

Conceptual and Practical Approaches to Integrated Watershed Management and Agroforestry to Address Food Security and Environmental Degradation in Lake Tana and the Blue Nile River Basin, Ethiopia

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Abstract

Forests and trees provide food, fuelwood and construction materials and many environmental benefits, such as erosion control, clean water and air, biodiversity conservation and carbon sequestration. The forest covers in Ethiopia and that of the Blue Nile River Basin in particular have been deteriorating at a progressive rate. The situation is even worse in the Angereb Watershed. The major causes of deforestation and environmental degradation in Ethiopia are increasing population, increasing demand for farmlands, and increasing demand for fuelwood to cook food and construction materials. The effects of poor farming practices and lack of conservation are responsible for the siltation of the Angereb Dam and the pollution of drinking water from the Dam. To address these environmental and livelihood problems, concepts of sustainability and ecosystem based approaches were applied. We involved different stakeholders, such as the Gondar city administration, Department of Forestry and Agriculture, Department of Water, Farmers in the Angereb watershed, University of Gondar and the Corvallis-Gondar Sister Cities Association in the project. Through this participatory approach, the stakeholders identified the natural resource problems in the Angereb watershed and proposed integrated watershed management involving soil and water conservation, agroforestry, tree planting and reduce siltation of the Dam. Through this project, we improved the tree nursery at Weleka, and raised multipurpose indigenous and exotic tree species for planting. Farmers were involved in tree planting and agroforestry practices, such as establishing riparian buffers along the streams, alley cropping for soil and water conservation by planting trees on terraces and agroforests/home gardens to address food security. Through this project, 2.5 million tree seedlings were planted on 560 hectares in the Angereb watershed in ten years. Since 2010, 19 water sources were constructed, including drilled wells, hand-dug wells and developed springs to provide clean drink water for 1,700 households in Gondar city and the surrounding villages. We recommend scaling up the ecosystem based approaches, using lessons learned on agroforestry, tree planting, and soil and water conservation in the Angereb watershed to the larger Blue Nile River Basin. This will address environmental degradation, soil erosion and food security, which will have great impacts on survival of Lake Tana and extend the longevity of the Grand Ethiopian Renaissance Dam (GERD) by reducing siltation.

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