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## CHALLENGES AND OPPORTUNITIES IN AN AGROECOLOGICAL MARKET IN THE EAST OF THE STATE OF MEXICO

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*Cindy E Gómez-Vergara*

CIESTAAM. Universidad Autónoma  
Chapingo. Chapingo, Texcoco, Estado de  
México, México

*Víctor H Palacio-Muñoz*

CIESTAAM. Universidad Autónoma  
Chapingo. Chapingo, Texcoco, Estado de  
México, México

*J. R Altamirano-Cárdenas*

CIESTAAM. Universidad Autónoma  
Chapingo. Chapingo, Texcoco, Estado de  
México, México

*Jorge E Vieyra-Durán*

Universidad Autónoma Metropolitana  
Unidad Iztapalapa, Iztapalapa, Ciudad de  
México

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**Abstract:** This article analyzed the main challenges and opportunities in the agroecological markets in the east of the State of Mexico, with emphasis on sustainability and collaboration between the actors of the value network. The study focused on identifying the structural barriers faced by these markets and the areas of improvement that can drive their growth and consolidation. A qualitative approach was used based on data collection through semi-structured interviews with producers, exhibitors and consumers. They were complemented with direct observation and review of literature on agroecology and sustainable markets. The main challenges identified include limitations in infrastructure, barriers in commercialization and lack of institutional support. On the other hand, opportunities focused on the growing interest of consumers in agroecological products, the potential to improve local value networks and the integration of digital technologies to optimize market operations. This study focused on a particular case from the eastern region of the State of Mexico, which could limit the applicability of the results to other areas with different socioeconomic and geographic characteristics. Despite structural challenges, the region's agroecological markets present significant opportunities for sustainable development and strengthening local economies. The implementation of public policies and collaborative strategies between producers and consumers will be key to taking advantage of these opportunities.

## INTRODUCTION

Agroecological markets represent a sustainable alternative to conventional agricultural production and marketing models, which often rely on agrochemicals and environmentally damaging practices. According to Altieri (1995), agroecology seeks to integrate food production with environmental preservation and social welfare, promoting practices that regenerate soils, conserve biodiversity and reduce environmental impact. In these spaces, consumers can purchase products free of pesticides and chemicals, from local producers who are committed to sustainable development (Gliessman, 2014).

In Mexico, the rise of agroecological markets reflects a transition towards conscious and responsible consumption. In the eastern part of the State of Mexico, municipalities such as Texcoco, Nezahualc6yotl and Chimalhuac6n have promoted initiatives that link small producers with consumers interested in local and healthy products (L6pez-Ridaura et al., 2007). These markets offer not only products, but also a space for cultural exchange and environmental education, promoting sustainable practices at the community level.

However, despite their benefits, agroecological markets face significant challenges. The lack of adequate infrastructure, limited access to formal marketing channels and limited institutional support hinder their consolidation (Altieri and Toledo, 2011). In addition, there are other factors, such as competition with traditional markets and the perception of high prices by consumers, which can be limiting for some segments of the population (Guzm6n et al., 2013).

On the other hand, the growing interest in agroecological and organic products presents significant opportunities. In line with global trends, demand for these products has increased in Mexico, which opens doors for diversifying supply and improving local value

networks (Ahumada and Villareal, 2018). In addition, the incorporation of digital technologies for the promotion and management of these markets can be a key tool to expand their impact.

The objective of this paper was to analyze the challenges and opportunities faced by agroecological markets in the eastern part of the State of Mexico. Through an approach based on the diagnosis of structural and operational aspects, we sought to contribute to the identification of strategies to strengthen their development and the economic, social and environmental sustainability of these spaces.

## MATERIALS AND METHODS

This study was conducted between July 2023 and July 2024 in agroecological markets located in the eastern part of the State of Mexico. The selected municipalities -Texcoco, Nezahualc6yotl and Chimalhuac6n (Figure 1)- presented a combination of urban and rural areas that evidenced the socioeconomic and cultural diversity of the area (L6pez-Ridaura *et al.*, 2007). It should be noted that these municipalities were selected based on the origin of the visitors reported in previous surveys, highlighting their participation in the consumption of agroecological products and their interest in responsible consumption alternatives.



Figure 1. Municipalities of the State of Mexico:

Texcoco, Chimalhuac6n, Chicoloapan.

Source: Maps (2020)

These municipalities reflected a diversity of socioeconomic conditions and access to services, in addition to representing key areas for agroecological trade due to their proximity to Mexico City and their potential for growth in response to the demand for healthier and more sustainable products.

In order to obtain a comprehensive perspective on the challenges and opportunities of agroecological markets, data was compiled through different sources of information with exhibitors, consumers and direct observations.

Semi-structured interviews were conducted with 25 regular exhibitors in the agroecological markets of the selected municipalities. The interviews explored topics such as available infrastructure, marketing strategies and institutional support received. They also included questions about the exhibitors' perception of the growth and sustainability of their activities.

In October 2023, 92 surveys with 12 questions were administered to consumers in agroecological markets during four working days. These surveys, designed with open and closed questions, explored preferences, willingness to pay for organic products, barriers such as price and accessibility, consumption patterns and buyer expectations.

During the market days, systematic observations were carried out to document the dynamics of interaction between producers and consumers, the arrangement and presentation of products, and waste management. These observations provided additional qualitative information on the daily functioning of the markets, complementing the data obtained in interviews and surveys.

To analyze the data collected, qualitative and quantitative methods were used to facilitate the identification of patterns and key themes in the testimonies and responses obtained.

- **Thematic coding**

The interviews were transcribed and analyzed using qualitative analysis *software* to identify recurring patterns. The responses were classified into 3 categories: a) infrastructure, b) marketing and c) institutional support; which allowed for the construction of a structured overview of the main challenges and opportunities.

- **Frequency analysis**

The survey data were processed to calculate the frequency of responses to each question, identifying common barriers among consumers. For example, it was observed that a significant percentage of respondents indicated price as a limiting factor for purchasing agroecological products.

- **Comparison between locations**

A comparative analysis was carried out between the municipalities of Texcoco, Chimalhuacán and Nezahualcóyotl in order to identify similarities and differences in the conditions of the agroecological markets, as well as in the perceptions of the actors involved. This analysis allowed us to observe how the socioeconomic and geographic characteristics of each municipality influence the challenges and opportunities of their respective markets.

- **Problem tree**

This technique was used to identify causes and effects related to the main challenges detected, such as low visit frequency and limited product diversification (Cooperrider & Whitney, 2021).

## **RESULTS AND DISCUSSION**

In this section, the most relevant findings on agroecological markets in the eastern part of the State of Mexico were analyzed, highlighting the challenges and opportunities they face in their operation and development. The results were based on general observations and common patterns identified among several markets in the region, with emphasis on their infrastructure, operation dynamics, visitor profile and positioning in the community.

### **GENERAL DIAGNOSIS OF AGROECOLOGICAL MARKETS**

In the eastern part of the State of Mexico, agroecological markets have established themselves as key platforms for the commercialization of agroecological, organic and sustainable products (Altieri & Toledo, 2011). In addition to being points of sale, they function as spaces for social interaction, environmental education and promotion of sustainable practices (Gliessman, 2014). However, they present significant limitations that affect their functioning and growth potential (Figure 2).

#### **INFRASTRUCTURE AND OPERATION**

- **Insufficient physical space**

The lack of adequate areas with shade, restrooms, parking and signage affected both the visitor experience and exhibitor efficiency, which coincided with López-Ridaura *et al.*, 2007.

- **Limited product diversity**

Although the markets include artisanal products, prepared foods and personal care products, their supply does not always respond to the demands and needs of consumers, as mentioned by Franco Hernández *et al.*, 2022.

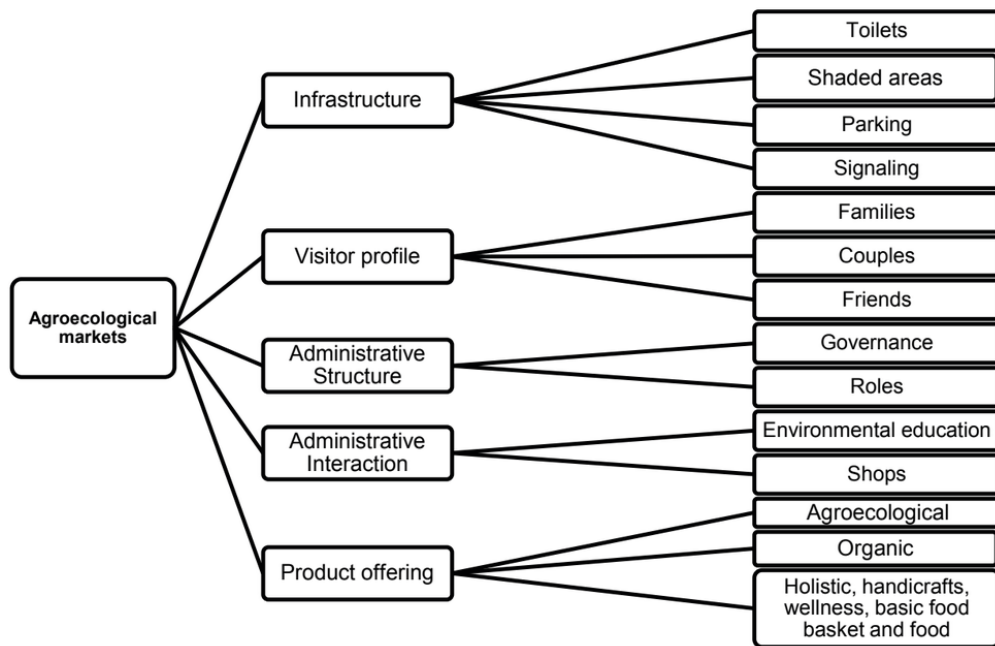


Figure 2. Main components of the agro-ecological market

Source: Own elaboration

### • Exhibitor rotation

The markets face a high turnover of traders, since they worked approximately 60% of maximum capacity and on Saturdays, exhibitors were absent 79% of the time, which created instability in the supply of products and services.

### ADMINISTRATIVE STRUCTURE

The administrative organization of agroecological markets is often limited or non-existent. In many cases, operational and strategic decisions are made informally, without a hierarchical structure or clearly defined roles. For example, in some markets, the founders or owners assume all responsibilities related to management, logistics and interaction with exhibitors, which can lead to work overload and a lack of strategic focus.

This lack of formality has prevented the optimization of key processes, such as space allocation, payment control and the implementation of regulations governing exhibitor participation. In addition, the absence of

formal administrative systems has limited the ability of markets to access government support programs, credit or external financing, as these options usually require the presentation of formal documentation and a clear organizational structure.

An important aspect was the lack of detailed records on market performance, such as visitor flow, sales generated or economic impact on the local community. Without such data, it is difficult to make informed decisions and implement improvement strategies. In addition, the markets lacked staff dedicated exclusively to specific tasks, such as promotion, infrastructure maintenance or exhibitor services, leaving responsibilities distributed informally and inefficiently.

### VISITOR PROFILE

Approximately 70% of visitors come from nearby towns, while about 30% come from neighboring municipalities and Mexico City. However, most of them are occasional customers. 50% visit only twice a year, which shows a low retention capacity.



## CHALLENGES IDENTIFIED IN AGROECOLOGICAL MARKETS

Agroecological markets faced a series of structural and operational challenges that limited their growth and sustainability. These challenges were mainly related to their infrastructure, diversity of supply, promotion, and governance. According to Altieri and Nicholls (2012), the functionality of agroecological markets depends largely on the creation of enabling environments that favor both producers and consumers, highlighting the importance of adequate infrastructure and clear management strategies.

### DEFICIENT INFRASTRUCTURE

One of the main challenges of agroecological markets is the lack of infrastructure. Problems such as insufficient toilets, few shaded areas and inadequate signage make visitors uncomfortable, which reduces their time spent in the market (Table 1).

Appearance	Current condition	Impact
Toilets	Insufficient and in poor condition	Low customer satisfaction
Shaded areas	Limited	Inconvenience for visitors
Parking	Insufficient space	Difficulty of access
Signage	Scarce	Difficulty in knowing all market areas

Table 1. Evaluation of infrastructure and its impact on user experience in agroecological markets

Source: Own elaboration

### LIMITED PRODUCT DIVERSITY

Although the agroecological markets offered a variety of agroecological and artisanal products, this diversity did not always meet the needs and expectations of visitors. In particular, the supply of basic food basket products was limited and insufficient. This imbalance negatively affected the market's ability to meet the needs of consumers, who sought to

stock up on essential products from the basic food basket, such as fruits, vegetables, grains and other staple foods.

The lack of adequate availability of these products not only generates dissatisfaction among visitors, but can also discourage repeat visits, since consumers tend to look for places where they can cover all their shopping needs in a single space, as happens in supermarkets. This challenge highlighted the importance of diversifying product offerings and ensuring greater availability of essential products that respond directly to public demand.

In addition, limited diversification may also impact the overall perception of the market, causing some visitors to perceive it as a complementary space, rather than as a primary option to meet their shopping needs. Addressing this problem requires strategies focused on increasing the supply of essential products and collaborating with local producers to guarantee a large and constant supply of basic market basket products.

### LACK OF PROMOTION AND DIFFUSION

The dissemination of agroecological markets in the region was limited due to the absence of effective and consistent promotional strategies in key channels. In many cases, promotion was reduced to isolated efforts, such as the placement of posters in local spots or exclusive reliance on word of mouth, which significantly restricted their reach. In addition, the digital presence of these markets was low to non-existent, with low social media activity and the absence of functional or attractive *websites*. This made it difficult to connect with younger consumer segments or those seeking online information on responsible consumption alternatives.

A promotion that did not have this feature should include comprehensive digital marketing strategies that encompass social networks

such as Facebook, Instagram and WhatsApp, platforms that have proven to be effective in reaching wider audiences. These strategies could include regular posts on the benefits of consuming agroecological products, stories from local producers, special promotions and the creation of educational content on sustainable practices.

In addition, dissemination could be strengthened through strategic alliances with educational institutions, responsible consumer associations and local cultural events. For example, participation in sustainability fairs or the organization of workshops on agroecology in collaboration with schools and universities would be effective tactics to increase market visibility and impact.

#### INFORMALITY AND WEAK GOVERNANCE

Most agroecological markets operate informally, which is reflected in the absence of official records, formal contracts or standardized administrative processes. This situation makes it difficult to access financing and government programs that require fiscal verification or an established legal status.

These findings were based on observations of operational dynamics and on the review of internal procedures where there was a lack of adequate administrative management.

#### OPPORTUNITIES FOR THE DEVELOPMENT OF AGROECOLOGICAL MARKETS

The main opportunities that can boost the development of agroecological markets were analyzed (Figure 2). From the increase in demand for sustainable products to the integration of digital technologies and the strengthening of community networks, these strategies are key to transforming current challenges into competitive advantages and positioning these spaces as benchmarks in agroecological

practices and responsible trade, as indicated by Chaparro-Africano and Franco-Chocue, 2020.

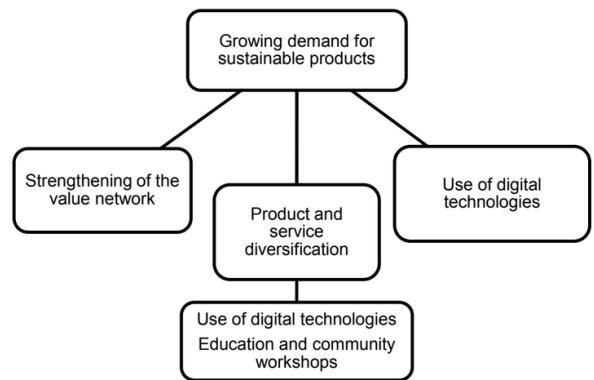


Figure 3. Key Strategies for Agroecological Markets

Source: Own elaboration

#### GROWING DEMAND FOR SUSTAINABLE PRODUCTS

The interest of consumers, especially Generation Z, in agro-ecological and sustainable products has been increasing due to their tendencies towards organic consumption, environmental care and health. According to a study by *GlobalWebIndex*, 58% of Generation Z and 61% of millennials are willing to pay more for sustainable and organic products; followed by 55% of Generation X and 46% of *baby boomers* (CompromisoRSE, 2020). This shift in preferences represents an opportunity for agroecological markets to position themselves as healthy and responsible alternatives, particularly for technologically connected generations such as millennials (people born between 1988-2000) and generation Z (people born between 1996-2010). They also prioritize sustainability practices (World Economic Forum, 2022). These trends demonstrate that younger generations are driving a transformation towards more conscious and environmentally conscious consumption

## USE OF DIGITAL TECHNOLOGIES

The integration of digital *marketing* strategies can significantly improve visibility and market attraction. For example, social networks such as *Facebook* and *Instagram* are key tools to reach new consumer segments especially in the case of millennials, and generation Z, also known as centennials.

## STRENGTHENING THE VALUE NETWORK

The creation of strong networks between producers, traders and consumers can strengthen the sustainability and competitiveness of agroecological markets. The adoption of participatory certification systems and strategic alliances can increase consumer confidence and loyalty. A relevant tool for this purpose is the *Organic Certification Self-Assessment Tool* developed by CCOF (*California Certified Organic Farmers*), which emphasizes the importance of transparency, traceability and good practices in the certification of organic products (CCOF, 2023). Although originally designed for organic certification, the tool can be adapted to strengthen the value network in agroecological markets.

For example, the implementation of a participatory certification system based on the principles of transparency and collaboration could allow market actors (producers, traders and consumers) to collectively validate compliance with agroecological standards. In addition, promoting product documentation and traceability could improve consumer confidence and facilitate communication within the network.

The tool also highlights the importance of strategic alliances with external entities, such as NGOs, universities and certification organizations that could provide technical and logistical support. Also, the incorporation of standards related to sustainability, such as the efficient use of resources and the protection

of biodiversity, could differentiate the market and reinforce its value proposition, attracting consumers interested in these responsible practices (CCOF, 2023).

## DIVERSIFICATION OF PRODUCTS AND SERVICES

The inclusion of workshops, cultural activities and environmental education as an innovative strategy to explain to consumers the importance of sustainable development and being part of the market offer can attract a more diverse public interested in the environment, health and sustainable food, which could help to increase and strengthen the frequency of visits.

## COMPARISON BETWEEN AGROECOLOGICAL MARKETS IN THE EASTERN PART OF THE STATE OF MEXICO

A comparative analysis of several markets in the region showed marked differences in their operation and approach. These differences highlighted both strengths and areas of opportunity in each case (Table 2).

As can be seen in the table above, although the markets for consumers could be indistinct, the products are rated differentially according to the methodology used. On the other hand, the infrastructure, being generally weekend markets, differ in their strategies to approach the consumer.

## PROPOSALS TO STRENGTHEN AGROECOLOGICAL MARKETS

Specific strategies were proposed to managers to address these challenges, based on the diagnostic findings and on successful experiences observed in similar markets.

These proposals were aimed at strengthening infrastructure, increasing the visibility and attractiveness of the markets, diversifying supply to respond to consumer needs, and for-



Appearance	Market A	Market B	Market C
Approach of products	Agroecological and organic	Artisanal and ecological	Agro-ecological and regenerative
Infrastructure	Moderate	Limited	Basic
Digital presence	Activate	Limited	Null
Relationship customer-producer	Direct	Indirect	Direct

Table 2. Comparison of key characteristics among agroecological markets in the eastern part of the State of Mexico.

Source: Own elaboration

malizing their operations to ensure their long-term viability. Emphasis was also placed on the importance of building a strong territorial identity that distinguishes these markets and highlights their values of sustainability and social responsibility. Each suggested action sought to contribute to the integral development of agroecological markets, improving their functionality, attractiveness and relevance within the region.

#### IMPROVING INFRASTRUCTURE

- Expand shaded areas and improve restrooms.
- Implement clear, visible and accessible signage for all types of public.

#### STRENGTHEN PROMOTION AND DISSEMINATION

- Implement digital marketing strategies.
- Promote markets in nearby municipalities and in Mexico City.

#### DIVERSIFY SUPPLY

- Incorporate new products and services.
- Encourage the participation of exhibitors with innovative products.

#### FORMALIZATION AND GOVERNANCE

- Establish clear administrative structures.
- Formalize operations to access financing and government support.

#### CREATION OF TERRITORIAL IDENTITY

- Develop a unique brand for agroecological markets, highlighting their values of sustainability and social responsibility.

#### CONCLUSIONS

The analysis of agroecological markets in the eastern part of the State of Mexico has made it possible to identify key challenges and opportunities for their development. These spaces offer a viable and sustainable alternative to conventional marketing models, by promoting agroecological practices and strengthening local economies. However, their consolidation requires addressing structural and operational issues that limit their potential.

The main challenges identified include insufficient basic infrastructure, lack of effective promotion and limited diversification of supply. These deficiencies affect both the consumer experience and the ability of markets to attract new exhibitors and visitors. In addition, the lack of formalized operations and clear governance has limited access to financing and institutional support.

On the other hand, the opportunities to strengthen these markets are significant. The growing demand for sustainable and agroecological products that are currently in demand by consumers represents a window of opportunity to consolidate their positioning. The implementation of digital *marketing* strategies, the development of a solid territo-

rial identity and the diversification of supply are key actions that can boost the growth of these markets. In addition, the integration of community networks and environmental education contribute to generating a solid base of conscious and committed consumers.

To ensure their long-term sustainability, it is essential to implement strategies that combine improvements in infrastructure, the strengthening of governance and the promotion of their values of sustainability and social responsibility. Likewise, fostering collaboration between producers, consumers and lo-

cal institutions will make it possible to build stronger value networks, optimizing the efficiency and competitiveness of markets.

Agroecological markets in the eastern part of the State of Mexico have the potential to become benchmarks of sustainability and responsible trade. However, to achieve this, it is essential to adopt a comprehensive approach that addresses current challenges and takes advantage of existing opportunities, consolidating them as engines of economic and social development in the region.

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