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## Major compensation forms of Chinese forest ecological compensation

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### ABSTRACT

Ecological compensation system of public welfare forest is an important way to realize the ecological value of forest. The analysis of the major forms and contents of current forest ecological compensation is the important foundation and prerequisite to guide the further protection and development of forest resources in China. Therefore, this study suggested that ecological compensation should be made in various forms based on the analysis of major compensation forms of Chinese forest ecological compensation. Finally, specific solutions are also proposed to guide the further protection and development of forest resources in China.

### KEYWORDS

Chinese forest ecological compensation; Compensation forms; Public welfare forest.



## INTRODUCTION

The forest system is an important part of the ecological environment system on the earth, which not only helps to maintain an orderly environment system, but also helps to regulate climate, conserve water, conserve water and soil, check the wind and fix the shifting sand, and improve soil. It plays a vital role in maintaining the dynamic balance of the environment system. Meanwhile, forest resources have great economic and social values, therefore, how to handle the relation of forest protection and utilization becomes a very important problem of high academic and theoretic value. Ecological compensation system of public welfare forest is an important way to realize the ecological value of forest. Ecological compensation is an economic approach to solve ecological protection and ecological sustainable use, and systematic sorting and analyzing the major forms and contents of current forest ecological compensation is the important foundation and prerequisite to guide the further protection and development of forest resources in China<sup>[1]</sup>.

In essence, forest ecological benefit compensation is a comprehensive approach to regulate, utilize and protect the interests of main bodies of forest ecological benefit, is a means and incentive to protect forest ecology. The core content of forest ecological benefit compensation is the nation giving economic compensation to forest protectors<sup>[2]</sup>. In China's ecological environment protection and management, ecological benefit compensation four levels of meanings: the first is the compensation for the ecological environment itself; the second is ecological environment compensation, which means using economic methods to control the damage to ecological environment, internalizing the external costs of economic activities; the third is the compensation for personal or regional ecological environment protection, or for abandoning development opportunities, equivalent to performance incentives or compensation<sup>[3]</sup>; the fourth is the protective investment in regions or objects of high ecological values; the first one is the compensation in ecological sense, while the latter three are compensations in economic sense, and are economic instruments and mechanisms of ecology, environment and natural resources protection<sup>[4]</sup>.

## MAJOR COMPENSATION FORMS OF CHINESE FOREST ECOLOGICAL COMPENSATION

### Divided according to the main body of compensation

Way of compensation refers to the approach that the main body of compensation takes to implement compensation (TABLE 1). It is the concrete form of compensation. If the way of forest ecological compensation is divided according to the main body of compensation, there would be several types, namely, government-led, society-led and market-led.

**TABLE 1 : Forest ecological compensation based on the division according to the main body of compensation**

Way of Compensation	Specific Performance	Implementation Effect
Government-led	Collecting taxes and fees on ecological compensation Financial subsidy system Increasing the investment on compensation Preferential credit Collecting fees on Nationwide Voluntary Tree Planting	The mature stage of implementation
Society-led	NGO providing funds and technologies Enterprises shouldering social responsibilities Individual voluntary tree-planting	The implementation scope is relatively narrow
Market-led	One-to-one market transactions	The starting stage of implementation

Quota-free market transactions  
Eco-labeling

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The protection and construction of forests are comprehensively and holistically significant to China, and the ecological benefit of forests is strongly public. Generally speaking, if the scope of benefits of the public goods is limited to certain region, then it is local public goods; while if the scope of benefits is cross-regional, and even nationwide, then it is national public goods<sup>[5]</sup>. If the scope of benefits is used in determining the regions that should share the cost of that public goods, then the country should be considered as the important main body of forest ecological benefit compensation. From the perspective of national security and interests, the central government should give policy and fiscal supports to forest protection and construction that concerns the overall. Meanwhile, ecological protection and construction of forests are also externally economic, for its ecological benefit could benefit many regions and people. In the long run, ecological protection and construction in forest areas could improve the ecological environment in those areas, increase the ecological value of forest resources, enhance the capability of self-development, and facilitate the virtuous cycle and sustainable development of economy and society in those areas, thus those areas are the ultimate beneficiaries of ecological environment construction. As a result, according to the principle of “Whoever benefits compensates”, the government should be considered as the main body of forest ecological benefit compensation. Overall speaking, the state, as the representative of public interests, is one of the important main bodies of ecological benefit compensation, and in specific, it could be divided into four levels, namely, the central level, provincial level, municipal level and community level. Currently, in the concrete implementation process, the way of forest ecological benefit compensation in China is government-led, and the compensation comes from state fiscal supports (investment, subsidies, and taxation reduction and exemption) and compensation from relevant regions, departments and industries on ecological benefit.

Ecological values made by healthy forest ecological system contain materialized labor of humans, forming special product of labor<sup>[6]</sup>. Therefore, regions, enterprises and individuals that get benefited from that should compensation for the cost of produce forest ecological products, so that ecological protectors could receive corresponding returns; on the other side, regions, enterprises and individuals make use of forest resources and pollute and destroy forest ecological environment, causing damages to the ecological functions of forests and the loss of the ecological values, therefore, they must make economic compensation for the loss of forest ecological environment. Besides, the main bodies of social compensation should also include social main bodies, represented by NGO, who are willing to take responsibilities. They see ecological environment protection as their own duty and are willing to should social responsibilities, able to provide funds and technologies and other compensation means. Therefore, main bodies of social compensation are the microscopic compensation main body in forest ecological benefit compensation, which could be divided into two types of main body of ecological beneficiary and that of ecological destroy, or three types, plus the ecological responsibilities bearers. Specifically, they refer to regions, enterprises, individuals and NGO, etc.

As the market economy matures, the market-led way of compensation gradually attracts more and more attention, mainly including one-to-one transactions, market trade, ecological labeling, etc. One-to-one market transactions mean that if the beneficiaries and protectors are clearly-defined and the interests are clear, and especially in the situation of one to one, transactions in the ecological service market should be made directly through consultation; quota-free market transactions mean that if the number of buyers and sellers in the ecological service market is large or unclear, but the tradable ecological environment services provided by the ecological system is quantifiable and could be divided, like pollution emissions, then these quotas could enter the market and be traded, i.e. open trade, like the carbon clean development mechanism project, quota biodiversity protection and wetland conservation trading mechanism, etc. under the United Nations Framework on Climate Change Convention and the Kyoto Protocol, and like the trading patterns of carbon sequestration. Ecological labeling is an

extensively launched system and could be used as an innovative policy tool of ecological protection zones and ecological compensation. Broadly speaking, ecological markers and services include both ecological labels of products and labels of tourist attractions, cultural and natural heritage sites.

### Divided according to the way of compensation

Dividing according to the standard of whether or not it is economic way of compensation, there could be two types, i.e. economic compensation and non-economic compensation (TABLE 2). And non-economic compensation could be further divided into three types based on way of compensation: (1) policy compensation: in regions with delayed economic development, “offering policies is itself a kind of compensation”, for example, for non-public welfare forests, reducing relevant taxes and fees is the biggest compensation for its ecological benefit; (2) in-kind compensation, like providing facilities of forest management and protection, forest fire prevention equipment, saplings and seeds, etc.; (3) intelligence compensation, mainly referring to offering technical training, consultancy and assistance.

**TABLE 2 : Forest ecological compensation based on the divisions according to the way of compensation**

Way of Compensation		Specific performance
Economic compensation		Set the compensation for unit area
Non-economic compensation	Policy compensation	Taxation reduction and exemption, fiscal investment
	In-kind compensation	Providing food, equipment and seedlings
	Intelligence compensation	Technical training, information consultancy

Economic compensation is the most direct way of ecological compensation, i.e. mainly about make subscription policies to set compensation for unit area. The specific performance of non-economic compensation includes:

Firstly, policy compensation. In fact, policy tilt is a kind of compensation. Ecological construction and environmental protection is strongly extroversive, therefore, completely following market mechanism could not provide the ecological environment resources that the market needs. At this moment, government mechanism is needed. But, entirely relying on government to provide economic compensation, problems like government finances will occur, therefore, economic main bodies that make contribution to the construction of ecological environment should be given subsidies, like low-interest loans, taxes reduction and exemption, investment increasing, etc. to stimulate their enthusiasm. This is also a very good way of compensation.

Secondly, in-kind compensation. It means that compensators use materials, labor and lands as compensation means to relief some problems concerning production factors and elements of life of compensation objects and improve their living conditions and production capacity. This kind of compensation is beneficial to improving substance use efficiency and is of vital economic importance under the condition of lacking compensation. The main performance of this kind is compensating food for farmers who have handed over their farmlands for afforestation.

Thirdly, technology (intelligence) compensation. It means that the main body of compensation offer intelligence services, like free technical consultancy and guidance, technical and management personnel trainings for areas and groups that receive compensation, professionals of all kinds transportation, and production skills, technical and management capacities of compensation objects. This kind of compensation is particularly important and obvious in economy-lagging regions. In some situations, technology (intelligence) compensation is more helpful than economic compensation in improving the economic development and ecological environment protection in regions that receive compensation.

In summary, the way of compensation is diversified in specific compensation process. At the moment, farmers that could get compensation seem to prefer economic compensation, however, due to the lagging economic development in compensation-receiving regions, the education level of residents in those regions is relatively low, therefore, the use of compensation is to some extent very unwise, causing great wastes. Besides, due to the limited economic compensation, under some circumstances, in-kind compensation, policy compensation, technology compensation or combined compensation are more realistic and of greater long-term significance than economic compensation.

## CONCLUSION

In the constant exploration of forest ecological compensation mechanism in China, the evaluation of ecological benefit, explorations and practices in many aspects like the determination and formulation of compensation objects and standards and the implementation of ways of compensation are all carried out. Now, the government-led economic compensation is still the major way of compensation, but in the future developing, market incentive mechanism should be introduced at the proper time to establish multiple ways of compensation that combining government and market, economic compensation and non-economic compensation together, to serve the forest construction in a more efficient way. In brief, the role which the government plays in the forest eco-efficiency compensation should be to flexibly manage the extents of competition and control, so as to give full play to the function of the market under the premise of taking price control, rationalizing the allocation of resources and guaranteeing the social interests<sup>[7]</sup>.

The concept of market compensation is relative to that of government compensation. In compensation activities, various market transaction subjects function not completely as the free markets, but undertake market trading activities within the contexts of the relevant standards, policies and laws and regulations laid down by the government. The market compensation plays a significant role in the activities of serving the forest eco-efficiency compensation and improving the ecological environment. On the one hand, market trading means manage to overcome a number of disadvantages of the government compensation, such as the monopoly caused by the low efficiency, etc., and therefore can promote competition among the main bodies of market trading and improve the efficiency of the ecological benefit compensation work; on the other hand, as an effective auxiliary measure of the government compensation, the market trading activities enhance the social benefits and social welfares<sup>[8,9]</sup>. This, to certain extent, also facilitates higher economic efficiency and the best configuration of public goods.

Therefore, ecological compensation should be made in various forms. Firstly, the form of “state purchase” should gradually be adopted in small national key ecological protection areas, like nature reserves, to purchase the ownership and rights of use of forest resources to solve the problem thoroughly. And the form of “rights of use purchase” could be applied to those whose ownership cannot be completely purchased, to purchase the long-term rights of use according to the rent of forest lands. Secondly, the mutual supporting of central and local governments should be considered. For areas that are important for local ecological environment and economic development (like water sources, important landscape areas, etc.), local compensation should also be made besides the central compensation to form central-local supporting compensation policies. Thirdly, marketable forest ecological service functions should be gradually marketed to alleviate the interest loss of owners and operators during the ecological construction. This marketing has two types. One is the real marketing of ecological service functions, like carbon sequestration transaction. The other concerns the ecological services involving the upstream and downstream, for example, in the case of water supply, relevant downstream enterprises of water sources should return some of their revenues. Besides the transaction and the upstream-downstream, many more market-oriented mechanisms can be considered, like in important areas of eco-tourism, part of the incomes of eco-tourism should be made as the ecological compensation. Fourthly, on the basis of protecting and making use of the ecological functions,

restrictions on resources use should be loosened to some extent when the compensation at the provincial level is not very much, to resolve conflicts between the protection and resources utilization, and those between protection and economic development, and try to ease the external interest conflicts. For example, for public welfare forests at provincial level or certain types of public welfare forests, logging with tending and management could be launched, or ecological public welfare forests should be used by developing under-forest economy. Fifthly, use relevant preferential policies that facilitate development to compensate, for example, use relevant preferential policies of resources cultivation and forest resources use to offset the loss of ecological public welfare.

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