

# TREES FOR CARBON CAPTURE

## INTRODUCTION

Sustainable Global Gardens has been promoting tree-planting in East Africa for several years. Nearly all the trees planted so far have been planted on small-scale farms and have been directly useful to the farmer, such as fruits [e.g. mango, avocado, pawpaw, bananas, citrus fruits] or multipurpose species [e.g. *Grevillea robusta*, *Azadirachta indica*, *Markhamia lutea*, *Moringa oleifera*]. The main purpose of such tree-planting has been improvement of the environmental conditions & production on the farm, together with improved socio-economic status for the farming household. For 2020-1 most of SGG's planting will continue to be of this type.

SGG has noticed in recent years that many East African farmers have become aware of the changing climate in their locality. Streams that once flowed are now dry beds. Other localities seem to be increasingly affected by erratic, unpredictable rains and flash floods. Some towns, such as Moshi, are now experiencing unprecedented high temperatures. Many in North-East Tanzania can only watch as the glaciers on Kilimanjaro continue to shrink. Many of those farmers are also aware that

- their lifestyle makes a relatively small contribution to the emission of greenhouse gases which have caused global warming and climate change. The main contributors to greenhouse gas emissions are the prosperous industrialised economies of Europe, North America and East Asia. Thus, on the basis of 'the polluter pays principle', it is reasonable to expect [or at least hope] that the more prosperous will be willing to donate some compensation to those suffering most from climate change;
- personal visits within their own East African communities quickly establish that places with good tree cover are more comfortable for living and more productive for farming than those places which are treeless. In addition there is also the widespread perception among African farmers that 'trees can bring more rain';
- thus, there are many who are prepared to plant trees inside & outside their own farms, along river banks, on steep, rocky terrain unsuitable for agriculture or restore degraded forest areas in an effort to halt rapid climate change.

This project, therefore, allows anybody who wishes to make a personal contribution to climate change mitigation to sponsor East African farmers who are able to plant trees on their behalf. The arrangements for this partnership will be made by Sustainable Global Gardens [UK charity reg. no. 1116243]. Any funder who wishes to have further information about Sustainable Global Gardens [SGG] is invited to browse the website [www.sustainableglobalgardens.org.uk](http://www.sustainableglobalgardens.org.uk).

## RELEVANT INFORMATION

The original plan was to launch this 'carbon capture' project early in 2020. However, SGG and the whole of Europe have been severely disrupted by the coronavirus crisis. At the time of writing, late March, it looks likely that the project will not get fully underway until November 2020 when SGG hopes to undertake a field visit to East Africa, make agreements with African planters, finalise the locations suitable for planting etc. Before next November, SGG's main efforts will be focussed on raising awareness about tropical tree-planting for carbon capture and securing sponsorship for this activity. However, we do not quite know what the future will bring!

As SGG is in the preparation stage of this project with neither all the stakeholders nor the available budget yet known, the formal writing of all relevant project details is not yet done. However, the formal version of the project will include the following points:

- the fundamental aims of SGG are poverty & hunger alleviation within locations where incomes are typically below \$2/day. We strive to contribute to UN Sustainable Development Goals 1 [i.e. end poverty in all its forms everywhere] and 2 [i.e. end hunger, achieve food security, improve nutrition and promote sustainable agriculture]. Most of the projects we support are located in rural regions of Eastern Africa,
- SGG's general strategy is to partner with small-scale, semi-subsistence farmers and to promote various innovations which can increase farm productivity and household incomes. Such innovations have included microirrigation, improved composting, use of natural pesticides, permaculture methods, microfinance, and agroforestry. For the last 5 years agroforestry has been by far the most important innovation as we have clear evidence that this is one of the most effective methods of enabling poor farmers to move out of poverty,
- SGG has several years' field experience of tree-planting in Kenya, Tanzania and Malawi. In 2017-8 SGG registered 41,475 trees newly planted in those locations as part of a Rotary International initiative. Under SGG's present circumstances we believe SGG has the capacity to arrange through our local African partners the planting of up to 100,000 trees. This scheme with an initial planting target of only 10,000 trees is only a small component of the much larger tree-planting programme,



The location of carbon capture trees will be significantly different from SGG's previous planting locations. Until 2020 virtually all tree-planting was located on farms or on school grounds within those farming communities. These locations will continue to account for most SGG planting, but we are now looking also for planting sites where trees can continue to grow with limited interference from neighbouring villagers.

Good planting sites for carbon capture include:

- remnants of forest which can be restored or extended. Ngarasero forest [see left] near Usa River in Tanzania is a good illustration of this;
- riverine sites, especially where riparian land is steep & unsuitable for agriculture. Tanzanian farmers are not supposed to plant within 20m of streams to protect water supplies;
- summit & watershed sites where soil is stony after previous soil erosion;
- within 50m of springs.

- preferred tree species will also be somewhat different from previous schemes. For this carbon capture project SGG favours the planting of large indigenous species [eg. *Albizia schimperiana*, *Cordia Africana*, *Maesopsis eminii*, *Milicia excelsa*, *Trichilia emetica* etc.], although onsite conditions will have a considerable influence on which particular species is planted. SGG will continue to promote certain tree species [e.g. pawpaw, moringa] but not for carbon capture: these species are suitable for farms but have soft wood and limited carbon capture potential.



Close to Ngarasero forest there are various smaller patches of land where the forest could be extended, sometimes with the possibility of linking together two areas of forest. Such linkage can establish 'wildlife corridors' and help maintain the biodiversity of the forest. Here [see above left] is an example of Ngarasero forest extension with trees planted in the last 3 years. Different species are best planted on according to different site conditions [see above right]. To the left of the path is level terrain and farmland where more than 100 Grevillea & Casuarina have been recently planted around a banana shamba. To the right of the path is very steep ground & a river. Here 'mikuyu'/fig species and 'loliondo'/Olea capensis have been planted.

Even in areas of high population density, it is possible to find small pockets of relic forest being conserved. Here is a plot of land near Matayos, Busia in West Kenya [see below left] with mature indigenous species. There are now many farmers who enjoy the pleasure of living among trees. Here is another patch of forest near Matayos [see below right]. Both of these situations where the land owner has no desire to fell trees for economic gain offer suitable sites for carbon capture.



- SGG has received many donations & small grants in support of tropical tree-planting. The justification for planting in East-Southern Africa is threefold : a] young seedlings are much cheaper to buy in African markets, so SGG advertises on the basis of "plant a tree for 20p" and a donor plants many more trees than could be planted in the UK where a young 'whip' with protective sleeve & stake typically costs about £2.50p; b] trees grow much faster in the humid tropics; c] tropical trees have all the environmental benefits of trees in the planted in the temperate world but also much greater 'humanitarian benefits' as they are often used as a 'reserve bank' to cover educational/medical/other occasional costs,

- thus, this particular project has two aspects. One is to provide a tree-planting mechanism for those who wish to reduce their carbon footprint. The second aspect is to implement tree-planting in various African locations as a strategy for both income-generation and on-farm environmental improvement. The overall purpose of this scheme is to contribute to climate change mitigation by carbon sequestration,
- this is a pilot project so the planting target is set at 10,000 for trees planted in tropical locations. There is an additional planting target of 5,000 for those who are prepared to pay a significantly higher premium to offset their carbon footprint but wish their tree-planting to be undertaken in the UK,
- the tropical tree-planting requires 100 farmers [this will not be difficult as SGG has had contact with more than 250 farmers for more than 5 years in Busia County alone] who will have 100 trees each registered for carbon sequestration. Each farm will be georeferenced so that strict monitoring, transparency and accountability can be maintained,
- each participating farmer will agree to take care of the registered tree for a period of 5 years. To ensure that farmers comply with this, they will be paid 20p when the young tree is first registered and 80p 5 years after the initial tree registration,
- participating farmers can join this project in two ways. They can plant a new seedling. That seedling will be checked after several months to ensure that the seedling has survived. If it is well established the farmer will be paid the initial 20p. As SGG has been promoting tree-planting for several years, most farmers we know plant seedlings at the time most suitable for themselves and then wait to claim their 20p when a SGG representative visits their farm. We anticipate such payments & registration beginning in October 2020,
- an alternative approach is to include well established trees which are 2 years old, have a height of at least 3 metres and a girth of at least 15 cms. SGG has detailed records concerning trees planted in a previous project, and these trees will be excluded. Eligible trees will be registered, farmers paid an initial 20p, provided the farmers can ensure that those trees will be maintained for another 5 years,
- after the initial registration in late 2020, most of the participating farmers will be visited on an annual basis, so SGG can produce regular progress reports for significant donors. However, all farms will be visited before the final payments are made after 5 years. At that time farmers will be offered further 'carbon payments' if they wish to maintain their 100 trees for another 5 years,
- SGG estimates that the likely number of beneficiaries is 480. This is based on 4.5 being the average farmer household size in Busia, West Kenya where many of these trees will be registered. This project will also provide work for several local tree nurseries, typically employing 2-3 persons so perhaps 20 persons in total. Most of the local fieldwork & monitoring will be undertaken by local coordinators, with whom SGG has worked for several years. SGG estimates that 10 coordinators will gain significant income from this occasional work,
- SGG's priority is to promote tropical tree-planting. This is based on: a] the low cost of African seedlings & labour, which enable several times more trees to be planted there than is possible with the equivalent funds in UK; b] the great value of trees for improving onfarm environmental conditions, farm productivity, and farmers' incomes, thereby contributing to UN. Sustainability Goals No 1 and 2 of poverty & hunger eradication; and c] the ready availability of suitable space in the regions where SGG partners live,
- SGG is also aware that some donors may wish to reduce their carbon footprint by tree-planting, but would prefer those trees to be planted in the UK. SGG does not want to deny such donors that option, so we would be pleased to fund an environmental partner who is implementing a scheme to plant 25,000 indigenous trees in the Yorkshire Dales. At present this particular scheme is 5,000 trees short of that planting target, which requires £12,500 of additional funding. Donors should indicate their preference for carbon capture in East Africa or the Yorkshire Dales.