

## ORIGINAL RESEARCH ARTICLE

# Research on ideas and directions of ecological land construction

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### ABSTRACT

Ecological land construction is a specific elaboration of the ecological civilization of Xi Jinping Thought on Socialism with Chinese Characteristics in the new era. By discussing the internal relationship between ecological land construction and ecological civilization strategy, this paper clarifies the importance of ecological land construction; summarizes the practical experience of ecological land construction in typical key areas/urban areas, and puts forward four considerations for my country's future ecological land construction. On the basis of practice, combined with my country's basic national conditions and development trends, put forward the core content and key tasks of ecological land construction in the new era, and put forward a timetable and roadmap for strengthening top-level design and steady progress.

**Keywords:** eco-land; new era; top-level design; timetable and roadmap

## 1. Introduction

Land is the material basis, space carrier and constituent element of ecological civilization construction<sup>[1]</sup>, and has a strategic, overall and fundamental position in modernization construction<sup>[2]</sup>. The construction of ecological civilization has been integrated into all aspects and the whole process of economic construction, political construction, cultural construction and social construction. With the continuous deepening of the strategy of ecological civilization, the construction of "ecological land" has become a broad consensus and action consciousness of all sectors of society. As the ideal and goal of human social development, ecological land takes meeting the objective requirements of people's growing

needs for a better life, providing high-quality ecological products and ecological functions as the task, and has become a major social practice related to the mutual coordination of modern human settlements, production and life, resources and environment<sup>[3,4]</sup>.

As a scientific problem, ecological land is a major modern research field that includes the intersection and penetration of many disciplines of natural science and social science<sup>[4]</sup>. Worldwide, the mass River Valley smog event, Los Angeles photochemical smog event, London smog event, Japan Minamata disease event and other large-scale and long-term ecological and environmental pollution events have aroused the continuous attention of all sectors of society to environmental

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and ecological problems, and further led to scholars' continuous thinking on scientific issues such as population, resources, environment and ecology. In April 1970, the massive environmental protection movement prompted the United States to establish a special government organization and passed the amendments to the water pollution control law and the clean air law. In 1972, the United Nations Conference on the human environment launched the "man and biosphere" program, which specially set up the research topic of ecological land issues, focusing on the expert group composed of international scholars in the field of spatial planning and ecological environment at that time, so as to promote the cross integration of Natural Science, social science, planning and design and other disciplines around the world with the clear direction of ecological land issues.

Generally speaking, the scientific research of China's ecological land is slower than the development of practice. For a long time since the founding of new China, China's ecological land construction has mostly focused on the construction of ecological environment, such as "Three North Shelterbelt", "South-to-North Water Transfer" and other major projects. Since the 21st century, in view of the existing problems of resources and environment, at the macro level, it tends to the overall protection of natural ecological space and the construction of ecological corridor. At the same time, it pays attention to the top-level design and the construction of ecological land system; at the micro level, the construction of human settlements and quality communities are the main contents, mainly manifested in urban renewal and brownfield transformation and utilization.

## **2. Experience of ecological land construction in typical key areas/cities**

### **2.1. Greater Paris**

Despite the abundant vegetation resources accumulated for centuries and the important policy

of creating public greening space, there are still large areas of insufficient greening and many needs in Greater Paris. In order to improve the urban environmental quality of residents, the greater Paris region has put forward a strategic framework to enhance the natural environment of central cities and towns<sup>[5]</sup>. First, permanently maintain public greening and vegetation space and improve greening resources at the request of residents. Second, reduce the areas with insufficient greening, create new public greening and vegetation space in the geographical areas with the most lack of Greening (the west of Val de Marne Province, the middle of Seine Saint Denis Province, the middle and north of upper Seine province), and enhance the value of abandoned mining sites. Third, between public greening and vegetation space, determine a continuous green and blue network with regional interests to support stable circulation or ecological continuity, which can be radial or centralized. The Seine River, the man river and those rivers that may reopen, plant greening near large streets and railways and build a green ring belt in Paris. Fourth, improve the landscape of the town center by rebuilding the water area, terrain, scenery and pavilions.

### **2.2. Tokyo Metropolitan Area**

In order to make the urban strategy more effective and restore the urban space surrounded by water and green that Tokyo lost in the process of urban development, Tokyo put forward the strategic plan of ecological Tokyo<sup>[6,7]</sup>. First, create an urban space surrounded by water and green and coexisting with each other; the policy focus is to build a "forest of the sea" in the coastal area, connect it with the green plot (about 700 hm<sup>2</sup>) in the central urban area through the street trees of the trunk roads, build a "green road network" and build an air duct in Tokyo; promote the greening of urban voids such as roofs, walls and facades, complete the greening works of all public primary and secondary schools, and create a new greening area of 1,000 hm<sup>2</sup>. Create a new fund-raising fund and carry out a "green campaign" in Tokyo with the participation of private entrepreneurs and citizens; improve the appearance of buildings in

waterfront areas and form a shipping network connecting Haneda airport to the city center. Second, in response to the construction of green network, remove the ground electric poles. Promote the ground pole free project in Linhai, Liubenmu, Akasaka, Hemp, Akihabara, Kanda and other areas, and expand the area of pole free areas to twice the current area. In the central area of the road, the wire poles on both sides of the ground shall be completely removed. Third, create a beautiful urban landscape and improve the value of Tokyo Designate the areas around the water areas such as the coastal area as special areas for landscape formation, and regulate the color and height of buildings to ensure the visual impression of overlooking the water. Set the forbidden area of building advertising, regulate the color and light source, and form a unified block.

### 2.3. Taipei Area

Based on the current situation of Taipei's ecological environment, urban planning and urban design, the outline of Taipei's ecological city planning focuses on "building a sustainable ecological city, beautifying living space and improving the quality and quantity of leisure and recreation". According to different spatial scales, it puts forward different directions of ecological city development policies, and formulates corresponding urban development policies, land management system and ecological design criteria, Promote the implementation of the goal of Taipei eco city<sup>[8,9]</sup>. First, formulate the strategic goal of global eco city. Based on the perspective of resource and environmental carrying capacity, the planning outline limits the upper limit of urban development, that is, the ecosystem must be recoverable. The global eco city strategy puts Taipei at the node of the global ecological footprint network. Its small-scale "eco city zoning" unit makes the system have a high degree of diversity and complexity, so as to seek the position and role in line with its own characteristics from the global urban network, and choose to formulate countermeasures. To some extent, this has expanded the carrying capacity of resources and environment in Taipei and maintained the benign

operation of the system. The second is the governance of the ecosystem of the metropolitan area. In order to solve the problems of landscape fragmentation, destruction of mountains and waters, air pollution, loss of biodiversity and microclimate change in the process of urban development, four management strategies have been formulated, including. 1) An absolutely protected ecological core area, which has complete vegetation and important ecological value and belongs to an ecologically highly sensitive area. Through the formulation of strict laws, policies and norms, human economic and social activities in the area are basically eliminated. 2) Urban boundary and buffer zone, which has transitional nature and is mostly located at the junction of city and natural system. The function of buffer zone is emphasized through planning, design and engineering construction to control the disorderly spread of the city. 3) For the construction of ecological corridor, in order to ensure the spatial continuity of important ecological points, increase the flow of species and continue their survival and population reproduction, a certain width of vegetation green belt will be protected and repaired. 4) Restore habitat, carry out purposeful intervention and construction by artificial means, and accelerate the reconstruction of ecosystem, such as urban forest construction.

## 3. Experience and enlightenment of ecological land construction

From the existing practice basis, ecological land is a combination of problem orientation and goal orientation, involving multi-dimensional elements such as economy, society, politics and culture. It is comprehensive, complex and lasting. According to the basic theories and development practice of economics, ecology and planning, China's ecological land construction should focus on the following four aspects in the future.

First, the essence of ecological land construction is to improve the ecological function and quality of land development and realize the stability and sustainability of ecosystem, including

the sustainability of ecological environment, economy, society, history and culture. It is also a correction to the unsustainability of “non ecology” in the process of land development and construction<sup>[4,10]</sup>.

Second, ecological land construction is a spatial system with “point, line and area network”. The internal relationship between the natural environment and the economy and society determines that the land space is not an isolated body, but an area of influence with different ranges and levels, which has extensive and profound connections with the surrounding areas. Therefore, in terms of planning and engineering construction, we should pay high attention to the impact of the planned area on the regional economy, society and natural environment; In terms of management, various evaluation indicators should not only stop at the scope of the planning area, but also include both the hinterland core area and the peripheral radiation area.

Third, the development of land space is the result of economic and social development and has internal development laws. We should face up to the overall development characteristics of China at this stage. China is in and will be in the primary stage of socialism for a long time. This national condition must be taken into account in the construction of ecological land. Ecological land construction not only pursues progressiveness, actively explores technological and institutional innovation, but also pays attention to the regional leading and demonstration role, and cannot lose the regional demonstration function due to the “high threshold” of investment, technology and policy.

Fourth, the construction of ecological land involves economy, society and ecology. Multiple government departments and regional competition are easy to cause development chaos. All localities should further prepare effective regional spatial planning on the basis of national spatial planning. Ecological land construction involves land and resources, urban construction, environmental protection, forestry, agriculture and other

departments. The relevant management policies of these departments should be fully communicated and coordinated, the public knowledge tools required for ecological land construction should be provided in time, and the environmental performance of various ecological land construction projects carried out in the form of projects should be evaluated in time.

## **4. Practice of ecological land construction in land and resources departments**

Since the establishment of the Ministry of Land and Resources in 1998, especially since the 18th National Congress of the Communist Party of China, the Ministry of Land and Resources has taken “adhering to the harmonious coexistence of man and nature” as one of the basic strategies, and actively practiced the construction of ecological civilization, which fully reflects the new era of Xi Jinping’s society with Chinese characteristics. The new realm of the ecological civilization concept of ideology.

### **4.1. Improvement of the land spatial planning system**

First, we explored the establishment of a spatial planning system with land planning as the main body, the overall land use planning as the chassis, multiple special plans in parallel, and the combination of goal blueprint and remediation action, which further optimized the pattern of land spatial development and provided a basis and guide for standardizing land spatial development, utilization, protection and remediation activities. The second is to deploy and carry out the adjustment and improvement of the overall land use planning at all levels throughout the country, take the optimization of land use structure and layout as the core, make overall arrangements for production, living and ecological land, coordinate and promote the demarcation of permanent basic farmland, urban development boundary and ecological protection red line, and draw a beautiful blueprint for the construction of ecological civilization together with a series of special plans. Third, promote the pilot work of “multi

compliance” and Provincial Spatial Planning in cities and counties, take the second national land survey and continuous change data as the “base”, steadily promote the “multi compliance” of cities and counties, actively coordinate various spatial planning differences, promote the formation of joint forces for land and spatial governance, and effectively promote the construction of ecological civilization. Fourth, the State Council issued the national land planning outline (2016–2030), China’s first strategic, comprehensive and basic land spatial plan, implemented the new ideas, ideas and strategies of the CPC Central Committee in governing the country, established a new “Trinity” pattern of land agglomeration development, classified protection and comprehensive improvement, and strengthened the new ways of land development of “conservation and intensification” and “green development”, put forward the new development orientation of “people-centered” and the new system of land and space governance. Fifth, strengthen the positive shaping and improvement effect of comprehensive land improvement on the spatial structure and form of land. The state has successively prepared and implemented the 12th Five Year Plan and the 13th Five Year Plan for comprehensive land improvement, implemented major improvement projects, and repaired and improved the production, living and ecological functions of land space from the practice of all localities, the comprehensive renovation, through the adjustment of land use, structure and layout and the improvement of functions, promotes the adjustment and optimization of urban and rural regional land use structure, the restoration of land ecological functions, the improvement of ecological environment and the improvement of regional resource and environment carrying capacity by leveraging the stock with flow, which is an effective means for the dynamic re optimization of land space. Sixth, under the guidance of land planning and the joint implementation of multiple spatial plans such as overall land use planning and urban-rural planning, the orderly flow and agglomeration of production factors such as population and industry have initially formed a “two horizontal and three vertical” land

development pattern with the main traffic trunk along the river as the backbone and urban agglomeration as the main form, and formed differentiated spatial development and protection policies for different main functions and different regions. It provides the basis and guide for space development, protection, utilization and remediation activities for building a beautiful China.

#### **4.2. Establishment of the land and space use control system**

First, strengthen the control over the use of natural ecological space. Print and distribute the measures for the control of the use of natural ecological space, expand the use control to all natural ecological spaces based on the land use control, build a land space development and protection system based on spatial planning and the use control as the main means, and protect the natural ecological land such as cultivated land, forest land, grassland, rivers, lakes and wetlands to the greatest extent. Focus on solving the problems of excessive occupation of high-quality cultivated land and ecological space, ecological damage and environmental pollution caused by disorderly development, over development and decentralized development. Second, accelerate the demarcation of the “three lines” of ecological protection red line, permanent basic farmland and urban development boundary. Delimit and strictly abide by the ecological red line in important ecological functional areas, land and marine ecological environment sensitive areas and vulnerable areas to reduce the intensity of economic activities; deploy and delimit permanent basic farmland, strengthen the management of permanent basic farmland around the city, earnestly implement the responsibility for the protection of permanent basic farmland, and promote the formation of urban development entity boundary. Third, improve the monitoring system covering all land space and dynamically monitor land space changes. Fourth, strengthen inter departmental communication and coordination, adjust and improve policies on construction land, resource development and environmental protection, and explore a supervision

system for uniformly exercising the responsibility of controlling the use of all land and space.

### **4.3. Construction of land and space basic information platform**

To meet the national needs of improving the capacity of land and space governance, integrate the existing spatial information resources and build the core part of the land and space basic information platform. The platform data is classified according to the basic spatial information, spatial planning information, spatial management information and other socio-economic information related to space, and provides unified services: First, integrate the current situation data of basic geography, land resources, mineral resources, basic geology, geological environment and geology, national survey, natural resource property rights, population, employment, macroeconomic and so on, which cover the whole country, involve above ground and underground and can be updated in time, form a unified land space “base map”; The second is to form a unified “bottom line” of land and space by integrating regulatory special planning data such as basic farmland, ecological protection red line, urban expansion boundary, overall land use planning, mineral resources planning and geological disaster prevention and control planning; Third, through the unified data and application services of the platform, it provides an information work platform for special planning, project implementation, daily supervision, analysis and decision-making of various departments, so as to form a unified “bottom plate” of land and space.

### **4.4. Building the property right system of natural resource assets**

Formulate the measures for unified right confirmation and registration of natural resources, explore the establishment of a unified right confirmation and registration system, clearly define the property right subjects of all kinds of natural resource assets in all land and space, and uniformly confirm and register the rights of all natural

ecological spaces such as water flow, forest, mountain, grassland, wasteland and beach establish a natural resource property right system with clear rights and responsibilities, and formulate a scheme for the paid transfer of natural resource assets owned by the whole people. Explore the establishment of a hierarchical agency system for central and local governments to exercise all responsibilities, and study and put forward the resource list and spatial scope for the direct exercise of ownership by the central government owned by the whole people and the exercise of ownership by the local government owned by the whole people.

### **4.5. Comprehensively carrying out land consolidation**

Build a comprehensive land improvement platform of “landscape, forest, field, lake and grass” life community, and form a comprehensive land improvement system oriented to multi-objective, multi policy support, multi capital sources, multi subject participation and interest balance and coordination. Take comprehensive land improvement as an important starting point for the implementation of spatial planning. First, build a comprehensive land improvement platform. Comprehensively consider the objectives of protecting cultivated land, ecological construction, saving land, ensuring development, safeguarding rights, targeted poverty alleviation and sharing development achievements. Integrate the existing single land improvement work, such as linking the increase and decrease of urban and rural construction land, high standard farmland construction, redevelopment of inefficient urban land, development of unused land on low hills and gentle slopes, construction of green mines, reclamation and utilization of industrial and mining wasteland, restoration and treatment of mine geological environment, improvement of marine environment, construction of ecological barrier and so on, open up the connection between the existing relevant pilot projects, give play to the effect of policy combination, and improve the overall benefits of comprehensive land improvement. Second,

strengthen the systematicness of comprehensive land improvement in urbanized areas, we will carry out the redevelopment of inefficient urban land and the comprehensive improvement of the living environment. In rural areas, we will implement the comprehensive improvement of farmland, water, roads, forests and villages and the construction of high-standard farmland. For key ecological functional areas with fragile and seriously degraded ecology, natural restoration shall be the main focus, enclosure shall be strengthened, and ecological restoration projects shall be implemented appropriately; in the mineral resources development concentration area, strengthen the treatment and restoration of the mine environment, repair the damaged ecosystem in the coastal zone and island areas, and improve the environmental quality and ecological value. Third, establish a project fund integration mechanism strengthen the integration of funds invested by governments at all levels, gather relevant funds such as paid land use fees for new construction land and demonstration funds for continuous improvement of rural environment, and focus on key areas and key projects. Establish a diversified land improvement fund investment mechanism with the wide participation of social forces. Fourth, strengthen the construction of relevant basic systems. Give full play to the decisive role of the market in allocating resources and build an incentive policy system for comprehensive land improvement in line with local realities. Establish unified land use classification standards, establish national technical standards for comprehensive land improvement, strengthen the construction of local technical standards for comprehensive land improvement, and form a technical standard system for comprehensive land improvement supported by national standards and local standards.

#### **4.6. Establishment of land and resources ecological compensation mechanism**

Improve the land and resources ecological compensation mechanism reflecting market demand, resource scarcity, ecological environment damage cost and restoration benefit<sup>[11]</sup>. First,

comprehensively consider land improvement, high standard farmland construction tasks, basic farmland protection area, etc., and further improve the constructive compensation mechanism for cultivated land protection. Systematically summarize the pilot experience of local cultivated land protection and compensation, connect with the integration of agriculture related subsidy policies, link with the establishment of ecological compensation mechanism, promote the incentive compensation for farmers' collective protection of cultivated land and regional compensation for main grain producing areas, and effectively mobilize the enthusiasm of local governments and farmers' collective protection of cultivated land. Second, cooperate with relevant departments to explore the pilot implementation of cultivated land rotation and fallow system in groundwater funnel areas, heavy metal pollution areas and areas with serious ecological degradation. Third, adhere to the principle that whoever pollutes the environment and who destroys the ecology pays for it, and improve the land reclamation system. Strengthen the implementation of the deposit system for mine environmental restoration and treatment, improve the economic mechanism of development compensation and protection, and promote the third-party treatment of environmental pollution.

#### **4.7. Accelerate the construction of green mines**

In April 2015, the opinions of the CPC Central Committee and the State Council on accelerating the construction of ecological civilization took "developing green mining and accelerating the construction of green mines" as an important task to promote the construction of ecological civilization in the mining field. In March 2016, the national 13th Five Year Plan outline took "vigorously promoting the construction of green mine and green mining development demonstration area" as the key task of the plan, and took "the construction of green mine and green mining development demonstration area" as a major project for deployment and arrangement. In order to implement the deployment requirements of the CPC Central Committee and the State Council,

on the basis of comprehensively summarizing the results of the pilot construction of green mines, the Ministry of land and resources, together with the Ministry of finance, the Ministry of environmental protection, the People's Bank of China, the CBRC and the CSRC, studied and drafted the implementation opinions on accelerating the development of green mines and building green mines. The overall starting point is to serve and support the steady growth of mining economy, accelerate the transformation of resource utilization mode and mining development mode, and promote the reform and innovation of mineral resource management. The general idea is: Improve the leading standards, typical demonstration and guidance, strengthen supervision and management, implement corporate responsibilities, strengthen multi-party linkage, implement policy incentives, focus on the construction of green exploration, green mines and green mining development demonstration areas, accelerate the development process of green mining, lead and drive the transformation and upgrading of traditional mining, improve the quality and efficiency of mining development, enhance the vitality and driving force of mining development, and strive to reach 2020, form a new pattern of national mining green development that meets the requirements of ecological civilization construction.

## **5. Objectives and approaches of ecological land construction in the new era**

### **5.1. Strategic objectives**

First, do a good job in top-level design and strengthen the overall goal. Establish a new paradigm of ecological land based on ecological civilization and new development concepts. Through the comprehensive transformation of development concept, construction content, development mode, institutional mechanism and policy system, accelerate the establishment of a new development paradigm of ecological land with mutual promotion of "economy, environment, culture and politics". Further improve the quality and function of land,

improve the international market competitiveness of green resources and green products, expand the supply scale of green resources and green products, make green become the main symbol of high-quality development of ecological land and the universal form of future development of land space, and provide "green resources" guarantee for building a beautiful China, improving people's well-being and realizing sustainable economic and social development. Then contribute to the green development and high-quality development of global ecological land.

Second, achieve the stage objectives and put forward China's plan. The first stage is from 2017 to 2035, which is a period of catching up and deepening reform. Comprehensively promote the construction of ecological land, and basically form a new pattern of ecological land development that matches the carrying capacity of resources and environment and is coordinated with the production and living ecology. At this stage, the institutional and policy framework for ecological land development was basically established, and breakthroughs were made in the main areas of ecological land transformation and upgrading. Ecological land has achieved win-win development in terms of industrial chain extension, job creation, resource income co construction and sharing, and helping poverty alleviation. The second stage is from 2035 to 2050, which is a leading and partial catch-up period. Focus on the index system, policy system, standard system, statistical system, performance evaluation and political performance evaluation to promote the construction of ecological land, establish and form an ecological land development system and governance capacity suitable for ecological civilization, and realize the comprehensive benchmarking with the advanced level of global resource conservation, environmental impact and protection. Promote the establishment of a global governance model for the transformation and upgrading of ecological land, and contribute Chinese wisdom and solutions to the construction of global ecological land.



## **5.2. Major projects to be carried out in the future**

### ***Action plan for soil pollution control***

Focus on solving the two prominent problems of soil pollution threatening the safety of agricultural products and human ecological environment. Carry out intensive investigation on soil pollution, implement classified and graded prevention and control of soil pollution, optimize the protection of unpolluted cultivated land, safely use light and medium polluted cultivated land, strictly control heavily polluted cultivated land, and strengthen the supervision of soil environment of construction land. Promote soil pollution control and remediation, strengthen soil pollution control after the relocation of chemical enterprises for safety and environmental protection, complete 100 pilot pollution control of agricultural land and 100 construction land during the 13th Five Year Plan period, and carry out 10 million mu of polluted cultivated land treatment and remediation and 40 million mu of polluted cultivated land risk control.

### ***Comprehensive treatment of heavy metal pollution***

Further promote the comprehensive treatment of heavy metal pollution focusing on the Xiangjiang River Basin, and start 12 national demonstration areas for comprehensive prevention and control of heavy metals and 10 demonstration projects for comprehensive treatment of heavy metals in typical river basins. Strengthen the prevention and control of non-ferrous heavy metal mining, beneficiation and smelting industry, lead battery manufacturing industry, leather and its products industry, chemical raw materials and chemical products manufacturing industry, and promote the elimination of backward production capacity of heavy metal related enterprises.

### ***Comprehensive treatment of geological hazards***

For residential areas that are not suitable for treatment by engineering measures and are seriously

threatened by geological disasters, take the initiative to avoid and relocate in combination with the tasks of poverty alleviation and relocation and ecological resettlement, and guide the local government to strive to complete the relocation and avoidance of 400,000 households and 1.4 million people threatened by geological disasters. Select the potential geological hazard points that threaten a large population and huge property, especially the counties and market towns, carry out engineering treatment, basically complete the engineering treatment of the found potential geological hazards that threaten the densely populated areas, and plan to deploy the engineering treatment of 300 super large debris flow gullies, 1,500 super large and large collapses and landslides, and 20,000 small and medium-sized potential geological hazard points. In areas such as the Yangtze River Delta, North China Plain and Fenwei basin where land subsidence and ground fissure disasters are serious, groundwater exploitation shall be strictly controlled and comprehensive treatment of groundwater over exploitation areas shall be implemented to realize rational development and utilization of groundwater and controllable land subsidence risk.

### ***Ecological treatment and restoration of rivers and lakes***

Systematically renovate river basins, protect and restore river ecosystems and functions. Comprehensively use river regulation, dredging, biological control, natural restoration, sewage interception and other measures to promote the ecological restoration of ecologically sensitive areas, ecologically fragile areas, important habitats and rivers and lakes with damaged ecological function. Take advantage of the situation to transform the channelized river channel, reshape the healthy and natural curved river bank line, create natural deep pools, shoals and floodplains, and provide biodiversity habitats for organisms. Implement the river lake water system connection project according to local conditions, and build a river lake water system connection system with reasonable layout, good ecology, proper diversion and drainage, smooth

circulation, storage and discharge, regulation of high and low seasons, multi-source complementarity and free regulation<sup>[12]</sup>.

### ***Restoration of island ecosystem***

Carry out investigation and assessment on the damage of island ecosystem and promote the repair of ecologically damaged islands. Implement the restoration of coral reefs, mangroves, seaweed (algae) beds and other typical marine ecosystems, support the conservation of fishery resources around the island, and carry out the protection of important natural and historical and cultural sites on the island. Carry out bird habitat protection; give priority to local species, promote vegetation restoration and restoration, prevent and control water and soil loss, and build a vegetation landscape system connected at underwater, coastal and island land levels. Restoration of coastal dunes, artificial sand replenishment, wooden groins and other affinity means shall be adopted to carry out island coast and beach restoration. Strengthen the environmental improvement of island areas and improve the garbage and sewage treatment capacity. Establish an evaluation mechanism for the effect of island ecological restoration, and strengthen the guidance and management of island remediation and restoration.

### **Conflict of interest**

The author declares no conflict of interest.

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