Abstract

SESSION 2:

Accelerating Actions for Sustainable Development and Climate Change

WORKSHOP 3:

Valuation of Coastal Ecosystem Services and Benefits and Coastal Use Zoning: Tools for Better Planning and Implementation

Quantifying Nature-Based Tourism in the Era of Big Data: A Case Study for Jeju Island, Korea

Choong-Ki Kim
Research Fellow
Korean Environment Institute
Environmental Policy Research Group
Republic of Korea

Nature-base tourism is one of the most important ecosystem services depending on the quality of natural features, and plays an essential role in human wellbeing providing a powerful incentive for national and local economies. However, economic development, natural resources abuse, and climate change result in the loss of biodiversity, habitat fragmentation, threatening unsustainable nature-based tourism in many parts of the world. The valuation of tourism and understanding the relationship of the natural features and tourism activities are the essential components for the sustainable management of nature-based tourism.

In this study, InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs)-Recreation Model was applied to value nature-based tourism in Jeju Island, Korea. This model predicts the visitation days of tourism, based on the locations of natural habitats and other features that factor into people's decisions about where to visit. In the absence of empirical data on visitation, we parameterize the model using a proxy for visitation days based on geo-tagged photographs and mobile phone data. The visitation proxy based on big data represented well most of the tourist sites in Jeju Island, and showed statistically significant relationship with natural features such as scenery, vegetation, wildlife, geological features, national parks, etc.

This study can be applied to predict the changes in nature-based tourism value due to various pressures such as economic development, visitors increase, habitat destruction and climate change under alternative scenarios, and helps to establish management strategies for sustainable nature-based tourism. Considering the wide variety of big data is collected worldwide, the application of big data provides new opportunities for the valuation of ecosystem services including nature-based tourism for the countries and regions where field data are limited.

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About Choong-Ki Kim:

Dr. Kim is currently working with the Korea Environment Institute (KEI). His previous work for Natural Capital Project at Stanford University focused on developing a decision-support tool (INVEST) to value ecosystem services, which has been applied to various decision-making processes including marine spatial planning, coastal defense and climate adaptation, siting ocean renewable energy facilities. He also worked extensively in numerical modelling studies with scales ranging from an estuary to a regional ocean.