

A/OP/04

Agro-Ecotourism Opportunities and Challenges in Village Tank Cascade Systems (VTCS): A Case from Hiriwaddunna Village, Anuradhapura, Sri Lanka

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Background: Agro-ecotourism is an emerging model that links sustainable agriculture with eco-friendly tourism, offering opportunities to enhance rural livelihoods while conserving natural resources. In Sri Lanka, the Village Tank Cascade Systems (VTCS) an indigenous irrigation system with rich agro-ecological value provide a unique setting for the development of agro-ecotourism.

Objective: This study aims to evaluate the agro-ecotourism potential of VTCS by analyzing market structure, stakeholder roles, and key opportunities and challenges.

Methods: The research was carried out in Hiriwadunna village located, within the Bellankadawala cascade system of the Anuradhapura District. Primary data were collected through face-to-face interviews using a semi-structured questionnaire with 110 respondents, including tourists, village house owners, boat riders, cart riders, and craft producers. The Structure-Conduct-Performance (S-C-P) framework and SWOT analysis guided the evaluation of market dynamics. Additionally, the Relative Importance Index (RII) was used to rank the top three perceived prospects and challenges based on stakeholder responses.

Results: The findings reveal an oligopolistic market structure with limited service differentiation and unequal income distribution. Weak pricing systems, lack of targeted marketing, and minimal institutional support limit the growth and environmental potential of the sector. Nevertheless, agro-ecotourism in VTCS regions promotes biodiversity, traditional farming practices, and community engagement. Using the RII, the top three prospects identified were: community-based livelihood generation (RII = 0.912), agro-biodiversity and natural landscape conservation (RII = 0.894), and cultural and agricultural heritage promotion (RII = 0.877). The main challenges included poor sanitary infrastructure (RII = 0.915), seasonal fluctuations in tourist activity (RII = 0.898), and human-wildlife conflict (RII = 0.872).

Conclusion: The study concludes that agro-ecotourism in VTCS areas holds significant potential if supported by improved infrastructure, vocational training, environmental protection measures, and policy frameworks that integrate agricultural sustainability and rural development. Addressing these barriers can enhance ecological stewardship and promote climate-resilient livelihoods in Sri Lanka's dry zone farming communities.

Keywords: Agro-ecotourism, Structure-conduct-performance, Village tank cascade systems