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ENGINEERS' VALUATION OF ECOSYSTEM SERVICES IN THONDAMANARU LAGOON: A CHOICE EXPERIMENT APPROACH

Kiriyaliny, V.*, Sooriyakumar, K., Sivashankar, S., and Sarujan, S.
Department of Agricultural Economics, University of Jaffna, Sri Lanka
*kiriyaliny87@gmail.com

Thondamanaru Lagoon is a brackish water lagoon located in the northern part of Sri Lanka. The Department of Irrigation built a barrage to prevent seawater from entering the lagoon; however, this barrage construction negatively affected local biodiversity and ecosystem services. Therefore, this study employed a choice experiment approach to understanding how engineers value the ecosystem services provided by the Thondamanaru lagoon and their preference regarding barrage construction. Engineers were chosen as primary respondents due to their technical expertise and role in shaping water infrastructure decisions. This study considered five attributes (barrage, fish stock, mangroves, tourist facilities, and payment), each with different levels. A total of 150 engineers were selected as respondents, and their choices were analyzed using the Random Parameter Logit (RPL) and Latent Class Models (LCM). The results from the RPL model reveal that for the barrage attribute, engineers prefer to completely close the barrage and open the barrage one month per year levels than completely open the barrage; however, they are willing to pay more to open the sluice gate one month per year (LKR 2078.99) than complete closure of the sluice gate (LKR 916.80). The result of the LCM groups the sample into two classes. Respondents in class 1 prefer the complete closure of the barrage, while the respondents in class 2 do not prefer the complete closure of the barrage. Furthermore, results show that engineers are more likely to pay to increase the fish stock and mangrove plants and improve the tourist facilities in the Lagoon. Notably, engineers' income and their knowledge regarding the lagoon significantly influence their choice. This study proposes that opening the barrage for one month each year could serve as an effective policy for the sustainable management of the lagoon ecosystem.

Keywords: Barrage closure, Engineers, Latent class model, Random parameter logit model, Thondamanaru Lagoon, Willingness to pay