

Technical Assistance for Cadastre Integration, Natural Resources Valuation and Resilient Planning in Cities

International Workshop
Oct 2024

Case Studies: Xuzhou and Zhuhai, China

中国徐州和珠海的案例

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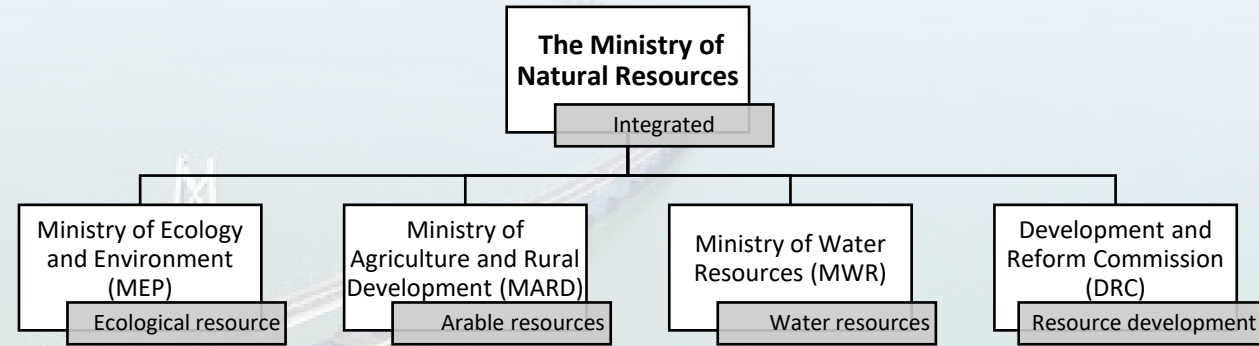
Introduction

• Natural resource management institutions and policies

➤ Natural resource management institution

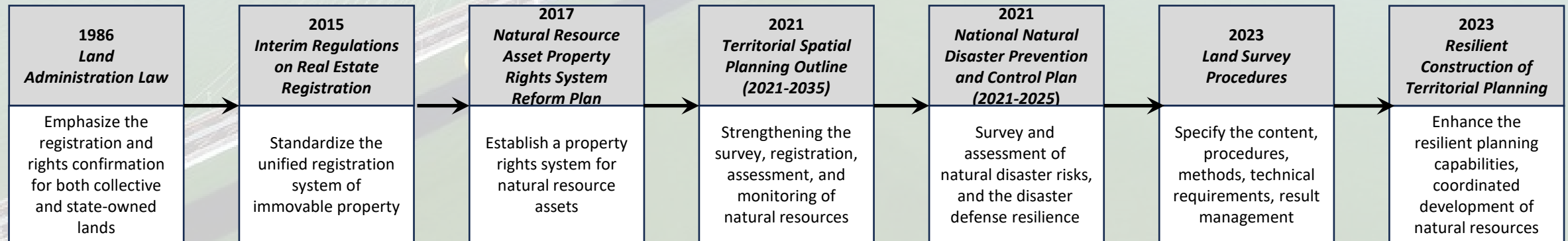
The **Ministry of Natural Resources** is responsible for the development, protection, and management of natural resources^[1]. The control and utilization of **specific types of natural resources** still require the cooperation of different departments.

自然资源部负责全国范围内的自然资源的开发、保护与管理。特定类型自然资源的管控和利用，需要不同部门协同配合。



➤ Key natural resource management policies

Covers **land administration, registries, spatial use, disaster prevention and resilience planning** 土地管理登记利用、防灾韧性规划
Including **laws, departmental regulations, local regulations, and normative documents** 法律、部门规章、地方法规、规范性文件



[1] Central Committee of the Communist Party of China. Plan on Deepening the Reform of Party and State Institutions[EB/OL]. (2018-03-05)

Xuzhou: Cadastral and natural resource assessment registry systems

- **Issued No. 1 real estate certificate in China**

The construction of the cadastral database can be divided into three phases: **the current state of land use survey, the cadastral survey and the registration of rights**. 徐州分阶段开展地籍数据库建设，完成**土地利用现状调查、地籍调查**^[1]、**确权登记**^[2]。2015年3月1日颁发全国首本不动产权证书。

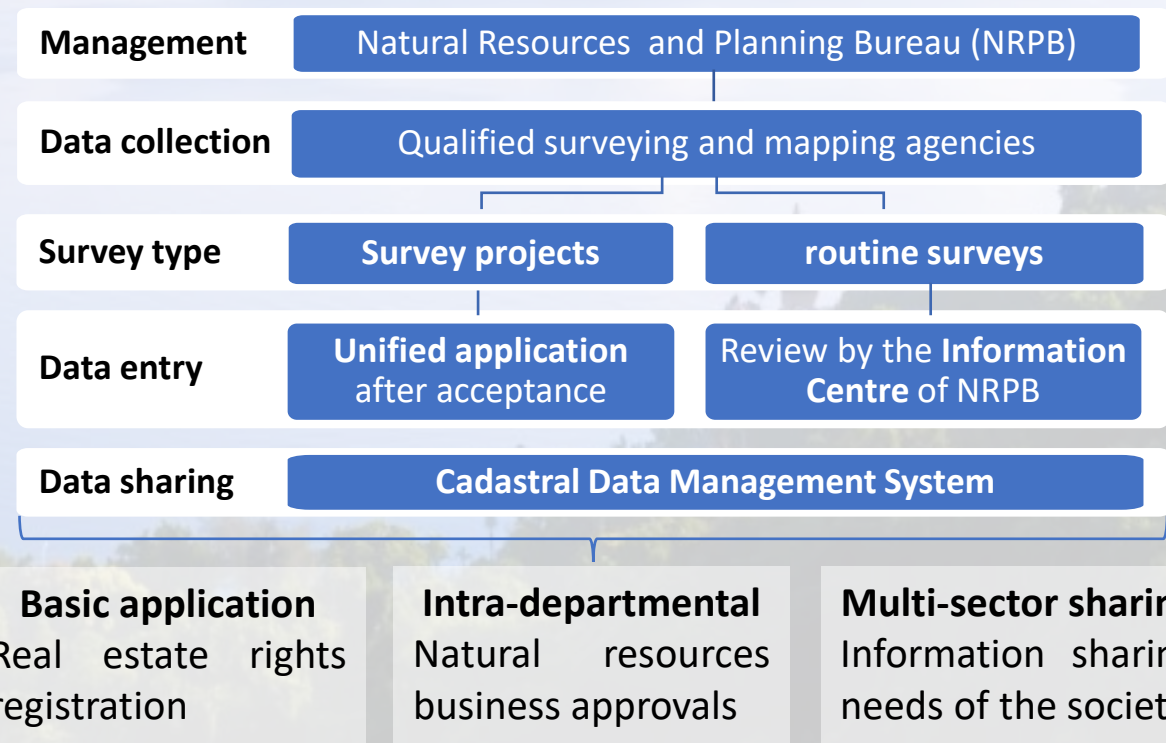
Construction of the natural resources database in Xuzhou

Year	Database	Construction content
1983	Land use status database	Every 10 years, change surveys every year
1991	Urban cadastral database	Cadastral information system
2001	Urban-rural integration database	Urban and Rural Integration Cadastral Information System
2007	Ownership survey database	Citywide residential land, rural collective land
2021	Natural resources survey database	A harmonized survey of natural resources
2021	Ownership Registration Database	Established a regularized updating mechanism of collective land ownerships ^[3]
2024	Forest Rights Cadastral Survey Database (under construction)	Surveys of State-owned and collective forest Cadastral surveys of forest rights database

- ✓ From the **urban area to the entire area**
- ✓ From **construction land to all types of natural resources**
- ✓ From **crude statistics to the cadasters**

- **Improving cadaster registry system**

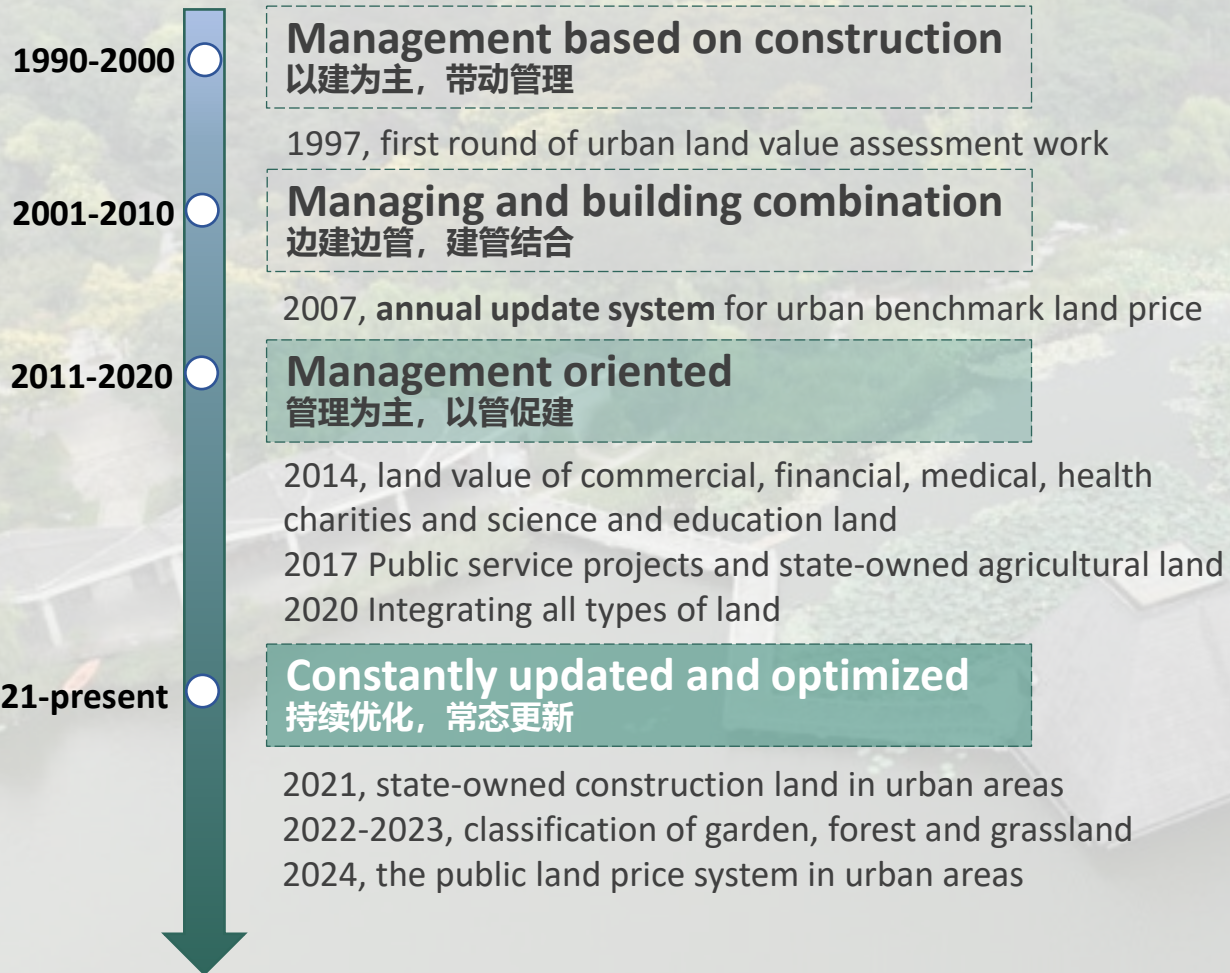
Qualified agencies are commissioned to complete technical surveys. Collection process varies according to projects and routine surveys: 委托有资质的测绘机构完成技术调查，入库流程按项目调查和常规调查而不同



[1]Cadastral survey protocol[GB/T].[2023-05-23]; [2]Five departments issue Interim Measures for Unified Rights Registration of Natural Resources.[2019-07-23]; [3]Xuzhou Natural Resources Survey Pilot Results Successfully Passed Acceptance.[2021-05-26]

Xuzhou: Natural resource valuation

- **Good practices in construction/arable/forest land valuation**



- **Multiple assessment methods and diverse effects**

- Based on market demand, regional differences, comparability and historical articulation, the following methods were mainly adopted:
 - ◆ Market comparison methodology 市场比较法
 - ◆ Income capitalization methodology 收益还原法
 - ◆ Cost approximation methodology 成本逼近法
 - ◆ Case comparison methodology 案例比较法
- The implement effects are mainly in **spatial planning, tax standards, government decision-making, and reasonable land acquisition and compensation.**

Implementation effects of the land price valuation in Xuzhou

Content of valuation	Date	Implementation effects
Establishment of public land value system	Since 1997	Support government land price regulation, market information, land use potential analysis and spatial planning, tax and rent
Dynamic monitoring of land prices in cities	Since 2008	Provide reference for marked land value, enhance the transparency of the land market, guide market participants to make rational decisions and promote the optimal allocation of land resources
Grading and benchmark land value of garden land, forest land and grassland	2022-2023	Filled the gaps in land value management for parkland, forest land and grassland, support for natural resource asset inventory and value volume accounting
Establishment of comprehensive land value standards	2020-2023	Reasonably Determine Compensation Standards for Land Expropriation and Reduce Regional Disparities, protecting the legitimate rights and interests of expropriated farmers, reducing conflicts and disputes;

Xuzhou: Resilience and integrated planning

- **Resilience-related natural resource protection policy system**

- Framework of policies and regulations
- Ecological protection red line system
- Territorial spatial planning
- Nature reserves, and natural parks
- Ecological compensation mechanisms
- Environmental protection in mineral resources

徐州市自然资源的保护通过政策法规框架、生态保护红线制度、国土空间规划、自然保护区和自然公园、生态补偿机制、矿产资源开发中的环境保护措施等实现

Red line for ecological protection^[1]

- Xuzhou has delineated an environmental red line covering an area of 800 km², which included the areas of extremely sensitive and fragile ecology such as soil and water erosion.
- Prevent ecosystem impacts caused by the over-development of resources, and enhance the systematicity and integrity of environmental functions.

- **No specific plan except resilience-related contents**

Xuzhou has not yet prepared a specialized plan for natural resource resilience, but related contents have been deployed in the plans and policies of Xuzhou City. Including **the development and protection strategies of natural resources, disaster prevention and control, and emergency management.**

徐州市尚未编制专门的韧性规划，但已有规划和政策中存在相关内容，主要从自然资源的开发保护战略、灾害防治和应急管理等方面提出战略性安排。

Resilience-related planning contents in Xuzhou

Planning	Related content
<i>Territorial Spatial Master Plan of Xuzhou (2021-2035)</i>	Territorial spatial development and protection strategy Establishment of an elemental support system
<i>Land Space Ecological Protection and Restoration Plan of Xuzhou</i>	Guaranteeing the basic pattern of ecological security Coordinate the protection and restoration of all types of natural ecosystems in cities and towns Strengthening urban water ecosystem restoration Security benefits of planning implementation
<i>Implementation Plan for Creating a Provincial Model City for Safe Development of Xuzhou</i>	Establishing an urban safety development system based on production safety Improving urban safety prevention and control mechanisms
<i>"14th Five-Year Plan" for Ecological Environmental Protection of Xuzhou</i>	Adhere to systematic thinking to improve the ecological environment

[1]Xuzhou Natural Resources and Planning Bureau.Xuzhou Land Space Ecological Protection and Restoration Plan(2021-2035)[EB/OL].

Zhuhai: Cadastral and natural resource assessment registry systems

- **High coverage in cadaster register in province**

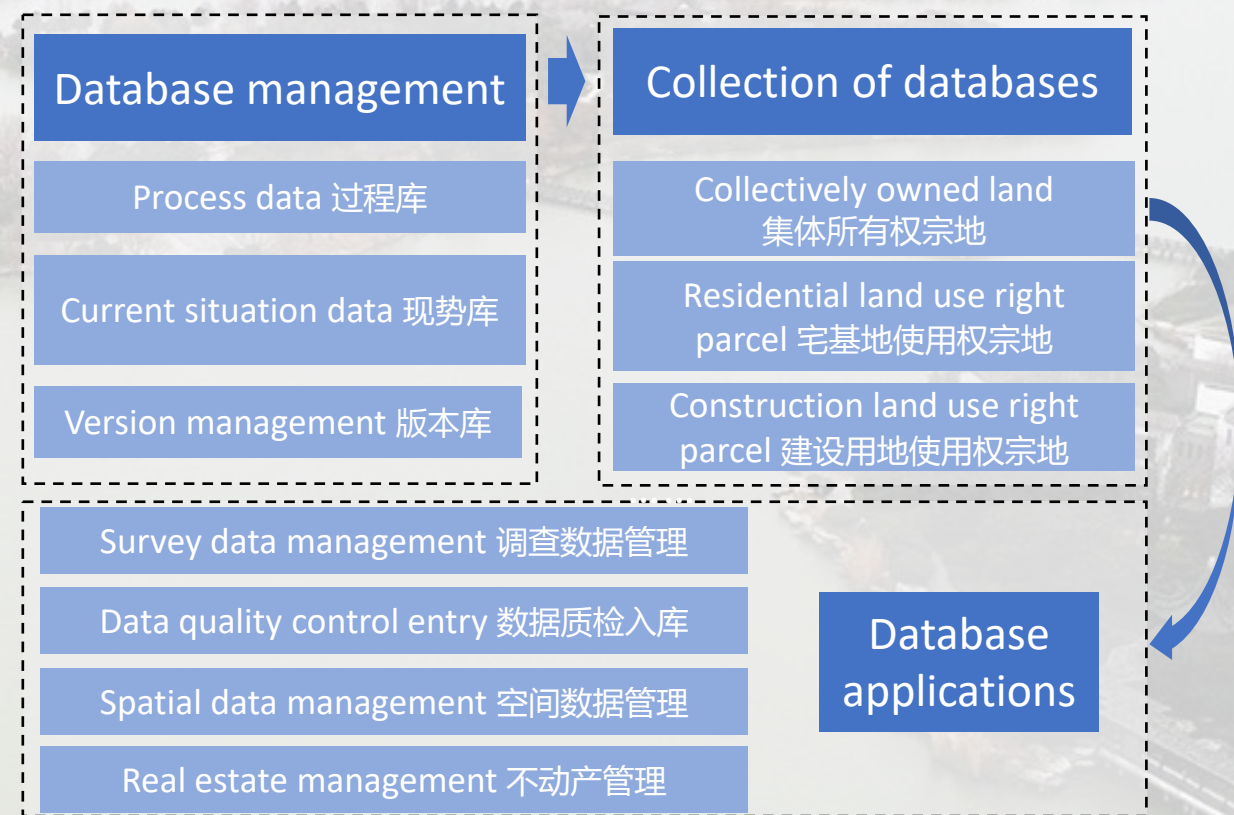
Since 2017, Zhuhai has carried out cadastral registration and database building for **state-owned construction land use rights, collective construction land use rights and collective land ownership**. 珠海市先后开展了针对**国有建设用地使用权、集体建设用地使用权以及集体土地所有权**的地籍登记和建库工作

Construction of the natural resources database in Zhuhai

Database	Construction content
2017 Integration of the city's real estate registration inventory data (State use rights)	Mapping, titling, numbering and complete registration information.
2020 Cadastral Survey of Residential Land in One Premises (Collective use rights)	Registration and issuance of certificates for those who meet the conditions for the integration of premises.
2021 Integration of collective land ownership registration data (Collective ownership)	Integration of 1000 collective land ownership registration data, and clarifying the process of replacing registrations.
2023 Integration of Forest Rights Data in Jinwan District	Completion of the verification and consolidation of a total of 138 forest rights registration files.
2024 Registration of the right to use maritime areas	217 cases of registration of the right to use maritime areas

- **Improving cadaster registry system**

Adoption of a **multi-version management** approach, **integrated various types** of cadastral results data



Zhuhai: Natural resource valuation

- Great progress in construction land valuation

Zhuhai has mainly carried out **dynamic monitoring of urban land prices** and is one of the pilot cities in China.

- In 2008, 2019, and 2023, it recorded and adjusted the monitoring scope, land price section and monitoring points respectively, and adjusted the weight of the use according to the land survey data.

珠海市是国家级城市地价动态监测试点，在2018、2019、2023年，对监测范围或地价区段、监测点进行了调整

Changes of dynamic monitoring of urban land prices in Zhuhai

Filing Time	Monitoring Area (km ²)			Sectors Monitored	Monitoring Point
	Commercial Area	Residential Area	Industrial Area		
2003	180.02	180.02	180.02	68	95
2008	140.69	140.69	178.78	57	81
First Quarter 2019	140.69	140.69	55.27	51	57
Second quarter of 2019	235.19	235.19	55.27	66	92
2023	522	513.39	327.96	101	108

- Exploration in marine resource valuation and use

Example of the valuation and use of natural resource values for islands: Triangle Island

海岛自然资源价值评估与应用实例：三角岛

- Benefiting from the valuation of island resources, Triangle Island became one of the first islands in China to **transfer the right of use of uninhabited islands in a market-based manner**.
- The **ecological restoration for the developer's responsibility** has yielded significant results.



岸线修复: 沙滩岸线修复630m, 修复沙滩4.14万㎡, 垒石砾石岸线修复约2000m 湖泊整治: 湖泊整治岸线900m 绿化工程: 边坡复绿5万㎡, 裸地复绿20万㎡。



2019: "Zhuhai Special Economic Zone **Regulations** on the Development and Utilization of Uninhabited Islands" enacted.

2020: **Connected to mainland power grid**, achieving uniform pricing and solving high electricity costs.

2022: Recognized as one of Guangdong **top ten ecological restoration examples**.

Zhuhai: Resilience and integrated planning

- **Resilience-related natural resource protection policy system**

- Ecological protection red line system
 - Territorial spatial planning
 - Nature reserves, and natural parks
 - Ecological compensation mechanisms
 - Island development and protection system
- 珠海市自然资源的保护通过生态保护红线制度、国土空间规划、自然保护区和自然公园、海岛的开发与保护措施等实现

Land-sea integrated ecological protection red line

- Zhuhai has designated **202 km²** of red line area for ecological protection **in the land area** and **3,281 km²** of red line area for ecological protection **in the sea area**.
- Strictly **protect important ecological function areas** within the ecological space such as sea areas and islands, coastal zones, mouth wetlands, mountains and woodlands, etc.

- **No specific plan except resilience-related contents**

As a **special economic zone**, Zhuhai has formulated regulations on resilience protection and disaster defense, formed a multi-disaster integrated resilience and safety development system:

	corresponding disaster type	Name of outcome
1	Typhoon disaster	Technical Report on Feng Risk Assessment of Typhoon Disasters in Zhuhai, China
2	Storm surge disaster	Zhuhai Storm Surge Hazard Risk Assessment and Zoning Technical Report
3	Storm surge disaster, flood disaster, inundation disaster	Zhuhai Flood Risk Map
4	Flood disaster	Report on the Results of Flood Risk Zoning and Prevention and Control Zoning of Pearl River Delta Basin, Guangdong Province, China
5	Geologic disaster	Geological Hazard Risk Survey in Zhuhai, Guangdong Province
6	Geologic disaster	Zhuhai Geological Hazard Prevention and Control Plan of the 14th Five-Year Plan
7	Earthquake damage	Seismic Tectonic Map of Zhuhai City for the First National Comprehensive Natural Hazard Risk Census Project

Conclusion

• Challenges

1. Problems in natural resource management

- The completeness and accuracy of **historical data** are limited 历史数据的完整度和精度有限
- **Land survey data are confidential**, leading to data conflicts between departments 地籍数据涉密导致部门共享不畅和数据冲突
- High-precision and high-frequency data maintenance and updates requires **a large amount of cost** 数据更新成本高

2. Problems in natural resource assessment

- Existing assessment is mainly for construction land, and **the measurement standards for other lands are not clear** 建设用地之外的其他地类价格标准不明确
- **Lacks value research and assessment** of other natural resources **except land** 评估仅聚焦在土地资源
- The **value compensation and ecological restoration** have not yet formed a unified standard 生态价值补偿和修复尚未形成统一的流程和标准

3. Problems in resilient comprehensive planning

- A comprehensive planning for resilience **has not yet been formed** 全要素统筹的韧性综合规划尚未形成
- **The planning and implementation** for ecological restoration and other aspects requires **sufficient capital investment**, and how to stimulate the initiative of society and enterprises still needs to be explored 韧性规划的实施需要大量资本投入，如何吸引社会投资仍待探索
- How to carry out the improvement of resilience in areas that have been built, facing the challenge of **coordination among multiple parties** 已建成地区的韧性提升/城市更新，需要多方主体的利益协同

Conclusion

- **Prospects/suggestions from the perspective of governance**

1. **Establish national-level evaluation mechanism and management standard system.** 建立健全全国统一的评估机制和管理标准体系
 - Formulate national-level urban resilience planning standards and assessment mechanism. 制定国家级城市韧性规划评估机制
 - **Data** from different departments requires a unified management platform. With the help of **AI technologies**, implement a dynamic land survey update system. 建立数据统筹平台, 借助人工智能技术实现土地调查动态更新系统
 - Integrate different natural resources and establish **a full-element database and valuation standards.** 整合不同的自然资源, 建立全要素数据及评估标准
2. **Strengthen the collaborative management between local governments and the state.** 强化地方政府与国家的协同管理机制
 - Encourage local governments to explore innovative models of **social investment participation** 鼓励地方政府探索社会资本参与
 - **Linking resilience assessments to the allocation of funds, incentivizes local governments to priorities investment in urban resilience enhancement projects.** 将韧性评估与资金分配挂钩, 激励政府优先投资于城市韧性提升项目
3. **Establish a tracking and feedback mechanism for the entire project process.** 建立项目全流程的跟踪与反馈机制
 - **Improve the certification of assessment agencies and the public monitoring.** 完善评估机构认证和公众监督机制
 - **Implement the Development Responsibility System** throughout the entire process of a project. 推行开发责任制度

E.g. Overall assessment of natural resource asset price procedures proposed by MNR on Oct. 8th 2024 ^[1]

