



**China Council for International Cooperation on
Environment and Development**

**Ecological Compensation and Green
Development Institutional Reform in the
Yangtze River Economic Belt (YREB)**

Policy Recommendations
(Discussion Paper)

CCICED Special Policy Study (SPS) Team

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Introduction

The concept of viewing a river basin in terms of a “belt” that encompasses environmental, social and economic networks of influence and comprises multidimensional elements is fundamentally different to the traditional focus of river basin management and catchment protection. Given the significant population involved and contribution to the national economy, the idea of a “Yangtze River Economic Belt” (YREB) is distinctive and represents a significant new way of approaching river basin management which will serve as a river basin planning model for the People’s Republic of China (PRC) and indeed the rest of the world.

From contributing water for the South to North water transfer scheme supplying Beijing, to the industrial activity which has impacts on other parts of PRC in economic, social, and environmental terms, the idea of the YREB very much takes the focus across many different areas of influence. In the long term, the YREB will play an increasingly important role in shaping the country’s approach to achieving an “ecological civilization” and set a precedent for thinking differently on river basin management.

On the backdrop of a vast roadmap of ideas surrounding the concept of the YREB and keeping in mind the ecological civilization aspirations, this paper highlights key recommendations and principles that need to be considered.

Recommendation 1

Adopt a Whole-of-Ecosystem Approach (from ‘Mountain to Ocean’) in environmental protection planning across the Yangtze River Economic Belt

Achieving healthy ecosystems requires a holistic whole-of-ecosystems approach that links all the different components in the ecological value chain from ‘mountain to ocean’. This approach reinforces the big picture view for the need for transformative change to restore environmental and natural processes to support system resilience and in so doing, enable natural systems to continue to deliver more ecosystem services over the coming decade and beyond.

Building ecological resilience in the Yangtze river basin management framework will need to recognize, anticipate, and take measures to incorporate climate change impacts, and promote measures such as the protection of slopes and reforestation of degraded land, and establishment of ecological corridors and wetlands, which serve as buffer zones for supporting catchment ecosystems, contribute to reducing flood risks and pollutant discharge, improve water quality, and serve as important habitat for fish and other animals.

The following areas are important elements to facilitate and support this approach in the YREB.

Digital Information and Knowledge Sharing Platform

- To effectively tackle the issues outlined above and given the scale of the problem in the YREB, establishing a sound integrated domestic platform for institutional cross-agency cooperation is critical, involving authorities responsible for forestry, agriculture, environment, water, industry and rural development, as well as private sector and civil society.
- In addition, establishing a supporting digital information, knowledge sharing, and coordination platform is also important for integrating economic, social and environmental data to improve overall river basin governance facilitate improved coordination among ministries, provinces, sectors, private sector, community, and civil society stakeholders to support catchment-wide decision-making.
- These platforms can also promote awareness raising, education and capacity building, and facilitate open policy dialogue through multiple stakeholder engagement, and cooperation with government, the private sector, and wider community.

- Finally, establishing an international cooperation platform on managing global environmental public goods to share lessons and experiences from PRC with other developing countries, including YREB's experiences on green development and ecological conservation, will be invaluable.

Prioritize the '80/20' areas of concern

While the environmental challenges in the YREB are significant, strategically focusing efforts on specific areas that have disproportionately large impact on the health of the overall river basin is important. Key areas identified that require special attention are rural non-point source pollution, solid waste management and plastic pollution.

The management of agricultural non-point source pollution and solid waste in rural areas is a major environmental challenge, as improper farming practices and application of fertilizers and pesticides, together with improper treatment and disposal of solid waste contributes to air, water, and soil pollution, as well as basin-wide ecosystem degradation. Total solid waste in the PRC is projected to rise to 600 million tons by 2030 (from 300 million tons in 2011). Due to the scarcity of landfill sites and waste-to-energy schemes, urban municipalities have typically resorted to incineration.

In rural areas “white” or “plastic pollution” is widespread and implementing solid waste management represents a difficult change as there has been an inability and reluctance to pay additional costs associated with their collection and disposal. Insufficient public engagement, outreach and education programs also hinder implementation of new regulations, requirements, and related waste management programs.

The rural non-point source and solid waste pollution, together with plastic pollution dilemma needs to be addressed using a “3Rs” approach (reduce, reuse, and recycle) as well as identifying replacements such as natural fibers or similar alternatives. By improving waste management approaches, waste can be reduced throughout the product lifecycle, which correspondingly reduces the size and number of landfills. Valuable materials (e.g. precious metals) can also be reused. Additional benefits of this approach include: green job opportunities; climate change mitigation by reduction of methane emissions from landfills, reduction of GHG emissions from energy use, and increased carbon sequestration due to decreased demand for virgin paper. Community-level awareness programs will also be critical in implementing this strategy, while innovative ICT practices should be harnessed for better integration and effectiveness of this approach. These outcomes can be achieved by the following actions:

- Continue efforts to reduce the volume of solid waste pollution, especially hazardous wastes, micro-plastics and rural waste, which cause serious water pollution from upstream and downstream areas through to the oceans.
- Further strengthen measures for supporting incentives to better design products in the context of circular economy policies to avoid the use of environmentally sensitive materials, as well as measures for micro-plastic pollution control by formulating national policies on circular economy and green supply chains, and jointly leading international action for protection of global public goods.
- Develop economic incentives for collecting and disposing solid wastes through innovative technology and raising awareness through community engagement.
- Promote the recycling of waste materials and reduce the incineration rate, especially for rural agricultural and domestic waste.
- Improve livestock and poultry farming pollution control measures to reduce the pollution load to waterbodies.
- Improve the performance of wastewater treatment plants and treatment of sludge.
- Pay more attention to social concerns through public awareness campaigns on solid waste treatment and recycling activities to avoid “not in my backyard” conflicts.

Recommendation 2

Adopt a multiple stakeholder engagement approach to carefully identify and address any negative impacts on communities and enhance livelihoods

Environment improvement programs and initiatives must consider the impacts on local livelihoods for farmers and affected communities, and ensure appropriate mitigating and social protection strategies are in place to address any negative impacts from environmental protection initiatives, for example, resettlement (e.g. “ecological migrant” program components), and ensure equitable terms and participation (i.e. ensuring that financial support does not go to wealthier farmers rather than smaller and poorer farmers). Rural-urban income gaps must also be considered, and measures must be put in place to ensure that as economic development progresses across the YREB, a rural-urban balance is maintained to ensure that rural people are not left behind while urban areas develop.

Greater emphasis is required to support and enhance livelihoods and provide more resilient transitions to sustainable rural economic growth based on sustainable ecological and green-growth frameworks. This includes improving natural resource management practices taking into account water resources and quality, soil health and condition, addressing pollution, protecting the environment, and adopting modern farming practices.

Yangtze River Economic Belt and Rural Vitalization

Two important initiatives of the central government are key in supporting this goal: the YREB Development Plan and the Rural Vitalization Strategy.

In 2016, the YREB Development Plan was prepared to guide the future development path of the YREB towards the overarching goal of ecological restoration and green development. The plan set ambitious environmental quality targets, such as for water and forest cover, and highlighted the need for: (i) ecosystem restoration, environmental protection, and management of water resources; (ii) construction of a multimodal integrated transport corridor; (iii) innovation-driven industrial transformation and upgrading; (iv) advancement of the new urbanization; and (v) strengthening of institutional mechanisms for coordinated development across local governments’ jurisdictions.

The Rural Vitalization Strategy was announced in 2018, leading the agenda for government work on agriculture and rural development and focusing on the interaction between people and land, including financial support for promoting poverty reduction and green and inclusive growth. The focal areas include: (i) developing a dynamic rural economy, (ii) constructing ecologically sustainable rural villages, (iii) preserving rural traditional culture and promoting harmonious rural neighborhoods, (iv) improving rural governance, and (v) pursuing prosperity in rural areas.

Improving agro-ecological systems

These programs must be closely linked in their implementation as they have the common goal of balancing economic development with ecological and environmental protection. In the context for improving local livelihoods, an important focus is on developing improved agro-ecological systems by adopting more sustainable and efficient food production and ecological agriculture practices. This will also offer rural communities the opportunity to develop sustainable and diversified livelihood options such as integrating agri-tourism and related green livelihoods options.

Achieving enhanced agro-ecological systems will require the following actions: (i) establishing a control system for agricultural non-point source pollution; (ii) strengthening a water resources security system; (iii) building an ecological protection system; (iv) promoting ecological agriculture; (v) building a policy support system; (vi) availability of inter-departmental agro-ecological monitoring and evaluation systems; (vii)

enhancing inter-departmental coordination; and (viii) promoting ecological compensation measures for improving and incentivizing change.

The government can also subsidize the transition to cleaner and greener agro-ecological systems (for example, climate-smart or organic production) in order to ensure a smooth transition from polluting, high-erosion agriculture to farming that restores or maintains ecosystem services. Subsidies can involve certification and eco-labelling for organic or more ecologically friendly agriculture practices and products. This will ensure that farmers are not dislocated from their working roles in agricultural production by removing farmlands from cultivation.

Farmers and rural communities are the key actors for improving agro-ecological systems, and the following points must be considered to ensure their full participation, and their ability to be resilient in the face of changing climate, market conditions and ecosystem health:

- Establishment of incentive mechanisms for encouraging farmers to participate in actions to improve agro-ecological systems;
- Clarification of property rights to avoid conflicts;
- Strengthening of inter-institutional cooperation to develop common enabling policies, and full sharing of information and resources;
- Ensuring changes in farmer behavior are attuned to market demand and appropriately linked to off-farm segments of value chains;
- Strengthening of monitoring and evaluation process involving government departments, farmers and external independent monitoring and evaluation experts to assess the efficiency, effectiveness and sustainability of the tasks related to the implementation of agro-ecological systems under eco-compensation principles;
- Improvement of project design to adapt to local site conditions;
- Development of cross-regional and interdisciplinary applied research to improve the protective benefits of farm landscapes and eliminate or mitigate its negative impacts on food production; and
- Promotion of modern information and communication technology tools aimed at strengthening communication and coordination links between professionals, scientists and farmers as well as among farmers, including scenario techniques that consider uncertainty around climate, market conditions and ecosystem health that allow for more resilient and responsive planning.

Once the preconditions are met, there are a number of key actions that should be undertaken to implement improved agro-ecological systems:

- **Raising stakeholders' awareness.** Training and awareness raising activities should be carried out in response to the fact that farmers may not be sufficiently informed of the benefits derived from building and protecting farm landscapes;
- **Creating an enabling policy and institutional environment.** Measures to be developed under this goal include: (i) improving horizontal and vertical cooperation between agencies to ensure consistency and synergy of sector policies; and (ii) formulating laws and regulations that are conducive to farmers' participation in the construction of agro-ecological protection systems, and revise those that hinder adoption; (iii) improve the construction and management of the agro-ecological protection system;
- **Providing Incentives.** Develop eco-compensation measures aimed at improving farmers' participation, through consultation meetings, involving relevant parties, to jointly determine the scope, content and implementation modalities of the proposed eco-compensation program for the development of agro-ecological protection systems;

- **Communicating the know-how.** Develop information and communication strategies and packages to promote ecological protection, as well as institutional and individual capacity building programs that would enable institutions and farmers' communities to use such ICT tools for providing technical, educational, financial and marketing assistance to individual farmers;
- **Advancing the knowledge of ecological security.** Ecological protection technologies that have been used and promoted in PRC had very significantly degraded. Extension technicians should be able to carry out multidisciplinary applied research to create ecological agriculture models adapted to local conditions or technical system with higher investment efficiency, and more economically inclusive ecological security knowledge; and
- **Increasing investment for ecological construction.** First, location of priority areas for intervention should be identified based on ecological and climate change/weather-related risks; and second, project design and project preparation activities should be tailored to local ecological, socioeconomic and market conditions. Such support activities should notably include awareness raising and information campaigns, and the identification of extension activities based on an incremental use of ICTs.

Integrating Gender in a Multiple Stakeholder Engagement Approach for Good Governance

The important role of public participation and stakeholder consultation must be advocated to ensure programs and policies are informed by wider views including from the affected communities or groups. Public participation and consultation with affected communities can, in fact, help to identify lower-cost options for achieving targets, and can help to ensure delivery of targeted outcomes by giving these stakeholders “ownership” in the process of program development and implementation.

Gender inequalities can also limit agricultural productivity and efficiency and in so doing, undermine development agendas and the potential to achieve an *Ecological Civilization*. The different roles of men and women need to be integrated into projects and programs to ensure desired targets for agricultural output and incomes, and food and nutrition security can be met. The role of women in agricultural production is substantial and should be valued both for its social and economic contribution accordingly. Women must be represented in decision-making bodies and be afforded voting power.

The need for good governance is an important enabler for achieving sustainable rural livelihoods and gender equality. Governance reform can be targeted at the agriculture sector level as well as at the livelihood level and may or may not require significant institutional and legal reform. However, governance reforms need to be gender sensitive and address the specific challenges of gender inequality in the agricultural sector. These may include: (i) gender sensitivity, by ensuring that women in the agricultural sector do not lose out in the reform process; (ii) gender specificity, by addressing specific needs that differ between men and women engaged in agriculture; (iii) empowering women, by making provisions for affirmative action and creating opportunities for rural women's participation in decision making processes; and (iv) transformative change, by attempting to change prevalent attitudes and social norms that lead to discrimination against rural women.

Recommendation 3

Design institutional frameworks to incentivize long term financial sustainability for ecological compensation and environmental protection programs in the YREB

Currently the central government is providing a reward system to incentivize provinces to cooperate on environmental and river basin protection. Provinces are provided with financial rewards if they successfully enter into agreements on cross-provincial eco-compensation schemes. Further rewards are provided if such schemes achieve environmental targets in the respective catchment or river basin. This is consistent with all environmental protection incentive programs in PRC funded by public expenditure. However, these typically one-off transfer payment schemes are heavily reliant on public funding and are not financially sustainable in

the long term. Introducing frameworks and governance arrangements that involve business-sector investments and financial contributions could mitigate this risk and ensure the progressive development of a structured process of integrating business investment into the ongoing protection of river catchments. Tax incentives for ecological business development and penalties for non-sustainable or polluting activities can have lasting effect. Subsidies for industrial or development activities that are damaging the environment should also be reviewed accordingly in this context.

The need to achieve stable, long-term sustainable funding for protection, ecological management and restoration in the YREB will require both long-term government commitment and robust participation of the business-sector. It must also crucially be acknowledged that both the government and private sectors have a strong role to play in the protection of ecological services in the YREB.

Government has a role to play to ensure that the enabling environment is conducive for facilitating desired processes and initiatives for achieving the desired environmental outcomes in the YREB, namely the right mix of policies, institutions and regulatory measures. Development of both compulsory and voluntary instruments will best ensure robust business-sector participation in conservation finance. Compulsory approaches have been most effective globally in ensuring business sector participation in conservation finance and in catalyzing the development of “markets” to supply ecological goods and services.

Development offsets are the most successful example of compulsory approaches internationally. A key instance of this is the wetlands banking program in the United States. This approach is well-suited for PRC, which has already laid the groundwork via its key ecological function zoning system. To better catalyze voluntary investments, the government should develop a detailed “business case” for investing in ecosystem services (e.g., how such investments can help to reduce operational and/or reputational risk for a business), as well as platforms for communicating this to private sector enterprises in PRC.

In terms of voluntary approaches, “pay-for-performance” contracts hold significant promise internationally, since these only require a contract between two parties which stipulates payments contingent upon delivery of targeted ecological services, and agreed-upon metrics for service delivery.

There should be a focus on removing barriers to the development and execution of “pay-for-performance” contracts between different stakeholders. The government should also play a key role in establishing the scientific basis for such contracts, through economic valuation studies, hydrology assessments, land use mapping and clarification of land tenure, and determination of Willingness to Accept (WTA) and Willingness to Pay (WTP) amounts. With a well-communicated business case, many enterprises would find it in their own interest to embark on the development of such contracts to mitigate business risk. A classic example of this in PRC is the water use rights transfer contract between Yiwu and Dongyang Cities in Zhejiang Province. Several enterprises (e.g. Three Gorges Corporation, Maotai Company, and Xi Company) have also expressed a willingness to provide funding to contribute to environmental protection in the YREB as it is in their interest.

Voluntary approaches such as “pay-for-performance” will also be enabled by better monitoring of watershed ecosystem services. The government should thus continue to focus on improvements in this area and should make this monitoring data open access. Piloting of “pay-for performance” contracts at different scales could be pursued within preexisting programs (e.g. the Xin’an River watershed and Chishui River watershed eco-compensation programs).

Pre-existing government programs (e.g. eco-compensation) should also be expanded to include pathways for business-sector investments. One example could be to use the Conversion of Cropland to Forest program as a platform for business-sector carbon offsets.

In the development of pooled funds for green finance, three distinct areas should be delineated and kept separate:

- (1) **Government funding pool:** These target environmental pure public goods, such as ecological conservation and the protection of particular ecosystem services, and are not for the purpose of generating revenue;
- (2) **Business funding pool:** These are for initiatives that link livelihoods with the provision of environmental pure public goods (e.g. eco-tourism, ecological or climate-smart agriculture,

bamboo (INBAR) opportunities, and wastewater treatment) and can include revenue-generating elements.

- (3) **General public funding pool:** This category involves public contributions to support green development initiatives through for example, increases in water and/or wastewater charges to cover the costs of upstream investment in ecological preservation programs; and Eco-labeling schemes for products of farms that participate and receive certification, so that they receive additional incentive to participate.

More broadly, the current status of domestic financial sector reforms should also be evaluated to determine options for sustainable financing mechanisms in PRC. Central to the viability of many international approaches is a regulatory environment where financial instruments exist with rates of return that are sufficient, stable, and low-risk to support ongoing conservation and management activities via the interest income generated from a special fund. The status of domestic financial sector reforms is thus key to understanding what types of sustainable financing instruments can feasibly be adopted in PRC, and what future financial sector reforms are most needed to strengthen and expand sustainable financing opportunities.

Consideration should also be given to expand or shift the government funded eco-compensation approach to a market-oriented funding paradigm, creating a market for selling and purchasing ecological improvement and protection goods and services by actively engaging private sector businesses including both beneficiaries and providers of ecological protection and improvements goods and services.

Under this model, an ecological protection credit system and associated ecological protection funding pools as described above could be considered. Beneficiaries of the river can be regulated to purchase eco-protection credits to meet water quality compliance. The proceeds from the eco-protection credits flow pooled into the eco-protection fund could be invested in ecological improvement. New financial instruments could also be designed (e.g. eco-improvement financing facility) to finance ecological improvement and protection projects, which usually encounter difficulty in accessing to finance due to perceived high risks.

This recommended approach can establish a long-term market-oriented business model for ecological and environmental protection, shifting away from the government funded eco-compensation approach.

Recommendation 4

Establish appropriate legal and institutional mechanisms to facilitate the creation of an enabling environment for achieving the desired social, economic, and environmental outcomes in the YREB

This recommendation ties together the outcomes articulated in the three recommendations described above and serves a harmonizing function to provide assurance and confidence (e.g. private sector investment in conservation finance) to underpin actions to be undertaken under the other recommendation areas.

A key thrust underlying this recommendation is the need for greater policy coherence. Policies in the agriculture, energy, industry and urban sectors need to be closely coordinated with those in the environmental and water sectors, and appropriate mechanisms established to manage trade-offs. With population and economic growth, these trade-offs will become more difficult to manage. An acute awareness of these trade-offs, at the inter-sectoral, inter-agency, and inter-provincial level, as well as identifying the mechanisms to deal with such conflicts will be crucial if any legal or institutional reforms are to be effective.

To protect the Yangtze river, the largest river basin in the PRC, it is important to ensure that an appropriate enabling environment (e.g. mix of policy, institutional and regulatory mechanisms) is established that can effectively facilitate the achievement of long-term environmental outcomes for the YREB.

Discussion has recently been focused on the need to undertake legal reform to promulgate a Yangtze River protection law (YRPL). This legal reform should address two fundamental issues: rights and authorities over river basin management, and coordination between jurisdictions and institutions.

Clarifying rights and authorities would improve river basin governance

In the YRPL, the government should clarify about rights and responsibilities over river basin management work, which would point to who are responsible for ensuring the water quality, water quantity and water ecology. Rights and authorities determine the key actors and stakeholders of river basin protection work and will provide the foundation for successful river basin environmental governance.

Legal reform would trigger coordination between jurisdictions

Provinces, municipalities, and counties, while competing with each other on economic growth, often “race to the bottom”¹ in river water surveillance. The problem is further aggravated by the fact that rivers, watersheds and catchment boundaries rarely align with political boundaries, which encourages local governments to “leave the problem to the neighbors.” Given the range of central and provincial government ministries and departments with different and sometimes overlapping responsibilities for water governance in river basin, the YRPL should develop frameworks for cross-provincial and cross-sector coordination and cooperation.

Aligned with these legal reforms, there should also be consideration for integrating other supervision and monitoring mechanisms and programs across the entire Yangtze River system, such as the River/Lake/Gulf monitoring systems to ensure that overall coordination and cooperation frameworks across jurisdictions are well supported and enhanced.

Critically, it is important that strict implementation and enforcement of regulatory measures to ensure that legislation and policies on developing ecological corridors, ecological function zones and redlines, resource use limitations, and development restrictions are properly upheld and implemented.

Conclusion

The challenges associated with improving river basin management and achieving environmental protection targets in the YREB are significant and complex. The four policy recommendations presented in this paper offers a way forward through a logical sequence of ideas that can be considered in the development of practical implementation actions. The recommendations highlight the key areas that must be given careful attention as each builds on each other in support of a holistic approach from ‘mountain to ocean’, being mindful of livelihood impacts and potential pathways to new green development opportunities, understanding how programs must be sustainably financed including incentivizing investment by the private sector, and finally how to establish the enabling environment for all these elements to work effectively together.

¹ A *race to the bottom* is a socio-economic concept that occurs between nations or within a nation (such as between states or counties). When competition becomes fierce between nations (or levels of government) over a particular area of trade and production, there is an increased incentive to dismantle or eliminate currently existing regulatory standards, such as environmental safeguards.