On the Principles and Strategies in Building of Ecological Green Harbors

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ABSTRACT
With the rapid development of harbor construction in China and in other developing countries, environmental protection and ecological harmony have become decisive factors in harbor planning, design and construction management. Green harbor concept and ecological strategies are important means used to guide the building processes and operation procedures of harbors to save the coastal environment and nature reserve and to make best use of various resources like water, power, land and sea areas. Based on theoretical analysis and practices, this paper summarizes nine evaluation principles and twelve available strategies which help build and manage ecological green harbors and coastal areas during the processes of planning, design, construction and operation management, puts forward the concept and method of dealing with harbor planning as with that of ecological communities, and the ecological theories of diversity and dominance of species can be referenced in planning considerations.

KEY WORDS: Ecological green harbor; harbor planning; construction management; ecological strategy; coastal environment; ecological harmony; sustainable development.

INTRODUCTION

Concept of Ecological Green Harbor
Ecological Green harbor is both an objective and a sustainable means to obtain a good balance between the economic development of the harbor and the society as well as the ecological environment. Due to their large space occupation and big traffic and pollutants convergence, harbors have great impacts on both coastal environments and the adjacent communities. In early stages of harbor building of developed countries, they also met the big challenges of environmental influences and societal impacts when the harbors scales expanded, so they developed the concept of “Green Harbors” in order to control these influences and impacts. According to Chang & Wang, (2012), Driscoll, etc., (2002), Ju, etc. (2010) , Wu, (2009) , “Green harbors” are those which can be of least impacts on natural and living environment, the implementation of which has brought success in harbors of Long Beach, New York/New Jersey, Vancouver, Sydney, Kaohsiung, etc. Ecological green harbors are those which consider harbors as parts of bigger environmental and ecological systems and make harmony between harbor development and environment quality improvement while raising income of enterprises and the society by means of ecological theories and methods of planning, design and management. Such harbors can be called ecological green harbors.

Characteristics and Requirements of Green Harbor
The characteristics and requirements of green harbors can be seen from Fig. 1 which describes the concept model of green harbors and have being studied by Ju(2010), Abood(2007), Chang & Wang(2012), etc.

Fig. 1 Concept model of green harbor

According to the connotation of the above concept, the characteristics...