

Intervention:	Soil and water conservation on the slopes of Kilimanjaro
Country:	Tanzania
Date:	Since 1990
Challenge:	Declining maize/beans yields at slopes of Kilimanjaro because of high water run-off and soil erosion as a result of non-adapted cultivation techniques
Objectives:	Improving the livelihoods of small-scale farmers
Approach of the Intervention:	<ul style="list-style-type: none"> <li>□ <b>Soil and water conservation.</b> It promotes soil and water conservation measures to boost soil fertility and increase productivity and farmers' income. <ul style="list-style-type: none"> <li>□ <u>Contour farming</u>: ploughing and growing crops along the contour rather than up and down the slope.</li> <li>□ <u>Grass strips</u>: planting grass strips to break the flow of water down the slope.</li> <li>□ <u>Mixed cropping</u>: planting a mix of crops to protect the soil from heavy rain and to maintain soil fertility.</li> <li>□ <u>Crop rotation</u> of maize, tomatoes, and nitrogen-fixing legumes such as groundnuts and beans to prevent the build-up of pests, diseases and weeds, to improve the soil structure and to maintain fertility.</li> <li>□ <u>Mulching</u> using crop residues to protect the soil surface, prevent erosion and conserve moisture in the soil.</li> <li>□ <u>Fanya juu</u>: a trench dug along the contour, with the soil piled into a ridge upslope to control water flow, prevent erosion, and encourage the natural formation of terraces. The ridges are planted with grass and trees to stabilize them. <i>Fanya juus</i> are useful on gentle to moderate slopes of up to 8% gradient.</li> <li>□ <u>Terracing</u>: moving large amounts of soil to form a series of flat terraces suited for irrigation. Terraces are appropriate for steeper slopes, up to 13% gradient.</li> <li>□ <u>Check dams</u>: barriers across a gully or stream to slow down the flow of water, so preventing further erosion.</li> </ul> </li> <li>□ <b>Furrow rehabilitation.</b> Farmers have a traditional system that leads water from rivers into their fields to irrigate vegetables and other crops. HEM is helping improve this system by lining the canals with cement, so reducing the amount of water lost and allowing farmers to produce up to three crops a year.</li> <li>□ <b>Tree nurseries.</b> This helps individuals, groups of farmers and institutions such as schools and churches to start tree nurseries. They can grow seedlings of fruit trees and fodder species to plant themselves or to sell to others.</li> <li>□ <b>Improved stoves.</b> This promotes the use of energy-saving wood stoves among the farmers. The aim is to reduce the number of trees cut for fuel, and to reduce the amount of time women have to spend fetching firewood.</li> </ul>
Benefits and Impacts:	<ul style="list-style-type: none"> <li>□ Farmers who have implemented the conservation techniques have seen many benefits. Their productivity has risen: maize yields on average have doubled from 6 to 12 bags an acre (from 1.3 to 2.6 t/ha); sunflower yields have gone up from 5 to 9 bags per acre (from 0.6 to 1.1 t/ha); and bean yields have risen from 3 to 5 bags per acre (0.7 to 1.2 t/ha).</li> <li>□ Farmers who have adopted soil and water conservation have planted trees such as leucaena, calliandra and croton on the bunds, as well as grasses such as Napier grass, desmodium, setaria and</li> </ul>

	<p>Pallida. They can feed cut grass and tree prunings to their animals, so milk yields have risen: before, a goat yielded an average of 0.5 litres of milk a day; now the average is 2.5 litres. An improved cow now produces 7 litres a day, compared to 4 litres previously. The farmers sell the much of their milk to consumers in Himo town. They even have extra fodder to sell to livestock keepers in Himo.</p> <ul style="list-style-type: none"> <li>□ Of the initial 1140 farmers who were trained, 760 (67%) decided to adopt at least some of the technologies. Their success encouraged the others to follow suit. By 2005, some 6500 farmers in the eight villages had applied conservation techniques on over 4200 hectares of land.</li> <li>□ Starting in 2000, the village governments passed by-laws requiring all the farmers to implement soil and water conservation practices. The village authorities fine farmers who do not comply – for example, by doubling the amount of kazi jumua work they have to do. The sanctions may vary from village to village, and are set by the village’s elected representatives, not by the villagers as a whole. Before the by-laws were passed, half of the farmers were implementing conservation measures. Since they were passed, all farmers have begun to do so.</li> </ul>
Wider application:	<ul style="list-style-type: none"> <li>□ HEM is one of many organizations working on soil and water conservation in Tanzania. By itself, it cannot have a very large impact. But combined with the efforts of all the other organizations, the overall impact on farmers’ livelihoods and on government policy can be substantial.</li> <li>□ HEM produces training manuals and easy-to-understand printed information materials in Swahili and English for distribution to farmers in the eight focus villages and other villages in the three districts, as well as to other NGOs and educational institutions working on similar issues elsewhere in Tanzania. This helps spread the techniques and approaches developed by HEM in the eight villages.</li> <li>□ The “Uhuru Torch”, a government programme to highlight successful development interventions, has visited HEM several times. This generates publicity in newspapers and on radio and TV. It also attracts the attention of local and regional politicians.</li> <li>□ HEM also runs training courses on request for staff of other organizations, and exchanges experiences with other organizations. HEM technicians visit primary schools and secondary schools in the area. They teach the schoolchildren about soil and water conservation and other techniques that HEM promotes, and work closely with the agriculture teachers. The children put into practice what they have learned on plots in the school’s compound. HEM also arranges training for the teachers to familiarize them with problems and techniques of sustainable agriculture.</li> </ul>
Implementing agency & partners	<p>Himo Environmental Management Trust Fund (HEM)  German Agro Action (Deutsche Welthungerhilfe,  <a href="http://www.welthungerhilfe.de">www.welthungerhilfe.de</a>)</p>
Contact:	<p><a href="mailto:hemtrustfund@kicheko.com">hemtrustfund@kicheko.com</a>  SUSTAINET (<a href="http://www.sustainet.org">www.sustainet.org</a>)</p>