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Forest Restoration Efforts in Sri Lanka: Successes and Failures

Piumal, R.J.[1], Wasantha, H.G.[2], Kathriarachchi, H.S.[1*]

[1]Department of Plant Sciences, University of Colombo, Colombo 07, Sri Lanka
[2]Department of Forest Conservation, Sri Jayawardenepura Kotte, Sri Lanka
**hashi@pts.cmb.ac.lk*

Abstract

The restoration of forests has become a vital priority in Sri Lanka, due to significant loss of forest cover in recent years, which has caused significant harm to its ecosystems and biodiversity. The objective of this study is to assess the effectiveness of forest restoration projects in Sri Lanka. The restoration project data was obtained from the Department of Forest Conservation, Sri Lanka. It contained information on forest restoration projects and Assisted Natural Regeneration (ANR) maintenance from 1987 to 2015. A logistic regression model is used to measure the success probability of projects. The model was trained with data derived from major successful restoration projects, ANR and the global forest restoration data. The model's parameters were the total project area, project duration, human population density in restoration area and locality. Success probability 0.6 was selected as the threshold value. It was consistently applied to classify projects as successful or unsuccessful. The model AUC value was 0.756. ArcGIS Pro was used to monitor forest cover. Data were sourced from Global Forest Watch (GFW), Global Land Analysis and Discovery (GLAD), and satellite images. Results of the regression model revealed that, mean success probability of the restoration projects was 0.613. Success probability in the wet zone was 0.71 and the successful probability in the dry zone was 0.55. Smaller restoration areas tend to be with higher project success and projects in wetter locations have higher project success. Forest cover monitoring results discovered that Sri Lanka lost 10.7 kha of humid primary forest between 2002 and 2022. This represented a 1.8% decrease in the total area of humid primary forest. Sri Lanka lost 210 kha of tree cover between 2001 and 2022, which represents a 5.3% decrease in tree cover since 2000. Between 2001 and 2022, 23% of tree cover was lost because of deforestation. Seven districts were responsible for 54% of all tree cover loss between 2001 and 2022. Anuradhapura had the most tree cover loss at 32.3 kha compared to an average of 8.40 kha. From 2000 to 2020, the country experienced a net change of -175 kha (-3.8%) in tree cover. This highlights the urgent need for sustained and comprehensive restoration efforts. It is a priority to address the underlying drivers of deforestation and enhance the success rates of restoration projects.

Keywords: *Forest restoration, Assisted natural regeneration*