



Centralization and decentralization: Evaluation of marine and coastal management models and performance in the Northwest Pacific Region



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ABSTRACT

The marine and coastal management (MCM) in various coastal countries is closely related to the national political systems, history, economic development and maritime strategies of the countries. No region in the world embodies as many differences as the Northwest Pacific Region (NWPR). Against this complex background, this paper comparatively analyses the institutional arrangement and legal system of the MCM in this region, summarizes the characteristics and divides the five coastal countries around the NWPR into two models: the MCM of China and ROK belongs to centralization, and the MCM of Japan, DPRK, and Russia belongs to decentralization. To evaluate the MCM performance in the five countries, this paper establishes an indicator framework from the four elements of the institutional arrangement and management, the legal system, the coastal environment and the ocean economy, and the principal component analysis (PCA) method is employed as the weighting method to synthesize the evaluation results. The evaluation results demonstrate that compared to the other four countries, Japan performed better in terms of the institutional arrangement and management and legal system aspects; DPRK performed best in terms of the evaluation aspects of the coastal environment; and China performed best in terms of the ocean economy aspects. In terms of the general MCM performance, Japan performed best, followed by ROK, China and Russia, with DPRK performing the worst. Overall, the MCM in the NWPR after years of adjustment has been effectual, and the effectiveness of the MCM performance among different countries varies greatly. Regardless of the differences in the current effectiveness of the MCMs of these countries, it is a future trend to improve the coastal environment and develop the ocean economy according to one's own development needs. Finally, the main areas to be improved in the various countries are proposed.

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1. Introduction

The geographical scope of the Northwest Pacific Region (NWPR) covers the Sea of Okhotsk, the Sea of Japan (which Koreans call the East Sea), the northern Yellow Sea and the Chinese Bohai Sea. There are five coastal countries in the NWPR, namely, the People's Republic of China (hereafter, China, which includes only the Heilongjiang, Jilin, Liaoning, Shandong, and Jiangsu Provinces), Japan (Hokkaido and prefectures of the west coast of Honshu and Kyushu), the Democratic People's Republic of Korea (hereafter, DPRK), the Russian Federation (hereafter, Russia, which includes only the Russian Far East districts of Primorsky Krai, Khabarovsk

Krai, and Sakhalin) and the Republic of Korea (hereafter, ROK) (Fig. 1). The coastal region has a population of 394 million people, accounting for 6 percent of the world's population. The GDP in the region amounts to 4.47 trillion USD, accounting for 3 percent of the world's gross national product (Table 1). As one of the economically developed regions in the world, the differences in political systems and economic development in the NWPR are great: China is a developing country under a socialist market economy system; Japan and ROK are world-class developed countries under market economy systems; Russia is generally a developed country, converted from a planned economy to a market economy system; and DPRK is a country with a completely socialist planned economy and is perhaps one of the poorest countries in the world.

These great differences in political systems and economic development have determined the special formation and evolution of the marine and coastal management (MCM) systems of these

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Glossary

DPRK	the Democratic People's Republic of Korea
EEZ	Exclusive Economic Zone
ICM	Integrated Coastal Management
IOC	International Oceanographic Commission
MCM	Marine and Coastal Management
MEP	the Ministry of Environmental Protection
MOMAF	Ministry of Maritime Affairs and Fisheries
NWPR	Northwest Pacific Region
PCA	Principal Component Analysis
ROK	the Republic of Korea
SFA	the State Fisheries Administration
SMA	the State Maritime Administration
SOA	the State Oceanic Administration
UNCED	United Nations Conference on Environment and Development
UNCLOS	the United Nations Convention on the Law of the Sea
UNESCO	the United Nations Educational Scientific and Cultural Organization

countries. The main factors responsible for the different MCM systems are the different ocean-related institutional arrangements and legislation (Cho, 2006). Because it is difficult to judge the type of model that is the most effective, a study of the MCM development status and the problems of the five countries could serve as a reference for promoting MCM within this region. It could also assist other coastal countries in the development of their maritime policies/strategies.

Recent studies have documented many achievements in MCM. For example, Kim (2012) divided the MCM systems of the world into five types: (1) inter-ministerial commissions or committees; (2) administration under a ministerial-level department; (3) administration at the ministerial level plus inter-ministerial commissions or committees; (4) ministerial-level departments; and (5) ministerial-level departments plus inter-ministerial commissions or committees. Cho (2006) described the MCM system of ROK and discussed the effectiveness of maritime policy from positive and

negative perspectives. Cao and Wong (2007) evaluated China's ocean management program and China's progress in legislation, institutional arrangements and public participation. Lacerna et al. (2003) evaluated the effectiveness of marine management institutional arrangements from the aspects of society, government and law, and they established an appropriate evaluation framework. Liu et al. (2012) proposed 12 indicators to evaluate the effectiveness of the institutional arrangements of the MCM systems of four East Asian countries. Wakita and Yagi (2013) evaluated the Japanese Integrated Coastal Zone Management Plan Development Guide and analysed the reasons for the poor implementation of the 2000 Guideline.

Studies conducting MCM performance evaluations have also documented some achievements: the International Oceanographic Commission (IOC), led by the United Nations Educational Scientific and Cultural Organization (UNESCO), published a handbook in 2006 for measuring the progress and outcomes of integrated coastal management (ICM), serving as a reference for all coastal regions around the world (UNESCO, 2006); Ye et al. (2014) and Kong et al. (2015) analysed the relationships among ICM governance, coastal environmental and ocean economy in Quanzhou, quantitatively assessing the performance of ICM; and Ye et al. (2015) quantitatively evaluated the ICM performance in three coastal cities in China in terms of governance, environment and ocean economy over a 9-year period from 2004 to 2012.

The above mentioned studies of MCM systems have been basically limited to a country, but analyses of the characteristics and evolution of MCM in different countries of the same region have been lacking. In contrast, studies conducting MCM performance evaluations have mainly focused on the performance of coastal cities. In fact, because it is a common geographic phenomenon that different countries are distributed in the same coastal region, the MCM in the region usually belongs to the national and even international level. Therefore, this paper measured the MCM performance of China, Japan, DPRK, Russia and ROK from four aspects (institutional arrangement and management, legal system, coastal environment and ocean economy) and summarized the types and characteristics of the MCM. By establishing an indicator framework and employing the principal component analysis (PCA) method, the performance of MCM in the five countries was quantitatively assessed.

2. Institutional arrangement

People around the world began to pay attention to marine

Table 1
General overview of countries in the NWPR.

Countries	Population (million)	GDP (10 ⁶ USD)	GDP per capita (USD/person)	Coastline (km)
China*	285.4	2,512,230	8802	6100
Japan**	33.6	779,704	23,183	9917
DPRK	22.0	28,000	1509	2495
Russia***	1.3	3437	2282	10,919
ROK	51.8	1,147,490	22,708	2413

Notes: *Heilongjiang, Jilin, Liaoning, Shandong, and Jiangsu Provinces; **Hokkaido and Prefectures of the west coast of Honshu and Kyushu; ***coastal districts of Primorsky Krai, Khabarovsk Krai, and Sakhalin.

Sources: data for population, GDP and GDP per capita of China, Japan, Russia and ROK come from the United Nations Environment Programme's report: State of the Marine Environment Report for the NOWPAP region (SOMER 2) (<http://dinrac.nowpap.org/documents/2015/POMRAC-SOMER2.pdf>); data for the length of coastline come from the United State Central Intelligence Agency's publication: the World Factbook (<https://www.cia.gov/library/publications/the-world-factbook/fields/2147.html>); data for DPRK come from 2013 official statistics. The currency exchange rate against the dollar takes December 31, 2013 as the base.



Fig. 1. The geography of the NWPR.

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