

Research Article

Research on River Basin Eco-compensation in Food Market Operation Mechanism

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Abstract: This study sets out to explore eco-compensation for food marketing operation mechanism. Researches and studies on ecological compensation mechanism not only provided a new theoretical foundation for Scientific Development Concept, but also new theoretical background for future direction of sustainable development strategy.

Keywords: Ecological compensation mechanism, food marketing, scientific development

INTRODUCTION

River Basin Ecological Compensation is the foundation for river basin eco-compensation mechanism to work smoothly. Currently, authorities and scholars on the field of eco-compensation study generally agree that the economy theoretical bases for river basin eco-compensation theory are Ecological Asset Theory, Ecological Services Value Theory, Public Goods Theory and Ecological Externality Theory (Van den Bergh and Verbruggen, 1999). Water resource ecological service with the nature of being public goods possesses special scarcity and externality, as well as ecological, social, economic values.

The public goods theory on river basin environmental resource: According to microeconomics theory, social product can be divided into two categories: Private Goods and Public Goods (Costanza *et al.*, 1997). Comparing to Private Goods, Public Goods possesses following features: indivisibility of effectiveness, consumptive non-rivalrousness and beneficial non-excludability. Everyone utilizing it does not harm others' consumption. Goods which cannot be effectively allocated by food market were usually provided by government and can't or can't effectively provided by individual or company. Public Goods that possess beneficial non-excludability and consumptive non-rivalrousness simultaneously is called pure public goods and those that only possess one of the two traits is called mixed public goods or quasi-public goods.

MATERIALS AND METHODS

Cost-benefit theory: Cost-benefit Theory was firstly proposed by economist G. Darrel Jenerette in 19th

century (Jenerette *et al.*, 2006). The theory is used to explore the relationship between behavior choice and expected result using Economic Person Assumption as basis and under various constraint conditions in search of ways to maximize revenue with minimum costs. Based on equality principle, a certain degree of punitive measures should be enacted for destruction of the river basin ecological environment and fees for ecological environmental management should be charged; actions to protect ecological environment in turn should be given a certain amount of fee for reward to encourage river basin ecological environment protection; ecological service loss of middle and downstream regions caused by destructive actions of upstream region, the latter should pay compensation fee for middle and downstream regions; similarly costs of ecological protective actions done by upstream regions should be compensated by benefited middle and downstream regions.

Positive externality: In Fig. 1, Curve S1 represents C Private, curve S2 for C Total. Point A stands for real food market balance point, Q1 for food market quantity, B for social equilibrium point, Q2 for equilibrium quantity. From Fig. 1, it can be concluded that food market yielding quantity is obviously less than social expected quantity due to the existence of positive externality.

Negative externality: In Fig. 2, Curve S2 (C Total) is above S1 (C Private) and the margin is C Private. A is the point of intersection of Curve S1 and Demand Curve Do, which stands for real food market situation without considering externality, food market quantity is Q1. The point of intersection of Curve S2 and Demand Curve Do is the equilibrium point. Considering the externality, the equilibrium quantity is Q2. Seeing from

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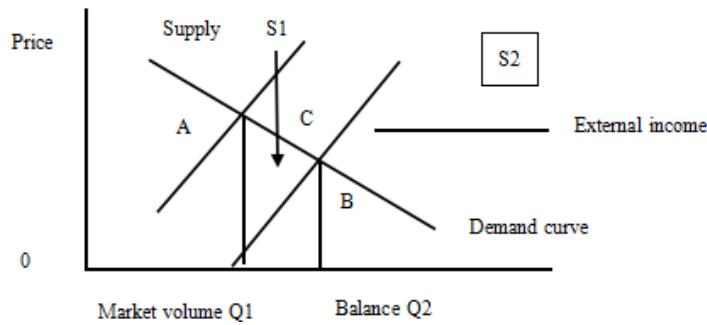


Fig. 1: External benefits

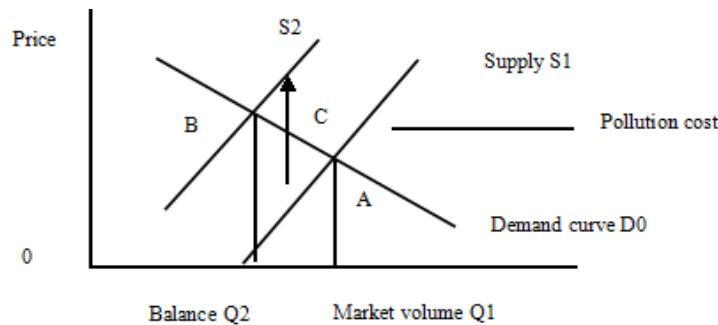


Fig. 2: Pollution and social equilibrium quantity

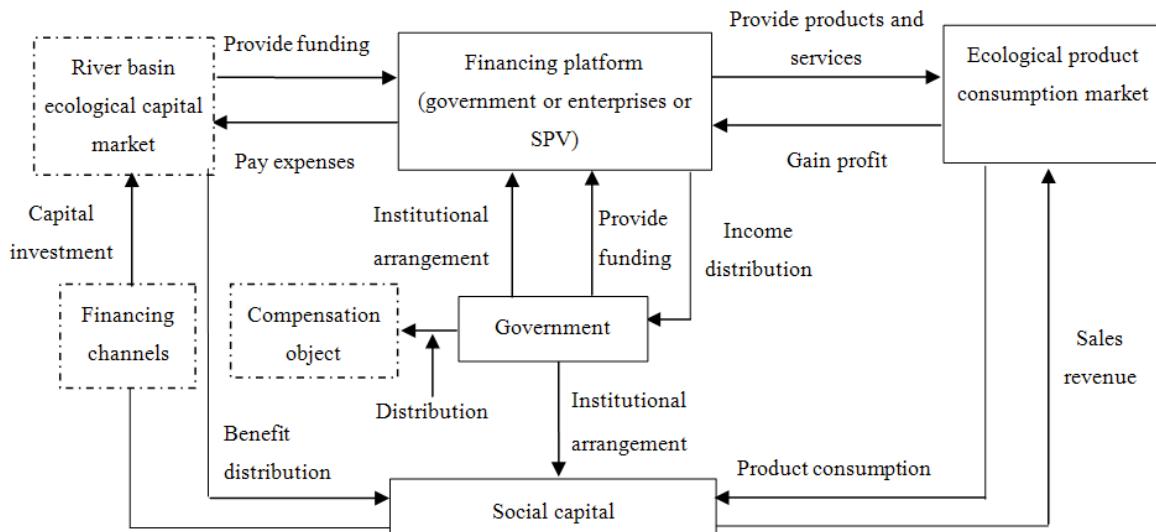


Fig. 3: Eco-compensation in food market operation mechanism frame design

Fig. 2, that food market yielding quantity is obviously exceeded equilibrium quantity due to the existence of negative externality which leads to enormous waste of resource.

Ecological capital theory: Ecological Capital is input share of ecological asset, i.e. the ecological environment and ecological resources, being used to value reproduction that can bring economic social benefit, mainly includes environmental quality and its self-cleaning capacity, total amount of natural

resources, potential to create future use value and use value of ecological system. Lenzen and Murray (2001) call ecological capital as Natural Capital. De Groot *et al.* (2000) once stated that ecological capital is not in the form of singular miracle rather than the product of millions of species' interactional, persevere working. River basin belongs to natural capital for its natural quality, while human's producing activities in the river basin for the purpose of survival and development and seeking economic benefits give river basin economic capital nature.

Eco-compensation in food market operation mechanism frame design:

Realization of eco-compensation in food market operation mechanism:

Construction of ecological capital property rights trading market: Property rights trading food market is to attract social capital into the field of ecological compensation, to provide a wide range of financial support for ecological compensation (Fig. 3). The establishment of property right trading food market should consider the following three technical conditions: first, The establishment of the trading food market requires the protection of the ecological credit system, Therefore, the premise of the establishment of market-oriented ecological compensation mechanism is a perfect credit system, only to establish a sound ecological credit system, give full play to its evaluation function, can effectively reduce its transaction costs and risks, enhanced ecological compensation for social capital. Second, ecological resources property and property right Clear and there is a suitable property right exchange market, food market transactions can be carried out, then favored by social capital. Third, property rights trading food market operation mechanism must be clear, specific include:

- The scope of the transaction
- Trading main body qualifications
- Transaction object
- Trading rules
- Transaction pricing and bidding
- Transaction procedures
- The government's role and management functions
- Intermediary services and other.

RESULTS AND DISCUSSION

Construction of food market financing platform: Food market operation mechanism is mainly to solve three problems: first, a profound lack of compensation funds, second, the low efficiency of compensation, third is the lack of management. Among them, compensation funds is main problem, in order to attract social capital to enter the field of basin ecological compensation, not only need to improve the ecological capital property rights trading market, also need to establish a market-oriented financing platform, combined with the actual situation, the financing platform for the construction can be government, enterprise or the SPV of any party that SPV is more conducive to solving problems in front of the three questions. Financing platform to play the role is mainly from the ecological capital food market access to funds, protection and development of ecological resources, provide products to the ecological consumption market, obtained income on the one hand, the return of funds providers, on the other hand alternative government for compensation funds, the

remaining part of the as a return on their own. In the food market mechanism, the crucial role of financing platform is the link connecting with stakeholders. Financing platform for the construction of the role and should have a role in research have important significance.

Broaden financing channels: At present, social capital has a huge stock, but lack of reasonable investment channels, financing platform can through the ecological capital property rights trading market, attract idle social capital to enter the field of ecological compensation. The source of the feasibility lies in the balance of investment income, can be applied mathematics simulation model of investment income effect, such as system dynamics, demonstrated the feasibility of social capital, the theory of the cost and benefit mentioned above can also be used as the basis for argument. In theory, it is a necessary step to attract shared capital. The difficulty is social capital in what way into ecological compensation, existing financing way is many and varied, for example, asset securitization financing, public private financing, diversified ecological financial products, ecological marker, etc. but ecological compensation has different characteristics, combined with the specific circumstances of the application of different ways of financing is the focus of future research

CONCLUSION

Summing up, it is a meaningful research topic to attract social capital into the field of ecological compensation, it can solve the problem of shortage of ecological compensation funds, for ecological compensation funding gap is huge, single rely on government financial support is difficult to achieve the ideal effect. This study analyzes the theoretical basis of ecological compensation, such as public goods theory, Cost-Benefit Theory, ecological capital theory, etc. On this basis, the research framework of food market operation mechanism is put forward, in the final analysis, the implementation of market-oriented operation mechanism. The study of ecological compensation is a meaningful supplement, which has important research value, but it is still a lot of problems need to be studied.

REFERENCES

- Costanza, R., R. d'Arge, R. de Groot, S. Farber, M. Grasso *et al.*, 1997. The value of the world's ecosystem services and natural capital. *Nature*, 387: 253-260.
De Groot, R.S., M.A. Wilson and R.M.J. Boumans, 2000. A typology for the classification, description and valuation of ecosystem functions, goods and services. *Ecol. Econ.*, 41(3): 393-408.

- Jenerette, G.D., W.L. Wu, S. Goldsmith, W.A. Marussich and W.J. Roach, 2006. Contrasting water footprints of cities in China and the United States. *Ecol. Econ.*, 57(3): 346-358.
- Lenzen, M. and S.A. Murray, 2001. A modified ecological footprint method and its application to Australia. *Ecol. Econ.*, 37(2): 229-255.
- Van den Bergh, J.C.J.M. and H. Verbruggen, 1999. Spatial sustainability, trade and indicators: An evaluation of the ‘ecological footprint’. *Ecol. Econ.*, 29(1): 61-72.