



Mechanisms similar to Payment for Environmental Services (PES) to promote socio-environmental development: An analysis based on the case of Alpargatas S/A

Mecanismos similares al Pago por Servicios Ambientales (PSA) como medios de promoción del desarrollo socioambiental: Un análisis basado en el caso de Alpargatas S/A

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Abstract: The objective of this work is to analyze the mechanisms of actions inspired by the approach of Payments for Environmental Services (PES) as a promotion for socio-environmental development by the private sector based on a case study of Alpargatas S/A. The research was carried out in the bibliographic and documentary modality. The document analysis of the data was for the years 2021 and 2022, when the company began to publish the Annual Sustainability Report as a transparency and governance strategy. For documental analysis of the management instruments, it was carried out in search of evidence of mechanisms similar to those of PES. Thus, under the lens of analysis from the social perspective, the company acts in the promotion of education, inclusion and income generation, considered by the organization as structural aspects of society. Under the lens of environmental analysis, it invests in the use of resources through reverse logistics, and in suppliers that are in accordance with the socio-environmental criteria of Alpargatas S/A, in the greenhouse gas emissions (GHGs), and energy reduction. The company's challenges consist of carbon retention or capture, seeking to offset emissions through the process of reverse logistics, carbon neutrality and carbon offsetting from reforestation in the Amazon. As far as water sources are concerned, there is no surface water abstraction. There is no water withdrawal in an area of water stress.

Keywords: *Socio-environmental responsibility; Private enterprise; Externalities; Economic development; Environmental development.*

Resumen: El objetivo de este trabajo es analizar los mecanismos de actuación inspirados en el enfoque de Pagos por Servicios Ambientales (PSA) como promoción para el desarrollo socioambiental por parte del sector privado a partir de un estudio de caso de Alpargatas S/A. La investigación se realizó en la modalidad bibliográfica y documental. El análisis documental de los datos correspondió a los años 2021 y 2022, cuando la empresa comenzó a publicar el Informe Anual de Sostenibilidad como estrategia de transparencia y gobernanza. Para el análisis documental de los instrumentos de gestión, se realizó en busca de evidencias de mecanismos similares a los de PSA. Así, bajo el lente de análisis de la perspectiva social, la empresa actúa en la promoción de la educación, inclusión y generación de renta, considerados por la organización como aspectos estructurales de la sociedad. Bajo la lente del análisis ambiental, invierte en el uso de recursos por medio de la logística reversa, y en proveedores que estén de acuerdo con los criterios socioambientales de Alpargatas S/A, en las emisiones de gases de efecto invernadero (GEI) y en la reducción de energía. Los desafíos de la empresa consisten en la retención o captura de carbono, buscando compensar las emisiones a través del proceso de logística reversa, neutralidad de carbono y compensación de carbono a partir de la reforestación en la Amazonia. En cuanto a las fuentes

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de agua, no hay captación de aguas superficiales. No hay extracción de agua en una zona de estrés hídrico.

Palabras clave: *Responsabilidad social y medioambiental; Empresa privada; Externalidades; Desarrollo económico; Desarrollo medioambiental.*

INTRODUCTION

In Brazil, analysis of environmental services and their valuation was introduced by some economists in 1970, who already had the idea of the finiteness and risk of scarcity of natural resources. It was only in the 1990s that mentions of this area of knowledge gained national prominence (Gossenheimer and Turatti, 2019).

Until then, economic and environmental interests were seen as antagonistic. The challenge is to maintain economic activities under the premise of the concept of sustainability of environmental services. Faced with this need, the main divergences between economics and ecology have arisen, stemming from the fact that ecosystems have cyclical processes, as do production processes. In a nutshell, it can be said that the environment-economic growth *trade-off* has remained as long as it has not resolved the issue of the limits signaled by natural systems (Altmann, *et al.* 2015).

In view of the above, environmental economics in its theoretical development and application consists of identifying the economic values of environmental goods and services, since "if they are not included in the current price system, environmental resources can be used in a more damaging and predatory way than would be socially appropriate" (Amazonas, 2009).

To this end, environmental policies play an important role in the planning, creation and execution of public policies, carried out through joint work between the three branches of government: the Legislative, Executive and Judiciary (Camila de Paula, 2023). Therefore, in order to guarantee the effectiveness of these policies, the joint action of the different spheres of organizations, as well as the private sector and society in general, is essential.

In this scenario, this paper emphasizes Payment for Environmental Services (PES), a tool that aims to compensate those who recover, maintain or increase the production of an ecological service through their management practices (Altmann, *et al.* 2015). It is a recent economic instrument in the Brazilian environmental matrix for environmental protection and management, but it is gaining ground on the national scene.

In view of the above, the main objective of this paper is to analyze the mechanisms of actions inspired by the Payments for Environmental Services (PES) approach as a means of promoting socio-environmental development by private initiative, based on a case study of Alpargatas S/A. Law No. 14.119/2021, on the National Policy for Payment for Environmental Services, in its article 3, item I, on

direct payment, monetary or non-monetary, and item II, on the provision of social improvements for rural and urban communities, and article 5, item III and article 6, § 2 of the law, as an instrument to promote the social, environmental, economic and cultural development of populations in rural and urban areas, especially traditional communities, indigenous peoples and family farmers (Brasil, 2021).

THEORETICAL BACKGROUND

Payment for Environmental Services (PES) and Brazilian legislation

According to Wunder (2005), Payments for Environmental Services (PES) gained prominence at the end of the 1990s as a market instrument to enable environmental protection and have been incorporated into public policies in various countries. In Brazil, PES policies emerged in 2000, inspired by pioneering experiences in Latin America.

In Federal Bill No. 792/2007, which is the subject of Chapter 14.1, the combination of items IV and VI of art. 2^o . of the Bill (PL) allows us to identify the type of practice eligible for a PES, i.e. that which "maintains", "recovers" or "improves" the environmental conditions of ecosystems that provide environmental services. Based on the protector-recipient principle, rather than the polluter-pays principle, PES represents a new approach to environmental management, since it mostly uses a benefit, rather than a punishment, to obtain socially desirable behavior (Altmann, *et al.* 2015).

On January 13, 2021, Law No. 14,119 was recently approved, establishing the National Policy for Payment for Environmental Services, which represents an important legal framework for the implementation of PES programs (Lima and Marques, 2023). According to the general provisions of Article 3, the following are modalities of payment for environmental services, among others:

I - direct payment, monetary or non-monetary; II - provision of social improvements to rural and urban communities; III - compensation linked to a certificate for reducing emissions from deforestation and degradation; IV - *green bonds*[...](Brazil, 2021).

The priority for the use of PES is set out in Article 5, III and Article 6, § 2 of the law, as an instrument for promoting the social, environmental, economic and cultural development of populations in rural and urban areas, especially traditional communities, indigenous peoples and family farmers (Brasil, 2021).

A recent update to the legislation, Law No. 14.653, of August 23, 2023 amends Art. 2 of the sole paragraph of Art. 9 of Law No. 14.119, of January 13, 2021. The sole paragraph states that Permanent Preservation Areas, Legal Reserves and other areas under administrative limitation under the terms of

environmental legislation will be eligible for PES with the use of public resources, with preference for those located around springs and watersheds considered critical by the competent body for supply or in priority areas for the conservation of biological diversity in the process of desertification or advanced fragmentation (Brasil, 2023).

Environmental services, externalities and Payment for Environmental Services (PES)

Discussions about ecosystems and their importance for the well-being of humanity date back to the second half of the 20th century, and the narrative has evolved into the current concept of environmental services (Weins, *et al.* 2022), which are the benefits that humans obtain from natural ecosystems, i.e. a recognition structured in scientific proposition of the dependence that humans have on nature for their well-being and survival (Mutimucuo, 2021).

In this way, the 1990 national survey on the valuation of environmental systems achieved an important advance in terms of conceptual construction, given its ability to unify economics and ecology" (Altmann, *et al.* 2015). Especially in the last twenty years, which have been marked by a growing awareness that the growth model, based on the unlimited exploitation of natural resources and the excessive disposal of waste, has proved to be unsustainable (Rocha, 2014).

Therefore, the concept of environmental services is closely linked to environmental degradation, with ancient civilizations advocating the exploitation of nature rather than its capacity to regenerate (Mutimucuo, 2021). In this sense, this approach is unique because of the potential for recognizing the value of nature can solve the problem of managing natural resources, particularly in the face of declining biodiversity.

To help demonstrate the value of ecosystem services to humans, correcting market failures and guaranteeing the flow of ecosystem services, the concept of externalities arose, which are benefits or costs perceived by third parties that are not accounted for in market prices (Altmann, *et al.* 2015). The concept of negative externality is commonly used in environmental economics to refer to pollution and environmental degradation (Pinheiro and Galvncio, 2022).

In this sense, economic instruments are essential for correcting externalities, such as climate, carbon sequestration, species habitat and the preservation of biodiversity. Altmann, *et al.* (2015) present two theories of economic science for the internalization of externalities, one is Pigouvian, whereby the state would charge a price to correct the market failures resulting from negative externalities and the Coasean theory, according to which the most efficient way to internalize externalities would be to guarantee property rights and allow the agents involved in the externalities to negotiate freely in the market.

The Pigouvian theory is related to the polluter pays principle, according to which the polluter must respond for the environmental damage caused and internalize the externalities of the production process (Pinheiro and Galvncio, 2022). The Coasean theory, on the other hand, is close to the protector-recipient principle, which is the basis of the PES principle.

According to Wunder (2005), PES is characterized by five criteria:

1. a voluntary transaction in which a well-defined environmental service or a form of land use can ensure this service;
2. is purchased by at least one buyer and from at least one provider;
3. under the condition that the provider guarantees the provision of this service (Wunder, 2005, p. 9).

Firstly, PES is a voluntary and negotiated framework, which distinguishes it from command and control measures (ibid.).

This presupposes that in any PES there must be resources coming from at least one buyer of SE (criterion 3) to at least one supplier (criterion 4), although the transfer often takes place through an intermediary. Last but not least, in a PES scheme, user payments must truly depend on the continued provision of the service (criterion 5) (Wunder, 2005, p. 9).

Any natural or legal person willing to pay for an environmental service can be a buyer (Wunder, *et al.* 2008). This includes private companies, the public sector and national or international non-governmental organizations (NGOs), among others. Depending on who is party to the relationship, we have private PES schemes, which are coordinated and financed directly by the users of the services, public PES schemes, coordinated and financed by the state, and mixed PES schemes, which include the participation of both (Altmann, *et al.* 2015).

Environmental services include provisioning services, regulating services, cultural services and support services, according to the Millennium Ecosystem Assessment Report (2005). Therefore, four types of environmental services are common in several countries that have adopted PES, which comprise environmental services associated with: Carbon retention or capture; Biodiversity conservation; Conservation of water services and Conservation of scenic beauty, i.e. environmental services likely to be affected by externalities (Wunder, *et al.* 2008; Altmann, *et al.* 2015).

Corporate social and environmental responsibility

In the 19th and 20th centuries, companies emerged as the market paradigm, focusing on their own interests to achieve a stable society. However, the market's focus on wealth led to a crisis of confidence

on the part of society, and the state became the major source of social welfare, but it struggled to meet social demands. As companies became major carriers of wealth and providers of goods/services, society recognized their responsibility and the need they should assume towards society and participate in social causes (Schroeder and Schroeder, 2004).

At the same time, along with the social issue, environmental concerns also increased in the last decades of the 20th century and began to be discussed by government officials and various segments of organized civil society, and also incorporated by the business community (Vidal and Santos, 2022). According to these authors, the concept of Social Responsibility "arises in the context of globalization, where consumers, investors, citizens and public authorities begin to demonstrate and demand from the private sector a stance that is more compatible with sustainable development".

In this sense, for Almeida (2023), Social Responsibility is the "commitment of companies to act ethically and contribute to the sustainable development of society, including concerns about human rights, health and safety, diversity and the environment". It is strategic for economic development to recognize that economic growth often implies compromising stocks of natural resources and their services.

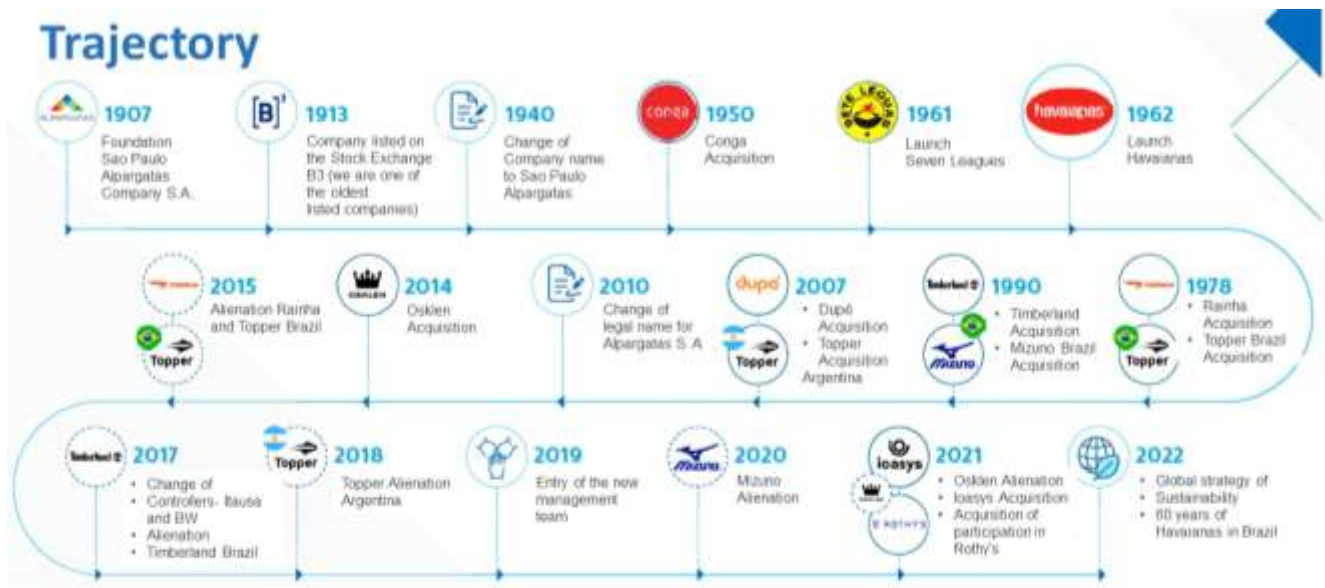
Thus, one of the most important issues today is the search for a model of economic development in which natural resources are not depleted for future generations (Sarmiento and Ribas, 2023). To this end, it is necessary to promote the recovery and protection of ecosystems in order to maintain Environmental Services.

METHODOLOGY

The object of study

The company Alpargatas S.A. began when Scotsman Robert Fraser arrived in Brazil in 1907 and joined forces with a group of Englishmen to create the first Alpargatas Roda, with the company's headquarters in Mooca, São Paulo (Figure 01). Alpargatas is a 116-year-old company, long-standing and made up of many remarkable moments, which sometimes coincide with the country's history, such as the fact that the Havaianas slipper was once considered such an essential item for society that it was part of the Brazilian basic food basket in the 1980s (Alpargatas S/A, 2022).

FIGURE 01: Timeline of Alpargatas S/A's business trajectory over 116 years.



SOURCE: Alpargatas S/A (2022).

FIGURE 02: Location of Alpargatas S.A. factories and offices.



SOURCE: Alpargatas S.A (2023).

In the 2000s, the company celebrated its 100th anniversary by implementing an internationalization plan. It opened its own operation in the United States and commercial offices in Spain, the United Kingdom, France and Italy. Camargo Corrêa became the main shareholder of the company, which joined Level 1 of Corporate Governance on the Brazilian stock exchange (B3) (Alpargatas S/A, 2022). The company currently has facilities in four Brazilian states with its headquarters

in São Paulo and manufacturing activities in Minas Gerais, Paraíba and Pernambuco, totaling four factories. As part of the internationalization expansion process, the company has offices in Colombia, the United States, Europe and China (Figure 02).

Research methods and procedures

The research was carried out in *bibliographical* form, as it was developed using material already prepared in articles, theses and dissertations. The annual sustainability reports published digitally on the company's *website* were used to help achieve the proposed objective. In this sense, documentary research and study were carried out in accordance with Gil (2002).

In order to analyze the information obtained, the research is classified as *explanatory*, as it aims to identify factors that make it possible to consider the most varied aspects of the fact studied (Gil, 2002). These methods were applied to a *case study*, characterized by the study of an object (Alpargatas S.A.), to describe the situation and context in which actions inspired by mechanisms from the Payments for Environmental Services (PES) approach are being carried out.

Research delimitation

With regard to data analysis, the period referring to the years 2021 and 2022 was used, when the company started publishing its Annual Sustainability Report. Also as a transparency and governance strategy, the Annual Sustainability Report was drawn up in 2021 involving all of its *stakeholders* in order to highlight value for each of them. Face-to-face consultation sessions were held with 184 *stakeholders*, interviews with plant general managers, members of the Board, as well as *online* consultations with the general public. Internally, some of the Group's top executives and decision-makers were consulted (Annual Sustainability Report, 2021).

The preparation of the 2021 report follows the standards of the *Global Reporting Initiative (GRI)*, the GRI standards (2023) which represent the best global practices for the public reporting of different economic, environmental and social impacts. The Annual Sustainability Report, on the other hand, follows the GRI standards and those of the *Sustainability Accounting Standards Board (SASB)*, a non-profit organization that develops sustainability accounting standards.

The documentary analysis of management instruments, in the search for evidence of mechanisms similar to PES, will consider the provisions of Law No. 14.119/2021, of the National Policy for Payment for Environmental Services in its article 3, item I, on direct payment, monetary or non-monetary, and item II, on the provision of social improvements for rural and urban communities, and article 5, item III and article 6, § 2 of the law, as an instrument for promoting the social, environmental, economic and cultural

development of populations in rural and urban areas, especially traditional communities, indigenous peoples and family farmers (Brasil, 2021).

RESULTS AND DISCUSSION

It wasn't until the company's internationalization plan in the 2000s, when Alpargatas S/A celebrated its 100th anniversary, that the Alpargatas Institute for Social Responsibility was inaugurated (2003). In 2019, in the face of changes in the company's shareholding, new management and a new business vision were formed: To be a global, digital, innovative and sustainable powerhouse of desired and hyperconnected brands (Alpargatas, 2023). Thus, the social dimension is the company's focus in 2003, and the environmental dimension gains greater relevance from 2019 onwards. It is also important to establish a relationship with the emergence of Payment for Environmental Services (PES) policies in Brazil, which also emerged in the same decade (2000).

Alpargatas S/A is one of thirty-nine companies in the clothing, footwear and accessories sector registered on www.consumidor.gov.br, an electronic portal providing a free public service that allows direct contact between consumers and companies, in a public and transparent environment that dispenses with the intervention of public authorities in dealing with individual conflicts (Consumidor.com.br, 2023).

Alpargatas S/A's social and environmental responsibility

Aligned with the United Nations' nine Sustainable Development Goals (SDGs), which are broken down into 12 practical commitments to be achieved by 2030, Alpargatas S/A collaborates with the global social and environmental responsibility agenda. In June 2022, the company made its commitments public, along with a progress report (Chart 01) on our three priority fronts: The first front is the Circular Economy - seeking to operate according to the principles of the circular economy throughout the value chain, from conception to post-use; Second, through the Responsible Operations front - aims to reduce the impact of operations, acting as catalysts for a responsible value chain; Third, through the Diversity & Inclusion and Local Development front - the company seeks to act in the regions and environments where it operates, contributing to a more diverse, inclusive and equal society. One of its commitments is to gender parity in senior leadership, adhering to the UN's They Lead 2030 Movement (Annual Sustainability Report, 2022).

Thus, under the lens of social analysis, the company works to promote education, inclusion and income generation, which the organization considers to be structural aspects of society. Under the lens of

environmental analysis, it invests in better use of resources through reverse logistics, in suppliers that comply with Alpargatas S/A's socio-environmental criteria, in reducing greenhouse gas (GHG) emissions and energy reduction.

TABLE 01: Accountability of the Alpa Sustainability Strategy.

AXIS	SDG 9- Industry, Innovation and Infrastructure; SDG 12- Responsible Consumption and Production and SDG 17- Partnerships and Means of Implementation.
Circular Economy	Commitments: - Low-impact materials in products; - Low-impact packaging materials; - Products recovered by the Reverse Logistics program; - Stores with a Reverse Logistics Program
	Company baselines 2022 / Targets for 2030 -Use of renewable and/or recycled raw materials in the product portfolio, 2022 baseline = 35% / 2030 target: 60%; -Use of renewable and/or recycled raw materials in packaging, 2022 baseline = 61% / 2030 target: 90%; -Recover the marketed volume of products via the reverse logistics program, 2022 baseline = 0.04% / 2030 target: 10%; -To have <i>monobrand</i> stores with a reverse logistics program in place, 2022 baseline = 35%, 2030 target / 2030 target: 100%.
Operations Responsible	SDG 7- Clean and Affordable Energy; SDG 8- Decent Work and Economic Growth; SDG 13- Action Against Global Climate Change.
	Commitments: -Reduction in carbon emissions; - Suppliers evaluated according to Alpargatas' social and environmental criteria; - Use of renewable energy; Reduced energy intensity in operations Company baselines 2022 / Targets for 2030 -Reduce absolute emissions, baseline 2022= had an increase of 12.58% /target for 2030: 30% (NOTE: Due to the change in the diesel emission factor in Brazil); To have suppliers homologated and monitored according to Alpargatas' socio-environmental criteria, 2022 baseline = 47% / 2030 target: 100%; -Renewable electricity: 2022 baseline = 12% / 2030 target: 100%; -Reduce the energy intensity of factories baseline 2022= increase of 1.14% /target 2030: reduce by 20% (NOTE: Due to the decrease in production volume versus the maintenance of electricity consumption. The causes are already being monitored).
Diversity & Inclusion and Local Development	SDG 4- Quality Education; SDG 5- Gender Equality; SDG 10- Reducing Inequalities
	Commitments: Under-represented groups in management positions Women in leadership positions People benefiting from local development programs in the regions where we operate Employees paid 20% above the national minimum wage Company baselines 2022 / Targets for 2030

-Ensure that management positions are occupied by under-represented groups, baseline 2022=19% /target 2030: 25%;
-Ensure that leadership positions are held by women, baseline 2022=44% /target 2030: 50%;
-Benefit people in the regions where we operate through local development programs, 2022 baseline = 2.25 million people / 2030 target: 3 million people;
-Raise the company's salary floor above the national minimum wage for all employees, baseline 2022= 77% / target for 2030: 20% (NOTE- Except for positions where salaries are set by law).

SOURCE: Annual Sustainability Report, Alpargatas S/A (2022).

PES-like mechanisms for social development

Within the scope of promoting social development. It develops an action strategy through Alpa Social *Responsibility* (ASR), which is directly connected to the company's Sustainability Strategy. It consists mainly of the following programs: Alpargatas Institute; Social Entrepreneur Development Program (GLOBAL); AVA - Alpa Volunteers in Action (GLOBAL); Empreender Alpa; Education through Culture; and Education through Sport.

Considering the provisions of Law No. 14.119 on the National Policy for Payment for Environmental Services in its article 3, item I, the payment can be direct, monetary or non-monetary, and item II, points out that there must be social improvements for rural and urban communities.

In this sense, the company is making a commitment to society regarding the generation of its processes in an ethical and transparent manner (Almeida, 2023) and the costs, i.e. the externalities related to environmental and social impacts. From this perspective, Alpargatas S/A's social programs use mechanisms similar to those of PES when they act as an instrument to promote the social development of rural and urban populations, especially traditional communities, indigenous peoples and family farmers (Brasil, 2021).

Since 2003, the Alpargatas Institute (2023) has benefited 406 schools, more than 762,000 students and 2,777 trained teachers. In 2022, through AVA (Alpa Volunteers in Action), 71 actions were carried out, with the participation of 6,071 employees, benefiting 60,350 people. In 2022, the company donated 30,383 pairs of Havaianas to Non-Governmental Organizations (NGOs) and 28,860 people benefited from donations of various items of equipment, including computers, surgical masks and air conditioning machines (Annual Sustainability Report, 2022).

Through the Education through Culture Program, more than 563,000 students were served, 445 schools benefited in 16 municipalities, R\$17 million invested, 6,118 teachers and managers trained. Similarly, the Education through Sport Program benefited more than 1.9 million students, 445 schools in

16 municipalities, R\$25.5 million invested and a total of 15,593 teachers and managers trained (Annual Sustainability Report, 2022).

In view of the data, actions to provide social improvements through Corporate Social Responsibility (CSR) actions by the company Alpargatas S/A were presented. In this sense, Neves and Benedicto (2022) do not question the importance of CSR for society, but point out that the actions "lead society to legitimize them as the main organizers and providers of the common good, and there may be an inversion of the social development that is the responsibility of the State, replacing it with business objectives".

In Paraíba, the actions take place in partnerships between Alpargatas S/A, the National Industrial Apprenticeship Service of Paraíba (SENAI-PB) and city halls to offer vocational education. In 2022, a partnership between the Alpargatas Institute, SENAI-PB and the Municipality of Mogeiro (PB) enabled the creation of the Educational Innovation and Sustainability Laboratory at the Iraci Rodrigues School, serving 937 students, with an investment of R\$ 120,000 (Annual Sustainability Report, 2022).

The Entrepreneur Alpa Program is a totally free project in partnership with SENAI-PB and municipal governments, which aims to train and qualify employees made redundant when the Alpargatas factories closed and vulnerable unemployed people from communities with special needs, black people and LGBTQIA+, as well as giving women access to courses that are stigmatized for men and vice versa. In the same area of vocational training, the Sustainable Carpentry project offers the theoretical and practical training needed to make furniture from pallets that come from the industrial process (Annual Sustainability Report, 2022).

PES-like mechanisms for environmental development

Due to its direct relationship as an aggravating agent of climate change, this topic will address carbon retention or capture, and the environmental resource affected by these changes, water services, which suffer in variability of availability as a result of climate change, both of which are common environmental services for the adoption of PES (Altmann, *et al.* 2015).

With regard to the data on gas emissions generated by the processes and services of Alpargatas S/A's activities, the GHGs included in the calculation are: CH₄ (Methane), CO₂ (Carbon Dioxide), HFC (Hydrofluorocarbon) and N₂ O (Nitrous Oxide) (Table 01). The report notes that the emission factors follow the model stipulated by the Brazilian GHG *Protocol* Program (PBGHGP). The GHG *Protocol* is a tool used to understand, quantify and manage GHG emissions, developed by the *World Resources Institute* (WRI). The consolidation approach chosen for emissions was operational control Annual Sustainability Report (2022).

For scope 1 emissions, the company did not see any significant changes in the behavior of emissions. According to the report, this analysis is considered to be an initial strategy also aimed at making a first combination of the potential for reducing GHGs from possible actions and their respective cost estimates (MAC curve). The outlook is challenging, but as stated in the Annual Sustainability Report (2022) there are already promising opportunities mapped out.

TABLE 01: Greenhouse gas emissions from Alpargatas S/A's production process.

Direct greenhouse gas emissions - scope 1 (ton CO₂ e)	2021	2022
Generation of electricity, heat or steam	14.733,30	14.420,71
Physico-chemical processing	73,62	111,66
Transportation of materials, products, waste, employees and passengers	530,02	480,38
Fugitive emissions	2.184,42	2.730,29
TOTAL GROSS CO₂	17.521,36	17.743,04

SOURCE: Annual Sustainability Report, Alpargatas S/A (2022).

In view of the emissions data, a search was carried out to analyze how the company seeks to offset emissions, since this is one of the SDG targets for 2030. In this sense, the company seeks to internalize the externality through the process of reverse logistics, carbon neutral, the Havaianas reCICLO program, created to collect and give proper destination to the sandals discarded by users, which are collected from different modes: One of them being made by bicycle or electric cars (CO₂ zero), not emitting greenhouse gases, thus avoiding the emission of 1,190.8 kg of CO₂.

Collections made in combustion vehicle modes have carbon offsetting, neutralizing emissions through reforestation actions in the Amazon. Carbon dioxide (CO₂) neutralized is estimated at: 3,507.5 kg (Annual Sustainability Report, 2022).

In order to analyze the environmental disclosure presented by Alpargatas S/A in compliance with the environmental policy regarding emissions, it is based on the polluter-pays principle, which establishes that the individual beneficiary who uses an environmental resource must bear its costs, with a view to exempting the public sector and society from these costs (Moraes, 2012).

However, as pointed out in the company's management tool, there are promising opportunities intrinsic to the challenges, which consist of the renewal chain with less environmental impact through the Circular Economy and reverse logistics.

As far as water management is concerned, according to the report, it has indicators that guarantee compliance with current legislation, and works with internal targets for optimizing this resource in line with best market practices. The largest volume of water consumed in operations is for human consumption and *facilities*, and the production process is not very resource-intensive.

There are four factories, which by 2022 housed 14,588 employees, prepared for the use of reused water in their plumbing installations. At the Campina Grande (PB) plant, an average of 500 cubic meters of water per month has already been reused.

In 2022, there was a reduction in water consumption compared to 2021 (Table 02) as a result of the water use optimization projects that have been put in place, with the aim of reducing consumption and reusing the water already used (Annual Sustainability Report, 2022).

As far as water sources are concerned, there is no surface water abstraction. There is no water withdrawal in areas of water stress. The Campina Grande plant uses all its water from the local sanitation company, Santa Rita and Carpina use all their water from wells, and a large part of the water used in Montes Claros also comes from wells.

TABLE 02: Sources of withdrawal and consumption of water used in the internal production process at Alpargatas S/A.

	2021	2022
Total water withdrawal, broken down by source (ML)		
Groundwater/water tables	88,01	89,52
Third-party water	105,8	98,87
TOTAL	193,81	188,39
Total water consumption, broken down by operating unit (ML)	2021	2022
Campina Grande (PB)	105,8	98,87
Santa Rita (PB)	23,45	24,07
Carpina (PE)	16,47	18,65
Montes Claros (MG)	47,31	45,48
Extrema Distribution Center (MG)	0,78	1,32
TOTAL	193,81	188,39

SOURCE: Annual Sustainability Report, Alpargatas S/A (2022).

Based on the Circular Economy, the report states that the effluents generated in the restaurants and toilets and a small part of the water used in the production process are duly earmarked for treatment. At the Montes Claros (MG) and Santa Rita (PB) units, these effluents are sent to the Effluent Treatment Plants (ETEs) that are part of the unit for internal treatment, after which the water is reused. In Campina Grande (PB) and Carpina (PE), the effluent is sent to the local sanitation company, where it is treated. All

the units, whether or not they have ETEs, follow the parameters established by the current environmental legislation of the National Environment Council (CONAMA) for the disposal of this waste.

In view of the results presented for this case study, the importance of environmental policies and their key role in "correcting externalities, which are seen as market failures that undermine the efficiency of resource allocations" (Nusdeo, 2012), is emphasized.

CONCLUSIONS

The aim of this study was to highlight mechanisms similar to the PES used by Alpargatas S/A in its efforts to internalize the externalities of its production activities, through actions that compensate, recover and maintain environmental services, as well as social responsibility actions to achieve socially desirable behaviour. In this sense, we can see the company's initiatives in both the social and environmental spheres.

Faced with demands for companies to take on ethical commitments, either voluntarily or compulsorily, in relation to society and the environment. The company's transparency portals and Annual Sustainability Reports make it easier to monitor actions and indicators linked to the production chain and compensatory socio-environmental initiatives.

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