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Hydro-Sedimentation Burden Shifting in the Blue Nile Basin

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Abstract

Meteo-physiographic factors, imprudent land husbandry, policy, and practice incoherence in relation to natural resource management have made the Abbay Basin in particular, extremely vulnerable to excessive erosion problem. From late 1970 to early 2000s, soil and water conservation efforts focused very much on moisture stressed areas and high rainfall high erosion potential areas were largely ignored. In the late 2000s decline in land productivity as a result of soil erosion was noted and soil conservation activities to improve agricultural productivity were initiated, but off-site impact was largely left as the problem of downstream countries. Now micro-and mega dams have been constructed and many more are still required to meet the growing food and energy demand. This brings the huge burden of managing sediment to Ethiopia. Soil erosion in Ethiopia is among the severest in the world. Long-time monitoring at micro-watershed scale showed that it ranges from 40.2 to 214 ton/ha/yr. Sediment deposition rate on larger water bodies may be small, but aggregated volume is significant. For instance, GERD is expected to lose its storage capacity at a rate of 120 to 150 MCM/yr (7-9 ton/ha/yr) with a corresponding decline in the service and revenue it is supposed to generate while downstream riparian countries are relieved from the cost of sediment dredging. Although sediment cannot and should not be entirely avoided, it can be reduced though coordinated set of intervention ranging from detention dams to the development of green infrastructure. and operations. In this review, we outlined the possible recommendations for actions to enhance the storage capacity of water bodies in the Abbay Basin and improve rural livelihood.

Keywords: Hydro-Sedimentation, Blue Nile Basin, Erosion, GERD, Sedimentation, Soil and water conservation

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