


SMART CITIES: PATHS TO SOCIO-ENVIRONMENTAL INCLUSION IN URBAN AND PERI-URBAN CENTERS IN THE SISAL REGION – BAHIA THROUGH AGROECOLOGY

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ABSTRACT

The project seeks to promote productive inclusion and income generation in the Sisal territory, in Bahia, through family farming, urban agroecology and renewable energy. The initiative aims to address poverty and unemployment, especially among youth and women, by offering training, strengthening cooperatives and encouraging collective marketing. In addition, it fosters community gardens for food security, contributing to sustainable and resilient development through income generation in the territory of Sisal, Bahia, through Agriculture and Urban Agroecology and Renewable Energy practices. Focused on vulnerable communities, offering training in agroecology, business management and access to markets, strengthening cooperatives and community gardens. The goal is to reduce poverty, unemployment, and food dependency, promoting food security, sustainability, and climate resilience. The results obtained so far confirm the level of assertiveness of the design decisions and suggest possible strategies for advancement.

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INTRODUCTION

The Sisal territory, located in the semi-arid region of Bahia, faces several socio-environmental challenges that directly impact agriculture and urban agroecology. These challenges are related to climatic conditions, the socioeconomic structure of the region, and the need for sustainable practices. The territory needs, therefore, an integrated approach that combines agroecological practices, sustainable management of natural resources, productive inclusion, strengthening of local communities as prescribed by the concept of Smart Cities. Urban agroecology, combined with smart technologies and solutions, can be a powerful tool to promote food security, income generation, and climate resilience, contributing to the sustainable development of the region and mitigating various problems, such as those listed below:

WATER SCARCITY AND SMART WATER RESOURCE MANAGEMENT

The Sisal region is marked by prolonged drought and irregular rainfall, which requires innovative solutions for the collection, storage and efficient use of water. The integration of smart technologies can amplify the impact of these solutions:

- **Water Monitoring Systems:** Use of sensors and digital platforms to monitor the water level in cisterns, underground dams, and reservoirs, ensuring rational use and preventive maintenance.
- **Precision Irrigation:** Implementing smart irrigation systems, such as drip controlled by soil moisture sensors, to optimize water use in agriculture.
- **Digital Education for Conscious Use:** Use of applications and online platforms to promote water management practices and awareness about the rational use of water.

LAND DEGRADATION AND SMART AGRICULTURE

The region's soil suffers from desertification and erosion, requiring recovery and sustainable management practices. Smart cities can contribute to:

- **Precision Agriculture:** Using drones and sensors to map soil health, identify degraded areas, and monitor the effectiveness of recovery practices, such as organic fertilization and crop rotation.
- **Digital Agroecology:** Digital platforms to share knowledge about agroecological systems, agroforestry, and biodiversity conservation.

- Climate Monitoring: Intelligent systems to predict extreme weather events and guide producers on adaptive practices.

CLIMATE RESILIENCE AND SMART RENEWABLES

Climate resilience is a central pillar of the project, and smart cities can scale up their actions through:

- Renewable energy: Implementation of solar and wind energy technologies, integrated with smart energy management systems, to reduce dependence on fossil fuels and ensure access to energy in rural areas.
- Real-time weather alerts: Using technologies to send alerts about droughts, heavy rainfall, or other weather events, helping communities prepare for and reduce losses.
- Intelligent Waste Management: Promotion of composting and recycling systems, with the use of technologies to monitor and optimize the process of transforming organic waste into agricultural inputs.

SOCIAL INCLUSION AND DIGITAL COMMUNITY PARTICIPATION

The project seeks to promote social inclusion and empowerment of vulnerable groups, such as women, young people, and traditional communities. Smart cities can contribute to:

- Community Participation Platforms: Creation of digital tools to involve communities in the management of community gardens, cooperatives, and agroecology projects.
- Digital Capacity Building: Use of online platforms and apps to offer training in agroecological practices, business management, and climate resilience, especially for youth and women.
- Women and Youth Empowerment: Promotion of digital networks to connect women and young people to income opportunities, markets, and public policies.

URBAN AGRICULTURE AND SMART FOOD SECURITY

In the axis of urban agriculture and food security, the project aims to increase the production of healthy food and reduce dependence on external food. Smart cities can amplify this impact through:

- Smart Urban Gardens: Use of technologies such as humidity sensors and apps to monitor and manage community gardens in urban and peri-urban areas.
- Digital Short Chain Commercialization: Creation of online platforms to connect rural producers to urban consumers, facilitating direct sales and reducing dependence on intermediaries.
- Food Security Monitoring: Digital systems to monitor food production and consumption, ensuring the food and nutritional security of communities.

SMART SOCIAL INFRASTRUCTURE AND TECHNOLOGIES

Infrastructure and access to technologies are pillars of the project, and smart cities can strengthen these actions through:

- Smart Cisterns and Dams: Use of sensors to monitor the water level and quality of reservoirs, ensuring the sustainable use of water resources.
- Biodigesters and Clean Energy: Implementation of smart systems to manage the production of biogas and energy from organic waste.
- Rural Connectivity: Expansion of quality internet in rural and peri-urban areas, facilitating access to information, markets, and digital services.

SMART IMPACT MONITORING AND EVALUATION

Smart cities use monitoring and data analysis systems to assess impacts and make informed decisions. In the context of the project, this can be applied through:

- Digital Performance Indicators: Use of technologies to monitor indicators such as productivity, income generation, waste reduction, and environmental impact.
- Real-Time Feedback: Collecting data on the needs and challenges of communities, allowing for quick adjustments to project actions.
- Transparency and Accountability: Disclosure of project results and impacts through digital platforms, ensuring transparency and stakeholder engagement.

The integration of the principles of smart cities into the scope of the project in the Sisal territory expands its potential for impact, promoting productive inclusion, food security, and climate resilience in an innovative and sustainable way. By adopting digital technologies, intelligent resource management systems, and community participation platforms, the project can transform the Sisal territory into a model of rural and peri-urban development in line with the challenges and opportunities of the 21st century. This

integrated approach not only strengthens local communities but also contributes to building a more just, inclusive, and sustainable future.

Finally, the project seeks to boost commercialization and access to markets through short marketing chains, such as local fairs, institutional markets (PAA and PNAE), and digital platforms. The search for organic and origin certifications will add value to the region's products, expanding access to differentiated markets and promoting the appreciation of local production.

The expected impact of the project is the improvement of the quality of life of the communities, with income generation, food security, strengthening of the local economy, and promotion of sustainable practices. In addition, the project will contribute to climate resilience and the conservation of natural resources, strengthening the identity and autonomy of the communities involved within the territory.

THEORETICAL FOUNDATION

This chapter presents the main theoretical concepts that underlie the project of productive inclusion in the territory of Sisal, Bahia, with a focus on Agriculture, and Urban Agroecology, and sustainable development. The selected references address topics such as productive inclusion, social inequality, rural development, family farming, and agroecology, offering a theoretical framework that dialogues directly with the project's objectives and actions.

Smart city concepts, such as smart resource management, social inclusion, and environmental sustainability, offer a solid theoretical framework for implementing innovative and inclusive practices. The integration of digital technologies, such as sensors, online platforms, and monitoring systems, can amplify the impact of the project, promoting productive inclusion, food security, and climate resilience.

Batagan (2011), entitled *Smart Cities and Sustainability Models*, discusses how smart cities can promote sustainability through the integration of digital technologies and innovative practices. The author highlights the importance of intelligent systems for the management of water resources, energy, and waste, which can be adapted to the rural and peri-urban context of Sisal. These systems are essential for optimizing water use, promoting energy efficiency, and reducing waste, aligning with the project's goals of strengthening climate resilience and environmental sustainability.

In the article *Urban Agriculture and Smart Cities: Possible Connections*, Costa and Santos (2020) explore the relationship between urban agriculture and smart cities, highlighting how digital technologies can be applied to promote food security and productive inclusion. The authors present examples of smart urban gardens, which use sensors and digital platforms to monitor soil, humidity, and weather conditions. These practices can be adapted to the Sisal project, where urban and peri-urban agriculture is a central strategy for income generation and food security.

The work of Harrison, Eckman, and Hamilton (2010), *Foundations for Smarter Cities*, presents the pillars of smart cities, with a focus on information and communication technologies (ICTs) and their application to urban management. The authors highlight the importance of integrated systems for monitoring and managing resources, such as water, energy, and transportation. In the context of Sisal, these fundamentals can be applied to develop smart water collection and storage systems, precision irrigation, and waste management, contributing to sustainability and climate resilience.

In the article *Smart Cities in Europe*, Caragliu, Del Bo, and Nijkamp (2011) analyze European experiences of smart cities, highlighting the importance of energy efficiency, social inclusion, and community participation. The authors argue that smart cities should be built on principles of sustainability and equity, ensuring that the benefits of technologies are accessible to all. This perspective is relevant to the Sisal project, which seeks to promote productive inclusion and empowerment of vulnerable groups, such as women, young people, and traditional communities.

In *The Age of Intelligent Cities*, Komninos (2015) explores the concept of smart cities as environments of innovation, where digital technologies are used to promote economic and social development. The author highlights the importance of inclusive innovation strategies, which ensure that all citizens can benefit from smart technologies. In the context of Sisal, this approach can be applied to develop solutions adapted to local needs, such as digital platforms for the marketing of agroecological products and climate alert systems.

In the article *Smart Cities: Utopia or Dystopia?*, Morozov and Bhargava (2016) offer a critical analysis of the concept of smart cities, highlighting the risks of social exclusion and concentration of power. The authors argue that smart cities should be built on principles of transparency, community participation, and equity. This perspective is

essential for the Sisal project, which seeks to promote social inclusion and the empowerment of communities, ensuring that the benefits of technologies are shared fairly.

The Smart Cities and Inclusive Growth Report, published by UN-Habitat (2020), explores the concept of smart cities as a tool to promote inclusive growth and sustainable development. The document highlights the importance of public policies that integrate digital technologies, social inclusion, and environmental sustainability. In the context of Sisal, this approach can be applied to develop local policies that promote productive inclusion, food security, and climate resilience.

In the Smart Cities for Sustainable Development report, the World Bank (2018) presents examples of how smart cities can contribute to sustainable development, with a focus on energy efficiency, resource management, and social inclusion. The document highlights the importance of smart systems to monitor and manage natural resources, such as water and energy, and to promote community participation. These practices can be adapted to the Sisal project, where the sustainable management of natural resources is essential for climate resilience and productive inclusion.

The work of Almeida and Oliveira (2017) provides a detailed analysis of the challenges and perspectives of productive inclusion in Brazil. The authors highlight that productive inclusion is a fundamental strategy to reduce social inequalities and promote the economic autonomy of vulnerable populations. In the context of the project, this perspective is essential to understand how technical training and access to resources can transform the reality of small rural and urban producers, especially in regions marked by poverty and exclusion.

Castro (2019) complements this discussion by analyzing productive inclusion policies in Brazil, emphasizing the need for actions that integrate education, training, and access to markets. The author points out that productive inclusion should be understood as a process that goes beyond income generation, also involving the promotion of citizenship and the reduction of inequalities. This concept aligns directly with the project's goal of empowering vulnerable communities through family farming and urban agroecology.

Sen's (2000) theory of development as freedom provides a philosophical basis for the project. Sen argues that development should be understood as a process of expanding individual freedoms, including the ability to choose and actively participate in economic and social life. In the context of Sisal, this translates into the creation of opportunities for

beneficiaries to choose their productive activities, increase their income, and improve their quality of life.

Schmidt (2020) addresses the relationship between socioeconomic inclusion and entrepreneurship, highlighting the role of local initiatives in generating income and employment. The author argues that entrepreneurship can be a powerful tool for productive inclusion, especially when combined with training policies and access to resources. This concept is central to the project, which seeks to foster rural and urban entrepreneurship through family farming and agroecology.

The work of Abramovay (2007) on the future of agriculture in Brazil highlights the importance of family farming for sustainable development. The author argues that family farming not only contributes to food security but also promotes productive diversification and the conservation of natural resources. This concept is fundamental to the project, which seeks to strengthen family farming in the Sisal territory, integrating sustainable and inclusive practices.

Silva (1996) and Schneider (2003) complement this discussion by analyzing the new dynamics of Brazilian agriculture and the concept of proactivity. The authors point out that family farming is marked by the diversification of activities, which include not only agricultural production but also food processing and marketing. This perspective is relevant to the project, which seeks to support small producers in expanding their activities and accessing markets.

Agroecology is one of the theoretical pillars of the project, and the works of Altieri (2012), Caporal and Costabeber (2004), and Gleisser (2015) offer a solid conceptual basis for this approach. Altieri (2012) defines agroecology as a science that integrates ecological principles into the management of agricultural systems, promoting environmental and social sustainability. This concept is central to the project, which seeks to implement agroecological practices that increase the resilience of communities in the face of climate change.

Caporal and Costabeber (2004) highlight the principles of agroecology, such as productive diversification, the efficient use of resources, and the valorization of local knowledge. These principles are fundamental to the project, which seeks to integrate traditional practices with technologies adapted to the semi-arid region. Gleisser (2015) complements this discussion by analyzing agroecology as an alternative to agribusiness, promoting fair and sustainable food systems.

Guzmán's (2006) work on agroecology and sustainability offers an international perspective that enriches the theoretical discussion of the project. The author argues that agroecology should be understood as a holistic approach that integrates ecological, social, and economic aspects. This perspective is essential for the project, which seeks to promote sustainable rural development in the Sisal territory, integrating agroecological practices with productive inclusion and climate resilience actions.

Wilkinson (2004) complements this discussion by analyzing the role of family farming in sustainable rural development. The author points out that family farming not only contributes to food security but also promotes the conservation of natural resources and social inclusion. This concept is central to the project, which seeks to strengthen family farming as a strategy for sustainable development.

From a legal point of view, the project is consolidated based on legal frameworks and national and state public policies that guide technical assistance, family farming, agroecology and food security actions. The selected references include laws and decrees that establish guidelines for the promotion of sustainable rural development, productive inclusion and climate resilience, central themes for the project.

Law No. 12,188/2010 establishes the National Policy for Technical Assistance and Rural Extension (PNATER) and the National Program for Technical Assistance and Rural Extension in Family Agriculture and Agrarian Reform (PRONATER). This legislation aims to guarantee access to technical assistance and rural extension for family farmers and agrarian reform communities, promoting productive inclusion and sustainable development. Decree No. 7,215/2010 regulates this law, detailing the guidelines and implementation mechanisms.

These legal frameworks dialogue directly with the project, which seeks to offer technical training and marketing support to small rural and urban producers. PNATER and PRONATER reinforce the importance of technical assistance as a tool for improving productivity, sustainable management of natural resources, and income generation, in line with the project's objectives of promoting productive inclusion in the Sisal territory.

Law No. 11,326/2006 establishes the guidelines for the formulation of the National Policy on Family Farming and Rural Family Enterprises. This legislation defines family farming as a strategic segment for rural development, recognizing its importance for food security, job creation, and the conservation of natural resources. The law also provides for access to public policies, rural credit and technical assistance for family farmers.

In the context of the project, Law No. 11,326/2006 offers a legal framework for actions aimed at family farming in the Sisal territory. The promotion of agroecological practices, the strengthening of cooperatives, and access to markets are initiatives that are in line with the principles of this policy, contributing to productive inclusion and sustainable development.

Decree No. 8,252/2014 institutes the National Policy on Agroecology and Organic Production (PNAPO), which aims to promote the transition to sustainable agricultural systems, based on agroecological principles and organic production. PNAPO provides for actions such as the training of farmers, the promotion of research and the creation of markets for agroecological products.

This policy dialogues directly with the project, which seeks to implement agroecological practices in the Sisal territory. PNAPO reinforces the importance of agroecology as a strategy for food security, conservation of natural resources and climate resilience, central themes for the project.

Law No. 14,564/2023 establishes the State Policy on Agroecology and Organic Production in the state of Bahia. This legislation complements PNAPO, adapting its guidelines to the local context and promoting specific actions for the development of agroecology and organic production in the state.

In the context of the project, the State Policy on Agroecology and Organic Production offers a legal framework for actions aimed at family farming and urban agroecology in the Sisal territory. The law reinforces the importance of technical training, access to markets and the promotion of sustainable food systems, in line with the project's objectives.

Law No. 13,572/2016 institutes the State Policy for Coexistence with the Semi-arid Region in Bahia, to promote sustainable development in regions affected by prolonged droughts. The law provides for actions such as the collection and storage of water, the promotion of adapted social technologies and the promotion of family farming.

This policy is fundamental to the project, which seeks to increase the climate resilience of communities in the Sisal territory. The implementation of water collection systems and the use of agricultural practices adapted to the semi-arid region are initiatives that are in line with the guidelines of the State Policy for Coexistence with the Semi-arid Region.

Law No. 11,046/2008 institutes the State Policy for Food and Nutrition Security in Bahia, to ensure regular and permanent access to quality food for the entire population. The law provides for actions such as the promotion of family farming, the promotion of community gardens, and the strengthening of local food production and marketing systems.

In the context of the project, this policy reinforces the importance of family farming and urban agroecology for food and nutrition security. The creation of community gardens and support for the commercialization of locally produced food are initiatives that are in line with the guidelines of the State Policy for Food and Nutrition Security.

Law No. 8,666/1993 regulates the rules for bids and contracts of the Public Administration, ensuring transparency and efficiency in the management of public resources. This legislation is relevant to the project, which may involve the contracting of services and the acquisition of inputs through bidding processes.

Law No. 8,666/1993 ensures that public resources are used efficiently and transparently, ensuring the quality and sustainability of the actions implemented in the Sisal territory.

The public policies analyzed in this chapter offer a legal and conceptual framework that guides the actions of the productive inclusion project in the Sisal territory. PNATER and the National Family Farming Policy reinforce the importance of technical assistance and productive inclusion for sustainable rural development. PNAPO and the State Policy on Agroecology and Organic Production highlight agroecology as a strategy for food security and climate resilience. The State Policy for Coexistence with the Semi-arid Region and the State Policy for Food and Nutrition Security offers specific guidelines for the context of Bahia, promoting sustainable development and social inclusion.

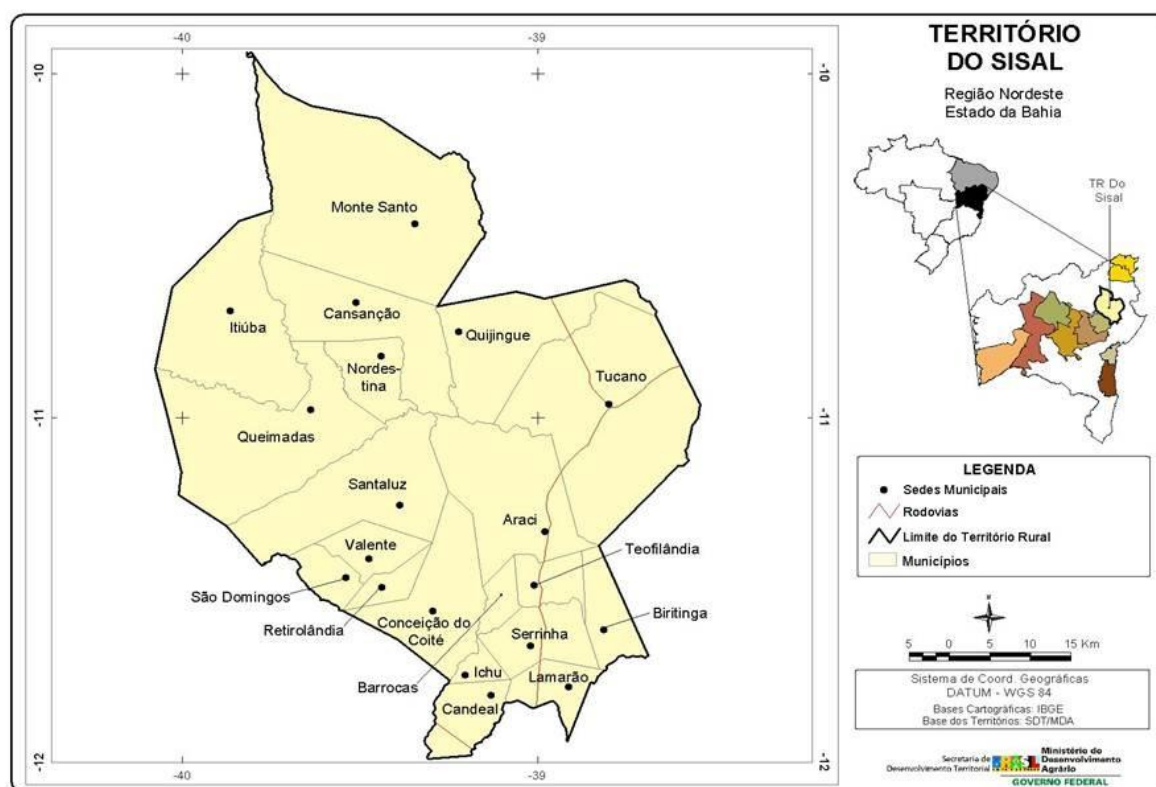
The theoretical references presented dialogue directly with the objectives and actions of the project. Productive inclusion, family farming, and agroecology are understood as integrated strategies to promote sustainable development and the reduction of social inequalities. Sen's theory of development as freedom offers a philosophical basis for the empowerment of communities, while works on agroecology and sustainability provide the conceptual tools for implementing resilient and inclusive productive practices.

Finally, this chapter also demonstrates how national and state public policies dialogue with the objectives and actions listed in this work, offering a legal and conceptual framework for the promotion of productive inclusion, food security, and sustainable

development in the Sisal territory, offering a solid conceptual framework for the project, integrating perspectives on productive inclusion, rural development and agroecology. These concepts not only support the actions and goals but also guide the evaluation of their impacts and the construction of future strategies for the sustainable development of the Sisal territory.

METHODOLOGY

The Sisal Territory, in Bahia, is composed of 20 municipalities: Araci, Barrocas, Biritinga, Candeal, Cansanção, Conceição do Coité, Ichu, Itiúba, Lamarão, Monte Santo, Nordestina, Queimadas, Quijingue, Retirolândia, Santaluz, São Domingos, Serrinha, Teofilândia, Tucano and Valente. As shown in figure 1.



The project will be implemented collaboratively and in a network, involving the 12 rural community associations and agricultural cooperatives in the Sisal territory, in Bahia. Execution will be divided into clear and interconnected steps, with specific activities, defined deadlines, and shared responsibilities. Below is a detailed description of each stage of the project:

STEP 1: PLANNING AND MOBILIZATION (DURATION: 2 MONTHS)

Objective: Structure the project, engage the communities, and define the responsibilities of each organization.

1. Initial Meetings and Participatory Diagnosis:
 - Holding meetings with representatives of the 12 organizations to present the project, discuss expectations, and map local needs.
 - Participatory diagnosis to identify priority areas, challenges, and opportunities in the territory.
 - Responsible: Technical team of the project and leaders of associations and cooperatives.
 - Involved: About 60 people (5 representatives per organization).
2. Formation of the Management Committee:
 - Creation of a management committee composed of 2 representatives from each organization (a total of 24 people) to coordinate and monitor the project.
 - Definition of governance rules, decision-making, and division of tasks.
 - Responsible: Representatives of the organizations and technical staff.
3. Preparation of the Action Plan:
 - Development of a detailed action plan, with goals, deadlines, indicators, and responsibilities.
 - Responsible: Management committee and technical team.

STAGE 2: TRAINING AND IMPLEMENTATION OF SOCIAL TECHNOLOGIES (DURATION: 6 MONTHS)

Objective: To train participants and implement social technologies to strengthen agroecological production.

1. Training in Agroecological Practices:
 - Workshops and courses on urban agriculture, sustainable soil management, efficient use of water, and techniques for coexistence with the semi-arid region.
 - Duration: 3 months (1 workshop per month per organization).
 - Responsible: Specialists in agroecology and technical staff.
 - Involved: About 240 people (20 per organization).
2. Deployment of Social Technologies:
 - Installation of cisterns, biodigesters, rainwater harvesting systems, and

community gardens.

- Duration: 6 months (parallel to the training).
- Responsible: Technical staff and members of the organizations.
- Involved: About 120 people (10 per organization).

STAGE 3: PRODUCTION AND STRENGTHENING OF PRODUCTION CHAINS

(DURATION: 12 MONTHS)

Objective: To start agroecological production and strengthen marketing chains.

1. Implementation of Community Gardens and Productive Backyards:
 - Creation of urban and peri-urban gardens in idle areas and backyards, with a focus on diversified and sustainable crops.
 - Duration: 6 months.
 - Responsible: Members of the organizations with technical support.
 - Involved: About 360 people (30 per organization).
2. Strengthening of Cooperatives and Associations:
 - Training in rural business management, cooperativism and access to markets.
 - Duration: 6 months.
 - Responsible: Management specialists and technical staff.
 - Involved: About 120 people (10 per organization).
3. Product Certification and Valuation:
 - Search for organic and origin certifications to add value to products.
 - Duration: 12 months (continuous process).
 - Responsible: Management committee and technical team.

STEP 4: MARKETING AND MARKET ACCESS (DURATION: 12 MONTHS)

Objective: To ensure the commercialization of agroecological products and expand access to markets.

1. Creation of Short Marketing Chains:
 - Organization of local fairs, participation in institutional markets (PAA and PNAE) and creation of digital platforms for direct sales.
 - Duration: 12 months.
 - Responsible: Management committee and members of the organizations.
 - Involved: About 240 people (20 per organization).

2. Partnerships with Local and Regional Markets:

- Establishing partnerships with supermarkets, restaurants and other points of sale.
- Duration: 12 months.
- Responsible: Management committee and technical team.

STEP 5: MONITORING, EVALUATION AND SUSTAINABILITY (DURATION: 6 MONTHS)

Objective: To monitor the results of the project and ensure its sustainability.

1. Monitoring and Evaluation:

- Conducting periodic meetings to assess the progress of the project, identify challenges and adjust strategies.
- Duration: 6 months.
- Responsible: Management committee and technical team.
- Involved: About 60 people (5 per organization).

2. Sustainability Plan:

- Elaboration of a plan to ensure the continuity of activities after the end of the project, including the creation of a common fund and the search for new partnerships.
- Duration: 6 months.
- Responsible: Management committee and technical team.

GOVERNANCE AND NETWORKING

- Steering Committee: Responsible for overall coordination, decision-making, and monitoring.
- Thematic Working Groups: Focused on areas such as production, marketing, training and sustainability.
- General Meetings: Held quarterly to ensure transparency and collective participation.

EXPECTED IMPACT

- Productive Inclusion: Income generation for about 360 families.
- Food Security: Increased production of healthy food and reduced dependence on external foods.

- Environmental Sustainability: Efficient use of natural resources and strengthening climate resilience.
- Community Strengthening: Empowerment of local communities, especially women and youth, through cooperativism and associativism.

DISCUSSION

The public directly benefited from the project is composed of groups in situations of socioeconomic vulnerability, who face challenges such as unemployment, low income, and lack of access to income generation opportunities.

They are small rural and urban producers who already grow food on a small scale, but face difficulties in expanding their production and marketing. Many depend on subsistence agriculture and have limited access to technologies, inputs, and markets, need training in agroecological practices, access to resources (seeds, tools, water), and marketing support. Table 1 shows the main communities and profile of the beneficiary public.

Community	Profile
Flowers	Women
Corner	Quilombola
Nook	Quilombola
Mombasa	Women and PWD
High from outside	Rural Youth

There is also a young audience between 15 and 29 years old, many unemployed or underemployed, who are looking for income opportunities and professional qualification. Most have not completed high school or higher education and face difficulties in entering the formal labor market.

The women's nucleus is formed especially by single mothers or heads of household, who seek financial autonomy and participation in productive activities. Many already work in informal activities or in family care, with little access to training and resources.

Quilombola and traditional communities already undertake actions that preserve ancestral knowledge and traditional agricultural practices, but face difficulties in ensuring their subsistence and income. They live in rural or peripheral areas, with limited access to public policies and infrastructure.

People in a situation of food insecurity, families that do not have regular access to quality food or depend on social programs. They live in areas with little supply of fresh and healthy food, often in rural or peripheral areas.

REGARDING THE REGIONS SERVED

Peripheral urban areas, with high population density and little infrastructure, where urban agriculture can be an alternative for income generation and food security.

Rural areas where there are rural and quilombola communities, where family farming is the main source of livelihood, but faces challenges such as droughts and lack of access to markets.

SOCIOECONOMIC CONTEXT

A large part of the population lives on less than one minimum wage, facing difficulties in covering basic expenses such as food, housing and health.

- Low education and high dropout rates, especially among young people.
- High unemployment and underemployment, with few formal job opportunities.
- Difficulty in accessing basic services such as health, education and infrastructure (sanitation, electricity, transportation).
- Climate change: The semi-arid region of Bahia is affected by prolonged droughts, which directly impacts agriculture and water availability.

NEEDS OF THE BENEFICIARY PUBLIC

1. Technical training: Training in agroecological practices, sustainable land management and efficient use of water.
2. Access to resources: Seeds, inputs, tools and social technologies adapted to the semi-arid region.
3. Infrastructure: Water collection and storage systems, greenhouses and spaces for urban production.
4. Commercialization: Creation of direct sales channels, local fairs, cooperatives and connection with regional markets.
5. Social inclusion: Promotion of gender, racial and opportunity equality, with a focus on the empowerment of women and youth.
6. Climate resilience: Preparing to face the effects of climate change, such as

water scarcity, through adapted techniques.

RESULTS

The productive inclusion project in the territory of Sisal, Bahia, has as its main objective to promote income generation and food security through Agriculture and Urban Agroecology, in addition to fostering sustainable and resilient practices to climate change. The preliminary results demonstrate significant progress, but also point to challenges that require continuous attention.

One of the main results was the training of small rural and urban producers in agroecological practices and sustainable land management. Communities such as Flores, Canto, Recanto, Mombasa, and Alto de Fora received training that allowed the adoption of techniques adapted to the semi-arid region, such as water harvesting systems and resilient cultivation. This resulted in an increase in productivity and crop diversification, especially among women heads of households and rural youth, who began to have greater financial autonomy.

The distribution of seeds, inputs and tools adapted to the local context was essential to boost agricultural production. In addition, the installation of water collection and storage systems in areas affected by prolonged droughts has allowed communities to maintain their productive activities even in periods of water scarcity. In peripheral urban areas, the creation of community gardens and productive backyards contributed to the food and nutritional security of vulnerable families.

The creation of marketing channels, such as local fairs and cooperatives, has allowed producers to reach regional markets, increasing their income and reducing dependence on intermediaries. In quilombola communities, such as Canto and Recanto, the appreciation of traditional agricultural practices and the connection with fair markets strengthened cultural identity and economic sustainability.

The project promoted the inclusion of historically marginalized groups, such as women, young people and people with disabilities (PCD). The formation of women's nuclei in communities such as Flores and Mombasa resulted in greater female participation in productive activities and community decision-making. Rural young people, many of them unemployed or underemployed, found in the project an opportunity for professional qualification and insertion in the labor market.

The adoption of agroecological practices and social technologies adapted to the semi-arid region, such as the efficient use of water and the cultivation of drought-resistant varieties, has increased the resilience of communities in the face of climate change. This was especially relevant in a context of prolonged droughts, which have historically impacted the region.

Despite the advances, some challenges persist. The limited scale of some initiatives and the dependence on external resources for infrastructure maintenance are obstacles that need to be overcome. In addition, integration with public policies and the expansion of marketing channels are essential to ensure the long-term sustainability of the project.

CONCLUSION

The project being implemented in the territory of Sisal, Bahia, has been demonstrating in a forceful way that the combination of technical training, access to resources, community strengthening and sustainable practices can transform socioeconomic realities in vulnerable regions. The results achieved reinforce the importance of initiatives that promote productive inclusion, food security, and climate resilience, especially in contexts marked by structural inequalities and the impacts of climate change. The experience at Sisal showed that when communities are empowered with knowledge, tools, and opportunities, they are able to overcome historical challenges and build paths to sustainable development.

One of the most significant aspects of the project is the technical training offered to small rural and urban producers. By learning agroecological practices and sustainable land management techniques, beneficiaries not only increase their productivity, but also diversify their crops, adapting to the harsh conditions of the semi-arid region. This knowledge, combined with access to resources such as seeds, inputs, and water harvesting systems, allows communities previously dependent on subsistence agriculture to reach production levels that guarantee not only their food security, but also the generation of surpluses for commercialization.

Community strengthening also stands out as an essential pillar of the project. The creation of cooperatives and the organization of local fairs provide marketing channels that reduce dependence on intermediaries and increase household incomes. In addition, the appreciation of traditional agricultural practices, especially in quilombola communities, has strengthened the cultural identity and autonomy of these groups. The inclusion of women,

young people and people with disabilities (PWD) in productive and decision-making activities was also a notable advance, promoting gender equality and social inclusion.

Climate resilience is another key axis of the project. In a region historically affected by prolonged droughts, the adoption of adapted social technologies, such as water harvesting and storage systems, and the cultivation of drought-resistant varieties allow communities to maintain their production even in periods of water scarcity. These practices not only reduce climate vulnerability but also contribute to environmental sustainability by promoting the responsible use of natural resources.

However, despite significant progress, some challenges remain. The limited scale of some initiatives and the dependence on external resources for the maintenance of infrastructures are obstacles that need to be overcome to ensure the continuity and expansion of positive impacts. In addition, integration with public policies is essential to consolidate the results achieved and expand the reach of the project. Partnering with governments, nongovernmental organizations, and the private sector can provide the resources and structure needed to scale up actions and reach a larger number of beneficiaries.

For the future, the continuity and expansion of these actions are fundamental. The consolidation of positive impacts depends not only on maintaining the initiatives already implemented, but also on expanding to other communities and regions facing similar challenges. The replication of the model developed at Sisal in other contexts can contribute to the sustainable development of vulnerable areas across the country, promoting productive inclusion, food security, and climate resilience on a national scale.

In summary, the project in the Sisal territory shows that it is possible to transform socioeconomic realities through integrated and participatory actions. The combination of technical training, access to resources, community empowerment, and sustainable practices not only improves the quality of life of vulnerable populations, but also contributes to building a more just, inclusive, and sustainable future. The continuity of these initiatives, combined with the integration with public policies and the expansion of partnerships, is essential to ensure that the benefits achieved are lasting and can be expanded to other regions of the country.

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