



ACEDP MEP-MWR Workshop

Studies and Practices of Watershed Eco-compensation in China

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1、 Concepts of Eco-compensation

Eco-compensation

Definition

EC purpose :

protect the ecological system function;
Promote the harmonious relationship between human beings and nature;

EC basis:

Ecosystem service value;
Eco-conservation cost;
Opportunity costs;

EC means:

Regulates the relation of ecological protector, beneficiary and destroyer with the means of finance, taxation and market.

Connotation

- The most direct method is **"Equivalent Compensation for Occupancy"** of the natural resource;
 - **Constrain** the destruction of ecological environment;
 - To make **compensation** for the abandonment of development **opportunities**
 - To make **compensation** for the **additional input** by individuals or regions for the protection of specific ecological environment;
 - To make protective **input compensation** for regions or natural ecological components with significant ecological value.

Definition of Eco-compensation by CCICED

Eco-compensation is a kind of **institutional arrangement** to regulate relationship among **all stakeholders**, so its implementation will be helpful to **regulate** the distribution of ecological and economic interests among all stakeholders, to **support and encourage** the ecologically vulnerable regions to **undertake** more responsibility of ecological protection, to **encourage** the providers' initiative to provide ecosystem service, to **improve** ecological and environmental protection, and **promote** equality and social coordinated growth between the urban and rural, as well as among different groups.

Concept of Watershed Eco-compensation in China

Eco-compensation is an economy administrative policy for equitable utilization of resources within watershed through macroscopic regulatory by the government, which mainly includes both compensation for watershed ecological damage and protection.

Compensation to environmental pollution, ecological damage and opportunities costs from producer

Compensate the upstream for their contribution to ecological environmental protection

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2. Review of State Macro Policies on Eco-Compensation Mechanism

Review of the Central Government Policies

With pressing ecological issues, increasingly concerning from public and increasing financial capacity, China has been paying more attentions to the eco-compensation, emphasizing on the establishing and improving the eco-compensation mechanism for several times during the formulation of state macro strategy and policy.

For example, In 1996, *Decisions of the State Council on Several Issues on Environmental Protection*; In *Scheme on Ecological Environment Protection* issued by the State Council in 2000 and some important policy papers to promote west development promulgated in 2003; the 11th Five-Years Plan of China; In 2005, *Decisions of the State Council on Strengthen Environmental Protection to Implement Scientific Outlook on Development*; In 2007, the Report to 17th National Congress of the CPC

The State Council listed the establishment of eco-compensation mechanism as priority every year *since 2005*.

the 12th Five-Year Plan on National Economic and Social Development of PRC

To speed up establishment of eco-compensation mechanism according to the principles that the developer is responsible for protection, and the beneficiary is responsible for compensation; to strengthen balance transfer payment to key ecological function areas and research **to form** special fund for national eco-compensation; **to promote** reverse system for sustainable development of resource enterprises; **to encourage**, guide and explore eco-compensation on the upstream from the downstream, on the protection area from the development area, and on the ecological protection area from the ecological beneficiary area; to positively **explore** market-based eco-compensation mechanism; and to **speed up** implementation of *Eco-compensation Regulation*.

Review of MEP's Policies

The Ministry of Environmental Protection published *Guidelines on Implementation of Eco-compensation Pilot* in Sep 2007, which put forward to carry out eco-compensation pilots preferentially within four areas, including **natural protection area, key ecological area, mining resource area** and **watershed water environment**.

At May 2008, MEP announced the notice *on determining the first batch of implementing eco-compensation pilot*, guiding local areas to extending pilot scope, deepening pilot components. And the pilot provinces including: Gansu, Liaoning, Zhejiang, Jiangxi, Fujian, Shanxi.

As a key department to take part in the drafting *Regulations on Eco-compensation* which was launched in 2010.

3、 Progress in Research on Watershed Eco-compensation in China

Research on Watershed Eco-compensation

Theory: Based on the theory of economic externality, Zhuang Guotai (2004) has conducted preliminary analysis on the externality of watershed ecological protection, and put forward that eco-compensation mechanism is a method to settle the economic externality between the upstream and downstream watershed.

Researched theoretic concepts, essence, and principle of eco-compensation as well as monitoring guarantee system, and concluded that watershed water management shall stress establishment and innovation of system, establishment and perfect of watershed eco-compensation system is an effective measure for sustainable utilization of watershed water resource.

Research on Compensation for Water source within Watershed

Fan Junxiang et al. (1999) have researched on ecological efficiencies of water conservation forest, such as soil and water maintaining, conservation and purification, and then discussed the principles of compensation for benefits of water conservation forest.

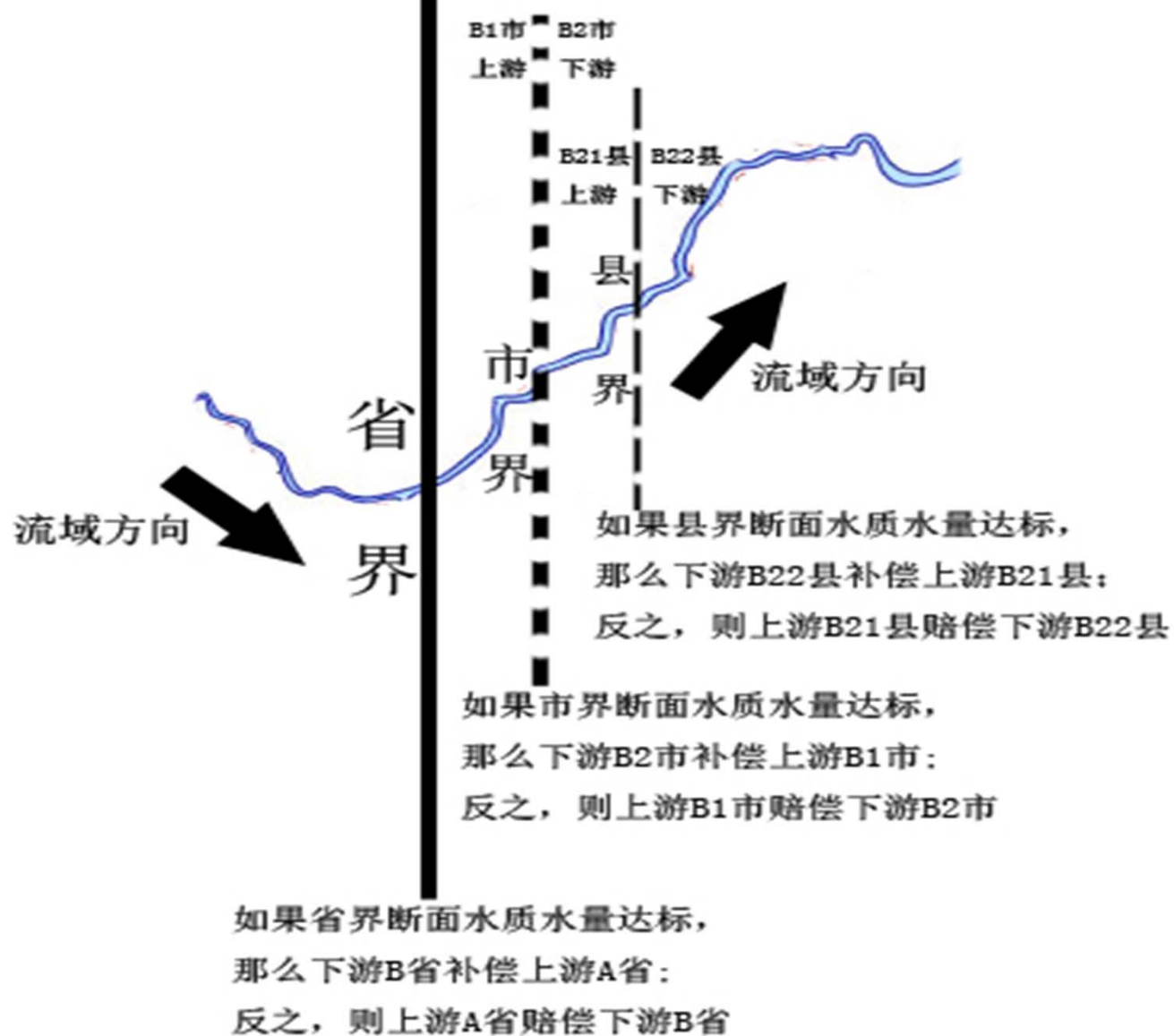
Analyzed compensation indexes of water conservation forest and the relevant tax/charge flow by means of environmental economics and welfare economics, which provided the theoretical basis for eco-compensation policy for water conservation forest.

Research on Compensation for Pollution of Water Environment within Watershed

For Example, Gao Youzhi (2003) has conducted an exploration for establishment of economic compensation mechanism for river pollution crossing boundary, and concluded that this mechanism was to utilize economic measures to urge each level governments to treat river pollution, the downstream shall compensate appropriately the upstream suffered certain economic loss during water transfer and intake.

A省（上游，相对于B省）

B省（下游，相对于A省）



Research on Calculating Method of Watershed Eco-compensation Criteria

Eco-compensation criteria refers the reference conditions for compensation, mainly involving natural capital of eco-compensation object, value of ecosystem service function and cost for environmental management and ecological restoration.

Generally, eco-compensation criteria could be determined according to the preliminary calculation of four aspects of values, including **input and loss of opportunity cost of the eco-protector, gains of the eco-beneficiaries, restoration cost of ecological damage and value of ecosystem service.**

4、 Practices of Watershed Eco-compensation in China

Eco-compensation policies and measures

The eco-compensation practice could be summarized **as three kinds:**

- 1) Eco-compensation implemented in forms of state policies which is promoted by the relevant ministries of the Central Government;
- 2) the exploring practice directed by the local governments;
- 3) Participation in the international eco-compensation market transaction started in recent years.

Regarding Compensation Modes

At present, eco-compensation modes in China mainly refer to the **government compensation mode** and the **market compensation mode**.

The government compensation is a kind of rational compensation to the provider of ecosystem service by the Centre Government or local government through various means, such as financial subsidies, supporting policies, project investment and reform of taxation and charges. Some ecological projects constructed through each level of governments, including the centre, province, municipality and county, are main patterns of eco-compensation in China recently.

Market compensation mode is a kind of direct compensation to the provider of ecosystem service with market mechanism applied through negotiation between the beneficiary and provider of ecosystem service. For example, the first transaction of water right is the transaction between Dongyang city and Yiwu city in Zhejiang Province

Regarding Compensation Means

In China, the means of watershed eco-compensation includes **capital**, **materials**, **policies** and **intelligence**, etc.

The capital compensation refers to the Central Government or provincial government, resource developer, or beneficiary contribute to treat and restore ecological damages from resource development, and compensate by means of transfer payment of governmental finance, tax exemption and reduction, credit guaranteed loan, compensatory payment and donation, etc.

The policy compensation refers to the upper level of government's compensation to the rights and opportunity cost of protection area through formulating all policies of priority and preferential treatment, adjusting industrial structure, supporting production transformation of the community residents in the protection area, and compensating the opportunity cost of the community residents giving up the original production mode.

Regarding Compensation Channel

Establishment of watershed eco-compensation fund with diversified and steady compensation capital source is a fundamental work to realize regional eco-compensation.

In 2007, Fujian provincial department of finance issued administration of special funds for Min River and Jiulong River protection.

—The cities located watershed upstream and downstream are encouraged to take water quality and quantity conservation for the assessment. Clear the both pay compensation and control task through consultation and agreement, to make sure that funds are to play a benefit.

—The using of special funds includes industrial pollution prevention and control, intensive livestock cultivation pollution control, drinking water source protection planning and regulation, and other remediation projects.

—Special funds are directly pay to project implementation units by the provincial treasury centralized payment system.

Regarding Compensation Criteria

Calculating method based on protection of water quantity and quality is very common in deciding the compensation criteria.

Many provinces, such as Liaoning, Shanxi and Hebei, compensate to the upstream watershed with COD (chemical oxygen demand) as monitoring factor within whole province.

Calculating method based on the upstream provision and opportunity cost could be used in deciding the compensation criteria.

For example, Shandong Province chooses different compensation criteria according to the different compensation subjects. Before wetland provides economic benefits, the peasants and fishers involving in conversion of cultivated land into wetland will be compensated according to actual losses of peasants and fishers.

Regarding the First Trans-provincial Watershed EC

Xin an Jiang River Watershed Eco-compensation was launched in 2010 between Zhejiang and An hui Province.

Now, Two hundred million has been given to An hui province to protect the upstream of xin an River().

5、 Conclusions and Outlooks

Conclusions

Great Progress: In summary, researches and practices on watershed eco-compensation recently emerged in China, and many results and modes have been explored.

Compensation object: from element compensation to ecosystem compensation; from compensation according to water quality and quantity of cross-boundary section to eco-compensation based on the ecological health assessment of whole watershed.

Compensation mode: from government financial transfer payment to combination of government and market-based measures

Compensation means: from single material or capital compensation to diversified compensation means such as training compensation

Compensation channels is also presented diversified and flexibly

Conclusions

Problems: Exploration stage are featured as more theoretical investigations and less practicable case studies, more suggestions and less analysis on typical cases.

In the technical view, both quantification assessment technologies for environmental impact before eco-compensation and monetization technologies for eco-compensation are not mutually enough, which make operability of eco-compensation practices greatly lower.

From practice aspect, the first is relatively difficult to carry out trans-provincial watershed eco-compensation; the second is necessary to strengthen market-based measures.

Outlooks

- ◆ To strengthen the research on identification method for subject and object of eco-compensation.
- ◆ To strengthen the research on calculation method for eco-compensation criteria.
- ◆ To enhance the role of market mechanism in watershed eco-compensation and establishment of transfer mechanism of environmental property through market mechanism.
- ◆ To strengthen the institution building, such as watershed eco-compensation legislation.
- ◆ To explore trans-provincial watershed eco-compensation modes. Now, trans-provincial watershed eco-compensation is still seldom, mainly because compensatory approach is difficult to find.
- ◆ To launch research on assessment of watershed eco-compensation effect.

Learn from ACEDP MEP-MWR Workshop

About the workshop, we wish to learn the following four main contents through the workshop exchange.

- ◆ Firstly, we are very keen to learn the model application and the policy suggestions of the model to Chinese case study.
- ◆ Secondly, we want to study the coordination mechanism of Australian eco-compensation policy option, especially the eco-compensation policies coordination after they are put in place. In China, there are many eco-compensation policies, but these policies are not good at coordinating with each others. So we want to learn what kind of mechanism can coordinate these policies in order to achieve the eco-compensation effect in Australia.
- ◆ Thirdly, in Australian announced eco-compensation policies, is there any policy contradictory with others? If so, how to solve these problems?
- ◆ Finally, we also want to study Australian experience in eco-compensation policy effectiveness assessment, including eco-compensation policies and ecological benefits monitoring and assessment.

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