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"Development on the margin"

# Off-site Cost and Benefit of Sedimentation in the Eastern Side of Inle Lake Watershed, Myanmar

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**Abstract**

The off-site cost and benefit of sedimentation in the eastern side of Inle Lake Watershed at Nyaung Shwe Township, Myanmar were estimated and compared. The average actual government expenditure for construction of sediment trap dams on streams flowing into the lake and for dredging the sediment inside the lake was determined as the total off-site cost associated with the sedimentation of the lake. In 2006 constant terms, total actual average off-site cost amounted to US$ 6,261, which is the sum of construction cost of sediment trap dam, US$ 2,467 to trap 5,080m$^3$ of sediment and the dredging cost US$ 3,796 to dredge 30,579 m$^3$ sediments from the lake to ensure enough depth for public waterway and cultural activities in the lake.

Off-site benefit of sedimentation was determined by the valuation of silt soil which is used in the floating tomato garden in terms of the value of garden soil to be used as the growing media for tomato plant and source of some plant nutrients to tomato plants. This benefit amounted to US$ 452,945 of 243 ha floating gardens in eastern side of Inle Lake during one cropping season.

To this extent of study, off-site cost was underestimated because this study only includes costs of direct impacts of sedimentation, sediment trapping and sediment dredging. There are still indirect impacts such as cost of water quality control, cost of crop damage due to frequent flooding, cost of damage to the downstream irrigation system, cost of reduction in power generation and reduction in fish catch. In consideration of sedimentation only, off-site benefit can cover the off-site cost of sedimentation.

Off-site costs as yearly government expenditures to reduce the downstream damage point to the magnitude of the damage caused by erosion and sedimentation. The average annual cost of dredging sediments is more than the cost of trapping sediment in the stream before it enters into the lake. The Irrigation Department and policymakers for Inle Lake conservation might consider putting more resources in prevention of sedimentation of the lake rather than spending more in dredging the sediments out of the lake.

**Keywords:** Floating tomato garden, growing media, plant nutrients, sediment dredging, sediment trapping

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