firewood.
Planting of trees that favour conditions (soil/ climate) like acacia.
Focus also on newly introduced tree species from nursery.
Trees that have been planted within degraded sites have to be weeded till competition with other vegetation is overcome.
Trees have to be planted in an appropriate technology like eucalyptus in woodlots/ fodder trees

according to agroforestry practices.
Cultivation of degraded sites is prohibited, including agroforestry (stop of soil erosion).
No cutting of trees before maturity, including permission of group, i.e. if one tree is cut, two-three/ ten others have to be planted (later on also focus bee keeping); maturity is determined by group/ forester.
No cutting of trees for burning charcoal.
Carrying out of appropriate soil conservation measures like contour ploughing, digging terraces, planting of euphorbia, aloe.
Seedlings given to individuals have to be maintained properly, i.e. no grazing if tree is planted/ area is restricted place.
Each member shall at least plant & manage 100 seedlings, i.e. if cut & replace.
After group agreement, proper planting and management of trees in order to practice subsistence, i.e. trees have to be planted/ used whenever there is the need (if resprouting), or in a woodlot and used before the age of 5.
Assessment of trees on a regular basis, i.e. counting/ pest control.
Each member has to know the type of tree and its benefits to educate community members on the importance of trees: trees as an investment, medicinal use, soil fertility, timber, purification of the environment; Members have to accept trees in life/ as a formation of the earth surface.
<i>Each plot shall be surrounded by trees (just discussed).</i>
Dam has to be de-silted by the community.
Watering of livestock, just one group at one time at water-pan.

Table 2: During the survey mentioned by-laws from smallholder groups in Nyando/ Yala

The **formulation of group by-laws** has been done so far in most of the groups in Nyando and Yala on a rather participative process, exclusively without any external assistance. Due to their formulation starting up from 2005, all the by-laws are rather young. In order to show the participative character of the formulated by-laws, several examples are listed below:

- Drafting of a first version by group officials and its committees, being passed to group members for agreement, respectively opened for additional contributions (like benefits from degraded sites have to be shared among the members).
- Calling of a meeting by chairman to discuss and collect contributions, given by all group members. Everything is written down by chairman, afterwards discussion in detail and agreement on final version, i.e. excluding bad ones, keeping good ones.
- Calling of a meeting to discuss openly to be formulated by-laws after giving free contributions from everybody, i.e. raised a point, discussed it freely and decided by voting. Everything has been written down by secretary, passed and finally signed by all group members.
- Drafting of a first version by group committee, being passed to the group, went through and gave comments, agreed on final version (draft after training on 'farming as a business').
- Sitting down of group, saw the need to have by-laws targeting each group activity (just draft), each member had to provide his/her opinion, written down by secretary, discussion, selection of strong arguments, elaboration of draft based on consensus (each member had to participate).

Due to all the groups, there were almost no severe constraints during the formulation process. One group argued that there have to be controversies in order to find a common agreement and to be effective in a long-run. If there would have been conflicts, one group argued, they would have discussed the issue and agreed by voting in terms a consensus couldn't be realised. Another group mentioned that in the formulation process they had a general discussion after each chapter in order to find a consensus, which was passed without any contradiction. A third group added that they had naturally some controversies, but therefore it's "important to pick the useful ones and neglect the bad ones". However due to upcoming controversies in this group, group members who didn't want to abide, just left the group.

Focusing on who has to **follow the by-laws**, an easy principle can be stated first, i.e. all the group members. However in Nyando, due to the focus on degraded sites, beyond by-laws also include non-members that are affected, i.e. that are acting within the location like e.g. grazers/ sand miners. Another exception in some groups targets individuals on their individual land, i.e. if group or community members have received seedlings from the group (or from governmental agencies/ NGOs via the group), then they also have to follow the group by-laws, according to the obligation to manage the given trees properly.

In order to fulfil the bylaws and meet the objective of common group activities each and everybody who is directly affected by the benefits of these by-laws also has to give certain **required contributions**. In general it has to be distinguished between contributions of land, capital and labour. Required contributions of land are not practiced among the targeted groups due to the provision of land on a voluntarily basis, in particular in terms of degraded sites. Against it, contributions of capital and labour have been more regulated in existing by-laws. In terms of capital, depending on the group, required contributions are: registration fees, weekly/ per meeting contributions for certain development targets, contributions for meals, local fundraising as base for a revolving loan fund (i.e. on Fridays each member has to give 50 KSh, from which a part goes to the group, another part to a specific member). In terms of labour, each member has to attend group work as well as group meetings. This differs according to the groups in duration, frequency and activity to be done, e.g. group work twice a week for three hours each or once a week preparing 100 tubes for nursery. A specific regulation is written down in one group in Nyando, where each member who is working on the dam, gets 100 KSh for 6 hours work. Closely related to labour contributions is the taking over of common responsibility, respectively individually by a selected member, e.g. farm-managers, who have to report the groups in times of failure (cp. H 3). Beyond these direct group contributions, also some individual contributions on individual land have to be made by some of the groups. In Nyando in one of the groups each group member has to have an own individual nursery, woodlot, water-pan and kitchen garden. Against it, in Yala in one of the groups each member has to have a long-lasting woodlot, at least 5 years in order to generate seeds as well as income to guarantee continuity within the group (*still in drafting process*).

In terms of **distribution of generated benefits**, some of the groups have defined rules, which mostly mean that benefits stays within the group before decision is made on further use. Exemplified is practice by a group in Nyando, where all benefits generated by own resources or benefits received from external support are transferred primarily to the group.

Then the group itself will decide on the further use, i.e. if kept within the group or distributed among the group members. The idea behind this practice is that benefits either have to help group members directly or have to target further development of group activities. In another group in Nyando, the group committee, i.e. officials as well as eight members sit down, discuss, call for a meeting and finally agree how to share the benefits (e.g. also in terms of benefits gained from trees on degraded sites later on).

Focussing on the enactment and in particular also on the enforcement of by-laws **awareness raising, mobilisation & sensitisation** among the people affected are important in order to have an effective instrument. According to the groups in Nyando and Yala group members are mostly aware through discussions during meetings as well as the implementation process. Against it the community as well as non-members, local governmental bodies like chief and assistant chief are informed via the group members (officials/ clan-elders etc.) in so called 'baraza' (chief's gathering). During these meetings all the mentioned groups received a positive feed-back, both from the community as well as from the local government, which also provided mostly assistance (through assistance chief) in case of some conflicts. Another way is the direct information of affected people (non-members) – e.g. grazers next to degraded sites in Nyando – and local governmental bodies by informal gatherings. Assistance chiefs are due to those gatherings able to address the issue during the next baraza in order to sensitise affected people and the whole community. Another form to inform the community has been practised by one of the groups from Yala that organised a field day in order to inform on common group by-laws ("tree planting day as demonstration day to inform everybody"). During this however the group also identified that it's important to inform on benefits of trees as a major focus before starting to talk on group by-laws, otherwise by-laws are just understood as regulations and not as motivation. Similar patterns of understanding benefits on trees have also been noticed beforehand among community, but also illiterate group members in other areas of Nyando. Due to communication and distribution of seedlings; however they could be sensitised on the benefits of tree growing activities/ agroforestry practices as well as by-laws. Generally spoken in several of the targeted groups in Nyando and Yala group members see themselves as "example & guidance for non-members".

According to the farmer groups in both areas nobody has been **negatively affected** in his/ her way of land management by the established by-laws so far. Exceptions are just some small upcoming controversies. One conflict that arose has addressed grazers & sand miners in Nyando. Due to the mediation by the local assistant chief during a baraza, however it could be solved. Another conflict in Nyando arose due to selfishness of some group members in one of the groups; however it could be solved within the group. According to most of the groups in Nyando, nobody is negatively affected by the by-laws due to the poor conditions of the present soil status on degraded sites in Nyando, no management has been practiced recently and therefore "everybody is aware of the gained benefits due to undertaken measures". Equal is the situation Yala, where due to recently established by-laws nobody no conflicts could be identified. Only point that has to be mentioned is the high pressure in terms of workload, why people who received seedlings have refused so far to weed the planted seedlings, although it's written down in the established by-laws.

The **enforcement of established by-laws** as one of the major element of having sustainable land use practises in Nyando and Yala is partly done by the whole group, by group officials or selected members, respectively by local governmental bodies. In terms of groups the enforcement means that they are commonly in charge of monitoring and observation of the by-laws. In one case in Nyando this means that if there is some kind of infringement, e.g. by grazers, the group has to sit down and discuss the consequences. If the infringement is done on purpose, then the responsible person will be questioned and punished according to the damage. Coming to individual activities which fall under the by-laws in another group in Nyando, the implementation of monitoring is done by going from site to site with the whole group, i.e. visiting all the sites of the individual group members, checking if e.g. tree nurseries, water-pans, woodlots and kitchen gardens are there and maintained properly. If something is not done according to the by-laws, the identified group member gets a warning and if no improvement within two weeks takes place a fine of 50 KSh. If no improvement is done and the fine not paid, the member will be excluded from the group. So far due to a lack in planting trees and watering, five members have been excluded in this group. In terms of group officials or selected members the enforcement means that they are in charge of supervision, in one group assisted by the group committee, in another group divided between chairperson assisted by secretary (in charge of record keeping of attendance) and farm-manager (in charge of carried out activities). If somebody is not fulfilling the agreed contributions like labour or financial support, the chairman or selected group member has to give a record to the group, warn the identified person and finally impose a fine. If the identified person is not fulfilling the agreed contributions for a second time he/she is excluded from the group. Besides paying a fine, another way to impose sanctions is the carrying out of extra hours. In case of one group in Nyando, if also this is not functioning, the identified person has to be consulted by the village elder who tries to sort out the constraint. If also the village elder can't succeed, i.e. group members or somebody out of the community refuses to follow the by-laws – in case of both groups in Nyando and Yala – the assistant chief has to be consulted and decide on appropriate actions. This means that in terms of local governmental bodies, assistant chiefs have to provide support, if there are no other solutions. Additional cases of infringement and consequences are listed in the list below, both from Nyando and Yala:

- If members fail to attend work without send replacement or apologising, respectively don't work properly, they have either to pay a fine of 20/ 50 KSh, depending on the group.
- If members fail to keep common group tools free of damage, they have to replace them.
- If members fail to pay a fine, the respective amount will be reduced from personal group savings (group savings are established within some groups on an annual basis, i.e. paying some amount in the beginning, respectively to get it back at the end of the year in order to have some savings).
- If members fail to take seedlings free of charge from the nursery to plant them on individual land in time, no further provision.
- If members fail to perform properly, like having a woodlot or taking care on planted trees, they are removed from the tree planting section (i.e. each group activity has its own section).
- If members fail to contribute money for meals during group work for three times, no further distribution of food.

In case of having applied measures of enforcement, all groups argued so far that there haven't been any cases of infringement, i.e. due to the motivation of members. Minor exclusions are cases of not attending group work or meetings, but therefore group members paid the required fines without any negative response. According to one group, this means that the "results are fair so far – no constraint, no resistance, everybody is able to follow".

Having the focus on following either **individually established group by-laws** or **local governmental laws** most of the groups in Nyando and Yala mentioned that they just follow the latter ones. Some of these groups argued that they have 'incorporated' those laws due to attending some baraza. However after asking them on concrete laws some of the groups/ group members were not always aware of all. Mostly they knew that pre-mature trees are not allowed to cut, respectively if somebody cuts a tree he/ she has to ask for a permission from the local chief and he/she has to replace the tree being cut. In most of the cases, these regulations are integrated in terms individual by-laws have been established. According to one group from Nyando a good example is the cutting of a tree. If somebody wants to cut a tree he/ she has to inform the chairperson, the chairperson will call for a meeting, the group will sit down and discuss, then give the information to the local governmental body, in order to get a final feed-back. Not in all the groups the procedure works like this. But in all the groups' individual group by-laws go beyond local governmental laws. In Nyando additional regulations are primarily the focus on a concrete area that can't be passed by animals or people, an area that has to be fenced, and where fencing material is not allowed to be used for any other purpose like e.g. firewood. Secondly they focus on the support of group members that have problems in sustaining their livelihood – in terms of temporarily occurring problems – by giving assistance and sharing of benefits. This list can be added by special regulations on ensuring effective development, taking immediate actions, addressing required contributions, selecting species & technologies as well as sharing responsibilities. To simplify, the advantage of having individual group by-laws is that "each and every member knows its rights & duties within the group" as well as "that everybody is giving each other equal maximum respect". According to one of the targeted groups, however not just own by-laws are important, but also governmental laws are useful due to the fact that both give assistance in getting to know something on tree growing activities/ agroforestry practices.

In terms of **effectiveness** most groups argued that there have been no problems so far, mostly due to the short time since their elaboration. According to groups from Nyando and Yala, the revision of established by-laws has to be done after a certain time – "review is a permanent process", "trees are still young, when trees bigger revision of group by-laws", "follow-up after two years". Another two groups already have amended their by-laws. Nowadays group members support each other on fulfilling individual contributions like building of water-pans. Before everybody did his/ her own water-pan. This refers also to the introduction of local fundraising (merry-go-around), which is used to assist individual group members. However one group also mentioned that not all group members have understood the by-laws well, "don't know how to take care of trees, partly also have no interest in tree planting, are not concerned". A similar controversy to this is the discussion on competencies after asking the groups on **identified weak points**. Referring to one group from Yala,

competences are not clear, but in terms of grazing have to be handled due to the interferences with outsiders by local governmental bodies, whereas competences on fencing can be integrated in own established by-laws.

On the question how well established by-laws work in times of **increased land pressure**, the groups in Nyando and Yala answered that “everybody respects the by-laws on the degraded sites” and that by-laws “have to be fulfilled, i.e. trees have to be mature, afforestation has to take place, if there are cuttings, then planting. Other areas are preserved, i.e. trees are there for shade”. However in order to fulfil and support established by-laws, the need of having training was also mentioned.

Asking on **improvements** due to established by-laws, following points have been brought up. Individually established group by-laws ...

- ... stop soil erosion and increase the diversity in the vegetation cover, improve the soil due to controlled grazing outside the degraded area, also due to stop of compaction,
- control sand mining,
- provide enough water, vegetables, an improved environment, beauty in the area and an increased health status,
- have changed the life of the community due to their impact on the water-pan, the group noticed that dam is their dam, not of the government, also people learnt how to plant trees and how to generate benefits,
- avoid due to information the cutting of trees, respectively guarantee a proper management,
- govern the people in order to be unified, to have discipline, also in the community, e.g. the more the community knows about benefits of trees and by-laws, the more it will be stimulated to plant trees, e.g. to keep trees for a certain time; people will follow them, no quarrelling, but peaceful arguing – “if no by-laws, no group, people wouldn’t assist”.

iii) Distribution of benefits gained by tree growing activities/ agroforestry practices in terms of improved livelihood of individual smallholder farmers

Hypothesis 9: Groups already involved in various development activities – on a more or less independent basis – will due to their higher experience in designing and implementing project activities easier carry out carbon projects (and therefore generate a higher outcome to individual farmers):

In order to promote the own development and to be viable, which means not to be ‘suitcase CBO’, as one group in Nyando mentioned, some strategic planning is essential. Therefore the addressing or accessing of external development activities is a central effort for all of the visited farmer groups. However experience and therefore knowledge and skills differ among the groups. Some of the groups haven’t been involved so far in external development activities, against others have addressed or have been addressed by governmental agencies as well as NGOs, either by submitting own proposals or being part of externally submitted

proposals or projects. The latter one is defined as group, being linked via extension officers, governmental bodies or directly via NGOs to existing external development activities. One of the groups in Nyando is working even on a strategic plan in order to access further external development activities and therefore development in the community. The plan itself has been discussed by 30 group members and is based on subordinated common interest groups, including mentioned responsible people. At the beginning the whole strategic plan shall be addressed to a donor by focussing on one common group activity, however later on each common interest group has to discuss the issue on external funding on their own.

Although “it’s easier for a group to write a proposal, to address a NGO and to ask for assistance”, according to a group from Nyando, there are also constraints. **Identified constraints** so far in accessing development activities have been the “way through”, i.e. becoming addressed by or addressing of donors & funds. Identified deficits are lacking information and communication, i.e. lack of proper & direct linkages as well as corruption and bureaucracy. Corruption and bureaucracy means in this respect, having preferences for certain people or regions by neglecting neutrality and transparency.

The problem of “proper communication, accessibility & bureaucracy” in terms of accessing external development activities can be illustrated according to an example of one group in Yala as follows: “due to the late information on provision of funds for group development and no reaction on submitted application, the group couldn’t act successfully. The claim therefore is to have a direct linkage between donor and farmers group – not via the governmental level – in order to reach grassroots effectively, otherwise there is just no information or it’s coming too late.”

Major internal constraint among farmer groups is the lacking **experience in submitting own proposals**. Some of the groups never have submitted one due to lacking information, lacking funds to pay somebody to do it or due to lacking education in terms of knowledge and skills. Again other groups have hired somebody or wrote it by themselves. The result so far is a couple of failed as well as a couple of successfully submitted proposals. The drafting of the so far realised proposals have been done with/ without training depending on the specific group either by group secretary, by skilled members, by a cooperation of members and chairman or members and officials, by all members or by some external expert. Examples for refusing a submitted proposal have been insufficient capabilities in summing up planned activities, deficits in setting up a budget breakdown according to the work plan, not fulfilling the requirements like reaching minimum age, being unable to handle asked corrections as well as follow-up, respectively being misused by ‘experts’ that are in favour of own benefits by using the group titles. In other cases of submitted proposals just no reply have been given by responsible bodies, respectively a follow-up have not been made or been made but without getting to face somebody. Consequence of these deficits and misfortunes are ignorance of some group members of certain groups towards new attempts of drafting proposals, i.e. due to a loss of time, capital and motivation in writing, submitting and doing the following-up. In order to act more properly, however most of groups have seen the need for basic or additional training, also adjusted to the requirements in writing and submitting proposals. This need is supported by a comment of one group in Nyando: “Kenyan society has to focus on proposals to be reliable for donors and funds ... It’s a thing to be necessary”.

Focussing on the **implementation of development activities** in general, most of the groups, especially in Yala mentioned that besides some training and instructions – e.g. in tree nursery establishment & management or tree arrangements – given by governmental agencies/ NGOs in terms “how to do it”, the activities have been carried out without any further assistance. Exclusions have been – in some cases – the assistance of local extension officers, which have come from time to time to give further advice, respectively the financing of an facilitator for a twelve month period, paid by some funds, in order to give supportive assistance in the implementation process. Due to all this assistance most of the groups argued that the implementation of introduced development activities could be arranged without any severe problems. One group also mentioned that even without being part of any external development activity so far, they are able to carry out group activities properly. However due to a lack of capital, another group mentioned, the addressing of bank loans and therefore the proper implementation of development activities would be more difficult. In order to have an effective benefit from external development activities, also a direct link between donors or funds and farmer groups would be useful. One group also mentioned that further training in project and finance management as well as modern agriculture would be necessary.

In terms of **own contributions** for external developing activities, most of the groups declared to provide land and labour – if not rented or hired – whereas almost no capital. Own common financial resources are mostly group registration & membership fees, existing or planned local fundraisings (merry-go-around), returns from selling crops, fruits, seedlings or off-farm products like baskets, robes, respectively providing common group labour. However these resources are rather limited till non-existing depending on the group. In some groups financial contributions being given depend on the volume of individual savings, respectively are stopped due to shortages like famine/ droughts or just not paid by the members (e.g. in case of one group in Nyando, where just ~ 20 of 130 paid the obligatory membership fee). One group also argued that group members don’t attend group meetings due to agreed obligation to give financial contributions. These constraints are also the reason why not all the groups have presently a bank account, which can be partly a problem – besides being registered as a group – in order to be eligible for external development activities. Similarly the handlings of bank loans, most of the groups haven’t considered taking a bank loan due to given restrictions like not having a permanent group income, i.e. not having common savings and therefore a lack of security. Other reasons are problems with land titles, the immaturity of group members or the difficult repayment of commercial bank loans. Others groups just haven’t thought on addressing bank loans, are in the process of discussion or don’t know how and where to address loans, respectively have applied – e.g. governmental youth fund – but not received any reply.

Hypothesis 10: In order to have an improved livelihood in a long run on a larger scale, smallholder farmers prefer the gradually distribution of benefits in kind on a common basis:

By focussing on the distribution of benefits most of the groups in Nyando preferred to receive **benefits in cash**, whereas in Yala most of the groups preferred **in kind benefits**. In terms of in cash vs. both in cash and in kind vs. solely in kind, the ratio for Nyando is 7 : 2 : 1, whereas for Yala it is 2 : 3 : 5. Having in mind that in Nyando half of the groups have been involved in the 'food for work' programme, which provides maize for work carried out on degraded sites, respectively the other half knows about it, the targeted groups argued that in cash benefits would give them more opportunities to invest than benefits in kind. Till now in terms of benefits, the groups have received almost exclusively benefits in kind like maize due to 'food for work', seedlings, material etc. One group argued in this respect that in order to expand common group activities further materials are needed, however which are more difficult to get with benefits in kind than with benefits in cash. The 'food for work' programme is identified therefore like "to sort a problem with a problem", better would be to buy the maize directly due to the improved ratio – beside some material – on their own. In cash benefits are more appropriate to sort out existing problems due to better supply and quality. Beyond benefits in cash are also better for own planning, i.e. not just distribution of benefits, but also promoting further activities like e.g. buying a generator for applying a water pump, hiring labour or getting some additional manure. Cash compared to in kind benefits means according to one group to have "own resources to buy something in order to diversify activities and to have a higher transparency". In terms of higher transparency various groups argued that due to direct transfers of benefits in cash going to the bank accounts of groups, the risk of corruption by donors or project coordinators is reduced compared to receiving benefits in kind. According to some groups not all benefits in kind reach the ground. In Nyando just one group favoured in kind benefits, however in an appropriate way, i.e. after consultation the groups on their present needs. According to this group, benefits in cash promote laziness ("by working you are not idle") and hold the risk to loose the focus on the activity that have been agreed beforehand. Having this in mind, some of the groups argued to have the focus on both, one part as benefits in kind, the other part as benefits in cash, depending on the present needs.

Compared to the described situation in Nyando, farmer groups in Yala are more divers in their attitude towards the distribution of benefits as already mentioned. They see more the pro & cons of both. Distribution of benefits in cash means to have more freedom as well as responsibility, e.g. in order to initiate something, make a decision, buy or hire something/somebody specific, work with a plan, but also to have the risk that people become crazy, don't concentrate, discuss a lot what to do, change their plans, don't use capital properly or in a short time, become corrupt and bureaucratic. Whereas distribution of benefits in kind means to get training & extension in order to use resources properly, to avoid misuses and the changing of ideas, to receive material in time, to ensure that the project proceeds & succeeds, but also to get material in bad quality, not suitable, without care. Adding to this, some of the groups in Yala argued that in terms of receiving benefits in kind, the giving of training & extension is necessary in order to have an efficient use of resources, which means to be able to manage work & material properly. According to one group, "if training &

extension is given as part of the benefits, then the other part can be given in cash, due to ability to plan and organise on their own, without having a break-down of work due to laziness”.

Coming to the point if **benefits** should be **given to individuals or to groups** in terms of improved livelihood, both areas groups agreed to concentrate on giving benefits to groups, without any exception.

	Benefits bit by bit	... in advance	... at the end
Advantages	<ul style="list-style-type: none"> There is something to start/ initiate Keep motivation on a daily basis Meet existing constraints Enough time to prepare Getting experience gradually Progress is visualized, i.e. group members see what is going on and plan well Group members have moral to work harder Work continues Group members experience project development Enough time to assess the project development, easy to do follow-up for donors (do proper evaluation and figure out what is needed & activities develop well) Keeping group members active No hectic management & bad assessment 	<ul style="list-style-type: none"> Motivation & confidence from the beginning Push for group activities Group members are able to plan on their own, i.e. buy things that are needed Effective planning due to transfer of benefits on bank account and gradually use when needed 	
Disadvantages	<ul style="list-style-type: none"> Planning more difficult Development of project can be faster than working plan – process slows down till risk of break-down 	<ul style="list-style-type: none"> Due to reluctance of benefits, esp. capital, risk of corruption, i.e. decrease of motivation/ leaving of group Capital changes human thinking/ plans Participation of people that are not really interested After receiving benefits performance goes down Risk of failure high Transfer of benefits that are used later on 	<ul style="list-style-type: none"> Project won't succeed, new project will be needed

Table 2: Pro & cons of different timing strategies in terms of distribution of benefits

However the argumentation has been divers, too. It starts from better distribution towards the needs of members, better identification of individual needs, more transparency & equity till development of future activities. One group in Nyando even established a by-law focussing on the common distribution of benefits in favour of widows, children and poor members. Similar the focus of one group in Yala, which argued that people have indeed different ideas, which makes it difficult to agree in terms of improved livelihood, however by focussing on

group, it's easier to mobilise and management own resources. Further if benefits are kept in the group, it's possible to use them for determined activities within the group – whereas as individual it's easy to change – in “a good way on a project without changing of mind”. This has to be practiced till everybody has enough experience, “otherwise it's waste of support”. Further advantage of benefits given to groups is that everybody is involved in the decision-making and that everybody will receive something, even with a transfer to the community (“whereas individuals are tight”).

In terms of distribution of benefits **focussing on timing**, most of the groups in Nyando have favoured bit by bit – partly in three portions: at the beginning, in the middle, at the end – due to keeping the motivation on a daily basis and meeting existing constraints, also in order to “maintain the group in a long-run”. Focussing on the situation in Yala, the perception is more divers. One group also argued that bit by bit benefits are more preferable due to getting experience gradually, which can be compared with the “building of a house, you have to dig first a hole, then put the ground floor, afterwards the ceiling, at the end the roof, not the other way round, i.e. beginning with small support, then go on gradually”. However other opinions go more in the direction of benefits in advance, in order to do proper planning on an independent basis and therefore to have the motivation and confidence within the group. In order to get a clearer idea on different timing strategies for the distribution of benefits, respective pro and cons are brought up in tab. 3.

Summing up the distribution of benefits by one group, the pursuing of strict supervision/ follow-up is of major importance in order to guarantee a proper use of benefits. Not favoured at all in this respect is the provision of benefits at the end of a project due to the lack of motivation to do something and therefore the risk of failure.

In tab. 4/5 below basic needs for improved livelihood as well as for enhanced tree growing are listed according to the results of the survey. Due to the addition later on, basic needs for enhanced tree growing are only generated in Yala.

Basic needs for improved livelihood in Nyando	... in Yala (according to groups)
Food 9	IGA/ small enterprise (e.g. dairy cattle, poultry, fruit processing machine) 5
Housing 8	Permanent water source (clean water) 5
Clothing 7	Health facilities (health centre: focus on HIV/Aids) 5
Seeds/ seedlings 4	Food 4
Education 3	Transport to reach markets (including road infrastructure) 4
Health 2	Extension & Training (e.g. modern farming methods, marketing, development) 3
Livestock 2	Housing 2
Oxygen	Seeds/ seedlings (i.a. certified) 2
Permanent water source	Capital (hire labour) 2
IGA/ small enterprise	Fertilizer (organic & anorganic)
Material	Clothing
Capital	Sport facilities for youth, Schools

Table 4: Basic needs for an improved livelihood in Nyando and Yala

Basic needs for enhanced tree growing in Yala
Seeds, seedlings 8
Permanent water-source: borehole/ pipes/ tank 7
Material (i.a. tools, wheel-barrows, generator, tubes) 7
Insecticides 6
Fertilizer (organic & anorganic) 6
Training (i.a. information campaign to mobilise community) 3
Capital (hire labour due to i.a. widows/ old) 3
Security in terms of fencing 3
Planting tubes 2
Land
Transport to reach markets

Table 5: Basic needs for enhanced tree growing exclusively in Yala

D. Discussion

Coming to the question what are key institutions in order to integrate smallholder farmers in Western Kenya in international CO₂-markets and if those are given, the following discussion will be divided in three parts according to the focus set in the objectives of this paper: i) Mobilisation & empowerment of individual smallholder farmers for tree growing activities/ agroforestry practices, ii) perception of individual smallholder farmers towards climate issues in terms of design, implementation and enforcement of adequate activities, iii) as well as distribution of benefits gained by tree growing activities/ agroforestry practices in terms of improved livelihood of individual smallholder farmers.

Among most of the targeted farmer groups in Nyando and Yala basic institutional arrangements of mobilisation & empowerment for tree growing activities/ agroforestry practices are given. The only difference is the extent of those key institutions. Starting with a fundamental institutional arrangement in terms of enhanced tree growing activities/ agroforestry practices and therefore targeting international CO₂-markets, the availability of land, labour and capital has to be mention. In terms of land, due to the longevity of trees compared to crops, most of the groups argued that tree growing is exclusively individual activity, whereas tree nursery establishment and management as well as training and extension is done as a group. Decisive for this is the limited access towards resources like land, but the improved access to resources like training & extension. Groups have to be seen therefore as multipliers that transfer knowledge and skills towards individual smallholder farmers, but also towards community members. Therefore long-lasting group activities are of major importance in order to mobilise and empower smallholder farmers for tree growing activities/ agroforestry practices in terms of international CO₂-markets. In this respect – also having in mind labour and capital – major key institutions are well structured training & extension, but also well structured farmer groups, i.e. having well defined group compositions as well as group processes. In terms of international CO₂-markets, training and extension as well as group composition and processes have to be arranged therefore properly. In order to

guarantee this, external start-up support will be of major importance, always depending on the knowledge and skills of a group.

Focussing on the perception of smallholder farmers towards climate issues in terms of implementation and enforcement of adequate activities, the role of established by-laws will be emphasized in this discussion. Practically due to the non-existence of customary laws among most of the groups in Nyando and Yala nowadays, written by-laws – established on a participatory basis – as some kind of legal framework seem to be essential in order to guide smallholder farmers. However due to the short existence and low coverage among the groups in Nyando and Yala, it's rather difficult to give a clear assessment on their effectiveness. Most of the by-laws that have been analysed within the small case study give the impression to be thought through and well communicated within and beyond the group, especially in terms of established by-laws having the focus on degraded sites in Nyando. May be due to the lack of this clear focus, others seem to be still on the way in terms of proper formulation, or practically don't exist in terms of enforcement. However in order to have a sustainable way of land use practices and be reliable for international CO₂-markets – like targeting grazing, soil conservation or tree management issues – farmer groups that have effective by-laws will benefit in a long-run compared to farmer groups that don't have effective by-laws, respectively don't have by-laws at all. Risks are a failure in tree growing activities/ agroforestry practices, respectively conflicts in distribution of benefits. Also a gradual revision of by-laws as mentioned by the groups is recommendable in order to act properly and be accessible for international CO₂-markets.

This way of thinking and acting requires a certain extent of knowledge and skills, primarily in designing and implementing developing activities. In terms of institutional arrangements and the integration of smallholder farmers, the approaching of donors and funds and therefore of external developing activities are of major importance. Knowledge and skills in proposal writing as well as a good system of networking has to be emphasised in this respect. According to the current situation in Nyando and Yala these experiences are partly not given/ partly given. As a consequence this means that existing deficits have to be targeted seriously, respectively good starting points have to be extended properly and more 'professionalized' by additional training & extension. If once smallholder farmers are integrated in international CO₂-markets, also the question on distribution of benefits has to be targeted. In order to have successfully tree growing activities/ agroforestry practices and therefore also well functioning international CO₂-markets benefits should be given to groups either in advance or on a gradually basis, respectively either as benefits in kind or benefits in cash depending always on the 'maturity' of the group. Therefore the mobilisation and empowerment of farmer groups is important also in terms of distribution of benefits. If benefits are not managed properly, the success of an activity is rather questionable.

Generally spoken the integration of smallholder farmers in international CO₂-markets in Western Kenya is due to the existing of basic local level institutional arrangements possible, whereas a further focus has to be set in terms of capacity building, i.e. giving training depending on existing deficits in order to mobilise and empower farmer groups and therefore

by farmer-to-farmer training and extension also individual smallholders as well as communities.

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Annex 1:
Basic information on targeted groups from Yala

Found	Group size	Female / male	Age	Officials	Education		Wealth		Common work	Meetings	Attendance	Activities
					Secondary & more	Primary & less	Permanent	Semi-permanent			Female/Male	
03/2006	15	8/7	15-30	chairman present	5	10		15; mostly thatched	Group work is based on agreed activities	Every two weeks, exchange ideas, contribute money in order to implement ideas	2/6	on rented land, grow tomatoes & vegetables to sell them, sweet potatoes; tree nursery (lack of markets to sell seedlings, i.e. planting)
12/2004	25	13/12	25-56 (30-35)	chairman, vice-chairlady, secretary (f.) + assistant-secretary (f.), organising secretary (f.), treasurer (m.), village elder (m.) present	4	21		25; 3 iron-sheets, rest thatched	1 time for 4 hours (Th)	Every two weeks	6/10	crop farming & tree nursery in the group (planting on individual land)
03/2000	19	6/13	19-60 (19-35)	chairperson (?), secretary (m.), treasurer (f.) present	8	11		19; equally iron-sheet & thatched	1 time for 4 hours (Tu), if more work, fix other day	Every Sunday	3/11	vegetable growing, tomatoes, bananas, fodder, pineapple, passion-fruits, tree nursery & planting
11/2005	16	9/7	19-46 (20-35)	chairman, secretary (m.), farm-manager (m.) present	1	15		16; some iron-sheet, but mostly thatched	1 time for 2 hours (Fr)	Twice a month	5/7	banana, pow-pow, ground-nut, mango, maize, fodder grass (napia grass), avocado, passion-fruit, pineapple, tree nursery (fruit & other tree seedlings), herbal trees to treat malaria vs. tree planting in woodlots as individuals
11/2005	30	10/20	15-35 (20-35)	chairman, treasurer (f.), farm-manager (m.) present	5	25		30; mostly thatched	2 times for each 6 hours (Th+Su; not all, some go to school)	Twice a month	2/14	maize, banana plantation, mango & pineapple, HIV/ Aids awareness rising among the youth; had tree nursery, however failed

04/2004	17	14/3	22-57 (30-50)	chairlady, assistant- chairlady, secretary (f.), treasurer (f.), school representative (m.) present	4	13	2	15; mostly thatched	2 times in case there is work for 5,5 hours (Tu+Fr)	Twice a month	10/2	on rented land: dairy goat keeping, growing crops like maize & sorghum + fruits: bananas, pineapples, mangos; plan to initiate tree nursery, so far just some individual members have planted trees
06/2002	> 30	20/10	25-70 (30-60)	chairlady present	20 & some more	rest?	2	28; 8 iron- sheet & 20 thatched	1 time for 3 hours (Tu)	Twice a month (1st+3rd Th; during farmer- field-school every week)	15/5	main IGA: selling of ground- nuts, maize, local poultry, seedlings (just a few, however no proceeding due to a lack of water; tree nursery began with Moringa & Casurina)
06/2005	15	15/0	19-42 (30-39)	vice-chairlady, secretary and auditor present		15		15; 6 iron- sheet & 9 thatched	1 time for 6 hours (Wed)	Every Sunday	9/0	Maize, beans, ground-nut crop farming, local sheep rearing; had a tree nursery, however didn't proceed, tree planting as individual activity
09/2000	30 either widows or 19 are HIV positive	27/3	25-45 (30-45)	chairlady, assistant chairlady, secretary (f.) present	9	20 & 1	1	29; 3 iron- sheet & 26 thatched	1 time for 2 hours (Wed), one hour field, on off-farm (sisal & basket weaving)	Once a week for 5 hours to discuss many issues, i.a. singing, drama ... (Wed)	20/5	vegetables like skuma, maize, tomatoes; keeping poultry & local goats; tree planting & tree nursery; pineapples, passion fruits; off-farm basket & sisal weaving, broom production; soil conservation measures like digging terraces; song & drama to educate/ create HIV/ Aids awareness; facilitate formation of other groups; support of orphans & widows
09/2006	15	5/10	15-40 (18-35)	chairman, assistant chairman, founder chairman, secretary, group organiser present (all m.)	2 & 1	12		15; one iron- sheet, 14 thatched	every day for 3 hours, however not everybody attends every day	Twice a month, arrange how to work	0/11	Tree nursery, crop farming like sweet potatoes & maize

Basic information on targeted groups from Nyando

Found	Members	Female / Male	Age range	Officials	Education		Wealth		Common work	Meetings	Attendance	Activities
					Secondary & more	Primary & less	Permanent	Semi-permanent			Female/Male	
06/2005	20	16/4	24-50	chairlady, secretary (m.), contact lady (not present)	3-4	16-17 & ?	1	19; Increasing amount of iron-sheet roofs	2 times for each 1 hour (Mo+Fr)	After work 2 times a week	12/3	Environmental rehabilitation of degraded areas; planting of trees in the group, water harvesting, help each other in cultivating land with crops, digging dams & weirs
01/2007	27	20/7	20-38	chairlady, vice-secretary (m.) present	7	20		27; mostly thatched	2 times for each 1 hour (Mo+Fr)	Every Sunday	18/2	Environmental rehabilitation of degraded areas; planting trees, fencing isolated areas, building contour lines on degraded sites, building dams/ weirs to water plants; basket weaving, merry-go-around
06/2006	36	26/10	22-71 (25-45)	chairman, assistant chairlady = secretary, treasurer (f.), vice-treasurer (m.) present	4 & 2	30 & ?		36; mostly thatched	2 times for 4+1,5 hours (Mo+Fr)	Once a month	23/5	Environmental rehabilitation of degraded areas; building of contours like applying of aloe as well as checking of dam & weirs
04/2005	15	10/5	18-75 (equal distribution)	chairman, vice-chairman, secretary (m.), treasurer (f.) present	1 & 2	8-10 & 2-4	1	14; mostly thatched	2 times for each 2 hours (Mo+Th)	Once a month + if there is need	10/3	Environmental rehabilitation of degraded areas; Controlling of soil conservation, tree nursery, planting some trees along gully, terraces, making fallows, building of dams, vegetable garden
04/2004	22	17/5	22-50 (35-40)	Chairman, coordinator (f.), keyholder (m.), secretary (f.), treasurer (f. not present)	10 & 4	8-0	4	18; 10 thatched	2 times for each 2 hours (Tu+Sa)	Every Saturday	10/2	Environmental rehabilitation of degraded areas, tree growing; Off-farm activities in a group handicrafts like basket weaving, dairy goats, poultry rearing with local breeds, savings

06/2004	80	30/50	25-65 (35-40)	Farmer secretary (f.), committee 4 times (2 f./ 2 m.), one f. eldest of group, secretary (f.) present	20 & 2	48 & 10		80; mostly iron-sheet	2 times for each 3 hours (Mo+We)	Every Friday	8/4	Building dam/ planting contours with aloe, planting trees within degraded sites, handicraft like basket & sisal weaving
11/2003 (start of activities 2002)	20, also divided in sub-groups in their individual communities	8/12	33-55 (40-45)	Founder chairman, treasurer (f.), vice-secretary/ coordinator crop production (m.), coordinator environmental issues (m.) present	8	12		20; both iron-sheet & thatched	1 time for 4 hours (Th)	Once a month + if there is need	1/4	Environmental rehabilitation of degraded areas, i.a. tree planting; nursery, farmer-field-schools, ..., basket weaving, ...
11/2006	143 covering 4 villages	88/55	18-70 (18-45)	chairman, secretary (m.) present		Mostly, just few beyond & ?		143; mostly thatched	no fixed days, e.g. during drought no common work, rainy season start again	Once a month	13/13	main activity is desilting of dam
04/2005	130	60/70	18-70 (25-40)	chairman, vice-chairman, secretary (m.), treasurer (m.), clan elder (m.), committee member (f.) present	50 & 1	30-0 & ?	3	127; mostly iron-sheet	1 time for 3 hours (Tu) attended by 80-90 members (sign that attended)	Twice a month & in case of emergency	13/13	5 sub-groups: tree nursery, water, terraces, planting, clearing, i.e. tree planting, soil conservation like dam control, cutting of drainages, digging terraces
05/2006	35	22/13	20-70 (40-60)	chairman, secretary (m.), assistant secretary (m.), eldest (f.) present, in total 13 committee members	Some	mostly	1-2	18-19; mostly thatched	2 times 2-3 hours (Tu+Th) + daily watering	Once a month	15/5	Environmental rehabilitation of degraded areas; tree nursery, conserving water catchment, horticulture like onions, spinach

