AMBIENTE & SOCIEDADE 25 anos 25 años 25 years

SciELO

Brazil's National Policy on Payment for Environmental Services: An Analysis of Alignment with International Best Practices

Lauro de Camargo Neto [I]
Nayara Luciana Jorge [II]
Soraya Joussef Carvalho [III]
Luís Fernando Pereira de Brito [IV]
Victor Eduardo Lima Ranieri [V]
Maria Rita Raimundo e Almeida [VI]

Abstract: The enactment of Federal Law No. 14,119/2021, establishing the National Policy on Payment for Environmental Services (PNPSA in Portuguese), granted legal recognition to implement Payment for Environmental Services (PES) schemes in Brazil. However, it is crucial to assess whether the best practices recommended in scientific literature are incorporated into the legislation. This article examines the PNPSA considering PES best practices and suggests key points for its regulation. A review of the main best practices was conducted, as well as an analysis of the law based on these guidelines. The findings reveal that most of the analyzed best practices are either absent or insufficiently addressed in the legal text, particularly in the categories of "Payments," "Definition of eligible/priority areas," and "Conditionality." The law more effectively incorporates "Institutional arrangement" and "Type of participation" best practices. This analysis highlights the need for PNPSA regulations to align with best practices to ensure effectiveness.

Keywords: PES; Federal Law 14.119/2021; Ecosystem Services; Public Policies; Environmental Conservation.

[I] *EESC/USP - School of Engineering of São Carlos/University of São Paulo, São Carlos, SP, Brazil*

[II] *EESC/USP - School of Engineering of São Carlos/University of São Paulo, São Carlos, SP, Brazil.*

[III] *EESC/USP - School of Engineering of São Carlos/University of São Paulo, São Carlos, SP, Brazil.*

[IV] *EESC/USP - School of Engineering of São Carlos/University of São Paulo, São Carlos, SP, Brazil.*

[V] *EESC/USP - School of Engineering of São Carlos/University of São Paulo, São Carlos, SP, Brazil.*

[VI] *UNIFEI - Federal University of Itajubá, Itajubá, MG, Brazil.*

São Paulo. Vol. 28, 2025

Original Article

DOI: http://dx.doi.org/10.1590/1809-4422asoc00111vu28L3OA

All the contents of this journal, except where otherwise noted, is licensed under a Creative Commons Atribution License.

Introduction

The Payment for Environmental Services (PES) instrument has become increasingly important over the past two decades as a public policy aimed at achieving environmental conservation objectives, drawing interest from both academia and policymakers (Börner *et al.*, 2017; Engel; Pagiola; Wunder, 2008; Ferraro, 2011; Ferraro; Kiss, 2002; Fletcher; Büscher, 2017; Pirard, 2012; Wunder, 2005). A widely accepted definition of PES was proposed by Wunder (2015, p. 241), who describes it as "a voluntary transaction where a well-defined service (or a land-use likely to secure that service) is being 'bought' by an environmental service buyer from an environmental service provider if and only if the environmental service provider secures environmental service provision (conditionality)." Considering this, PES schemes aim to promote the preservation and/or restoration of ecosystems by compensating landowners or communities that implement practices benefiting the environment (Börner *et al.*, 2017; Engel; Pagiola; Wunder, 2008). The concept is grounded in the Coase theorem (Coase, 1960), which advocates for the creation of markets through voluntary transactions among affected parties to internalize the positive externalities generated by economic agents who engage in practices that maintain or improve environmental quality, thereby benefiting others (Engel; Pagiola; Wunder, 2008).

There are two important concepts related to PES that lack consensus in the specialized literature: ecosystem services (ES) and environmental services (ENS) (Boyd; Banzhaf, 2007; Fisher; Turner; Morling, 2009; Muradian *et al.*, 2010; Wallace, 2007). As this article focuses on the National Policy on Payment for Environmental Services (PNPSA in Portuguese), it adopts the definitions provided by the policy. ES refers to "the relevant benefits to society from ecosystems, including the maintenance, restoration, or improvement of environmental conditions", and environmental services (ENS) are "individual or collective activities that promote the maintenance, restoration, or improvement of ecosystem services" (Brasil, 2021). These definitions align with the proposal by Muradian *et al.* (2010).

Despite its significance, PES faces criticism regarding its potential inefficiency, highlighting the need for adopting best practices in implementing schemes, particularly in monitoring the results achieved. One of the main criticisms concerns the lack of evidence demonstrating a correlation between payments and the provision of ecosystem services (Calvo-Alvarado *et al.*, 2009; Engel, Pagiola; Wunder, 2008; Zanella; Schleyer; Speelman, 2014). Moreover, various schemes lack a market structure and function as state subsidies (Muradian *et al.*, 2010; Fletcher; Büscher, 2017). It is also argued that the instrument promotes the commodification and monetization of nature (Büscher; Fletcher, 2015), and many schemes fail to prioritize the reduction of socioeconomic inequalities (Karsenty *et al.*, 2017), although there is controversy among experts about using PES for this purpose.

The global implementation of PES has been expanding (Salzman *et al.*, 2018; Wunder *et al.*, 2020). Brazil is following with this trend, implementing an increasing number of PES initiatives at local and regional levels (Guerra; Ranieri, 2023; Mamedes *et al.*, 2023; Young; Bakker, 2015). Under the umbrella term of PES, Brazil has set up various initiatives, such as *ICMS Ecológico* (a criterion to calculate the tax on the circulation of

goods and services to municipalities, aimed at promoting environmental preservation), Ecological Income Tax, Amazon Fund, Climate Fund, and Water Supply programs (Santos; Fontgalland, 2022). Mamedes *et al.* (2023) reported 80 different PES projects (78 of which were implemented by 2019), predominantly in southeastern Brazil.

Although there were more PES initiatives in Brazil during the 2000s and 2010s, it was only in 2021 that the PNPSA was established, formalizing the concepts, setting objectives, guidelines, actions, and criteria for implementing these schemes in Brazil (Brasil, 2021). The PNPSA created the Federal Payment for Environmental Services Program (PFPSA in Portuguese) to implement the policy for the payment of these services by the federal government and the National Payment for Environmental Services Registry (CNPSA in Portuguese), which is intended to incorporate information about the schemes that are part of the PFPSA. At the time of writing this article, the law still lacked regulation.

Adhering to guidelines in terms of developing PES programs aligned with best practices can serve as a benchmark to ensure greater effectiveness. This article is based on the premise that to have a higher chance of success, a PES program must be in line with the best practices identified in both national and international literature. The scientific literature on these best practices is rich and complex, describing various approaches to how schemes should be designed and implemented. Guerra and Ranieri (2023) listed the main best practices that should guide PES schemes, based on a systematic review of international scientific literature, highlighting the 14 most cited. The authors emphasized that these best practices "should not be taken without critical analysis but can help actors involved with PES to have contact with successful experiences in light of replicable methodology" (Guerra; Ranieri, 2023, p. 16). This article used their research as a source to identify PES best practices related.

Assessing whether the federal law on PES aligns with best practices in the literature is crucial, as such alignment can enhance the instrument's effectiveness. Furthermore, the PNPSA is a strategic policy for nature conservation, making it essential for its regulation to be designed to guide the schemes toward greater effectiveness. Thus, this article analyzed the PNPSA in light of the best practices established in the scientific literature on PES and suggested key points for regulating it.

It is important to note that the PNPSA regulation is currently under debate (Chamber of Deputies, 2023). In October 2023, a Working Group (GT PSA in Portuguese) (Ordinance GM/MMA No. 778) was established to draft a decree to regulate the law (Ministry of the Environment and Climate Change, 2023). The recommendations for regulations identified and discussed in this paper were submitted to the GT PSA as a technical report, accompanied by findings from other studies, to support and enrich the ongoing debate.

The discussion among various sectors of society (political, economic, academic, and others) about PES best practices indicated by scientific literature is crucial and can help develop subordinate regulations aimed at detailing and directing them to ensure their effectiveness.

Methodology

The study was based on documentary analysis of Federal Law No. 14,119/2021 and the content of its text regarding the best practices reported in the scientific literature. The best practices were extracted from the systematic literature review conducted by Guerra and Ranieri (2023), who identified 37 best practices and selected 14 as the most cited, grouping them into five categories. It is worth noting that, to be aligned with the conceptual framework used in this study, the terms Ecosystem Services (ES) and Environmental Services (ENS) were adapted in some best practices, as Guerra and Ranieri (2023) used them as synonyms. The definition/justification of the best practices for evaluating the PNPSA is presented in Table 1. Based on comparing these practices with the legal text, suggestions for its regulation were identified, presented, and discussed in the results.

Table 1 – Best Practices Used for Analyzing the PNPSA.

Best practice	Definition/Justification
Category 1: Institutional arrangement	
Involvement and negotiation with stakeholders	Government participation, intermediary organizations (i.e., NGOs), and the local community (Adhikari; Agrawal, 2013; Wegner, 2016).
Clearly identified property rights	Clearly identified property rights are essential to ensure that environmental resources are properly managed (Adhikari; Agrawal, 2013; Meyer *et al.*, 2015).
Technical and budgetary support to participants	Economic incentives, technology, and machinery increase the adoption and adaptation of PES schemes, especially for small landowners (Adhikari; Agrawal, 2013; Atmodjo; Lamers; Mol, 2017).
Strengthening trust, dialogue, and collaboration between scheme actors	Communication, dialogue, and collaboration strategies among stakeholders are essential to implement a PES scheme (Adhikari; Agrawal, 2013; Wunder, 2013).
Category 2: Payments	
Payments higher than provision costs	Payments need to be higher than the costs to participate in the scheme (Lundberg *et al.*, 2018; Wunder *et al.*, 2020).
Varying payments	Differentiated payments for providers with varying provision costs make the scheme cost-efficient. These payments apply to different providers within the same project (Ezzine-de-Blas *et al.*, 2016; Lundberg *et al.*, 2018).
Category 3: Type of participation	
Voluntary participation	Participation in the program must be strictly voluntary. When engagement involves a regulatory requirement (making participation mandatory or coerced), the instrument loses its purpose (Wunder, 2015).

Best practice	Definition/Justification
Transparency of information in contracts	Transparency enhances the effectiveness of programs by enabling social oversight and monitoring of allocated resources (Adhikari; Agrawal, 2013; Mamedes *et al.*, 2023).
Flexible and/or adaptable contracts	Contractual flexibility is essential to ensure environmental efficiency (Lundberg *et al.*, 2018; Sattler; Matzdorf, 2013). It should encompass not only the ability to design different projects tailored to the local context but also the adaptability of contracts to accommodate social, environmental, or ecological changes, as well as new knowledge gained that justifies adjustments (Hiedanpää; Borgström, 2014).
Category 4: Definition of eligible/priority areas	
Well-defined ecosystem services.	The need to assess and identify ES eligible for inclusion in PES programs, considering the importance of these services being quantifiable, are factors that influence program effectiveness and can be considered essential characteristics for a program to qualify as PES (Brouwer; Tesfaye; Pauw, 2011; Chinangwa; Gasparatos; Saito, 2017).
Additionality	Increased delivery of ES (Wunder, 2015) or the protection of areas facing some level of threat to providing an ecosystem service (Engel; Pagiola; Wunder, 2008).
Spatial segmentation	Prioritization of highly relevant areas for greater environmental benefits (e.g., biodiversity or deforestation hotspots) (Ezzine-de-Blas *et al.*, 2016).
Category 5: Conditionality	
Monitoring the ES provision or land-use proxies.	Monitoring is essential for the success of PES schemes. Clear indicators must be established to track the ecosystem services or the land use specified in the contract (Aquino; Lopes Netto; Assis, 2022; Engel; Pagiola; Wunder, 2008; Ezzine-de-Blas *et al.*, 2016; Wunder, 2015).
Sanctioning the non-compliance with the provision of the ENS or activity provided for in the contract	Provision for enforcement and penalties in case of contract non-compliance (Ezzine-de-Blas *et al.*, 2016).

Font: Adapted from Guerra and Ranieri, 2023.

It is worth mentioning that in this study, Wunder's (2015) definition of PES (presented in the introduction) was used, which also served as the basis for the one adopted in the PNPSA, aiming to differentiate the instrument from other economic tools. Al-

though this definition is structured in Weber's philosophy, based on an "ideal type"[1], it is important to critically examine the tool within the framework of the logic under which it was conceptualized (Wunder, 2015). It is understood that creating an "ideal type" of PES involves, to some extent, defining detailed and rigid contours for its design, which contradicts, among other things, the best practice of maintaining flexibility in contracts (Hiedanpää; Borgström, 2014; Lundberg *et al*., 2018; Sattler; Matzdorf, 2013). Therefore, a PES "ideal type" can be presented with different contours, which does not make it ineffective, as long as the scheme is aligned with best practices. Thus, as well as creating an "ideal type," the analysis observed deviations in the PNPSA (or its developments for regulation) concerning what has been pointed out as best practices in the scientific literature, allowing for the identification of potential weaknesses in the legislation and areas for improvement to enhance the instrument's effectiveness.

Furthermore, the discussion in this article aims to analyze PES scheme best practices, not for "PES-type" schemes (schemes that share some similar characteristics but do not fit the definition of PES) or for other economic instruments that self-identify as PES but lack its essential characteristics. It is important to emphasize that "PES-type" schemes are neither better nor worse than PES schemes; on the contrary, they can be adaptations to complex realities. However, attempting to analyze and discuss other economic instruments from the perspective of best practices expected for PES does not contribute to ensuring that different instruments are applied in practice and achieve their objectives. Differentiating instruments according to their underlying principles "this may help us better understand the elements of logic behind the real-world intervention, and the assumptions needed for that logic to function" (Wunder, 2015, p. 242).

Results and Discussion

It is important to highlight that the analysis conducted was based on best practices applied at the PES project scale, rather than on a policy. Therefore, some of the best practices presented in the literature may not be relevant at this higher level of planning, as they could lead, for example, to rigid projects, making it more difficult to implement schemes in specific contexts. Thus, the law's failure to incorporate a particular best practice should not necessarily be considered a negative aspect, as long as it is addressed in the policy's regulation in a way that strengthens new projects. Therefore, the following paragraphs aim not only to discuss the PNPSA content but also to guide its regulation.

After reviewing the content of the law, the results of the PNPSA analysis in light of the best practices are shown in Table 2. Subsequently, each best practice is discussed based on what was found in the legal text, and recommendations are presented.

Before presenting the results, it is important to highlight a key point regarding the text of the law, which is fundamental for understanding and implementing the instrument. The definition of the PES used presents contradictions in relation to the content provided in the law itself. On one hand, the law defines PES (Art. 2, VI) as a "PES *stricto sensu*"—

1 - "An ideal type is formed by the one-sided accentuation of one or more points of view and by the synthesis of a great many diffuse, discrete, more or less present and occasionally absent concrete individual phenomena, which are arranged according to those one-sidedly emphasized viewpoints into a unified analytical construct" (Weber, 1949).

closely aligned with Wunder's (2015) concept, where an agreement occurs between ENS payers and providers based on practices related to natural resource use. Contradictorily, the text also opens up the possibility for PES modalities such as loan agreements, Environmental Reserve Quotas, green bonds, and "provision of social improvements to rural and urban communities" (Brasil, 2021), which, although important, are based on different logics than those outlined in the PES definition.

The literature provides evidence that using a combination of instruments leads to greater effectiveness in nature conservation (Börner; Marinho; Wunder, 2015; Camargo Neto; Paulino; Ranieri, 2022; May *et al.*, 2012; Wunder *et al.*, 2020). However, utilizing imprecise definitions may lead to interpretations that direct PES resources toward other economic incentive instruments, hindering its application and evaluation (Wunder, 2015). Moreover, PES may not always be the most appropriate tool for achieving environmental conservation goals in all contexts (Börner *et al.*, 2017). Therefore, subsidies, ecological certification, tax exemptions, environmental taxes, carbon markets, and low-interest financing lines may aim to create incentives for specific land use, but they are economic instruments that operate under a different logic and should be analyzed independently (Wunder, 2015), each requiring its own regulations. Once again, it is emphasized that the analyses conducted in this article distinguish PES from other economic instruments.

Table 2 – Analysis of Federal Law No. 14,119/2021 in Light of Best Practices Defined in the Scientific Literature on PES.

Best practice	Related PNPSA article	Findings in the PNPSA and Analysis compared to Best Practices
Involvement and negotiation with stakeholders	Arts.4 X; 5 VIII; 15	The law vaguely provides for society's participation in its objectives and guidelines, presenting it as a premise. The participation outlined in Article 15 is limited to the collegiate body of the PFPSA, with no mention of the need for involvement from the local communities of the projects.
Clearly identified property rights	Arts.6 II §4; 9 I, II, III and §sole paragraph	The law does not explicitly require proof of ownership, only that rural properties should be registered in the Rural Environmental Registry (CAR). However, the purpose of CAR is not to certify ownership but rather to verify the compliance of properties with the Native Vegetation Protection Law (LPVN).
Technical and budgetary support to participants	Art.11	Article 11 defines that "Public authorities will promote technical assistance and capacity building to foster environmental services (...)," thus indicating technical support for the participants.
Strengthening trust, dialogue, and collaboration between scheme actors	Arts.4 IX; 5 V; 14	One of the law's objectives is to promote scientific research to validate the ecosystem services provided, which helps build trust among stakeholders. As a guideline, it also emphasizes the integration of policies, fostering collaboration between different stakeholders with the involvement of intermediaries.
Payments higher than provision costs	-	Not provided.
Varying payments	Art.5 XI	The law establishes only "ensuring proportionality in the payment for environmental services rendered" as a guideline.
Voluntary participation	Arts.2 IV; 5 VII	It is outlined in the definition of PES and in the guidelines.
Transparency of information in contracts	Arts.4 X; 5 VIII; 11; 12; 13; 16	Article 5, VIII: Establishes publicity and transparency as guidelines, but they do not appear among the contractual requirements. Article 11: Provides for public authorities' role in offering technical assistance and capacity building, among other things, in the "public dissemination of information." Article 12, III: Includes access by public authorities to the contracted area and data related to maintenance, restoration, and environmental improvement actions. However, it does not include contract publicity. Article 16: Establishes the CNPSA, which contains contract information in a unified database with public access, integrated with the National Environmental Information System (Sinima), the Brazilian Biodiversity Information System (SiBBr), and the Rural Environmental Registry System (Sicar).

Best practice	Related PNPSA article	Findings in the PNPSA and Analysis compared to Best Practices
Flexible and/or adaptable contracts	-	Not provided.
Well-defined ecosystem services	-	Although the law mentions carrying out activities that qualify as ENS (e.g., Article 7), it does not include the requirement for contracts to clearly define the ecosystem services to be covered by PES. This omission may make it difficult to check the achievement of results in such schemes.
Additionality	Arts.5 IV; 8; 9	Article 5 establishes as a guideline "the complementarity of PES regarding command-and-control instruments for environmental conservation," which, in theory, would ensure additionality. However, Article 8, III, IV, and Article 9, III, sole paragraph, allow areas regulated by policies mandating environmental protection to be included as objects of PES, thereby compromising the principle of additionality.
Spatial segmentation	Arts.8; 9	Priority areas defined by public authorities and areas undergoing in areas affected by desertification or advanced fragmentation are considered eligible.
Monitoring the ES provision or land-use proxies.	Arts.4 IX and XI; 5 X; 11; 12 II; 15 IV	Article 11: Provides for the role of public authorities in "technical assistance and capacity building" and in defining metrics for valuation and monitoring. Article 12: defines that the criteria and indicators for the ENS quality, as well as the conditions and timelines for conducting inspection and monitoring, are mandatory clauses in PES contracts.
Sanctioning the non-compliance with the provision of the ENS or activity provided for in the contract	Arts.4 IX; 5 X; 12 II; 14	The law provides for the verification and confirmation of the actions stipulated in the contract through monitoring and inspection. However, it does not provide for sanctions.

Font: Authors, 2025.

"Involvement and negotiation with stakeholders" refers to the involvement of local communities and the interaction between stakeholders in the program (Guerra; Ranieri, 2023). The participatory approach is important because it typically increases the viability of PES schemes (Wegner, 2016). The law vaguely provides participation in its objectives and guidelines. Participation, as outlined in Article 15, is limited to the PFPSA collegiate body, without involving local communities in the projects. Therefore, it is recommended that stakeholder involvement should be expanded. This content could have been included in the law but should be further developed in its regulation.

In "Clearly identified property rights" it is understood that these rights are important because they influence land investment decisions (Adhikari; Agrawal, 2013), enabling landowners' access to PES schemes and facilitating ENS provision specified in the contract (Meyer *et al.*, 2015). The law is clear in restricting participation in the PFPSA for private rural properties by stating that private properties are eligible only when they are properly regularized in the CAR, if located in rural areas; if they comply with the Municipal Master Plan when in urban areas; and finally, for Private Natural Heritage Reserves (RPPN in Portuguese) and buffer zones of ecological corridors, provided they are covered by native vegetation (Art.9). Moreover, participation in the PFPSA also requires "proof of regular use or occupation of properties through the CAR" (Brasil, 2021). However, the CAR does not guarantee property ownership, as it is merely a registry to inform the regularity (or not) of rural properties in relation to the Native Vegetation Protection Law (LPVN in Portuguese). In Art.6, Paragraph 4, Item IV, the PNPSA allows the regulation to establish other requirements for participation. Therefore, the necessary content to be included in the regulation is proof of property rights for private lands. For public lands, proof of ownership and/or usage rights can be made through other legal means.

It can be observed that one of the difficulties in implementing PES schemes in Brazil is the issue of land ownership. Of the 5,073,324 rural properties, 266,910 did not have definitive land titles in 2017 (IBGE, 2017). The lack of definitive land ownership can make it challenging to use the instrument given the service providers' requirement for proof of ownership (Börner *et al.*, 2017). Thus, family farmers and settlers may face difficulties accessing the resource due to land tenure issues. However, it is precisely these landowners who would most benefit from the policy, as they have lower economic capacity compared to large landowners (Leite *et al.*, 2020). Therefore, the regulation should be attentive and sensitive to this issue.

"Technical and budgetary support to participants" is characterized by the increased adoption and adaptation of PES schemes, especially for small landowners, through economic incentives, technology, and machinery (Adhikari; Agrawal, 2013). Furthermore, incorporating technical support alongside monetary payments is essential for the long-term success of the schemes (Atmodjo; Lamers; Mol, 2017). The law provides technical and budgetary support in its objectives and guidelines (Art. 4 VII and Art.5), and in Art.11, it is defined that "public authorities will promote technical assistance and capacity building to promote environmental services" (Brasil, 2021). It is worth noting that Brazil already has a consolidated Rural Technical Assistance and Extension program, which can be

utilized for this purpose.

Participation and transparency in all PES scheme development stages are essential for improving communication and social control, as the lack of transparency weakens links between the stakeholders involved (Adhikari; Agrawal, 2013). It is important that this participation is effective, allowing for involvement and influence over decisions within PES schemes, where these elements are addressed through the "Strengthening trust, dialogue, and collaboration between scheme actors" best practice. The law provides for stimulating scientific research to prove the ES provided, thereby increasing trust between stakeholders (Art.4 IX). As one of the guidelines (Art.5 V), it provides for policy integration, facilitating collaboration between different actors with the presence of intermediaries. Moreover, it establishes that contracts involving public resources will be subject to inspection by public authorities (Art.14).

Without trust between the actors involved, voluntary PES agreements will not succeed (Wunder, 2013). Adhikari and Agrawal (2013) reviewed cases of PES schemes and concluded that they are adopted more when NGOs and civil society organizations are involved, as they can build trust between producers and beneficiaries. As PES is a relatively new instrument, it is crucial to prioritize communication efforts to provide clear information and create spaces to address any doubts among all actors, thereby preventing false expectations regarding objectives, practices, values, sanctions, and other aspects.

The need for broader societal involvement, extending beyond the directly involved actors, is also emphasized. Therefore, the regulation should propose effective forms of local social participation, ensuring that each project developed provides participatory spaces for providers, payers, and society.

"Payments higher than provision costs" are not provided for in the law and refer to all costs related to participation in the PES scheme and compliance with contractual conditions (including opportunity and transition costs) (Lundberg *et al.*, 2018). "Varying payments" are established in the law only under the guideline of "ensuring proportionality in the payment for environmental services rendered" (Brasil, 2021). Therefore, as a recommendation, the regulation should provide for flexible payments to consider different realities, costs, and project objectives, including social aspects (such as reducing inequalities). Moreover, the flexibility to make different payments for different stakeholders within the same scheme is important to value the provision of ecosystem services. Therefore, the regulation should not rigidly define the contract rules for projects to allow for this flexibility within the same scheme. The challenge lies in balancing the need for flexibility with rules that prevent the abuse of economic power by actors at various scales (national, regional, and local).

The "voluntary participation" best practice may warrant further examination in the PNPSA. On one hand, the law provides for voluntary participation in the scheme in several sections: the definition of PSA (Art.2), objectives (Art.4), and guidelines (Art.5). On the other hand, it overlooks the possibility that participating agents experiencing some degree of vulnerability could result in a situation of compulsory involvement (Martinez Alier, 2007; Zanella; Schleyer; Speelman, 2014). Furthermore, this best practice states that

"Engagement involves choice rather than being the object of regulation" (Wunder, 2015, p.4). Conflicts may arise when using PES schemes in Permanent Preservation Areas and Legal Reserves as these are areas regulated by Federal Law No. 12.651/2012. Therefore, the regulation should strengthen the landowners' voluntary nature of participation, as well as enable the choice of participation, without linking mandatory fees to the beneficiaries of environmental services.

The PNPSA incorporates the "Transparency of information in contracts" best practice in several articles. This is mentioned in its objectives and guidelines; in Art.11, which addresses the criteria for applying the PFPSA, outlining the role of the public authorities in technical assistance and information publication; in Art.12, regarding the PES contract, particularly in item III, where it addresses the public authority's access to the contract area and relevant data; and in Art.16, which ensures public access, with integration into the National Environmental Information System (Sinima), the Brazilian Biodiversity Information System (SiBBr), and the Rural Environmental Registry System (Sicar). Transparency of information in the contract helps the scheme to be more efficient as it helps build trust between producers and beneficiaries and reduces costs (Adhikari; Agrawal, 2013). Therefore, the regulation should enhance efforts for transparency and access to information in contracts, as indicated by the law. Particularly in the case of PES with public resources, transparency should enable social control of programs/projects.

The "Flexible and/or adaptable contracts" and "Well-defined ecosystem services" best practices are not provided for in the law. The first should be included in the regulation to ensure environmental efficiency (Lundberg *et al.*, 2018; Sattler; Matzdorf, 2013), covering the possibility of different projects for each local context, the flexibility to adapt contracts in case of social, environmental, or ecological changes, or new knowledge gained that justifies adjustments (Hiedanpää; Borgström, 2014). The second influences the effectiveness of the program and is an essential characteristic to consider in the PSA scheme (Brouwer; Tesfaye; Pauw, 2011; Chinangwa; Gasparatos; Saito, 2017). Therefore, the regulation should define the ES targeted by the activities carried out. It is also important to define the ENS to be provided by the project, the rural landowner, and other involved stakeholders to ensure the activities are properly managed.

Based on the definitions in the law, the PNPSA does not include the "Additionality" best practice. "Additionality" refers to the increase in ES provision when compared to an area without a PES (Wunder, 2015) or the protection of areas that face threats to continued ES provision (Engel; Pagiola; Wunder, 2008; Wunder, 2007). This concept is key to the success of PES because, if participants were already meeting the conditions established in the PES program, even in the absence of payments, the program would become inefficient (Lundberg *et al.*, 2018; Wunder *et al.*, 2008), and consequently, a waste of resources.

Clarifying these points, the PNPSA outlines as a guideline the alignment of rural properties with environmental legislation (Art. 5 IX) and the complementarity of PES regarding command-and-control instruments for environmental conservation (Art. 5 IV). It also specifies that the PFPSA may include areas such as Integral Protection Con-

servation Units, Extractive Reserves (ResEx in Portuguese), Sustainable Development Reserves (RDS in Portuguese), and Private Natural Heritage Reserves (RPPN) (Art.8). Furthermore, it defines (Art.9):

> "Permanent Preservation Areas, Legal Reserves, and other areas subject to administrative limitations according to environmental legislation are eligible for payment for environmental services using public funds, as per regulations, with preference given to those located in watersheds considered critical for public water supply, as defined by the competent authority, or priority areas for conserving biological diversity in areas affected by desertification or advanced fragmentation" (Brasil, 2021).

By enabling Permanent Preservation Areas and Legal Reserves as eligible areas for Payment for Environmental Services (PSA) schemes, the law could weaken the landowners' obligations to protect these areas. The overlap of economic incentives and command-and-control instruments within the same territory can be interpreted as a strategy to tie legal compliance to receiving incentives (Karsenty *et al.*, 2017; Santos; Guelfi; Bertão, 2022). In other words, it is the landowner's duty to comply with Federal Law No. 12.651/2012, regardless of receiving compensation if participating in a PES scheme, and failure to receive compensation does not absolve the "landowner's duty to preserve and restore the environment in these areas" (Santos; Guelfi; Bertão, 2022, p.213).

In this scenario, the additionality of a project in these areas is uncertain, as it is impossible to determine whether the additionality is linked to the obligation imposed by the Native Vegetation Protection Law (LPVN in Portuguese) or to the PES scheme. Evaluating the effectiveness of combining public policies, at best, is challenging (Bouma *et al.*, 2019). Therefore, it is unreasonable to claim that there is additionality in the preservation of areas regulated by command-and-control instruments. Thus, the regulation should not consider additionality in areas where mandatory protection instruments apply and should only consider it in areas where land use holders have the freedom to make changes in land use. In other words, additionality can primarily be observed in private land areas, except for mandatory protection areas (Permanent Preservation Areas and Legal Reserves). This logic also applies to Conservation Units, where there is no additionality if the State is responsible for the protection of the area, regardless of the existence of a PES scheme. The exception may be discussed in areas where land use conversion is possible, such as those specified in the Extractive Reserves (ResEx) and Sustainable Development Reserves (RDS) management plans.

Some authors defend using PES to regulate Permanent Preservation Areas and Legal Reserves (Börner; Marinho; Wunder, 2015; Zanella; Schleyer; Speelman, 2014), contrasting legal additionality with real additionality (Karsenty *et al.*, 2017). However, it is contradictory to use PES in its strict sense for Permanent Preservation Areas and Legal Reserves due to the principle of voluntariness and additionality. It is also worth noting that there are other economic instruments that could be applied to stimulate Permanent Preservation Areas and Legal Reserves conservation or recovery, which aim to improve

the well-being of small rural landowners and traditional communities in socio-economic vulnerability. Examples include credit lines, subsidies, carbon markets, and technical support (Leite *et al.*, 2020).

Thus, as a rule and in line with best practices, it is understood that PES should not be used for areas under mandatory protection. However, considering the economic difficulties faced by some social groups in restoring native ecosystems as required by law, exceptions may be reconsidered cautiously in the regulation, as would be the case for the priority groups defined in the PNPSA (Art.6 §2). In this limited context, following the logic advocated for other economic incentive instruments (Leite *et al.*, 2020), PES schemes can serve as a tool to help fulfill the legal obligations for mandatory protection areas. However, it is essential to reflect on the potential impact that citizens may have regarding current and future environmental regulations, as paying for something that was once obligatory could undermine the enforcement of more restrictive nature protection laws by emphasizing a utilitarian logic (cost/benefit calculation) (Karsenty *et al.*, 2017).

The definition of eligible/priority areas is considered a key factor for the success of a PES scheme, as it directs the program towards suitable areas (Gutiérrez Rodríguez *et al.*, 2015). To this end, the ES should be well-defined, meaning that the services eligible for inclusion in the program need to be identified and quantified (Brouwer; Tesfaye; Pauw, 2011; Chinangwa; Gasparatos; Saito, 2017). Priority should be given to areas with high relevance for the greatest environmental benefit (biodiversity hotspots or deforestation hotspots) (Ezzine-de-Blas *et al.*, 2016), which characterizes the "Spatial Segmentation" best practice.

Highly relevant areas for greater environmental benefit are mentioned in the law, but they are not clearly defined which might result in a lack of transparency and understanding. The PNPSA specifies the following as a criterion for being eligible for PES schemes: "priority areas for conserving biodiversity, as defined by public authority acts" (Art.8º VII). It also indicates "priority areas for conserving biological diversity in areas affected by desertification or advanced fragmentation" (Art.9º) as eligible areas on private properties. However, it is unclear whether the priority areas referred to in the article are those defined by Federal Decree No. 5.092/2004 and MMA Ordinance No. 09/2007, which outline "actions and areas for prioritizing biodiversity conservation across all major biomes and Coastal and Marine Zones" (Ministry of the Environment, 2007), thus including the two Brazilian biodiversity hotspots – the Atlantic Forest and the *Cerrado* (tropical savanna). Therefore, this should be clarified in the regulation.

Regarding "Spatial Segmentation," it is important to propose conducting studies at different scales (from broader to more localized) to define priority areas, considering the potential provision of multiple ecosystem services (e.g., water, carbon, etc.). This can be addressed in the regulation by proposing integration with territorial planning instruments, such as watershed management plans, municipal master plans, ecological-economic zoning, among others.

"Monitoring the ES provision or land-use proxies" is characterized as one of the most important aspects for a PES scheme to function. This is because performance

measurements verify environmental improvement through the provision of ENS and help create a comparative baseline (Aquino; Lopes Netto; Assis, 2022; Engel; Pagiola; Wunder, 2008). Ezzine-de-Blas *et al.* (2016) hypothesized that PES schemes with robust monitoring are more likely to achieve superior environmental outcomes.

Article 12 stipulates that the regulation must define the essential clauses for each type of PES contract, including, among other things, those related to the criteria and indicators for the ENS quality provided, as well as the methods, conditions, and deadlines for conducting supervision and monitoring. Therefore, the regulation should guide the frequency at which monitoring should occur. It is also important to ensure that, in addition to monitoring the activities specified in the contract (which are, in fact, proxies), evidence of positive environmental impact resulting from the PES scheme is monitored (Brouwer; Tesfaye; Pauw, 2011), ensuring that it meets its objectives of improving environmental quality, or in other words, increasing the ES provision.

Finally, the "Sanctioning the non-compliance with the provision of the ENS or activity provided for in the contract", meaning the provision of sanctions in case of breach of contract (Ezzine-de-Blas *et al.*, 2016), is not provided for in the PNPSA. Therefore, it is important for the regulation to include guidelines for sanctions in case of non-compliance with the terms outlined in the contract.

Final Considerations

The analysis integrated scientific best practices, as defined in the literature, with the national policy supporting the PES instrument, aiming to enhance Federal Law No. 14.119/2021 and its regulatory framework. PES is a relevant instrument for public policies aimed at nature protection. However, it faces criticism regarding the risk of inefficiency, highlighting the need to adopt best practices when implementing these schemes.

To provide clearer guidelines for the instrument, a "PES ideal type" was defined. Additionally, the analysis and application of best practices aimed to ensure the PES aligned with its original design purpose. This enabled us to identify deviations between the actual policy and the foundational rationale justifying the instrument, as well as to uncover potential weaknesses and areas for improvement in the law or its regulation, aiming for greater effectiveness in the environmental protection public policy. Therefore, an effective PES is one that achieves the goals of increasing the ES provision, and to do so, it is important that it is aligned with best practices.

Based on the analysis conducted, it was observed that most of the best practices reviewed are either not present in the PNPSA or are included but with insufficient details. Therefore, the regulation needs to take into account these best practices, particularly those that have limited content and guidance in the PNPSA, in order to ensure the greater effectiveness of the instrument.

The best practices that are less present or absent from the text of the law include: "Payments higher than provision costs," "Varying payments," "Well-defined ecosystem

services," "Additionality," "Spatial segmentation," "Monitoring the ES provision or land-use proxies" and "Sanctioning the non-compliance with the provision of the ENS or activity provided for in the contract". However, it is understood that, despite having gaps in incorporating these best practices, the law was an important milestone in establishing the PNPSA, providing guidelines for the instrument in Brazil.

As argued, PES is a viable option for achieving nature conservation goals, but not the only one. Other instruments (such as credit lines, subsidies, carbon markets, and technical support) may be more suitable tools for fostering environmental protection depending on the context. In the case of small rural landowners and traditional communities in situations of socioeconomic vulnerability, PES schemes, as an exception, may have a positive impact in promoting compliance with legal obligations for protected areas (Permanent Preservation Areas and Legal Reserves).

Finally, it is crucial to highlight the importance of presenting, sustaining, and expanding the discussion within the academic sphere regarding the proposed suggestions for advancing the PES instrument in Brazilian legislation, focusing on incorporating best practices. Regardless of the regulation underway, the debate will also provide valuable input for the development of future sub-regulatory norms.

References

ADHIKARI, B.; AGRAWAL, A. Understanding the Social and Ecological Outcomes of PES Projects: A Review and an Analysis. **Conservation and Society**, v.11, n.4, p.359–374, 2013.

AQUINO, A.; LOPES NETTO, A.; ASSIS, R. L. **Desenvolvimento sustentável em ambientes de montanha: estratégias e experiências**. Niterói: Embrapa Agrobiologia, 2022.

ATMODJO, E.; LAMERS, M.; MOL, A. Financing marine conservation tourism: Governing entrance fees in Raja Ampat, Indonesia. **Marine Policy**, v.78, p.181–188, 2017.

BÖRNER, J.; BAYLIS, K.; CORBERA. E.; EZZINE-DE-BLAS, D.; HONEY-ROSÉS, J.; PERSSON, U. M.; WUNDER, S. The Effectiveness of Payments for Environmental Services. **World Development**, v.96, p.359–374, 2017.

BÖRNER, J.; MARINHO, E.; WUNDER, S. Mixing Carrots and Sticks to Conserve Forests in the Brazilian Amazon: A Spatial Probabilistic Modeling Approach. **PLOS ONE**, v.10, n.2, p.e0116846, 2015.

BOUMA, J.A.; VERBRAAK, M.; DIETZ; F.; BROUWER, R. Policy mix: mess or merit? **Journal of Environmental Economics and Policy**, v.8, n.1, p.32-47, 2019.

BOYD, J.; BANZHAF, S. What are ecosystem services? The need for standardized environmental accounting units. **Ecological Economics**, v.63, n.2-3, p.616-626, 2007.

BRASIL. **Lei No 14.119, de 13 de janeiro de 2021**. Institui a Política Nacional de Pagamento

por Serviços Ambientais. Brasília, 2021. Available on: http://www.planalto.gov.br/ccivil_03/_ato2019-2022/2021/lei/L14119.htm. Accessed 7 jun. 2023.

BROUWER, R.; TESFAYE, A.; PAUW, P. Meta-analysis of institutional-economic factors explaining the environmental performance of payments for watershed services. **Environmental Conservation**, v.38, n.4, p.380–392, 2011.

BÜSCHER, B.; FLETCHER, R. Accumulation by Conservation. **New Political Economy**, v.20, n.2, p.273–298, 2015.

CALVO-ALVARADO, J.; MCLENNAN, B.; SÁNCHEZ-AZOFEIFA, A.; GARVIN, T. Deforestation and forest restoration in Guanacaste, Costa Rica: Putting conservation policies in context. **Forest Ecology and Management**, v.258, n.6, p.931–940, 2009.

CÂMARA DOS DEPUTADOS. **Comissão de Agricultura debate regulamentação da política de pagamento por serviços ambientais - Notícias**. 2023. Available on: https://www.camara.leg.br/noticias/966019-comissao-de-agricultura-debate-regulamentacao-da-politica-de-pagamento-por-servicos-ambientais/. Accessed 17 jan. 2024.

CAMARGO NETO, L.; PAULINO, E. R. M.; RANIERI, V. E. L. Instrumentos de comando e controle para a conservação da natureza em terras privadas sempre fracassam? **Ambiente & Sociedade**, v.25, p.e00241, 2022.

CHINANGWA, L.; GASPARATOS, A.; SAITO, O. Forest conservation and the private sector: stakeholder perceptions towards payment for ecosystem service schemes in the tobacco and sugarcane sectors in Malawi. **Sustainability Science**, v.12, n.5, p.727–746, 2017.

COASE, R. H. The Problem of Social Cost. **The Journal of Law & Economics**, v.3, p.1–44, 1960.

ENGEL, S.; PAGIOLA, S.; WUNDER, S. Designing payments for environmental services in theory and practice: An overview of the issues. **Ecological Economics**, v.65, n.4, p.663–674, 2008.

EZZINE-DE-BLAS, D.; WUNDER, S.; RUIZ-PÉREZ, M.; MORENO-SANCHEZ, R. P. Global Patterns in the Implementation of Payments for Environmental Services. **PLOS ONE,** v.11, n.3, p.e0149847, 2016.

FERRARO, P. J. The Future of Payments for Environmental Services. **Conservation Biology,** v.25, n.6, p.1134–1138, 2011.

FERRARO, P. J.; KISS, A. Direct Payments to Conserve Biodiversity. **Science**, v.298, n.5599, p.1718–1719, 2002.

FISHER, B.; TURNER, R. K.; MORLING, P. Defining and classifying ecosystem services for decision making. **Ecological Economics**, v.68, n.3, p.643–653, 2009.

FLETCHER, R.; BÜSCHER, B. The PES conceit: revisiting the relationship between Payments for Environmental Services and neoliberal conservation. **Ecological Economics**, v.132, p.224–231, 2017.

GUERRA, B. R.; RANIERI, V. E. L. Diretrizes para o planejamento e desenho de esquemas de

Pagamento por Serviços Ambientais. **Ambiente & Sociedade**, v.26, p.e00601, 2023.

GUTIÉRREZ RODRÍGUEZ, L.; HOGARTH, N.; ZHOU, W.; PUTZEL, L.; XIE, C.; ZHANG, K. Socioeconomic and environmental effects of China's Conversion of Cropland to Forest Program after 15 years: a systematic review protocol. **Environmental Evidence**, v.4, p.1–11, 2015.

HIEDANPÄÄ, J.; BORGSTRÖM, S. Why do some institutional arrangements succeed? Voluntary protection of forest biodiversity in Southwestern Finland and of the Golden Eagle in Finnish Lapland. **Nature Conservation**, v.7, p.29–50, 2014.

INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA. **Censo Agropecuário 2017: Resultados Definitivos**. Rio de Janeiro: IBGE, 2017. Available on : https://biblioteca.ibge.gov.br/visualizacao/periodicos/3096/agro_2017_resultados_definitivos.pdf.

KARSENTY, A.; AUBERT, S.; BRIMONT, L.; DUTILLY, C.; DESBUREAUX, S.; EZZINE-DE-BLAS, D.; LE VELLY, G. The Economic and Legal Sides of Additionality in Payments for Environmental Services. **Environmental Policy and Governance**, v.27, n.5, p.422–435, 2017.

LEITE, M. D. S.; SILVA JÚNIOR, J. A.; CALABONI. A.; IGARI A. T. Fatores socioeconômicos e a vegetação nativa em imóveis rurais no estado de São Paulo. **Ambiente & Sociedade**, v.23, p.e03093, 2020.

LUNDBERG, L.; PERSSON, U. M.; ALPIZAR, F.; LINDGREN, K. Context Matters: Exploring the Cost-effectiveness of Fixed Payments and Procurement Auctions for PES. **Ecological Economics**, v.146, p.347–358, 2018.

MAMEDES, I.; GUERRA, A.; RODRIGUES, D. B. B.; GARCIA, L. C.; GODOI, F. R.; OLIVEIRA, P. T. S. Brazilian payment for environmental services programs emphasize water-related services. **International Soil and Water Conservation Research**, v.11, n.2, p.276–289, 2023.

MARTINEZ ALIER, J. **Ecologismo dos pobres**. 2.ed. São Paulo: Editora Contexto, 2007.

MAY, P. H.; ANDRADE, J.; VIVAN, J. L.; KAECHELE, K.; GEBARA, M. F.; ABAD, R. **Assessment of the role of economic and regulatory instruments in the conservation policymix for the Brazilian Amazon – a coarse grain analysis**. Rio de Janeiro, 2012.

MEYER, C.; REUTTER, M.; MATZDORF, B.; SATTLER, C.; SCHOMERS, S. Design rules for successful governmental payments for ecosystem services: Taking agri-environmental measures in Germany as an example. **Journal of Environmental Management**, v.157, p.146–159, 2015.

MINISTÉRIO DO MEIO AMBIENTE. **Portaria n° 9, de 23 de janeiro de 2007**. Diário Oficial da União, Brasília, 2007.

MINISTÉRIO DO MEIO AMBIENTE E MUDANÇA DO CLIMA. **Portaria GM/MMA n° 778, de 5 de outubro de 2023**. Diário Oficial da União, Brasília, 2023.

MURADIAN, R.; CORBERA, E.; PASCUAL, U.; KOSOY, N.; MAY, P. H. Reconciling theory and practice: An alternative conceptual framework for understanding payments for environmental services. **Ecological Economics**, v.69, n.6, p.1202–1208, 2010.

PIRARD, R. Market-based instruments for biodiversity and ecosystem services: A lexicon. **Envi-**

ronmental Science & Policy, v.19–20, p.59–68, 2012.

SALZMAN, J.; BENNETT, G.; CARROLL, N.; GOLDSTEIN, A.; JENKINS, M. The global status and trends of Payments for Ecosystem Services. **Nature Sustainability**, v.1, n.3, p.136–144, 2018.

SANTOS, V. É. S.; FONTGALLAND, I. L. Pagamentos por serviços ambientais (PSA) x novo código florestal: uma análise no Estado da Paraíba. **Brazilian Journal of Animal and Environmental Research,** v.5, n.4, p.4180–4198, 2022.

SANTOS, S. S.; GUELFI, A. R.; BERTÃO, S. M. **A política nacional de pagamento por serviço ambiental: um retrocesso?** 2022. Available on: https://bdjur.stj.jus.br/jspui/handle/2011/171924. Accessed: 29 jun. 2023.

SATTLER, C.; MATZDORF, B. PES in a nutshell: From definitions and origins to PES in practice—Approaches, design process and innovative aspects. **Ecosystem Services**, v. 6, p. 2–11, 2013.

WALLACE, K. J. Classification of ecosystem services: Problems and solutions. **Biological Conservation**, v.139, n.3, p.235–246, 2007.

WEBER, M. **The Methodology of the Social Sciences**. Tradução: SHILS, E.; FINCH, H.A. 1.ed. Glencoe: Free Press, 1949.

WEGNER, G. I. Payments for ecosystem services (PES): a flexible, participatory, and integrated approach for improved conservation and equity outcomes. **Environment, Development and Sustainability**, v.18, p.617–644, 2016.

WUNDER, S.; BORNER, J.; TITO, M. R.; PEREIRA, L. S. **Pagamentos por serviços ambientais: perspectivas para a Amazônia Legal**. Brasília: Ministério do Meio Ambiente, 2008.

WUNDER, S.; BORNER, J.; EZZINE-DE-BLAS, D.; FEDER, S.; PAGIOLA, S. Payments for Environmental Services: Past performance and pending potentials. **Annual Review of Resource Economics**, v.12, n.1, p.209–234, 2020.

WUNDER, S. **Payments for environmental services: some nuts and bolts**. 2005.

WUNDER, S. Revisiting the concept of payments for environmental services. **Ecological Economics**, v.117, p.234–243, 2015.

YOUNG, C.; BAKKER, L. de. Incentivos econômicos para serviços ecossistêmicos no Brasil. **Forest Trends**, n.118, 2015.

ZANELLA, M. A.; SCHLEYER, C.; SPEELMAN, S. Why do farmers join Payments for Ecosystem Services (PES) schemes? An Assessment of PES water scheme participation in Brazil. **Ecological Economics**, v.105, p.166–176, 2014.

Lauro de Camargo Neto

✉ lauro.cneto@gmail.com

ORCiD: https://orcid.org/0000-0002-5092-491X

Submitted on: 06/02/2024
Accepted on: 08/12/2024
2025;28:e00011

Nayara Luciana Jorge

✉ nayara.ljorge@usp.br

ORCiD: https://orcid.org/0000-0003-1355-2966

Soraya Joussef Carvalho

✉ sorayacarvalho@usp.br

ORCiD: https://orcid.org/0000-0001-8179-1411

Luís Fernando Pereira de Brito

✉ luis.fernando.brito@usp.br

ORCiD: https://orcid.org/0000-0002-4806-0729

Victor Eduardo Lima Ranieri

✉ vranieri@sc.usp.br

ORCiD: https://orcid.org/0000-0002-9203-5037

Maria Rita Raimundo e Almeida

✉ mrralmeida@unifei.edu.br

ORCiD: https://orcid.org/0000-0001-6228-6110

AMBIENTE & SOCIEDADE 25 anos 25 años 25 years

SciELO

Análise da Política Nacional de Pagamento por Serviços Ambientais à Luz das Boas Práticas Internacionais

Lauro de Camargo Neto
Nayara Luciana Jorge
Soraya Joussef Carvalho
Luís Fernando Pereira de Brito
Victor Eduardo Lima Ranieri
Maria Rita Raimundo e Almeida

Resumo: Com a Lei Federal nº 14.119/2021 – Política Nacional de Pagamento por Serviços Ambientais (PNPSA) formalizando a aplicação de Pagamentos por Serviços Ambientais (PSA), os esquemas de PSA praticados no Brasil obtiveram respaldo legal. Entretanto, faz-se necessário verificar se as boas práticas recomendadas pela literatura científica são incorporadas pela legislação. O artigo analisa a PNPSA à luz das boas práticas sobre PSA e sugere pontos essenciais para a sua regulamentação. Foram realizados o levantamento das principais boas práticas e a análise da lei com base nessas orientações. Observou-se que a maior parte das boas práticas analisadas não é contemplada no texto legal, ou o conteúdo é insuficiente, principalmente nas categorias "Pagamento", "Definição de áreas elegíveis/prioritárias" e "Condicionalidade". A lei abarca melhor as boas práticas "Institucional" e "Tipo de adesão". A análise demonstra a necessidade da regulamentação da PNPSA estar alinhada às boas práticas para garantir a sua efetividade.

Palavras-chave: PSA; Lei Federal 14.119/2021; Serviços Ecossistêmicos; Políticas Públicas; Conservação Ambiental.

São Paulo. Vol. 28, 2025

Artigo Original

Todo o conteúdo deste periódico, exceto onde está identificado, está licenciado sob uma Licença Creative Commons.

AMBIENTE & SOCIEDADE 25 anos 25 años 25 years

SciELO

Análisis de la Política Nacional Brasileña de Pago por Servicios Ambientales y Buenas Prácticas Bibliográfica

Lauro de Camargo Neto
Nayara Luciana Jorge
Soraya Joussef Carvalho
Luís Fernando Pereira de Brito
Victor Eduardo Lima Ranieri
Maria Rita Raimundo e Almeida

São Paulo. Vol. 28, 2025

Artículo Original

Resumen: Con la Ley Federal nº 14.119/2021, Política Nacional de Pago por Servicios Ambientales (PNPSA), los esquemas de PSA practicados en Brasil han ganado respaldo legal. Sin embargo, es necesario comprobar si las buenas prácticas recomendadas en la literatura científica se incorporan a la legislación. El artículo analiza el PNPSA a la luz de las buenas prácticas en PSA y sugiere puntos clave para su regulación. Se estudiaron las principales buenas prácticas y se analizó la ley a partir de estas directrices. Se observó que la mayoría de las buenas prácticas señaladas no están incluidas en el texto legal, o su contenido es insuficiente, especialmente en las categorías de "Pago", "Definición de áreas elegibles/prioritarias" y "Condicionalidad". La ley atende mejor las buenas prácticas "Institucional" y "Tipo de afiliación". El análisis demuestra la necesidad de alinear la normativa del PNPSA con las buenas prácticas para garantizar su eficacia.

Palabras-clave: PSA; Ley Federal 14.119/2021; Servicios Ecosistémicos; Políticas públicas; Conservación ambiental.

Todo el contenido de esta revista, excepto dónde está identificado, está bajo una Licencia Creative Commons.