

# Abstract

## SESSION 2:

Accelerating Actions for  
Sustainable Development and  
Climate Change

## WORKSHOP 2.3:

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

## Linking the Value of Ocean Space and Marine Ecosystem to Coastal Reclamation Planning: A Case Study of Xiamen

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Coastal reclamation is the common solution for almost all coastal societies with high population density to ease the pressure of land shortage. While creating useful space for agriculture, industry, and urban land area, coastal reclamation usually means permanently changing the natural characteristics of the ocean and coastal environment and damaging considerably the marine ecosystems which human-kind depends on. There is an urgent need to develop coastal reclamation planning which can harmonize the demand for coastal socio-economic development and the protection of marine and coastal ecosystems.

This paper presents an analytical framework, which links the value of ocean space and marine ecosystems, to estimate the Total Allowable Area for Coastal Reclamation (TAACR) and its spatial distribution for providing scientific support for spatial planning of coastal reclamation. The logic of the framework is to maximize the net benefits of coastal reclamation subject to a set of constraints. Various benefits and costs, including the ecological and environmental costs of coastal reclamation, are systematically quantified in the framework. Model simulations are developed using data from Tongan Bay of Xiamen. The results suggest that the TAACR in Tongan Bay is 5.67 km<sup>2</sup>, and the area of the Bay should be maintained at least at 87.52 km<sup>2</sup>.



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**About Benrong Peng:**

Dr. Benrong Peng is the deputy director of Ocean and Coastal Management Institute (COMI), professor of College of Environment and Ecology (CEE), Xiamen University. His researches cover environmental and natural resources economics, ecosystem based ocean and coastal management, evaluation of coastal ecosystems' services, impact of climate change on marine environment and economy, ecological damage assessment and compensation, etc. He has been strongly involved in decision making of local and national government and establishment of standard of sea area use charge and ecological damage compensation.