

Water Ecological Restoration Practice of Cross-Administrative-Area Synergic Projects —Case Study on the Yuandang Lake Synergic Eco-Development Pilot Project, the Demonstration Zone of Green and Integrated Ecological Development of Yangtze River Delta



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ABSTRACT

Today integrated regional development becomes a national agenda of China. The Demonstration Zone of Green and Integrated Ecological Development of Yangtze River Delta faces a task of exploring a more effective and localized coordination mechanism for the implementation of cross-administrative-area synergic projects under the current administrative regimes. This article reviews the current practice of cross-administrative-area synergic development at home and abroad, and summarizes corresponding mechanisms and key issues; then by focusing on the case of the Yuandang Lake Synergic Eco-Development Pilot Project that sits on the junction of Shanghai City and Jiangsu Province, this article sorts out the key issues and the solutions at each project stage, and proposes the “3P3S” coordination framework for the implementation of cross-administrative-area synergic projects. As an exploration of spontaneous bottom-up approach—instead of administrative orders—the “3P3S” coordination framework can efficiently promote project implementation under the current administrative regimes, providing reference for synergic implementation of regular cross-administration-area projects.

KEYWORDS

Integrated Development of Yangtze River Delta;
The Demonstration Zone of Green and Integrated Ecological Development of Yangtze River Delta;
Cross-Administrative-Area Synergic Development;
Cross-Administrative-Area Ecological Restoration;
Mechanism Innovation for Synergic Development

- Comparative study on cross-administrative-area synergic development
- Introduction of practice experience of Water Ecological Restoration in the Yuandang Lake Synergic Eco-Development Pilot Project
- Full life-cycle coordination framework and detailed tasks in the implementation of cross-administrative-area synergic projects

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1 Introduction

The Yangtze River Delta, one of China's most economically developed and vibrant region, is of great strategic importance in China's macroeconomic pattern and urbanization. In October 2019, the Demonstration Zone of Green and Integrated Ecological Development of Yangtze River Delta ("Demonstration Zone" hereafter) was officially established upon the approval of the State Council. The Demonstration Zone is located in the intersection zone of Zhejiang, Jiangsu, and Shanghai, with a total area of approximately 2,413 km².^[1] Under a joint effort, the Demonstration Zone has formulated superior plans such as the Overall Plan of the Demonstration Zone^[2] and the Territorial Spatial Master Plan of the Demonstration Zone (2019–2035)^[1], and established the Executive Committee of the Demonstration Zone of Green and Integrated Ecological Development of Yangtze River Delta ("Executive Committee" hereafter) as the platform for the collaboration among related agencies and stakeholders.

In this background, the management institution based on the existing administrative regime has increasingly hampered the regional integration of Yangtze River Delta, leading to problems such as insufficient flow of productive factors, disordered competition, and administrative barriers. Therefore, how to get rid of the limitations of administrative boundaries is a critical challenge to the regional integration system now^[3]. At present, the synergic development of Yangtze River Delta looks for an exploration for closely collaborative governance within the current administrative regime^{[2][3]}. It means that one of the most important tasks for the Demonstration Zone is to identify the problems in the implementation process of cross-administrative-area synergic projects ("CAAS projects" hereafter), thus to propose comprehensive solutions to utilizing regional ecological assets and supporting regime innovation for the implementation of such

projects^[2]. For this purpose, the Demonstration Zone has started a series of pilot and demonstration CAAS projects around the Taiapu River, Dianshan Lake, Yuandang Lake, and Fenhu Lake, covering water body ecological restoration and shoreline connectivity improvement.

The Yuandang Lake Synergic Eco-Development Pilot Project ("Pilot Project" hereafter) is the first project to come into implementation in the Demonstration Zone. Addressing multiple issues including planning management, land management, and ecological conservation, as required by the Executive Committee, the Pilot Project aims to develop common standards, and effective institutions and arrangements for its synergic implementation involving several parallel provincial administrative agencies, so as to provide reference for the synergic development of the whole Yangtze River Delta. In each stage of the project, the problems, as well as their causes and solutions have been all recorded, analyzed, and reflected by the project team, who have collected considerable first-hand data and experiences for water body ecological restoration in CAAS projects. Based on a detailed case study on the Pilot Project, this article probes deeply into the full life-cycle of the its implementation, and attempts to summarize into a paradigm for the other CAAS projects in the region.

2 Literature Review

Studies on cross-administrative-area governance started earlier abroad, and related practice mainly adopts three patterns: the one led by government based on traditional regionalism^[4], the one based on market competition and public decision^{[5][6]}, and the one based on new regionalism involving multiple agencies such as governments, enterprises, and citizens^{[7][8]}. Chinese scholars pay more attention to related concepts, theories, model development, and application in synergic regional development^{[3][9]–[16]}.

In January 2021, Chinese Ministry of Ecology and Environment of People’s Republic of China issued Regional Ecological and Environmental Co-protection Plan of Yangtze River Delta, which puts forward principles of “co-promotion, co-protection, co-governance, co-construction, and co-creation” and encourages innovation for collaborative institution, as well as ensuring the consistence in plans, standards, evaluation systems, and enforcement supervision^[17]. This creates a top-level policy framework for ecological and environmental protection of Yangtze River Delta. At present, studies on integrated regional management and regulation of Yangtze River Delta concentrate on macro-level planning and policy proposals. Liu Dong et al. analyzed the current situation and problems of ecological protection in Yangtze River Delta, and proposed ideas for integrated governance^[18]. Ge Tianbo et al. proposed a regime of “virtual administration areas” to promote governance towards “co-construction, co-governance, and co-sharing” in the whole Yangtze River watershed, as well as the enforcement of environmental protection laws to guarantee public interest in Yangtze River Delta^[19]. Li Xiaoli studied on three existing mechanisms of regional ecological governance in Yangtze River Delta—vertical (based on inter-level government relations), the horizontal (based on partnerships between local governments), and the one involving cross-administrative-area agencies (e.g., governments, enterprises, and social organizations)—and reviewed

their differences^[20]. However, there are few studies on bottom-up operational model for specific CAAS projects, nor less discussion on mechanism for the long-term implementation of such projects.

A cross-administrative-area project means that the site of a given project involves two or multiple parallel administrative areas. The implementation of CAAS projects requires collaboration and coordination throughout the life-cycle, from planning and construction to operation and maintenance. It involves multiple agencies, and plays a key role in integrated regional development. Enlightened by notions like inter-governmental relations, holistic governance, and synergetic governance, the implementation of CAAS projects are basically influenced by factors such as superior policies, coordination mechanism, negotiation platform, and implementation input. The practice of CAAS projects can be roughly divided into four categories by coordination mechanisms (Table 1).

1) Coordination led by upper-level government. Such CAAS projects, usually cross-province, are mainly about national infrastructure construction ranging from transportation, water conservancy, power to environmental protection, such as China’s South-to-North Water Transfer Project, Beijing–Shanghai High-speed Railway Project, West-to-East Gas Pipeline Project, and Three-North Shelter Belt Project. Sun Lei et al. studied the conflict-coordination mechanism of such projects by applying Game Theory^[21]; Xiang Pengcheng et al. studied the organization and

Table 1: Four coordination mechanisms of CAAS projects

Mechanisms	Coordination led by upper-level government	Coordination led by authorized agencies	Coordination led by networked organizations	Coordination promoted by government partnership
Leading coordination agency	National or provincial government	Coordinating agency endowed by higher-level governments	Coordination committee formed by multi-level and cross-administrative-area governments	Leading team composed of heads from related governments
Major means	Administrative order, regulation, etc.	Law, regulation, convention, etc.	Spontaneous sharing alliance driven by interest	Equal negotiation
Applicable project	National or provincial major project	Projects located within the given region	Projects vital to each party	Major projects led by parallel partner governments
Characteristics	Outstanding effect of integration, but with limited applicable extent	Ready-made paradigms and clear rules, but mostly suitable for ecological governance projects	Great spontaneity, but with coordination difficulties and lower effectiveness	Great spontaneity and high coordination effectiveness, but with limited applicable extent

operation mechanism of such projects at six aspects and proposed methods for project vulnerability evaluation^{[22][23]}; Fan Yongcheng et al. analyzed the case of “APEC Blue,” which well demonstrates the characteristics of cross-administrative-area environmental governance led by government^[24].

2) Coordination led by authorized agencies. Such a CAAS project usually has an agency endowed with higher-level governments, which perform coordination and management by means of law, regulations, convention, etc. Examples include the Rhine Watershed Inter-governmental Synergetic Ecological Governance^{[25][26]} and the Danube River Watershed Cross-boundary Management^[27] in Europe, Great Lakes Watershed Comprehensive Management^[28] and Water Quality Control^[29] in North America, and China’s Taihu Lake Basin Water Resource Protection and Water Pollution Control^[30], the corresponding agencies of which are International Commission for the Protection of the Rhine against Pollution, International Commission for the Protection of the Danube River, International Joint Commission, and Taihu Lake Basin Administration of Ministry of Water Resources, respectively. CAAS projects employing this mechanism often see higher efficiency, but responding more to ecological environmental governance while less to cross-administrative-area joint development.

3) Coordination led by networked organizations. Involving more diverse entities, this sort of CAAS projects often establish an active bottom-up coordination mechanism based on willingness and equality of each party. For example, in China’s Pan-Pearl River Delta Region Cross-boundary Water Pollution Control Project, based on principles of “voluntary, equality, openness, complementary, and all-winning,” the local governments have established autonomous cooperative alliances to jointly address the difficulties in administrative coordination and achieved sound effects^{[24][31][32]}. Zurich Metropolitan Area Association in Switzerland is composed of representatives from 8 federal states and 110 cities and towns. As the most important spatial planning coordination organization in Zurich Metropolitan Area, it has coordinated and promoted a series of spatial conceptual plans for the region, as well as a number of cross-administrative-area projects on coordination platforms such as Agglomerationsprogramme and Förderprogramm Nachhaltige Entwicklung^[33]. In USA, a coordination mechanism taking the Council of Government as its platform has been formed through long-term practice by cross-administrative-area governments and privates. As an NGO, Council of Government is composed of delegates from different interest groups and regions, and in forms of Regional Council and Metropolitan Planning Organizations, playing a significant role in the coordination of specific cross-administrative-

area projects in transportation infrastructure, environmental governance, planning, etc.^{[34]~[36]}

And 4) coordination promoted by government partnership. These projects found alliance of neighbor governments with shared resources through negotiation and risk-reward sharing. For example, as China’s first cross-city metro line construction project, the Guangzhou–Foshan Rail Transit Project was promoted by a joint leading team composed of the heads of both cities, which has created efficient coordination and organization framework for cross-administrative-area projects^{[37][38]}. Such projects often witness outstanding advantages in economic cooperation or infrastructure construction. Similar cases include Nanjing Metropolitan Area Railway System Project^[39], and various “enclave” industrial parks throughout the country^[40].

In conclusion, the coordination mechanisms for cross-administration-area projects all need the participation of governments, but seeing variety in the level of initiative and intensity. The coordination mechanism led by networked organizations as a highly spontaneous and active bottom-up approach offers a reference for the Pilot Project, but it might face a lower coordination effectiveness due to less participation intensity of the multiple parallel governments involved. Adopting this mechanism, the Demonstration Zone needs to not only furtherly mobilize the initiative of each party, but also intensify the participation of government and improve decision-making efficiency. All these are expected to be explored in the Pilot Project to reach a more effective and localized coordination mechanism for the CAAS projects in the Demonstration Zone.

3 Overview of Project Site

Yuandang Lake sits on the junction of Shanghai City and Jiangsu Province—its east and west parts affiliating to Qingpu District of Shanghai City and Wujiang District of Suzhou City, respectively. The site of the Pilot Project covers 1.2-km-long shorelines on both sides of Qingpu and Wujiang from the Yuandang Bridge, and the total area is about 35 hm². The tasks of the Pilot Project include improvement of shoreline connectivity, lakefront revetment remediation, and ecological restoration of shallows.

The Pilot Project involves a number of key issues on cross-administration-area coordination in its implementation: Specifically, that of subprojects in each administration area deals with the positioning of the overall planning, and the integration of transportation system, aquatic ecological system, landscape system, etc., while that of the single cross-administration-area

subprojects—such as Yuandang Bridge and Yuandang Slow Traffic Bridge (Fig. 1)—involves joint approval, integrated construction, joint acceptance, and stipulation of responsibilities and liabilities for maintenance and management.

4 Solution—The Development of the “3P3S” Coordination Framework for CAAS Projects

4.1 Problems in the Pilot Project

As the first CAAS project in the Demonstration Zone, the Pilot Project faced following challenges in its implementation process.

1) Only superior instructions failed to drive the project implementation. Since the involved governments are administratively parallel, their collaboration and coordination in ecological and environmental governance are mostly pushed by the instructions of superior governments. However, such collaborations often see low efficiency of collective actions and unclear responsibilities and liabilities due to the multiple agencies^[41] and weak incentive, making long-term benefits and sustainability cannot be guaranteed, not to mention innovation in inter-governmental collaboration.

2) The absence of united coordination platform caused difficulties in the communication between participating agencies. First, the administration systems are different—Shanghai implements linear management, while Jiangsu implements localized management—and there was no united coordination

platform to address the problems in specific projects due to such gaps. Second, the huge disparity of funding, development planning, and construction priorities between the involved governments also made the Pilot Project, sitting in the junction of different administration areas, received less attention.

And 3) the technical and management standards adopted by each administration unit vary widely. For example, the methods for the delimitation and management of wetland redlines, the management level of Yuandang Lake in each province, the baseline elevation systems used in surveying and mapping are all different between the involved units. Such problems greatly increased the cost of communication and coordination in the implementation of the Pilot Project.

This article sorts out 18 key issues in each stage of the full life-circle of the Pilot Project (Table 2). These can also serve as a reference for other CAAS projects.

4.2 Discussion About the Key Issues

4.2.1 Difficulties in Coordination

The scheme and approval stages face the most coordination difficulties, which engage multiple higher-level agencies to coordinate major issues (e.g., overall position, budgets) through several rounds of communication and exchange before reaching the common ground. The management and operation stages often face difficulties caused by the lack of experience of clarifying the responsibilities and liabilities of each party in implementation. The coordination at planning, design, and construction stages mainly involves specific technical problems that are relatively easier to deal with (Table 3).

4.2.2 Participating Agencies

In each stage of the full life-cycle, the Executive Committee, as a third-party, plays as an effective communication and coordination platform among all the agencies. Also, it had actively conducted a series of studies to predict key issues as many as possible, avoiding some potential mistakes or problems. In addition, the coordination of the Executive Committee was based on consensus instead of administrative order, which stimulated the initiative of each party, greatly enhancing the efficiency of integration.

Although both governments have ideologically reached the common ground, in practice the absence of coordinated superior planning documents and shared paradigms for project implementation led to the divergence about the overall planning direction, increasing the difficulties in coordination.

In addition, due to the lack of implementation experience of

1. Site location map of the Pilot Project



CAAS projects, the involved planning, design, and construction teams could not anticipate detailed problems in advance, and could only solve them after they had emerged. This increases the work and coordination cost of those teams, lowering implementation efficiency.

4.3 Development of the “3P3S” Coordination Framework

Before the Pilot Project started, the Executive Committee had proposed a principle of “practicing–innovating–summarizing” for the coordination. After the completion of the project, the Executive Committee led a full interview with all participating agencies/

Table 2: Summary of the key issues of the Pilot Project

Stage	Key issues
Scheme	1. Lack of necessary communication and preparation: this results from the lack of communicating platforms and the inconsistency of implementation lists or plans of each party
	2. Multiple leading agencies: the leading agency of each administrative entity is determined by the capital source and the administrative pattern of a project, so there might be multiple parallel leading agencies
Approval	3. Disparity of management agencies and policies: the implementation process involves several agencies such as water conservancy, planning, landscape, and environmental protection, but their responsibilities might conflict with each other and the administration level and management mechanisms are also inconsistent
	4. Inconsistent technical standards: different administration units might adopt different technical standards, including ecological redline delimitation, flood control and drainage standards, and wetland management standards
	5. Inconsistent land use planning: the disparity or overlapping in planning direction and goal of different administrative units may hinder the effective integration into the overall regional blueprint
Planning	6. Desynchronized construction timeline: the difference in funding and planning of projects often cause desynchronized construction cycles
	7. Inconsistent infrastructure system plans: such inconsistency exists in infrastructure system planning of water system, green space system, ecological corridor system, landscape slow traffic system, road system, flood control system, etc.
	8. Discontinuous ecological wetland systems: integration or connection with other regional ecological wetland systems (such as core conservation areas, buffer zones, and ecological corridors) is often less considered in planning stage
	9. Disparity in funding standards: the budgets of different administration units vary widely, which leads to different standardized built-up effect and performance of projects
	10. Inconsistent design base control systems: the basic design control systems (space coordinate system, baseline elevation system, etc.) adopted by different administration and management units remain inconsistent
Design	11. Incompatible design concepts and principles: different design units may have varied concepts and principles in ecological protection, utilization, and restoration, so consonant concepts are fundamental to avoid deviation in ecological restoration planning and built-up effect and performance
	12. Discordant overall landscapes: coordination among different administration units is required in the overall planning and design of ecological corridor system, landscape system, slow traffic system, and interpretation system, whereas discordancy and homogenization should be both avoided

Continued

Table 2: Summary of the key issues of the Pilot Project

Stage	Key issues
Construction	13. Unsynchronized construction periods: unsynchronized construction periods in different administrative areas may result in dead-end roads or waterfronts, or affect the overall built-up effects of ecological landscape
	14. Unclear construction interface: disordered or unclear construction procedure arrangement of project interfaces would result in difficulties in construction; shared construction sites and roads require on-site coordination as well
	15. Inconsistent construction standards: the inconsistency of construction and management standards among different construction teams brings difficulties in dealing with on-site problems and quality control during construction process
	16. Unsynchronized project acceptance: CAAS projects are composed of several independent projects, and the quality management and acceptance of each single project is also independently conducted, which means the effect of the overall project may be unsatisfactory
Operation and management	17. Multiple management entities and inconsistent standards: unclear management responsibilities and liabilities may exist in single subprojects, and management standards and regulations in different administration units are also varied
	18. Operation model selection: the selection of different operation models for cross-administration-area projects (independent, collaborative, or third-party-leading) should be carefully considered and coordinated to achieve all-win

Table 3: Major participating agencies and coordination difficulty level at each stage in the Pilot Project

Project stage	Participating agencies	Coordination goals	Difficulty level of coordination
Scheme	Executive Committee + departments of development and reform, planning, and finance of both governments + other related agencies	Reaching a general consensus on joint promotion of the Pilot Project, determining scope and duration, and clarifying funding arrangement	※※※※
Approval	Executive Committee + departments of water conservancy, environmental protection, and planning of both governments + other related agencies	Reaching a consensus on project approval mode, process, timeline and workflow, and the leading agencies	※※※※
Planning	Executive Committee + planning and design teams + other related agencies	Reaching a consensus on the overall blueprint, covering positioning, and the timeline and workflow of planning and construction	※※
Design	Executive Committee + executive agencies + design teams + other related agencies	Reaching a consensus on the consistency of design standards and baseline systems	※※
Construction	Executive Committee + design and construction teams + other related agencies	Reaching a consensus on construction scope, timeline and workflow, and key techniques	※※
Operation and management	Executive Committee + operation and management agencies + other related agencies	Reaching a consensus on the consistency of operation/management standards and regulations, revenue allocation, etc.	※※※

NOTE
The difficulty level of coordination is rated according to the level and the number of involved agencies, and the time cost in actual coordination. The difficulty level increases as the more ※ it has.

teams and symposiums with experts to reflect and summarize the experience in the implementation process of this project.

Sorting out the key issues and the corresponding solutions at each stage of the full life-cycle of the Pilot Project, this article summarizes and develops the strategies of CAAS projects as follows.

1) Common strategic positioning: to reach a strategic consensus on project direction and goals.

2) Project approval mechanism: to anticipate the differences in approval modes of the involved administration areas, so as to determine a synchronized approval mode that is easy to implement.

3) Integrated planning: to achieve integrated planning programs by joint preparation.

4) Consistent design standards and specifications: to avoid repeated work and to reduce communication cost.

5) Same construction schedule: to facilitate the integration of construction by different teams and ensure the built-up effects.

And 6) sustainable management and operation system: to formulate clear management and maintenance standards and operation modes, as well as the responsibilities and liabilities of each party.

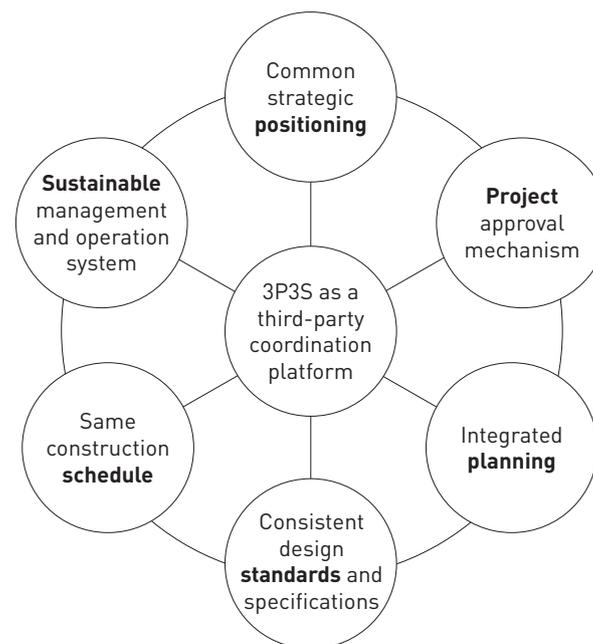
Using the initials of the keywords of the above six strategies, the article proposes the “3P3S” coordination framework for CAAS projects (Fig. 2). Based on the networked mechanism and covering the full life-cycle of the project, this bottom-up framework employs a government-empowered third party as the coordination platform that collects feedback, facilitates consultation, and promotes administrative participation and implementation efficiency.

4.4 Details of the 3P3S Coordination Framework in the Pilot Project

To instruct the implementation of water ecological restoration in similar CAAS projects more specifically, this article demonstrates the workflow and detailed tasks at each stage in the full life-cycle of the Pilot Project based on the 3P3S coordination framework (Table 4), which can be a reference for concerned administration units, as well as planning, design, construction, operation, and management teams/agencies.

5 Post-occupation Evaluation

The construction of the Pilot Project was fully completed at the end of October, 2020. The main project adopts separate operation with unified management and maintenance standards, while Yuandang Bridge and Yuandang Slow Traffic Bridge adopted single-party operation mode. At present, the ecosystem of the site



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2. 3P3S coordination framework for CAAS Projects

witnesses a rapid restoration, achieving significant social, economic, and environmental benefits.

1) Social benefits: Yuandang Slow Traffic Bridge, as the first cross-province pedestrian bridge, has linked up the pedestrian systems of Qingpu District (Shanghai) and Wujiang District (Suzhou), and the opening of Yuandang Bridge shortens the travel time between the two cities from 40 minutes to 5 minutes. The Executive Committee has summarized the practice experience of this project as a series of guidance documents such as *Guidance on the Integrated Implementation of Ecological Restoration and Shoreline Connectivity Projects for Cross-Administration-Area Water Bodies* and *Integrated Implementation Standards for Ecological Restoration and Functional Enhancement Projects of Cross-Administration-Area Water Bodies*, providing reference and guidance for 47 similar major projects in the Demonstration Zone.

2) Economic benefits: In the earlier stages, a large amount of cost of communication and coordination was spent due to the absence of coordination platform and relevant experience: more than 20% of the time at the planning stage was spent in coordination and waiting, and the inefficient communication caused at least 30% of extra workload at the design stage. The practice experience summarized in this article may help future cross-administration-area projects save communication and time cost. In terms of economic development, the Pilot Project has become

Table 4: Detailed tasks for water ecological restoration in the Pilot Project under the 3P3S framework

Stage	Core strategies	Specific tasks
Scheme	Full preparation	Formulate implementation lists, schedules, and plans, and establish project library and update timely
		Communicate and determine the key issues including project goals, priorities, scope, and timeline If divergence appears, the Executive Committee should take the lead in the negotiation process till a consensus is reached
Approval	Clarifying responsibilities	Each administration area should have a leading agency Determine the specific construction scope of each party Determine a single construction agency/team for single subprojects
	Developing contingency plans	Each party should comprehend related systems and procedures, and anticipate potential gaps and disparities Develop contingency plans for possible divergence in approval process and policy standards
	Determining launch mode	The launch of non-cross-administrative-area projects is conducted independently by the corresponding administration units For single cross-administration-area subprojects (e.g., bridges), independent launch and capital arrangement should be carried out by a same implementation agency
	Determining approval mode	The approval of non-cross-administrative-area projects is independently conducted by the corresponding administration units Joint approval is carried out for single cross-administration-area subprojects
Planning	Planning team selection	For the best, all the plans can be prepared by a same planning team in accordance with laws and regulations Joint planning should be conducted for projects prepared by multiple planning teams
	Joint planning preparation	Joint planning preparation needs to coordinate spatial layout, planning indicators, construction timeline, etc. based on the same blueprint
	Determining ecological indicators	Coordinate the function zoning for ecological conservation, public education, and other proposes Unify ecological indicators in wetland construction, biodiversity protection, etc.
	Integrated infrastructure	Develop regional infrastructure planning for systems of sponge city construction, transportation, flood control, and supporting facilities
	Consistent funding standards	Determine funding standards according to overall positioning and construction difficulty level to ensure construction effect
	Coordinating construction timeline	Coordinate project construction pace and overall construction schedule
	Integrated planning outcomes	A special document about the synergy should be included in the final planning outcomes of each party
	Planning review and approval	Planning outcomes should be reviewed among all the planning teams and concerned authorities Organize a uniform expert review for a one-time review of the planning outcomes of each party Final planning outcomes can be approved independently by each administration unit, and joint approval is encouraged
	Negotiation on divergence	Adopt consistent technical standards to avoid the divergence among planning teams Negotiate and reach a consensus on spatial layout among all the concerned agencies/teams, led by the Executive Committee Negotiate and reach a consensus on project positioning and funding standards among each party, led by the Executive Committee; when necessary, a higher-level coordination platform can be established by the Executive Committee to reach a consensus

Continued

Table 4: Detailed tasks for water ecological restoration in the Pilot Project under the 3P3S framework

Stage	Core strategies	Specific tasks
Design	Design team selection	<p>For the best, all the projects can be designed by a same design team in accordance with laws and regulations</p> <p>Joint design should be conducted for projects involving multiple design teams</p> <p>Single cross-administration-area subprojects (e.g., bridges) should be designed by a same design team</p>
	Joint design	<p>Joint design should be carried out by all teams simultaneously to guarantee the coordination efficiency in each stage for an integrated design</p> <p>Establish process-sharing mechanism and organize meetings in each key phase of the design stage</p>
	Consistent baseline systems	<p>Unify design baseline systems among all the design teams before starting specific works</p> <p>Use the 2000 National Geodetic Coordinate System</p> <p>Use Zhenjiang Wusong Benchmark Elevation for projects involving water bodies, and National 85 Benchmark Elevation for the others</p> <p>Coordinate flood control standards to ensure the built-up effects</p> <p>Management standards and measures can be adopted flexibly in each administration area to ensure the width of blue lines</p>
	Unified design concept	<p>Reach consensus of design concepts on ecological protection, utilization, and restoration among all the design teams to avoid divergence in goals and effects of ecological governance</p>
	Integrated landscape system	<p>Coordinate landscape systems in the phase of design proposal to harmonize the landscapes in different administration areas</p> <p>Landscape integration: harmonize the landscape styles in the phase of design proposal; coordinate the use of materials, techniques, and representation methods in the phase of detailed design</p> <p>Greenway integration: coordinate road widths and connection modes at each level in the phase of design proposal; coordinate the use of materials, colors, and construction techniques in the phase of detailed design</p> <p>Integrated supporting facilities: coordinate facility layout and amount in the phase of design proposal; unify facility styles, materials, and sizes in the phase of detailed design</p> <p>Integrated planting design: coordinate major plant species, and planting specifications and density in the phase of design proposal, and use native species as many as possible</p> <p>Landscape nodes should be designed based on localities (site conditions, cultural qualities, etc.) to avoid landscape homogenization</p>
	Integrated wetland system	<p>Unify evaluation standards for existing wetland resources, and determine the scope and goals of wetland protection and restoration</p> <p>Shoreline forms should be designed with high diversity according to local conditions, while unified construction techniques and materials (such as gabion shoreline) should be used to ensure the unified landscape effects</p> <p>Wetlands should be designed according to habitat conditions with proper and diversified plant species to form natural communities</p>
	Construction	Construction team selection
Delimiting construction interfaces		<p>Coordinate the delimitation of construction interfaces and corresponding construction scope before on-site construction</p>

Continued

Table 4: Detailed tasks for water ecological restoration in the Pilot Project under the 3P3S framework

Stage	Core strategies	Specific tasks
Construction	Synchronized construction timeline	Synchronize the construction timeline among all leading agencies and construction teams
	Coordinating construction schedules on the interfaces	Coordinate construction schedules on the interfaces among all construction teams before on-site construction to avoid interference
	Unifying construction techniques	Unify construction techniques for a same landscape or municipal facility in early construction to guarantee a unified effect
	Unifying construction standards	Unify construction standards (no lower than corresponding national standards) to ensure construction quality
	Joint acceptance	Establish a joint acceptance team and issue joint acceptance documents
Operation and management	Management agency and scope	For the best, a same management agency can be determined for the post-occupation maintenance and management of the entire project Determine a single party responsible for the management and maintenance of single cross-administration-area projects, and the rest parties should pay the corresponding expense
	Unifying management and maintenance standards	Unify management regulations and maintenance standards among all administration units if the project is managed by different parties
	Integrated operation	An integrated operation mode (collaborative operation, third-party operation, etc.) is encouraged

a tourist destination of Shanghai and Jiangsu, providing quality environmental assets for the surrounding urban development clusters—such increasing integration effects have laid a foundation for “Eco+” economic development model.

And 3) environmental benefits: Previously, the site was dominated by large aquaculture ponds, concrete shorelines, and severely eutrophic cutoff ditches, and was largely covered with invasive wetland plants such as *Alternanthera philoxeroides* and *Eichhornia crassipes*, which degraded the shallow habitats of the wetland. The ecological restoration in this project has made the eco-shoreline ratio of the site increase to 80% and shallow wetland habitats within 50 ~ 80 m from the nearshore has been restored. After one-year natural succession, the local biodiversity has been significantly improved with the submerged plant coverage exceeds 60% while the species number of wetland birds reaches more than 20. The lake’s self-cleaning capacity has also increased because of the restored shallow wetlands, while the sponge city system

created in this project has enhanced its rate of pollutant removal up to 70%.

At present, the project is in sound and sustainable operation and management, but has not yet realized an ideal integration. Further efforts are needed in future integrated operation and management to transform environmental advantages more efficiently into economic benefits.

6 Conclusions

Based on the practice experience of the Yuandang Lake Integrated Eco-Development Pilot Project, this article proposes the “3P3S” coordination framework for the implementation of cross-administration-area synergic projects, as an exploration of spontaneous bottom-up approach—instead of administrative orders—that can efficiently promote the implementation of such projects under the current administrative regimes. It hopes to

provide reference for synergic implementation of regular cross-administration-area projects. Subsequently, the Demonstration Zone will carry out more practice tests on the 3P3S framework in a series of projects such as the Water Township Living Room project of the Demonstration Zone of Green and Integrated Ecological Development of Yangtze River Delta and the ecological management of the Taipu River, to keep improving it with empirical studies.

Today, China is experiencing its transformation from urbanized development toward integrated regional development, whereas traditional integrated models and mechanisms relying on administrative orders can hardly support sustainability or innovation. It requires to break the limitations caused by administration boundaries and to develop a new one that is efficient, practical, and full life-cycle guiding. Future integrated projects need to probe into the inherent cooperation-competition mechanism of integration and to study the methods to enhance the implementation efficiency in face of different inter-governmental relations.

REFERENCES

- [1] The People's Governments of Shanghai, Zhejiang, and Jiangsu. (2020, June 18). *The Territorial Spatial Master Plan of the Yangtze River Delta Ecological Greening Development Demonstration Zone (2019–2035)*. Department of Natural Resources of Zhejiang Province.
- [2] National Development and Reform Commission. (2019, November 16). *Overall Plan of the Yangtze River Delta Ecological Greening Development Demonstration Zone*. The State Council of the People's Republic of China.
- [3] Xiong, J. (2022). The administrative division's logic of regional urban integration: Governing with administrative division and reforming administrative division with governance. *The Journal of Shanghai Administration Institute*, 23(1), 65-73. doi:10.3969/j.issn.1009-3176.2022.01.006
- [4] Lefevre, C. (1998). Metropolitan government and governance in western countries: A critical review. *International Journal of Urban and Regional Research*, 22(1), 9-25. doi:10.1111/1468-2427.00120
- [5] Tiebout, C. M. (1956). A pure theory of local expenditures. *Journal of Political Economy*, 64(5), 416-424. doi:10.1086/257839
- [6] Ostrom, V., Tiebout, C. M., & Warren, R. (1961). The organization of government in metropolitan areas: A theoretical inquiry. *American Political Science Review*, 55(4), 831-842. doi:10.2307/1952530
- [7] Wheeler, S. M. (2002). The new regionalism: Key characteristics of an emerging movement. *Journal of the American Planning Association*, 68(3), 267-278. doi:10.1080/01944360208976272
- [8] Savitch, H., & Vogel, R. K. (2000). Paths to new regionalism. *State and Local Government Review*, 32(3), 158-168. doi:10.1177/0160323X0003200301
- [9] Zhu, C., & Shen, J. (2015). ISGPO model in local governments' cross-boundary governance. *Nankai Journal: Philosophy, Literature and Social Science Edition*, (6), 49-56.
- [10] Zhang, C., Li, H., & Bian, X. (2012). Inter-regional governance: Model, mechanism and dilemma. *Chinese Public Administration*, (3), 102-109.
- [11] Yang, A., & Lin, Z. (2020). Regional collaborative governance organizations in three world-class bay areas: Model classification and comparative analysis. *Journal of Public Administration*, (2), 40-57.
- [12] Wu, J., & Sun, B. (2019). Research on cross-domain governance in China: Generation logic, mechanism and approaches. *Administrative Tribune*, (1), 65-72. doi:10.16637/j.cnki.23-1360/d.2019.01.009
- [13] Suo, L. (2021). How can data-based governance operate beyond jurisdictions: A new vision on integrated regional development in response to urban digitalization. *People's Tribune*, (1), 45-48.
- [14] Shen, J., & Zhu, C. (2015). Conceptual typologies and research models of cross-boundary governance. *Journal of Beijing Administrative College*, (4), 38-43. doi:10.16365/j.cnki.11-4054/d.2015.04.005
- [15] Cao, T. (2013). The origin, system characteristics and synergy evaluation of cross-boundary governance. *Comparative Economic and Social Systems*, (5), 117-127.
- [16] Cao, H., & Zhang, Y. (2013). Cross-administrative-area governance in the perspective of coordinated regional development: Origin, theoretical framework, and model comparison. *Probe*, (1), 76-80. doi:10.16501/j.cnki.50-1019/d.2013.01.009
- [17] Ministry of Ecology and Environment of the People's Republic of China. (2021). Answers to journalists' questions on regional ecological and environmental co-protection plan of Yangtze River Delta. *Resources Economization and Environment Protection*, (2), 2-5.
- [18] Liu, D., Xu, M., Lin, N., Yang, Y., & Zou, C. (2020). To enhance the integrated ecological and spatial management and governance in the Yangtze River Delta. *China Environment*, (12), 25-27.
- [19] Ge, T., & Xie, Y. (2020). Restriction and development of the integration of the rule of law and environmental public interest in the Yangtze River Delta: A study of virtual administrative district. *Journal of Zhejiang University of Technology (Social Sciences)*, 19(4), 449-454.

- [20] Li, X. (2020). A study on the overall governance of the ecological integration of the Yangtze River Delta. *Party and Government Forum*, (12), 49-51.
- [21] Sun, L., & Sun, S. (2020). Conflict coordination mechanism in cross regional major project based on dynamic game. *Systems Engineering*, 38(3), 141-150.
- [22] Xiang, P., & Zou, L. (2012). The organizational operation mechanism of cross-region public engineering projects. *Science and Technology Progress and Policy*, 29(18), 26-29. doi:10.6049/kjbydc.2012GC0136
- [23] Xiang, P., & Li, J. (2016). Research on system vulnerability of interregional large-scale construction projects. *Systems Engineering—Theory and Practice*, 38(6), 2383-2390.
- [24] Fan, Y., & Yin, Y. (2016). The selection of collaborative governance models for the transboundary environmental issues: Theoretical discussion and three cases. *Journal of Public Management*, 13(2), 63-75, 155-156. doi:10.16149/j.cnki.23-1523.2016.02.006
- [25] Yang, C. (2021). A discussion on high-quality economic development of the Yangtze River Economic Belt in the perspective of inter-government synergized governance—Based on the experience of basin governance of the Rhine. *Hubei Social Sciences*, (11), 84-89. doi:10.13660/j.cnki.42-1112/c.015746
- [26] International Commission for the Protection of the Rhine. (1999). *Convention on the Protection of the Rhine*.
- [27] Stadler, R., Chen, G., & Zhang, L. (2009). Cross border management in the Danube River Basin. *Express Water Resources and Hydropower Information*, 30(9), 12-21. doi:10.15974/j.cnki.slsdkb.209.09.02
- [28] Chen, J., Zhao, J., Liu, G., & Kong, X. (2010). The experience and enlightenment of integrated river basin management for the Great Lakes. *Wetland Science*, 8(2), 189-192. doi:10.13248/j.cnki.wetlandsci.2010.02.009
- [29] Botts, L., & Muldoon, P. (2005). *Evolution of the Great Lakes Water Quality Agreement*. Michigan State University Press.
- [30] The State Council of the People's Republic of China. (2011). *The Management Regulation of Taihu Lake Basin*.
- [31] The People's Governments of Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Sichuan, and Yunnan, The Special Administrative Regions of Hong Kong and Macau. (2004). *The initial of collaborative environmental protection for the Pan-Pearl River Delta*. *Environment*, (8), 6-7.
- [32] The People's Governments of Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Sichuan, and Yunnan, The Special Administrative Regions of Hong Kong and Macau. (2007). *The Specialized Planning of Collaborative Environmental Protection for the Pan-Pearl River Delta (2005—2010)*. Department of Ecology and Environment of Yunnan Province.
- [33] Wang, M., & Qiu, Y. (2021). Cross-border collaborative spatial planning in Switzerland and its enlightenment. *Journal of Chinese Urban Forestry*, 19(4), 55-60.
- [34] Liu, C. (2005). District committee: A study on the system of USA's metropolitan district governance. *Chinese Public Administration*, (3), 66-69.
- [35] Shen, S., Wang, X., & Liu, Z. (2016). Inspirations of the regional transport planning system of MPOs for China Syncretic Planning. *Comprehensive Transportation*, 38(10), 85-93.
- [36] Zhou, S., & Chen, H. (2008). The regional coordination mechanism of American MPOs and its inspiration to China. *Urban Planning International*, 23(6), 93-98. doi:10.3969/j.issn.1673-9493.2008.06.014
- [37] Liu, Z. (2019). On the construction and operation mode of Guangzhou-Foshan cross-city rail transit. *Urban Mass Transit*, 22(1), 11-14, 64. doi:10.16037/j.1007-869x.2019.01.003
- [38] Ye, L., Yang, Y., & Qiu, M. (2020). Government motivation, mechanism and behaviors in cross-boundary governance—Comparison of Guangzhou-Foshan metro construction and water pollution governance. *Theoretical Investigation*, (2), 163-170. doi:10.16354/j.cnki.23-1013/d.2020.02.026
- [39] Su, L. (2021). Analysis on the model of cross-border rail transit co-construction: Based on cases of Nanjing Metropolitan Area. *Project Management Technology*, 19(10), 67-70. doi:10.3969/j.issn.1672-4313.2021.10.013
- [40] Li, J., & Xia, H. (2006). A research on “Enclave Economy” development pattern of development zone. *Business Economics and Administration*, (2), 55-60. doi:10.14134/j.cnki.cn3-136/f.206.02.010
- [41] Zhu, J. (2016). A study on the dilemma of inter-government coordination in ecological governance. *Journal of Sichuan Administration College*, (1), 15-18. doi:10.3969/j.issn.1008-6323.2016.01.003

跨区域水体生态修复全周期一体化项目管理实践 ——长三角生态绿色一体化发展示范区元荡示范段案例

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摘要

区域城市一体发展是国家战略。在尊重现有行政区划的前提下实现一体化模式创新是长三角生态绿色一体化发展示范区重要示范和实践任务之一。本文首先分析了国内外跨区域项目一体化实践案例, 并总结了其模式及面临的关键问题, 继而以跨越江苏省和上海市的长三角生态绿色一体化发展示范区元荡示范段项目为例, 在详述了一体化实施过程中各个阶段面临的具体问题和解决方式的基础上, 提出了跨界水体修复全周期一体化管理的“3P3S”模式框架。实践表明, 该框架摆脱传统依靠行政命令或者权威机构主导的一体化模式, 是一种自发性、主动性相对较高的一体化模式的探索, 可为常规的跨区域项目的一体化实施提供参考。

关键词

长三角一体化;
长三角生态绿色一体化示范区;
跨区域项目一体化;
跨区域生态治理;
一体化模式创新

文章亮点

- 跨区域项目一体化经验及模式对比研究
- 长三角元荡示范段跨区域水体修复一体化项目实践经验介绍
- 跨区域项目全生命周期一体化模式框架及详细流程清单

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1 引言

长江三角洲地区是中国经济发展程度最高、最有活力的区域之一, 在国家宏观经济格局及城镇化建设大局中具有极其重要的战略意义。2019年10月, 长三角生态绿色一体化发展示范区(以下简称“示范区”)由国务院批复正式成立并正式进入启动阶段。示范区位于浙江省、江苏省和上海市的交汇地带, 总面积约2 413km²。^[1]在两省一市的共同努力下, 示范区已制定出台了《长三角生态绿色一体化发展示范区总体方案》^[2]、《长三角生态绿色一体化发展示范区国土空间总体规划

(2019—2035)》^[1]等上位规划, 并成立了长三角生态绿色一体化发展示范区执行委员会(以下简称“执委会”)作为沟通协作平台。

随着长三角区域一体化发展上升为国家战略, 长期以来行政区管理的体制惯性, 使得行政区划逐渐成为区域一体化的掣肘, 导致了生产要素流动不畅、无序竞争、行政壁垒等问题。所以, 如何跨越行政边界的无形束缚逐渐成为区域一体化制度探讨的核心议题^[3]。目前, 长三角区域一体化发展模式是一种不打破行政区划界线, 但须紧密协作的区域一体化治理的新探索^{[2][3]}。根据规划要求, 示范区需要在尊重既定行政区划的前提下, 通过跨域具体项目的实施, 发现一体化过程中的问题并提出综

合解决方案，进而探索生态价值转化及跨域项目协同一体化制度创新的途径，这也是示范区承载的重要任务之一^[2]。为此，示范区围绕“一河三湖”（太浦河、淀山湖、元荡和汾湖）启动了一批跨域水体生态修复、岸线贯通等试验和示范型项目。

长三角生态绿色一体化发展示范区元荡示范段项目（以下简称“示范段项目”）是示范区首个进入建设实施阶段的项目。根据执委会要求，该项目需要在跨省级行政区、涉及多个平行行政主体的框架下，聚焦规划管理、土地管理、生态保护等方面，探索一体化推进的共同行为准则，形成行之有效的制度、模式安排，为长三角一体化发展提供示范。项目团队从跨域一体化角度，对项目各个阶段遇到的困难、具体原因及最终解决方式进行了全程调研、记录、分析和总结，为研究跨域水体生态修复积累了丰富的第一手经验。本文在详细研究该案例的基础上，从全生命周期的跨域项目一体化实施过程，以及模式化的角度进行了重点总结和思考，以期为推动区域内的工程项目一体化实施提供参考和借鉴。

2 文献综述

跨域治理相关研究在国外起步较早，积累了大量的经验。跨域治理大致可分为三种模式，分别是以政府管理为主的传统区域主义模式^[4]、以市场化手段开展竞争的公共选择模式^{[5][6]}，以及倡导政府、企业、公民等多个主体参与的新区主义模式^{[7][8]}。中国学者的研究多集中在跨域治理概念解析、理论探究、分析模型建立及区域一体化发展探索等方面^{[3][9]-[16]}。

2021年1月，中华人民共和国生态环境部发布了《长江三角洲区域

生态环境共同保护规划》，提出了“共推、共保、共治、共建、共创”的一体化原则，并要求创新协作机制，强化统一规划、统一标准、统一监测评价、统一执法监督^[17]，这为长三角地区生态环境保护提供了顶层政策框架。目前，关于长三角区域生态管控一体化的研究多集中于宏观层面的规划、政策建议等方面。刘冬等人分析了长三角区域生态空间现状及面临的问题，提出了生态空间的一体化管治思路^[18]。葛天博等人提出了构建“虚拟行政区”的机制，从整体性出发推进全流域“共建、共治、共享”的治理格局，推进长三角环境公益法治一体化^[19]。李晓莉研究了当前长三角区域生态治理的三种机制及特点，并提出了在纵向上（层际政府关系）、横向上（地方政府之间的伙伴关系），以及跨越边界的不同主体（政府与企业、社会组织）之间的治理模式思考^[20]。但上述研究缺乏针对具体跨域项目的自下而上的操作模式研究，缺少对项目实施长效机制的探讨。

跨域项目是指跨越两个或两个以上平行行政区的项目。跨域项目一体化是指此类项目从规划建设到运营维护全生命周期地协同一致、整体统筹，涉及多元合作主体，是区域一体化的重要依托。跨域项目一体化涉及“府际关系”（inter-governmental relations）、“整体性治理”（holistic governance）、“协同治理”（synergetic governance）等概念，主要受政策环境、协作机制、协商平台、执行力度等关键因素的影响。按协作模式，跨域项目一体化实践大致可分为四类（表1）。

1) 上级政府主导的一体化模式。此类跨域项目往往为跨省级行政区建设的国家级重大基础设施项目，如中国南水北调工程、京沪高铁工程、西气东输工程、三北防护林工程等项目，涉及交通、水利、电力、生态环境等领域。孙蕾等人应用博弈理论研究了此类工程的冲突协调机制^[21]；向鹏成等人从6个方面研究了该类工程项目的组织运行机制，并

表 1: 四种跨域一体化模式及其特点

跨域一体化模式	上级政府主导的一体化模式	权威机构主导的一体化模式	网络化组织主导的一体化模式	伙伴政府主导的一体化模式
主导协调机构	国家或省级政府	被政府赋予较高权限的协调机构	多级跨域政府单位参与的协调委员会	相关政府高层组成的领导小组
主要手段	行政命令、现有规程等	法律、法规、条约等	受利益激励的自发性共享联盟	平等协商
适用性	国家或省级重大项目	缔结契约的区域内相关项目	区域各方利益攸关的项目	平级伙伴政府之间的重大项目
评价	一体化效果显著，但适用范围小	具有现成范式，规则明确，但多用于生态治理类项目	具有自发性，但协调难度大、效率相对较低	具有自发性，协调效率高，但适用范围小

提出了此类工程项目脆弱性的评估方法^{[22][23]}；范永成等人分析的“APEC蓝”案例很好地体现了行政主导下的跨区域环境治理模式特点^[24]。

2) 权威机构主导的一体化模式。此类项目往往存在一个被政府赋予较高权限的协调机构，基于法律、条约等手段进行跨区域协调管理。经典案例包括欧洲的莱茵河流域府际协同生态治理^{[25][26]}、多瑙河流域跨界管理^[27]、北美的五大湖流域综合管理^[28]与水质管控^[29]，以及中国的太湖流域水资源保护和水污染防治^[30]等，其对应的机构有保护莱茵河不受污染国际委员会、多瑙河保护国际委员会、五大湖国际联合委员会，以及水利部太湖流域管理局。此类跨区域协调模式效率较高，但往往涉及生态环境治理较多，涉及跨域联合发展则相对较少。

3) 网络化组织主导的一体化模式。此类跨域项目是在各方自愿、平等的基础上，自下而上形成的一种主动跨域协调模式，涉及的项目主体往往更加多元。典型案例包括：中国的泛珠三角区域跨界水污染治理工程，其中，地方政府基于“自愿参与、平等开放、优势互补、互利共赢”的原则，通过建立自主合作同盟来共同应对跨行政边界协调困难的问题，取得了良好的效果^{[24][31][32]}；由瑞士8个联邦州和110个市镇代表共同组成的苏黎世大都会区协会作为苏黎世大都会区内最重要的空间规划协作组织，协调推动了苏黎世大都会区空间概念规划，以及“集聚项目计划”和“可持续空间发展示范项目”等平台中的跨域项目^[33]；在美国的政治体制下，跨域政府及民间经过长期的实践，目前已经形成了一种以区政府联合会为平台的协调机制，它是来自不同利益群体和不同地区的代表共同组成的非政府组织，根据其功能可分为区域委员会、大都市区规划组织等形式。区政府联合会在交通基础设施项目、环境治理项目、规划项目等具体跨域项目协调方面发挥了重大作用^{[34]-[36]}。

4) 伙伴政府主导的一体化模式。该模式是通过平等协商、风险收益平摊的方式，促使资源共享的相邻政府跨域联合。例如，中国广州与佛山跨市轨道交通建设项目是中国首个跨市级行政区的轨道交通建设项目，该项目由广州市、佛山市两地市长及常务副市长共同组成联合领导小组，形成了高效的跨域项目协调组织框架^{[37][38]}。该模式往往在重大经济合作或基础设施建设项目中具有明显优势，类似的案例还有南京都市圈轨道交通项目^[39]，以及当前出现的各类“飞地”园区项目^[40]。

综上所述，跨域项目协调均需要有政府参与，区别在于参与主动性及参与强度的高低。其中，网络化组织主导的一体化模式提供了一种自下而上的、更具自发性和主动性的一体化途径，具有较大的借鉴意义，但其由于政府的参与强度较小，存在协调效率相对较低的问题。示范区内涉及多个平行行政区，未来应参考网络化组织的一体化模式，发挥各跨域主体的积极主动性，但也应根据示范区的实际情况适当加强政府参与强度，提高决策效率。元荡示范段项目作为示范区内首个跨域一体化项目，将在借鉴以上模式经验的基础上，探索一种更高效、更在地化的跨域一体化模式。

3 场地概况

元荡是横跨上海市与江苏省的重要省界湖泊，其东、西部分别隶属于上海市青浦区和苏州市吴江区。以元荡大桥为界，以青浦区和吴江区每侧各1.2km长的岸线（总面积约35hm²）为示范段项目范围，工程内容主要包括岸线贯通、岸坡整治、浅滩生态修复等工作。

示范段项目涉及多个跨域一体化实施的核心议题。其中，各行政区内的工程项目涉及的跨域协商主要为如何实现整体规划定位、交通体系、水生态体系、景观体系等系统的一体化问题；元荡大桥和元荡慢行桥（图1）等跨域单体子项工程项目涉及的跨域协商主要包括联合审批、一体化实施建设、联合验收，以及后期维护管理的权责划分等工作。

4 解决策略——“3P3S”模式框架的提出过程

4.1 全周期跨域一体化议题梳理

作为示范区内首个跨域一体化项目，示范段项目在实施过程中主要面临如下挑战。

1) 单纯依靠上级指令的一体化体系难以维系。示范区内的各政府之间并无领导和被领导关系，其目前在生态环境治理方面的协作往往是依靠上级政府的指令，但此类协作往往存在主体多元、集体行动困难、权责不清等问题^[41]，在缺乏利益驱动的情况下，难以取得长期的、可持续的效果。而一体化发展是一项长期战略，单纯依靠上级指令，府际协作难以维系与创新。

2) 缺少沟通协调平台，项目各参与主体沟通不顺畅。第一，示范区内各省级政府在行政管理模式上存在差异（上海市施行条线式管理，而江苏省则施行属地化管理），且各方之间缺少沟通交流平台，导致具体项目沟通不顺畅；第二，各个行政区由于在资金支持、发展规划、建设重心等方面存在巨大差异，导致跨域交界处处于被各方遗忘的盲区。

3) 各区采用的技术通行标准与管理标准差异较大。例如，各地对湿地红线的划定和管理方式各不相同，同一湖泊在不同省份的管理等级也不一致，在测绘方面三地甚至分别使用了三种不同的基准高程体系，这大大增加了示范段项目一体化实施过程的沟通协调成本。

本文根据项目全周期的不同阶段，梳理出了具有代表性的18项一体化议题（表2），以供其他同类项目参考。

4.2 全周期跨域一体化议题分析

4.2.1 一体化实施难度分析

前期谋划阶段和立项审批阶段是协调难度最大的阶段，涉及总体方向、资金预算安排等重大议题，需要协调的主体多、层级高，甚至需要

进行多轮沟通方能达成共识。其次是管理运营阶段，主要原因是缺少相关经验，需要厘清各方的权利和义务。而中间的规划、设计及建设阶段则主要涉及具体的技术性协调问题，相对较易解决（表3）。

4.2.2 各参与方角度分析

执委会在全周期各阶段均起到了重要的协调作用。首先，执委会作为第三方协调部门解决了各方长期以来缺乏有效沟通平台的问题；其次，执委会在本项目中充分发挥了主动协调的作用，通过一系列的研

究，提前预判了部分一体化核心议题，避免项目团队进入误区；第三，执委会作为非上级行政单位，坚持以共识为协调的基本原则，不以行政命令为手段，最大化调动了跨域各方的积极性，降低了一体化协调难度。

跨域行政区双方都认同一体化的原则，但是由于缺少上位的统一协调的规划，且缺少统一的项目库或可供参考的一体化范式，导致在前期总体方向上出现了分歧，增加了协调难度。

此外，规划、设计及建设施工单位由于缺少一体化实施的经验，只能采取先发现问题再解决问题的方式，无法做到预判，这增加了各参与

表2：元荡示范段项目跨域一体化核心议题总结

实施阶段	核心议题
谋划阶段	1. 前期缺乏必要的项目协同：由于缺乏沟通平台和渠道，跨域各方项目实施清单和实施计划不一致，在早期形成了建设真空地带
	2. 缺乏统一的牵头机构：各行政区内的牵头机构是由项目的资金来源及行政管理模式决定的，故而存在多个平行牵头机构
审批阶段	3. 管理部门及管理政策差异较大：实施过程涉及水利、规划、园林、环保等多个部门，又有管理内容交叉、管理单位行政级别及管理模式不一致等复杂现象
	4. 技术通行标准不一致：不同行政区域采用的技术通行标准存在差异，包括生态红线划定、防洪排涝标准、湿地管理标准等
	5. 规划功能布局不协调：各行政区在某些规划方向和定位上或迥异或雷同，造成规划蓝图无法有效整合
规划阶段	6. 建设实施时序不同步：由于各方项目资金、计划安排等是根据自身发展情况而定，因此存在建设周期步调不一致的情况
	7. 基础设施系统规划不统一：水系、绿地系统、生态廊道系统、景观慢行系统、道路系统、防洪系统等基础设施系统存在规划不协调现象
	8. 生态湿地体系缺乏衔接：规划中往往较少考虑与其他区域的生态湿地体系（如核心保育区、缓冲区及生态廊道等功能区）的有效衔接
	9. 投资标准不统一：单位面积投资标准直接影响项目建成效果，不同行政区域因财政预算差异，导致项目建成效果存在明显的差异
设计阶段	10. 设计底板控制体系不统一：示范区内不同行政区域、不同管理部门之间的设计基本控制体系仍未完全统一，包括空间坐标系、基准高程体系等基础体系
	11. 设计理念和原则不一致：不同设计单位在生态保护、生态利用、生态修复的理念、原则等方面存在差异，如果不提前统一思想，可能会导致生态修复规划设计方向和最终效果产生偏差
	12. 整体景观风貌不统一：整体的生态廊道体系、景观风貌体系、慢行交通体系、标识标牌等方面需要协商；需要注意的是，一体化并不同于同质化

续表见下页

表 2：元荡示范段项目跨域一体化核心议题总结

实施阶段	核心议题
建设阶段	13. 建设工期不同步 ：不同行政区域建设工期存在不同步问题，可能会出现断头路、断头浜等现象，也可能影响生态景观的建成效果
	14. 施工界面不清晰 ：在工程交接面施工工序安排方面，如果施工工序安排不合理，会导致后序工程无法施工或施工困难；交界面区域还需现场协调共用施工场地、施工便道等问题
	15. 工程质量管理标准不统一 ：由于有多个施工主体，施工进度、施工工艺、施工过程中出现问题的解决方案，以及工程质量管理标准均存在不统一现象
	16. 工程验收不同步 ：实质上，跨域项目是由若干独立立项的项目组成的，质量管理过程和最终的验收也是各项目各自独立进行的，这可能会造成整体工程质量无法达到预期效果
运营管理阶段	17. 存在多个管理主体及标准 ：特别是跨域单体子项工程，可能存在管理权责不清晰的问题；同时，各行政区也存在着不同的管理维护标准及规章制度等
	18. 运营方式选择 ：各方对于跨域项目运营方式的选择（分离独自运营、合作运营，或是选择第三方运营），思考如何实现互商、互助，最终实现共赢

表 3：元荡示范段项目各阶段主要参与方及协调难度系数

项目不同阶段	跨域协调各参与方	主要共识	协调难度
谋划阶段	执委会 + 双方发改部门 + 双方规划部门 + 双方财政部门 + 其他相关机构	达成共同推进示范段项目，明确范围、工期等，落实资金安排等共识	※※※※
审批阶段	执委会 + 双方水利部门 + 双方环保部门 + 双方规划部门 + 其他相关机构	达成双方同意的立项审批模式、流程、时序以及牵头部门等共识	※※※※
规划阶段	执委会 + 双方规划部门 + 双方设计单位 + 其他相关机构	达成双方一致的规划定位、规划建设时序等统一蓝图共识	※※
设计阶段	执委会 + 双方实施单位 + 双方设计单位 + 其他相关机构	达成双方统一的设计标准、设计基础体系等共识	※※
建设阶段	执委会 + 双方设计单位 + 双方建设单位 + 其他相关机构	达成施工范围、施工时序、主要施工工艺等共识	※※
运营管理阶段	执委会 + 双方运营单位 + 双方管理单位 + 其他相关机构	达成双方一致的运维标准、运维章程以及经营收益分配等共识	※※※

注

协调难度系数根据需要协调的单位级别、参与单位数量、协商次数综合评估得出。其中 ※ 越多，代表难度系数越大。

单位的反复修改的工作量，降低了工作效率也增加了协调成本。

4.3 “3P3S”模式框架的提出

示范段项目开始之前，执委会便提出了围绕一体化模式“边推进、边创新、边总结”的基调。项目结束之后，笔者在执委会的组织领导下，围绕跨域一体化主题，对各参与单位进行了逐一访谈，并通过多次组织相关部门、专家座谈会等方式对项目过程进行了全面复盘和总结。

为了更好地指导其他跨域项目一体化实践，笔者根据元荡项目全周期的6个阶段与每个阶段所对应的核心议题及其对应解决方案，总结出了核心一体化策略，分别是：

- 1) 一体化的战略定位 (common strategic positioning)，共同商定项目的目标方向等形成战略共识；
- 2) 易实施的立项审批机制 (project approval mechanism)，提前预判跨界立项审批的差异，商定易实施且同步的立项审批机制；
- 3) 相互融合的规划方案 (integrated planning)，实施联合编制，实现一体化的规划方案；
- 4) 共同使用的设计标准体系 (consistent design standards and

specifications)，减少反复修改的工作量和沟通成本；

5) 统一的建设实施计划 (same construction schedule)，便于施工过程衔接和最终效果的一体化呈现；

6) 共同的运营管理体系 (sustainable management and operation system)，制定清晰的管理维护标准、运营方式，以及跨域各方的权力和义务。

根据上述6个策略的核心关键词的英文首字母，笔者提出了“3P3S”的跨域项目一体化实施模式框架 (图2)。该模式框架借鉴网络化组织主导的一体化模式，同时以政府赋权的第三方作为反馈和协商平台，既增强了行政参与，也提高了执行效率，形成了一种高效的、自下而上的、覆盖项目全周期的协调模式框架。

4.4 示范段项目3P3S模式框架细则

为了更具针对性地指导跨域水体生态修复项目的顺利实施，本文在“3P3S”模式框架的基础上进一步细化了项目全周期6个阶段的流程 (表4)。该流程适用于跨域参与的各行政单位，以及各规划设计、建设施工及运营管理单位等。

表4：“3P3S”跨域水体生态修复项目一体化模式细则

项目阶段	核心策略	具体引导建议
谋划阶段	提前策划	制定建设项目清单及建设计划，形成项目库并及时更新 重点协商建设目标、建设重心、建设范围、建设时序等议题 协调过程中若产生分歧，由执委会主导进入会商程序，直至达成共识
	明确负责单位	各行政区域明确项目牵头机构 确定跨域各方具体建设范围 若存在跨域单体子项工程，应协商确定单一的实施主体
审批阶段	制定预案	各自梳理与项目有关制度及流程，提前预判潜在差异 若在行政审批流程、政策标准等方面存在分歧，应做好统一预案
	明确立项方式	对于在各行政区内的项目，在其行政区内分别独立立项 对于跨域单体子项工程（如桥梁），应分别立项并分别安排资金，但需协商确定一个实施主体
	梳理审批方式	对于在各行政区内的项目，由各行政区独立审批 对于跨域单体子项工程，应进行联合审批

续表见下页

表 4: “3P3S” 跨域水体生态修复项目一体化模式细则

项目阶段	核心策略	具体引导建议
规划阶段	选择规划单位	鼓励在依法依规的前提下，协商确定由同一规划编制单位编制规划 对于由多个规划单位参编的项目，应采取联合规划机制
	联合编制规划	联合规划应统筹空间布局、规划指标、建设时序等内容，实现“一张蓝图”
	确定生态指标	统筹划定生态保育、生态涵养、科普教育等生态功能区 统一湿地建设、生物多样性等相关指标等
	基础设施一体化	统筹规划区域性基础设施，如海绵城市系统、交通系统、防洪设施、配套服务设施等
	投资标准一体化	应在不影响一体化效果的情况下，根据项目总体定位、工程难度等实际情况共同商定投资标准
	建设时序协调	共同商定项目建设步调及整体建设周期控制
	规划成果一体化	在各方独立的最终规划成果中须设有一体化专篇
	规划评审和审批	规划成果完成后应由各规划编制单位及规划主管单位互相审阅 应统一组织专家评审环节，一次性评审各方规划成果 规划最终结果可由各行政单位分别进行独立审批，鼓励联合审批形式
	意见分歧处理	对于技术性细节差异，由规划编制单位进行协商统一 对于空间布局分歧，由执委会会同各牵头机构及各规划编制单位共同协商确定 对于项目定位或投资标准方面的分歧，由执委会会同各方协商；在无法达成共识的情况下，由执委会推动建立高层次协商平台，直至形成共识
	设计阶段	选择设计单位
联合设计		联合设计应同步进行，保障各阶段设计内容的商讨和对接，以实现一体化设计 设置过程共享机制，并在各关键设计阶段组织会议，商讨设计内容一体化
设计基础底板控制体系一体化		在具体设计工作开始之前，设计单位应统一设计基础底板控制体系 坐标系统统一使用 2000 国家大地坐标系 在基准高程方面，涉水项目统一采取镇江吴淞基准高程，非涉水项目统一采用国家 85 基准高程 防洪标准由各参与方共同商定，确保不影响一体化实施建成效果 根据各行政区现有管理标准，灵活采取措施，实现蓝线控制宽度实质上的统一
统一设计理念		设计单位之间应该就有关生态保护、生态利用、生态修复的理念等提前达成共识，避免在生态治理方向和效果上产生分歧

续表见下页

表 4：“3P3S” 跨域水体生态修复项目一体化模式细则

项目阶段	核心策略	具体引导建议
设计阶段	景观体系一体化	<p>景观体系应在方案设计阶段进行协商，保证不同行政区内的景观协调</p> <p>景观风貌一体化：方案阶段应探讨风格定位；深化设计阶段应探讨用材、工艺、表现手法等</p> <p>绿道一体化：方案阶段应探讨各等级道路宽度、对接方式等；设计深化阶段应探讨道路材质、色彩、施工工艺等内容</p> <p>景观配套设施一体化：方案阶段应探讨合理的布局、数量等；在设计深化阶段重点探讨统一的样式、材质、尺寸等内容</p> <p>景观植栽一体化设计：以乡土植物品种为主，各设计单位应在方案阶段协商确定主要植栽品种、规格、种植密度等内容</p> <p>各设计单位就局部景观节点应因地制宜，融合在地文化，避免景观节点同质化</p>
	生态湿地体系一体化	<p>对现状湿地资源制定统一评价标准，并确定湿地保护、修复范围和方向</p> <p>水岸形态设计应因地制宜，鼓励多样化，但同一形式的岸线（如石笼岸线）应统一工艺和材料，实现相同效果</p> <p>设计单位应根据目标湿地生境条件，选择适宜的湿地植物种类，鼓励多样性，但湿地植物搭配应统一采用模拟自然群落的方式进行种植</p>
建设阶段	施工单位选择	<p>鼓励在依法依规的前提下共同招标，确定同一施工单位、同一监理单位</p> <p>跨域单体子项工程，应由各牵头机构共商确定同一建设单位</p> <p>鼓励采取以设计单位牵头的 EPC 模式来建设工程</p>
	施工界面划定	各施工单位在施工进场前，应协商界定施工界面和相应的施工范围
	建设时序统一	各牵头机构和施工单位须共同制定同步的建设计划
	交界面施工工序协调	各施工单位应在施工进场前主动沟通交界面施工方案，避免相互干扰
	施工工艺统一	施工前期针对同一景观及市政设施商定统一的施工工艺，确保效果一致
	建设质量标准统一	在遵守国家标准的前提下，采用统一的质量管理标准来控制工程建设质量
	联合验收	共商组建联合验收小组，联合出具验收文件
运营管理阶段	管理单位和范围	<p>鼓励各行政区联合选定同一管理单位，负责整体项目后期相应维护和管理</p> <p>对于跨域单体项目的管理和维护，应协商由一方负责其维护和管理，其余各方作为委托方应支付其行政区域内对应的管理和维护服务费</p>
	管理维护标准统一	若委托不同的管理单位，各行政区应采用协商的方式制定统一的管理规章、维护标准等
	运营一体化	鼓励合作运营、委托第三方等一体化运营方式

5 建成后评价

示范段项目相关工程建设已于2020年10月底全部竣工。主体工程在运营模式上采取了在统一管理维护标准的前提下各自单独运营的方式，而元荡大桥和元荡慢行桥则采取了委托一方负责运营维护的方式。目前场地生态系统处于加速复育的过程当中，已取得显著的社会、经济与环境效益。

1) 社会效益。本项目中的元荡步行桥是示范区第一座跨省级行政区的步行桥，实现了上海市青浦区和苏州市吴江区的慢行系统一体化连通。元荡大桥的通车将两地的车行时间从原来的40分钟缩短至5分钟。执委会也根据此项目的一体化经验制定出台了《跨域水体生态修复与岸线贯通工程一体化实施指导意见》《跨域水体生态修复和功能提升项目一体化实施标准》等指导性文件，以为示范区内47个重点跨域水体治理项目提供参考和指导。

2) 经济效益。从项目成本角度而言，由于前期缺乏沟通平台和一体化经验，花费了大量的沟通协调成本，其中规划阶段有超过20%的时间处于协调等待状态，设计阶段有超过30%的工作量是因沟通不到位而进行的返工。通过本文的实践经验总结，可以显著减少未来跨域项目的沟通成本与时间成本。从经济发展的角度而言，示范段项目已经成为了两省市交界处的旅游热点，聚集了人气，为周边城市发展组团提供了优质的生态环境条件，为“生态+”的经济发展模式奠定了基础，一体化效应逐渐显现。

3) 环境效益。场地在生态修复前，原以大面积的养殖塘、混凝土硬质岸线，以及严重富营养化的断头沟渠为主，湿地植物以喜旱莲子草 (*Alternanthera philoxeroides*)、凤眼蓝 (*Eichhornia crassipes*) 等入侵植物为主，缺乏浅滩湿地生境，湿地呈现退化状态。项目实现了跨两地的一体化湖滨生态修复，总体生态岸线率超过80%，修复了近岸50~80m范围内的浅滩湿地带；经过一年的自然复育，沉水植物覆盖度超过60%，常见湿地鸟类超过20种，显著改善了区域生物多样性水平；除近岸浅滩湿地增强了湖泊的自净能力外，项目通过海绵城市系统建设，将场地水体污染物去除率提升至70%。

依现状来看，项目的运营管理处于健康可持续的状态，但尚未达到理想的一体化状态。如何将生态环境优势转化为更高效的经济优势是未来运营管理一体化方面需要进一步探索的重点方向之一。

6 结语

本文根据元荡示范段项目的实践过程提出了“3P3S”跨域项目一体化实施模式框架，旨在尊重现有行政区划管理的前提下，摆脱传统依

靠行政命令或者权威机构主导的一体化模式，推动跨域项目一体化的推进和实施，是一种自发性、主动性相对较高的一体化模式的探索，可为常规的跨域项目的一体化实施提供参考。示范区后续将围绕长三角生态绿色一体化发展示范区水乡客厅、太浦河生态治理等系列项目对该模式进行更多的实践检验和修正，以实现该模式的不断完善。

中国目前正处在从城镇化发展升级至区域城市一体化发展的阶段，这种空间格局的演进超越了原有的行政区划限制，而传统的依靠行政命令的一体化模式难以维系和创新，亟需探索高效率、可实施、全周期的一体化新模式。在未来的一体化项目实践探索中，我们还需要进一步了解一体化内在的竞合机制，研究在不同府际关系中，如何进一步通过模式创新有效提高一体化实施效率。

图 1. 项目区位及工程内容

图 2. 跨域项目的 3P3S 一体化模式框架