

The Ecological Livable Planning of Industrial Urban During Rapid Urbanization

Liu Chengcheng, Urban Planner, China

1. Introduction

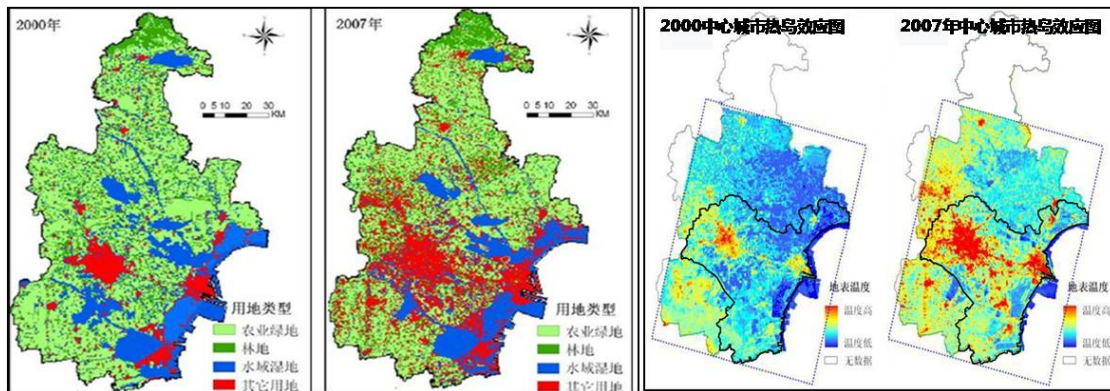
Tianjin is economic center of China's northern, international port city and the ecological city.

Tianjin, one of China's four municipalities, Beijing 137 Kilometers away from downtown, is the center of Bohai-rim economic circle and is largest coastal open city in the China's north. As the birthplace of modern industry, she is one of the earliest coastal cities opening up of north China's shipping and industrial center. is a famous

Tianjin east Bohai Sea, is located in mutual convergence zone of marine ecosystems and terrestrial ecosystems. Ecosystem types are diversification. Species are abundant. In forest ecosystem, there is typical of North China warm temperate broad-leaved forest and coniferous forest. In irrigated grass ecosystem, there is mountain shrub, shrub and grass. In wetland ecological system, there is plain lake, reservoir, pond, depression, river halophyte marsh. In coastal ecosystem, there is beach, estuaries and coastal halophytes meadow. In the marine ecosystem, there is gulf and inshore shallow water. In agricultural ecosystem, there is mountain, dry land, paddy field and big city suburb farmland.

In recent years, with the rapid development of urbanization, the total urban ecological land is showing a decreasing trend. From 2005 to 2010, the urbanization rate has increased 4.55%, the urban built-up area has increased 156.7km². In contrast, the urban total ecological land has decreased 346km². Ecological carrying capacity has undergone pressure caused by the urban development needs. The fragmentation degree of ecological landscape is increasing. The urban heat island effect is becoming more serious. In order to improve the above phenomenon, this paper proposes three measures.

Changes in Ecological Space and Urban Heat Island Effect Change Schematic



2. First, optimize planning the ecological security pattern of the urban landscape.

Optimization of landscape pattern is based on the theories and methods of landscape ecology, through the analysis and simulation of landscape process, including the expansion of the city, the space motion of the species, the flow of water and wind, the spread of the disaster process, etc., to distinguish the critical importance landscape elements and the spatial location as well as the spatial relation for the safety and health of these processes.

Such the key elements, their strategic locations, and their spatial relation forming the pattern is the landscape ecological security pattern.

One of the specific measures is the delineation of urban growth boundary, reducing the total loss of urban ecological land, especially to prevent the loss of natural ecological land. From 2005 to 2010, the Tianjin ecological land 64% dropped to 61% accounted for the total land area. Among the artificial ecological land increases 153.3km², however, the natural ecological land decreases 499.6km², loss of mostly lands are wetlands. Loss of land is mostly used for urban development and construction. In order to reduce the impact of urban development, human disturbance of the ecological land, as well as to coordinate the conflict between conservation and development we propose to urban build land area must not exceed 45% of the total land area in 2020.

The other of the specific measures is to determine the landscape elements of urban center and suburban, their landscape connectivity degree, the optimized specific objectives of landscape ecology. It aimed at planning the most efficient landscape pattern to resolve the safety and health problems, maintaining the land ecological process, the process of history and culture, recreation process on a limited land area, The basic structure is consisted by patch, corridor and matrix. Landscape connectivity refers to the spatial structure relation of landscape elements. Through linking and continuity the patches, corridors, matrixes connected in space and continue to enhance relation between the functions and ecological processes for the various landscape elements. Combine with urban natural ecological characteristics of resources, we plan to form six country parks. Each park planning area is approximately 500 hectares. Intertwined, relying on the main river and lake water system, forming five wedge-shaped corridor, planning ecological zone of the ring center and the ecological zone of four districts. Controlling the contiguous development of the city, and guiding the formation of the peripheral ecological groups, and promoting to build the landscape ecological security pattern.

3. Second, industrial land is to optimize the layout plan.

The one hand, “the development zone is hot” that brought the number and scale of development zones are too large, From the provincial to the county or township has the right to set up development zones, which is driven the main reason to change urban and the surrounding land use types . the farmland and wetland are changed in Tianjin.

The other hand , the scattered layout of industrial land, the living land allocation efficiency is low, the ecological land use is scattered and isolated, so the land layout is irrational.

It is intended to construct industrial agglomeration areas, and recover ecologically industrial waste land. The roles are to improve land use and infrastructure building waste caused by the industrial land in loose condition, recover the ecological functions of large industrial wasteland with affect on the ecological landscape of the city in the core areas of urban ecology and landscape sensitive areas or the forward of urban.

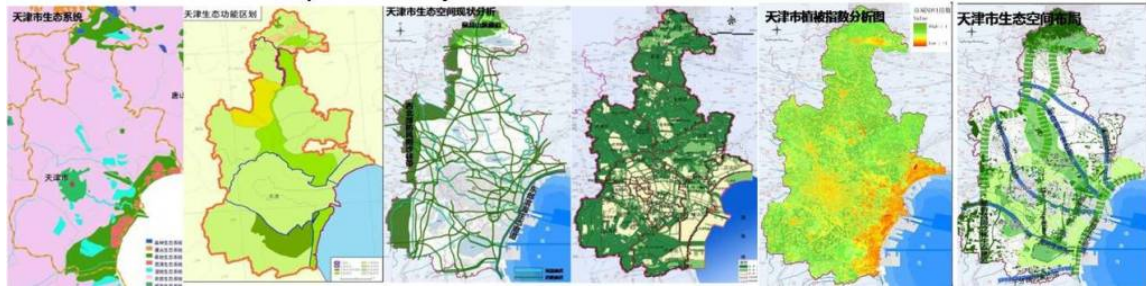
4. Third, habitat planning is continuous design.

It is intended to protect and plan large natural patches and corridors, use reasonable habitat rehabilitation, scale up patches, enrich the type of landscape. The roles are to mitigate the aggravated degree of urban landscape fragmentation by the development of road network, improve quality of habitat, and conserve biological diversity.

One of the measures is evaluation of the ecological environment. There are including the valuation assessment of ecosystem services, ecosystem health assessment, and the reasonable assessment of ecological restoration for natural patches and corridors.

The other hand, improve the river corridor system based on the eco-environmental evaluation. The river corridor system has planned wetland pond system, wetland vegetation system, green space, forest systems, jungle grass, but also according to the ecological conditions. Then add to the park with the formation of a slow system bicycle, walk, and some venues, including community venues, including parks, sports facilities and so on.

Spatial Analysis and Plan of Urban Ecosystem



5. Conclusion

The process of urbanization of the industrial city is not only the urban population urbanization should also be a process of urban ecology, natural ecology and human ecology coupling process is the evolution of a large-scale space. Industrialized urban livable planning and construction under the premise of maintaining the landscape pattern, compact layout, intensively using industrial land and building in urban green network, so that the living and production of residents being in the garden.

Endnotes

- Urban Land Use Planning, 2006 by the Board of Trustees of the University of Illinois of the University of Illinois
- Michael Scriven , Evaluation Thesaurus, 4th ed. (Newbury Park, CA: Sage,1991), pp.1,4-5
- Brownfields Progress Report 2008, PlaNYC