Study on the Technical Requirement of the Fifth Generation Port Environmental Protection

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Abstract. Because China's environmental pressure is growing, environmental technology and management have increased the higher requirements, therefore, how to solve the premise of protecting the environment, to ensure the healthy development of port water transport, as we must solve the problem. Environmental problems that are technical reasons, there are management issues. Some of the existing water transport traffic management system has been unable to meet the needs of development. This study will closely study the current situation of port construction and management at home and abroad and the current situation of environmental protection technology and equipment, and apply the research on the demand of environmental protection technology of the fifth generation port.

The Definition of the Fifth Generation Port

The so-called fifth-generation port refers to the green port or low-carbon port. Time initially set from around 2010 to the next 10 years or so, according to the situation the length of this time can also be adjusted.[1]

Green ecological port is a sustainable development port that can meet the environmental requirements and obtain good economic benefits. It requires the port to meet the hinterland economic and trade development needs at the same time, to minimize the port construction and operation of the environmental and ecological impact, reduce resource and energy consumption, ease the impact on climate change. [2]

Analysis on the Development Trend of Domestic and Foreign Port

The United Nations Conference on Trade and Development, 1992, in the "port development and improvement of the port of modern management and organizational principles," the study, the port according to its functional development is divided into three generations. The first generation of ports mainly refers to the port before 1950, its function is the transshipment of maritime goods, temporary storage and the collection and delivery of goods, the port is the hub of transport. The second generation of ports mainly refers to the port of the 1950s to the 1980s, in addition to the functions of the first generation of ports, but also increase the value of the goods business functions, the port as a loading and unloading and service center. The third generation of ports mainly originated in the 20th century, 80 years later, in addition to the first generation, the second generation port function, more and the city and the user's contact, so that the port service beyond the previous boundaries, increase transport, trade Information services and distribution of goods and other integrated services, the port has become a logistics center. The fourth generation port is the 20th century, 90 years to around 2010, for the port route between the alliance and the port of cooperation between the information and flexible port. This generation of ports includes the functions of the first three generations of the port, and it is mainly based on the alliance between the Union and the port. Processing of goods is mainly large-scale, highly information, network, but also to meet the market demand for flexibility, but also has a refined production, agility, which is
characterized by: the alliance between the port and the port and the harbor, some port operators operating the terminal is forming a network; the interaction between port and shipping and its associated logistics activities is important when building a seamless supply chain; port information, networking, agility makes the port to the market demand for quick and quick response to meet the various differences proposed by customers, personalized needs.

The first four generations of the port are basically ignored the sustainable development and climate change. Climate warming is now largely dependent on the control of emissions. The global emission reduction agreement is expected to reduce greenhouse gas emissions by about 20% by 2020 compared to 1990 levels and 20% by 2050 in 1990. [1]

The development of the port is closely related to the development of the national and regional economy, and the environmental problems are often accompanied by the development of the port, which is what we usually call the relationship between development and environmental protection. Foreign port development also encountered the same problem. Europe and the United States and other developed countries, because the economic development started earlier, so the environmental problems as early as we found, understanding and solution.

**Port Environmental Protection Technology Difficult**

China's ports, especially Ningbo - Zhoushan Port, Shanghai Port, Shenzhen Port and so on in the port throughput, container throughput has entered the forefront of the world's ports. However, due to China's relative to the United States, Europe, Japan, Australia, some developed countries more serious port, so the fifth generation port as the direction of China's port development to promote green and low carbon.

At present, a large number of research and actual monitoring data show that the construction and development of the port to the surrounding environment and the quality of the marine environment has caused great impact, such as ecological problems, dust problems and environmental risks, etc., for how to identify specific environmental issues and impact It is very important to put forward effective countermeasures and measures, which is one of the difficulties of this project.

The environmental problems of the port are not only related to the speed of the port construction and the scale of development, the country's concern about the port environmental problems and the relevant regulatory systems and measures to effectively improve the port environment plays a very important role.

**Problems to be Solved in Port Development**

**Port Environmental Prevention and Control Technology**

Through investigation and Research on environmental problems, there are some technical problems in the prevention and treatment of coastal ports in different stages of development in china. It includes the following: ecological protection and restoration measures of port and Waterway Engineering; measures for the protection and mitigation of the ecological environment in the land and water areas taken for the construction and operation of the project; environmental protection measures of ecological bank protection, artificial fishway, ecological flow protection and other measures; harbor water transport project oil-containing wastewater; oily wastewater, chemical wastewater, coal—containing sewage, ore—containing sewage, container cleaning wastewater, living water collection, discharge and treatment of waste water, waste water treatment measures; impermeable and leak proof measures of chemical dangerous goods port area, tank area, bulk cargo yard; the Dust control measures for typical bulk ports and clean production processes, closed storage, windbreaks, shelterbelts and other measures; port water transport engineering environmental protection policy and noise control technology level, noise control to take relevant measures; regional risk emergency situation, project emergency facilities, recovery and elimination measures; harbor, ship and other solid waste treatment and dangerous goods waste disposal, solid
waste harmless treatment measures. Above these measures taken by the prevention and treatment needs to be further improved.

**Environmental Management**

Due to the different stages of economic development at home and abroad, in the treatment of environmental protection ideas, understanding and technical level is different. First, we are mainly passive acceptance and enforcement in environmental protection. At present in the water transport environment protection work, more time is the need for relevant authorities, departmental supervision can be implemented. And for economic benefits, in the implementation of often discounted. Environmental protection measures cannot be on the no, can save on the savings. Even if the completion of the environmental protection measures, the work does not work when the phenomenon occurs. Second, the port of environmental protection research attention is not enough. mainly reflected in: the research of funds and personnel relatively single; the main source of funding for the study of port environmental protection is government investment; the investment of port enterprises is very small; and the staff is mainly led by managers. Third, the environmental risk prevention area linkage is not close enough. Environmental risk accident should first be the main prevention, in the event of an accident, alone rely on a unit or department of the power is difficult to solve. Domestic and foreign history of the accident experience tells us that the regional linkage is an inevitable choice, but the current regional linkage mechanism is not perfect, the configuration of the relevant facilities is not reasonable enough.

**History Left Over**

China's water transport in the current environmental management there are still many problems to be solved, such as: Industry environmental protection management system is not perfect, some industry environmental protection laws and regulations and technical specifications can not meet the new situation of environmental development needs. Some of the early construction of the lack of environmental protection facilities, some infrastructure operations management department without pollutant recycling capacity, the industry's overall pollution control capacity is insufficient, pollution control facilities operating mechanism to be implemented, regulatory work to be strengthened. The lack of ecological protection measures in some projects in the early construction has affected the ecological environment and has not yet been restored. The ecological protection level of the new project is still low, and the specificity and effectiveness of the ecological protection and restoration technology are still insufficient.

**Concluding Remarks**

According to the research results of the development trend of future port environmental problems in China, combined with the characteristics of the port and the characteristics of environmental problems, we put forward effective solutions from the aspects of prevention and control, processing technology, management requirements and supervision system, and make quick and stable for our fourth generation port Development and environmental improvement.

**References**
