International experience in implementing the policy of payment for forest environmental services

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Abstract: ***The article presents international experiences in implementing the policy for Payment for Forest Environmental Services (PFES) from countries such as Costa Rica, Colombia, Mexico, Indonesia, and Cambodia. These PFES programs have significantly contributed to forest conservation, local economic development, and ecological improvements. The article also draws out lessons for Vietnam in applying the PFES policy, emphasizing the importance of building a solid legal framework, rational payment planning and ensuring close coordination among stakeholders.***

Keywords: *Forest environmental services; policy implementation; payment; international experience.*

Received:
June 28, 2024
Revised:
August 02, 2024
Accepted:
September 17, 2024
https://doi.org
10.59394/JSM.36

1. Overview of payment for forest environmental services and policy implementation

1.1. Payment for Forest Environmental Services (PFES)

According to Decree No. 156/2018/ND-CP dated November 16, 2018, which provides guidelines for implementing specific articles of the 2017 Forestry Law (Law No. 16/2017/QH14), the forest environment is an essential component of the forest ecosystem. The forest environment includes soil, water, air, sound, light, and other material factors that form the landscape. The values that the forest environment provides to humans and society are referred to as the utility values of the forest environment, which include land protection, water regulation, watershed protection, biodiversity conservation, carbon absorption and storage, tourism services, habitats for living organisms, and providing timber and other forest products.

As defined in Article 3, Chapter I of the 2017 Forestry Law, forest environmental services are activities that provide utility values derived from the forest environment. These services

include: (1) Protecting soil and reducing erosion and sedimentation in lakes and rivers; (2) Regulating and maintaining water sources for production and daily life; (3) Absorbing and storing carbon in forests, reducing greenhouse gas emissions through sustainable forest management and promoting green growth; (4) Protecting and maintaining the natural landscape and biodiversity within forest ecosystems, serving ecotourism; (5) Providing breeding grounds, natural feed sources, and water for aquaculture.

Payment for Forest Environmental Services (PFES) is not just a local concept but a global one. It is a voluntary transaction process between at least one buyer and one seller of forest environmental services, where the seller must ensure the reasonable provision of these services (Sven, 2015). This concept is widely used globally, making it a part of a more significant environmental movement. Additionally, PFES can also be understood as the relationship in which users of forest ecological services pay the providers of these services (Government, 2010), as any form of compensation for the service, effort, or work, or as a reward for maintaining and improving forest environmental services, provided by the seller or paid by the buyer (Thuy et al., 2018).

Compensation or rewards can be made through direct payments, financial benefits, or in-kind contributions. In Vietnam, the mechanism for PFES differs from the classical definition of environmental service payments (Sven, 2015), as the government plays a crucial role in determining the payment levels. These are usually implemented through taxes or fees related to electricity, water, and tourism (Thuy et al., 2018). Therefore, PFES in Vietnam involves beneficiaries of forest environmental services paying the providers of these services, highlighting the significant role of policy in environmental sustainability.

1.2. Implementation of the policy on payment for forest environmental services

Implementation means carrying out or putting into effect. In this context, implementation is considered the fourth stage in a five-stage cycle: (i) Program planning; (ii) Policy formulation; (iii) Policy approval; (iv) Policy implementation; (v) Policy evaluation (Thanh & Hoa, 2016).

Policy implementation is the process of turning policies into concrete actions. It's the stage where policy decisions, selected tools, and allocated resources from the policy-making process are tested in real-world scenarios, making it a practical and crucial part of the policy cycle.

Policy implementation is the process of transforming approved ideas and objectives into specific outcomes. Crucially, this process requires the organization of administrative agencies. These agencies play a vital role in mobilizing all necessary resources (human resources, finances, facilities) to achieve policy objectives optimally regarding people, capital, and effectiveness.

Thus, implementing the PFES policy can be understood as the entire process of mobilizing and allocating resources to ensure that payments from the beneficiaries of forest environmental services to the service providers are carried out according to strict procedures and processes to achieve the policy's objectives.

2. International experience in implementing the policy on payment for forest environmental services

2.1. Costa Rica

Costa Rica, a pioneer in environmental conservation, has successfully implemented the Payment for Forest Environmental Services (PFES) program since 1997. This groundbreaking program, rooted in Costa Rica's Forestry Law No. 7575, provides farmers and forest owners vital financial support. Their

role in planting and managing forests sustainably is crucial to the program's success. The National Forestry Finance Fund (FONAFIFO) expertly manages the program, validating payments, negotiating with users, coordinating, monitoring, and establishing allocation criteria. Farmers can apply directly through FONAFIFO or local representative agencies (Jean-Francois et al., 2015).

In addition, FONAFIFO operates another mechanism to promote the market for environmental services, the Forest Environmental Service Certificates (CSA). These certificates are issued for voluntary contributions and are used to fund the PFES program. Furthermore, funding from REDD+ is also considered an essential source of financial support for the program (Russo & Candela, 2006). The key lessons from this program include: (i) the Broad participation of various stakeholders; (ii) The Costa Rican government has built a relatively comprehensive institutional system to implement the program; (iii) The integration of PFES with activities that improve and diversify livelihood strategies for rural communities.

2.2. Colombia

One of the notable initiatives in Payment for Environmental Services (PES) in Colombia is the program implemented on the Nima River in the Cauca Valley, which began in 1992. The Nima River is critical in providing water to Palmira City (with a population of 350,000), the surrounding rural areas (about 4,200 people), and irrigation for 6,900 hectares of sugarcane, the valley's main crop. The river also supplies water to a significant sugar processing company, Ingenio Manuelita, and two hydropower plants.

Under this initiative, major water users (including the Sugarcane Growers' Association, a water company, a hydropower company, and a packaging company), together with government agencies (local environmental departments, municipal authorities, and the national government), collaborated to pay private landowners upstream to implement ecosystem conservation measures. These measures aimed to enhance water flow, stabilize water supply during rainy and dry seasons, and mitigate seasonal water shortages.

Conservation activities included building fences and gardens around water sources, reforesting with native tree species, and connecting forest areas (Jean-Carlo Rodriguez & Rutgerd, 2015). The experience from this program underscores the crucial role of legal support and more transparent payment mechanisms in ensuring the sustainability of PES programs, providing you with valuable insights for future initiatives.

2.3. Mexico

In response to deforestation and forest degradation, as well as to enhance water supply in watersheds, the Mexican government established a national Payment for Hydrological Environmental Services (PSAH) program in 2003. This program, managed by the National Forestry Commission of Mexico through a policy program called ProArbol, integrates all forestry programs supported by the government. It aims to strengthen forest management and conservation activities nationwide, focusing on forest areas in headwaters prone to high deforestation risks. PSAH is one of the world's most extensive PES programs in scale and budget. By 2009, the program had supported 2.27 million hectares of forests, with ongoing efforts to improve budget allocation through more targeted methods.

Specific criteria for PSAH participants include: (1) Land located within a small watershed where the "seller" of ecosystem services benefits from PSAH; (2) Areas of land with high deforestation risk; (3) Land located in regions at high risk of natural disasters and extreme weather events.

PSAH prioritizes forest conservation, including the restoration of wetlands and the prevention of soil erosion. ProArbol's operational rule is to select applications that align with its goals, focusing on areas with over-exploited groundwater and reduced surface water levels. PSAH participants include private landowners, but the majority are community landholders or landowners whose land is divided among families for use. These landowners are managed by a management board of three elected individuals who oversee landowner activities and manage program revenues and policy projects. Landowners can participate in PSAH individually or in groups, with a minimum forest area of 20 hectares, with consensus reached in landowner meetings. In such cases, the group assumes responsibility for the application process and meeting the program's requirements.

Mexico allocates around 200 million Pesos annually to PSAH, with annual payments to landowners ranging from 382 Pesos ($29.30) to 1100 Pesos ($84.36) per hectare per year, depending on the type of forest and the regeneration period, which is five years. These payments have fluctuated over time due to changes in average opportunity costs for land use (Caro-Borrero et al., 2015). Lessons from Mexico's PES program demonstrate the importance of participation from the entire political system, ensuring solid legal frameworks, precise payment mechanisms, and a rigorous monitoring and auditing system.

2.4. Indonesia

a. Integration of environmental service markets with headwater management in the Singkarak River basin

Since the early 2000s, approximately 31% of the Singkarak River Basin has experienced severe degradation, leading to a significant decline in the quantity and quality of water in Lake Singkarak. In 2004, RUPES (Rewarding Upland Poor for Environmental Services) proposed restoring the area around the lake by applying an agroforestry model and reforestation to improve water quality and quantity in the lake. In this program, the local government, acting as the buyer of services, plays a crucial intermediary role, ensuring the project's smooth operation. Local farmers living around Lake Singkarak in Tanah Datar District serve as the service providers.

The program provides services including: (1) Improving water quality for hydroelectric power, conserving native fish, and promoting ecotourism; (2) Carbon sequestration for voluntary markets under the Clean Development Mechanism (CDM); (3) Reducing sedimentation in the lake. This program has reduced poverty while enhancing local government capacity and governance. Farmers involved in tree planting have seen improvements in their income. The reforestation and restoration efforts have stabilized, reducing erosion and adjusting the flow into the basin, benefiting downstream water users (Ly & Nam, 2014).

The program has successfully integrated environmental service payments with poverty reduction efforts, achieving environmental and social objectives. It also serves as a model of how agroforestry approaches can be used to provide ecological services.

b. Protecting the Cidanau headwater basin

The Cidanau Basin, covering 22,036 hectares, provides water for domestic, industrial, and agricultural needs. However, by the late 2000s, the water resources here were threatened due to encroachment and the conversion of forested land to agricultural use. In 2004, PT Krakatau Tirta Industri (PT.KTI), a water supply company, initiated a pilot project for environmental service payments to address issues in this basin. Farmer groups in the upper reaches of the Cidanau Basin provided the services. PT.KTI played the role of founder, manager, and financier of the project. The Cidanau Basin Media Forum, supported by a national non-governmental organization and

the NGO Rekonvasi Bhumi, acted as the intermediary.

The environmental service payment program provided additional income to upstream farmers through cash payments while enhancing agricultural productivity, soil quality, and rising household water supplies. One of the project's most significant achievements is the substantial decrease in illegal logging, a key factor in the degradation of the Cidanau Basin. The project has positively impacted farmers' skills, helping them apply conservation techniques, thereby increasing productivity, profitability, and the quality of environmental services (Budhi et al., 2008).

This project is a successful example of implementing forest environmental service payments in Indonesia. Its success is primarily attributed to strong government support and a solid legal foundation.

2.5. Cambodia

a. Forest and wildlife habitat protection agreement in Chumnoab

The International Conservation Organization implemented the "Forest and Wildlife Habitat Protection" program in the Cardamom Mountains Conservation Area in Chumnoab Commune, Thmar Bang District, Koh Kong Province. Under this program, the Organization provided training in good agricultural practices and funded conservation activities. The Organization also offered cash payments to support community members in forest protection, wildlife conservation, and safeguarding crocodile habitats in the area.

Furthermore, the fund supported local transportation, paid salaries for teachers at Chumnoad School, and financed patrols and land use mapping activities. The total cost of this contract was USD 11,870 over one year. The community signed an agreement to delineate boundaries and protect a 20,000-hectare forest, where deforestation and hunting were prohibited to restore the area's ecosystem services. As a result, rice yields quadrupled, teachers continued to receive salaries to teach at the school, and school attendance improved. Agricultural training helped community members diversify their income sources (Ly & Nam, 2014) (Appendix 1). This experience demonstrates the positive outcomes of the program, such as increased rice yields, improved school attendance, and diversified income sources, which highlight the success and impact of the program.

b. Oddar Meanchey Redd project

Oddar Meanchey is ideal for developing a REDD (Reducing Emissions from Deforestation and Forest Degradation) project. The forests in this province have suffered severe damage, prompting the Forestry Department, in collaboration with the International Community Forestry Organization and other partners, to launch a project in Oddar Meanchey to create, register, and sell carbon credits from the forest.

The project is expected to generate 7.1 million tons of CO2 over 30 years. The sale of carbon credits typically relies on forward contracts with fixed prices ranging from one to twenty years. The estimated total cost to implement the project over 30 years is USD 11,479,471, while the projected total revenue from selling carbon credits is USD 42.6 million (Poffenberger et al., 2009). This project underscores the critical need to establish a legal and policy framework to support community-based forestry initiatives, as current forest management systems are insufficient to meet the project's objectives.

3. Lessons for Vietnam in implementing forest environmental service payment policies

From the experiences of environmental service payment programs in various countries, several important lessons can be drawn for Vietnam:

Firstly, regarding policy framework. The need to promptly develop and issue guiding documents to thoroughly address the challenges in implementing policies at the

local level is apparent. However, what's crucial is the adaptability of these policies to the specific conditions of each province, district, and commune. This flexibility, along with the regular review and flexible application of existing regulations, will ensure the relevance and effectiveness of Vietnam's forest environmental service payment programs.

Secondly, regarding planning. Develop detailed proposals for forest environmental service payments in different watersheds, specifying the forest areas providing services, the beneficiaries, and the payment procedures. This will serve as the basis for creating forest management contracts and implementing forest environmental service payments, ensuring timely contract signing and payment.

Thirdly, regarding policy implementation and coordination. Intermediary agencies, such as Forest Protection and Development Funds at the provincial or municipal level, must effectively coordinate to ensure that forest environmental service payments are fully and accurately executed for each policy recipient. In programs and projects, it's not just about the execution but also about the transparency in the use and distribution of service payments to forest owners. This transparency will instill confidence in the system, with funds being allocated as stipulated and the remaining amount paid fully to the forest owners.

Fourthly, regarding awareness and policy dissemination. Beneficiaries of forest environmental service payments in many provinces are often ethnic minorities with varying customs, practices, and levels of education. Therefore, when implementing policies, it is crucial to adapt regulations to fit the needs of each ethnic group. This includes disseminating policies in ethnic languages and managing forests through group contracts to align with local customs. More importantly, it's about enhancing community involvement in forest management and protection, making the audience feel the value of their participation.

Fifthly, regarding monitoring and policy oversight. Relevant agencies must agree on and coordinate closely to implement environmental service payments. Experiences from the Cidanau headwater protection project in Indonesia and environmental service payment programs in Costa Rica and Mexico have demonstrated that establishing a comprehensive institutional system and receiving strong support from the political system are critical factors.

Sixthly, regarding statistics and review. Accurate statistics on beneficiaries and precise identification of forest owner boundaries are necessary to ensure that forest environmental service payments are properly executed for the intended beneficiaries and the correct service areas.

4. Conclusion

The forest environmental service payment policy is an essential tool for the protection and sustainable development of forest resources while also contributing to improving the livelihoods of local communities. Experiences from countries such as Costa Rica, Colombia, Mexico, Indonesia, and Cambodia show that successful implementation of forest environmental service payment policies requires support from the legislature, government, and active participation from stakeholders. Specifically, forest environmental service payment programs help protect forests and provide economic benefits to people through financial payments and livelihood improvements.

For Vietnam, forest environmental service payments should be adjusted to fit the specific conditions of each region while ensuring transparency and effectiveness in the implementation process. Lessons from advanced countries highlight the need to establish a comprehensive institutional

system, enhance community awareness and education, and set up strict monitoring mechanisms. When these factors are implemented comprehensively, PFES fully realizes its role in Vietnam's forest protection and sustainable economic development.

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