

# The market of forest payments for environmental services in Vietnam after fifteen years of its implementation

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**Abstract.** Pham TL, Mai TTX, Ngo T. 2025. *The market of forest payments for environmental services in Vietnam after fifteen years of its implementation. Asian J For 9: 75-81.* Sustainable development is a core concern for most countries and entities across the globe despite the fact that there is a trade-off between environmental sustainability and economic growth. Many countries are focusing on Sustainable Development Goals (SDGs), such as SDG11: Sustainable cities and communities, SDG14: Life below water, and SDG15: Life on land. Meanwhile, the people still face challenges like unemployment and poverty, worsened by the recent pandemic. Innovative tools like Payments for Environmental Services (PES) have gained importance, and Vietnam was the first ASEAN country to implement forest PES (FPES) in 2008. Over the past 15 years, despite its achievements, such as raising individual income and government budget generation, some challenges still persist, including administrative inefficiencies and market inequalities. This study re-examined the development of Vietnam's FPES market, highlighting its contributions to the national and provincial budgets, forest protection, and cash income for forest owners. Importantly, the study also analyzed the society's awareness and knowledge of the FPES market, particularly in terms of market participants and price mechanism. We found that ongoing improvements in official training and education, as well as market mechanisms, are needed to enhance public awareness and participation in the FPES market. The integration of poverty alleviation and (forest) environmental protection in Vietnam is a collective responsibility, and this study aims to engage the audience in this crucial task.

**Keywords:** Forest, market development, Payments for Environmental Services (PES), poverty, Sustainable Development Goals (SDGs)

**Abbreviations:** ES: Environmental Services, FPES: Forest Payments for Environmental Services, ICDPs: Integrated Conservation and Development Projects, PES: Payments for Environmental Services, SDGs: Sustainable Development Goals, SFEs/SFCs: State Forest Enterprises or Companies, VNFF: Vietnam Forest Protection and Development Fund

## INTRODUCTION

Sustainable development is a core concern for most countries and entities across the globe despite the fact that there is a trade-off between environmental sustainability and economic growth (Stern 2004; Mardani et al. 2019; Ngo et al. 2024). At a macro level, many countries are focusing on the Sustainable Development Goals (United Nations 2024), such as SDG11: Sustainable cities and communities, SDG14: Life below water, and SDG15: Life on land, to make sure that environmental protection is monitored alongside development. More importantly, at the micro-level, the people are still facing the problems of unemployment, hunger, and poverty (e.g., SDG01, SDG02, and SDG08), especially due to the recent COVID-19 pandemic (Dang et al. 2023; Nguyen-Anh et al. 2023; Sridhar et al. 2023).

It would be more difficult for the poor to participate in environmental-friendly activities or Environmental Services (ES), as their foremost target is not the environment; thus, alleviating poverty is the only solution (Pagiola et al. 2005). Integrated Conservation and Development Projects (ICDPs) and sustainable forest management, among others, are two major management tools intended to deal with both poverty and environmental issues simultaneously (Barrett

and Arcese 1995; Siry et al. 2005). However, their results are still limited (Wunder 2005). In this sense, it is no surprise that innovative tools such as Payments for Environmental Services (PES) (Michel et al. 2016) are important for this goal (Wunder 2008; Tacconi 2012). The fundamental principle of PES is that external beneficiaries of ES (i.e., the service buyers) should make direct, contractual, and conditional payments to local landholders and users (i.e., the service sellers or producers) in exchange for their adoption of practices that promote ecosystem conservation and restoration (Pagiola et al. 2005; Wunder 2008). Such a market-based incentive led to an expansion of PES applications, especially in developing economies (Pagiola 2008; Pattanayak et al. 2010; Wunder et al. 2020).

In Vietnam, the forests have been dominantly governed by state control via a system of State Forest Enterprises or Companies (SFEs/SFCs), with a gradual shift toward market-based policies toward forest protection and conservation (McElwee 2016; Cochard et al. 2020). In 2008, Forest PES (FPES) was piloted in Son La and Lam Dong, two mountainous provinces that host large groups of poor ethnic minority communities and, respectively are in the Northern and Central Highlands areas of Vietnam, to deliver innovative and market-based social, agricultural and environmental programs (To and Dressler 2019). The

encouraged results of the pilot programs led to the implementation of Decree No. 99 (Vietnamese Government 2010) to cover additional provinces and to re-confirm the Vietnam Forest Protection and Development Fund (VNFF) as the national body for all FPES activities in the country (VNFF 2024). Consequently, the FPES has been observed as a 'breakthrough' in the Vietnamese forestry sector's history that helped create a new source of income for ES producers, a budget generator for provincial governments, and, more importantly, a new (financial) mechanism for forest protection (MARD 2010; Thuy et al. 2013; VNFF 2014).

Despite the 'successfulness' of the piloted and extended FPES programs in Vietnam, after more than 15 years of operation, it has not been carried out as a 'true' PES, as assessed by Thuy et al. (2013). Other limitations include the administrative oriented, inequality, and asymmetry between participants of the ES market (Loft et al. 2017; Chu et al. 2019; Do et al. 2022; Gallemore et al. 2024). Among others, the inefficiency of PES as a market-based framework is the most critical reason since it conflicts with the core definition of PES (Wunder 2008; Pattanayak et al. 2010). In this sense, it is important to re-examine the market for FPES in Vietnam, including the producers, buyers, equilibrium price, and relevant institutions. Therefore, this study aims to provide an assessment of the market for FPES in Vietnam in the past decades.

The rest of the paper is constructed as follows. The next section briefly reviews some relevant literature on (F)PES, with a special focus on the Vietnamese context. After that, we present the methodologies utilized, and then discuss the relevant findings. The lastly section concludes the paper.

## MATERIALS AND METHODS

### Study area

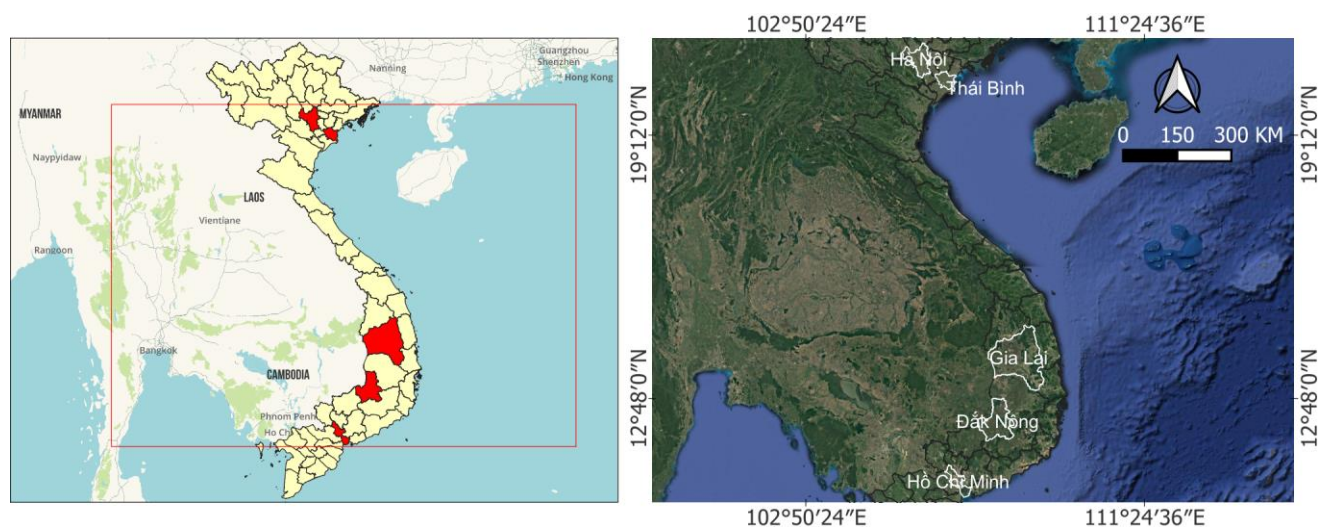
This study aims to examine the current situation and serves as a basis to indicate the limitations of the development of the FPES in Vietnam. Then, to do that, interview questionnaires were used to obtain information on the age, income, and occupation of interviewees, especially concentrating on the understanding of people in terms of ES in particular and (F)PES in general, assessments of ES users about the current payment level for ES, ES users willingness to pay an additional amount to benefit better ES (such as fresh air, more beautiful natural landscapes, among others). All collected information was used to study the current situation and served as a basis to indicate the limitations of the implementation process of FPES in Vietnam.

Following the non-probability sampling method (Brimont and Karsenty 2015; Raes et al. 2017), we surveyed 300 participants in highly representative areas such as Hanoi, Ho Chi Minh City, Thai Binh, Gia Lai, and Dak Nong (see Figure 1), with 60 questionnaires for each city or province. Hanoi and Ho Chi Minh City are the two largest cities of Vietnam with high population density and thus, have more ES beneficiaries. Gia Lai and Dak Nong, on the other hand, are two provinces with large forest areas that have implemented several FPES programs. Meanwhile, Thai Binh, a purely agricultural province without forest areas, is used as a control province to examine the spillover effect of FPES even in places without any implementations.

### Data collection

#### *FPES achievement/limitation analysis*

In this stage, content analysis was used to examine previous literature, including official reports from the national and provincial agencies, on the implementation and development of the FPES program in Vietnam. As such, the findings could inform both the FPES's achievements and limitations.



**Figure 1.** Location of the five cities/provinces of the FPES survey in Vietnam

### FPES awareness survey

To guarantee high accuracy from respondents, we designed such questionnaires based on both qualitative and content analysis methods. It means that the questions raised are not only in the form of multiple-choice but also open-ended questions so that respondents can propose their additional opinions. On the other hand, we also represented many answers to each question to avoid inadvertent answers from respondents. The age of participants ranges from 24 to 60 years old with income ranges from 5 to 10 million VND/month (equivalent to about 200 to 400 USD, respectively, with 1 USD  $\approx$  25,000 VND), representing the poor community in Vietnam. Research subjects are selected at this age because they are the main subjects of payments for environmental services, and most of them already have stable jobs and incomes; thereby, they can clarify the issue: Whether service beneficiaries (who must pay for services they use) understand services and amounts they are paying for. This expresses the reliability of answers. In addition, we also used the random interview method for research samples. Because we did not focus on FPES participants (e.g., forest owners or service buyers) but the society's awareness and understanding of FPES, and given that the nation's population surpassed 100 million people, random sampling would ensure higher representation while also limit sampling bias. Accordingly, this method would guarantee the reliability of our research results.

The questionnaire consisted of two parts: the first is about general information about interviewees, including information about age, educational background, occupation, average income level, and living area, and the second part is the main survey on the participant's understanding of ES and FPES. For this second part, the questions concentrated on assessing the respect and understanding level of people about the environment and ES to be provided, people's perspectives on the FPES that they are benefiting from as well as their willingness to make an additional payment for such benefits (e.g., fresh air, clean water, cooler climate).

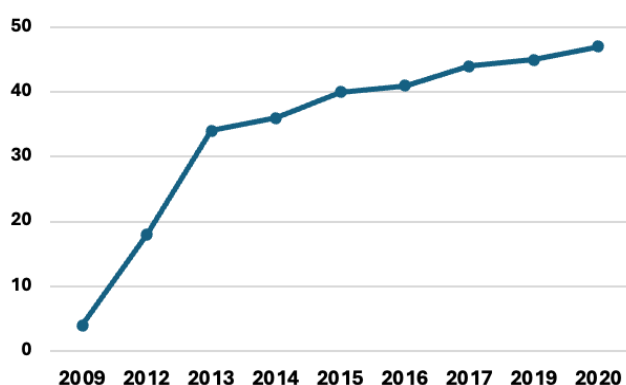


Figure 2. Number of provincial VNFFs over time (VNFF 2024)

## RESULTS AND DISCUSSION

### Fundamental achievements for the market for FPES in Vietnam

Over the past 15 years, the Vietnamese government has made great efforts in promulgating legal regulations and policies to form a legal corridor to promote the marketization of payments for environmental services. Vietnam is one of the first countries in Asia to promulgate a national program on FPES (To and Dressler 2019). Although many difficulties still exist (see Section 2.2 above), Vietnam has built a policy system for FPES. The most prominent policies are Decree No. 05/2008/ND-CP and its four attached guidelines and Decree No. 99/2010/ND-CP and the 13 attached guidelines. Up to 2018, the government has issued 23 documents related to the FPES. Although these policies are still infancy, they have helped form a basic ground for the implementation and development of the FPES market in Vietnam (VNFF 2024) in terms of monitoring, producers, buyers, and price.

Firstly, the institutions and regulations for the FPES market had been established, resulting in a system of managing agents for the FPES market that plays an important intermediary role in its payment mechanism. To date, under the VNFF, 47 local and provincial funds are operating in Vietnam. Moreover, VNFF has also signed nearly 1000 entrusted contracts, an important momentum to develop the market for FPES in the country (VNFF 2024). Figure 2 represents the growth of the VNFF system over the 2009–2020 period. Such development at the provincial level is important because it helps to improve the negotiation capacity, information accessibility, and participation ability of ES producers, especially ethnic minorities. In this sense, the provincial VNFFs would gradually play the role of a financial intermediary between ES participants and maintain the fundamentals of the ES market in Vietnam.

Secondly, the number of ES participants in the FPES market has also increased significantly. For instance, from 2016 to 2020, the number of ES producers as households, individuals, and communities had increased by more than 31% (see Figure 3), providing more than 6.5 million hectares of protected forests, accounting for about 45% of the national forest area (VNFF 2024).

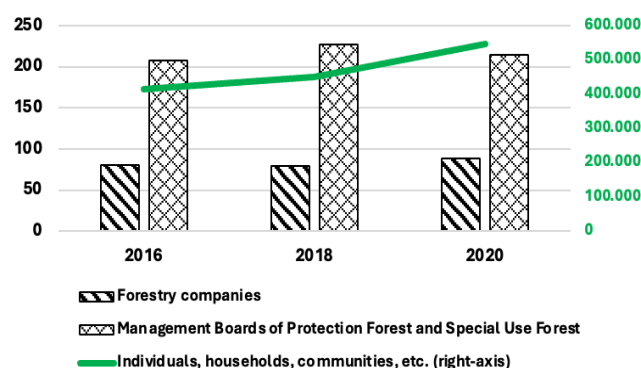


Figure 3. The development of FPES producers in Vietnam (VNFF 2024)

ES are currently provided to 387 hydropower stations, 191 clean water suppliers, 17 eco-tourism agents, and 266 industry facilities. Overall, the total number of ES buyers has increased by more than seven times and a third, respectively, compared to 2010 and 2018 (Table 1). Table 1 also reports that the major buyers in the Vietnamese FPES market are hydropower stations. While the number of industry facilities (and clean water suppliers) has increased over time, the number of participants of eco-tourism agents instead dropped in recent years, which might be due to the impacts of the COVID-19 pandemic on the tourism industry (GSO 2024; Vu et al. 2024).

Thirdly, the number of transactions in the FPES market has also increased, resulting in a significant contribution to the national and provincial budget revenues. As reported by the VNFF, the total FPES amount collected in 2020 was more than 2.5 trillion VND, equivalent to about 110 million USD (although it has dropped from the peak of more than 2.9 trillion VND or 126 million USD before COVID-19). It helped contribute to 20% of the annual cash income of more than 540 thousand ES individual/household producers (see also Figure 2), playing an important role in the win-win setting of FPES in Vietnam in terms of both poverty alleviation and forest protection/conservation (VNFF 2024). As discussed by Thuy et al. (2013), the prices or payment rates of the forest ES in the market are controlled by the government, which makes the FPES deviate from a true competitive market. However, it is understandable that the ES can be seen as positive externalities, and thus, given the Vietnamese context, government interventions are justified (Mankiw 2020).

### Re-examining the market for FPES in Vietnam

We re-examine the development of the FPES market in Vietnam by first looking at the environment and ES awareness. It is noted that more and more forest owners have realized their responsibilities for providing the ES and with a clearer understanding of the areas, scope, and boundaries of FPES (Nguyen et al. 2022; Nguyen et al. 2024). From there, the capacity and efficiency of forest management, use, and protection are improved, contributing to the implementation of forestry development strategies. Table 2 reports the results of our survey using 234 valid responses out of 300 questionnaires from five cities/provinces in Vietnam (Dak Nong, Hanoi, Ho Chi Minh City, Pleiku, and Thai Binh). Accordingly, it shows that most respondents are aware of the benefits of the environment and understand the importance of forests and other ecosystems to their lives. For instance, the roles of providing food, water, and other raw materials, as well as mitigating natural disasters and other climate protection of the environment, were recognized by 82.63 and 77.61% of the respondents, respectively (see Q1 of Table 2). Most of them also believe that the forest is important in land protection, soil erosion and flood prevention (92.66%) and in climate freshening and cooling (81.85%) – see Q3 of Table 2. As a result, 88.03% of the participants agreed that (F)PES is necessary – see Q4 of Table 2. This is the basis for moving towards the marketization of payments for environmental services in Vietnam in the coming time.

**Table 1.** Number of buyers in the Vietnamese FPES market (2010-2020)

FPES Buyers	2010	2014	2015	2016	2018	2020
Hydropower stations	4	235	285	324	387	387
Clean water suppliers	3	72	80	88	150	191
Eco-Tourism agents	5	44	44	59	76	17
Industry facilities	0	0	0	15	44	266
Total	12	351	409	486	657	861

Source: VNFF (2024)

**Table 2.** The awareness of the environment and FPES in Vietnam

Q1. Which benefits/services does the environment provide to you and your family?	
Provide food, clean water, and raw materials	82.63
Act as a waste storage place	48.26
Mitigate natural disasters, climate regulation, watershed protection	77.61
Assure the soil improvement, soil nutrient regulation	67.18
Provide entertainment, aesthetic, cultural, and educational services	50.58
Guarantee biodiversity conservation	58.30
Q3. Which benefits/services does the forest provide to the community?	
Provide wood, timbers, and other forest products other than wood	78.38
Absorb and store carbon	79.54
Protect and prevent soil erosion, floods	92.66
Store and supply water sources for daily life and production	73.75
Keep the climate fresher and cooler	81.85
Provide giving-birth places, natural breeds, and foods	65.64
Provide tourism products	64.09
Q4. In your opinion, do we need to pay for such benefits/services?	
Yes, it is necessary	88.03

Note: This table summarises the proportion of the answers with yes or agree (in percentage)

On the other hand, the understanding of the respondents on (F)PES is still incomplete, with only 58.97% recognizing the term, mainly via the media (Q6 of Table 3). While it indicates a certain level of socialization and universalization of (F)PES in Vietnamese society, it comes with a con. Without official training and education, society does not fully understand (F)PES and its market-based mechanism. Particularly, many respondents wrongly defined the (F)PES as the monetary amount to remedy environmental pollution (48.72%) or for pollution/waste treatment services (52.14%). Notably, nearly a third of the respondents (31.20%) believe that (F)PES is the allowable fee to pollute the environment.

The knowledge of the FPES market is also diverse. While most respondents (88.46%) agreed that everyone should be involved in FPES as ES beneficiaries, only around a third of them (or less) identified tourism companies, hydropower plants, clean water suppliers, and industry facilities as ES buyers in the market (Q8 of Table 4).

In terms of ES producers, two-thirds of the respondents believe that the ones in charge of environment protection should receive the ES payments (Q9 of Table 4); this finding is linked to Q7 of Table 3 and strengthens our argument that official training and education are needed to improve FPES knowledge of the Vietnamese society. As for the price in the market, most respondents accept the monitoring role of the government and agree that the current FPES rates for hydropower and clean water companies are reasonable. Around 20% of them, however, believe that the rates are still low and could be increased, so to contribute more to the win-win solution of FPES. As a result, 77.78% of the respondents are willing to pay an additional amount to receive more benefits/services from the environment (Q16 of Table 4). We further argue that it indicates the potential to increase FPES price, or even let it be defined by the buyers and sellers, in expanding the Vietnamese FPES market.

**Table 3.** The knowledge of FPES

<b>Q6. Where did you learn about FPES?</b>	
Television, radio, magazine, newspaper	35.90
Internet	38.03
Traning and Education	14.53
<b>Q7. In your opinion, what is (F)PES?</b>	
An amount to remedy environmental pollution	48.72
An amount for environmental protection and biodiversity conservation	68.80
An amount for the benefits of environmental benefits/services	48.29
An amount to pollute the environment	31.20
An amount for pollution/waste treatment services	52.14

Note: This table summarises the proportion of the answers with Yes or Agree (in percentage)

**Table 4.** The knowledge of the market for FPES

<b>Q8. Who should pay for the benefits/services provided by the environment?</b>	
Everyone	88.46
State authorities and agencies	20.09
Tourism companies	34.62
Hydropower and Clean water suppliers	29.06
Industry facilities	28.63
<b>Q9. Who should receive such payments?</b>	
Government and relevant agencies	38.46
Forest owners and contractors	15.38
Households, individuals, and communities living at water sources	10.68
Households, individuals, and agencies in charge of forest protection	68.80
<b>Q14. How do you evaluate the current rate of 36VND/kWh of electricity in FPES?</b>	
High	5.98
Low	19.23
Reasonable	63.68
<b>Q15. How do you evaluate the current rate of 52VND/m3 of clean water in FPES?</b>	
High	9.83
Low	17.95
Reasonable	61.11
<b>Q16. To receive more benefits/services from the environment, are you willing to</b>	
Paying extra for FPES	77.78

Note: This table summarises the proportion of the answers with Yes or Agree (in percentage)

In conclusion, in parallel with global economic development, improvement of people's living standards (especially for the poor and minority communities) and environmental protection and conservation are becoming more important, reflected in the SDGs agenda. This study re-examined the development of the FPES market in Vietnam, the first ASEAN country to implement this tool since 2008, by looking at the role of the government, the achievements of the FPES over the past fifteen years, and the knowledge or awareness of the society regarding the market for FPES (i.e., producers, buyers, and price). Accordingly, we confirmed that the marketization of FPES in Vietnam created significant revenues for the national and provincial budgets for forest protection and conservation, generated about 20% of cash incomes for forest owners, and expanded the area of protected forests. On the one hand, the market for FPES has been developed in terms of regulations, market participants (both ES producers and buyers), and socialization. On the other hand, there is a need for improvements in terms of official training and education, as well as market price mechanism, to expand the awareness and participation of the society toward a market-based FPES. When implemented, these improvements will ensure a win-win solution for poverty alleviation and environmental protection a positive impact that we are committed to monitoring.

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