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Sustainability

SHARED RESPONSIBILITIES: Improving Water and Land Management through Payment For Environmental Services (PES)

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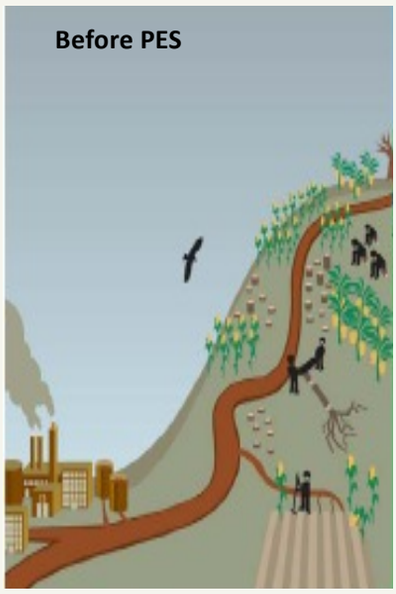
Productivity of land after conservation measures are in place under the PES scheme

Payment for Environmental Services (PES)

PES in the Lake Naivasha Basin (also referred to as the Naivasha-Malewa Sub-Catchment) is a market based scheme that enables downstream beneficiaries of environmental services to provide incentives to upstream land owners for these services resulting from voluntary conservation efforts. These efforts are expected to result in continued supply of the agreed environmental service, thereby balancing poverty reduction with watershed conservation.

This scheme was introduced in 2006 by WWF and CARE in Kenya, who facilitated the process with donor support, in partnership with the private sector and the Water Resource Users Associations (WRUAs) in the basin.



The long term vision of PES

The longterm vision is to have improved water quality and quantity in the rivers that flow into Lake Naivasha, through the reduction in on-farm soil erosion and the reversal of forest cover loss, and the improvement of livelihoods through an increase in agricultural productivity.

Figure 1: Schematic vision of the PES concept

Identification of rehabilitation sites

Identification of sites for rehabilitation under the PES scheme was based on various criteria identified in the smaller sub-basins of the sub-catchment including:

(i) Water yield (surface and ground)
(ii) Sediment yield
(iii) Population density and poverty levels
(iv) Land use/land-cover dynamics
(v) Potential buyers and sellers

Based on the above criteria, five sub-basins were selected as shown in figure 2. Of these, 2 sub-basins were selected for the pilot that started in 2008, and these were Wanjohi and Tulaga.

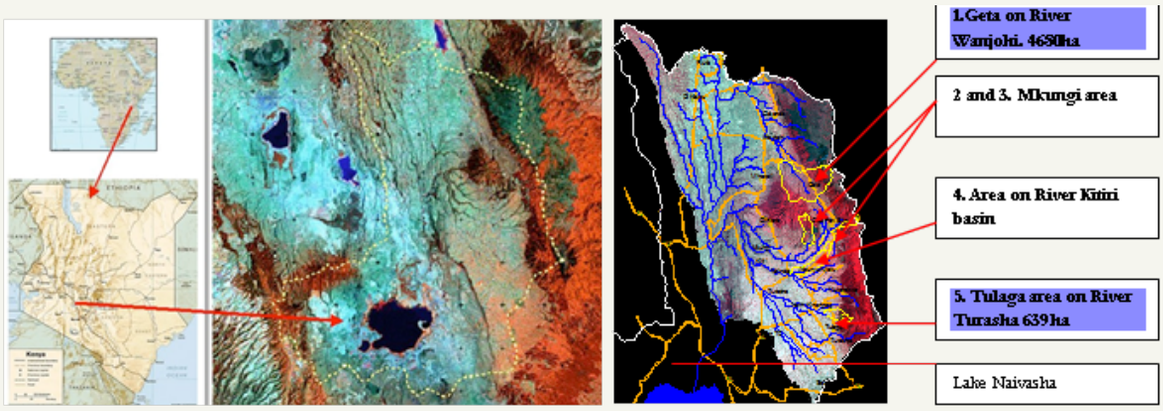


Figure 2: All potential PES Intervention Sites in the Lake Naivasha basin. The highlighted text boxes indicate the sites currently under the scheme (Credit: Gathenya, 2007)

Identification of farms for inclusion in PES scheme

This is conducted by the facilitators (formerly WWF and CARE, currently done by WWF) and the WRUAs in collaboration with key Government bodies such as the Ministry of Agriculture (MoA), Water Resources Management Authority (WRMA), Kenya Forest Service (KFS).

The “hotspot” farms are those that have the highest potential for erosion due to land use and layout. These farms are mapped and the contours pegged for natural terraces. The upstream farmers then implement soil and water conservation measures, having been provided with basic tree seedlings (indigenous for riparian areas and fruit trees for the farm), as well as Napier or Cocksfoot grass for the terraces.

The link between the buyers and the sellers

This is based on the Water Resource Users' Associations (WRUAs) network that is in place within all sub-catchments throughout Kenya. The specific intervention sites up to 2014 were under the jurisdictions of Wanjohi and Upper Turasha-Kinja WRUAs, whereas in 2015 these sites were expanded along River Wanjohi into the jurisdiction of Kianjogu WRUA (Figure 3).

These upper catchment/ upstream WRUAs engaged in an annually reviewed contractual agreement with the Lake Naivasha WRUA (LANAWRUA), whose jurisdiction is the area around the lake, to provide ecosystem services by changing their land use practices in exchange for payments/ incentives in the forms of vouchers redeemed through purchases of agricultural inputs in selected agro-dealer shops within the upper catchment WRUAs. LANAWRUA is, therefore, responsible for raising the incentives.

In 2015, a new approach has been introduced, and also taken up by the new PES pilot being conducted in the Mau-Mara area by WWF, whereby the incentives mobilized by LANAWRUA from buyers in the lower catchment will be used towards procuring conservation materials for new PES farmers in the coming year. In this way, we are introducing more sustainability into the scheme as the actual land use changes are being driven by the market.

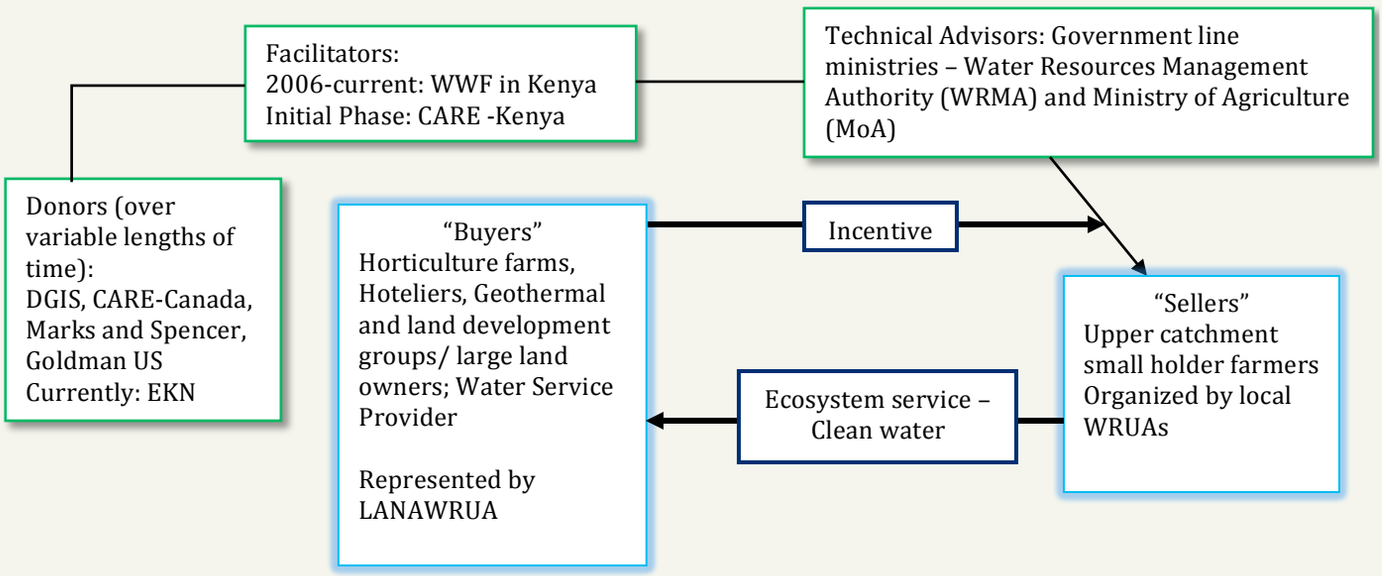


Figure 3: Model for the PES Scheme in the Naivasha-Malewa Sub-Catchment

Monitoring and verification

Monitoring and verification under the scheme is done locally by the upstream WRUAs and trained PES farmers. Turbidity levels in the water, soil buildup and other auxiliary data are being collected to develop change profiles resulting from conservation measures being put in place. Soil build up as a result of terracing is measured using soil rods inserted in a sub-sample of farms at the start of the project. Data has also been collected on various parameters from number of trees surviving and number of grass strips planted, to harvest quantities. Monitoring of turbidity was introduced at the best existing regular gauging stations (where river levels are monitored twice daily) in the areas of interest. This enabled the scheme to utilize existing mechanisms of monitoring already in place within the basin. Verification of farms to check implementation levels of soil conservation measures in order to determine which farmers qualify for incentives is done by the WRUAs and PES coordinators, as well as buyers.

Incentives being presented to the Upper Turasha Kinja WRUA in 2014

Progress under PES

2338 farmers = 8.3% of the total number of farm households in the upper catchment = 2238.09 ha of agricultural land under conservation as a result of the scheme. An additional 145 farmers have adopted the soil and water conservation measures on their own.
Target = 3000 farmers by end of 2016

Left: Erosion on farms with no conservation structures ; **Centre:** Preparation of the farm for conservation structures; **Right**: Productivity of the land after conservation measures are in place under PES Scheme

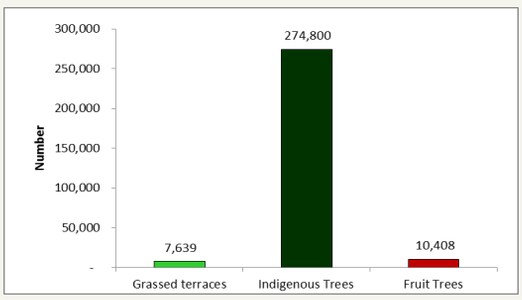


Figure 4: Current number of terraces with grass (on average between 2 and 4 strips are found per farm), indigenous trees and fruit trees planted in highly erodible parts of the upper catchment (July 2014)

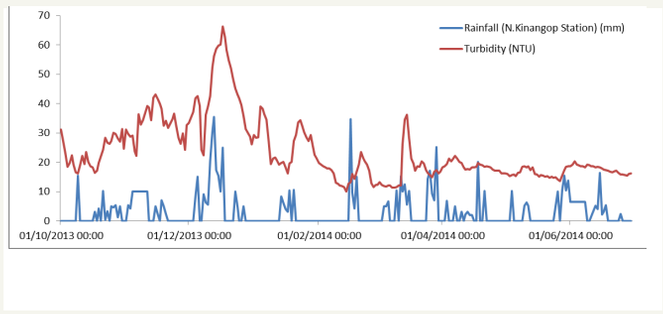


Figure 5: Rainfall versus turbidity in R. Wanjohi from October 2013 to June 2014. Turbidity (red) showing a gradual decline over this period, despite rainfall levels holding steady

Positive Livelihood Outcomes

938 pioneer farmers have been exited from the scheme as they already enjoy benefits of improved land productivity and availability of high quality fodder (cocksfoot and napier grass) year round. The enhanced nutrition for their dairy cattle has enabled an increase in milk production and in turn incomes. Increased soil and water retention on-farm has led to improved fertility and thus enhanced crop production and better incomes.

A case in point is Mrs. Margaret Mundia initially resisted the implementation measures on her farm. However, in 2010 she joined the scheme and has reaped huge benefits. The cocksfoot grass used for terracing has provided fodder of high quality for her dairy cows that are more productive as a result. She has also earned income from selling the grass to new PES farmers. According to Margaret, she has been able to buy a solar panel and built a zero grazing unit from the proceedings of selling the cocksfoot grass. “This is a good project and I request farmers to join and improve their lives just as I have done”, she says.

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