Evaluation Report Greening Africa 1

Evaluation Mission Report elaborated by:

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Executive Summary

Land degradation is threatening livelihoods and heightens poverty levels, particularly in arid and semi-arid areas. Whilst there are biophysical factors leading to the degradation of landscapes, anthropogenic actions often catalyse the process. Greening Africa, through using the Pachamama Raymi (PMR) methodology from Peru, intends to improve the living conditions of the poorest people in the Babati District of Tanzania, by working on ecological reclamation, preventive health measures and economic recovery. This evaluation of the Greening Africa project focused on the first phase of the project: GA 1. We used Focus Group Discussions and a quick survey tool among 124 farmers in Sarame and Vilima Vitatu Village to evaluate the results achieved.

This evaluation found that GA has been able to generate considerable change in the area, and that people are now better skilled and aware about the importance to invest their household. The PMR approach evidently works in Tanzania, because the approach stimulates people to invest in their well-being, improve their homesteads and start working towards ecological restoration. The main instrument of the project, the competitions, are very much appreciated by the population, and the prizes that can be gained stimulate their participation. All people know and talk about PMR and the importance of planting trees, and the project is very much appreciated by farmers and local authorities. However, we think that with some modifications in the strategy, GA can further enhance – together with local stakeholders – its sustainable impact and lasting change.

We have therefore formulated the following recommendations:

1. Reconsider the project strategy concerning the use of prizes in the competitions;
2. Pay more attention to bottom-up planning with farmers about opportunities;
3. Give more emphasis on the integrated management of the commons;
4. Foster collaboration, also in the competitions, e.g. by means of farmer groups;
5. Do more on impact assessment and understanding the changes in the area;
6. Document the achievements by households in a more structured way;
7. Pay more attention to (rain) water harvesting and water conservation methods;
8. Discuss (and design) the intervention strategy with the stakeholders;
9. Review and make explicit how the competitions work, for staff and for farmers;
10. Start with tailor-made competitions, for specific groups, enhancing participation;
11. Work more closely with institutional stakeholders to enhance their collaboration;
12. Quantify the changes in vegetation cover with Remote Sensing;
13. Do a due diligence on the introduction of tree species in the area;
14. Make a training plan with the staff, and build capacities of staff first (judges);
15. Define a clear exit-strategy, which is understood by all stakeholders (bottom-up);
16. Reinforce and continue with activities of GA1 to bring the evidence that PMR works.

Our conclusion is that the project should continue and even intensify its intervention in the existing villages (GA 1 & 2) with a truly integrated approach, embracing topics and areas that till date have hardly been addressed, such as the management of the commons and the regreening of such areas. The PMR approach has the potential to be a game-changer in Tanzania, but it is crucial to reflect on the past years and seriously discuss the issues mentioned in our recommendations, to make the approach even more bottom-up, integrated and effective. Greening Africa has taken the first crucial steps in planting prosperity, but now is the moment to reflect and discuss on what has been achieved, and decide on the best way forward, both in the existing villages, as well as in an expansion phase in other villages, based on the valuable foundation of the PMR approach.

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Acronyms

GA - Greening Africa
PMR - Pachamama Raymi Methodology
FGD - Farmer Group Discussions
WMA - Wildlife Management Authority

1. Introduction

Land degradation can be defined as the loss in ecological functions of the land over a period of time (Bai *et al.*, 2008). This loss mostly refers to the ability of the land to produce food without addition of external inputs and amendments, as is the case of smallholder farmers. Land degradation is manifested in different forms (i.e. compaction, destruction of soil structure, decline in soil fertility, heavily eroded top soils) and often worse in arid and semi-arid environments (Hueso-González et al., 2017), where often long dry periods are followed by sporadic rainfall catalysing the land degradation process. This loss of ecological functions cannot be attributed to one factor but is always a combination of biophysical and socio-economic factors (Stocking and Murnaghan, 2001; Bai et al., 2008; Kiunsi and Meadows, 2006), and often linked to poverty as land becomes unproductive to produce food.

In order to restore degraded landscapes to their former state in which there was a balance between human and nature (i.e. sustainable use of the natural resources), urgent action is required, especially in how mankind manages the landscape. There are various approaches to the restoration of degraded landscapes. This may include for example improving the soil physical and chemical properties via various methods like increasing soil organic matter content, or measures focused on soil and water conservation measures. But even more important for land restoration interventions is how to motivate users to change their current management practices and assure good land stewardship. This needs to be part of the implementation strategy. Through the years these approaches have evolved from top-down to bottom-up, which also falls within participatory approaches (Khadka and Vacik, 2012). Top-down involves the trickling down of opinions from experts, whilst bottom-up approaches involve incorporating expert opinion guided by the users of the intervention. Participatory approaches in development are people centred approaches, which means that the person is at the forefront of decision making. There are two major reasons as to why participatory approaches would be suitable in development projects: as a tool for empowerment and equity, and secondly as a means to ensure greater project outcomes (Cleaver, 1999). At the forefront of participatory approaches is learning from each other, and the use of indigenous knowledge to motivate farmers to participate.

Pachamama Raymi, a non-profit organisation with its roots in Peru, understands this link and as such has established a philosophy that seeks remediation. The organisation started operations in 2006 and was formerly established in 2008. It implemented poverty eradication projects in 210 villages, based on the Pachamama Raymi philosophy, which in simple terms refers to “planting prosperity”. This is done via four main principles: Peer learning, Clear and demanding goals, Motivation, and Monitoring & Evaluation. The Pachamama Raymi methodology looks at reinforcing cultural identities within communities through competitions on adoption of natural resource management and community health practices, and now aims to exchange their knowledge and experience to the Manyara region in the North East of Tanzania via the Greening Africa (GA) project and in the process foster learning.

Wageningen Environmental Research (WENR) was commissioned to evaluate the results and adoption of the Pachamama Raymi (PMR) methodology amongst the farmers in the Manyara Region in September 2018. As starting-point, this evaluation considered important to take into account the several challenges that were identified as potential impediments by GA during the GA project formulation. These include among others a huge cultural diversity, human-wildlife conflict, adapting the approach to Tanzania’s context, lack of water for households, predominant vertisols.

This report will focus on Greening Africa project 1, executed in Vilima Vitatu and Sarame Villages. The evaluation method involved the use of appraisal methods with an initial review of GA project documents, including the project formulation document and periodical project reports. This was coupled with farmer Focus Group Discussions (FGDs), stakeholder engagements, individual interviews and finally a farmer survey. The aim was to investigate the impact of the PMR methodology in the villages of Vilima Vitatu and Sarame under Greening Africa Project 1 (GA1), and to ascertain whether GA has achieved the objectives set out in their project formulation document for Greening Africa 1 (GA1).

This evaluation narrows down to the household level and does not look in-depth to the various environmental constraints that may be associated with the adoption of the technologies. Neither does it use specific benchmarks or baseline data as reference to what was practiced (usually) in the area, although of course this evaluation will shed light on what was achieved as compared to the initial (before GA) situation. However, our analysis will mainly focus on the specific set of objectives set by GA at the start of the project, and additionally other areas and issues of interest will be highlighted.

Delineation of the Study Area

The delineation will start from a larger scale view and will narrow down to the project site. This will help to put into perspective the 'issue' that Greening Africa aims to assess. Africa south of the equator carries the highest percentage of degraded land, with 13% of global degradation. Tanzania has a total land size of 954,000 km^2 with a population of 60 million people. According to the global land assessment on land degradation and improvement (Figure 1) 386,000 km^2 of the land is degraded and about 15 million people are affected by land degradation in Tanzania. This means that about 25% of the total population is affected by land degradation and this covers about 40% of the total land size.

Country	Degrading area (km^2)	% Territory	% global degrading area	Total NPP Loss (tonne C/23yr)	% total population	Affected people
Somalia	52520	8.24	0.149	1834048	14.77	1544921
South Africa	351555	28.82	1.124	23123364	38.14	17041101
Spain	63266	12.53	0.231	1712506	6.41	2417996
Sri Lanka	21057	32.09	0.060	634813	25.62	4788637
Sudan	166031	6.63	0.480	3627514	9.43	3280414
Suriname	50503	30.93	0.125	2102420	10.13	38529
Swaziland	16533	95.22	0.051	1226857	98.77	947510
Sweden	78964	17.55	0.475	1594303	10.37	841284
Switzerland	4982	12.07	0.020	106619	6.81	484619
Syria	11327	6.12	0.039	224233	6.71	1243265
Tajikistan	8412	5.88	0.030	104021	2.39	151676
Tanzania, United Republic of	386256	40.87	1.081	22603896	39.48	15300003

Figure 1*: Global Assessment on land degradation and improvement Source:* (Bai *et al.*, 2008)

To narrow it down further to the project sites, Figure 2 on the next page shows the land degradation and aridity indexes for Manyara region where GA1 (Magugu) is located. We show these figures to highlight the challenging conditions under which GA works in this area: an area prone to land degradation and where due to its semi-arid environment restoration and greening of the land is a huge challenge. According to Figure 2, Manyara Region has mostly an aridity index between 0.2-

0.5. The aridity index refers to the level of stress the plants can be in, and is based on temperature and precipitation. This means that within this region potential evapotranspiration is two to five times higher than precipitation and the area is therefore classified as semi-arid. The land degradation is mostly classified as medium, where with the current management practices (cultivation of annual food crops and grazing) the region is greatly predisposed to land degradation.

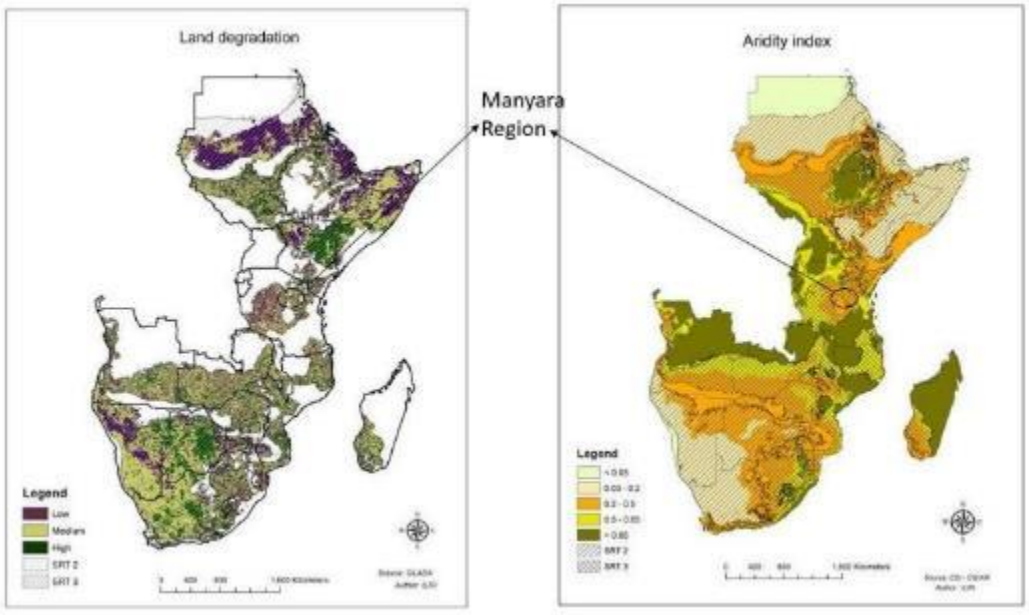

***Figure 2**: Aridity Index and Land Degradation for South-East Africa Source: (Geoagro.icarda.org, 2019)*

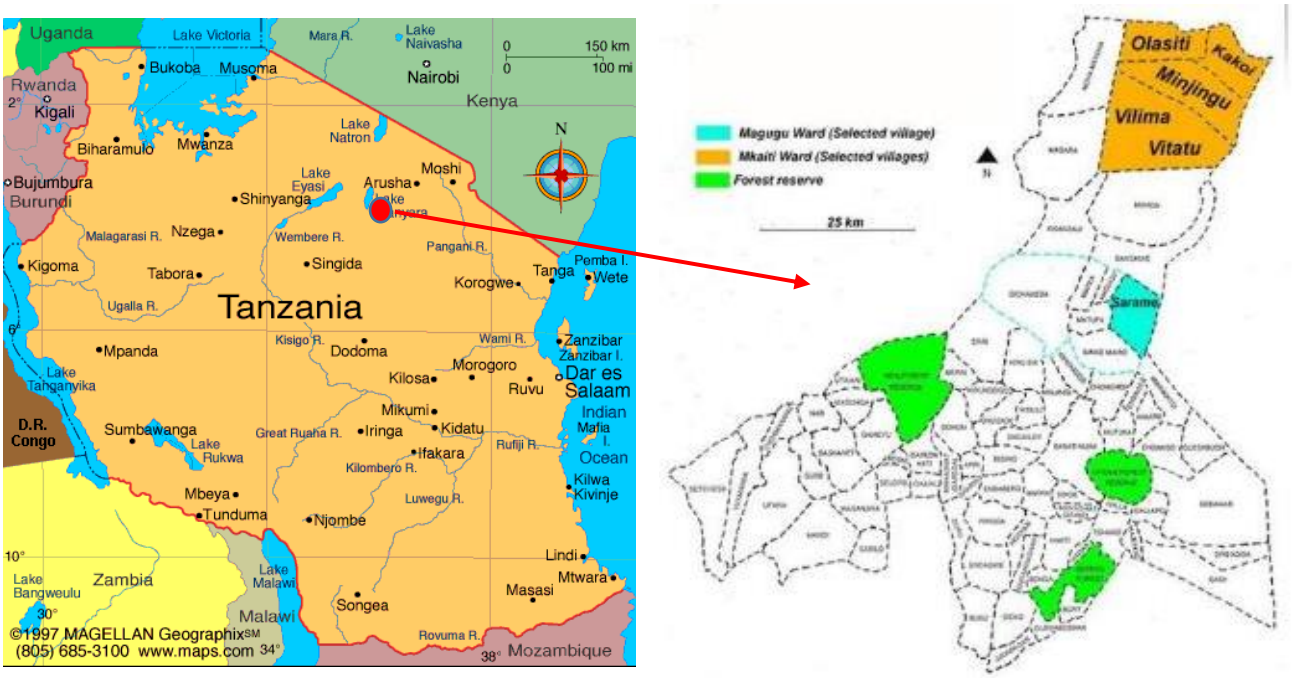

***Figure 3**: GA project location within Tanzania (red dot)*

The Greening Africa project is situated in Magugu within the Manyara region of Northern Tanzania (Figure 3), located between latitudes 3° and 4° South and the longitude 35° and 36° East. The project boundaries are within two wards i.e. Magugu and Nkaiti Ward in the district of Babati. Magugu Ward has Sarame village whilst Nkaiti Ward has Olasiti, Kakoi, Minjingu and Vilima Vitatu Ward. For the purposes of this evaluation the focus will be on GA1: Sarame and Vilima Vitatu villages. Sarame has 5 sub-villages whilst Vilima Vitatu has 6 sub-villages.

The landscape is characterized by undulating hills, plains and mountains, with soils being sandy loam to clay alluvial. The rainfall is spatially varied with 500mm/yr. in the lowlands and 1200mm/yr. in the highlands. Specific rainfall information and temperature are indicated in Figures 4 & 5.

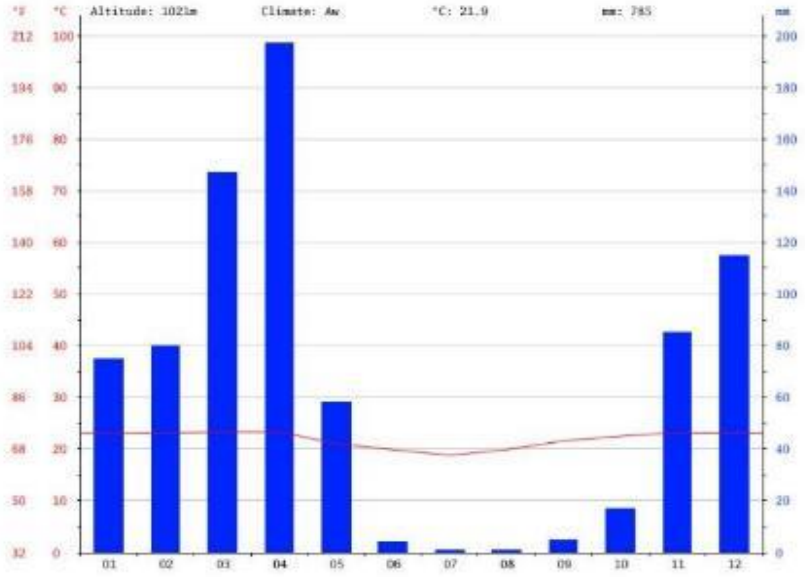

***Figure 4**: Rainfall and temperature distribution for one year for Magugu.*

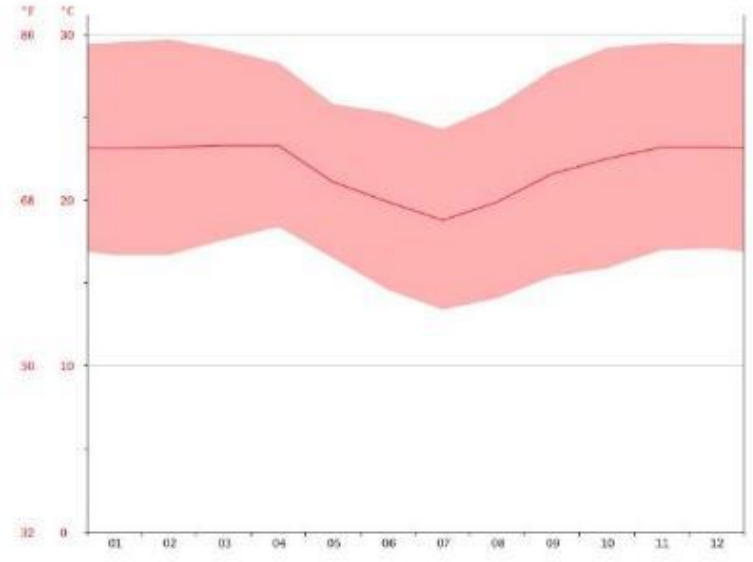

***Figure 5**: Temperatures ranges for Magugu for 12 months*

Based on their success in Peru with the PMR methodology, especially in the achievement of high adoption rates, Greening Africa set out to achieve the same success in Tanzania. Two main objectives were formulated during the project formulation phase, guiding the project activities:

- To improve the living conditions of extremely poor families in two villages in the District of Babati in Tanzania, achieving the adoption by a majority of the population of innovations in natural resource management, alternative economic activities and preventive health care within four years.
- To adapt and test the Pachamama Raymi methodology in Tanzania to learn if and how it can be used in Africa.

The Pachamama Raymi methodology focuses on the utilization/participation of the community in their activities, which is further explained in the organizational structure below, as well as how GA intends to achieve this.

Organizational Structure and Operations

The organisational structure (Figure 6) described here consists of the field implementation structure, devoid of administration structure within the organisation. It is categorised into direct Greening Africa staff and indirect staff in the form of members selected from the community. The director of GA is the general overseer, and, in this case, as a benefit to the project the exchange farmer from Peru (expert in PMR) holds this position, and works on the general technical aspects. The director is assisted by the project manager who is an external trained professional. Within the two villages (Sarame and Vilima Vitatu) there are village co-ordinators, who are staff members of GA but recruited among the community members and trained in the methodology. They help to co-ordinate the activities of the organisation, assisted by field facilitators who are also selected from within the community. Ideally, they should be within each sub-village, depending on the size of the sub-village.

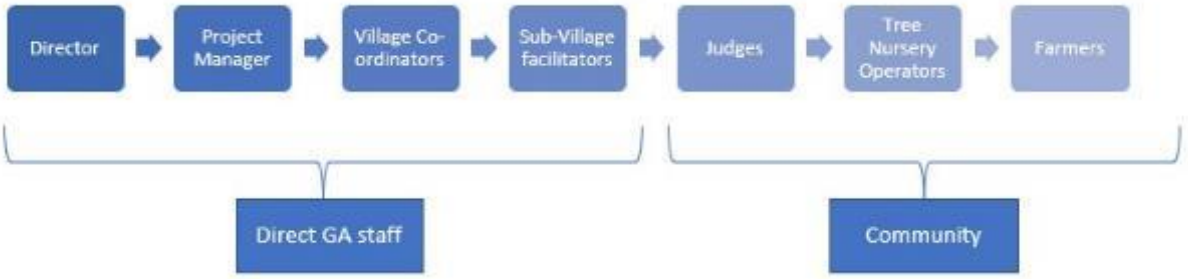

***Figure 6**: Greening Africa Organisational structure*

The field reporting is done by the project co-ordinators, who then report the findings to the project manager. The community-based side includes judges and nursery operators. The judges are recommended by local administration i.e. village chairmen. Their role is clearer during the competition period (explained later), but they also participate in training the community after they have been trained by the project manager and director on project components. The tree nursery managers also come from the community. The tree nursery is under the management of the community. This means that the farmers and the nursery operators work together to maintain the nursery. Greening Africa provides seeds and the necessary infrastructure.

According to the project formulation mission, for the project to be considered a success, 1203 households should be transformed and be on their way to prosperity. This includes achieving a 60% adoption of the project components. The activities leading to this success include:

- Peer to Peer learning conducted by an expert farmer from Peru. Several other farmers will be identified within the communities to participate in the learning as expert farmers as well.
- Competitions that are organised to motivate farmers.
- Provision of field support as explained above. The suggestion includes 1 staff per 100 farmers.
- Creation of fodder banks, zero grazing and forestation are the main farmer activities.

These activities are supposed to be implemented within a project period of 3 years upon which the project is supposed to move to a new location. Since the aim of Pachamama Raymi is to foster prosperity, the 3 years is taken as ample time for the farmers to internalize and own the vison of the Pachamama Raymi methodology. This will be investigated also in the evaluation as specific activities that had been outlined in order to achieve the objectives that had been set.

Expected project impacts and expected challenges

According to the project formulation mission document carried out by Pachamama Raymi in Tanzania in December 2014, the following were the expected project impacts:

- The elimination of strong seasonal variation of income for the villagers, through the production of fodder all year around.
- The provision of long-term excellent economic options, i.e. timber tree production.
- Improvements in human health, through the increase in the quality of food in their diets and water harvesting.
- Increased amounts of stored grain.
- Animal production increased at the end of the four years as fodder will be enough.
- The results for improving the livestock breeds will be apparent.
- Production of milk and milk products will improve family diet.
- Fodder production as a business option.
- Each family will have planted at least 1ha of timber trees.
- Each household will have planted at least 15 fruit trees.
- Soil cover, natural grass will have improved.
- Financial and fixed capital of the families will have increased greatly.

Other potential impacts include a potential increase in biodiversity due to the improvement in the natural habitats.

The identified project challenges included:

- The methodology of the project is based on reinforcing people’s cultural identify. Navigating through the population pressure and environmental degradation is a challenge that may need to be overcome to identify this.
- Achieving significant improvements in the position of women in these households.
- Potential conflict with neighbouring villages as cattle invades the fodder fields.
- Fires in the dry season, due to increased grass cover.
- Human-Wildlife conflict i.e. destruction of the trees by elephants from the neighbouring conservancies.

- Water availability, to be improved by digging of wells and rain water harvesting.
- Conflicts between absentee farmers, government officials and villagers is a complex issue and should be avoided.
- Adopting the methodology from Peru and training a complete team in the methodology in Tanzania when no one has experience on the same.
- Marginal soils that could be problematic in the establishment of certain tree species, including vertisols that can rip off roots from trees.

2. Description and evaluation of the GA methodology

The evaluation method included review of project documents and reports and delving into the day to day functioning of the organisation beforehand to get a glimpse of their workings. This was followed by semi-structured interviews, visits with other stakeholders, farmer discussion meetings, local administrative visits, focus group discussions and finally a formal survey which included about 124 farmers in total interviewed. The survey involved a one hour-long interview process with farmers' households in the two main villages Sarame and Vilima Vitatu of GA1.

The PMR Methodology

The Pachamama Raymi (PMR) Methodology has four elements. These four elements constitute the peer learning, clear and demanding goals, motivation and monitoring and evaluation. They use a systematic approach in order to be able to achieve the four elements set out. These are briefly described below from the project formulation document.

1. Peer learning

2. Clear and demanding goals

3.Motivation

4. Monitoring and Evaluation

5. Systematic Approach

In their project formulation mission and in the description of the PMR methodology, GA focuses on the farmers' potential to change their surroundings. The **Peer learning** process involves learning from the best i.e. farmer-to-farmer learning, or learning from a farmer who successfully introduced practices and innovations. Having **clear and demanding goals,** this also includes setting out numerical targets, e.g. GA has set out to have 60% adoption rates for the farmers as a benchmark for success. **Motivation** is achieved among others via competitions (contests) between families in the project after every 6 months of the project period, with winners being farmers who have best adopted and implemented the innovations. During the contests there are presentations involving cultural performances which further create a greater cultural identity and add to famer motivation to participate. Through the strengthening of the families, their community and local governments, GA then uses a **systematic approach** which aims at dealing with the complexities (social, economic and ecological) within rural systems. Finally, in order to track achievements and implement necessary corrections, there is need for **monitoring and evaluation.**

2.1 The Intervention Strategy

GA covers actionable activities divided into 3 pillars. Within these pillars, farmers contribute by managing the tree nurseries as GA provides infrastructure and seedlings. The farmers are also expected to practise the interventions that have been introduced, and implementing project components. The three pillars are:

- Ecological Reclamation
- Preventive Health Measures
- Economic Recovery

Some of the activities have cross cutting benefits within the different pillars, for example use of energy saving “jikos” (stoves) produce less soot which then reduces the risk associated with respiratory diseases, as an added benefit they also use less wood fuel. The three pillars are used as a means for the intervention strategy and thus the implementation of the methodology. As such, each participating farmer family is required to map out their future using these three pillars. This is done by the farmers plastering the walls of their houses and drawing what they perceive to be there best attainable future (Figure 7). The aim of this is to ensure that farmers then internalize what they project, and this will then motivate them to work towards better futures. By farmers internalizing and taking steps towards what they have perceived, GA objectives can be met. All this is done using locally available material like mud and chalk.

Figure 7*: Proud farmers in front of their plastered houses*

The following will describe what was observed in terms of the three pillars:

- **Ecological Reclamation**

As mentioned in the project formulation mission, this is where issues of land reclamation are dealt with, and is mainly done through the introduction of perennials to the area. This includes the

growing of timber trees and fodder for animal husbandry. Another component of ecological reclamation is controlled grazing through the introduction of zero grazing, in anticipation of controlling herd size and thus reducing pressure on land. Water scarcity is an important aspect of the regions and as such GA embarks the digging of shallow wells to provide the farmers with water. This is done by first identifying the presence of the water, followed by assessing the water quality for the different uses in terms of human and livestock consumption but also for irrigation. This is because the ground water has varying levels of soda and salt. According to GA records, out of the total number of wells that have been dug, 26% of the wells have salt levels that can be classified fit for human consumption, while 74% of the wells have water suitable for irrigation and livestock. The wells are dug per family but in some instances the wells are shared amongst families as in the case of some sub-villages in Vilima Vitatu. However, the water to people ratios are not clear, and whilst this is in not an ideal situation, it is an improvement to this area that is classified as semi-arid and to the options that are available. In almost all the focus groups discussed later, water availability was mentioned as a problem, indicating the gravity of the scarcity of water as a resource. From our observations, out of the rainy season, water was mostly collected from former borrow pits that had now turned to dams. The water was shared by livestock, people washing clothes and bathing and the same water is collected for household use.

Erosion is the most visible form of land degradation in the area. The constant cultivation of annual crops perpetuates this aspect. The extent of erosion was evident in Sarame, which created a greater understanding of the current situation in the area. As mentioned earlier, the approach of GA to regreening is through introducing perennials, hence planting trees for food, timber and fodder This was clearly visible (Figure 8), and farmers especially embrace the growing if fruit trees around their homesteads, as well as (amongst the agro-pastoralist) growing fodder. There wasn't much evidence seen in terms of how to best manage these trees after planting, with a few water conservation measures such as mulching and water-bottle feeding of trees.

***Figure 8**: Various aspects of tree planting*

- **Preventive Health Measures**

The activities within this pillar of preventive health involve the improvement of homesteads. The main point behind this pillar is that a healthy society is an active society. This is achieved through the plastering of the houses to prevent draft from the strong winds that would otherwise have access from the spaces in between the wooden pillars. This helps to prevent contracting respiratory diseases. Plastering of the walls has a double effect as the farmers then can map out their future on the walls. They are also encouraged to have separate rooms within the house as opposed to one shared space.

The farmers also learn how to build smoke-free jikos and cupboards with innovatively using locally available materials (Figure 9). The jikos are suitable because they have space for having two cooking pots, and emit almost no soot inside the cooking area, having a chimney in place. This keeps the cooking areas smoke free. The cupboards are suitable as the farmers can store their utensils and food away from the floor, reducing chances of infection. Further to this, they are encouraged to have lavatory facilities. This means that they build structures within the homestead but away from the house and dig pit latrines to reduce risk of infections associated with open defecation, especially during the rainy season. Items such as the (*kibiyu chirizi)* handwashing containers are encouraged alongside the lavatory facilities.

Finally, the farmers are also trained on keeping kitchen gardens (*bustani*) which then diversifies their diets. They grow various vegetables for the household but also have fruit trees like the papaya, passion fruit and some citrus trees. The process of zero grazing is ongoing, aiming that the farmers can then have improved cattle breeds for milk production. Through the dug wells farmers are also able to have access to clean water.

Figure 9*: Preventive Health Aspects.*

- **Economic Recovery**

The idea behind this pillar is to provide the farmers with a dependable source of income, which is almost constant throughout the year, in order to reduce poverty and move towards the creation of prosperity which is one of the main objectives of PMR. The activities include short-term and long-term income sources (Figure 10), such as the growing of fruit trees like the papaya, guava and passion, with the idea behind it that as the farmer satisfies the dietary household needs then the surplus can be sold. Some farmers can make fruit production their main business, particularly those who have little land. The other short-term source of income is the keeping of dairy cattle within the zero-grazing unit. The idea is to have improved breed of cattle which can meet household food self-sufficiency and then the surplus can be sold. This venture however requires that the farmer has enough fodder for the cow in order to be able to produce enough milk to sell. That is why fodder banks are introduced in conjunction with the production of hay from crop residues and the production of silage.

For the long-term growing of timber trees is suggested. They grow timber trees that should last about 8 to 15 years before harvest, and although it is still too early for concrete evidence on how these trees contribute to economic recovery in this region, their potential is highly promising (and experiences visited elsewhere have shown this potential). There is obvious visible success in the establishment of the tree stocks, and this translates to the farmers establishing their own tree plantations (Figure 11). However, a concern is that the project has a 3-year period, while for trees to mature 8 years is needed, with the challenge ahead that farmers need to learn more about management of the trees. The growing of fruit trees near the homesteads or in kitchen gardens is the most obvious and successful aspect of this pillar. Nearly all of the farmers have a standing population of Papaya trees. In our evaluation we realized there was no point where markets were discussed. With the evident success in growing fruit trees within the homestead, there needs to be a discussion on the market. This may be useful to advise the farmers on possibilities of marketing especially when there is a saturation of the same product in the market.

***Figure 10**: Economic Recovery*

***Figure 11**: GA Tree Nurseries*

2.2 The Peer Learning process

Like mentioned earlier, the peer learning process involves having an expert exchange farmer from Peru in Tanzania to train the farmers on the various project components. The Pachamama Raymi approach has been successful in Peru, with the experiential exchange facilitated by the expert farmer. Secondly, the farmers within the project also visit other projects including going into model farms (Figure 12). This has included visiting well-established farmers who either grow trees for timber or keep cows for zero grazing. Internally, the farmers are also meant to learn from the farmers who win the contests: learning from their neighbours on what they are doing and enabled them to win. The judges who are selected from within the villages to grade the participants, learn from those farmers and are known to take back this information to their own farms, and apply those novelties.

More structured learning occurs at the tree nurseries. Village co-ordinators and facilitators learn from tree nursery staff, and so do the many hundreds of volunteers. The project manager performs further training at the GA offices with the area coordinators. The project manager is also responsible for overseeing and providing technical support within the project areas. As mentioned earlier, farmers also go for farmer exchange visits. Some farmers were highly motivated and came back and implemented what they saw: like in Nchemu where a farmer is moving on with zero grazing and putting all his efforts on this activity. However, some farmers had criticism:

"study tours ziandamane na mazingira ya vijiji husika, mtu wa vilima vitatu kwenye hali ya ukame ilitakiwa apelekwe kwenye hali ya hewa inayoendana na si maeneo kinzani kama Iringa"- Farmer 98 in Mdori. Translation: *Farmers should be taken to environments that are like theirs and not to areas that are not similar; e.g. from an arid area like Vilima Vitatu to Iringa which is relatively wetter.*

The GA team recognizes this, but this visit was an exception amongst the other study tours that have been conducted, and where comparable environments to the Manyara region were visited.

***Figure 12**: Farmer exchange visit to Dodoma Courtesy Greening Africa*

2.3 The contests

The contests are a culmination of the 6-month project intervals: they mark the end of the period and the beginning of the new 6-months period where fresh farmer registrations are conducted. This means that the old (already participating) farmers are registered for the new season, and any new farmer who may want to join GA also gets a chance to join. There is a guideline with rules and regulations for the competition for farmers (in Swahili) and that will be the basis of information for this section, together with the information from the project staff and judges that we interviewed.

The competition structure includes having 3 judges per group. There are a number of groups per sub-village. People can conform such groups of 15 to 45 families. The judges then elect a chair and secretary from amongst them per village. The judges are then trained on Greening Africa project activities by GA staff, which is different from what farmers learn during the competition period, as it also focusses on the contests themselves, the inscriptions, etc. Further training occurs during the competition period where judges are trained on the competition process. The judges, have an opportunity to compete as farmers, to remove bias, they have a competition among themselves, outside the normal farmer competitions.

The farmers are divided into different groupings within the sub-villages of either 15, to 45 families per group. The families usually come from the same ethnic community. The families then compete within the group stage (Table 1). All the families are eligible to participate in this competition. Most criteria centres on preventive health issues, including household improvement: this includes

plastering of the walls, having lavatory facilities, improved jiko and cupboard, and finally having a kitchen garden. Other criteria include tree planting and the business that was selected. The prizes are highlighted in the table below with the highest getting Tzsh. 180,000 (about USD 80) in the category of 31-45 families and the lowest receiving Tzsh. 50,000 (about USD 20). The first winners in this competition cannot compete again within the same category in the next competition. They have a separate "league" that has all the 1st prize winners from the different groupings. The prizes within this competition are considerably higher than the prizes in the first competition: the first place gets a prize of Tzsh. 300,000 and the last gets Tzsh. 100,000; similar to what the 5th place winner gets in the group stage of the competitions. However, this competition is not among families of a small group but among the best of the entire village. Winning such a competition requires great improvements and has so much more merit.

Table 1: Prizes for the group competitions in Tanzanian Shillings (Tzsh.)

Number of families per group	1st Winner	2nd Winner	3rd Winner	4th Winner	5th Winner	6th Winner	7th Winner
15-30	150,000	130,000	120,000	100,000	80,000	-	-
31-45	180,000	160,000	150,000	130,000	100,000	80,000	50,000

During the round of competitions that we witnessed, there was a separate competition for timber tree establishment. In this competition the winner gets Tzsh. 500,000. This category is however limited as the farmer must grow a minimum of 1 hectare of trees in order to qualify for the contest.

The main criticism from farmers on the competition process is that the more resource endowed farmers get more benefits. For a farmer to be able to grow 1 hectare of trees, they need resources in terms of labour and land. Agreeable GA provides seedlings for free, but without resources growing 1 hectare of trees is not possible. Further to this, the lack of land because of absentee farmers complicates the availability of land. Whilst this is beyond the capabilities of GA, it worth noting that GA is aware of this.

In the competition, it is possible for a farmer to win twice in the sense that the farmer after winning the group stage gets a cash prize also in the "winners competition". The farmer in perspective has already gained compared to other farmers, and with this prize improves on the homestead and as such could win again in the "winners competition"; this gives a boost compared to the farmer who has not been able to win a cash prize, and remains limited in resources in terms of labour and land.

There are also other aspects highlighted in the farmer rules and regulation document that further encourage this disparity (see Box on next page). Nevertheless, in the interviews we found that most farmers were well-able to explain what they had drawn on their walls and why they had drawn them. This is further highlighted in the survey. Some of them were on their way to achieving the objectives they had set-out to do, especially in terms of home improvement. We also found that most of the winners used some of the prize money to enhance their homesteads. This included moving from a mud walled-thatched house into a stone-walled house with iron sheet roofing.

What is interesting within the competition document is that the specifics to what homestead improvement means are highlighted, but also other aspects come up which are not explicitly mentioned in the set objectives and activities by GA. For example, within the judges scoring sheet, the following topics are described:

1. Concerning household and health: not using plastic containers, use of mosquito nets, a separate place for storing books on health, a balanced diet, availability of clean drinking water, a first aid kit, not using or selling alcohol within the homestead and family planning.
2. Irrigation of the kitchen garden, having your own compost, use of biological pest control measures.
3. Availability of clean water the whole year, storage and cleaning of tanks and general maintenance of the wells.
4. Alternative sources of income/business, this includes general tree and livestock management but also other activities like weaving of baskets and mats. Use of natural sources of dye in their materials.

The competitions have been useful in providing prizes that go directly into the households. The responses we received on what they used the prize money for included: improving homesteads as mentioned above, school associated costs, adding to their existing livestock, buying food for the household. There was general pride in having won the competition but also in the display of their cultures during the prize award ceremonies. A farmer in Sarame mentioned that they had an opportunity to revive some of the culture in song and dance that they felt they were losing. The farmers were generally excited and willing to participate in the competitions.

The general picture we got from the farmers we spoke to is that they were however not comfortable enough speaking to the neighbours who won the competition. Several of the farmers complained of favouritism within the judging of the competitions. They expressed specifically the interference from judges from other regions who then interact with their local guides. The farmers had various opinions on what they would consider as the best way of addressing the competitions (see also Box on next page).

Some farmers suggest that in order to avoid the influencing of the external judges, they should walk around with a neutral party or a member that the community has confidence in, they suggested the village chairman. Others expressed how the competitions were not clear: e.g. farmer 70 says that some of the activities to be judged changed mid-competition, whilst farmer 20 does not understand why she didn't win the second time indicating discontent. In order to avoid discontent, this may be a suggestion worth taking since the village chairmen are seen as administrators within the village and as such carry a different level of respect.

Other farmers told us that they put a lot of effort in the growing of the trees but unfortunately water is a problem and as such, their efforts were not visible. Some of the farmers expressed their discontent with the competition because they were still disadvantaged because the areas that they come from are not suitable for the tree varieties that were provided. For instance, farmer 90 and farmer 6 say that the availability of water is still a challenge. Some also felt like they were generally disadvantaged: "I plastered my houses with mud but when the rains came, it was all washed away. I have nothing to show" (lady farmer 2).

"*Katika mashindano kuna ubaguzi ndani yake. Inatokea mtu ambaye hajakidhi vigezo anapewa kipaombele*" - "Within the competition there is unfairness, there are people who have won without fulfilling all the requirements needed for the competition" - farmer 81 Kigongoni

"Wanakaya wanalalamika juu ya namna ya kuwapata washindi inavyofanyika. Watu wasio na vigezo wanapewa ushindi na wengine wao hawaorodheshwi" - "Members of the community are complaining on the unfairness in judging, people who don't follow the rules are winning therefore taking away from those who deserve to - farmer 83 Kigongoni

"Majaji hawatoi haki watu wanaposhindana"- "The judges are not fair in the competition process" - farmer 90 Kigongoni

"Watu wanatoka mbali kuja kujaji wasiingiliwe kwenye maamuzi yao kwa kutembezwa na watu wa hapa kijijini. Pia zizingatiwe alama wanazopanga wao"- "The decisions by external judges should not be influenced by the guides from the competing villages. Additionally, emphasize should be on grading from the external judges"- farmer 81 Kigongoni

"Majaji wanaoletwa watembee wenyewe bila wasaidizi wa ndani ya kitongoji kwa maana huweza wakawashawishi wasitoe haki. Mbadala yake watembezwe na mwenyekiti wa kitongoji" - The external judges should not be shown around by a member of the community as this influences their judgment. They should instead be guided by the village chairpersons - farmer 83 Kigongoni

"GA hawana mpango mzuri kwenye mashindano, inatakiwa iwe wazi. Kwa mfano wametangaza mashindano ya miti baadaye wakachanganya bila kuwajulisha watu" - "GA doesn't have a clear guideline for the competition, the guidelines should be more explicit, for example, they started the competition for timber trees only to change and add the other categories mid-competition. This was done without informing the farmers" – farmer 70 Marewa

"She won the first and second time. However, she did not win the 3rd time and does not understand why she did not win" – farmer 20 Bulkeri

"Ukuaji wa miti ni mgumu kwa eneo hili" - "Our area is not suitable for growing trees" – farmer 90 Kigongoni

3. Current situation and results at household level

The Greening Africa (GA) survey used in this evaluation was inspired by the integrated farm planning approach (PIP) quick survey tool, and aims to measure key indicators of impact (Kessler *et al.*, 2016). As mentioned earlier, the PMR methodology as developed and applied in Peru works on the reclamation of dilapidated natural resources and in the process aims to plant prosperity and eradicate extreme poverty. The survey used for the GA evaluation (annex 1) aims to quantify farmer perception and knowledge aspects as well as PMR impact, in order to check internalization of the project activities and to establish the level of intrinsic motivation of the farmers (hence, adoption). The survey is divided into 4 main indicators defined as outcomes and further sub-divided into categories. This will further be explained in the survey results section. An overview of the locations of the farmers that were in the survey is shown in Figure 13.

***Figure 13**: Overview of farmer survey locations*

Adoption of an intervention or innovation refers to the acceptance and practise of the new activity without receiving any external incentives (hence, based on own intrinsic motivation and conviction that the practice is useful). In order to further delve into the analysis and look at the adoption of the PMR methodology and its components, the approach described by Cramb *et al.* (1999) will be used. This involves looking at farmer attributes in terms of three groupings i.e.; perceptions, personal attributes (tribe, age, gender etc.) and farm attributes (mixed, crop and livestock).

The survey was conducted for 124 farmers in VilimaVitatu and Sarame Villages. Vilima Vitatu village consists of 6 sub-villages i.e. Nchemu, Changarawe, Magomeni, Marewa, Kigongoni and Mdori. Sarame has 5 sub-villages i.e. Taifa Njema, Kiteto, Bulkeri, Changarawe and Ndoroboni. The sample size per subvillage was determined using the formula given below, where the relative proportion per village meant 80 was benched on Vilima Vitatu which has a total of 791 farmers registered and 40 was benched to Sarame which had a total farmer registration at 350. The data was analysed using Microsoft Excel and STATA 12.0.

As mentioned earlier, this GA survey was borrowed from experiences with a similar survey for the PIP approach, and adapted to the context of GA, by considering the objectives and intended outcomes of the PMR methodology in Tanzania. As mentioned earlier, in order to asses adoption, personal attributes and farm attributes are examined. This was done by questions based on the use of specific indicators, with the indicators being grouped in different categories. These categories then add up to the four outcomes that we want to analyse in this GA survey:

Outcome A: Motivation - farmers' motivation to farm and participate in activities related to their farm and community;
Outcome B: Natural Resource Management - farmers' (in)/ability, knowledge and perceptions to their natural resource management;
Outcome C: Economic activities - activities related to livelihoods and how they generate income;
Outcome D: Well-being - the health status and situation in the households.

Outcome A is establishes farmers' motivation to stay in their living environment and to what extent this motivation is intrinsic or extrinsic. This is established through their interaction within the community. In order to look into their living environment and how they manage their natural resource outcome B is used. This is useful in determining perceptions and farm attributes, Do they understand the importance of the activities and the subsequent consequences? Farmers cannot immediately understand degradation in its definitions, but do see the resultant effects, i.e. loss in land productivity, reduced yields and visible soil loss. Outcome C then looks at PMR effects on "planting prosperity" through the eradication of poverty, i.e. economic activities. This co-agrees with outcome D which looks at households being self-sufficient and with reduced poverty levels.

The survey was conducted with trained surveyors who have backgrounds in Agronomy and Community Development. We found that only 15 of the 124 farmers surveyed were not registered with GA and as such were not considered in the analyses, given that their numbers were negligible for comparison reasons. Amongst those surveyed, a total of 17 tribes were identified. The 5 tribes with the highest proportions were selected and the rest were clustered as others. The Mbug'we were the majority tribe in the area taking 41% of all the tribes surveyed, and the Kuria having the smallest proportion amongst the 5 tribes with 3%. (Figure 14).

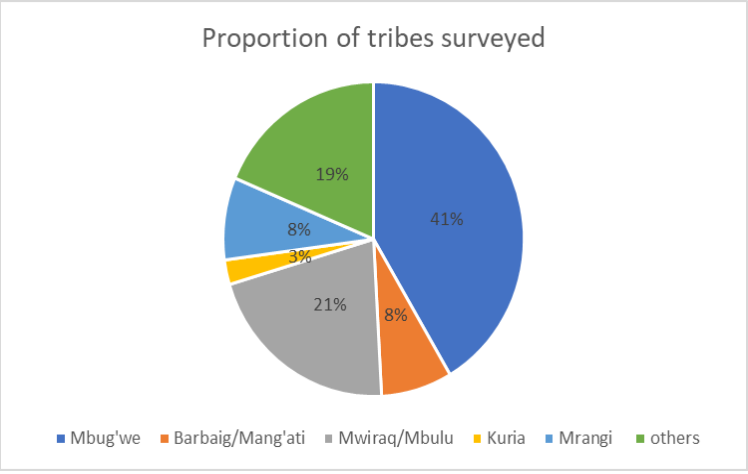

***Figure 14**: Proportion of tribes surveyed*

Among all farmers surveyed, 56% were women and 44% were male. In terms of the farming systems, 78% of the farmers were in mixed cropping systems, 21% in crop production only, and 1% was keeping animals only. The average farm size was three hectares. We also found that 84% of the households were dual headed households, 14% female headed, and only 2% was found to be male headed. The average household size is 6 people.

Table 2: *Farmer Attributes actual numbers.*

Gender proportions	Female	Male
Bulkeri	5	3
Changarawe	8	3
Kigongoni	13	11
Kiteto	4	2
Magomeni	4	4
Marewa	3	8
Mdori	12	16
Nchemu	3	3
Ndoroboni	7	1
Taifa Njema	8	2
Total	67	53

Age grouping	Frequency
15-20	1
21-30	14
31-40	29
41-50	37
51-60	24
61+	15
Land Ownership	
Owned	99
Owned and Rented	6
Communal	6
All rented	8

Table 2 above provides a general description on farmer attributes in actual numbers for the gender proportions, age groupings and type of land ownership. Land ownership in this case refers to inherited land or farmers who have stayed on the land for years and as such consider the land theirs. The overview is useful as we move into the analysis as it provides insight on the results. The analyses below will start by giving general scoring for the outcomes A-D and the different categories, and then delve specifically into the indicators keeping in mind personal attributes, perceptions and farm attributes.

3.1 Outcome Scoring

The scoring for Outcomes A-D was divided into five different levels, using the following Likert-scale: **1**-poor scoring, **2**-bad scoring, **3**-good (midpoint), **4**-very good scoring and **5**-excellent scoring. A general overview of the outcome scoring per village can be seen in Figure 15.

According to the survey, Sarame scored better than Vilima Vitatu in three of the four outcomes i.e. in Natural resource management, Economic activities and Well-being (figure 10). Vilima Vitatu only had a better score in Motivation as an outcome. Overall, outcome B had the poorest scoring followed by outcome C.

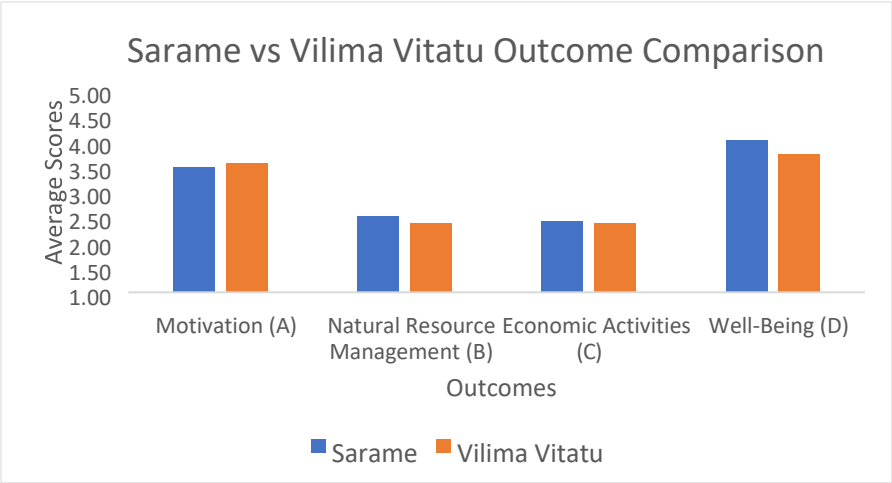

***Figure 15**: Villages outcome scoring (with A = Motivation; B = Natural Resource Management; C = Economic Activities; D = Well-Being)*

In order to further understand if there are differences in the scores, we investigated the sub-villages (Table 3). We see that Kiteto sub-village (in Sarame village) had the poorest performance across all outcomes while distinctively Changarawe sub-village in Sarame had the best performance in the Outcomes A and B, and Marewa in VilimaVitatu had the highest scoring in outcome D. Kiteto with a score of 2.88 is the only sub-village to have a below average mark in Outcome A (Motivation). None of the sub-villages reached the half mark score 3 in outcome B and C. In outcome D (Well-being) however, Marewa, Taifa Njema and Bulkeri sub-villages had the highest scores and were relatively close (scores of 4.20, 4.18 and 4.14).

***Table 3**: Outcome scoring for the different sub-villages (with A = Motivation; B = Natural Resource Management; C = Economic Activities; D = Well-Being)*

Sub-Villages	***A***	***B***	***C***	***D***
Taifa Njema	3.30	2.52	2.50	4.18
Kiteto	2.88	2.02	2.25	3.51
Bulkeri	3.54	2.61	2.23	4.14
Changarawe S	3.81	2.98	2.42	4.08
Ndoroboni	3.61	2.21	2.66	3.98
Nchemu	3.46	2.56	2.49	3.68
Changarawe W	3.47	2.16	2.38	3.81
Magomeni	3.70	2.44	2.66	3.94
Marewa	3.65	2.40	2.29	4.20
Kigongoni	3.56	2.49	2.29	3.62
Mdori	3.52	2.27	2.37	3.61

The above results show us outcome scores as per the different locations within the project. However, to better understand these scores, it is necessary to compare the correlations between the outcomes. Table 4 shows that there is a positive and significant ($p < 0.05$) correlation between all 4 Outcomes. Particularly Outcome A (Motivation) is most strongly correlated with all other

Outcomes (as shown by the higher scores), which means that farmer with higher scores on Motivation also score significantly higher on all other Outcomes: motivated farmers thus manage their natural resource better, have more economic activities and have a better wellbeing. What is interesting to note is that outcome D and C had the weakest positive correlation among each other, but still also in this case, the correlation is statistically significant, hence those farmers who score higher on economic activities also score higher on well-being.

***Table 4**: Farmer outcome correlation analysis*

	A	B	C	D
Motivation (A)	1.0			
Natural Resource Management (B)	0.5	1.0		
Economic Activities (C)	0.4	0.4	1.0	
Well-Being (D)	0.4	0.3	0.3	1.0

3.2 Category Scoring

In this section we break down the analyses further into the various categories that compose the 4 Outcomes. This is useful as it provides more insight into the Outcomes and attempts to show whether within the various Outcomes there are any noticeable differences. Figure 16 illustrates the category scoring and the average is markedly indicated. This explained below for (n=103).

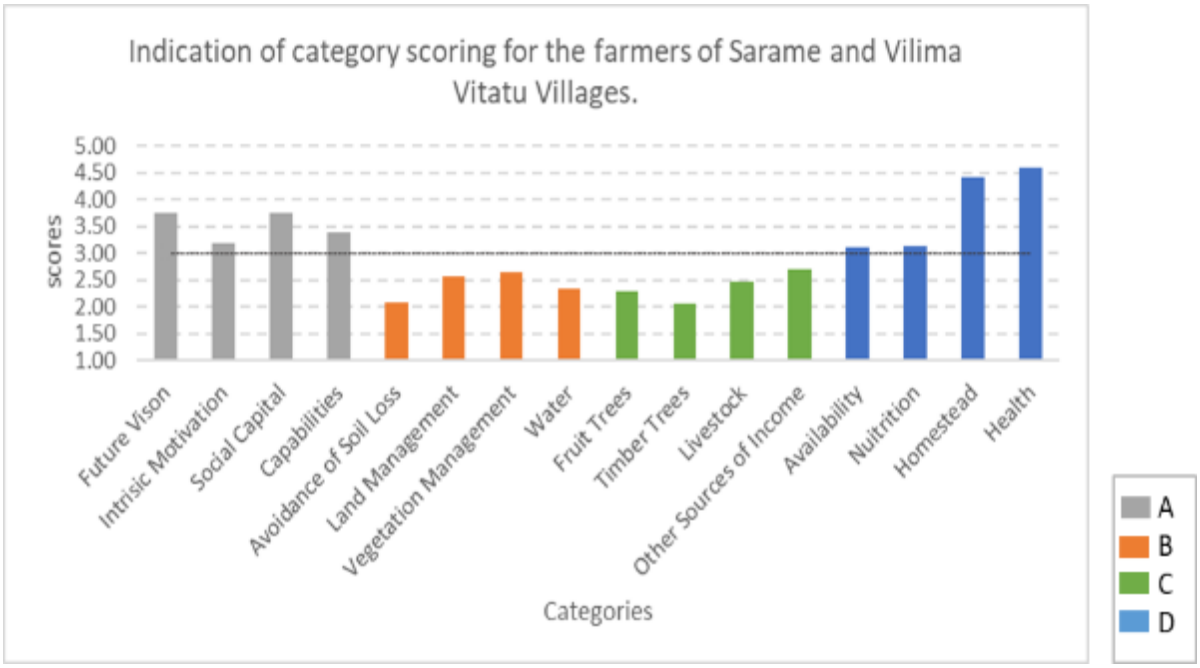

***Figure 16**: Scoring of farmers in the various categories within the survey.*

As mentioned earlier, a score of 3 indicates that the farmers have a good score with at least 50% of the indicators per category. This graph does NOT indicate the impact of GA, it is rather just a snapshot of the current situation regarding the different categories, and it allows to visualize and

understand in which categories farmers score well and where efforts are needed (by the farmers, and if the case with support from a project like GA) to improve. From the graph it is evident that category A (Motivation) and D (Well-Being) in all their categories are above 3 and therefore have a good score: this is not evidence that GA has done good work in these categories (because we don't have a comparison score of an area where GA has not worked) but we can quite safely assume that the high scores here are the result of GA efforts over the past 3 years. However, Outcome B and C which include categories on Natural resources management and Economic activities (tree production, livestock, other sources of income) have lower scores. Especially the poor perception of farmers on soil loss is evident: they are not aware and therefore rarely carry out any soil management practices. This was also noticeable by the surveyors during the data collection process. It is no surprise that this score is low, as GA doesn't pay specific attention to soil erosion control, and focused ion tackling the root causes of poverty and land degradation. The highest scores are on the farmers planning and future vision, the social capital, their capabilities and overall family health. A closer look at these highest scores in Outcomes A and D reveals lower scoring in intrinsic motivation, nutrition and food availability.

To establish greater insight, the following sections on analyses of the survey will focus on personal attributes, farm attributes and farmer perceptions as explained earlier. The data will look how various scorings relate with the objectives set out by GA on adoption of the intervention in Tanzania.

3.3 Analysis of attributes

In this section we look at farmer personal and household attributes and how these different are reflected in the different outcomes. The intention is to show the influence of the attributes to how they score and therefore provide insight to the project on impact of GA activities.

3.3.1 Age

In this section we worked with 103 farmers, as the age grouping between 15-20 was too small and not considered for analysis. We can see that the 21-30 age group scored the lowest across all Outcomes, whilst the 31-40 age range had the highest scoring in 3 out of the 4 Outcomes. The age group of 30-50 in general scores highest on the GA indicators considered for this evaluation.

Table 5: *Overall outcome scoring for different age groupings*

Age	A	B	C	D
21-30	3.32	2.24	2.18	3.51
31-40	**3.66**	2.45	**2.58**	**3.99**
41-50	3.58	**2.57**	2.37	3.84
51-60	3.50	2.39	2.36	3.86
61+	3.44	2.20	2.30	3.70

3.3.2 Ethnic Community

A total of 16 ethnic communities were evaluated during the survey within Sarame and Vilima Vitatu villages. Amongst the 16 ethnic communities only 5 had numbers that were at least 5% of the total sample population (n=103). Among the respondents, 46 come from the Mbugwe community, 9 from the Barabaig, 25 from the Iraqw, 8 from the Mnyaturu and 10 from the Mrangi communities respectively. Table 6 shows relative scoring of the differences within the selected ethnic communities.

***Table 6**: Outcome scoring of selected ethnic communities within Sarame and Vilima Vitatu Villages.*

	Ethnic Community	A	B	C	D
	Mbugwe	3.55	2.43	2.45	3.87
	Barabaig/Mang'ati	3.26	2.27	2.10	3.16
	Iraqw/Mbulu	3.54	2.50	2.36	3.92
	Mnyaturu	3.70	2.20	2.40	3.47
	Mrangi	3.64	2.13	2.37	3.83

The Mnyaturu, Mbugwe and Iraqw communities had better scoring compared to the Mrangi and Barabaig communities. Mbugwe had the highest overall scoring. The Barabaig evidently had the lowest scoring.

3.3.3 Gender

No visible differences could be observed across the different Outcomes amongst male and female farmers, whom all scored more or less the same on all Outcomes.

3.3.4 Type of household

For comparison purposes, dual headed households will be compared with female headed households. For the samples size (n=102) there were only 2 households that were a male headed and as such not considered. From the results, it is obvious that the female headed households had a lower scoring compared to the dual headed households (Figure 17). This discussion about differences between female and dual-headed households will come back in the analysis later in this report.

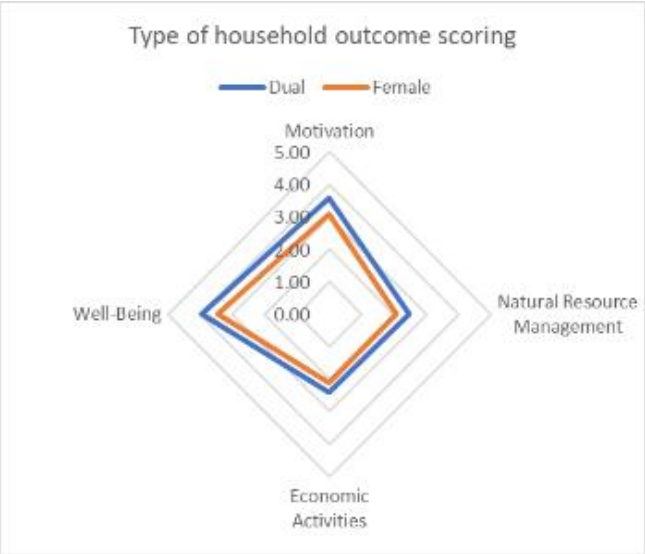

Figure 17: *Type of household outcome scoring.*

3.4 Farmer Perceptions

This section of the analysis will focus on some of the specific questions and issues that were evaluated and which we consider most relevant for GA. These questions reflect the perception of the surveyed farmers on these issues, and the scores give a good indication on the results that GA has achieved over the past years concerning these issues (as perceived by the farmers). Again, the different scoring indications are: **1-**poor scoring, **2**-bad scoring, **3**-good (midpoint), **4**-very good scoring and **5**-excellent scoring. The scores in Table 8 are further analysed in the rest of this section.

Table 8: Scoring on some specific issues relevant for GA

Specific issue	Score
Farmers future vision	4
Objectives for the farm	4
Motivation to farm	4
Willingness to invest in farming	3
Tree management	3
Water availability	2
Nutrition and diet	3

Table 8 shows good scores for issues related to farmer motivation. This is an indication that GA is achieving one of its set objectives on adoption of the various practices. Most farmers had a rather clear vision of their future, had objectives to achieve, and were motivated for farming and investments in their farm. This is a very positive sign, as it is the foundation for sustainable development. It is for sure that the competitions have been received positively by the farmers as

a source of motivation, and that farmers participating in GA are motivated to invest in their future; how this compares to non-GA farmers was not investigated in this evaluation.

Concerning water availability, we see a very low score. This is because water within Manyara Region is a scarce resource as highlighted at the beginning of this paper. The area falls under arid and semi-arid zones. About 74% of the farmers responded to having access to a source of water, but amongst them 45% indicated that water is badly accessible, 45% say water is moderately accessible, and only 5% say that water is very accessible.

Concerning nutrition and diet (food availability) we see on average score of 3. Especially after harvest time food availability was higher; and most of the respondents also affirmed that food availability had improved due to the introduction of kitchen gardens and the establishment of home orchards especially with Papaya.

There are also other questions and issues worth mentioning:

- *In the last 12 months how many different types of fruit trees did you cultivate?* The responses were as follows: Very Diverse = 1; Diverse = 6; Quite diverse = 9; A little diverse = 33; Not at all diverse = 39. What this indicates is that the farmers have planted fruit trees, but the diversity is very low, which we also established in our observations. Papaya trees were most common and suitable for the climate of the area, other fruit trees (e.g. mango) were less seen.

- *In the last 12 months how many different types of timber trees did you cultivate?* The responses were: Very Diverse= 1; Diverse = 2; Quite diverse = 11; A little diverse =25; Not at all diverse = 47. This shows some indication of the timber trees that were planted, and that diversity here is also low on each farm (hence most farmers only plant one or two types of timber trees). However, this does not show absolute values of the timber trees that had been planted by the farmers.

- Looking further to responses on tree survival rates we can see that the following responses for (n=99) 100% = 1; ≥75% = 32; ≥50% = 25; ≥25% = 27; 0%= 14. Hence, in the perception of farmers, in only 33% of the cases a higher survival rate was seen of >75%; this means that survival rates are considered in general very low by the farmers.

- In terms of tree management, the question was asked: *To what extent do you use water to irrigate your trees?* The responses were 29% not at all, 32% barely, 25% sometimes, 10 often, 1% all the time. Here we observe again the water problem in the area, and probably one of the main reasons for the low survival rate of trees.

- To understand farmers' economic status, we asked: *are you or your family members engaged in any non-farm income generating activity?* The responses were as follows: Yes, several of us = 3; Yes, some of us = 17; Yes, seasonally = 7; Yes, occasionally = 32; and Not at all = 43. Hence, most of the farmers do not have an external source of income and if they have, it's not permanent but seasonal. This is for sure something to be addressed in a future project for these villages, as the dependence on agriculture (and thus the over-exploitation of the land) is still huge.

- As a follow up question, we asked: *is the combination of incomes enough for the sustenance of the household?* The responses were as follows: More than enough = 1; Mostly enough = 63; Half of the year enough = 15; Barely enough part of the year = 21; Not enough at all = 3. Hence, with obtaining most income from agriculture, according to their response the combination of income sources is for most farmers enough throughout the year, which shows that still farmers can survive on what they are currently doing.

- In terms of the well-being and adoption of the project components, direct questions were asked for household improvement: *do you have a cupboard or an improved jiko?* 83% of the farmers confirmed having a jiko or a cupboard and all of them answered positively to using them. This is definitely a very positive impact of GA. Similarly, in terms of lavatory facilities, 88% of farmers surveyed responded positively to having lavatory facilities and all the positive respondents use their lavatory facilities.

4. Evaluations and comparison at Village Level

This chapter will focus on some issues in the Terms of Reference (TOR) provided by the Greening Africa project for the evaluation and comparison at the village level. Specific issues related to gender (4.1), appreciation of the project (4.2) and project results according to the 10 principles of the landscapes approach paper by Sayer *et al.* (2013) in 4.3 will be discussed in this chapter. This was achieved via Focus Group Discussions (FGD) and group meetings.

4.1 Gender Equality and Inclusion

The division of gender for the sake of this report will focus on male (men) and female (women). The Greening Africa project specifically targeted women in the project implementation components as a means of affirmative action in order to ensure that women benefit from the project. Smallholder women within rural farming communities are often side-lined due to various socio-cultural factors, often resulting in economic discrepancies among the women (Palacios-Lopez, Christiaensen and Kilic, 2017). As a basis in most development projects, women are placed in focus to ensure that they benefit from the project.

In order to evaluate the gender strategy within an organization, it is first necessary to identify the gender integration program within the project. This is highlighted with the gender integration (equality) continuum illustrated below. The two main categorizations are gender blind and gender aware. Gender blind ignores existing socio-economic differences and power relations between gender at different age groupings. Gender aware, however, examines and attempts to address these differences. These can be divided into exploitative, accommodating and transformative with the goal of achieving gender equality.

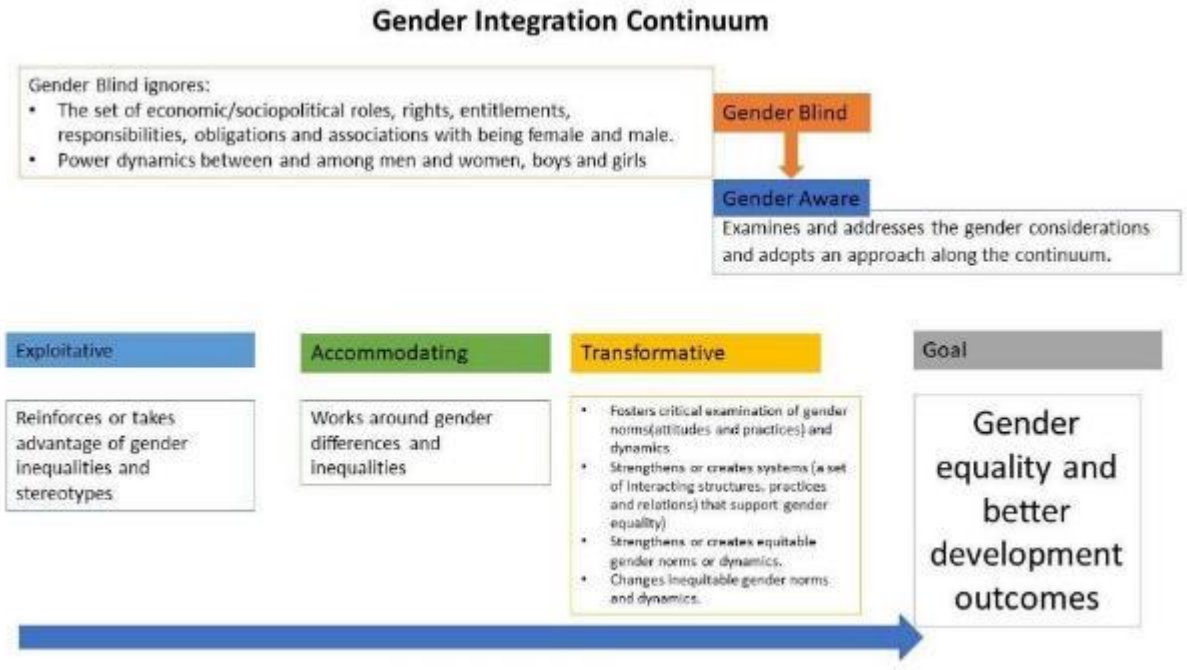

Figure 18: *Gender Integration continuum for equality Adapted from: www.igwg.org*

Based on the continuum above, and based on our evaluation, the Greening Africa Project is gender aware and falls into the gender accommodating spectrum, as GA has specifically targeted women and their societal prescribed roles in accordance to the region that they work in. In order to further asses their strategy it is useful to define their strategy in a framework.

Evaluation Approach

In accordance with the guide to gender analysis framework (March, Smyth and Mukhopadhyay, 1999), it is important to be context specific when designing a framework for a project. Furthermore, looking at women's empowerment within an intervention, one must remember that this will have varying levels. This may be attributed to ethnicity, relative wealth, race, age, etc. (Mosedale,2005). Inclusivity may then be strengthened with the consideration of these differences. Most frameworks look at roles and not relations; for example, the Harvard framework and the Moser framework, which then creates exclusivity of the gender roles. Without going into too much detail on gender analysis frameworks, the take away message from this is that development projects need to look at gender equity in their implementation, to ensure that the maximum benefits are accrued in the target communities and/or environments.

The evaluation of gender for GA included having women-only FGDs, given that the project specifically targeted women as entry points into households. Mosedale (2005) suggests that there is a risk of looking at women empowerment as a buzzword rather than the value that it would bring to the community, and therefore suggests in her framework to look at three aspects in the assessment of women empowerment within a project; these include:

- **identifying constraints of action**, this looks at power relations and whether there has been a shift since the introduction of the intervention. Attempting to identify the constraints may be a daunting task and instead a focus on actions identified by those constrained (women) can be used for assessment. This would include discussions around power; i.e. power over, that is who holds more power in decision making; power within, that is self-belief in being a change maker; power with, that is how they identify with other women in the community; and finally, constraints in relation to social values and norms.
- **Identifying how women's agency has developed**, if constraints to action are identified then agency (ability to act) will develop. This should be reflected on both the individual and collective action.
- **Identifying how women's agency changed constraints to action,** improvements in power relations are welcomed but only when the shift in power is due to action by women, can empowerment be used.

This framework suggested by Mosedale and the TOR provided by GA for this evaluation, will therefore be used for the evaluation of gender within the project. The specific issues of the discussion in the FGDs were (based on the TOR for this evaluation): Knowledge of GA, Natural Resource Management, Motivation, Economic Activities, Challenges faced. The FGDs were conducted in Nchemu A, Nchemu B, Mdori sub-villages and Sarame Village (Table 9, Figure 19). The specific questions raised in the TOR included:

- Why they participate and compete?
- What changes are occurring in the social organization and customs?
- What are the different interests within the family set up regarding thematic issues?
- What is the perception of women on the improvement of natural resource management?

- What are the management issues relevant to both the families and sub-villages?
- What is the perception of those without income?

Additionally, some of the questions addressed in consideration of gender approaches and Mosedale's framework as explained in the beginning of the chapter included:

- What do the farmers understand about the project components? What do they understand about the competition process? What do they do with the competition money?
- Learning process: How/When do they get training/information about managing their natural resources?
- What are the benefits of the project/ What is the most important project component?
- What are the challenges faced within the project?
- What would you like to be addressed more?

Table 9: *FGD Farmer participants description*

Sub-Village	Attendance	Community	Description
Nchemu A	13	Mbugwe	Mixed farmers: cash crops, agropastoralists
Nchemu B	12	Iraqw & Barabaig	Agro-pastoralists
Mdori	15	Barabaig	Pastoralists
Sarame	~15	Mixed	Predominantly crop farmers, some agro-pastoralists.

Figure 19*: FGDs in pictures*

Two hypothetical questions were finally asked at the end of each FGD:

1. Would the project be successful if the men were the initial target group?
2. Would they join the project if there was no prize money?

Results of the FGDs with women

The following are the main points of feedback and quotes from the different FGD meetings with the women. A summary will be given at the end of the individual FGD reporting.

a. Mdori

How do they plan their pasture management? Their usual plan is to go into the forest during the dry periods and the plains during the rainy season with their livestock, however, there are limitations especially now with the Wildlife Management Authority (WMA) protected lands.

Concerning the project, all women involved were happy with the project and normally participate in the competition. They use the prize money to buy cows, goats and sheep to add to their herd, some of the money goes into paying for school associated costs. They feel like they don't need training on managing their livestock as they are already used to taking care of livestock.

On the questions if the project would have been successful if it would have targeted men instead of women, they replied: "*Where are the men? They are in Mdori drinking alcohol. Some of them have migrated with the livestock during the dry periods."*

On the question why women should be targeted: *"Because women are the ones found at home. We have engaged in growing trees, plastering our houses and making jikos. The project would not have had much success if they targeted the men*."

The most beneficial component of the project for the women is that water wells are now much closer to their houses and that they have small-kitchen gardens where they can get vegetables to prepare for the household. Challenges include that as women, even if they want to develop, they cannot, since the men are the main decision makers when it comes to, for example, livestock. They only have autonomy in the milk production as they are responsible for milking the cows for household consumption and they can sell the excess milk.

Some of their houses were recently destroyed by the government as a way of protecting the wildlife corridor. They can now re-build their houses out of the corridor. However, they are not allowed to cut timber from the nearby forest. Timber is evidently a challenge. They suggested an introduction of the neem tree and acacia as those are the visible varieties of trees that they see.

They mentioned that some of them joined the project even before they realised that there is prize money to gain, so they would still be part of the project even if there would be no prizes.

In Mdori the women in the FGD were the most suspicious to the questions compared to the other villages. They wanted to know what was done with the information, especially since the government had just destroyed their houses. They were obviously in a more uncertain and unstable situation compared to the other communities visited.

b. Nchemu A

In this village women had a good understanding of the GA project methodology, and could express the project activities and their participation. They explained the competition process the best way they know, and they participated in various instances, with some of them having won a prize more than once. They believe that women were selected as participants of the project because they have more responsibility in household management; it therefore makes it easier for them to fulfil the competition requirements.
When it comes to the competition money, they generally make the decision together (man and woman) as a household on how to spend the money.

The prize money is mostly used for personal development but also to improve the homestead, i.e. adding more rooms, changing the roofing from thatch to iron sheet, school related costs and buying food. The main benefits they have seen in the project is that there is food from the papaya trees and the kitchen garden during the rainy season.

On the question if the project would have succeeded if it specifically targeted men, some of the women believed it would have succeeded but some of the others did not. They also confirmed here that money is a great motivator for their participation in the project. This area had visually more progressive farmers compared to Nchemu B.

c. Nchemu B

Women in this village were able to describe the project and its various components quite well, and they understood the competition. On the question why to target the women, they replied: *"kwa sababu mama anaelewa mambo ya nyumbani"*; i.e. women better understand the needs of the household.

They participate as women in the activities leading up to the competition by plastering their houses, growing fruit trees, making the improved stoves etc. However, when it comes to the sharing of the prize money, they determine the use with their husbands. They also realise that the men in participating in the activities mostly engage in the planting of timber trees and fodder.

They believe that the project would not have been successful because the activities within the project are geared towards women. At the point they are now, they would continue without the prize money, but otherwise maybe not at the beginning. Hence, they confirm that the money was a good driver to start.

Water availability in their area is the main hindrance to their management of trees. They would like to have more training that is hands on and practical. For the competition, they feel like they are at a disadvantage being compared to Nchemu A because they are not as developed as Nchemu A. They also feel like Nchemu is too huge to be clustered together and that they should have their own grouping for the competition. Furthermore, they are willing to keep the dairy cattle for zero grazing, but as they have huge herd sizes, only one cow will get artificial insemination.

d. Sarame

During the meeting in Sarame, it was evident that there is already a good structure in the village. They had met for the general village meeting to discuss finance matters and what is needed within the village, for example within the schools, or health facilities. The men and women sat in separate groupings (Figure 21), which served as a visual indication of the cultural norms within this community. In terms of interacting and asking questions about GA, there was visual disinterest from the men. The women were more engaging and willing to respond. What does this say about attitudes and acceptance of the GA project within the community?

From the FGDs the women mentioned that they realise that their men stepped back at some point because they felt like the project focused on women and as such it was not meant for them. One farmer from Magomeni we spoke to said that he was not sure what number his wife was in the competition (my wife would know best…, he said). Such responses and including the '*hizo ni kazi za wanawake*' (translated as "that is women's work"), show the disconnect of men. The risk of looking at roles assumes exclusivity in action amongst genders. For a project to succeed in gender mainstreaming it should investigate relations as opposed to roles. This then begs the question: *While the project was focused on women, how has the inclusivity of men to the project been affected?*

There are several papers that have shown that interventions that target women show greater success than those that do not. Women tend to spend the money within the household and therefore immediate benefits are met in the family. However, while the project focused on women and created an opportunity for them to be at the forefront, the men took a back seat and the women ended up working more, with the whole family benefitting from her efforts.

The Pawpaw trees and Kitchen gardens have worked to ease the burden in feeding the household. Another side to this is that the women are now working in two aspects, not only fieldwork for crop production (grain) but also in the kitchen garden for fruit and vegetables.

In this village, in general, the whole family decided on how the prize money would be utilized. What was evident and unanimous in Sarame, Nchemu A and Mdori where the FGD was conducted is that 'if the project would have specifically targeted men, then it would not have been successful'. But Greening Africa may have to improve on their gender strategy to ensure that the men are included. To expect that GA can change the gendered customs and norms may be naïve, however GA in action may influence these norms and needs to work towards a transformative strategy where women are empowered, and the men are in collaboration.

Summary

In summary the FGDs revealed that women were selected because the project components are typically a responsibility of the woman within the household:

"It is easier for women to be convinced to participate in the project because the activities within the project are within their traditional roles and responsibilities of women for example, the improved jiko and fruit trees." (Mdori FGD)

"Women also tend to be home managers. The men are already out working or herding livestock." (Mdori, Nchemu FGDs,)

In general, the project has been beneficial for most of the women since they have been able to improve their homesteads i.e. having a toilet, plastering their walls, separating rooms and the competition money has been useful in personal development. They participate throughout the competition process as women, and some of them have had the opportunity of winning in more than one competition. The decision on how the prize money will be used is however made by both the man and the woman.

They requested more training on tree management, how to combat termites, and in establishing the zero grazing unit. They would advise that the Neem Tree and Grevillea are suitable trees for the area. They have had some training on how to manage their environment, especially since Sarame is prone to erosion. They showed some level of awareness but not too much. Within a household the project benefits are viewed differently: women see the home improvement as most beneficial, having fruit to add to diet also and the possibility of selling the pawpaw fruits, while the men find the fodder and timber trees most beneficial. Finally, concerning the prize money, the consensus is that the prize money is a great motivator, in as much as they can see the benefits they are having.

4.2 Appreciation of the project and Social Cohesion

This section is based on meetings held in Sarame (a general meeting with the village chairman that included a mixture of men and women and a specific meeting with women only), a meeting with the village authorities of Vilima Vitatu, and meetings with the Manyara ranch and the WMA. The results below will describe the feedback from these meetings.

4.2.1 Meetings in Sarame

In Sarame, the farmers were able to identify as project components: environmental conservation, reforestation, timber tree cultivation, fodder and the of digging wells. On responding as to why those who won had won, the response was that their competitors won because they followed the instructions from the rules and regulations of the competition document. On the prize money and how it was spent, they said they would not know since this depends on individual needs. On training, the farmers mentioned that they get their training in the tree nurseries sites, and judges then give follow-up on the trainings. If there is a need for training, they told that they could organize themselves and request for a training from the co-ordinator or facilitator of GA; however, this mainly referred to tree management issues. The farmers' feedback included a few issues that needed to be addressed, especially pests are a problem in the area (termites). They control pests using traditional methods of neem, and ash, however, the pests are still a major problem.

***Figure 20**: Sarame Village Meeting*

Next to the general feedback remarks mentioned above in this meeting, a clear concern among all farmers in the meeting was the withdrawal of the project. One lady explained it like this:

"*Since the project started, we have seen some progress, but it is worth noting that GA has just started implementation. Terminating the project now as it is, is immature. We have expectations that Sarame will be green, but we are now worried about this possibility after the project ends"* (this was also reiterated by a sub-village chairman).

Another big concern mentioned was water. The farmers in the meeting mentioned that they have requested for a borehole to be dug, or dams but that this was not done; that they have planted trees but that these have dried out (despite having followed the instructions); and that thus the challenge remains that they don't have enough water.

As mentioned in 4.1 in terms of gender, there is a disconnect between men and women. This has consequences to the social cohesion within the household. To look further at the village level, it requires looking into the competition and how farmers interact during the competition. Some of the farmers who were interviewed mentioned a lot of favouritism and jealousy, which prevented them from engaging with the winners and trying to learn from them.

On the positive side, the individual farmers interviewed in Sarame (Figure 22) were quite excited about the competition process because this helped to bring them together and they felt that some of the traditional songs and dance that were slowly eroding are now being revived. There was a sense of pride in their speech and how excited they get to compete and showcase their best form within their villages. However, social cohesion may not be as clear to determine, because there isn't a benchmark from which comparisons may be made. What must also be considered are the existing bias or structures that were already existing and to determine how these affect the social cohesion of the villages.

***Figure 21**: Individual famer visits*

4.2.2 Feedback from village administration Vilima Vitatu

On September 25th we had a meeting with the local administration of Vilima Vitatu, together with the GA director and project manager and village and sub-village leaders (Figure 22). It was a positive sign that we could get the village chairmen to attend and it was obvious that there was great collaboration between the local administration and the Greening Africa team. We discussed perception in the meeting, changes that they have seen within their communities and areas that needed more attention. The meeting was also useful in setting the scene, and for us as the evaluation team to determine the cohesion between GA and the community.

In general, the project was very much welcomed, and the participants highlighted the positive changes thanks to the project:

- More trees, vegetables and fruit trees;
- People have improved their own space, with better houses;
- Progress in Environmental conservation, with trees and fodder;
- More water and wells;
- More knowledge about zero grazing, due to limitations of pasture.

Main concern from the village chairmen and the ward representatives was that the project was coming to an end prematurely. They understood that tangible operations started in the second year and that setting-up the Magugu office and establishing operations in Sarame and Vilima Vitatu took time most of the first year. Indeed, in a project like GA, familiarizing with the local communities, establishing the tree nurseries, discovering the type of tree species that are needed to be grown within the villages etc. takes a lot of time; in this case at least one year. it is therefore comprehensible and logical that the local administration in this meeting requested that the project could continue at least for a few more months.

We asked them if they were able to continue themselves with the project activities. They expressed that they see the competitions as the main project support, that they can organize the competitions, but that they don't have money for the prices. They consider it impossible to do a competition without a price, that's the meaning of the competition for them. On the question if people are really motivated they said that of course the prices are a crucial motivator, again, without prices no competition. However, they acknowledge that trainings are given in specific skills, and that this is a good thing. That's the reason that the village administration itself cannot continue with the same activities: they don't have the experts, e.g. for tree management. Furthermore, they don't have extensions workers like the project has, and don't expect the government to assign one to them; hence there is also an important limitation of staff at this level. They also expressed that they would like to have more bore-holes, because the shallow wells are drying out too fast. However, these are expensive, and only the project can construct them.

In general during the meeting we sensed that the village administration is aware of the importance of the project concerning motivating people, but they see it mainly as a result of the competitions, and they don't see that they have a role themselves; mainly given the excuse of lack of money and labour (staff) within the village to support activities.

***Figure 22**: Meeting with local administration and village chairpersons.*

4.2.3 Feedback from Manyara Ranch and WMA

We also had a meeting with Manyara Ranch and the Wildlife Management Authority. The meeting with Manyara Ranch was useful in providing insight on the history of the area especially in relation to human-wildlife interactions. The meeting with WMA was to shed more light into this and provide insight on the land use status in the areas near the wildlife parks. What we gathered from the meeting was the complexity of the conflicts in land use in this landscape, and the little collaboration

currently between GA and WMA (although we know that they have been involved in ceremonies and meetings of the project, but due to the recent events concerning the Barabaig some tensions have grown). These tensions could become a hinderance to the project activities, especially because the Barabaig – who are part of the greening Africa project – had their homes destroyed because they were living on the Burunge wildlife corridor (Figure 23). The feedback from WMA and the Manyara Ranch was that the government had this conflict with the Barabaig because they are occupying now a permanent settlement in the area. Greening Africa, through helping them build energy saving jikos and plastering their houses, was therefore viewed as more or less confirming with their activities that the Barabaig were settling. This is a very complex issue, which we were not able to fully understand and there will not discuss further in the report.

***Figure 23**: In pictures before and after destruction of homesteads*

4.3 Landscape restoration and conservation

In this section, the PMR methodology will be evaluated by focusing on the 10 principles for a landscape approach to reconciling agriculture, conservation, and other competing land uses (Sayer *et al.*, 2013). The paper highlights the competition with environmental and biodiversity goals that comes about due to various land use allocation i.e. agriculture, mining, etc. The main aim of the paper is to "provide principles that address the emerging need to conserve environmental values and increase agricultural production while having a people-centred approach".

Due to the multifaceted nature of landscapes with interaction of both biophysical and socio-economic issues, challenges often emerge leading to 'wicked' problems because of conflicting priorities. This has often made it difficult to come up with solutions that satisfy these problems. Approaches have evolved over the years with various concepts, however, often not considering the people and society; often leading to project failures. The authors through these 10 principles attempt to provide guidelines for agents "seeking to achieve development and conservation

outcomes in multi-stakeholder systems", with a landscape approach framework that attempts to grapple these 'wicked' problems. By and large, GA promotes kitchen gardens and advises the planting of trees and perennial crops on marginal cropping areas to replace annual cropping which is degrading the land. As we further evaluate the PMR approach based on this paper, we are aware that agricultural production is not one of the objectives of GA, and that more focus is on ecological reclamation. Hereafter we will highlight each principle and its relevance or non-relevance in the GA context.

Continual learning and adaptive management: This principle demands the realization that landscapes are dynamic with internal and external influences. This potential to change means that there are unexpected changes within the landscape. This then suggests that actors should be prepared to adjust accordingly and take the opportunity as learning points. The authors suggest adaptive collaborative management and continuous learning. GA faced quite some failure during the first year of tree establishment due to various reasons, most of which were environmental. However, GA sought tree varieties that would be suitable in the area and has now found these tree varieties and species. This process of evaluation that is part of the Pachamama Methodology is also part of the continual learning process as emergent issues can then be highlighted and acted upon. The adaptive capacity of GA is definitely one of its strongest points, and although the project has sometimes the inclination to rely too much on a validated approach "copied" from the PMR Peru experience, continual learning is inherent to the methodology and the project is very aware that adaptations to the local context are required to make the project a success.

Common concern entry point: Stakeholders share divergent views, goals and objectives within a landscape. Aligning these different objectives is no easy task but rather a necessary task for finding solutions to the various problems within the landscape. In order to gain trust, the authors of the paper suggest focusing on intermediate targets that are relatively easy to reach. In the context of GA there is also a huge diversity in the stakeholders who are part of GA. The farmers registered within the project have different farming practices, live in differing environments (highlands verses lowland) and have different land tenure rights. The diversity is also expressed in stakeholders outside the GA project, but who have an interest in the same space (i.e. government administrations, other development organisations, private business, etc.). However, GA is generally seen by all stakeholders as a "good" project, with the right intentions, it is trusted; hence, although there are common concerns, how to work towards solutions "in collaboration" is still a challenge and something in which GA could invest more.

Multiple Scales and Multifunctionality: "Landscapes consist of numerous system feedbacks and influences that may affect management, both internal and external", for example downstream and upstream. In the case of GA some of the farmers reside on the shores of Lake Manyara and Lake Burungi when others are on the slopes and hillside. The introduction of the same tree varieties in the whole area was not plausible, so it was a good thing that GA took the tree fatalities as a learning point and suggested different tree species for different areas. However, there is more concerning this point. GA has not come to a truly "landscape approach" yet: focus is on individual households which compete in the contests, and some sporadic plantations of 1 hectare and larger, but at landscape level degradation continues. Hence, the scaling effect of GA is very limited, and so is its approach to multifunctionality of the landscape. Although different activities are included in the GA approach, and the project aims to foster (economic) diversity, there is no true integration of activities at village level, let alone at landscape level. Driving around in the area, the first visible issue are the bare soils and the lack of vegetation – with farmers still cutting trees and opening

marginal areas for crop cultivation. This is not tackled by the project, and agricultural activities – apart from the small plots around the homestead and sporadic plots further away – are not changing or improving. Hence, if the project really wants to regreen the area, much more efforts should be done at village and landscape level, starting with developing land use plans based on the carrying capacity of the land, reforestation of lands that do not produce anymore, achieve social agreements to reduce pressure of grazing, etc. This would require a whole new project and more investments in changing peoples' mindsets and capabilities to become stewards of the land and manage its natural resources in a sustainable way. This needs to be done in order to really change the fate of this area; without it the area will fall back to its original situation, despite the laudable efforts of GA.

Multiple Stakeholders: Like mentioned before, multiple stakeholders are involved within landscape development, and all of them must be considered to achieve sustainable impact. GA works with these multiple stakeholders, including farmers, private business owners, local administration, various government agencies, and other development agents. However, focus is mostly on establishing small local successes, rather than the integrated (holistic) management of the landscape (which is logical considering the scope and budget of GA). In our evaluation we drew quite some insight through the farmer meetings that we had, and this stakeholder group is very much involved in the project. However, having more regular feedback with different stakeholder groups (evaluation sessions) may help GA to have a better perspective on what is needed, how the project is viewed, and how these stakeholders can become more involved and especially committed.

Negotiated and transparent logic: This involves governance at all levels, and has a lot to do with participatory planning, in such a way that all stakeholders understand the logic of the intervention and become intrinsically motivated to participate. GA has done well in engaging governance at the lowest level within the society, being directly in touch with the farmers and village administration. In the meeting with the Ward executive and village chairmen there was consensus in most of the issues discussed, but they had valuable feedback and insights on what has worked there or not. Having such open discussions then creates allies and helps in the overall adoption of the project activities. Hence, this is addressed by the project, but not to its full potential. There is no systematic feedback mechanism from the local stakeholders to the project, there is no multi-stakeholder platform for example, or another structure that would provide the space for constant feedback into the project. Such a mechanism would reinforce the learning process, not only for the project, but also for the stakeholders: discussing about the project activities and logic, involving different people and transforming them into owners of the change process, is a major issue for achieving sustainable impact. That this is missing or not fully potentialized in GA is exemplified by the confusion about the competition process: people like to participate, mainly because there is a prize to win but also because they acknowledge the activities as useful, but nobody fully understands (not even the staff) the logic of the competitions. A serious evaluation with the farmers could provide a lot of new insights and could lead to better comprehension from all sides. Equally important is that this is done at higher institutional levels: again, stakeholders appreciate the project, but they don't really understand it or are intrinsically motivated to participate. The project is still seen as "foreign", with the competitions being the main support, which cannot be taken-over by the local administration. Hence, embedding the project activities in the local (institutional) context to create genuine ownership is needed.

Clarification of rights and responsibilities: The rights and responsibilities of different actors need to be well expressed formally or informally via the use of available administrative systems if possible, which then helps in future conflicting issues. For landscape restoration purposes this is indeed crucial, because all stakeholders need to be involved and have a clear role. In GA this is achieved to a certain extent: from our analysis we see that interviewed farmers are motivated and feel a certain level of responsibility to invest in their land and care for the environment. This is the basis, and very important. However, it is still very much focused on their own homestead and farm plot nearby the house, rather than a general widespread feeling of stewardship and sense of urgency to tackle land degradation at a wider (landscape) scale. People simply don't feel responsible for it yet, which is logical considering the level of poverty in the area, but which keeps the area in the vicious circle of degradation and food insecurity. This has also a lot to do with the absence of responsible authorities at the higher institutional level: this is something very common of course in Africa and settings such as these, but it is something that must be addressed by a project like GA. Responsibilities concerning peoples' own role in landscape restoration or development are not defined, and there is no alignment or harmonization in strategies. GA could and should take the lead in this, at least in a relatively small area like the two villages of GA1, if not, nothing will change substantially, and the area will remain in the same vicious circle, with a little improvement thanks to the project, but falling back to the initial situation as soon as GA leaves.

Participatory and user-friendly monitoring: Whilst stakeholders are in the same landscape, they interact within this landscape on an individual independent basis. As such they collect information that could be rather useful learning points for themselves, the project and other stakeholders. This principle is important in landscape restoration, as it allows a constant learning process and exchange of knowledge and experiences. One important very good point of GA are the clear indicators that need to be achieved to gain points during the competitions. Farmers know exactly what they need to do to in each competition and can decide themselves if that is worth their investment or not. These evaluation points are known to all competitors, and they can monitor themselves if they achieved it or not. This is meant to be a transparent process, and it indeed is, although some farmers complained that the judges were not fair and that they did not agree with the evaluations. However, in general this is very good, and if a family doesn't win a prize, they know what to improve next time to be able to win. Nevertheless, this works at individual household level, but not yet at landscape level, and it would be highly commendable to start a similar process at sub-village level and focus more on collective and participatory learning & action. Awareness about the degradation processes at landscape level and what can be done about it is now mainly lacking, and this could be improved by developing clear visions of the future village with concrete action plans, accompanied by a similar transparent and user-friendly monitoring system.

Resilience: This can be achieved through a combination of different principles, and the authors highlight the challenge of bringing change in an agricultural system without affecting or jeopardizing the already existing resilient systems. Of course, in this area, the whole landscape and system has already lost its resilience and capacity to respond to shocks, and landscape restoration with a total focus on restoring resilience is therefore absolutely crucial. However, GA is still very far from achieving that: it has sown the first seeds of resilience in motivating people, diversifying activities and planting trees, but in general land degradation and deforestation continues. For example, in such an area with land degradation farmers were still burning manure and crop residues, which would be useful for compost making and a remediation for restoring soil organic matter. Furthermore, during the survey and interviews, farmers responded to be using firewood for cooking, and as much as GA has already made headway with the introduction of the

energy saving stoves, deforestation for firewood and making charcoal still continues. A recommendation would therefore be to encourage tree varieties that can supplement wood fuel, but resilience has to do with so much more than only tree planting. As mentioned before, land use planning and reaching (stewardship) agreements at village level on how to use the land and control grazing and firewood collection are essential. Now it is simply still a situation of uncontrolled and overexploitation of the commons, predating the landscape from its natural resources, with only just a little drop of improvements and awareness giving back to the land.

Strengthened stakeholder capacity: This refers to improving the ability to stakeholders to participate fully and effectively, based on their own skills and capacities. GA has managed to increase the capacity of the farmers via peer learning and the competition process, which is indeed a great asset of the project. The prize money has gone directly into the homestead and in helping to facilitate some of the project components and essentially helping to achieve the projects objectives, contributing as such to landscape restoration. However, much more efforts are needed concerning capacity building to really give a meaningful contribution to landscape restoration. GA is based on learning from the best and is very aware of the capacity of local stakeholder to learn and do it themselves: this is indeed the way forward. How to achieve more improvements in this point is a major challenge, and something that GA cannot do alone. As the 10 principles paper clearly states in its conclusion as a learning point, is that there is not a single best answer: there needs to be constant learning, adaptation and improvement amongst stakeholders in a landscape. This means integration of activities at all possible levels (horizontal and vertical scaling-up), empowerment of all stakeholders so that they take their responsibilities and are motivated to learn and improve, and further strengthening collaboration. This is a daunting task, but it needs to be done to work toward a more sustainable future of this area.

5. Discussion

This chapter will reflect on the results that have been presented in the previous sections. But first we recall the two main objectives that were defined when GA set out to replicate the Pachamama Raymi methodology in Tanzania:

1. To plant prosperity through the adoption by most of the population, of innovations in natural resource management, alternative economic activities and preventive healthcare;
2. To test the Pachamama Raymi (PMR) Methodology in Tanzania and see if it can be used in other parts of Africa (this was to be achieved via various activities most outstanding being the organization of contests after every season and peer to peer learning).

Throughout the GA project, “adoption” is a central issue, as it is to most development projects. However, adoption by local smallholder farmers as in this case, is not a simple yes/no decision by a farmer (family) to invest in a certain innovation, but it is a process in which awareness about the problem, urgency and possible opportunities to tackle the problem are core elements. Farmers will always start with small trials first, and once a practice works and fits their farming system, they will start implementing it on a wider scale. This is the continued adoption phase, when real ownership of a practice is visible, and when practices are maintained and replicated by a farmer without any external incentives.

In the GA project, when it started, there was a lot of confidence in the intervention of PMR as it was done in Peru. From literature we know that it is important for any intervention to self-evaluate and determine the balance in salience, credibility and legitimacy (Kunseler *et al.*, 2015). *Salience* refers to ensuring all relevant views are addressed, *legitimacy* refers to the inclusion of diverging views, interests and beliefs as far as possible, and *credibility* ensures that the information is authoritative, believable and trusted (Cash *et al.*, 2003; Kunseler *et al.*, 2015; White *et al.*, 2010). Interventions need to consciously create boundaries that allow for salience, credibility and legitimacy, which in the case of working with smallholder farmers – as in GA – may be difficult. Beyond this, it is worth noting that limitations to adoption of technologies in Africa can be linked to the approach in which these technologies are disseminated and introduced into these communities (Oduol, 2011). However, what we appreciate very much in the GA approach as evaluated in this report, is that from the start GA has been trying to ensure as far as possible that these boundaries are considered, and that the necessary social infrastructure for their intervention would be made available during their introduction into this new territory.

GA does definitely have important elements of a truly bottom-up project, and – even though the use of an “alien” approach from Peru might be seen differently – GA tries not to use the PMR approach as a blueprint that can be copied and pasted in Tanzania. However, at the same time, we have seen that the approach is not always well-understood by the staff of GA, and that the only person fully mastering the approach is the Peruvian expert Mr. Toribio. Of course, this was the first phase of the GA project, in which elements of trial & error were still important to learn how the PMR would work in Tanzania. This open attitude to learn and do better is very much appreciated, and it is crucial for next phases of GA in Tanzania.

In this discussion we will dive into some of the aspects that we consider most important, and we base our discussion on the expected impact as formulated at the start of the project, and on the challenges that were defined; this to evaluate what has happened and what GA has done over the

past years. This discussion is therefore going to reflect on the identified impacts and challenges and highlight successes and points of attention from our findings.

5.1 Expected impact

In the project formulation mission, several potential (or expected) impacts were identified, and in this section, we will deal with most of them.

- The elimination of seasonal income for the villagers.

This was expected to be achieved through the production of fodder all year around and fodder production as a business option, with also animal production having increased at the end of the project as enough fodder is produced. A question specific to this was asked to the farmers: *Have you had access to good quality feed and fodder for your livestock over the past year?* About 25% of the respondents affirmed not to have access to feed or fodder, while 21% of those who were surveyed said they did have access in the past year. This only gives a slight indication of fodder availability in the region. What is to be appreciated here is that GA introduced the production of fodder actively amongst the farmers in the region and these numbers are an improvement to the initial situation. What would be interesting to find out is whether numbers would increase once adoption of fodder starts to diffuse more. In terms of whether fodder production contributed to the elimination of seasonal income, this could not be immediately established as most of the farmers who were growing fodder and feed were doing it for the livestock that they were keeping.

- The provision of long-term economic options, i.e. timber tree production and that each family will have at least planted 1 hectare of timber trees.

We did not collect in this evaluation absolute values of farmers who had planted timber trees. The information that we gathered was on the diversity in timber trees planted. Most of the farmers in terms of the framing of the question in Swahili planted some trees but also responded to the question as meaning that they did not have timber trees. We saw three main varieties of timber trees cultivated, and it is worth noting that the GA tree nurseries do have enough tree seedlings for timber production that are accessible to the farmers for free (after of course having given their voluntary labour for working in the tree nurseries). However, the requirement that the farmers must grow at least 1 ha of land is a major challenge due to the issue of land tenure.

- Improvements in human health, through preventive health measures, such as the increase in the quality of food in diets and water harvesting, construction of latrines, smoke-free stoves, etc.

In the project formulation document in order to achieve this objective of better human health, the project components included the improvements of the homestead and diets. For the respondents in our survey, 83% of the farmers had improved on their kitchen areas with jikos and cupboards whilst 88% of the farmers have lavatory facilities. All the farmers interviewed responded positively to the use of these facilities. This is an indicator of GA's success and impact in the aspect of improved human health.

- Increased amounts of stored grain.

In our assessment there was little or no interaction in the project components with crop production. This outcome could simply be an indication as to how the project evolved but given the importance

and impact of agriculture on the environment, it is absolutely needed that GA gives more emphasis to the agricultural aspects, among which production and storage of grains is indeed a crucial issue.

- The results for improving the livestock breeds will be apparent and the production of milk and milk products will improve the family diet.

The question we asked the farmers to ascertain this was: *Do you have a zero-grazing unit?* Only 20% of the farmers who were interviewed had zero grazing units. This is understandable as we were informed that the process of improved breeding by artificial insemination only started toward the end of 2017 and the beginning of 2018. This means that only some of the farmers had been able to get access to the artificial insemination services as of the time the survey was being conducted. Hence, it is too early to truly judge this expected impact of the project as such, but given that the project will now withdraw from these initial villages leaves us with the impression that this activity won't continue – only a few farmers have started.

- Each household will have planted several fruit trees.

Although in this evaluation we didn't exactly establish the number of fruit trees planted, it was evident that most families do have at least some fruit trees, although the diversity in type of fruit trees is low. In our assessment, as an activity within tree planting, fruit trees planting was the most pronounced within the farmer households. What is evident was the establishment of the Papaya trees as opposed to the other fruit trees like guava, mango or passion fruit. Hence, although Papayas are important and generally grow well in this region, more diversification would be very important.

- Soil cover, natural grass will have improved.

In the results section we have seen natural resource management as an outcome having the poorest scores in the analysis. This could be owed to the fact that farmers are often focused on production and not much aware of the degradation process. There is great opportunity for improvement in this aspect, as our analysis shows that more motivated farmers also scored higher on natural resource management aspects. In order for natural grass to recover, a completely new dynamic in the villages is required in which agreements are made on how to deal with the commons and the grazing. There is currently hardly any control, and enormous areas still lay bare without any cover, prone to erosion. This is one of the hardest issues to solve, but in order to really regreen this part of Africa, much more work is required in the field of awareness raising, collective action, and inducing a feeling of responsibility and stewardship among the population. This is currently hardly addressed by GA; this is to say, the focus is on families and the land around the homestead, and hardly on the management of the commons.

- Financial and fixed capital of the families will have increased greatly.

There was no way of quantifying this in numbers. What can be anticipated is that based on the activities that were introduced i.e. fruit tree production, timber production, kitchen gardens, zero grazing for milk production, the adopters of these innovations will, consequently, have an increase in their financial and fixed capital status. However, the expected "great increase" is definitely not achieved: some families, and especially the prize-winning families, have improved their capital assets and invested in their farm, and others have achieved this to a lesser extent, but overall and in a sustainable way this impact has not been achieved.

5.2 Challenges

While the above discussed impacts were identified, potential challenges were also envisioned in the project formulation document. We will now discuss these challenges in relation to our observations and results:

- The methodology of the project is based on reinforcing people's cultural identify. Navigating through the population pressure and environmental degradation is a challenge that may need to be overcome to identify this.

Cultural identification is probably one of the main successes that was experienced in this project. A farmer we interviewed in Sarame spoke with a lot of pride about representing his cultural heritage during the contests. Enquires about the contents were met with a lot of enthusiasm. In our opinion, the population pressure and land degradation did not affect the cultural identity.

- Achieving significant improvements in the position of women in these households.

The position of women has been extensively mentioned in the chapter of gender. The take-home message is that it is highly commendable that GA is aware of the need to empower women. Like mentioned previously, the ideal point would be to get to a gender transformative strategy in order to achieve gender equality and better development outcomes. GA has put in the necessary measures already, and a closer evaluation may be needed so as to include the men and eventually empower the women while achieving greater outcomes.

- Potential conflict with neighbouring villages as their cattle might invade the fodder fields for the farmers.

We did not experience any issues in relation to neighbouring cattle getting into GA farms. During the Focus Groups Discussions (FGDs) we have repeatedly asked this question, but it never appeared as a serious issue or challenge.

- Fires: with increased grass cover, potential fires in the drier seasons

This evaluation was conducted during the dry season, but as explained before, grass cover (as well as tree cover) is still very low in the area. During our presence (2 months) we also did not experience any incidences of accidental (bush)fires, even though burning crop residues is still a common practice in the area (this for sure is another point of attention during awareness raising workshops).

- Human-Wildlife conflict i.e. destruction of the trees by elephants from the neighbouring conservancies.

From our interviews we did not find much evidence of elephants destroying the fruit trees. This was further established in the survey, where 71% of the respondents told not to experience this problem at all, when asked if the tree survival rate was influenced by wildlife destruction. During the interviews we heard some stories of elephants having entered papaya fields, but this was more accidently then a general sensed kind of problem.

- Water availability is a challenge and digging of wells and rain water harvesting is needed.

Indeed, one of the main challenges that we encountered from our analysis was water availability. GA has done a lot in digging wells to provide the water for both human and livestock consumption. The farmers rarely use the water to irrigate their trees. This is further seen in the kitchen gardens,

where farmers are only able to maintain the vegetables during the rainy seasons when water is available. During the FGDs and farmer meetings, the main request that the farmers had was the provision of water and there were constant requests for boreholes. GA has mentioned rain water harvesting in their project formulation mission, but we saw very little promotion of rain water harvesting, and emphasis always on the digging of wells.

- Conflict between absentee farmers, government officials and villagers is a complex issue and should be avoided.

Land tenure is a crucial factor in the adoption of new technologies, as farmers are more willing and feel more secure if they own the land. There is marginalization of nomadic-pastoralist communities due to population outbursts and change in lifestyles. They cannot live their nomadic-pastoralist lives as they have previously been doing. They therefore own no land and are literally squatters in the area. This is further highlighted in the feedback from farmers on the competitions. They would like to grow timber trees, but they do not have land that they can allocate. Conflict is bound to arise. This was already experienced by some of the registered farmers of GA. This is a complex issue as there are various stakeholders within the same ecosystem. This was experienced also at the Burunge Wildlife Corridor. This remains a challenge and is a possible threat to the sustainability of the project if it continues in the same area.

- Adopting the methodology from Peru and training a complete team on the methodology in Tanzania when no one has experience on the same.

The only staff member who had adequate knowledge and experience in the methodology was the Peruvian expert/director of the Greening Africa project. This is because the director came to Tanzania from working in Peru in the Pachamama Raymi project as an expert farmer and eventually rose to become the director of the project. The challenge here is that he had to learn the local language and environment for the experiential learning to occur. As mentioned before, in our opinion there is still a challenge in the other staff members in executing activities of the methodology. There needs to be greater capacity building for the field staff to increase their knowledge. The model of finding community members to work as GA field staff is useful for maintaining diffusion and increasing learning within the community. The field staff are the immediate farmer contacts. It is appreciated that the project manager is a trained professional, but considering farmer numbers there needs to be more conscious capacity building for field staff.

- Marginal soils that could be problematic in the establishment of certain tree species.

This was a challenge in the beginning of the project and was expressed in the first year of the project where the tree survival rates were dismal. This is still experienced near Lake Manyara, however, in our evaluation we appreciate that suitable tree species were now being used for the area. However, soil fertility – and the soil being marginal – is still a huge issue in the area and nothing serious is done about it. Integrating soil fertility (and agricultural / farming) issues in the GA project and work with a more integrated approach that covers all aspects affecting the further degradation of the area, would be highly commendable.

5.3 Adoption rates

In this final section we come back to the issue of adoption, as adoption/ownership (and hence sustainability) for a project like GA is the one and only main impact indicator. Looking further into the objective set by GA, according to the project formulation document the proposal shows that

there should be about 60% of adoption after 3-4 years of the project. The table below shows that the 60% farmer participation was easily achieved, as shown by the farmer registration records of the project. However, the big question is: *what constitutes adoption rates of the methodology?* Does it entail all 3 pillars of GA? Is adoption of one aspect enough for all aspects? It is considered that this 60% of adoption is needed to have a sustainable basis for further scaling-up and consolidation of the approach and the activities done, but where are we now?

HOUSEHOLDS REGISTRATION

Sarame

S/N	Sub-Village	Total No. of families	Families Registered	% of families registered
1	Taifa Njema	88	78	89%
2	Ndorobni	83	77	93%
3	Kiteto	46	46	100%
4	Changarawe	60	49	82%
5	Bulkeri	73	72	99%
	Total	**350**	**322**	**92%**

HOUSEHOLDS REGISTRATION

Vilima Vitatu

S/N	Sub-Villages	Total No. of families	Families Registered	%
1	Mdori	251	204	81%
2	Kigongoni	238	154	65%
3	Marewa	117	84	72%
4	Magomeni	75	65	87%
5	Changarawe	53	45	85%
6	Nchemu	57	50	88%
	Jumla	**791**	**602**	**76%**

It is hard to be conclusive on this aspect. One the one hand, as we have seen in the relatively high scores for Motivation in our survey, GA has achieved to spark enthusiasm, motivation, vision building and planning among many of the farmer families. This is a crucial issue, and the foundation for development: without it nothing will change. On the other hand, we also see that achievements are still very much focused on individual households, and that collective action is hardly undertaken. In order to really work towards sustainability and change (in greening the area), much more emphasis must be put on generating collective responsibility and stewardship, and collaboration within the villages to take care of the environment. Adoption doesn't only deal with individual (household) improvements and implementation of specific practices, adoption in the sense of sustainable development deals with this collective sense of stewardship that the Earth, the land and its natural resources, is a common "gift" that must be taken care of.

An example of how this focus on the more individual household works out in the results of the GA project is this statement which was written down in the project formulation mission GA:

Cutting down trees from natural forests can no longer produce the amounts of wood that are required; too much of the forests have disappeared. Afforestation needs to take place on a large scale to produce the timber and firewood that are needed.

Regreening and afforestation is logically a key-activity in GA, and this statement mentions the need of fuel wood and the adoption of trees for firewood. However, the project has not had a focus on providing farmers with specific varieties for firewood production, and the emphasis has been on trees for fruit trees and timber. Of course, one could argue that this makes sense and is a first step, and that the branches of those trees will also provide firewood, but obviously this is not enough to counter the problem of lack of firewood. Here the tension between collective action and individual needs for fruit and timber (income generating) trees becomes apparent, and that is something that is not yet solved within the project.

Another issue concerning adoption and ownership are the prizes that are used. The project has successfully managed to motivate the farmers with contests culminated by cultural presentations. With the use of prizes, there is a risk of creating scenarios where those who are already in a better financial status gain more (higher prizes for winner of winners). But even higher is the risk that people will participate (or "adopt" certain practices) because of the prizes they can win. This risk becomes higher when not enough attention is given to awareness raising and making the people understand *why* these prizes are given and justified. Of course, GA is working on this and is aware of this risk, but still we consider that the project should be more cautious with the use of prizes, and that a good discussion and reflection within the project is needed to evaluate this issue. From the previous parts of this report it is clear that the discussion among farmers about the prizes is a serious one, and that there are at least several cases where farmers have expressed jealousy or criticism on how the project deals with these prizes. The fact that farmers can win prizes (money) is highly welcomed, but the negative aspects of it should be taken very seriously as well. Doing something (or adopting a practice) for the wrong reason, such as a prize instead of the intrinsic motivation that it is a good thing to do, is devastating for the motivation of farmers. So far, their motivation is high, but high mainly for their own household development and well-being; not so much for the collective sustainable development of the village or the landscape as such.

Finally, in terms of investigating the possibility of adapting the Pachamama Methodology in Tanzania, we have seen that it is possible but there is a need to appreciate the differences and heterogeneity in the region. This is specifically on the activities that are outlined within the methodology. There is diversity on personal attributes, perceptions and farm attributes. All these factors greatly influence the uptake and adoption of the various activities. Nevertheless, what was a constant across villages was that the farmers are motivated, and GA should capitalize and strategize more around this aspect, by focusing more on village dynamics and the management of the commons.

6. Recommendations & conclusion

In this section we will explicitly highlight recommendations that we base on the evaluation results from the survey, the FGDs / farmer feedback, and our observations. This section therefore summarizes some of the discussions in previous sections and will highlight those issues we consider most important to mention as recommendations. We finalize this chapter and the report with some conclusions.

6.1 Recommendations

First of all, we would like to emphasize that in most development projects the issue of motivating farmers to participate in the introduced interventions is often the main challenge. The biggest positive in GA is that farmers in the area are motivated, and we have seen that more motivation is correlated to better natural resource management, economic activities and well-being. However, the observed motivation and enthusiasm to join project activities is not only intrinsically given: the prizes given in the competitions play a big role. This was often confirmed during the evaluation, and a first recommendation **(1)** would therefore be to define a clear strategy on how to go about with these prizes. The problem is that once a project starts with such prizes it is hard to do without them; unless there is a clear strategy and the farmers know and understand it. An option would be to reduce the prizes to zero within 1-2 years, but even then at the start of the project a lot of (awareness raising) training is needed to explain this to the farmers. Giving prizes and incentives is always risky and can undermine ownership and sustainability. This is a crucial issue that need to be discussed in the project team.

On the other hand, overall there is rather poor performance in natural resource management and economic activities, although we must note here that we don't have a control group (the without GA case) and that it is therefore hard to be conclusive. What is obvious however, is that there is still a lot of work to do on especially natural resource management (the often-mentioned management of the commons specifically) and on economic activities in the area. These are opportunities for GA to strategize in a next project, and coincide with their pillars of ecological restoration and economic recovery. We recommend **(2)** that more emphasis is given from the start of a next project to mapping and discussing (awareness raising) with the stakeholders about the underlying problems of ecological degradation and poverty, and seek for opportunities that the population supports and suggests (local knowledge!), and which are attainable with their own means. Giving them the responsibility and making them responsible would foster sustainable development, so as much as the GA approach is already bottom-up, this can still be improved and strengthened.

Related to this we come back to the issue of landscape restoration, and the greening of the area. Very laudable efforts are being made by GA to integrate different activities and practices, and emphasize that this starts at household level. This is absolutely the right way forward, but at the same time we see too much focus on the individual (household) improvements and hardly any progress on regreening at landscape level (the commons). Of course GA has recently started, and of course one could argue that the foundation is now being laid for regreening and that it is now up to the people to continue planting trees. But we strongly recommend **(3)** to put more emphasis on the integrated management of the commons and its natural resources, and from the start include these aspects in the trainings and workshops.

This also calls for more attention to collaboration within the GA villages. Now there is a certain level of jealousy when people win, and collaboration within the competition is not at all stimulated (only within a household, but not between households). Although the celebrations and cultural activities stimulate social cohesion, we see that much more can be done (and should be done) to stimulate collaboration and trust within the villages. This is a crucial element for sustainable development, and especially when a project intends to regreen Africa (or this area in particular), collective action is indispensable. We therefore recommend **(4)** to consider changing the competitions to more collaborative competitions in which groups participate, as such stimulating social cohesion and trust. We are aware that this might be a challenge in an environment with so many different tribes, but it needs to be done. The only way to make progress in combatting the underlying causes of ecological degradation is that people start collaborating to tackle these problems together, and reach agreements about how they want their future to look like.

Looking at Outcome D (well-being) we saw that Marewa in Vilima Vitatu had the highest scoring, which we explain because Marewa is one of the sub-villages that is in the town centre and people have easier access to food and sanitary facilities than with the more remote sub-villages. However, we could not establish why Kiteto as a sub-village scored poorest compared to the other sub-villages or why Changarawe in Sarame had such a good scoring in natural resource management. This information may be useful for GA to further investigate, to learn about driving factors that could make the difference. An in-depth impact assessment is therefore highly recommendable **(5)**, to understand better about the drivers of change in this area due to GA, opportunities and limitations in different villages, and as such take the strategic decisions that could gear the project to achieve its objectives. Currently it is too easily assumed that after 3-4 years intervention with the PMR methodology a village should be ready and the project can withdraw: we don't agree with this and the results show that indeed there is still a lot of work to do in the two villages.

Concerning the adoption of project components, we see that every new round of registration includes the farmers that were also there in the previous season. GA does not keep a database on the previous farmers but rather relies on the competition process to record farmer achievements, through rewards for improvements from the previous season. However, all the farmers improve on their household and adopt certain components, but they do not necessarily win in the contests. Recording these achievements would be useful indicators to the adoption of project components, and we recommend **(6)** to do this in a more structured way, as such also generating more evidence about the impact of GA.

Water access and availability is a big issue in the region, which is described as semi-arid. While GA is collaborating with the farmers to dig wells, there needs to be a lot more emphasize on water conservation. Rain water harvesting is mentioned in the project formulation mission as important, but there needs to be done a lot more to encourage rain water harvesting in addition to what is currently being done. A recommendation **(7)** would be that alongside providing water, conserving the little water that falls and is available would be a priority, and that specific capacity building on these aspects is integrated in the project activities. More so, since in almost all the meetings, interviews and within the survey the need for water was the constant feedback.

Concerning the PMR methodology, we see it as a great effort to implement and test it in the Tanzania context, and adapt it accordingly. However, as mentioned above, too much believe is put on the fact the "what works in Peru will work in Tanzania". Realizing that farmer motivation is a major driver is welcome, however, putting more emphasis on the diversity in the system and the

differences between the two contexts is essential. Often too easily the 'one shoe fits all' scenario is taken for granted, and we recommend **(8)** that GA – within its intervention – should adapt a Tanzania strategy in general but also a locational strategy within the Magugu project. Hence, being more aware of the sociocultural but also the agroecological differences, and acting on it to adapt the strategy at an early stage with the collaboration of the different stakeholders, is an essential aspect. Hence, more feedback and evaluation sessions with the stakeholders are needed.

Concerning the competitions, the project evaluation team could not get a clear picture of the competitions and how these are exactly set-up. This was discussed with the director who mentioned the intention of creating a clearer idea (on paper) of the competition process, but this was eventually not received. The same confusion is present within the staff, who could also not adequately explain the whole process of the competitions, leading to unclarity about who participates in which competition and has the opportunity to win (again) a prize. Making this totally transparent and discuss it with the staff – so they can explain it to the villages – is a crucial aspect to be addressed. Hence, clear guidelines (or a manual) are needed on the competition process, to avoid a scenario where those who are more resource limited are at risk of being side-lined. The highest award in terms of prize money is for the growing of timber trees, but this should not be below 1 ha of land. Land as an asset for such a long investment needs ownership. Therefore, the wealthier farmers in this regard, can grow timber trees, win the highest possible award in terms of prize money and still accrue the highest benefit in future. Further to this they can win more than once in terms of home improvement in the next competition. We recommend **(9)** GA to review this competition process and avoid perpetuate the opposite of what it is advocating for.

Similarly, concerning the competitions, we recommend **(10)** to design the competition also a bit more "tailor-made", i.e. adapt these to local tribes or sub-villages which would be allow also the more vulnerable people to win. Now for instance the female-headed households often have no chance to win as they lack resources and labour. For this stakeholder group a tailor-made competition could be held in which female-headed households compete in one single competition. The same could be done for certain sub-villages or tribes.

Concerning the conflicts between absentee farmers, government officials and villagers we see this is a complex issue that should be addressed. Although this was already at the start of the project foreseen as one of the challenges within GA, our recommendation **(11)** would be to work in closer collaboration at management level. Bureaucracies withstanding there is necessity more so for information purposes and to avoid being riled up in the conflict.

Further into the technical aspects, we recommend **(12)** that Greening Africa should include quantification of changes in vegetation data by applying remote sensing. This would shed more light on the changes that may have occurred within the project area, and would be very strong (visible) evidence about the impact of the project. Although in this phase 1 the impact on soil cover has not yet been very visible (due to lack of earlier discussed attention to the management of the commons), changes in tree cover will be visible on such RS images, and on environmental impact within the area of Vilima Vitatu and Sarame. This may be useful as learning points in the expansion of GA to other regions.

We recommend **(13)** due diligence on the introduction of tree species in the area, because GA needs to be aware whether the regreening is because of the areas getting back into equilibrium or because of the introduction of new vegetation to the area. This is well explained in the paper by

Brandt *et al.* (2014). GA did consult the local government but they would benefit from looking at proven databases of trees, for example the world agroforestry centre has open source information called Useful Tree Species for Africa | World Agroforestry.

Another important recommendation **(14)** would be to have a training plan in place. Since the methodology advocates for the use of best practices by local communities, there need to be better training videos, leaflets and manuals - more so since GA is using a trainer-of-trainers model. Important also that such trainings are tailor-made and on-demand by local farmers: what demands do farmers have, and what are the questions farmers have in relation to the project? Which gaps should they fill? While it is understandable that the project has a huge working area, a training plan will work to ensure that the farmers training needs are at least met. During the FGDs and interviews they specifically asked for more training on management in several aspects. For instance, farmers have knowledge on tree nursery management and tree establishment, but they need more training on management, i.e. pests and diseases, fertilization, etc. A training plan would be useful in the standardization of the information provided. Please note the training is meant firstly to increase the capacities of the field staff, which includes the local judges within the communities, who then on their turn can better train the farmers according to the learning from the best principle (farmer-to-farmer learning).

Furthermore, an exit plan seemed not to be present or available as we observed during our evaluation. This became even more apparent in terms of training needs. The village chairmen and farmers were concerned about tree management especially and that they had just started getting acquainted with the project. This is understandable more so since GA admitted to having spent about one year and a half in trial and error of appropriate tree species. But just withdrawing from these villages that were addressed during the first phase of GA is a big risk for sustainability: we consider that it is too early to withdraw, the work has just started, people are motivated, but impact on natural resources and economic activities is still too low. This makes stakeholders also uncertain, they frequently asked us for the project to stay; not just because they know that they can win prizes (which for sure is also an important reason), but also because they truly wanted the project to continue and finish the job. Hence, we recommend **(15)** to define a clear exit strategy which is also understood by the local stakeholders; hence, discuss this with them from the start, understand what they want and see as most feasible, and reach an agreement. Now it is rather one-sided, with the decision being taken by the project, and nobody understanding why the project stops.

The GA project is in general quite popular in the area, it is far more successful and cared for by the local population than previous projects, and has set in motion real change. But it is just the start, it is premature to leave, and the risk that the village falls back into the same trends as before GA started is very high. Hence, if funding is available, we recommend **(16)** that GA reinforces its activities in these two villages to really bring the evidence that this (adapted) PMR methodology can bring sustainable change in the Tanzania context. The timing is appropriate now for discussing this with the local stakeholders: lessons have been learned, people now understand how the project works, they have confidence that GA helps them to find solutions, collaboration has improved and there is trust and motivation, but it is still quite a big step towards sustainable development of the area.

6.2 Conclusion

Unmistakably, the GA project in Tanzania has a myriad of challenges and issues that need to be navigated through. This not only includes the space in biophysical terms, but also in the diversity and complexity of the socioeconomic space. Certainly, what we have seen in evidence throughout this document is that GA has been able to generate change in the area, and that people have learned a lot, especially in the management of their tree nurseries and improvements on the homesteads. We can therefore conclude that the PMR approach works in Tanzania, as it appeals to some basic and universal characteristics of mankind, namely the need to improve our well-being (or "to plant prosperity" as GA expresses it so nicely), and the underlying desire to connect to other people and collaborate, as we can see triggered by the competitions. With some modifications, and considering our recommendations, GA can still tremendously improve its impact in the area; however, key is to have more in-depth discussion and reflection on the methodology with the local stakeholders (staff and farmers!), and especially to define the next steps needed to achieve more sustainable impact, lasting change.

Our conclusion is therefore that the project should continue (and even intensify) its intervention in the existing villages (GA 1 & 2). What is needed is a truly integrated approach, embracing topics and areas that till date have hardly been addressed, such as the management of the commons and the regreening of such areas. Given the experience that farmers now have with the tree nurseries and their motivation to learn and plant trees, GA has the huge opportunity to create micro-climates with the local population and owned by them! The PMR approach can be highly relevant and a game-changer in Tanzania (with the competitions being the most embraced aspect of the methodology), but deep discussions are needed on how to make the approach even more bottom-up, integrated and effective. GA, all factors considered, has been able to achieve a tremendous amount of headway and as such the project can become even more successful if it tackles the remaining issues as well – based on more focus on village collaboration, and benefiting from the new dynamic that is now available.

When these discussions about the strategy and intervention approach are finalized, taking into account the recommendations in this report, it would definitely be worthwhile to simultaneously expand Greening Africa to other villages in the area. Given that GA is already known in the area – and people have heard about its approach – this expansion should be thoroughly prepared and discussed with the stakeholders, in order to make expectations and goals clear, create ownership, and achieve that people genuinely participate in the "new" GA intervention, without looking to much at GA 1 and 2 villages. It should be clearly explained that these were pilot villges where GA wanted to learn about the best approach and techniques, and that now expansion starts with a slightly different approach to assure sustainability. Care should be taken not to go too fast and aim to achieve impact in 3 years: changing mindsets and behaviour of people takes time, but if it is done collectively and based on ownership and own efforts of local stakeholders, it can be achieved, maybe in more years, but in a sustainable way, as such really contributing to the regreening of Africa.

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Greening Africa project documents.

Annexes

Tree Nurseries

Improved Houses

Fodder Production

Farmer Visits

Farmer Survey Document

The Greening Africa Quick Survey Tool is inspired by the methodology of Pachamama Raymi which loosely translates to building prosperity via the eradication of extreme poverty. This is mainly achieved through the reclamation of dilapidated natural resources. The elements within the methodology are considered in the outcomes and are made measurable by defining categories and Indicators.

The Survey measures only the 4 main Indicators that are relevant for each Category, and for each Indicator 1 to a max of 5 questions are asked to a farmer. These are key-questions, which together give the best possible proxy for each Indicator. As such the Survey can be short and quick, but at the same time very rich in collecting only the information that is absolutely needed. It can be finalized within 100 minutes.

Each response is measured on a Likert-scale, usually of 1-5, and these sums up to scores for each Category, and subsequently for each Outcome. Transferring this to spider graphs, a quick insight can be provided on the score of each farmer concerning the 4 Outcomes and 18 Categories. An overview is given below:

Outcomes	Categories	Indicators
Motivation	**Future vision**	Concrete Action Plan
		Farmer's future vision
		Objectives for the farm
	Intrinsic motivation	Motivation for farming
		Willingness to invest in the farm
		Drive to learn and do better
	Social capital/Conducive Environment	Collaboration in the household
		Collaboration and trust in the village
		Collaboration in groups
	Capabilities	Self-reliance
		Available means
		Knowledge
Natural resource management	**Avoidance of Soil Loss**	Occurrence of soil erosion
		Physical Measures
		Tillage practices
	Land management	Soil Productivity
		Soil Fertility Management
		Crop management
	Vegetation management	Pasture Management

		Tree management
		Survival Rate
	Water	Water source
		Water availability (shortage)
		Water conservation practices
Economic activities	**Fruit trees**	Number of trees planted
		Sales / Income
	Timber trees	Number of trees planted
		Sales/Income
	Livestock	Diversity in livestock type
		Livestock Health
		Feed Availability
	Other income sources	Employment
		Cash Crops
		Sales/Small Businesses
Well-being	**Food security**	Availability
		Nutrition / diet
	Kitchen garden	Crop diversity
		Production
		Management of the kitchen garden
	Health	Homestead Improvement
		Kitchen
		Lavatory
		Health Status