



Designing of Watershed Ecological Compensation Mechanism Based on the Key Ecological Function Zone: A Case Study in the Source Area of Dongjiang River

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Content



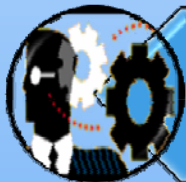
Background



Significance of the Key Ecological Function Zones



Significance of the Key Ecological Function Zone in the Source Area of Dongjiang River on Establishing Eco-compensation Mechanism



Design of Eco-compensation in Source Area of Dongjiang River Based on the Key Ecological Function Zone



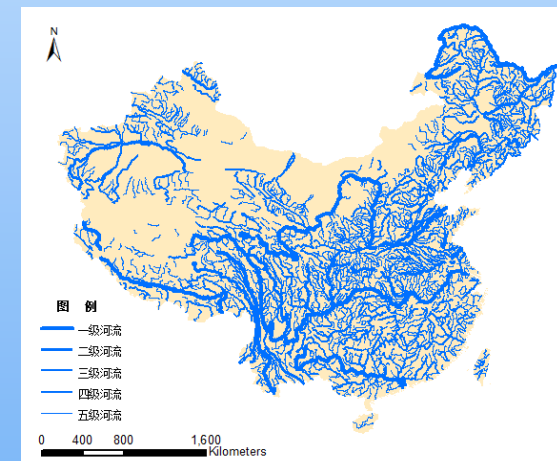
Conclusions and Discussions

BACKGROUND



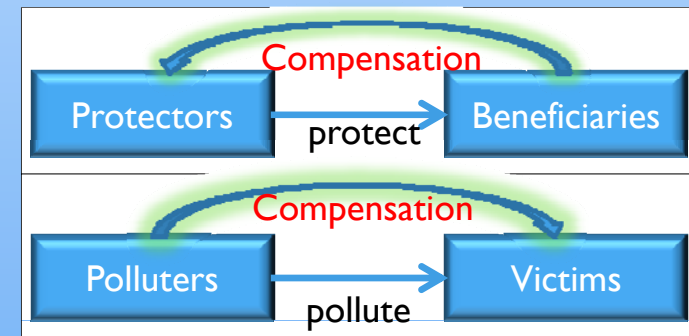
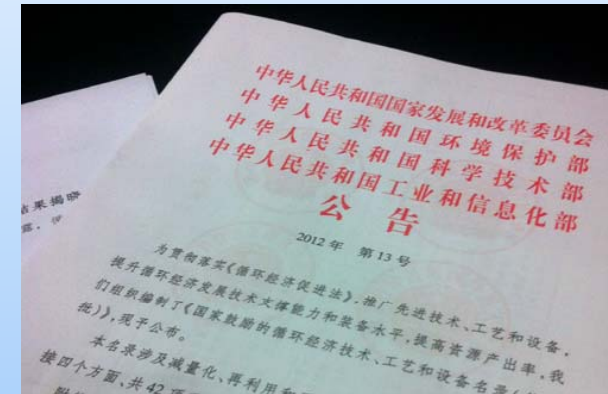
BACKGROUND

- Ecological Compensation (EC): an effective way to support conservation and sustainable utilization of ecosystem.
- Problem: Division management system of water resources and water environment, trans-provincial watershed EC.



BACKGROUND

- Policies and practices: Currently, ecological conservation thought based on ecological function zones has been mentioned several times in national macro policies on environmental protection, but **less progress in practices**.
- Opportunity: **Transfer Payment on National Key Ecological Function Zones** formulated by MoF in 2011 is an important policy guidance for fulfillment of EC policy on key ecological function zones.



BACKGROUND

The trans-provincial key ecological function zones can be seen as a starting point on studying trans-provincial EC mechanism, take trans-provincial watershed source area as a whole, thus would weaken problems introduced by watershed area division management to some extent.

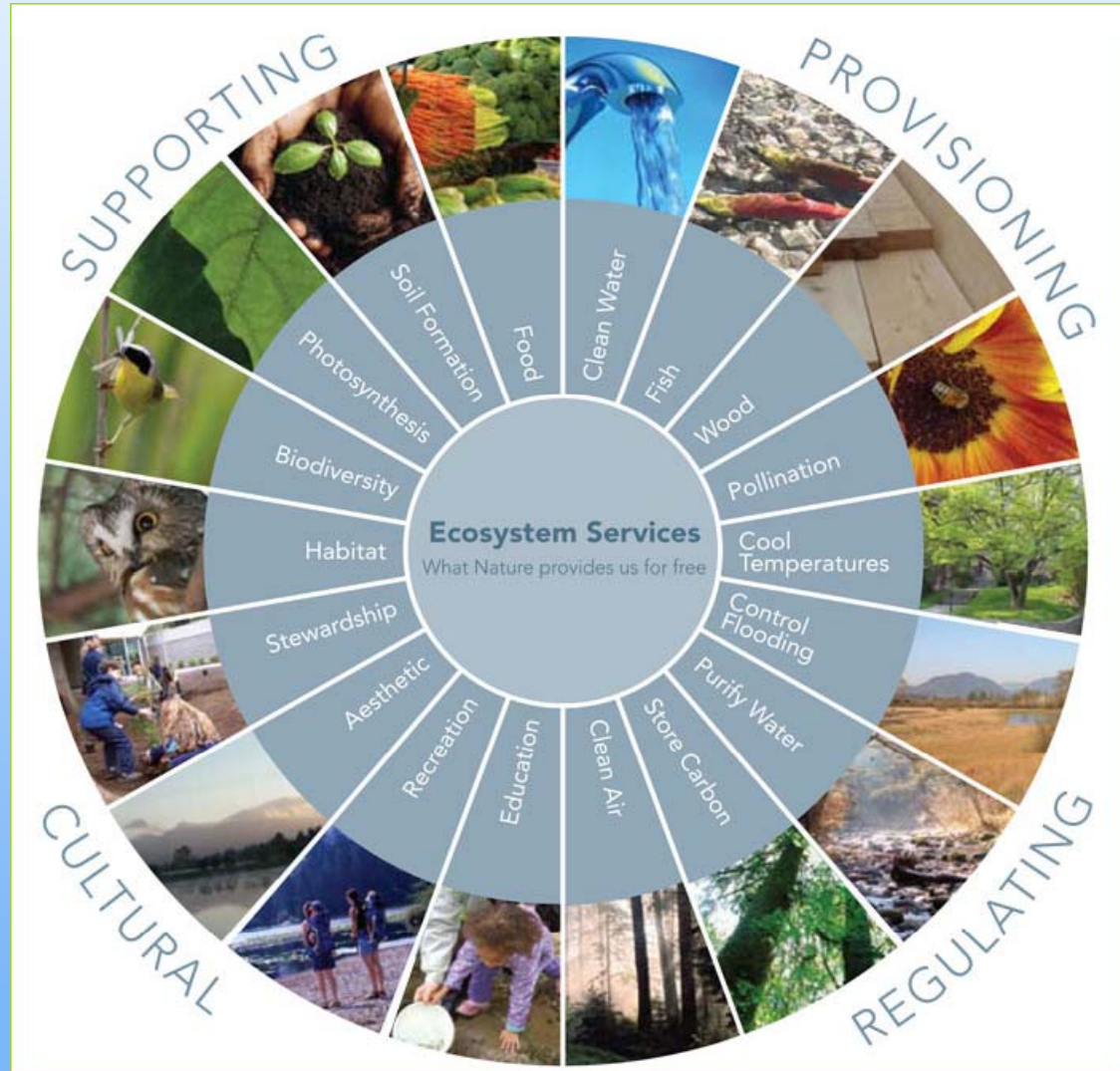


SIGNIFICANCE OF THE KEY ECOLOGICAL FUNCTION ZONES



Protected objectives in Key Ecological Function Zones

- Upgrading the **ecological services**.
- Maintaining and improving the **ecological product supply capacity**.
- **Restricting large-scale and intensive development** of industrialization and urbanization.

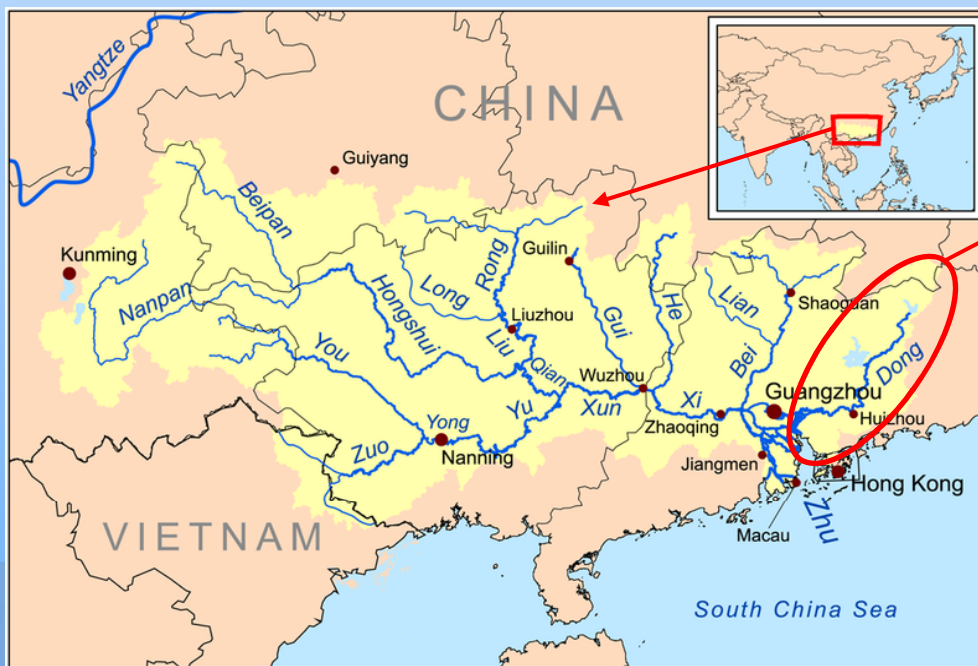


SIGNIFICANCE OF KEY ECOLOGICAL FUNCTION ZONE IN THE SOURCE AREA OF DONGJIANG RIVER ON ESTABLISHING EC MECHANISM



Dongjiang River Basin

- The Dongjiang River is one of the three tributaries of the Pearl River.
- The river channel length is 562 km. The total area of Dongjiang River Basin is 35,340 km².
- The river supply water to Hong Kong SAR and Pearl Delta, so it is also called “water for life”, “water for economy”, and “water for politics”.
- The river is one of typical trans-provincial river.



Urgent demand for EC to coordinate of economical development and ecological protection



- In the source areas of Dongjiang River in Jiangxi Province, in order to safeguard the drinking water source, all **the abundant resources are restricted to explore**, while the communities are relatively poor rather than benefit from resource advantages.
- Due to **limited local finance**, the source areas could not afford the huge expenditure on eco-environmental protection; some “historical debts” issues are difficult to solve, thus leading to more ecological problems.


Table. Economic Development and Living Standard of Source Regions in Jiangxi Province in 2009

	Xunwu County	Anyuan County	Dingnan County	Ganzhou City	Jiangxi Province	Guangdong Province
Local fiscal revenue (Million Yuan)	17.044	14.840	23.200	680.900	5812	36492
Rural per capita net income (Yuan)	2633	2737	3403	3856	5075	6907

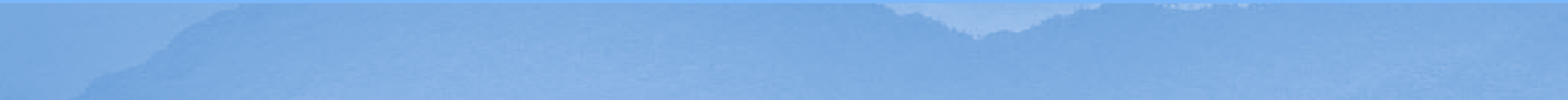
- **Heyuan City, the source area of Dongjiang River in Guangdong Province**, also faces the problem of how to balance the relationship between economic development and ecological protection.
- **Economy of Heyuan City is less developed** than other cities located in the midstream and downstream in Guangdong Province such as Huizhou, Dongguan, Guangzhou, and Shenzhen.

Table. Economic Development and Living Standard in the Source Areas of Dongjiang River in Guangdong Province in 2009

	Heyuan City	Huizhou City	Dongguan City	Shenzhen City	Guangzhou City	Guangdong Province
GDP (billion Yuan)	41.7	141.5	376.3	820.1	911.3	3908.2
Rural per capita net income (Yuan)	5013	7583	13064	---	11067	6907
Urban per capita disposable income (Yuan)	12138	21278	33045	29245	27610	21575





Under the steady economic development in downstream of Dongjiang River, the source areas' economic development and peoples' living standard are lower than other areas, which would weaken enthusiasm and outcomes of ecological conservation. Therefore, the source areas of Dongjiang River both in Jiangxi Province and Guangdong Province are in need of establishing EC mechanism to enlarge the investment of ecological construction and pollution treatment, thus easing the pressure of watershed ecological environment protection in the source areas.



Accelerating the Progress of Trans-provincial Eco-compensation and enhance the cooperation of provinces



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- In the **National Ecological Function Zoning** (2008), the source areas of Dongjiang River in Jiangxi Province has been listed as the key ecological function zones of water conservation.

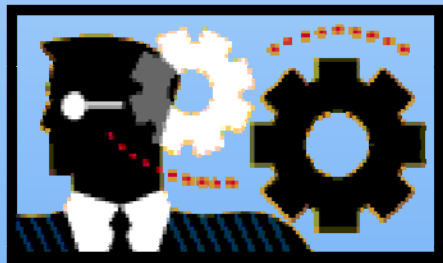
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- In the **Planning on National Main Functional Areas** (2010), the upper stream of Dongjiang River have been designated as a key ecological function zone, including areas allocated in Ganzhou City Jiangxi Province, and Heyuan City Guangdong Province.

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- Improve the enthusiasm and initiative of downstream compensation.

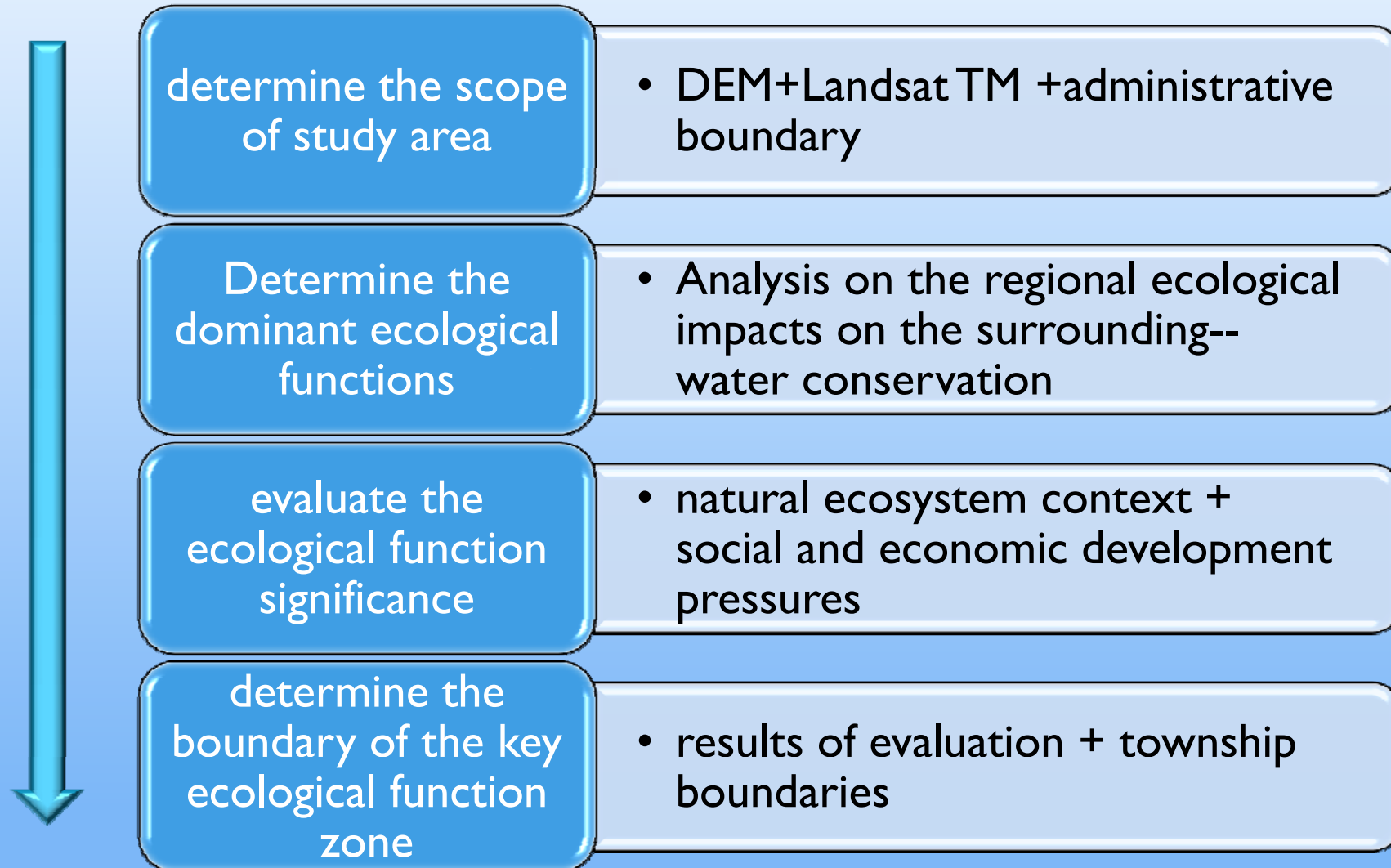
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- promote the key ecological function zone in Dongjiang River to be national plan, get more support and as broaden funding channels of Eco-compensation such as **Transfer Payment on National Key Ecological Function Zones**.

Taking key ecological function zones as a platform to establish EC mechanism in the source areas of Dongjiang River is in favor of the effective protection and restoration of the ecosystem services there, which will improve the feasibility for establishing inter-provincial eco-compensation mechanism in Dongjiang River Basin.

DESIGN OF ECO-COMPENSATION IN SOURCE AREA OF DONGJIANG RIVER BASED ON THE KEY ECOLOGICAL FUNCTION ZONE



Scope of key ecological function zone in Dongjiang River

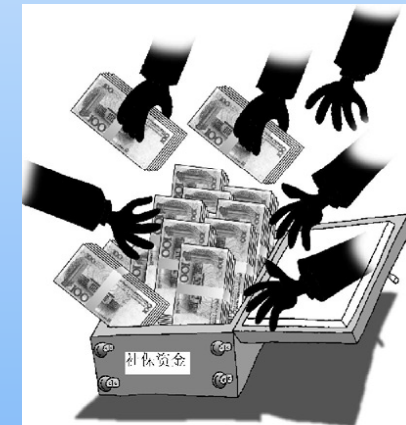


Capital Demand of EC

- **Subsidy for environmental protection and construction:** calculated by the following aspects: conservation and demonstration of trans-provincial ecological function zones, mining governance in source areas, ecological forest construction and environmental protection capacity, etc.
- **Compensation for loss due to restriction on economic development :** By analyzing differences of fiscal revenue and peoples' living standard between source areas and surrounding areas, and taking cost various coefficient (i.e. population scale, living space, elevation and temperature) into account, the amount of compensation for loss can be calculated.
- Considering the consistency with national and local planning, the total fund should be estimated including **four to five years**.

Fund Management Mechanism of EC

- The Eco-compensation fund is suggested mainly invested by the Central Finance and supported by Guangdong and Jiangxi Provinces' finances as supplement, then gradually transmits from central to local.
- National level: seek support from the Central finance and establish the special funds for EC in the source areas of Dongjiang River. The special funds can be paid from the general transfer payment and the special transfer payment.



- The special funds are arranged by finance departments and environmental protection departments in two provinces.
- Provincial level: enhance cooperation on investment and technical supports.



Monitoring and Evaluation of EC

- ▣ Set up an assessment mechanism for Eco-compensation implementation
- ▣ Establish a performance assessment mechanism for basin ecological environment quality
- ▣ The results of assessment could be considered as the determinant of fund arrangement of the next cycle.



Table Indicator System of Performance Evaluation

	Type	Indicator
Natural Ecology Indicator	Biodiversity Conservation Type	Species Richness Indicator
	Soil and Water conservation Type	Vegetation Cover Indicator
		Land Degradation Indicator
		Land Use Intensity
Water Environmental Condition Indicator	Water Resources Protection Type	Density of Water network Indicator
		Wetland Area Proportion
	Prevention of Water Pollution Type	COD Emission Intensity
		Emission Compliance Rate of Industrial Pollution
		Water Compliance Rate of Grade III and Above

Organization and Management Mechanism of EC

- ▣ Formulate **ecological compensation Agreement** in Dongjiang River Basin
- ▣ Set up **ecological compensation standing committee** of the source area of Dongjiang River (the leading group)



CONCLUSIONS & DISCUSSIONS



Conclusions

- Considering the integrity of ecosystem and water-supply function of river basins, a **key ecological function zone in Dongjiang River was formed.**
- we propose **a framework and some ideas for ecological compensation in the Dongjiang River Key Ecological Function Zone**, which includes particular design on the funding needs, funding sources, financial operation, monitoring and evaluation, organization and management system.
- Establishing ecological compensation mechanism based on the key ecological function zone may be **a optimal way to accelerate the trans-provincial watershed ecological compensation** and enhance the cooperation between upstream and downstream.

Discussions

- ▣ How to **monitor and evaluate** ecological compensation mechanism in river basins?
- ▣ What kind of **long-term scheme** can be established to ensure the operation and maintenance of ecological compensation projects?
- ▣ Is it possible to establish a **standing committee** of ecological compensation in the source areas of Dongjiang River?

A close-up photograph of a single water droplet falling into a pool of water, creating concentric ripples. The background is a soft, out-of-focus blue and white. The text is overlaid on this image.

Thanks For Your Attention!

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