

Innovative Recycling Solutions to Waste Management Challenges in Costa Rican Tourism Communities

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Abstract: Costa Rica's tropical beaches attract millions of tourists annually; yet increased tourism generates additional waste, threatening the "pristine" environment visitors seek. This study aims to evaluate whether an innovative private/NGO planned recycling solution meets locally desired outcomes while addressing community obstacles to participation. Data collection methods include GIS mapping of litter and surveying community members on needs and barriers to recycling participation. Mapping shows high levels of uncollected waste, both a deterrent to tourism and a threat to public health. Eighty-eight percent of survey participants identified waste management as a problem in their community and 28% voiced concern over dengue carrying mosquitos breeding in trash. Lack of education or lack of transportation for materials are each identified as barriers by nearly a third of participants, making information distribution and recycling collection essential to an inclusive program. A collaborative recycling solution between a local NGO and private business that turns recycled plastic into clothing has the potential to harnesses citizen participation and social capital to incorporate local perspectives and talents. Social impact assessment of residents' role in waste management solutions demonstrates that local skills and knowledge are still largely undefined or incorporated, threatening project resilience. The model and lessons of this case-study can be applied to the evaluation of a variety of community-based development projects.

Key words: *sustainable tourism, social impact assessment, public-private partnerships, ocean plastics, Nicoya Peninsula, resilient infrastructure*

1. Introduction

Over the past 25 years, Costa Rica's economic revenue stream has switched from primarily agricultural exports to service industries, with 40% of revenue now generated from service industries, including tourism. The natural beauty and political stability of Costa Rica are among the factors that attracted 2.9 million tourists in 2016 (La Nación, 2016). According to the Center for Responsible Travel, 42% of Costa Rica travelers consider the environmental and social impacts of their

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