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PAYMENT FOR ECOSYSTEM SERVICES AS A LOCAL POLICY FOR STRENGTHENING FAMILY FARMING (SÃO PAULO, BRAZIL)

PAGAMENTO POR SERVIÇOS AMBIENTAIS COMO ESTRATÉGIA PARA FORTALECIMENTO DA AGRICULTURA FAMILIAR EM UM MUNICÍPIO PAULISTA

Jamily da Silva Fernandes¹
Renata Evangelista de Oliveira²
Adriana Cavalieri Sais³
Ricardo Serra Borsatto⁴

Abstract

This study evaluates two interrelated and complementary municipal programs, one aimed at strengthening family farming and good land-use practices, and the other at paying for environmental services, aiming at forest restoration linked to the provision of water for public supply in Louveira (SP - BRAZIL). The aim was to identify through local stakeholders the factors that influence the operational environment of these programs, limiting or promoting their effectiveness, categorizing them as strengths, weaknesses, potentialities, or threats. Semi-structured interviews were conducted with representatives of strategic organizations, and the factors analyzed were presented using a SWOT matrix. The results indicated two factors as threats to the continuity of programs: dependence on political decisions and their funding source. Practicing sustainability through good practices, environmental concerns, and the payment of subsidies to farmers were the main strengths identified. All the weaknesses and some of the threats refer to the low participation and understanding of farmers regarding the programs, which indicates that strategies are needed to foster farmers' engagement, making them more than just "recipients" of the programs.

Keywords: Local development policies. ESP. SWOT matrix. SDGs.

Resumo

Este estudo analisa dois programas municipais, inter-relacionados e complementares, um voltado ao fortalecimento da agricultura familiar fruticultora e boas práticas de uso do solo, e outro ao

¹ PhD student in Forest Science at the Universidade Estadual Paulista Júlio de Mesquita Filho (UNESP), Botucatu – SP, Brazil. Email: jamidsfernandes@gmail.com

² PhD in Forest Science (UNESP). Professor at the Federal University of São Carlos, São Carlos – SP, Brazil. Email: reolivei@ufscar.br

³ PhD in Agricultural Engineering (UNICAMP). Professor at the Federal University of São Carlos, São Carlos – SP, Brazil. Email: acsais@ufscar.br

⁴ PhD in Agricultural Engineering (UNICAMP). Professor at the Federal University of São Carlos, São Carlos – SP, Brazil. Email: ricardo.borsatto@ufscar.br

pagamento por serviços ambientais, visando restauração florestal atrelada à provisão de água para abastecimento público em Louveira (SP). O objetivo foi identificar junto a gestores locais os fatores que influenciam o ambiente operacional dos programas, limitando ou fomentando sua efetividade, categorizando-os entre pontos fortes, fracos, potencialidades e ameaças. Foram realizadas entrevistas semiestruturadas com representantes de organizações estratégicas para sua execução, e os fatores são apresentados e analisados com a utilização de uma matriz SWOT. Dois fatores foram apontados com frequência como ameaças à continuidade dos programas: a dependência de decisões políticas e fonte de recursos para custeá-los. Praticar a sustentabilidade por meio de boas práticas, a preocupação ambiental e o pagamento de subvenção ao agricultor foram as principais forças identificadas. Todas as fraquezas e algumas ameaças referem-se à participação e entendimento dos agricultores em relação aos programas, o que indica que são necessárias estratégias que fomentem a aproximação dos agricultores aos programas, tornando-os mais que apenas receptores das ações desenvolvidas.

Palavras-chave: Políticas de desenvolvimento local. PSA. Matriz SWOT. SDGs.

Introduction

The sustainability topic has been included in government agendas at different times, combining the environmental topic with other issues, such as social, institutional, economic, and environmental agendas (ORSIOLLI; NOBRE, 2016; SANTOS; CÂNDIDO, 2013; ROMEIRO, 2012). Wu (2013) showed that the interaction between people and nature could be noticed with greater intensity on the landscape scale, and its composition and configuration affect and are affected by human activities. Sustainability at this scale is therefore defined as the ability of the landscape to provide long-term ecosystem services essential for the well-being of human populations.

Unsustainable agricultural practices and urbanization are factors in the degradation of multiple landscapes. Urbanization, with changes in demographic composition and the expansion of built-up areas, has occurred in a disorderly manner, with negative effects and impairments on the ecosystem services previously provided by the landscapes (SCHNEIDER et al., 2015); in turn, unsustainable agricultural practices mitigate environmental services in this context (TILMAN et al., 2011; MARQUES et al., 2007). According to Teixeira and Ribeiro (2020), there is a need for public policies related to rural and regional development that align with environmental sustainability standards.

Agricultural activity has been responsible for many environmental problems experienced globally (IPCC, 2019): large cultivated areas with very low biodiversity, excessive use of pesticides, and eutrophication of water sources are some of the characteristics of so-called business agriculture. Considering that the promotion of agriculture that contemplates the socio-environmental agenda can provide significant ecosystem services and improve the living conditions of its practitioners (DALE; POLASKY, 2007; TILMAN et al., 2002), for some decades, family farming establishments have been highlighted as the ideal locus for the adoption of more sustainable – and more environmentally friendly – food production practices (IPES-FOOD, 2016). Family farming units are characterized by not only constituting a space of capitalist production, but a space of social reproduction, where families of farmers live and establish social ties. In them, environmental conservation processes are considered a maintenance strategy for the heritage for future generations or ecosystem service providers that will directly benefit the family itself.

Globally, family farm units constitute more than 98% of agricultural holdings and occupy 53% of the cultivated area (GRAEUB et al., 2016). In Brazil, according to the last Agricultural Census, in 2017, of the 5,073,324 agricultural establishments in the country, 3,897,408 can be classified as family farms (DEL GROSSI, 2019), which justifies the realization of empirical experiments in socio-environmental policies based on this public.

Actions focused on the rural environment should strengthen and increase the resilience of family farming, considering the importance of this segment for food production, valuing local ways of life, and the potential provision of ecosystem services (LIMA; SILVA; IWATA, 2019; NORONHA; FALCON, 2018), targets of the 2030 Agenda for Sustainable Development (UN, 2015).

Actions to support regional development initiatives must focus on innovations in the strategic pattern of public policies, associated with an emphasis on local potential (ANTONIO et al., 2009). In other words, to achieve sustainability goals, the implementation of policies linked to local public management is crucial (ILIEVA, 2017). This must be linked to and adequate for the territorial management demands and should include processes of articulation and joint and cooperative involvement of social, economic, and institutional actors (DALLABRIDA; BECKER, 2003).

Policies to support Family Farming (FF) can be understood as regional rural development strategies, as they comprise a social form of work and production - with its own social, economical, productive, and environmental organization, and with multiple adaptation mechanisms, as a response to territorial diversity (DEPONTI, 2014).

On the socio-environmental agenda, some processes demand special attention so that policies or programs have good results; for example, the simultaneous involvement of several political-administrative jurisdictions in the management of environmental processes, transversality, the plurality of actors and organizations present in the environmental field, the multiple temporal and spatial scales of environmental processes and the tension between trends towards centralization and decentralization (NEVES, 2012). The participation of the actors involved is important for executing the actions themselves and their evaluation.

Considering the complex and dynamic nature of social and environmental problems, decision-making must be flexible and transparent and encompass diverse knowledge and values (REED, 2008). The involvement of stakeholders through participatory processes is essential for the proper management of the landscape and decision-making (MARTÍNEZ-SASTRE et al., 2017). The principle of social participation in the decision-making process is included in international debates as a mechanism capable of legitimizing the decisions taken (ROCHA; BURSZTYN, 2005). A tool that can be used for this is SWOT analysis, which is widely applied to support strategic decision-making for business management and has recently also been used for environmental assessments (SCOLOZZI et al., 2014; MARTINS et al., 2013) and in the study of agricultural systems (MARROCOS; DE MORAES; GOMES, 2018; OMMANI, 2011). SWOT is an acronym for Strengths, Weaknesses, Opportunities and Threats (DANTAS; MELO, 2008).

The object of this research was two interrelated and complementary municipal programs aimed at containing an intense process of degradation of the landscape in the municipality of Louveira, in the state of São Paulo, and promoting the restoration of ecosystem services. One aims to strengthen family farming and promote good land-use practices, and the other aims to pay rural landowners for environmental services dedicated to forest restoration in priority areas for public water supply. Together with the local managers, the aim was to identify factors that influence the operational environment of the programs, limiting or promoting their effectiveness.

Material and Methods

Study place and context

The study was carried out in the municipality of Louveira, São Paulo, with an estimated population of 49,993 inhabitants in 2020 and a territorial area of 55,133 km² (IBGE, 2020). There are 136 rural establishments in Louveira, 97 of them family farm units (IBGE, 2020b). Louveira is one of the largest grape producers in the Circuito das Frutas, created by fruit-growing family farmers as an alternative to generating income from rural tourism (CORDEIRO, 2016).

In recent years, the municipality began to receive direct pressure from the dynamics of two cities (São Paulo and Campinas) regarding its land use, Resulting in industrialization, urbanization, and gentrification processes - with the occupation of agricultural areas by high-end condominiums (CARREÃO, 2018; HARDER, 2007). Amid this scenario, strategies were created to maintain the rural identity of the municipality, promote the sustainable use of the land, and contain the processes of disorderly urbanization and rural exodus.

An important milestone in this process was the Municipal Master Plan - *Plano Diretor Municipal* - PDM (Law No. 2,331, of December 13, 2013), which established specific guidelines aimed at protecting springs and hydrographic basins of interest for public supply, and which set aside 58% of the municipal territory as an Environmental Preservation Area, aimed at maintaining the visual identity and improving the quality of air and water.

The Municipal PROMIF and PSAL Programs, target of this study

After establishing the PDM, two specific programs were created, focusing on valuing fruit-growing farmers and on environmental preservation, the Municipal Fruit Growing Incentive Program (*Programa Municipal de Incentivo a Fruticultura - PROMIF*) in 2013 and the Louveira Environmental Services Payment Program (*Programa de Pagamentos por Serviços Ambientais de Louveira - PSAL*) in 2015.

The PROMIF, established by Municipal Law No. 2,347, of December 26, 2013 (LOUVEIRA, 2013b), aims to encourage fruit growers to maintain their plantations and strengthen fruit growing as a sustainable economic activity, preserving and maintaining the municipality's cultural identity. The PROMIF works with environmental preservation measures such as protecting springs and watercourses, the adaptation of basic sanitation, and erosion control. An economic subsidy is granted for each hectare dedicated to fruit growing upon adherence to a Term of Adherence and Commitment (TAC) for three years, subject to compliance with the goals established in an Individual Technical Plan (ITP). In 2020, the subsidy amount was R\$ 5,042.00 (five thousand and forty-two reais) per hectare of planted fruit - a value adjusted annually for inflation. This amount is paid to the farmer in the following proportions: 35% after joining the program and 65% after an annual assessment and approval of a technical report attesting to the achievement of goals. In 2020, there were 93 farmers that were beneficiaries.

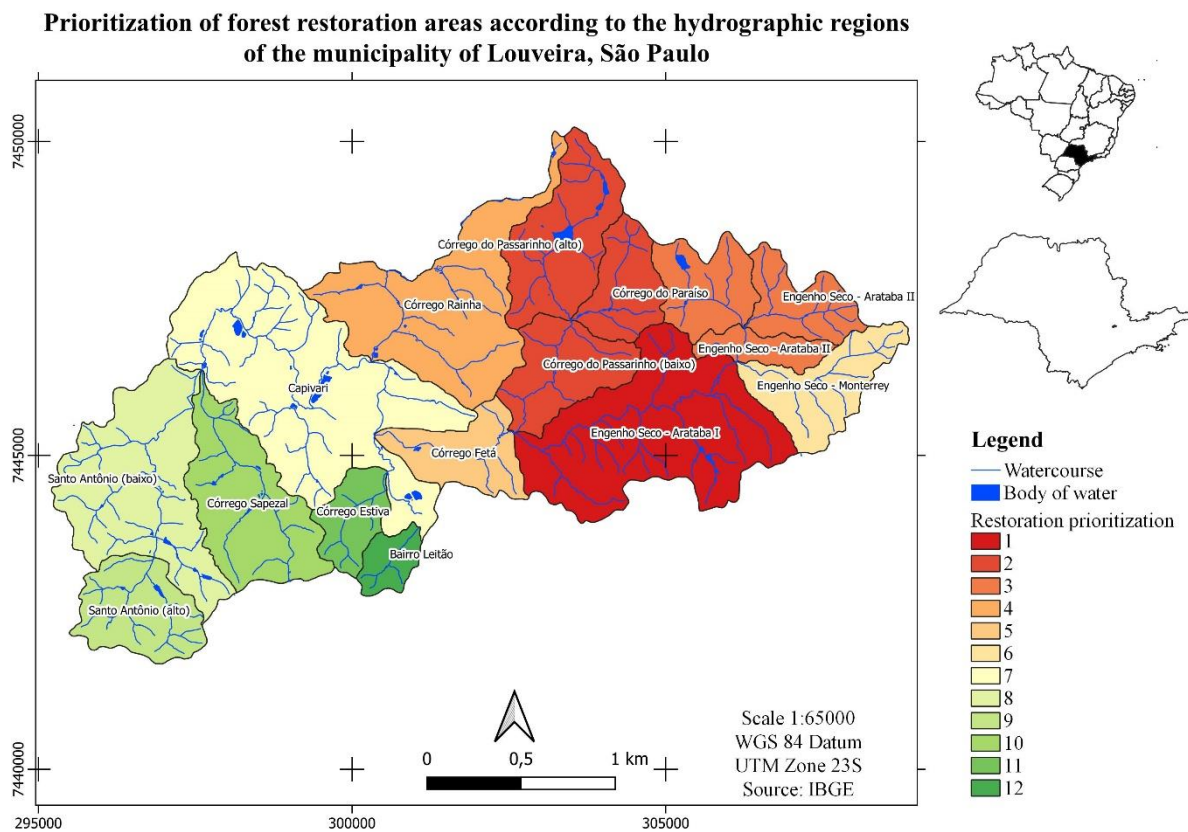
In 2015, Law No. 2,456 of August 5, 2015, created the Louveira Environmental Services Payment Program (PSAL) (LOUVEIRA, 2015a), which also established Spring Protection and Recovery Areas (*Áreas de Proteção e Recuperação de Mananciais - APRMS*) as priorities. Its preparation was based on another Brazilian Program named Conservador das Águas implemented in of Extrema, Minas Gerais, and aims to implement actions to protect water resources and fragments of native vegetation and for the environmental adaptation of rural properties. Adherence to the PSAL is formalized through a Term of Adherence and Commitment (TAC), valid for three years (It is considered that every three years, there is a change in the stage of development in restored areas). After adherence, an Individual Property Project (IPP) is carried out, updated annually, defining the goals to be achieved and methodologies to be adopted. To implement the actions, the farmer is paid a subsidy per hectare of the area to be preserved or restored (Table 1); the amount is divided into twelve equal installments, adjusted for inflation and subject to compliance with the targets established in the IPP.

Table 1: Amounts paid to owners adhering to the PSAL (Updated Values - 2017).

Situation	Priority Area	Non-priority area
Areas to restore	R\$ 1,179.52	R\$ 786.35
Initial stage (3 years)	R\$ 1,474.40	R\$ 982.93
Medium stage (6 years)	R\$ 1,965.87	R\$ 1,310.58

Source: Environmental Management Department of Louveira 2020.

Decree No. 4,443 of April 5, 2016 (LOUVEIRA, 2016) regulated Municipal Law No. 2,456/2015, establishing the criteria for implementing the PSAL. The order of priority of the hydrographic sub-basins (Figure 1) are (i) basins located in Spring Protection and Recovery Areas (APRMs), (ii) sub-basin with the highest number of areas with high priority for the restoration of Areas of Permanent Preservation (APP) and, (iii) in case of high demand for enrollments to participate in the program in the same sub-basin, the implantation will be carried out in rural properties that are located from the springs to the mouth of the watercourse.

Figure 1: Priority areas for PSAL implementation

Source: Prepared by the authors, based on Decree No. 4,443 of April 5, 2016.

The PSAL came into practice in 2017, and the properties that are part of the program are located in the sub-basins *Engenho Seco – Arataba I*, *Córrego*, and *Córrego Fetá*. In 2020, the program covered 32 family farm units, with 23.42 ha of preserved forest and 11.89 ha of areas to restore.

Data collection and analysis

Initially, public documents of the Department for Economic Development/Agriculture Division (responsible for implementing the PROMIF) and the Department for Environmental Management (responsible for implementing the PSAL) were consulted to understand the programs' operation and identify the key actors. The primary data survey took place after authorization of the Ethics Committee (CAAE: 20400919.9.0000.5504). The collection and analysis of primary data took place as follows:

Step 1- Semi-structured interviews: Ten interviews were conducted with social actors from seven different organizations working to execute the programs. From October to December 2020, the interviews were carried out individually and remotely by videoconference, audio recordings, and email. During the interviews, the following points were addressed: (1) work of the interviewee with the farmers and in the management processes linked to the programs, (2) participation of the farmers in the programs, (3) important factors for the programs to perform well, (4) difficulties in their execution and (5) program-related strengths, weaknesses, opportunities and threats.

Step 2- SWOT Matrix Elaboration: Considering the fact of having responded to point 5 (strengths, weaknesses, opportunities and threats related to the programs) of the interviews, seven interviews were used to construct the SWOT matrix (Table 2). Several studies have used individual interviews as a tool for the construction of the SWOT Matrix (FERREIRA et al., 2019; SANTOS, 2016; VELLOSO; YANAZE; OLIVEIRA, 2015; ARAÚJO; SCHWAMBORN, 2014)

Table 2: Interviews used to construct the SWOT Matrix.

Institution	Number of interviewees
Department of Economic Development	1
Department of Environmental Management	2
Sustainable Rural Development Coordination/House of Agriculture	1
EMBRAPA Territorial	2
Advanced Center for Technological Research in the Fruit Agribusiness of the IAC/Jundiaí	1

Considering the particularity of some answers, due to the interviewees' greater familiarity with one specific program, each quadrant of the matrix was initially subdivided into three. The subdivisions were named "PSAL," "PROMIF" and "Programs," the latter related to the response of social actors who managed to carry out a broader analysis, encompassing both. In this phase, the allocation of information in the quadrants of the SWOT matrix strictly followed the allocation given by the interviewees.

With the points highlighted by the interviewees, it was noticed that there was a certain difficulty in distinguishing what would be internal and external factors, and the occurrence of the same factor in both environments (internal and external) was also observed. The internal environment can be controlled since it is the result of action strategies defined by the organization (programs), while the external environment is totally out of the control of the organization (programs) (DANTAS; MELO, 2008). Given this definition, the reorganization of the factors in the matrix quadrants was carried out. This procedure is justified because confusing external and internal issues can make the matrix analysis ineffective (DUTRA, 2014).

Step 3- SWOT cross: The data crossing method was used, in two ways, analyzing and relating the information from each quadrant as it is in the matrix and performing a crossing with the adoption of numerical values, using the so-called cross SWOT, which helps to identify priority factors or those with greater importance in a given circumstance (FERREIRA et al., 2018; TRZECIAK et al., 2018). A model used for strategic planning was employed, identifying the factors with the greatest influence on each SWOT variable, aiming to select those with the most significant influence for priority actions. In this model, all items from the four SWOT quadrants were initially crossed among themselves, establishing a value referring to how closely they were related (Table 3). The final score for each category was obtained through the relationships shown in Table 3.

Finally, based on the information from the matrix reorganization (Step 2), the information from the quadrants was crossed following the orientation of Dutra (2014), establishing the relationships between them, seeking to answer the following questions:

S x O: How to combine strengths to leverage opportunities?

S x W: How to turn weaknesses into strengths?

T x O: How to convert threats into opportunities?

Table 3: Classification for the relationship between the factors and relationships established to obtain the final values of the numerical cross SWOT matrix.

Classification of the relationship among factors				
0 None	1 Low	2 Medium	3 High	
Relationships for calculating the cross SWOT				
S	Strength (S)	x Opportunity (O)	- Strength (S)	x Threat (T)
W	Weakness (W)	x Opportunity (O)	- Weakness (W)	x Threat (T)
O	Opportunity (O)	x Strength (S)	+ Opportunity (O)	x (W)
T	Threat (T)	x Strength (S)	+ Threat (T)	x Strength (S)

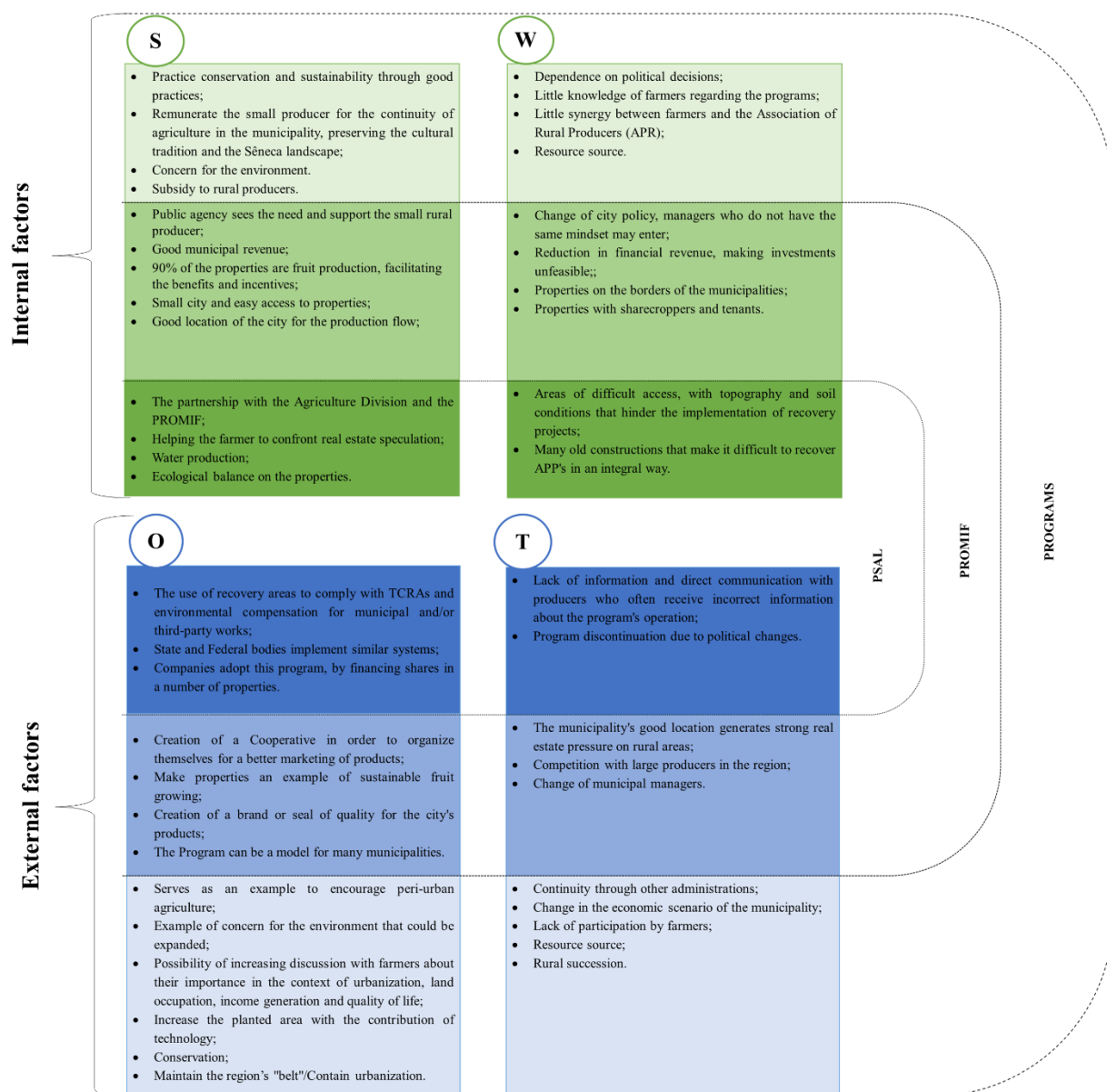
Results and Discussion

In the interview process, two factors that can hinder the continuation of the programs often emerged, the dependence on political decisions and the source of resources to fund the programs. The interviewees almost unanimously mentioned the dependence on unstable political decisions (management). The programs (PROMIF and PSAL) were established as laws created by a specific municipal government, which lost the 2020 municipal elections.

The resource for the maintenance of the program was also cited as a major concern. According to the interviewees, Louveira has good revenue; however, some large companies have relocated to other cities, motivated by more attractive tax incentives, which, in the interviewees' opinion, could compromise the subsidies paid by the programs due to the negative impact on the municipality's economy.

The novelty of the PROMIF is seen as positive, highlighted in different reports (Figure 2), due to the possibility of expansion to neighboring cities and other regions. According to Cordeiro (2016), the expansion of the PROMIF is possible with the aggregation of more investors, as the benefits generated by the program go beyond the municipal limits.

Figure 2: SWOT matrix (O = Opportunity; T = Threat; S = Strength, W = Weakness).



Source: Study results.

Table 4 shows the information regarding the components (opportunity, threat, strength, and weakness) of the SWOT matrix after the reorganization that considered the characteristics of the

factors reported by the interviewees concerning whether they were external or internal. Table 5 shows the values resulting from the interactions between the factors of the matrix quadrants and the final classification (Table 3), indicating the most relevant factors of each component of the matrix.

Table 4: Information organized for the SWOT matrix (O = Opportunity; T = Threat; S = Strength, W = Weakness)

SWOT Matrix Data	
S 1	Practice conservation and sustainability through good practices
S 2	Remunerate the small producer for the continuity of agriculture in the municipality, preserving the cultural tradition and the Sêneca landscape
S 3	Concern for the environment
S 4	The partnership with the Agriculture Division and the PROMIF (to implement the PSAL)
S 5	Helping the farmer to confront real estate speculation
S 6	Water production
S 7	Promote ecological balance on the properties
S 8	The use of recovery areas (PSAL) for compliance with TCRA's and environmental compensation of works
W 1	Little knowledge of the farmers regarding the programs
W 2	Little synergy between farmers and the Association of Rural Producers (APR)
W 3	Lack of information and direct communication with producers who often receive incorrect information about the program's operation (PSAL)
O 1	State and Federal bodies implement similar systems (PSAL)
O 2	Companies adopting this program (PSAL), financing shares in a given number of properties
O 3	Creation of a Cooperative in order to organize themselves for a better marketing of products (PROMIF)
O 4	Making the properties an example of sustainable fruit growing
O 5	Creation of a brand or seal of quality for the city's products
O 6	The Program (PROMIF) can be a model for many municipalities
O 7	Serves as an example to encourage peri-urban agriculture
O 8	Include greater discussion with farmers about their importance in the context of urbanization, land occupancy, income generation and quality of life
O 9	Increase the planted area with the contribution of technology
O 10	Conservation
O 11	Maintain the "belt" of the region / Contain urbanization
O 12	Public agency sees the need to support the small rural producer
O 13	Good revenue from the municipality
O 14	90% of the properties are fruit production, facilitating the benefits and incentives
O 15	Small city and easy access to properties
O 16	Good location of the city for the production flow
T 1	Dependence on political decisions
T 2	The municipality's good location creates strong real estate pressure on rural areas
T 3	Competition with large producers in the region (PROMIF)
T 4	Change in the economic scenario of the municipality
T 5	Lack of participation by the farmers
T 6	Resource source
T 7	Rural succession
T 8	Properties on the borders of the municipalities
T 9	Properties with sharecroppers and tenants
T 10	Areas of difficult access, with topographic and soil conditions that make it difficult to implement area recovery projects
T 11	Old constructions that hinder the recovery of the APP's

Source: Study results.

Table 5: SWOT crossed SWOT (O = Opportunity; T = Threat; S = Strength, W = Weakness)

Variable s	S 1	S 2	S 3	S 4	S 5	S 6	S 7	S 8	W1	W 2	W 3	TOTAL	
O 1	2	1	3	0	1	3	3	2	0	0	0	15	O P P O R T U N I T I E S
O 2	2	1	3	0	0	3	3	3	0	0	1	16	
O 3	0	0	0	0	1	0	0	0	0	1	0	2	
O 4	2	3	3	0	1	3	3	0	1	1	3	20	
O 5	3	2	3	0	0	2	3	1	0	0	1	15	
O 6	3	3	3	0	2	3	2	1	2	0	1	20	
O 7	3	3	2	0	3	2	2	0	2	0	1	18	
O 8	3	3	3	0	3	2	3	2	3	3	3	28	
O 9	2	2	2	1	3	1	1	0	2	2	0	16	
O 10	3	3	3	2	2	3	3	3	2	1	2	27	
O 11	3	3	2	2	3	3	2	1	2	2	1	24	
O 12	3	3	2	1	3	2	1	1	2	2	2	22	
O 13	2	3	2	0	2	1	1	1	0	0	0	12	
O 14	2	3	1	2	3	2	2	0	2	3	1	21	
O 15	1	1	0	0	1	0	0	1	0	0	0	4	
O 16	1	3	0	0	3	0	0	0	2	2	0	11	
T 1	2	3	1	0	1	2	2	3	1	0	1	16	T H R E A T S
T 2	3	3	3	0	3	3	3	2	0	1	2	23	
T 3	2	3	1	1	2	1	1	0	1	2	0	14	
T 4	2	3	1	0	3	2	1	2	0	1	1	16	
T 5	3	3	3	1	2	3	2	1	3	3	3	27	
T 6	2	3	1	0	3	2	2	2	0	0	1	16	
T 7	3	3	2	0	2	3	3	2	1	2	3	24	
T 8	1	1	1	0	1	1	1	1	0	1	2	10	
T 9	0	1	1	0	1	1	1	1	2	1	2	11	
T 10	1	0	2	0	0	1	1	2	0	0	0	7	
T 11	1	1	3	0	0	3	1	2	0	0	1	12	
TOTAL	15	13	13	6	13	8	11	2	12	6	0		
	STRENGTHS								WEAKNESSES				

Source: Study results.

Internal factors (Strengths and Weaknesses)

The main strengths identified (Table 4 and Table 1) were: to practice sustainability through good practices, environmental concern, and the fact of paying a subsidy to the farmer, aiming at the continuity of agriculture and confronting the pressure of the real estate market on the rural areas. Using the subsidy as a mechanism to promote the strengthening of agriculture, adding greater sustainability, and maintenance of the cultural identity and of the landscape have caused the two programs to be considered models of innovation in the inclusion of family farming, which has gained prominence in the regional and national scenario.

The most influential weakness was the farmers' lack of knowledge about the programs (Table 4 and Table 1). It should be highlighted that all the weaknesses and some of the threats are associated with the participation and understanding of farmers, which highlights the importance of the farmers' engagement within the programs. It must be considered that sustainable development is closely linked to adequate and participatory human and social capital (ROCHA; BURSZTYN, 2005a). Participation is considered a critical factor for the association (APR), since it is a key mechanism when seeking integrated development in the rural environment (SANGALLI et al., 2015) and could help in the engagement process of the farmers in the programs.

External factors (Opportunities and Threats)

The main opportunities identified were the inclusion of greater discussion with the farmers about their importance in the context of territorial occupancy, income generation, conservation and maintenance of the region's productive belt, and in containing urbanization (Table 4 and Table 1). The farmers' involvement with these issues can significantly contribute to landscape management and sustainable development (MARTÍNEZ-SASTRE et al., 2017; ROCHA; BURSZTYN, 2005).

Among the threats identified, the most relevant were the lack of participation by farmers, the municipality's location, and rural succession. Integrating the social participation, in this case, mainly of the farmers, in programs or policies aimed at local development is of fundamental importance (PATRÍCIO; GOMES, 2012; ABRAMOVAY; MAGALHÃES; SCHRODER, 2010; SILVA; SCHNEIDER, 2004), as sustainability can only be guaranteed if social participation is effective (ABRAMOVAY; MAGALHÃES; SCHRODER, 2010). In the case of the PSAL, which focuses on environmental issues, having a more participatory approach helps reduce conflicts, build trust, and facilitate learning among the stakeholders, who become more likely to support the project's objectives and implement long-term decisions (REED et al., 2018; JACOBS et al., 2016; REED, 2008).

Rural succession is one of the threats with significant potential, especially regarding the PROMIF, since the program's objectives are to prevent the rural exodus and strengthen fruit production as an economic activity. The development of strategic actions to strengthen family farming requires that this succession process in agricultural activity be well thought out and structured. In Louveira, the distortions caused by the rural exodus process seem to have caused the aging of the rural population, which reflects the lack of labor for adherence of new areas to the PROMIF (CORDEIRO, 2016), and is associated with a lack of interest on the part of the younger people to remain in the countryside (MATTE et al., 2019). Many young people tend to move to the urban area to study and seek other professions, often encouraged by their parents (OLIVEIRA; MENDES; VAN HERK VASCONCELOS, 2021). As a result, they lose their link to the land, which is one of the factors that most hinder succession, along with economic insecurity (HILLESHEIM; VIZZOTTO, 2015).

Possibilities identified through the crossing of the SWOT information

Identifying the main strengths, weaknesses, opportunities, and threats is relevant; however, several studies have shown that it is important to cross the matrix information in order to obtain strategic directions (FERREIRA et al., 2018; TRZECIAK et al., 2018; DUTRA, 2014; DANTAS; MELO, 2008), as does this work.

Strengths S1- to practice conservation and sustainability through good practices, S3- concern for the environment, S4- the partnership with the Agriculture Division and the PROMIF (to implement the PSAL), and S7- promote ecological balance in the properties - can be directly related to opportunities O3- Creation of a Cooperative in order to organize themselves for better marketing of the products (PROMIF), O5- Creation of a brand or seal of quality for the city's products, O15- Small city and easy access to properties, and O16- Good location of the municipality for production flow (Table 4). The creation of a cooperative associated with the creation of a quality seal that includes sustainability and environmental concerns can lead to these products (fruits) having a niche market that values these characteristics. Considering that the weaknesses identified are related to the lack of knowledge and participation of farmers in the programs (T5- Lack of participation of the farmers) and the continuity of agricultural activity (T7- Rural succession), these can be tackled with the inclusion of greater dialogue with the farmers and the creation of a cooperative, which would be able to help confront competition from large producers (T3 - Competition with large producers in the region) (PROMIF) and also help reduce the real estate pressure on the rural areas.

The adoption of the program by private companies should also be highlighted as a way to alleviate the threats T4 - change in the economic scenario of the municipality and T6 - source of funds, especially for the PSAL. Within the scope of the PROMIF, the opportunities O3- creation of a cooperative in order to organize themselves for a better marketing of products (PROMIF), O6- The program (PROMIF) can be a model for many municipalities, O9- Increase the planted area with the contribution of technology, O11- maintain the "belt" of the region/ Contain urbanization and O14- 90% of the properties are fruit production, facilitating benefits and incentives (Table 4), even if indirectly, could help in cases of change in the municipal economy. If farmers have good production and are organized for marketing, and if neighboring municipalities, which have similar production characteristics, also join in this movement, the result could help the farmers to maintain themselves in the case of possible economic changes in the municipality.

Conclusions

The target programs of this study are directly related to the sustainability agenda, which recognizes the role of rural landscapes in promoting local and regional development, providing for actions aimed at the provision of ecosystem services, and focusing on the changes needed to meet the needs of human populations and ensure environmental integrity. The analysis carried out allowed the main obstacles to their effectiveness to be highlighted, from the opinions of local actors responsible for their realization, as well as the strengths and opportunities related to their continuity in the municipality of Louveira, SP.

The results emphasize the farmers' understanding, engagement, and participation - important variables when seeking sustainable development - as fundamental factors to guarantee the success and effectiveness of the two programs. This finding indicates that policy-makers need to seek alternatives that encourage the involvement of the farmers in the programs, making them more than recipients of the actions developed.

The organization of the farmers through associations and cooperatives has also been identified as a factor that would strengthen the fruit-growing family farming in the municipality. It should be highlighted that the financial contribution provided for the two programs is essential for the continuity of the actions. The subsidy paid to farmers to continue developing fruit production with the inclusion of greater sustainability on their plots is one of the factors that contribute most to the development and success of the programs so far.

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