

On the Countermeasures of Panjin Coastal Wetland Protection in Liaoning Province --- Reflections on Five-point-in-a-line Construction Project

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Abstract

The five-point-in-a-line strategy is actually an important component of development strategy of the coastal economic zone in Liaoning Province or even in the whole northeast China. The early five-point-in-one-line strategy only involved five key development areas in five coastal cities of Liaoning province. Since the beginning of June in the year of 2006, the strategy, instead of the original five-point-in-one-line layout, has been expanded to all the coastal cities of Liaoning Province, namely, Dalian City (Changxing Island Harbor Industrial Zone, Huayuankou Industrial Park), Yingkou (Liaoning Coastal Industrial Base), Dandong (Dandong Industrial Park), Jinzhou city of the western Liaoning Gulf Economic Area (Xihai Industrial Zone), and Huludao city (Beigang Industrial Zone and Xingcheng Industrial Park), Panjin City (Ship Building and Repairing Industry Park). In this way, all coastal cities in Liaoning have been included in Liaoning coastal economic zone development strategies.

Keywords: Panjin, Five-point-in-a-line, Coastal wetland

Panjin City, with 118 kilometers of coastline, has an area of 261,000 hectares of wetlands. Among them, natural wetlands (reed swamp, rivers, coastal beach and the shallow sea of less than 6 meters in low tides) are 12.9 million hectares. And the constructed wetlands (rice field, reservoirs, fish and shrimp ponds) are 13.2 million hectares. Wetlands are rich in water resources, fertile soil, and extremely abundant in creatures, which provides a lot of food resources and industrial raw materials. Since the founding of New China, especially since the Third Plenary Session of the Eleventh Central Committees of the CPC, the Party committees and governments at all levels have attached great importance to the protection of the wetlands. A lot of manpower, material and financial resources have been invested to give an enough protection of the ecological functions of wetlands and comprehensive benefits have been increased steadily.

Wetlands, forests and oceans, known as the three ecological systems of the world, have the functions of maintaining security and protecting the biodiversity. They are the important natural resources and the ecological environment in which human beings depend and develop on. They also play vital and special roles in fighting against ecological disasters, regulating climates, cleaning water, conserving the biological diversity, and other aspects. "Kidney of the globe", "natural reservoir" and "the library of natural species" are the nicknames to demonstrate their importance. They have important ecological, economic and social benefits, and bear a significant impact on economic development and the survival of mankind. With the implementation of "Action Plan of China Wetland Protection," wetlands have become an important condition of social progress and economic development and played an important role in fighting against the ecological disasters. Panjin City is a resource-based city around the Bohai Sea, whose wetland area are large and of various types and rich in biological breeds. The oil city, home of crane, city of crabs, and the world's largest reed marshes have won the good reputations for it at home and abroad.

1. Construction conditions of Panjin wetlands

1) In June 1964, under very difficult circumstances of the national economy, Ministry of Light Industry of China in order to solve the issue of paper-making raw materials invested heavily in the construction of a high-standard water conservancy project and built the main-branch engineering system, which does not only ensure the production of reeds, but also maintains Panjin wetlands sustained, healthy and coordinated development.

2) In February 1988, Shuangtaizi estuarine wetland in Panjin was approved by the State Council as a national nature reserve. Wetlands in the area have been actively protected and scientifically restored so that the resource advantages of wetlands have been more fully demonstrated.

3) In April 2000, ZhaoQuanhe wetland eco-tourism area and the Shuangtaihe water sightseeing area, after many years of development and construction, have been named by the State Environmental Protection Administration as Model of Wetland Ecological Construction in North Part of China and become the Panjin eco-tourism card.

4) Panjin reed wetland is located in the Liaohe River Delta Marshes. During the twenty years of 1986 to 2005, the reed wetland area has decreased by 140.62 square kilometers and the ecological functions of wetlands have been apparently degraded. The shrinkage of wetlands has aroused great concern from all sectors of society. With the implementation of "Action Plan of China Wetland Protection", "Liaoning Provincial Wetland Protection Ordinance," and other series of laws and regulations, in 2008 Panjin reed wetland area was increased with a net 34.94 square kilometers compared with 2005. Continuous dynamic remote-sensing monitoring results show that from 2005 to 2008, Panjin reed wetland area has been increasing year by year with a good trend.

2. The achievements and experiences in Panjin wetland construction

Panjin coastal wetlands have been highly stressed by the Party and the governments. After 50 years of development and construction, some achievements and experiences in construction have been made.

2.1 Strengthening the engineering system is an important prerequisite to speed up the development and construction of wetlands.

The construction that Panjin carried out on the wetlands can be divided into two major phases. The first was in 1964. Since then on six pumping stations had been set up and more than 500 million cubic meters of earth had been deployed so that the wetlands in that period had been effectively protected and restored. On the basis of an annual reed output of 35,000 tons in the early period of New China, in 1965, an annual output of reed reached 180,000 tons with an increase of 5.1 times. The wild fish, shrimps and crabs were substantially increased in production and became the major food for the local people to overcome the difficulties in that period. The second stage is from the beginning of the nineties of the last century. The ecological economic mode had begun to be constructed to achieve the maximization of wetland benefits, which is of importance in accelerating eco-city building.

Practice has shown that only by adhering to the scientific outlook on development, strengthening the constructing of wetland engineering system and building the harmonious relationship of man and wetlands, can the development and construction of wetlands be sped up.

2.2 Adhering to scientific research and implementing the strategy of enterprise development through science and technology strategy are the key to achieve sustainable construction and development of wetlands.

In 1954, Panjin Wetland Research institute was set up after approved by the State Ministry of Light Industry of China. In 2004 the 50th executive meeting of the municipal government made a decision to approve the establishment of Panjin Wetland Science Research Institute. For more than 50 years, the Research Institutes has closely centered the problem of the reed wetland comprehensive utilization and active protection to develop the basic theory and applied technology research, and created the theory of reed wetland ecology. It has conducted more than 60 research projects and 21 has won the prize of provincial or ministerial scientific research and technological progress and has provide scientific basis and application technology for the establishment and development of wetland economy and the promotion of the harmonious development between man and wetlands.

The unremitting efforts made by the workers in the Research Institute have provided strong support for the protection and utilization of the reed wetlands. The reed wetland resources obtain sustainable development and the Panjin reed area becomes the world's largest one. The research results of "planting reeds scientifically, raising poultry on the water, fish in the water, and crabs under the water" have been widely promoted in the whole city to realize the simultaneously increase of ecological benefits, economic benefits and social benefits.

Practice has showed that only by adhering to scientific research and scientific and increasing the technological support, can the wetlands gain sustained, healthy and rapid development.

2.3 Establishing wetland nature reserve is an important form to protect the ecological environment which man depends on and gain the development.

Panjin Shuangtai Estuary Nature Reserve was approved as a National Nature Reserve by the State Council of China in 1988. Through the joint efforts of the workers and cadres in the protected area, biological creatures

obtained protection in the wetlands. The rich biological resources and the unique vegetation types and the ecological environment constitute harmonious relations. According to the statistics, there are 411 species of 124 families of vertebrates. Among them, mammals are 21 species, amphibians and reptiles are 15 species, fishes are 124, birds are 253 species, waterfowls are 106, and migratory birds are 52 species. The main types of waterfowl are red-crowned crane, white crane, Saunder's gull, swan and big-tailed eagle. All belong to the first or second type of national protected animals. In terms of the distribution of birds, here is an important stop and habitat for the migratory birds and the breeding place for the world's largest population of endangered black-beaked gull with more than 2,700 black-beaked gulls in birth each year and more than 540 red-crowned cranes in birth as well. The vast wetlands after ebb provide the vital venue for resting and finding food for the birds migrating from Siberia to Southeast Asia. It stands in the leading position in protecting the wetlands and the wetland biodiversity.

Practice has proved that the establishment of wetland nature reserves has played an important role in protecting biological diversity and constructing harmonious relations for human beings and the wetlands.

2.4 Establishing eco-cycle economic mode is an important way to achieve the rapid economic development in wetlands.

Wetlands are rich in water resources. The soil conditions are good and the species are numerous. They are ideal to achieve rapid economic development. In the past years, Panjin City has made full use of wetland resources. While scientifically cultivating the reed, it has developed aquaculture and waterfowl breeding industry. The planktons in the wetlands are the natural food for fish and waterfowls. And the excrement of the fish and poultry is the natural fertilizer for the reed. Thus eco-cycle economic mode in the wetland is established, which is of great importance for the regional economic development.

Practice shows that only by establishing the eco-cycle economic mode and turning the wetland resource advantages into economic advantages, can the development of regional economy be sped up.

2.5 Establishing the wetland eco-tourism area is an important carrier to promote the local culture and speed up economic development.

Panjin wetland eco-tourism is rich in resources with natural ecological characteristics and has enormous space for development. Since the founding of the city, the tourist route of the Reed sea and Red Beach has been listed as one of the unusual tourist routes by the Provincial or State Tourism Bureau. It has played a vital role in publicizing the local culture and displaying the good image of Panjin City. Meanwhile, it has earned more than a billion Yuan for Panjin City a year, and what's more, given an impetus to the development of related industries. This shows that only by making full use of wetland resources and building regional culture brands, can the regional characteristics be displayed.

2.6 Enhancing the quality of the wetland construction is an important guarantee of fighting against ecological disasters.

Panjin City, in the north shore of Liaodong Bay is an area of storm surge. After years of development and construction, wetland ecological quality of Panjin City has been well protected. This gives an effective resistance against the frequent occurrence of storm surges so that the country and people's lives and property have been protected.

Practice has fully proved that only by strengthening the quality of the wetland construction, can the ecological disaster be effectively resisted.

3. The main problems and difficulties that Panjin has in the work of wetland protection

Because China's wetland protection and education has lagged behind, people haven't got enough understanding of the importance of wetlands, the capital investment is in short and the laws and regulations of protecting wetlands are not sound, the situation of wetland is quite grim.

3.1 Serious shortage of investment in environmental protection of wetland ecology

Due to the disrepair of some engineering constructions, the functions of the wetlands are degrading. Most of the wetland conservation projects in Panjin City were built in the 20th century. Forty years has passed. Due to lack of investment, some are dilapidated or damaged severely. And even some engineering facilities can not be used again. Thus, the structures of the wetland ecosystem have been destroyed, resulting in impaired ecological functions of wetlands. Especially the abilities of irrigation and drainage have been severely affected. The wetland economic advantages have not been realized.

The coastal beach after the ebb has been increasing year by year. Because constructions lag behind,

desertification becomes serious. Panjin City has a coastline of 118 kilometers. With the changes of the Earth, the sea-beach area is increasing year by year and now it has more than 30,000 hectares of the sea beach. The investment on wetland protection is large and Panjin can not afford it, resulting in the waste of the valuable beach resources, the reduction of biological lives and declined functions.

3.2 Shortage of resources and declined biodiversity

The wetland life can not survive without water. Panjin City is lack of fresh water resources and the existing freshwater resources can only meet the demand of the people's daily life and of rice field. It is impossible to list the water use of the wetlands. Thus, in a year of dry weather, wetlands become dry and the functions lessen. The biodiversity declines continually. It will be terrible if such conditions continue.

3.3 There are no regulations or plans to use the wetland resources. Farmland is reclaimed disorderly and oil fields are developed. All these are responsible for the substantial reduction of wetland area.

According to the statistics, in the era of "taking planting grain as the key guideline", Panjin City opened more than thirty thousand hectares of the sea beach to plant crops. Because there was no fresh water, soil salinity increased. These fields finally could not be planted and then abandoned. Some fields were turned into shrimp fields.

Oil field development resulted in a significant reduction of wetland area. Since the beginning of 1970s, Liaohe Oil Field has drilled more than 600 wells in the wetlands, constructed more than 1,000 kilometers of underground pipes, and built roads of over 200 kilometers, taking up more than 60 hectares of wetlands. The construction of roads and platforms has cut off the original flow of the irrigation and drainage canal system and changed the water flow direction. The vegetation groups in reed wetlands, due to the long time water accumulation, have lowered the yields. At the same time, soil of some areas due to drought becomes saline lands, where plants are difficult to survive.

3.4 Environmental pollution in wetlands has increased.

There are industrial wastewater, domestic sewage, the farmland sluice with a large number of chemical fertilizers and pesticides, oil pollution made by all kinds of fishing vessels at sea and river transport vessels and the high concentrations of organic wastewater from the shrimp baits in the artificial breeding. Especially, when the oil-field wastewater are discharged into the wetlands, pollution is made to the wetlands and the pollutants far exceed the purification capacity of wetlands, which greatly affects the environmental quality of the beaches and shallow waters. The main coastal wetlands environment of reed swamps, salsa, beaches and coastal waters are all affected to various degrees.

4. Several suggestions on strengthening wetland protection

4.1 The scientific outlook on development must be adhered to and a vigorous and energetic management system and operational mechanism must be established.

To construct an environment-friendly mode of wetland conservation and utilization, we must uphold the scientific outlook on development and establish an operational mechanism to meet the demands of the market economy with clear property rights, definite duties, scientific management, sound and fast development. Specific preferential policies should be formulated to encourage participation, attract investment and raise production. Diversified investment system should be made to provide good environmental conditions for the construction of the coastal wetland protection and restoration project.

4.2 Scientific and technological progress should be relied on and the strategy of scientific and technological development should be implemented.

The construction of coastal wetland protection and restoration should take science and technology as the guide and the high-tech as a starting point to be on the way of scientific development so as to enhance the technological content of wetland construction.

4.2.1 The transformation of scientific and technological achievements should be accelerated. Research units and researchers should be organized to actively participate in the coastal wetland construction. Policies of incentives about the scientific and technological achievements transformation and application should be worked out. Science and technology contracting should be continued. Research units and researchers should be encouraged to the main battlefield of the wetland construction to well improve and publicize the techniques.

4.2.2 Science and technology demonstration area should be built. Step by step, we should focus on the reed wetland eco-park building and wetland aquatic photosynthetic demonstration zone to well protect and restore the wetlands with the help of the high technology.

4.3 Efforts should be made to strengthen the work of propaganda to raise the awareness of all the people about the wetlands.

Such media as television, radio and newspapers, etc should be made full use of to enlarge the propaganda work in an all-round and multi-level way to let all the people in the city to know about the wetlands. At the same time, people may understand that to protect wetlands is to safeguard the natural environment that mankind depends and develops on. They may consciously establish the scientific outlook on development and advocate the strong points that Panjin wetlands have in location, resources, infrastructure, personnel, and other areas so that people at home and abroad can know Panjin, and establish a good image of the wetland city.

4.4 International exchanges and cooperation should be actively carried out.

International communication and cooperation on wetland economy, technology, environmental protection and management should be actively developed to introduce the advanced technology, equipment, managing experience and talents needed in protecting and constructing the wetland construction. As for those projects of mature technology, good prospect and high benefits, we should take active measures to attract foreign investment and promote the process of industrialization and internationalization so that Panjin coastal wetland and wetland economy can develop steadily and rapidly.

4.5 Leadership should be strengthened to ensure the successful construction of protecting and restoring the coastal wetlands.

4.5.1 We should clarify our way of thinking and make scientific planning. The planning of the coastal wetland protection and restoration is an important part of the project of the Panjin national economic construction and social development and a vital basis for developing the wetland economy and constructing the coastal protection system. The coastal counties and all involved departments and enterprises should work out the construction planning of their own regions of units on the basis of the city's overall planning and the local actual circumstances, correctly understand the regional advantages and the development potentials, sort out the development way of thinking, set a strategic goal and implement specific tasks to do a good job in the construction.

4.5.2 We should enhance the sense of responsibility and urgency and work much harder. Leaders at all levels should attach more importance to the work of the wetland construction, truly put it on the agenda of the Party committees and governments, formulate preferential policies, establish and improve incentives and accountability systems.

4.5.3 We should manage according to the law and further strengthen our management. We should conscientiously implement Action Plan of China Wetland Protection and Liaoning Wetland Management Regulations and govern according to laws. Wetland leading group should improve their quality of business management and law enforcement level. Legal concept of the whole cadres should be enhanced to realize that of observing the law and strictly enforcing the law.

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