Study on the methods of rational analysis about the area of the Planning of Sea Usage of Regional Construction

Study on the methods of rational analysis about the area of the Planning of Sea Usage of Regional Construction

Li Ya-Juan[1], Mao Tian-Yu[1]*, Mingjing-Tian[1],

Laboratory of Environmental Protection Technology on Water Transport, Tianjin Research Institute for Water Transport Engineering, Ministry of Transport, Tianjin 300456, China

* Corresponding Author

Abstract: The Planning of Sea Usage of Regional Construction is a new area, and the rational analysis about the area of which is one of its difficulties. Based on "Urban land classification and land use planning and construction standards", the land use control index method study the rationality of the sea usage area of the whole region, by accumulating for specific land use indicators for each land type within the planning area. This paper, takeing the project named "caofeidian integrated service area" for example, make a little study on the land use control index method used by the sea usage demonstration of the planning of sea usage of regional construction. The study will be good for improving the technical methods of rational analysis about the area of the planning of sea usage of regional construction.

1. Status Quo of Domestic Sea Area Demonstration and Regional Sea Planning Demonstration

Sea use refers to the use of sea water in the People's Republic of China, the territorial waters continue to use specific waters for more than three months of exclusive sea activities[1]. The use of sea area demonstration is through scientific investigation, calculation, analysis, forecasting, the development of sea sea feasibility analysis and give the corresponding written materials to achieve scientific sea, standardized management and sustainable use of the sea.The use of sea area must be borne by a certified staff with marine scientific knowledge. The use of high, refined, sharp instruments and equipment, access to marine hydrology, marine geology, marine chemistry, marine life and other environmental information and marine resources development and utilization of the status of information, in full control of the above natural characteristics, based on the use of sea Program for scientific analysis, evaluation, prediction, for the decision-making departments to provide the basis[2].

The use of sea area demonstration is a newly established system in China, only with ten years of history.The real norms of the use of the waters of the demonstration work is since 2002, "Sea Use Management Law",which is promulgated after the implementation of the. With the efforts of the competent national authorities to promote, although the development and promulgation and implementation of the "sea area demonstration technology guidelines", "the use of sea area demonstration report outline" and "sea use demonstration qualification management regulations" and other documents, but the whole work is still in Fissure stage, in the theoretical system and methods need to be improved[3]. In December 2008, the State Oceanic Administration promulgated the Circular of the State Oceanic Administration on Doing a Good Job of Safeguarding Services to Promote the Steady and Rapid Development of the Economy. The document clearly put forward the "strengthen the special use of the sea planning and project management", so the use of regional planning sea planning demonstration work is a new research area. This work includes not only the use of project

waters, but also covers the contents of marine environmental impact assessment and environmental impact assessment. Therefore, how to solve the regional use of sea planning in accordance with the existing guidelines, outline and combined with the contents of the preliminary work of marine environmental impact assessment, to become a new research field. At present, the working methods and techniques of regional seas planning, spatial layout, implementation steps, sea use and rationality of sea area are in the exploratory stage.

2. Foreign research progress

There is no concept of "sea area use demonstration" abroad, and its related contents are included in the generalized environmental impact assessment system. For example, the United States, the federal government requires states in the sea before the use of sea areas must be used to develop planning and zoning. And that prior to the planning or zoning, the impact of coastal erosion must be estimated in accordance with the procedures prescribed by law, the methodology for the control or mitigation of the effects of such erosion, and the restoration of the adverse effects of such erosion. According to the “Regulations of the United States of America Coastal Regulations of 1976”, Section 30718, port planning should be prepared in accordance with the Environmental Quality Law of 1970 for various environmental impact assessment reports or veto statements or prepared under the National Environmental Policy Act Environmental impact assessment report, and put them in a timely manner to the Committee on the awareness of the Committee to comment on it. In addition, Coastal systeminter national Inc. is a specialized project for the provision of marine environmental impact assessment services for the Caribbean Islands project. Their environmental impact assessment for the construction projects carried out in the Caribbean Islands includes physical conditions, meteorological conditions and ocean conditions for the wind, waves, tides, ocean currents, geomorphology, soil structure, drainage, storm forecasting and weather conditions at the project location Conditional comprehensive analysis. They monitor and demonstrate marine and terrestrial ecosystems such as coral reefs, wetlands, and coastal forests. As well as regional and national freshwater and facilities, sea history and social and cultural resources to assess. [4]

The environmental impact assessment carried out by this Coastal Systems International Co. is substantially the same as that of China's marine use demonstration, but this work in the United States can only be a kind of environmental impact assessment.

3. Several Key Factors in the Analysis of Sea Area Rationality

Reasonable sea area mainly for the use of sea area can meet the actual needs of the project with the sea, but also the effective use and protection of sea resources. And unreasonable sea area will often bring waste of sea resources and environmental damage, and even lead to contradictions with the sea. Area rationality analysis is generally analyzed from the following aspects:

3.1. Whether the project sea area meets the project sea demand

According to the construction scale and design standard of the sea project, it is analyzed whether the project sea area meets the demand of project construction.

3.2. Whether the metric of the sea area of the project is in line with the "maritime survey procedure"

The use of the area of the sea area is calculated using the boundary point in the sea area, calculated by mathematical method. There are two types of area commonly used: the area calculation on the reference ellipsoid and the area of the coordinate analysis method that is projected onto the plane coordinate analysis method. When the area of the sea area is not too large, the difference between the two methods is not too large, but when the area is larger, it should be calculated by using the area calculation method on the reference ellipsoid.

3.3. The rationality of the project taking the shoreline

Because the natural coastline is an important part of the ecosystem, which itself carries many natural

ecological functions, which can not be replaced by artificial coastline, so the natural coastline is critical to the sustainable development of a sea area and even a region. When the sea project needs to occupy the coastline, the type of coastline should be analyzed, including the natural shoreline (sandy coastline, silt shale coastline, bedrock shoreline) and artificial shoreline, and the length of the coastline. When the project needs to occupy the natural coastline, should be based on the size of the project and the layout of the occupation of shoreline rationality analysis.

3.4. The project uses sea to reduce the possibility of sea area use

For sea projects that have completely changed the properties of the sea or have a greater impact on the marine ecological environment, such as the sea reclamation project, the salt industry sea project, the sea of the nuclear power plant, the sea and road and so on, according to the relevant norms, Through the program than the selection, production process improvement to explain the use of sea projects to reduce the use of sea area the possibility. Through the demonstration analysis and adjustment of the area and scope of the project, the materials such as sea area, boundary point and location map should be given after the demonstration analysis.

4. Regional planning sea and the main difference between the project construction sea

4.1. Sea type, different ways

Construction of the project with a variety of types of sea, from the use of sea demonstration technology can be seen, the sea type mainly includes a variety of types. The classification system used in the sea area clearly defines the classification principle, type and sea use of sea area use. The area of sea planning with a single type of sea, basically to the reclamation of the main, so the regional planning with the sea area are larger, is the general construction of the sea area with several times, several times or a hundred times, so , The planning and construction projects with the sea area and rational analysis than the general construction projects more complex.

4.2. Uncertainty of the sea project

General construction projects are based on the feasibility study of the project, based on the actual situation of the project, apply for a certain amount of sea area, sea can be based on the actual needs of the project diversification. And the regional planning sea is based on the macro point of view to the sea area planning (rather than the general project feasibility study) as a basis for the development plan for the implementation of the regional sea application, the planning area within the sub-construction There is a certain degree of uncertainty in the project.

5. Application of Land Use Control Index Method in the Rational Analysis of Caofeidian Comprehensive Service Area Project

Caofeidian comprehensive service area construction of the project include: embankment works and filling works, land area of about 1337.514hm^2. Caofeidian comprehensive service area project is divided into two parts: Caofeidian comprehensive service area project north of the Nampo River area and south of the Nampo River area.

Caofeidian comprehensive service area north of the Nampo River area of the main land use functions for residential and public service facilities and public facilities land, with a total area of 996.075hm^2, accounting for "Caofeidian Industrial Zone start area (North) control detailed planning" in the planning Of the area of 50.3%.

Caofeidian comprehensive service area south of the Nampo River area of the main land use functions for residential and public service facilities and public facilities land, with a total area of 405.142hm^2, accounting for "Caofeidian Industrial Zone start area (Southern) control detailed planning" in the planning Of the area of 20.59%.

Planning integrated service area can accommodate 20-25 million people living, work. According to the "urban land classification and planning and construction land standards" (GBJ137-90), the

standard proposed the "planning per capita construction land indicators, planning and construction land structure" indicators, so in this sea area rationality, only for this Several aspects of the area of rationality analysis, while the total area of these projects, and indicators of planning and construction of land use indicators for comparative analysis, the rationality of the conclusion of the area.

"Urban land classification and planning and construction land use standards"[5] (GBJ137-90) Article 4.2.1 clearly put forward the "planning per capita construction land indicators" (Table 1). Planning integrated service area can accommodate 20-25 million people living, even if the conservative estimate to 25 million population, the demand for various types of land and the standard comparison of the table in Table 2.

Table 1. Planning per capita construction land use indicators

Classification name	Land use indicators (m^2 / person)
Residential land	18.0～28.0
Industrial land	10.0～25.0
Road plaza land	7.0～15.0
Green land Among them: public green space	≥9.0 ≥7.0

Table 2. Comparison of demand and standards for land use

Planning per capita construction land use indicators		Land demand (hm^2) Estimated at 250,000 people	This plan (ha)	Remarks
Classification name	Land use indicators (m^2 / person)			
Residential land	18.0～28.0	450～700	420.84	Slightly less than the standard value; as a supporting life service area, its industrial land is less reasonable, but also in line with its functional positioning, but also reflects the intensive, saving the principle of using the sea.
Road plaza land	7.0～15.0	175～375	32.938	Less than the standard value; as a supporting life service area, its industrial land is less reasonable, but also in line with its functional positioning, but also reflects the intensive, saving the principle of using the sea.
Green land Among them: public green space	≥9.0 ≥7.0	≥225 ≥175	210.090 169.094	Slightly less than the standard requirements; as a supporting life service area, its industrial land is less reasonable, but also in line with its functional positioning, but also reflects the intensive, saving the principle of using the sea.

This demonstration of Caofeidian integrated service area as Caofeidian industrial area supporting life service area, its function for short-term residence, administration, logistics trade, training research and development-based. As can be seen from Table 4, Caofeidian comprehensive service area of the land situation reflects its service-oriented features.

Article 4.3.1 of the Standard for Urban Land Classification and Planning and Construction Land (GBJ137-90) clearly states the "Planning and Construction Land Structure" (Table 3), and Article 4.3.5 clearly states that "Residential, Industrial, Road Plaza And the green land of the four categories of land use accounted for the proportion of land for construction is 60 to 75% "(Table 4).

Table 3. Planning and construction land structure

classification name	Accounting for the proportion of land for construction (%)
Residential land	20～32
Industrial land	15～25
Road plaza land	8～15
Green land	8～15

Table 4. Comparison of the proportion of the land used for construction land and the standard

Classification name	Accounting for the proportion of land for construction (%)	This plan the number of land use (hectare)	The proportion%	Remarks
Residential land	20～32	420.84	31.5	Basically meet the standard requirements
Road plaza land	8～15	32.938	2.5	Less than the standard value
Green land	8～15	210.090	15.7	Basically meet the standard requirements
Total	56～62		57.7	Meet the standard requirements

Although the proportion of other types of land is not calculated, but the living, road plaza and green land of the three categories of land use the proportion of land for construction should be 56 to 62%. The above three categories of land in the project are within the scope of the "standard", so it is also appropriate to indicate the proportion of other land use.

It can be seen that although the specific projects in Caofeidian comprehensive service area are to be implemented, the conclusion of Caofeidian comprehensive service area with reasonable sea area is obtained through the use of land control index method through its function orientation and population density index.

6. Conclusions and prospects

At present, the use of sea areas related to the use of the type of sea, but also makes the regional planning with the rationality of the work area in the actual operation is still insufficient and specific. The method of land use control is one of the important argumentation methods of sea area rationality analysis. But there are few ways to really guide the analysis of the rationality of the sea area, and only the method based on the practical basis is more meaningful and more viable. Therefore, the study of the rationality of sea area will be based on the theoretical research with the regional planning with the sea closely, will be operational and practical development, in order to better guide the use of regional planning sea use demonstration work.

References

[1] Law of the People 's Republic of China on the Administration of Sea Area [M] . BEIJING：Law Publisher， 2001.1

[2] State Oceanic Administration，Guidance on Technical Guidance for Sea Area Use [EB/OL] . http://www.soa.gov.cn/hyjww/hygg/2008/02/21/1203498002511723.htm，2008
[3] Jia Houlei, Xie Jian, Hong Peimin, et al.Problems and Countermeasures in the Management of Sea Area Use [J]. Ocean Development and Management， 2006(5): 79-80
[4] http://www.coastalsystemsint.com/marine_env/environmental_impact_assessment/index.htm．2007-11-19
[5] GBJ137-90. Classification of Urban Land Use and Planning and Land Use Standard [S]. BEIJING：China Planning Press，1991