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Title:	Land Use Change and Prediction for Valuating Carbon Sequestration in Viti Levu Island, Fiji
Authors:	Yunus, Ali P. (/jspui/browse?type=author&value=Yunus%2C+Ali+P.)
Keywords:	Carbon Sequestration Remote sensing
Issue Date:	2022
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Abstract:	This study examines land use changes and evaluates the past and projected forest carbon sequestration and its valuation in Viti Levu Island, Fiji, through a combination of remote sensing with a geospatial-based modeling approach. Land use classification was performed using Landsat 7 and Landsat 8 imageries of the years 2000 and 2020; then, cellular automata and artificial neural network (CA-ANN) modeling was conducted to predict the land use map of 2040. Carbon sequestration and the economic valuation were estimated using the land use maps of the past, present, and future (2000, 2020, and 2040) within the Integrated Valuation of Ecosystems Trade-off (InVEST) model. The results showed that deforestation occurred during the past two decades, and the forest area was predicted to keep decreasing in 2040, with the major contribution from the conversion to the agricultural area. Local communities' perceptions confirmed that the forest conversion to croplands would persist due to the demand for fertile lands. This study estimated a loss of −7.337 megatonnes of forest carbon (Mt C) with an economic loss of USD −1369.38 million during 2000–2020 due to deforestation. If the business-as-usual scenario does not change in the near future, a potential carbon loss of −7.959 Mt C is predicted in the upcoming 20 years. The predicted results can be used to assist as a reference in establishing a national baseline and reference level for implementing the REDD+ mechanism in Fiji and sustainably managing the limited pristine forest by implementing forest-related programs.
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