

PROGRESS REPORT ON SGG-ZOMBATREEZ PROJECT

INTRODUCTION

Sustainable Global Gardens [SGG] representatives undertook the annual field visits in Kenya, Tanzania and Malawi between 4th January and 5th March for the purpose of monitoring progress there and developing new plans for the future. The first month of this period was spent in Zomba District, Malawi, and this report indicates what has been achieved in that locality.

For those readers who are unacquainted with this project, it may be useful to refer to two other documents. One is the Strategic Plan for this 5-year project. The other is the 2023 Progress Report, written after SGG's first visit to Zomba. These documents are both available on the website www.sustainableglobalgardens.org.uk. They provide the context for this report.

It should be recognized that there are three major parties involved here. One is SGG, whose prime role is to raise funding and to provide monitoring reports for sponsors of this project. A second is Zomba Forest Lodge, who act as the local sponsor and manager of the various activities. The third, and most important party, are the hundreds of farmers in the Nankhunda-Nsanama locality who undertake most of the work required and who are the main beneficiaries of this project. These three parties participate in four major activities, which should continue for a 5-year period.



This photo [see above left] shows one of several Conservation Areas near Zomba Forest Lodge. Here indigenous tree species predominate, although the area has become degraded by tree felling. The aim is to clear weeds, 'stranglers' [e.g. buffalo bean, mulunguzi] and suppress any wildfires so that natural regeneration of the forest can be encouraged. The photo also shows three of my regular guides & companions: Jonas on the left, Clement in the middle, and Aaron right background. They are some of the community leaders & trainers on whom the success of this project depends.

The photo on the right illustrates the typical scenery where most activities [eg. agroforestry, kitchen gardens] were undertaken. Here the original forest has been removed and generally replaced by the small plots of semi-subsistence farmers. The most common crop is maize. This photo was taken in January during a period of significant rainfall and soil erosion. The brown patches indicate areas where the maize is still very small & likely to be unproductive – probably because of a combination of a) early rains in November followed by drought in December, b) infertile soil, and c) soil erosion, which was witnessed within a hour of this photo being taken. There are some woodlots of pine, but generally there is insufficient tree cover except immediately around the villagers' homes. Promotion of agroforestry across this type of scenery is an important component of this project.



Above are photos showing two of the local community groups who are a crucial part of this environmental improvement programme. One group [see above left] are 10 members of the Nsanama Women's Conservation Group who undertook the hard labour to establish a kitchen garden Demonstration Plot. The large stones in the foreground give an indication of some of the difficulties of cultivation in this locality. The second group [see above right] is the Happy Hammers group when they had finished their maintenance of their Conservation Area where 4,056 trees, at least knee height, were counted. Many of the Happy Hammers look rather tired – which is not surprising when they have just completed hours of physical work!

Over the last 50 years when the population of Malawi has increased more than threefold, there has been a corresponding clearance of land for farming, a loss of the majority of Malawi's forest cover, and widespread degradation of villagers' environmental resources. The aim of this project is to reverse this process and implement environmental improvements which will bring direct benefits to the local community. Community development through environmental improvement is our goal.

TRAINING BASED ON TIYENI DEEP-BED FARMING

It was intended for most of 2023 that there would be a second round of Tiyeni training before the November rains and before SGG's January visit. For various reasons that training did not take place, so group discussions with SGG present tended to focus on two issues: was the Tiyeni method effective in raising crop yields, and were the previous training arrangements the most cost-effective way of promoting the Tiyeni methodology. In the last progress report it was mentioned that most of the Tiyeni plots visited showed promising results in that the growing maize was generally taller and healthier-looking than where Tiyeni methods had not been used. However, would this initial promise produce a better harvest? The other point made last year was that, if Tiyeni methods were the best way to improve crop yields, the training of only 20 farmers per year is too slow an arrangement to promote Tiyeni methods rapidly through the community.

Accordingly, those attendants at the October 2021 Tiyeni training who had not been visited in 2023 were asked to comment on their harvest results. When this was done at various times in January, SGG kept in mind that the training took place more than two years previously, so there may be some inaccuracies in the quoted results. Some respondents may have been inclined to exaggerate the benefits of Tiyeni training in order to please the interviewer or to encourage more training. Another consideration here is that these results would be influenced by other factors e.g. the poor rains & subsequent harvest in the 2021-2022 period, the severe damage caused by Cyclone Freddy in February 2023. Despite these difficulties of survey interpretation there seems to be a useful conclusion.

The most significant comments from Tiyeni trainees included:

- 3 of the attendants at Tiyeni training did not follow up and use the method on their own farms. One gave the reason of having steep land. This raises the question whether this method is the best intervention on steep ground which is widespread in this locality;
- several farmers did not try to implement the Tiyeni method, which requires significant hard work, until preparation of the land from August 2022 onwards. These two facts suggest that farmers were not immediately convinced by the training;
- 1 farmer estimated that her plot had produced 3 bags of maize before Tiyeni training, but only one and a half afterwards. The reason given was that the plot was on steep ground, and Cyclone Freddy caused severe erosion within the plot;
- 1 farmer attended the training but left it to his brother-in-law to undertake the work required;
- 8 farmers gave very positive comments. Clement suggested that in 2023 he harvested 4 bags of maize after Tiyeni whereas he had gained only 3 bags before. Kennedy had harvested only half a bag of maize before training, but a whole bag of maize plus beans & pidgeon peas afterwards. Humphry obtained 5 bags of maize before, but 7 bags after Tiyeni training. Felix said that before Tiyeni he harvested only half a bag of maize from a small plot, but after training he tripled that figure. Phineas also made the same comment. Margaret & Eric both claimed that yields of maize had tripled on their respective Tiyeni plots;
- from the last set of comments it seems reasonable to accept that the Tiyeni method can often produce a doubling of yields, so it can make a major contribution to food security. Thus, Tiyeni methods should be promoted within the Zomba area. However, consideration needs to be made of slope gradients, and where these are steep other methods may be more appropriate.



Here are 3 photos of Elisabeth Lifa, who received Tiyeni training. [See above left] Here there has been Tiyeni method + compost, whereas [see above right] there is no Tiyeni method on a neighbour's plot. In the 3rd photo [see left below] Elisabeth did not have sufficient compost to fully follow the Tiyeni method.

Notice the height of the maize compared to Elisabeth. The obvious conclusion is that Tiyeni can produce better harvests, but that compost/manure is also essential for good results.

How can this Tiyeni method best be promoted? There is agreement that the system of training only 20 farmers every year will not disseminate this valuable innovation rapidly enough. Accordingly, it was decided by ZFL & SGG that it would be better for SGG to devote the next field visit to the training of at least 40 farmers in the Tiyeni deep-bed farming method. Furthermore, this training would make considerable use of the Tiyeni manual but would also include some aspects not sufficiently covered in the first Tiyeni training course of October 2021. Such aspects could include more attention to the creation of contour ridging on steep ground, greater use of interplanting, and better integration of agroforestry and Tiyeni methods.

KITCHEN GARDENS

Nearly all of SGG's time concerning this activity during last year's field visit was taken up by the establishment of a Demonstration Plot in Nankhunda village. For the rest of 2023 SGG was concerned that the young plants and the cheap fencing would be inadequate to face the fury of Cyclone Freddy. However, the news received in early January this year was good: the Demonstration Plot not only survived Cyclone Freddy, but it also provided food supplies for those left homeless by the cyclone. When village life returned to normal after May 2023 the Demonstration Plot continued to provide food for the families of the volunteers maintaining the plot. Thus, it was an obvious decision to establish a second demonstration plot at the neighbouring village of Nsanama. The site chosen for the Demonstration Kitchen Garden was next to Faith Rabbet's house. This was steep and rocky ground, but it had the advantage of being located in the centre of Nsanama village and with easy access. As most of the farms near that village are on steep ground, it seemed reasonable to show what could be done in such circumstances.



Most work involved the making of double-dug raised beds. As the soil was often thin with a very stony sub-soil this was hard work [see above left]. As the ground was steep, it was necessary to create a series of terraces with vetiver planted along them to hold the soil in place [see above right]. On one part of the plot solid rock just below the surface meant that planting was impossible, so it was then decided to use this for a compost mound. Here [see below right] dry maize stoves are being chopped into smaller pieces, mixed with manure & ash, and then watered to aid decomposition. Making compost-manure is a major need on Malawi's small-scale farms.





After six days work the Nsanama Demonstration Garden looks rather bare in comparison with the healthy maize beyond the fence. However, by this time the land had been terraced & secured with 3 lines of vetiver grass. Five short raised beds & one long raised bed [the equivalent of 3 shorter beds] had been constructed, and were now planted with 60 tomato plants. It would have been sensible to have a greater variety of vegetables but other seedlings were unavailable when the photo was taken. It is suggested therefore that in the future this plot is used primarily to provide members with a variety of vegetable seedlings for their own farms as well as for sale. Spaces between the raised beds were now occupied by 10 banana plants, 3 pawpaw and 12 *Tephrosia vogelii*. What is required now is for these plants to grow and be watered when rainfall is inadequate.

One pleasing feature of the Nsanama Demonstration Garden is that it cost only MKw 336,000/- [less than £200] to establish, whereas the 2023 Demonstration Plot at Nankhunda cost nearly £500. Part of the explanation for this is that it is much smaller than the Nankhunda prototype. However, the main factor here is that most resources [manure, vetiver grass bundles, bamboo, fencing grass, the trees which were planted etc] were purchased within the village itself, whereas in the previous year it had been necessary to transport large quantities of manure from outside the village. A consequence of this reduced cost is that the partnership is now considering the establishment of two new demonstration gardens next year.

Demonstration plots are of limited value unless the innovations they illustrate are adopted by the surrounding farming community. Concerning this dissemination of kitchen gardens SGG heard some very good news. The 5-year Strategic Plan proposed that during the last 3 years of the programme a total of 150 kitchen gardens would be established in the household plots of villagers in order to increase the consumption of vegetables in the local diet. SGG anticipated that this activity would commence during this January field visit and that there would be an annual target of 50 double-dug raised beds for the next 3 years. SGG was pleasantly surprised to discover that this activity had started towards the end of Year 2 of the programme, and that by January 2024 there were already 29 beds established. Thus, SGG's contribution to this activity was not further training as expected, but monitoring of progress on those farms with kitchen gardens. At the meeting of Nankhunda Transformation community leaders on 29/1/2024 a brief survey indicated that 9 members had 15 raised beds. All of these beds had at least 3 different vegetables, and a total of 13 different vegetables were recorded. This is in addition to the two demonstration plots, managed by Benedicto and Faith, where there are 18 raised beds.



As double-dug raised beds for vegetables was a new idea for most farmers it was initially agreed that only 1 or 2 beds would be made on each farm in order to spread the uptake of this horticultural innovation. A consequence of this is that some used much of their fenced area as a tree nursery as well. Here [see above left] Jinny Kagwa has planted rape, Chinese cabbage, & beans in her raised bed. She also has 3 pepper bushes & 3 tomato plants, but most space within the fenced area is occupied by a tree nursery with an estimated 1,200 pine seedlings. Fanny Mariko, who is standing between her maize & her new raised bed, [see above right] has also planted Chinese cabbage, rape, beans and tomato in the raised bed. The best kitchen garden visited belongs to Oliva Seba of Chigwandembo group [see both photos below] where again there are a variety of vegetables. Of particular interest here is the choumoellier, which was found only in this garden. This is known as sukumawiki in Kenya, where it has rapidly spread as the most favoured green vegetable, so SGG would like to promote this in Nankhunda next year. SGG has offered to buy at least 100 choumuellier seedlings & a similar number of tomato seedlings next November/at the start of the rains for MKw 200/- per seedling. There was a dearth of seedlings available for purchase in January 2024, and the production of such seedlings for a ready demand represents a promising commercial opportunity for good gardeners. Both demonstration plots should focus on production of seedlings for members in the future.



There were two other interesting features of Oliva's farm. She did not attend the October 2021 Tiyeni training course, but she has been successfully taught these methods by one of the trainees on that course. This suggests that perhaps the quickest way to spread Tiyeni methods is by 'internal training' i.e. using experienced practitioners living locally. Also Oliva has grown scores of tomato plants but lacks easy access to water. Perhaps SGG should consider investing in water-harvesting schemes in this locality.

AGROFORESTRY

SGG views agroforestry planting as one of the best strategies for poverty & hunger alleviation in the African context. Around Nankhunda & Nsanama there are many trees, but these are usually concentrated around homesteads while much cultivated land away from the home is left with limited tree cover and vulnerable to the ravages of soil erosion. Thus, a crucial part of this project is the promotion of agroforestry combined with the payment to farmers for their care of such trees. Renumeration to farmers requires trees to be counted, and such counting occupied most of SGG's time during this January 2024 monitoring visit.



The bare foreground here [see above left] is a corner of the Nsanama Demonstration Plot, but the background shows typical tree cover within Nsanama where eucalyptus, pines & fruits, such as bananas, are widespread. In the other photo [see above right] Jinny Kagwa's kitchen garden-nursery is in the foreground, but the background shows a variety of fruit trees surrounding villagers' homes. Both these scenes show that tree cover around households is often good. The problem is the more open land away from houses – as seen in the 2nd photo on page 1. Here [see below left] there is ridging of the soil and a few trees along the contour line, but there is nowhere near enough tree cover. The foreground of this slope has several shallow channels indicating soil erosion. The treeless plot [see below right] is a perfect example of a failing crop, photographed after a period of significant rainfall. This farmland is badly in need of agroforestry and other soil conservation measures.



At the end of the 4-week monitoring visit the tree count was an estimated 19,269 trees growing on 173 plots. However, only half the conservation groups have had their trees counted, so a final figure of perhaps 45,000 trees growing on about 400 plots is anticipated. Furthermore, such data provides only a baseline before the large-scale planting is implemented during the last 3 years of the project.

FOREST RESTORATION

Zomba Forest Lodge [ZFL] have been organising local village groups to take care of designated 'conservation areas' within the Zomba Forest Reserve well before the establishment of this project. These community groups maintain their designated areas by suppressing any wildfires, which can be particularly destructive at the end of the dry season when farmers are preparing their lands for the coming rains. They also clear their areas of weeds, particularly the 'stranglers' [e.g. buffalo bean, mulungusi, lantana] which can suffocate young tree saplings. These actions allow trees to grow by natural regeneration, which ZFL believe is a more efficient way of developing tree cover than by actual planting of trees. It was this strategy of natural regeneration of trees which has been a significant factor in encouraging SGG to invest time and money in this locality.

As indicated earlier SGG was more occupied with agroforestry on villagers' farmland than forest restoration in the Forest Reserve. However, there was sufficient time to witness one group, Happy Hammers, clearing weeds in their conservation area.



This clearance of weeds [see above] is hard, but occasional toil done in exchange for sponsorship of their football & netball teams. A key issue though is whether or not natural regeneration is a more efficient way to regain forest cover than simple tree-planting. It is worth comparing the two photos taken at the same location within Happy Hammers conservation area. One was taken during the clearance of the site in January 2020 [see below left] and the other [see below right] taken four years later. On the basis of this evidence SGG would suggest that natural regeneration of forests can be a cost-effective strategy for rapid recovery of degraded forest land in Malawi.



By the time of SGG's departure from Zomba only two out of 14 conservation groups had completed the clearance of weeds and tree counts. Such counts are necessary as they are the basis of payments to those groups. The two groups were Happy Hammers and Nsanama WCG, who recorded 4,056 and 5,095 respectively. Maguba Choir had completed clearance but not the tree census. Nevertheless, SGG can confirm a counting of 2,702 in the lower part of Maguba's conservation area. The 11,853 trees recorded so far suggests that the total tree count for all 14 conservation areas will be approximately 70,000.

One difficulty with such 'conservation areas' is that the land is not owned by the village community but by the government ministry responsible for forests. Therefore, villagers are sensitive to the fact that government authorities could decide to turn these conservation areas, where indigenous species predominate & where villagers can earn casual seasonal employment, into a more immediately profitable use, such as a monocropping pine plantation. In fact, most of the upper slopes between ZFL and Zomba town are either pine plantations or excellent examples of badly degraded forests where tree cover is often below 10% of the terrain. This matter of ownership and control of these conservation areas is a crucial issue to be settled if Zomba's degraded forests are to be rapidly restored. If the Malawi government wishes its people to take more positive action to restore Malawi's tree cover, that government needs to be prepared to hand over both management and ownership of forests to interested local communities. While this issue remains unsettled there is much pilfering of timber from the Forest Reserve, so forest degradation continues to the disadvantage of all. Communal ownership of large sections of the Forest Reserve offers by far the best long-term prospects for sustainable development of the forests around Nankhunda and Nsanama villages.

Two proposals concerning strategies to encourage villagers to gain greater benefits from woodland were made in the last progress report. One proposal was to turn small pieces of land which were unsuitable for agriculture into 'copses' where natural regeneration would be facilitated. The other was the use of larger trees for carbon capture.



Kennedy [see above left] is the owner of a small piece of steep, rocky ground unsuitable for cultivation. By 2023 he had established a small woodlot of 155 pine. He was then advised to develop the rest, which at the time was being wasted, into a small copse/biodiversity reserve. There was some spot-planting of indigenous species, and in January grass & weeds were cleared. Here is the result. There are several similar sites in this locality where farmers could gain a small income by establishing such biodiversity pockets. SGG is looking for clients who would like to reduce their carbon footprint by funding carbon capture using trees such as this one in Maguba Choir's conservation area [see above right]. 50 such trees will produce more than 1 ton of CO₂e, which SGG is trading at £10/12 euro per ton.

FUTURE PROSPECTS

The various activities described above have all been implemented successfully elsewhere in a series of projects which have been ongoing for at least a decade. A significant part of SGG's thinking when developing a partnership with ZFL and Nankhunda Transformation was to see if all these activities could be implemented in a single comprehensive programme, in a new country, Malawi rather than in East Africa, and in one new location. After two lengthy monitoring visits in Zomba District, SGG now believes that we have a suitable model for 'community development through environmental improvement' which is appropriate and replicable not only elsewhere in Malawi but also in many other locations south of the Sahara.

What needs to be considered now is the possibilities of 'upscaling' the development model which has been established around Nankhunda village. This could be done by establishing new community groups in neighbouring villages in Zomba District. Upscaling could also be done by starting a similar programme at significant distance from Zomba. Whichever route is taken, any form of upscaling will require the participation of new likeminded NGOs and new funding.

Concerning the first of these requirements, prospects look good. The Rotary Club of La Haute Vallee de L'Aude in France is currently developing a project partnership with Limbe Rotary Club in Malawi. The intention here is to implement a large-scale tree-planting & forest restoration programme in Zomba District. Another potential stakeholder is One Acre Fund, who implement programmes for both support of small-scale farmers and also tree-planting activities, and who have a regional office in Zomba town. Both SGG and ZFL have other contacts who may wish to be stakeholders in this type of development. Now that SGG's annual field visit is over, the rest of 2024 can be used to investigate whether continued and wider support for this programme is available.

Paul Keeley

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