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Evaluation of the Targeting Mechanisms of the Sembrando Vida Program in Mexico

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Abstract

Since 2019, the Mexican Government has implemented the Sembrando Vida Program (SVP) to address environmental degradation and social marginalization in rural areas. This research analyzed the SVP's targeting mechanisms to assess the fulfillment of its objectives in the central region of the state of Guerrero, Mexico. The methodology included an analysis of the Operating Rules; a review of the beneficiary registry; the construction of environmental, social, and economic indicators; proportional stratified sampling with a 90% confidence level; and an SVP evaluation using indicators and confidence intervals. Targeting mechanisms identified agrarian subjects aged $\geq$ 18 years with 2.5 hectares living below the poverty line. Changes in the indicator matrix highlight a focus on food self-sufficiency and poverty levels, among others. Key results from the indicators include 100% social recovery, 62.3% of beneficiaries increased their agricultural income, and 100% application of learned environmental techniques. The intervals showed that between 26.49–42.19% of individuals joined the agricultural sector; 55.68–71.58% diversified their crops; and 86.15–95.65% made improvements in health, housing, or education. The evaluation of the SVP demonstrated its impact on environmental preservation and the improvement of the socioeconomic well-being of the rural population in the study area.

Keywords: Sembrando Vida Program; indicators; operating rules; rural development; targeting mechanisms

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1. Introduction

Since the nineteenth century, human activities have been the primary drivers of climate change, mainly due to the burning of fossil fuels, deforestation, and forest fires, which have led to ecosystem loss and increased carbon dioxide emissions, negatively affecting the environment [1]. Currently, climate change represents a major risk to forest vitality, as evidence of the intensity and severity of forest fires is alarming, given that forests cover approximately 31% of the planet, of which 45 million hectares correspond to agroforestry lands. This situation poses significant challenges for economic and physical access to food

resources, high levels of income inequality, and rising input prices, disproportionately affecting vulnerable populations [2,3]. In response to the challenges of global warming, environmental degradation, and growing economic inequalities, governments worldwide have promoted strategies that integrate ecological sustainability and social well-being, assuming responsibility for protecting and expanding agroforestry cover through community participation. Within this framework, agroforestry projects in different geographical regions have emerged as key strategies to mitigate climate change, reconcile agricultural production with environmental conservation, and promote social justice.

Nowadays, the Sembrando Vida Program (SVP) is being implemented in Mexico to address socio-environmental challenges, particularly rural poverty and environmental degradation. Through the provision of financial support and technical assistance, the program seeks to promote sustainable production systems, including Agroforestry Systems with timber and fruit trees (AFS) and the Milpa Intercropped with Fruit Trees (MIAF), in rural areas. At the same time, it aims to promote the reconstruction of the social fabric by forming Peasant Learning Communities (PLC) and encouraging field-based collective work [4]. The targeting mechanisms refer to the criteria used to identify and select beneficiaries: agricultural subjects aged 18 years or older, living below the CONEVAL poverty line, who possess 2.5 hectares of land to develop the project and agree to comply with the SVP Operating Rules, with the objective of reaching the largest possible number of beneficiaries and restoring agricultural land [5].

This research presents an evaluation of the SVP, considering its targeting mechanisms to assess the fulfillment of its objectives: revitalizing rural areas, regenerating the social fabric, and reactivating the local economy in the central region of the state of Guerrero, Mexico. A mixed-methods approach was employed, incorporating documentary review techniques, descriptive and exploratory statistics, confidence intervals for a population proportion (P), proportional stratified probability sampling, and the construction of environmental, economic, and social indicators.

Literature Review

In the Philippine archipelago (Luzon, Visayas, and Mindanao), [6] examined a critical approach to sustainable forest management under the Community-Based Forest Management (CBFM) program for the establishment of tree plantations and agroforestry farms, while protecting the remaining forest cover within the program's jurisdiction. Their analysis was based on a review of the literature, existing policies, and focus group interviews conducted across different regions where the program has been implemented. The results showed that the most successful indicator was the increase in forest cover, reaching 705,664 hectares within CBFM areas. Similarly, [7] presented a transdisciplinary learning framework that links cultural heritage, landscape, and social–ecological systems thinking in the Czech Republic, Scotland, Norway, and Estonia, with the aim of supporting sustainable rural development. Through four iterative phases of dialogue, learning, collaboration, and cultural heritage knowledge, the study demonstrated how to facilitate sustainable landscape planning and promote resilience in the face of global challenges.

In Iran, the social responsibility of peasant communities, government institutions, and private enterprises was assessed using stratified random sampling applied to 358 farmers. The study found that the participation of rural cooperatives in community-oriented ethical activities constituted a significant first step toward strengthening community social responsibility. This process promotes trust among farmers and encourages their participation in cooperative programs, thereby fostering sustainability-oriented activities within the agricultural sector [8]. On the other hand, [9] analyzed food security in relation to agroforestry practices among smallholder farmers in Indonesia based on a literature re-

view. Their findings identified various agroforestry systems, predominantly focused on non-timber products (88%), ensuring direct food supply (42%), while 58% prioritized income generation through product sales. These results demonstrate that agroforestry meets both the food and income needs of farmers, outperforming traditional agriculture by 13%. Likewise, in the regions of Brittany, France, and Montérégie, Quebec, the components and specificities of agroforestry policies were explored through a bibliographic review and semi-structured interviews with different stakeholders, including research institutions, agricultural advisory organizations, independent experts, and regional public agencies involved in agroforestry and environmental initiatives. The study indicated that in France, agroforestry benefits from a well-structured policy environment centered on the Common Agricultural Policy (CAP) and the Agroforestry Development Plan (ADP), while in Quebec agroforestry is also supported by various policies and programs, such as Prime-Vert, with more than 2370 hedge-planting projects completed [10].

In the regions of Central Bohemia and South Moravia, Czech Republic, researchers explored how to establish a baseline to ensure that agroforestry policy is viable and sustainable. The study applied farmer surveys, standardized focus groups, and personal interviews to assess knowledge of agroforestry systems. The findings showed that although trees are recognized as part of agricultural landscapes and are generally appreciated, their aesthetic and ecological functions are not well understood in terms of potential local synergies with crops and livestock. The study identified knowledge gaps and the lack of market opportunities for agroforestry system outputs as the main obstacles to their establishment [11]. In Côte d'Ivoire and Colombia, [12] examined the relationship between social cohesion, natural resource management, and peacebuilding, focusing on sustainable cocoa production in post-conflict contexts. Through a literature review and four key areas of action—agroforestry, cooperatives, certification schemes, and trade policies—their research demonstrated that promoting environmentally sustainable agricultural practices has clear potential to strengthen social cohesion among cocoa producers, thereby contributing to post-conflict peacebuilding in both countries. In Pakistan, [13] examined the role of foreign aid in maintaining agricultural production and mitigating rural poverty. The authors applied a questionnaire to 384 farmers from the country's main agricultural regions and used partial least squares structural equation modeling. Their results showed that agricultural production is positively associated with poverty reduction ($\beta = 0.379$, $t = 2.014$, $p = 0.044$). Foreign aid was also positively, though not significantly, related to agricultural production ($\beta = 0.159$, $t = 1.366$, $p = 0.172$), while government policies showed a negative and non-significant association with poverty reduction ($\beta = -0.026$, $t = 0.167$, $p = 0.875$). In the Madhupur forest region of Bangladesh, [14] assessed the impact of agroforestry practices on rural farmers' livelihoods and their capacity to conserve biodiversity. The study employed personal interviews with 100 agroforestry farmers and sampling techniques across 50 quadrats (20 m $\times$ 20 m) to measure biodiversity. The results showed that rural farmers formed a social platform and enhanced their capacities through training programs, while also achieving a significant increase in income. In addition, they introduced 34 plant species, creating higher-quality habitats for environmental conservation.

Ref. [15] examined how environmental concerns and climate change have gradually been integrated into the framework of the CAP and how they have contributed to shaping the "green architecture" of European agriculture. Through a systematic and comprehensive academic synthesis, the authors conducted a structured process of collecting, analyzing, and summarizing existing knowledge, research, and academic literature. Their study highlighted the European Union's (EU) commitment to addressing climate change and sustainable development challenges by promoting coordination with compatible policies and greater adaptability in response to the unique circumstances and objectives of each

Member State. Similarly, [16] contributed to the scientific debate on the CAP through a research protocol based on data collection, descriptive analysis, and bibliometric analysis. The study revealed an opportunity for European policymakers to involve academics more actively in decision-making processes by integrating different research areas, thereby identifying new evolutionary pathways and positioning this approach as a strategic driver for the development of the agricultural sector. Ref. [17] evaluated the sustainable development of agriculture in the EU Member States using the Hellwig method and calculated the taxonomic measure of development for the economic, social, and environmental dimensions. The authors identified differences among countries in terms of sustainable development, with the highest index values in 2018 observed in the Netherlands, Germany, France, and the United Kingdom.

Ref. [18] explored the role of community empowerment programs as a fundamental tool for sustainability management strategies and practices through a semi-systematic review of 21 sustainability and resilience programs. The authors analyzed four key dimensions of empowerment: (1) capacity building; (2) self-sufficiency, control, ownership, responsibility, and independence; (3) participation, engagement, and collective action; and (4) integration of local knowledge and values. Their findings indicate that there is no single, universal approach to such programs. Instead, their success depends on a deep understanding of local contexts and the ability to adapt strategies to meet the specific needs of each community.

Likewise, several studies have documented analyses of the SVP. For instance, Mardero et al. [19] examined policy coherence with sustainable development, particularly in relation to climate change, through a documentary review of journalistic articles, online reports, and interviews with key SVP personnel. Their findings revealed a policy drift as the stated objectives evolved over time, generating inconsistencies that limit the program's overall impact. Ref. [20] evaluated the factors affecting the viability of using drones to monitor areas reforested under the SVP, considering a random sample of 12 plots in the state of Michoacán, Mexico. The authors conducted field surveys using GPS to record the total number of live and dead seedlings, and captured aerial images with a drone to assess their condition and calculate survival rates. An analysis of variance (ANOVA) was applied to compare the estimated survival rates, finding no statistically significant differences between drone-based estimates and field-recorded survival. Meanwhile, [21] examined women's participation in the SVP through community collaboration perspectives and feminist care economy frameworks. The authors employed convenience sampling and participatory workshops with 27 participants. They concluded that although the SVP improves the visibility of women's productive work, it remains weak in mitigating time poverty due to the burden of unpaid care work. Ref. [22] reflected on SVP-related research through a documentary analysis of scientific publications, official reports, and gray literature. Their study identified six innovations that have driven the expansion of agroforestry: significant financial investment, simplified governance, technical support, distribution mechanisms, a focus on community cohesion, and gender equity. Finally, [23] explored local perspectives on conservation, development, sociopolitical relations, and land control in the context of the Tren Maya and SVP projects in the southern Yucatán Peninsula. Employed Q methodology to analyze the subjective foundations of local governance. They conducted 50 interviews, followed by 17 interviews with participants selected based on their regional knowledge, community leadership, and differentiated viewpoints. The results showed that farmers' perspectives challenge narratives that portray rural communities as either resistant or receptive to external interventions, instead revealing context-specific commitments in which local actors selectively align with external agendas to advance local objectives.

Environmental programs represent an opportunity to advance toward sustainable development, generating economic and social benefits while mitigating human impact on ecosystems. Taking into account the participation of diverse stakeholders, there is consensus on the importance of social context for initiatives to prosper. This research considers three significant dimensions: environmental, social, and economic, proposing indicators for a more precise evaluation through targeting mechanisms, operating rules, and beneficiary perceptions.

2. Materials and Methods

2.1. Materials

In the evaluation of the SVP, the statistical software IBM SPSS Statistics 25 and Minitab 18, the geographic information system QGIS Desktop 3.40.2, and Google Forms were employed. A generic wireless lavalier microphone and a Samsung A54 smartphone were used to record audiovisual material during the interviews.

2.2. Methodology

2.2.1. Study Area

The study was conducted in the central region of the state of Guerrero, Mexico, comprising 13 municipalities, Figure 1.

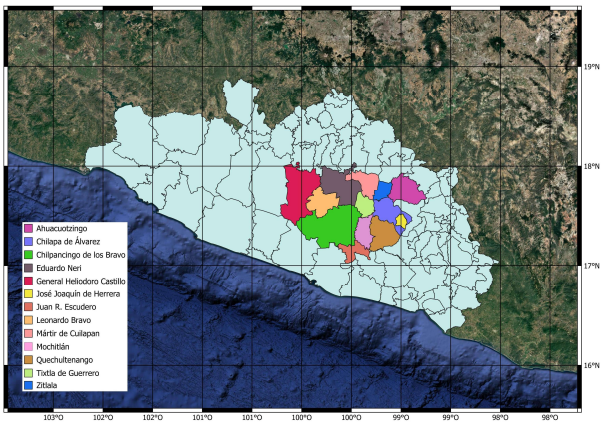


Figure 1. Central region of Guerrero, Mexico.

2.2.2. Methodological Diagram

To evaluate the targeting mechanisms, the methodological process described in Figure 2 was followed.

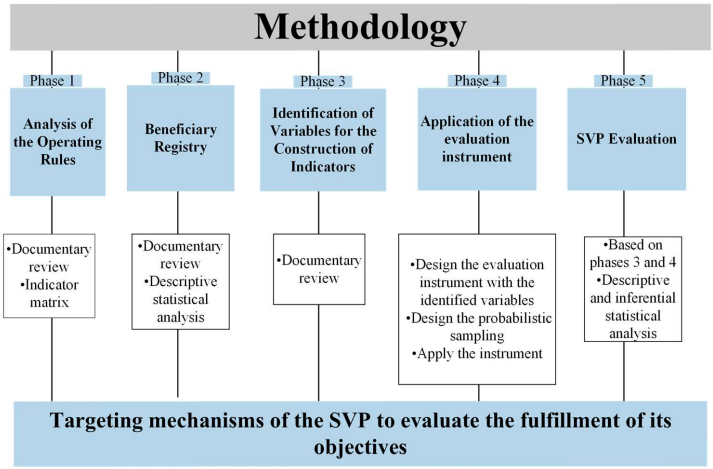


Figure 2. Methodological diagram.

2.2.3. Analysis of the Operating Rules

In order to review the Operating Rules, an annual comparison of the program's indicators since its inception was conducted (Tables 1–3).

Table 1. Indicators of the SVP for 2019 and 2020.

Year	Indicators *					
2019	% of agricultural subjects below the welfare line	% of beneficiaries receiving financial support	% of beneficiaries receiving financial support relative to the target population	% of beneficiaries receiving in-kind support compared to planned	% of technical staff complying with at least 85% of the work plan with beneficiaries	% of retention compared to the previous period
	% of beneficiaries achieving at least 85% compliance with the work plan established by technical staff	% of financial support deliveries supervised by technical staff	% of in-kind support deliveries supervised by technical staff	% of registered technical-production staff relative to planned	% of social technical staff registered in the program relative to planned	
2020	% of agricultural subjects below the welfare line	% of beneficiaries receiving financial support	% of beneficiaries receiving financial support relative to the target population	% of beneficiaries receiving in-kind support compared to planned	% of technical staff complying with at least 85% of the work plan with beneficiaries	% of retention compared to the previous period
	% of beneficiaries achieving at least 85% compliance with the work plan established by technical staff	% of financial support deliveries supervised by technical staff	% of in-kind support deliveries supervised by technical staff	% of registered technical-production staff relative to planned	% of social technical staff registered in the program relative to planned	

* Information from the indicator matrix [24,25].

Table 2. Indicators of the SVP for 2021 and 2022.

Year	Indicators *					
2021	% of active individuals with 2.5 ha in production	% of target population reporting that they meet basic food needs	% of beneficiaries receiving financial support relative to active subjects	% of beneficiaries receiving financial support on time relative to active program subjects	% of financial support allocated to beneficiary savings disbursed	% of technical staff complying with at least 80% of the work plan with beneficiaries
	% of retention compared to the previous period	% of beneficiaries achieving at least 80% compliance with the work plan established by technical staff	% of agricultural production obtained	% of social technical staff registered in the program relative to planned	% of registered technical-production staff relative to planned	
2022	% of population below the poverty line in rural localities	% of active individuals with 2.5 ha in production	% of subjects whose family's basic food needs are met with products from the AFS/MIAF, relative to their income	% of beneficiaries receiving financial support relative to active subjects	% of beneficiaries receiving financial support on time relative to active program subjects	% of resources contributed to the savings of program beneficiaries
	% of technical staff complying with at least 80% of the work plan with beneficiaries	% of beneficiaries receiving in-kind support compared to planned	% of retention compared to the previous period	% of beneficiaries achieving at least 80% compliance with the work plan established by technical staff	% of beneficiaries who record their savings relative to the total number of active participants in the program	% of registered technical-production staff relative to planned
	% of social technical staff registered in the program relative to planned	% of in-kind support deliveries supervised by technical staff				

* Information from the indicator matrix [26,27].

Table 3. Indicators of the SVP for 2023 and 2024.

Year	Indicators *				
2023	% of active individuals with 2.5 ha in production	% of subjects whose family's basic food needs are met with products from the AFS/MIAF, relative to their income	% of beneficiaries receiving financial support relative to active subjects	% of beneficiaries receiving financial support on time relative to active program subjects	% of resources contributed to the savings of program beneficiaries
	% of beneficiaries achieving at least 80% compliance with the work plan established by technical staff	% of beneficiaries receiving in-kind support compared to planned			
2024	% of active individuals with 2.5 ha in production	% of subjects whose family's basic food needs are met with products from the AFS/MIAF, relative to their income	% of beneficiaries receiving financial support relative to active subjects	% of beneficiaries receiving financial support on time relative to active program subjects	% of technical staff meeting monthly work plan activities agreed with the PLC
	% of beneficiaries receiving in-kind support compared to planned				

* Information from the indicator matrix [5,28].

2.2.4. Beneficiary Registry

The registry of 7289 SVP beneficiaries in the study region was reviewed [29] through a geographic distribution by municipality, Figure 3.

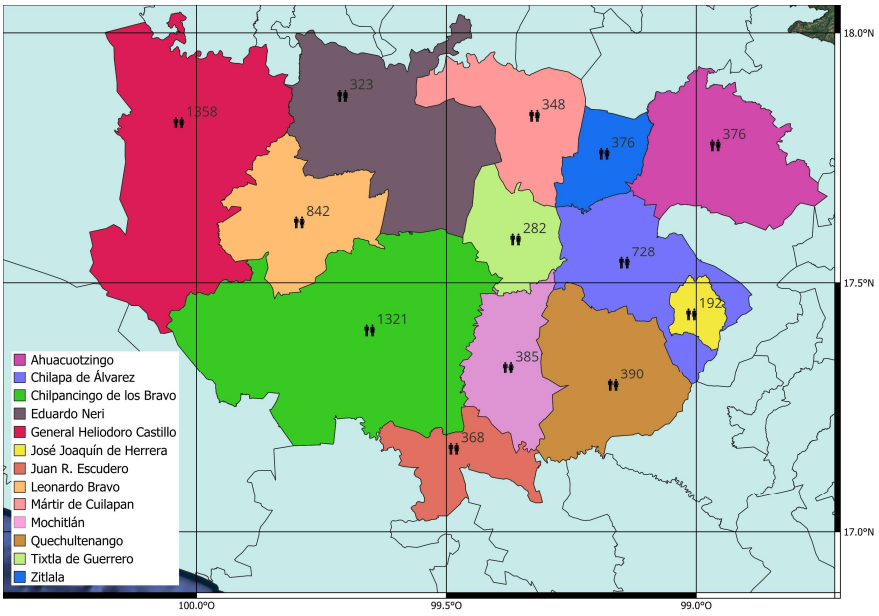


Figure 3. Distribution of the SVP in the central region of Guerrero, Mexico.

2.2.5. Identification of Variables

According to the reviews conducted during Phases 1 and 2 of the methodology, the following variables were identified for the construction of indicators, social variables: recovery of the social fabric, technical assistance, knowledge exchange, and community participation; environmental variables: cultivated hectares, crops, and environmental care techniques; and economic variables: food self-sufficiency, local economy, economic support, and improvements in health, housing, and education.

2.2.6. Application of the Evaluation Instrument

The instrument consisted of 26 open-ended questions addressing social, environmental, and economic variables, as well as a narrative component based on participants experiences through images and videos.

For its application, a sample of n = 99 beneficiaries was considered, with a 90% confidence level for a population of N = 7289, distributed across the 13 municipalities under study, following the approach of 1 [30]

$$n = \frac{N}{1 + N(e)^2} = \frac{7289}{1 + 7289(0.1)^2} = 99 \quad (1)$$

A proportional stratified random sampling was used, where nh represents the sample size of stratum h and Nh the population size corresponding to stratum h, Formula (2) [30], Table 4.

$$nh = \left(\frac{Nh}{N}\right)n \quad (2)$$

Table 4. Stratified random sampling.

Municipality	Beneficiaries	Stratified Sample
Ahuacuotzingo	376	5
Chilapa de Álvarez	728	10
Chilpancingo de los Bravo	1321	18
Eduardo Neri	323	4
Gral. Heliodoro Castillo	1358	18
José Joaquín de Herrera	192	3
Juan R. Escudero	368	5
Leonardo Bravo	842	11
Mártir de Cuilapan	348	5
Mochitlán	385	5
Quechultenango	390	5
Tixtla	282	5
Zitlala	376	5
TOTAL	7289	99

2.2.7. SVP Evaluation

For the development of the social, environmental, and economic indicators, the following proportions were considered: beneficiaries who are producers, women, those who diversified their production, and those who improved their health, housing, or education, among others, Table 5.

Table 5. Indicators.

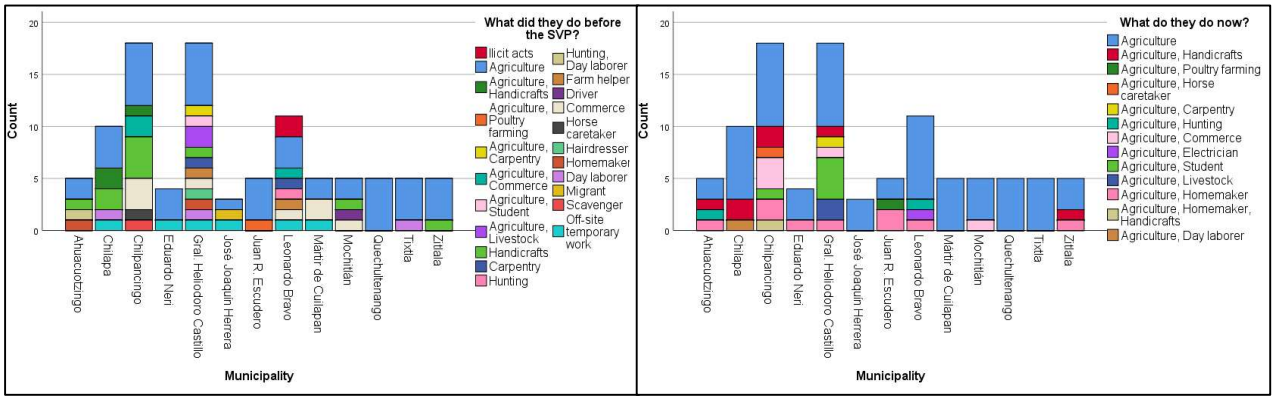
Social %		Environmental %		Economic %	
Beneficiaries who have returned to their place of origin	6.9	Beneficiaries who have diversified their production	62.3	Beneficiaries who have made improvements in their health, housing, or education	93
Beneficiaries who entered agriculture	33.7	Beneficiaries who implement the environmental practices learned on their plots	100	Beneficiaries who have experienced an increase in their agricultural income	62.3

Table 5. *Cont.*

Social %	Environmental %	Economic %
Recovery of the community's social fabric	100	
Participation of youth aged 18–29 years	7.9	
Participation of women	39.6	

Based on the results observed in the previous methodological stages, a descriptive statistical analysis was performed, Figure 4, followed by an inferential analysis using confidence intervals for a population proportion with Equation (3) (where $\hat{p}$ = x/n; x = characteristic of interest) [31], Figure 5.

$$\hat{p} - Z_{\frac{\alpha}{2}}\sqrt{\frac{\hat{p}(1-\hat{p})}{n}} \leq P \leq \hat{p} + Z_{\frac{\alpha}{2}}\sqrt{\frac{\hat{p}(1-\hat{p})}{n}} \quad (3)$$



(**a**) (**b**)

Figure 4. Occupation of beneficiaries: (**a**) Before joining the SVP; (**b**) while participating in the SVP.

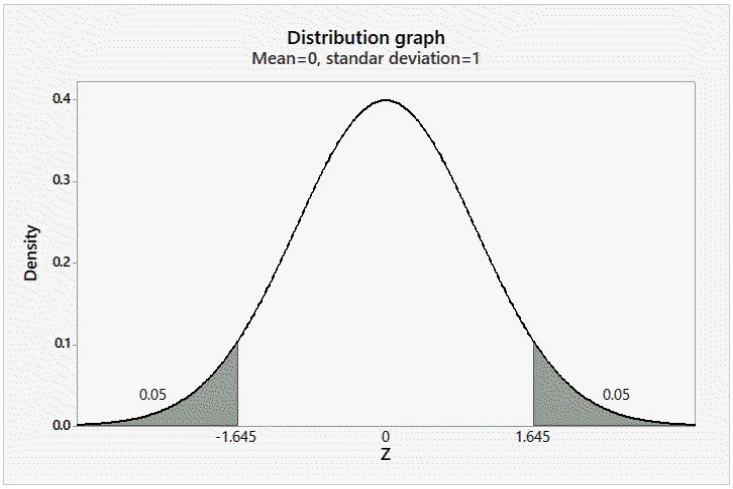


Figure 5. Normal distribution graph.

3. Results

3.1. Rules of Operation

The year-by-year review of the Operating Rules shows an increasing emphasis on areas such as food self-sufficiency, land restoration, the promotion of a financial savings culture, and economic support for beneficiaries (Figure 6).

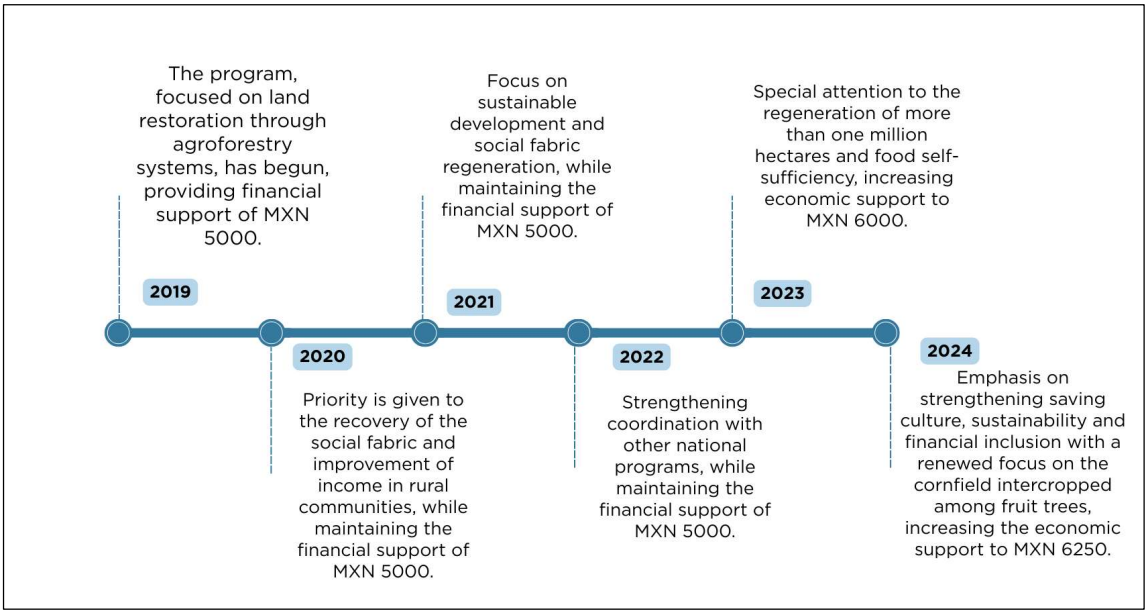


Figure 6. Annual changes in the SVP Operating Rules.

The analysis also highlights changes in the SVP indicator matrix, showing the evolution of key dimensions, including welfare and poverty thresholds, hectare productivity, financial support delivery, food self-sufficiency, and technical staff compliance (Tables 6–10).

Table 6. Focus on welfare and poverty thresholds.

Year	Evolution
2019–2020	During this period, the primary indicator was the percentage of agricultural subjects below the welfare line, reflecting an initial focus on identifying populations living in poverty.
2021	The indicator measuring the percentage of the population meeting its basic food needs was introduced, aiming to strengthen the monitoring of welfare conditions and food self-sufficiency.
2022	The indicator was defined that represents the percentage of the population below the poverty line in rural localities, emphasizing the multidimensional impact of rural poverty beyond income.
2023–2024	The focus on food self-sufficiency and the percentage of individuals able to meet their basic needs was maintained, prioritizing economic well-being.

Table 7. Hectare productivity.

Year	Evolution
2019–2020	No indicators explicitly addressed hectare productivity; rather, the focus remained on the delivery of financial support to agricultural subjects and on welfare conditions.
2021	The indicator measuring the percentage of active participants cultivating 2.5 hectares was incorporated, aimed at assessing the program's actual productivity and land use efficiency.
2022–2024	The indicator representing the percentage of active participants cultivating 2.5 hectares was maintained, highlighting the continued importance of land productivity as a key component of the SVP.

Table 8. Financial support delivery.

Year	Evolution
2019–2020	The initial emphasis focused on measuring the percentage of agricultural subjects who received financial support in relation to those planned, while also assessing the delivery of in-kind support.
2021–2024	The delivery of economic benefits continued, with the incorporation of a more detailed evaluation, including the percentage of individuals receiving timely support and their contributions to savings. This focus allowed for the assessment of both subsidy delivery and the promotion of financial education among beneficiaries.

Table 9. Food self-sufficiency.

Year	Evolution
2019–2020	No indicators explicitly referred to food self-sufficiency; rather, the emphasis remained on the delivery of financial support to agricultural subjects and on welfare conditions.
2021	An indicator was implemented to measure the percentage of the target population that meets its basic food needs. This marked progress toward analyzing food self-sufficiency capacity as an outcome of the program.
2022–2024	Emphasis was placed on the percentage of individuals meeting their food needs through products derived from cultivated hectares, relative to the income received. This shift underscored the importance of land cultivation and its direct contribution to food security.

Table 10. Technical staff compliance.

Year	Evolution
2019–2020	Technical staff compliance with the work plan was evaluated, with a minimum standard of 85%.
2021	The indicator was adjusted to a compliance standard of 80%, adapting to a more realistic approach that encompasses a greater diversity of activities within the work plan.
2022–2024	The evaluation of technical staff continued, underscoring the importance of their participation. By 2024, the percentage of technical staff meeting monthly activity requirements was incorporated, indicating a deeper level of supervision and performance evaluation.

3.2. Beneficiary Registry

Beneficiaries in the study area are predominantly concentrated in the municipalities of General Heliodoro Castillo y Chilpancingo, Guerrero, while women's participation in the SVP represents a significant share (41%), Figure 7.

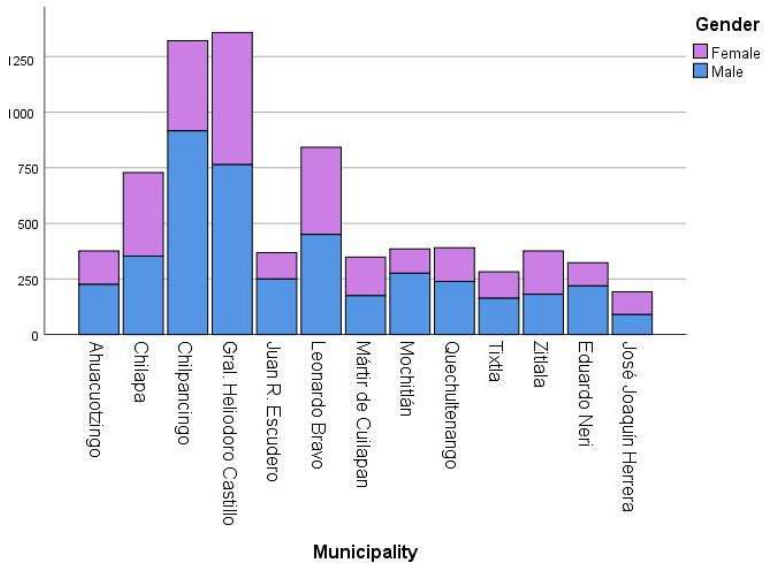


Figure 7. Beneficiaries by municipality and gender.

3.3. Analysis of Indicators

With the implementation of the SVP, beneficiaries improved their quality of life through food self-sufficiency (86.15–95.65%), diversified their production (55.68–71.58%), increased their agricultural income (55.68–71.58%), and reduced the need to migrate by adopting the program as a source of employment (2.84–11.30%). Women's participation in the program was also significant, ranging from 32.39% to 48.51%. Another important aspect was the environmental techniques learned by beneficiaries to enhance their land, such as vermicomposting, organic insecticides, and social activities, including reforestation and school visits to their plots. These practices contributed to the recovery of the social fabric within communities through coexistence, cooperation, and the satisfaction of shared needs that promote collective well-being, Table 11, Figure 8.

Table 11. Estimation of 90% confidence intervals.

Population Proportion (P)	Intervals
Beneficiaries who have made improvements in their health, housing, or education	$86.15\% \leq P \leq 95.65\%$
Beneficiaries who have experienced an increase in their agricultural income	$55.68\% \leq P \leq 71.58\%$
Beneficiaries who have diversified their production	$55.68\% \leq P \leq 71.58\%$
Beneficiaries who have returned to their place of origin	$2.84\% \leq P \leq 11.3\%$
Beneficiaries who entered agriculture	$26.49\% \leq P \leq 42.19\%$
Participation of women	$32.39\% \leq P \leq 48.51\%$
Participation of youth aged 18–29 years	$3.58\% \leq P \leq 12.58\%$

Figure 8. Activities of the beneficiaries.

4. Discussion

The results obtained in this study demonstrate that the SVP has generated significant impacts across the three evaluated dimensions in the central region of Guerrero, Mexico. The most prominent indicator was improvements in health, housing, or education, with a confidence interval ranging from 86.15% to 95.65%, reflecting the program's contribution to beneficiaries' quality of life. This finding is consistent with previous reports documenting improvements in well-being and food security associated with the SVP and aligns with local perceptions reported for the program in southeastern Mexico [32]. In addition, [33] highlights how agroforestry systems strengthen food security and community ties.

When contrasting these results with previous studies, it was observed that targeting based on land tenure of 2.5 hectares and the poverty line can be effective in reaching producers with greater productive capacity; however, it also excludes small-scale farmers who lack the required land area, a limitation previously identified in research on the SVP [19]. This observation highlights the need to introduce more flexible eligibility criteria in order to expand the program's reach without compromising its productive and environmental objectives.

According to [34], the adoption and maintenance of agroforestry systems depend on structural factors such as land tenure, farm size, accessibility, farmer age, education, and gender. This finding is consistent with the SVP evaluation, where beneficiaries' commitment to the practices promoted by the program is associated with factors including age, lifestyle, family context, educational background, and targeting criteria. Similarly, [35] argue that agroforestry systems are closely linked to identity, memory, and territorial autonomy, highlighting women as a key factor in biodiversity preservation, in line with the SVP's objective of increasing women's integration into agricultural activities. Meanwhile, [6] emphasize that strengthening local participation requires collaboration between government institutions and rural cooperatives, while [8] point out that private enterprises must also be part of this alliance to consolidate a sustainable agricultural ecosystem. Together, these studies support the present findings regarding the importance of coordinated engagement among all local actors to achieve the objectives of the SVP, from farmer selection to long-term participation in the program. In addition, research by [36] and [37] identified climate

change adaptation practices that directly align with the SVP's environmental indicators, demonstrating rural resilience through agroforestry systems and sustainable actions.

In relation to internationally established programs, the SVP is oriented toward addressing socio-environmental challenges such as environmental degradation, aligning with initiatives like the Great Green Wall and the forest garden initiative of Trees for the Future in Africa. These programs similarly aim to restore and rehabilitate degraded land, as well as to increase vegetation cover in order to enhance soil fertility and improve smallholder farmers' productivity, unlike the Great Green Wall, which incorporates agro-silvopastoral systems; the SVP does not include this approach [38,39]. However, the SVP focuses on combating deforestation by promoting productive land use through AFS and MIAF, whereas the Terai Arc Landscape initiative prioritizes reforestation to restore habitats for multiple species within a shared biodiversity hotspot between India and Nepal [40]. Similarly, programs such as the Amazon Sustainable Landscapes Program, Initiative 20 × 20, and the Bonn Challenge address climate change through comparable restoration strategies, although they differ in terms of the scale of hectares restored, regions of implementation, and years of operation. In this context, the SVP stands out by providing direct financial support to beneficiaries in the amount of MXN 6450 [41]. Regarding the achievements of each program, the SVP, after six years of implementation, has recovered 1,202,959.708 ha, surpassing its proposed goal of 1,139,372.5 ha; it generated more than 442,000 permanent jobs, established 18,500 PLC, 368 cooperatives, 1400 productive projects, and 48,000 actions benefiting their own communities, among others. In comparison, the Amazon Sustainable Landscape protected 7.4 million ha of new or expanded areas, restored 17,814 ha of forest, supported 60 community initiatives related to 15 non-timber species, backed three sustainable financing mechanisms, and mitigated 91 million Mt CO_2 eq of greenhouse gas emissions. Initiative 20 × 20 restored 8.2 million ha of degraded land, converted 14.6 million ha into conservation areas, promoted the formation of thematic working groups and communities responsible for policy formulation to foster peer exchanges, organized the Land Accelerator program that trains and empowers entrepreneurs whose businesses restore land to develop their capacity in key business areas, pitch their businesses to impact investors, and sell their products more effectively; its funding comes from shareholders and financial partners. Meanwhile, Trees for the Future has restored 41,345 ha since 2014, supports more than 50,000 households, has captured 347 Mt CO_2 per hectare, restored arid lands, contributing to increased income and improved health for farmers and their families. The Great Green Wall has restored 30 million ha of degraded land, creating three million new jobs in participating countries, thus completing 30% of the project. The Bonn Challenge has currently recovered more than 160 million ha, with 61 countries committed to the initiative. And the Terai Arc Landscape restored 66,800 ha, increased the rhinoceros' population from 409 to 752 (2005–2021), and tigers from 121 to 355 (2010–2022). It is worth noting that while other programs are funded by international organizations, financial partners, and investors, the SVP is a public policy implemented and funded by the Mexican government, Table 12.

Table 12. Comparison between the SVP and other environmental programs.

Program	Year of Start	Region	Objective	2030 Goal (Hectares)	Stakeholders	Financial Support	Results
Amazon Sustainable Landscapes Program [1]	2015	Amazon	To connect people and institutions to link conserved and managed landscapes, maintain 73 million hectares of forest land, promote sustainable land management on 52,700 hectares, and support actions to reduce CO_2 emissions by 2030.	73,000,000	Environmental authorities of Amazonian countries, public and private national and international organizations, civil society, and community organizations.	Provides financial support and funding through specific national projects implemented in Amazonian countries.	7.4 million ha of new or expanded protected areas, 17,814 ha of restored forest, support for 60 community initiatives related to 15 non-timber species, 3 sustainable financing mechanisms supported, 91 million Mt CO_2 eq of greenhouse gas emissions mitigated.
Initiative 20 × 20 [2]	2014	Latin America and the Caribbean	To bring more than 50 million hectares of degraded land into a process of conservation and restoration by 2030 through various projects.	50,000,000	National governments, financial and technical partners, academics, communities, civil society, and transboundary regions committed to land restoration and conservation.	Receives funding for environmental restoration projects, some of which provide economic benefits to farmers.	8.2 million ha of degraded land restored, and 14.6 million ha converted into conservation areas.
Trees for the future "Agroforestry gardens" [3]	2014	Africa	Increase soil fertility and smallholder productivity, expanding restoration from 41,000 to 229,000 hectares by 2030 and supporting the creation of 230,000 jobs.	229,000	International non-profit organization (TREES) and farmers.	Does not provide direct financial support; instead, it supports communities and farmers in Africa through training, seeds, and tools for regenerative agriculture, promoting sustainable incomes and reducing poverty and deforestation.	It has restored 41,345 ha since 2014. It has supported more than 50,000 households and captured 347 metric tons of CO_2 per hectare. The restoration of arid lands also contributes to increasing income and improving the health of farmers and their families.
The great green wall [4]	2007	Africa	Implement a mosaic of restoration and rehabilitation interventions to address land degradation and desertification, restoring 100 million hectares, creating 10 million green jobs, and capturing 250 million tons of CO_2 by 2030.	100,000,000	The United Nations (UN) and international organizations.	Receives funding to implement practical projects benefiting local communities and the environment, aiming to create 10 million green jobs by 2030.	Three million new jobs have been created in the countries participating in the project, which has restored 30 million hectares of degraded land. The project is 30% complete.
The Bonn challenge [5]	2011	Global	Restore 150 million hectares by 2020 and 350 million hectares by 2030, aiming to improve both ecological integrity and human well-being.	350,000,000	Countries, governments, international organizations (IUCN, FAO, UN), NGOs, Indigenous communities, private sector actors, and landowners.	Does not provide direct funding; resources are directed toward ecosystem restoration and the strengthening of local and regional initiatives.	It has restored more than 160 million hectares currently, with 61 countries committed to the initiative.
Terai Arc Landscape [6]	2001	India and Nepal	Protect a rapidly degrading biodiversity hotspot shared by India and Nepal.	2,470,000	NGOs, state and local governments, civil society, and Indigenous communities.	Receives funding from international organizations for the restoration project. It generates green jobs and promotes sustainable economic activities.	It restored 66,800 hectares, increased the rhinoceros population from 409 to 752 (2005–2021), and tigers from 121 to 355 (2010–2022).
SVP [7]	2019	Mexico	Promote the social well-being of women and men farmers by promoting food self-sufficiency, through actions that foster the reconstruction of the social fabric and environmental restoration, implemented via plots with agroforestry production systems.	1,139,372.50	Government, beneficiaries, and technical staff (productive and social).	Provides direct monthly financial support of MXN 6450 to beneficiaries.	It recovered 1,202,959.708 ha, surpassing its proposed goal of 1,139,372.5 ha, generated more than 442,000 permanent jobs, established 18,500 PLC, 368 cooperatives, 1400 productive projects, and approximately 48,000 actions benefiting their own communities.

[1] [42], [2] [43], [3] [39,44], [4] [38,45], [5] [46], [6] [40,47,48], [7] [4,41,49].

5. Conclusions

The analysis of the SVP targeting mechanisms in the central region of Guerrero, Mexico, identified that the program significantly fulfills its social, environmental, and economic development objectives. Most beneficiaries diversified their agricultural production by applying sustainable environmental techniques and reported improvements in health, housing, and education. In addition, the community expressed that, thanks to the SVP, they have harvested a variety of products that they have been able to commercialize through local peasant markets (*tianguis campesinos*) or agro-markets (*agrotianguis*) in different localities. The results confirm that targeting agricultural subjects aged 18 years or older, living in poverty conditions and with at least 2.5 hectares available, has been effective in promoting the SVP; however, this same criterion limits the inclusion of producers with smaller land areas, an aspect that should be considered in future revisions of the Operating Rules in order to expand the program's reach without losing efficiency. Quantitative and qualitative indicators were established that can be used for monitoring and improving the program in other regions of the country, reinforcing the importance of maintaining technical assistance and continuous training as a foundation to ensure long-term sustainability and restore the social fabric of beneficiary communities.

The study proposes new indicators to measure targeting mechanisms, including beneficiaries who improved their health, housing, or education; increased their agricultural income; diversified their production; returned to their place of origin; entered agricultural activities; women beneficiaries; young beneficiaries aged 18 to 29 years; application of learned environmental techniques on their plots; and recovery of the social fabric. These indicators may be considered by SVP policymakers in program design and evaluation. In addition, the study lays the groundwork for future lines of research focused on developing methodological approaches that can improve the evaluation of this type of government program based on beneficiaries' perceptions.

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Informed Consent Statement: Verbal consent was obtained from all subjects involved in the study instead of written due to ensure complete anonymity, avoiding the creation of a written record that could link participants' identities to the data.

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