

Development Practice and Policy Suggestions of Horizontal Ecological Compensation in Guangxi

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Abstract: Ecological compensation is an economic means to improve, maintain and restore ecosystem services, and an important measure to promote regional coordinated development. In recent years, Guangxi has explored a lot in the establishment of horizontal ecological compensation mechanism, with outstanding characteristics. Based on the first comprehensive review of the construction and practice of ecological compensation system in Hubei Province, this paper analyzes the problems and advantages existing in the construction of horizontal ecological compensation mechanism in Guangxi, and puts forward targeted suggestions from the aspects of accelerating the practice of cross-provincial ecological compensation, improving the effect of policy, and exploring scientific evaluation standards.

Keywords: Horizontal Ecological Compensation; Jiuzhou River Basin; Policy Recommendation

1. Introduction

Which encourages the conservationists to protect the ecological environment by paying a certain amount of money to the ecological environmental conservationists. Foreign scholars from the perspective of farmers' ecological cognition, attitudes and behaviours have found that a full understanding of farmers' willingness to protect plays an important role in the implementation of ecological compensation policies (Jang W et al., 2019), and there has been a rich accumulation of research on the factors influencing the willingness to participate in ecological compensation policies. Kotchen et al. concluded from their study that the masses with a relatively high degree of subjective cognition had a willingness to participate in environmental protection is stronger. Pham et al. investigated the willingness of farmers to continue to participate in the fallow policy and analysed the willingness of farmers to be compensated and the key influencing factors by constructing an econometric model (Hung Duy Pham et al., 2019). Juliette et al. measured the amount of farmers' willingness to be compensated by applying utility modelling (Juliette Gadaud et al., 2010). Horizontal ecological compensation refers to the financial transfer from one level of government to another at the same level of government for ecological protection and restoration, and is usually applied between regions with close ecological interests and no administrative affiliation, and the parties involved determine the reciprocity of "rights, responsibilities, and benefits" through independent negotiation. It is mainly aimed at solving cross-basin and cross-regional ecological compensation problems, and is more targeted and goal-oriented. To a certain extent, it can well reflect the principle of "who benefits, who compensates". In China's watershed environmental management problems, the pilot mechanism of horizontal ecological compensation of the Jiuzhou River can well reflect this principle, mainly through negotiation and signing betting agreements to solve the problem of environmental pollution compensation. Horizontal compensation is mainly formulated "top-down", which can be regarded as a principal-agent relationship, i.e., the central government acts as the principal and entrusts the governments of Guizhou and Guangdong to act as the agent in negotiating and signing a betting agreement using the water quality standards of the cross-section, so as to achieve the Pareto optimality. In this process, the basin ecological compensation is the result of the coupled game between the upper and lower levels of government and the upstream and downstream governments, and the operational logic of the horizontal basin ecological compensation from the perspective of synergistic sharing has strong explanatory power, and the mechanism of synergistic sharing is reflected in the basin ecological compensation as the "upper and lower levels of

government linkage”. Upstream and downstream government linkage “government and society linkage”, institutional arrangements for upstream and downstream linkage to provide legal protection, thematic functional location differences for upstream and downstream linkage to provide the necessary conditions for social participation in the formation of multi-sharing synergies. The better the institutional arrangement of ecological compensation, the smoother the implementation of compensation; on the contrary, the more deficient the ecological compensation system is, the more difficult the implementation will be. In terms of ecological compensation in the basin, the formal institutional arrangement solves the dilemma of “zero-sum game” of local governments in ecological compensation, and forms a mechanism of ecological compensation synergistic sharing between the upper and lower levels of government linkage. The central Government has formulated legal rules and procedures for the coordination of local government interests to guide the construction of watershed ecological compensation.

In addition, central leaders’ instructions and public opinion guidance are both informal and complementary to formal institutional arrangements. Eventually, a community of destiny for ecological compensation will be formed with the linkage of the upper and lower levels of government, namely, the central government, the provinces and the municipalities. Differences in the location of thematic functional areas provide the necessary conditions for upstream and downstream linkage. The level of economic development, natural geographic characteristics and environmental demands between the upstream and downstream of the basin determine the differences in the location of the upstream and downstream of the basin, which provides the possibility of upstream and downstream linkage of transboundary watershed eco-compensation. The upstream of the basin is a restricted development zone and a prohibited development zone, with better ecological environment and obvious ecological advantages; the downstream of the basin is a key development zone and an optimised development zone, with better economic development and obvious economic advantages, thus forming the difference in the functional positioning and comparative advantages of the upstream and downstream of the basin. The upstream and downstream of the basin share the right of survival and development of the whole basin, and must complement each other's advantages in order to promote the ecological and economic benefits of the basin as a whole, and is responsible for the dilemma of “zero-sum game”, the upstream of the basin sacrificed the opportunity for economic development to create ecological value for the downstream to provide high-quality ecological services, and therefore the downstream of the basin has the responsibility and the obligation to provide better ecological services to the downstream. Therefore, the downstream area has the responsibility, obligation and ability to help the upstream area, so the downstream area should provide ecological compensation funds to the upstream area. In addition to the formal system, informal arrangements can strengthen the sustained effect of ecological compensation and enhance the public's awareness of ecological compensation in the watershed. In addition, leaders' speeches, as an important part of the informal system, are also a wind vane to guide public participation in environmental governance. Under the guidance of the formal and informal systems, the public has become more and more active in participating in watershed ecological compensation. Horizontal watershed ecological compensation has formed a pattern of “government-led, social coordination and multi-party participation” in watershed ecological compensation and synergistic sharing.

2. Development status

Ecological compensation projects can contribute to the goal of sustainable development by creating ecosystem services, encouraging sustainable livelihood strategies and bringing about tangible and intangible changes in human well-being through direct payments for investments at the household or community level (Jones et al., 2019). Rural residents in the watershed as a whole are a complete production unit that seeks to maximise benefits, as well as a supplier of ecosystem services, and in the process of environmental governance, farmers have become new “agents”, as demonstrated by the implementation of the pilot policy, where farmers consciously participate in the governance of watershed environments instead of the state and the collective. Therefore, the horizontal ecological compensation policy in the water quality assessment standards through direct and indirect two mechanisms to affect the employment and income of rural residents: one is through the role of labour, land and other factors of production re-allocation impact on the total economic income of their families; the second is to change the production of rural residents, lifestyle, and increase the transfer of income caused by changes in rural residents of agricultural employment and total income. This paper will take the Jiuzhou River Basin as an example to illustrate the mechanism of horizontal ecological compensation. According to the modern theory of property rights, property rights with clear rights and responsibilities and strict protection can bring higher income flow for the subject of transaction. The Jiuzhou River eco-compensation was issued under a “top-down” project system, and was realised through a provincial-level betting agreement between the Guangxi Autonomous Region and the Guangdong Province, instead of being negotiated at the county level. Although farmers are unable to make claims under the project system, the environmental governance constraints

imposed by eco-compensation will inevitably change the level of sustainable livelihoods and budgetary constraints of farmers, which will have an impact on their incomes, possibly directly, depending on the type of compensation, its intensity, and the timing of the compensation, and it has been shown that cash compensation will increase cash incomes of farmers, and that increased employment will increase wage incomes of farmers. Wage income increases, so the level of household income of farm household residents participating in the policy will increase. It is also possible that there is an indirect effect, i.e. the characteristics of the farm household itself will have an indirect effect on the socio-economic effects. In addition to having an income impact on participants, eco-compensation may also have an impact on changes in labour demand. The impact on the local labour market depends on whether the type of land use promoted by the eco-compensation policy is labour-intensive, and if it is less labour-intensive than it was before the compensation was implemented, farmers may lose their jobs. Since the pilot, the Jiuzhou River Basin has implemented a strict pollution management and control system, which strictly restricts the discharge of pollutants from farming wastewater around the basin, and all the farmers around the basin have carried out the transformation and upgrading of the farming industry, and the government has provided training in the operation of large-scale farming and vocational skills training in alternative products, as well as transferring employment for farmers, helping self-employment, and providing industrial support, and the pilot policy has, by influencing the livelihood activities of farmers. In turn, it generates certain employment effects. On the one hand, strict discharge restrictions on farm wastewater may release rural labour from agricultural production and facilitate the transfer of activities from on-farm to off-farm activities, such as working in the local manufacturing industry or migrating to work; on the other hand, the government has innovated and promoted the “raised net beds + probiotic” ecological aquaculture model for large-scale aquaculture, which makes use of raised net beds and automatic manure removal technology to save energy at the source and reduce waste. On the other hand, the government innovates and promotes the “elevated net bed + probiotic” ecological farming model for large-scale farming, using the elevated net bed automatic manure cleaning technology to save more than 90% of water at the source, realising the clean production of the farming industry, and helping it to upgrade its industry. Farmers put in more labour to promote the transformation and upgrading of the aquaculture industry. In this context, although the first two years of farming households, rural residents can adjust the labour force and other factors of production, so as to promote the concentration of their family labour force in the advantageous production sector, increase the marginal rate of return on factors of production, and stimulate the employment of rural residents to continue to increase. Short-term policy adjustments may cause economic fluctuations for farm households engaged in agricultural production, leading them to take up other jobs or go out to work, but in the long run, the economic effects brought about by the upgrading of the farming industry are likely to be better, and the economies of scale brought about will attract more people to take up related jobs.

3. Conclusion

In terms of results, the horizontal eco-compensation policy is based on incentives to improve the basin environment, enhance the value of ecosystem services in the basin, and promote the realisation of the value of eco-products, and has already achieved significant environmental improvement effects. The ecological compensation system implemented in the Li River Basin in the same period is still a vertical ecological compensation system, which allocates funds from the top to the bottom of the river to the protected areas. Horizontal ecological compensation, as an important institutional innovation to promote the construction of ecological civilisation and the strategy of main functional area, has a significant advantage over vertical ecological compensation in terms of the implementation effect of the horizontal compensation policy. However, the development mode of horizontal ecological compensation needs to be further expanded in the future.

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