

Estimation of Ecosystem Services Loss due to Rohingya Influx in Eastern Coast of Bangladesh using Multi-Temporal Satellite Data

Muhammad Mainuddin Patwary¹, Sadia Ashraf¹, and Faysal Kabir Shuvo²

¹Khulna University

²University of Wollongong

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Abstract

Nearly one million Rohingya refugees of Myanmar have fled to neighboring Bangladesh for seeking shelter from systematic oppression since 25 August 2017. The speed and scale of the influx has led to unprecedented growth of the Kutupalong refugee camp of eastern coast of Bangladesh within few months. There is a few study focused on environmental degradation of the refugee camp, however, no study has been done so far to estimate the impact of camp expansion on ecosystem services loss. This study, therefore, made an attempt to estimate the changes of Ecosystem Services Value (ESV) in response to camp expansion for the year July 2017 (pre-camp) and July 2018 by GIS technique and corresponding global value coefficient developed by Costanza et.al. (1997). Land cover map of the study area was prepared by using Landsat 8 satellite data. Results show an overall decrease of vegetation of 2486 hectares, of which 20% were used to expand the camp and 80% were deforested. Total ecosystem service values of the study area reduced dramatically, from 51.53×10⁶ US\$ to 49.12×10⁶ US\$ in the study period. This represents a 4.63% net decline in annual value of ecosystem services in the study area. In terms of 2 km buffer of the camp, the net decline rate is found 32.58%. The significant changes are also recorded in individual ecosystem services function of the area. Hence, the findings of this study may motivate the Bangladesh government to develop better plans to protect the ecologically sensitive forested land and wildlife habitats surrounding the refugee camps and assist in more sustainable resource mobilization for the Rohingya refugees.

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Muhammad Mainuddin Patwary^{1,2*}, Faysal Kabir Shuvo³, Sadia Ashraf²

¹Environment and Sustainability Research Initiative, Khulna, Bangladesh. ²Environmental Science Discipline, Life Science School, Khulna University, Khulna-9208, Bangladesh. ³School of Health and Society, Faculty of Social Sciences, University of Wollongong, Wollongong, Australia

*Corresponding Author: raju.es111012@gmail.com

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Key Words : Rohingya refugee, Ecosystem services, Urbanization, coastal Bangladesh

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