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Socio-technical innovation in community-based tourism organizations: A proposal for local development

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ABSTRACT

Socio-technical innovation is based on new patterns of interaction involving a set of new behaviors that have been legitimized in a given context. The approach of socio-technical innovation complements a purely technological innovation focus. However, studies of how to address social and environmental challenges under this approach are scarce. The aim of this paper is to identify the technical and social structures that underpin the socio-technical innovation system of community-based tourism organizations (CBTOs). This paper offers an in-depth case study of a specific type of collective property known as an "*ejido*". Through this case study, the paper highlights the aspects that have allowed these organizations not only to meet the needs of the tourism market but also to tackle both human challenges (food, education, well-being, and empowerment) and environmental issues. The results enrich the discussion of stakeholder collaboration and showcase an efficient type of organization that helps meet economic, social, and environmental needs. A key contribution of the study is to provide evidence of the relationship between technical and social systems. This relationship reveals the strong interrelationship between these two systems, which feed off each other to drive the social change of the CBTO. Another contribution is the characterization of the socio-technical innovation system in *ejidos*.

1. Introduction

In recent years, socio-technical innovation (STI) has become a common concept for understanding technology-driven changes and their economic, social, and environmental interactions (Lowe et al., 2008). STI is characterized by the development of productive initiatives, which occur through new practices, products, and services, new processes, and new rules and regulations (Simon et al., 2014). These productive initiatives are combined with social practices, norms, values, and other social patterns to create, adopt, and develop technical innovations. STI results from the confluence of a set of facts (i.e., the exchange of knowledge and ideas between individuals with a common goal), a deep understanding of the social context, well-defined interaction patterns between stakeholders, and a plan with precise role assignments, places, and times (Harrison and Laberge, 2002).

A review of the literature shows the need to improve our understanding of the interaction between technological change and the social, economic, and environmental contexts where it occurs (Lowe et al., 2008). Studies of socio-technical structures have used the inter-organizational community as a unit of analysis. The inter-organizational community is understood as the social groups that share rules and needs (De Prá Carvalho et al., 2017) in such a way that they reflect "experimental learning, the viability of rules, cognition and local practices, that turn into the environment's formal rules and regulations" (Geels, 2010, p. 254). Actor network theory has been applied to the analysis of socio-technical changes. This theory seeks to understand actors' arguments (Harrison and Laberge, 2002). However, it has limitations when used for micro-level analysis of political strategies at the expense of social needs (Allen, 2004) and as a source of power (Parayill, 1999). The socio-technical systems and networks in social enterprises seek social innovation that meets social needs and brings social benefits.

To analyze how society is set up to solve community issues, research on STI has turned from high-tech industries, developed countries, and global markets (Lepratte et al., 2011) to low-tech industries and regional or even local territories (Moulaert, 2009). Local development enables a society to provide alternatives for collective well-being (Rösing et al., 2017). It uses the potential of local residents to generate innovative ideas that have an economic impact on their home location (Duarte and

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Ruiz, 2009).

One specific case of STI occurs in rural areas through tourism-related activities in the form of community-based tourism organizations (CBTOs). Such endeavors focus on more than just economic goals. They also foster sustainability and social development by tackling issues such as employability, changes in culture related to childhood protection, gender equality, female empowerment, and social cohesion. They even address the issue of environmental preservation. One distinction of these social enterprises is the members' commitment to a common vision and goals. Members' deep knowledge of regional needs and circumstances can also encourage or support the necessary changes. In these cases, STI results in new ways of life. Participation by and cooperation between different agents are fundamental parts of the response to the economic and social needs of the community (Leeuwis and Aarts, 2016). STI creates the opportunity for fairness and social justice to increase the amount of social value (Bock, 2012).

Until now, research on tourism, STI, and local development has been scarce. Most studies of STI in rural areas have focused on rural electrification (Chaurey and Mohanty, 2007; Berg, 2014; Ahlborg, 2015a; 2015 b) and other renewable energy schemes (Geels, 2010; Bhattacharyya, 2010; Byrne et al., 2011; Coenen et al., 2012). However, there are gaps in the literature. Few studies have examined STI in the form of a configuration of social groups that share rules and needs (Alegre and Berbegal-Mirabent, 2016). The literature also lacks analysis of the role of other social structures in exploring and exploiting opportunities (Sorensen, 2007), as well as constraints in the form of a lack of effective government, poor community participation, and the need for sustainable community involvement (Malek and Costa, 2015).

Despite these contributions, the literature cites a need for further qualitative research to develop models that capture the distinctive features of STI in rural areas. Such models are especially important to enable a better assessment of outputs such as benefits, the involvement of beneficiaries, the transformation of social relationships, and networks of internal and external agents (Bosworth et al., 2016; Quandt et al., 2017). Scholars have likewise called for further research on specific aspects of STI in rural areas. Topics that require further attention include governance networks in rural development, the role of social entrepreneurs as part of STI processes (Rösing et al., 2017), and knowledge exchange flows between stakeholders (Leeuwis and Aarts, 2016).

In response to these calls for additional research, this paper analyzes social enterprises devoted to rural tourism. It examines how these endeavors enable STI that can satisfy the collective needs of local communities such as the *Bosque de las Truchas* in the state of Hidalgo, Mexico. The aim of this research is to identify the technical and social structures that drive the STI system of CBTOs. Through an in-depth case study, this paper explores what allows these organizations to satisfy and even develop the needs of the tourism market while tackling the human and environmental challenges facing the members of the organization. The paper is organized as follows. In the following section, the literature is reviewed, and community enterprises in rural areas are investigated as a potential form of STI. The third section describes the research context and design, as well as the data collection method. In the fourth section, the results are presented. Finally, the findings and conclusions are discussed in the fifth section.

2. Community-based organizations as an opportunity for socio-technical innovation in rural areas

STI in rural areas is important for hosting communities to create new capabilities, transform social relationships and relationships of power, and crucially, satisfy collective needs (González et al., 2010; Blanco et al., 2016). From this perspective, innovation is social not only in its goals but also in its means. That is, it encompasses possible outcomes as well as "locally embedded practices, actions and policies that help socially excluded and impoverished individuals and social groups to satisfy basic needs" (Oosterlynck et al., 2013, p. 28). In other words, STI involves not only purely technological innovations but also the development of social relations, governance models, forms of individual or collective empowerment, and so on.

Community-based organizations, particularly those led by indigenous and farming communities, have arisen in response to the environmental, economic, and social challenges of their context (Butkeviciene, 2009; Kirwan et al., 2013). However, they are also a vehicle for social change (Ortíz, 2007) in terms of quality of life, especially in rural communities, where neither markets nor the state has been able or willing to satisfy their basic needs.

Most studies of social entrepreneurship and innovation follow a businesslike approach that places technological innovation at the forefront of competitiveness (Fernández et al., 2012). A review of the literature reveals a wide range of papers that study the role of STI in tackling social disadvantages in urban areas and communities (Brown and Vergragt, 2008; Hielscher et al., 2011; Ulsrud, 2015; Moulaert et al., 2017; Paré et al., 2017; Winther et al., 2018). However, less research has analyzed how rural communities deal with the effects of economic recession through STI models, specifically with regard to tourist service offerings (Blanco et al., 2016; Paré et al., 2017; Richter, 2019).

Research has shown that STI is one of the prerequisites for successful rural development (Bock, 2016; Bosworth et al., 2016; Neumeier, 2012; Quandt et al., 2017). Social and organizational contexts are central forces in the development of innovative services such as rural tourism, recreational services, green care farms, and social care farms (Knickel et al., 2009; Patrono and Sutamti, 2016; Altinay et al., 2016). In the field of rural STI, authors have emphasized the role of social enterprises in employability and the education of people to foster social inclusion and encourage their influence on rural development (Patrono and Sutamti, 2016; Richter, 2019).

2.1. Community-based tourism organizations (CBTOs) as tools for socio-technical innovation

Traditionally, the tourism industry in Mexico has prioritized mass services and goods controlled by large, usually transnational, companies (Capellá, 2002; Cruz et al., 2012). This model results in the leakage of economic value and is strongly biased toward marketing and organizational innovation. The capitalist market economy and competition form the basis of tourist development in Mexico, leaving little space for other forms of tourism (Jacob et al., 2003; Murray et al., 2010).

Meanwhile, tourist activity in rural or semirural areas has been seen by government agencies and some social groups as an instrument for sustainable development given its contribution to overcoming the economic and cultural gaps accentuated by the dominant economic model (Ortíz, 2007; Casas et al., 2012). The type of tourism promoted by government agencies in Mexico and other areas of Latin America has supposedly been aimed at improving the economic conditions and quality of life of the host communities.

In the ongoing search for responsible and sustainable practices in the tourism industry, some CBTOs are able to contribute to minimizing social needs and problems of host communities without curbing economic performance. Social change is implicit in rural development (Bock, 2012) and is an explicit purpose of innovation. Rural tourism and other practices (ecotourism, agritourism, and community tourism) are commonly founded by social, community-based enterprises. These enterprises offer long-term strategies for economic and social continuity, not only by adopting an active role in the development of host communities but also by contributing to environmental preservation, social empowerment, and governance, among other aspects (Mbaiwa and Stronza, 2010; Vajirakachorn, 2011; Altinay et al., 2016).

In particular, CBTOs in rural areas can satisfy social needs through the interrelation of social and technological aspects to generate innovative solutions, generally with a social impact. STI through CBTOs offers a holistic strategy for sustainable development (Okazaki, 2008; Aquino et al., 2018; Mottiar et al., 2018). These CBTOs are largely the

result of participants' ability to develop and create processes, products, tourism services, new organizational forms, and other types of technologies that meet not only the requirements of the tourism market but also social needs (Ray, 2000; Shucksmith, 2002; Lee et al., 2005). These organizations can be considered a form of STI. This status owes to two characteristics of CBTOs. The first is the ability of their members to incorporate technologies into the local context, in this case by adopting tourism as one of the main productive activities (Smith et al., 2010). The second is the ability of their members to convert them into a means of satisfying collective needs. From an STI perspective, CBTOs have the social infrastructure necessary to develop, use, and commercialize innovations. The social groups that give rise to CBTOs tend to have distinctive cultural features, norms, problems, preferences, and the like, all of which aids in the adoption, and even the adaptation, of technological developments (Geels, 2010). An in-depth study of these organizations can help explain the social reality built by social actors and a specific context, place, and time (Harrison and Laberge, 2002).

The social relevance of these organizations has to do with their contribution in supporting sustainable development and in understanding transformations in rural areas (Jenson and Harrison, 2013; Moulaert et al., 2017). Despite this importance, however, there is scant academic research on the internal dynamics between technical, organizational, and even operational aspects, particularly of CBTOs.

CBTOs can provide the right context for STI, created by the interaction between technical and social structures (Byrne et al., 2011; Fischer, 2011; Hielscher et al., 2011; Ulsrud, 2015). Their strength in resolving practical problems lies in the synergy of these components to form systems with emergent properties that can be oriented to the resolution of social problems (Geels and Kemp, 2007). Entrepreneurs inside these organizational configurations can generate innovative value propositions. These innovations are composed of more than just technological developments in the pure sense. They also consist of processes, products, practices, and new forms of organization, including new rules and regulations (Simón et al., 2014; FCCyT, 2016). Processes, products, practices, and new forms of organization are continuously adapted and merge with the social system of the organization during their development, adoption, or use (Ulsrud, 2015), paving the way to create the right social structures.

Conceptually, social structures are useful for analyzing CBTOs as the organizational context where STI processes occur. Social structures can be defined as "sets of common habits, norms, routines, established practices, rules, or laws that regulate the relations and interactions between individuals, groups and organizations" (Edquist, 2005, p. 188). Several studies have examined social structures. For example, Stirling (2009), Leach et al. (2012), and Bernal and Cecchini (2017) have cited local knowledge, local experiences, and collective talent as core factors in the adaptation of various technical structures in the local environment. Others have identified participation and cooperation between actors as even more important components than purely technological structures (Schot et al., 1994; Hoogma et al., 2002; Vajirakachorn, 2011; Smith et al., 2014) given their ability to capitalize on the mutual benefit of the technological structures developed in the system. Collective learning processes are also recognized as even more important given their potential to generate valuable outcomes for the group (Brown et al., 2003; Brown and Vergragt, 2008). Hielschet et al. (2011) reported that community-based projects involve local knowledge and commitment, as well as social capital and trust among actors, as components that enable the integration of the technical infrastructure. Studies have identified other emerging social structures such as female participation (Clancy et al., 2007; Sovacool et al., 2013; Winther et al., 2018), social cohesion, and equity (Terstriep et al., 2015). Even internal and external support networks are cited as important inputs for the appropriation of technological innovations (Jamal and Stronza, 2009; Vajirakachorn, 2011). They are recognized as the ideal means to generate and disseminate tacit and non-formalized knowledge (Capello, 1999; Yoguel, 2000; Caravaca et al., 2005).

Given the scarcity of models that capture the elements of prosocial STI, particularly models of the factors that boost the resources of CBTOs, the following research model is proposed (see Fig. 1).

The key idea is that CBTOs as a form of STI are less the result of technical design and more a framework within which technical structures are incorporated and adapted by social structures to satisfy collective needs. This study attempts not only to decipher the components of CBTOs from the perspective of STI but also to show how the social actors that participate in these organizations have managed to channel the outcomes of this STI to meet their own social needs. These needs include employability (Hatton, 1999; Martínez-Cerdá et al., 2020), access to opportunities (Hatton, 1999; Millard et al., 2016), security (Bock, 2012; Bernal and Cecchinni, 2018), social empowerment (Hatton, 1999; Scheyvens, 2002; Howaldt et al., 2018), the conservation of natural resources (Mbaiwa and Stronza, 2010; Vajirakachorn, 2011), and the inclusion of vulnerable groups (FCCyT, 2016).

The proposed model enables exploration of the components of CBTOs from the perspective of STI, but it is still useful to respond to the following specific research questions:

R.Q.1. How does STI occur through CBTOs?

R.Q.2. How do social structures allow the articulation of innovations in CBTOs?

R.Q.3. What are the main linkages between the technical and social structures in CBTOs?

R.Q.3. What kinds of social needs does this form of STI fulfill?

3. Methodology

This section describes the research method, case selection criteria, and basic components of the case study protocol. The case, the codification criteria, and the initial codes are also summarized.

3.1. Method

The main goal of this research is to observe and identify the technical and social structures behind CBTOs that enable STI to emerge. Therefore, an in-depth case study was used. The case study presented here sheds light on the components that enable these organizations not only to meet the needs of the tourism market but also to become social organizations capable of facing both the human and environmental challenges of the members of these organizations.

Case studies can provide an understanding of the "why" and "how" of a variety of facts and processes in a certain context (Stake, 2005). This method is effective for analyzing in-depth qualitative data from different actors and sources (Stake, 2005). It is the most suitable strategy to detect causal patterns, which can provide the seed for additional theory to enhance the knowledge in a given subject.

This method is also useful for addressing practical problems where the experiences of participants are important and context is fundamental (Bonoma, 1985; Cepeda, 2006). A key element of the research design is the existence of a formal conceptual structure of both explicit and underlying assumptions (constructs or variables) in relation to the components of STI in CBTOs (see Fig. 1). Some of these constructs arose during the data analysis, much like in inductive and constructivist approaches (grounded theory). In some cases, pre-existing theories or ideas have emerged while addressing a problem (Strauss and Corbin, 1998; Gray, 2009).

Given the research model and the research questions, five case selection criteria were applied. First, complexity was required. The case covered a rich set of stakeholders and relationships. Institutional development enabled exploration of the proposed research questions. Second, parsimony and access to key informants was required. The goal was to select a single case that maximized what could be explored and learned. The third criterion was proximity between the researchers and informants. This proximity enabled a relaxed relationship between the researchers and informants. It also allowed the research team to

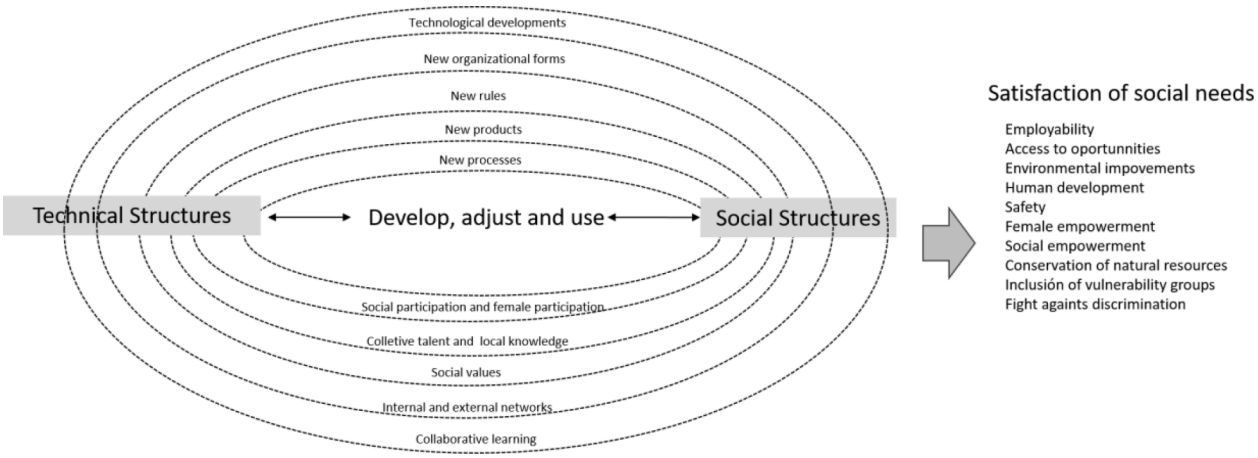

Fig. 1. A model of socio-technical systems.

estimate the bias due to their intervention. It helped develop empathy and intimacy, which allowed the researchers to approach the problem from the perspective of each interviewee. Proximity also helped identify different perspectives and made it possible to decide on the value of the data provided by each informant. The fourth criterion consisted of the organizational features and purpose. The CBTO had to be focused on social development. Finally, the case had to have enough history to enable analysis of longstanding relationship patterns (see Table 1).

3.2. Case selection and description

Given the case selection criteria, *El Bosque de las Truchas*, located in Huasca de Ocampo, was chosen for this case study. This village is located in the state of Hidalgo, Mexico. It is surrounded by forests and ravines, waterfalls, and canyons that form part of the Sierra Madre Oriental. The ecotourist park *El Bosque de las Truchas* (literally, "The Forest of the Trout") is a social enterprise owned by a type of community known in Mexico as an "*ejido*". In Mexico, *ejidos* are a common type of community built around collective property in rural areas. They are recognized as having great economic and ecological potential (Orozco, 2010). *Ejidos* should not be thought of as an area of land. Instead, they are more of an entity consisting of a collection of goods and rights. Legally, *ejidos* are governed by the Assembly of *Ejidatarios* and the *Ejidal* Commissariat (Lewis, 2016).

This CBTO was created in 1985 by *ejidatarios* (members of the CBTO) from the community of San Miguel Regla. It is considered a pioneer of tourism development in the region. It offers tourist services such as quad bike and boat rental, extreme sports and fishing, horseback riding for sightseeing, hiking, pools, slides, and lodgings in cabins. In addition to these tourist services, it also has an area for the farming and sale of trout to tourists and local restaurants. In 2004, an area known as the *Parian* was created where restaurants, cafés, and craft shops can be found.

This project consists of 32 microenterprises led by members of the CBTO, and it is organized into six committees: General Admission, Boats, Recreational Activities, Maintenance, Pool, and Tourist Information. Together, they provide permanent employment to 21 people in the low season and up to 35 people in the high season. Employees must be from the community or must be related to some *ejidatario*. The tourist services offered by the *ejido* reveal the demand for these services among the inhabitants of the surrounding cities, which include Pachuca, Mexico City, and Puebla.

Table 1
Case study design.

Case selection criteria	CBTO	Sufficient social and organizational complexity. Access to key informants and direct observation. Physical and cognitive proximity to gain required trust and intimacy. *Purpose and features* It promotes community involvement (members and their families). Its benefits are not only financial but also social. The role of women is a key factor in CBTO development. The case history should be long enough to explore well-established interactions in depth.
Construct validity		Internal and external informants were interviewed twice. A draft case report was sent to some social entrepreneurs. Experts were consulted to discuss the constructs, concepts, and results.
Reliability		There was a protocol with a clear description of the constructs and concepts. Multiple researchers collected and interpreted the data. Multiple data sources were used: internal informants, external informants, and experts.

3.3. Data collection

To characterize the social and technical structures of the STI developed by the members of this community, two in-depth interviews were carried out with 27 microentrepreneurs from *Bosque de las Truchas* in Huasca, Mexico. These informants formed a purposive sample.

The first interview explored and identified the types of innovation developed by this CBTO (Simon et al., 2014). In particular, the interview focused on the new processes, practices, organizational forms, rules and regulations, and products/services offered by these tourism microentrepreneurs (see Table 2).

This interview also provided data on the social structures involved in the tourist service offering. Despite prioritizing the social structures found in the literature (see Fig. 1), the interview was designed to identify other social structures that were not directly included in the questions. In grounded theory, researchers allow the theory to emerge from the analysis of the data. The term "grounded" refers to the idea that other

Table 2
Types and subtypes of socio-technical innovation based on the classification by Simon et al. (2014).

Types of socio-technical innovation	Examples
New products/services	New interventions or programs to meet social needs
New practices	New services that require new professional roles or relationships
New processes	Co-production of new services
New rules and regulations	Creation of new laws or entitlements
New organizational forms	Hybrid organizational forms such as social organizations

categories (social structures) may emerge from the data analysis.

The goal of the second interview was to explore and analyze the social needs satisfied by the tourist services offered by the CBTO. The categories explored in the interview are presented in Fig. 1. However, the use of grounded theory meant that other social needs could also be identified.

Both interviews were recorded with the entrepreneurs' authorization. The audio recordings were transcribed for content analysis with ATLAS.ti software. Each category of the STI model's components was coded to create a system of codes (see Fig. 2).

This system served to identify the most prominent categories and codes in the interviews, as well as patterns (themes), frequencies (see Table 3), and co-occurrences in the data (see Appendix A). ATLAS.ti software calculated the frequency with which the interviewees referred to situations related to the categories and codes. The software also enabled analysis of the co-occurrences between categories and codes. This "association can give clues about contextual factors and how these factors shape the specific manifestation of a given phenomenon" (Gutierrez, 2010, p. 527). The matrix of co-occurrence (see Appendix A) shows the association of themes in terms of the coefficient C, whose values range from 0 (no co-occurring codes) to 1. The closer the value is to 1, the stronger the relationship between codes will be (Oeij et al., 2019). The data analysis focused on the co-occurrences between the technical and social structures of the CBTO. This study also aimed to explain the dynamics between the main components of CBTOs as a form of STI. Finally, for the data interpretation, qualitative data such as observations and interview notes were included to complement the data from the interviewees.

4. Results

Some tentative theoretical categories were taken from well-founded theories (Strauss and Corbin, 1998; Chamaz, 2006) for this study.

Table 3
System of codes and frequencies.

A. Technical structures	
Code	**Frequency**
A.06 New practices	61
A.01 New organizational forms	49
A.05 New rules and regulations	48
A.03 New products/services	16
A.02 New processes	5
B. Social structures	
Code	**Frequency**
B.04 Social participation	86
B.09 Female participation	84
B.12 Internal and external networks	84
B.13 Social values	77
B.10 Social cohesion	57
B.03 Collective talent	20
C. Social needs	
Code	**Frequency**
C.07 Female empowerment	89
C.01 Employability	72
C.02 Access to opportunities	68
C.08 Environmental improvements	44
C.09 Human development	43
C.04 Social empowerment	46
C.10 Reduction of environmental damage	31
C.05 Conservation of natural resources	29
C.06 Inclusion of vulnerable groups	16
C.03 Safety	16
C.11 Fight against discrimination (equity)	4

However, the grounded theory approach also allows researchers to build codes and concepts from the empirical data. These codes and concepts capture the properties of the phenomenon under study. Table 3 shows the variation of the categories (codes) in relation to the STI model initially proposed in Fig. 1. Table 3 also shows the frequency with which these categories appear in the arguments of the interviewees.

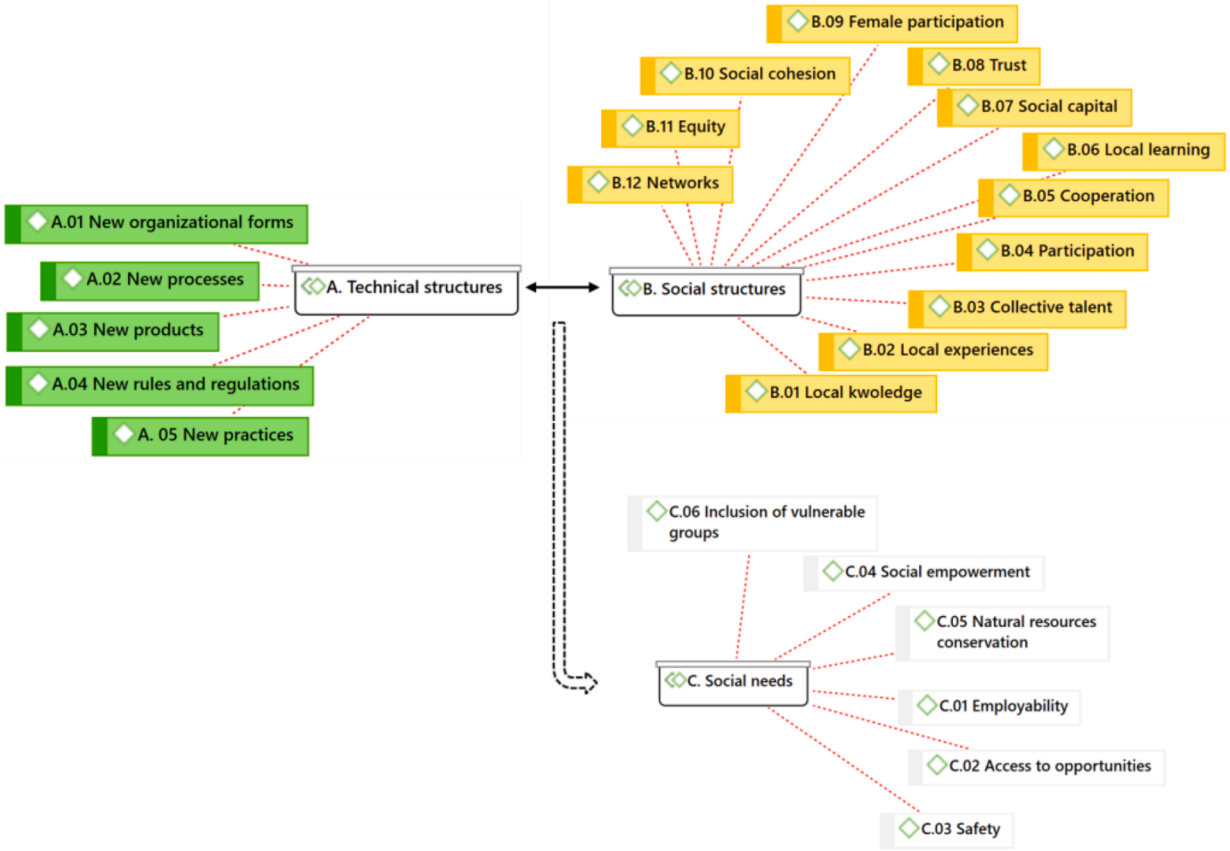

Fig. 2. System of codes.

The key variations were in Category B (Social structures) and Category C (Social needs). Code B.13 (social values) emerged in Category B. Five codes emerged in Category C: C.07 (female empowerment), C.08 (environmental improvements), C.09 (human development), C.10 (reduction of environmental damage), and C.11 (fight against discrimination).

4.1. Technical structures

One purpose of this study was to explore the technical system of this CBTO. The microenterprises that make up this social enterprise predominantly focus on developing *new practices* (A.06), which was the most frequently cited technical structure (61 mentions). The entrepreneurs have incorporated various technologies into their businesses. Examples include billing and reservation platforms. Environmental change has also led them to implement new practices of reforestation and environmental impact studies.

New organizational forms (A.01) were also recognized as forms of innovation by the interviewees (49 mentions). The interviewees reported that managing the park's activities through different committees is an effective way of solving problems and making decisions. The interviewees emphasized the idea that this collective organizational capacity was aimed at improving and proposing new products and services.

New rules and regulations (A.05) was the next most frequently cited code (48 mentions). Rules were proposed and agreed upon at committee meetings and the Assembly of *Ejidatarios* to prevent misuse by those involved in the microenterprises. This set-up seeks equity and fairness. An example is the opening and closing times of businesses. These times were agreed upon with the *ejido* in the General Assembly. Monthly meetings are held to solve problems such as uncovering sewers in the rainy season and addressing unfair practices by competitors.

Bosque de las Truchas farms and sells trout. Tourists visit on weekends to take a walk and sample the park's trout. The code for *new products and services* (A.03) was cited 16 times by the interviewees. The restaurants have introduced traditional drinks from the area, as well as other goods. The specialty is trout prepared in a variety of ways. The entrepreneurs recognize the importance of providing a good service to customers. Therefore, they are known for their hospitality and friendly service. They strive to offer a good service in a variety of ways to ensure customer satisfaction. The entrepreneurs have attended training courses, which have helped them introduce different products and services, specifically in terms of gastronomy.

Although *new processes* (A.02) had a low frequency (only five mentions) in the data analysis, the microentrepreneurs have begun to make changes to their tourism services in areas such as promotion, collection, and sales (the three most cited changes). For example, they offer a service that provides tourists with information on lodgings, restaurants, and recreational activities in the park and other establishments in the area. They have also introduced the use of technology by implementing collection systems.

4.2. Social structures

The *ejidatarios* and their families have played an important role in the development of this tourist enterprise. The development of STI models through this CBTO has made *social participation* (B.04; 86 mentions), *social values* (B.13; 77 mentions), and the *development of internal and external networks* (B.12; 84 mentions) the principal social structures that drive the CBTO as a form of STI. According to the data, *female participation* (B.09) is a crucial part of the internal dynamics of this entrepreneurship (84 mentions). *Internal and external networks* (B.12) generate a dense system of interrelationships (84 mentions). Finally, *collective talent* (B.03) was mentioned only 20 times (see Table 3).

The relationships of CBTO members (B.12) with external groups and institutions promote knowledge sharing and access to other resources (financing, training, and other forms of support) to improve these businesses. According to the data, the relationships of the microentrepreneurs with government actors at the local, state, and federal levels focus on training to enhance the quality of tourism services, the implementation of techniques for forest conservation, and the improvement of trout farming.

Regarding private actors (hotels and suppliers), the relationships are collaborative in terms of the exchange of information and mutual agreements to meet and increase seasonal tourist demand. This network involves denser relationships with the private sector than the public or government. In both cases, the relationship is one way (see Fig. 3).

4.3. Relationships between technical and social structures

The second aim of this research was to analyze the relationship between the technical structure and the social structure. The co-occurrence matrix shows the relationships between the technical structure codes and the social structure codes (see Appendix A). *New rules and regulations* (A.05) had the most co-occurrences with three social structure codes: *social values* (B.13; co-occurrence = 0.16), *social participation* (B.04; co-occurrence = 0.12), and *social cohesion* (B.10; co-occurrence = 0.11). The entrepreneurs have rules and regulations to avoid unfair competition. They seek to support each other and ensure that all members of the CBTO benefit. When problems arise, assemblies are called, and democratic decisions and agreements are made. The rules include the opening and closing hours of the microenterprises, the rules for felling trees, and the separation of garbage. The rules allow them to work in a coordinated and cohesive way for mutual benefit.

New practices (A.06) had co-occurrence with two social structure codes: *social values* (B.13; co-occurrence = 0.17) and *social participation* (B.04; co-occurrence = 0.11). The entrepreneurs have introduced practices such as providing information for tourists, obtaining a green logo linking the trout farm with the restaurants, and introducing quality standards for tourism services. They have performed environmental impact studies, and they are aware of climate change. The temperature of the trout farm has changed from 11 °C to 17 °C in recent years, which is a matter of concern for the entire community. They are taking joint action to address this issue. They are aware of the need for environmental care, so biologists have come to the park to advise members of the community on how to act. They have also organized gastronomic samples, bringing more tourists to the park. The demand of products and services has increased in recent years.

New organizational forms (A.01) had co-occurrence with *social cohesion* (B.10; co-occurrence = 0.16) and *collective talent* (B.03; co-occurrence = 0.11). The entrepreneurs have implemented different organizational forms in the ecotourism park. Examples include a committee to solve problems, a savings account, brochures, and product promotion cards. Although they have different opinions regarding the park's problems, the interviewees emphasized the importance of respect. This value keeps them working collectively. The women in charge of the businesses share recipes, knowledge, and skills that then become collective talent.

New processes (A.02) and *new products/services* (A.03) were not associated with any social structure code. Fig. 4 illustrates the relationship between the technical structure and the social structure. New products/services, new practices, new organizational forms, and new rules and regulations are depicted as being associated with the following social system codes: value for society, social participation, social cohesion, and collective talent.

With regard to the interaction between the elements of social structures and those of technical structures, this section examines the rules, routines, interactions, values, regulations, and other social practices of the members of this organization. These members create, adopt, and improve tourism-related technical innovations.

Social participation (B.04) was one of the most frequently cited codes. It is used by members to take control of the *new practices* (A.06)

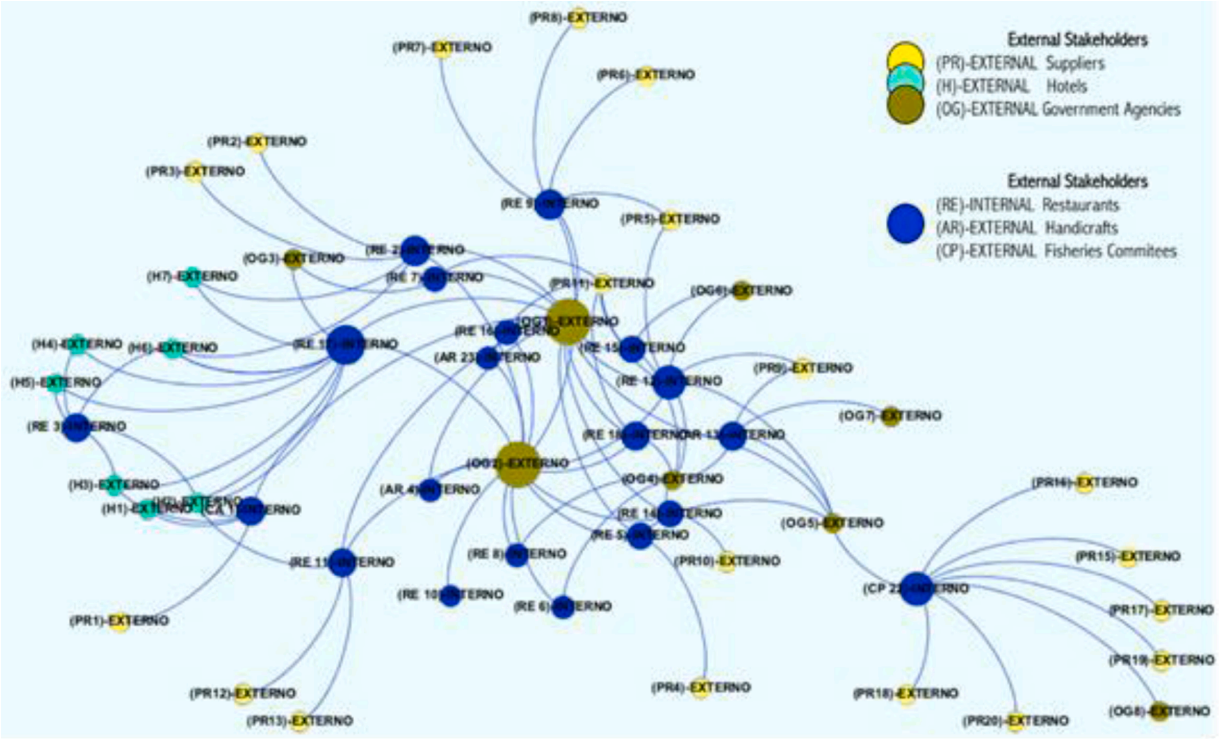

Fig. 3. Network of external relationships.

implemented in this CBTO. The co-occurrence matrix shows that social participation has a strong relationship with *new practices* (A.06; co-occurrence = 0.11) and *new rules and regulations* (A.05; co-occurrence = 0.12). The *Ejidal* Commissariat is the formal organization that promotes and governs the participation of the members of this CBTO in decision making regarding new tourism practices. Although members' social participation is voluntary and democratic, the *Ejidal* Commissariat has a system of rules and obligations to organize, coordinate, and regulate participation within the organization regarding tourism practices and processes. In the internal relationships that support the STI, the *Ejidal* Commissariat is a central actor in terms of making decisions and establishing rules not only on the operations of the park but also on aspects of community life such as water, utilities, and conflict resolution.

Community values are reflected by statements such as "*Respect among colleagues and between those in charge and other workers is very important. … It is, like, the basis of everything.… If not… imagine how everything would be? But trust, solidarity, commitment, and worker responsibility are also important.*"

The results show that *social values* (B.13) have a strong relationship with *new practices* (A.06; co-occurrence = 0.17) and *new rules and regulations* (A.05; co-occurrence = 0.16), as shown in Appendix A. For the members of this organization, social values (solidarity, trust, honesty, etc.) are incorporated into tourism work practices. Social values have led to reciprocal and supportive work practices. Social values also regulate the behavior of members of the organization, establishing codes of conduct that reduce unethical and opportunistic behaviors (Muñoz, 2006; Kieffer, 2016).

Female participation (B.09) is a crucial part of the internal dynamics of this CBTO (84 mentions). The co-occurrence matrix does not provide conclusive evidence of the relationship between this social issue and technical innovation. However, observations and notes from the fieldwork indicate that female participation plays an important role in the incorporation of technical innovation in tourist services. This statement is corroborated by the association between *female participation* (B.09) and female *empowerment* (C.07; co-occurrence = 0.65).

The *networks of relationships* (B.12) reveal a high density of links not only within but also between the members of the CBTO and the social and institutional environment (government agencies at different levels of government, technology centers, etc.). The purpose of these relationships is to add different types of technical innovations to the STI. According to the co-occurrence matrix (Appendix A), *internal and external networks* (B.12) have strong relationships with *new practices* (A.06; co-occurrence = 0.17), *new organizational forms* (A.01; co-occurrence = 0.16), and *new products/services* (A.03; co-occurrence = 0.13). In general, collaboration between the members of the CBTO and the socioeconomic actors in the environment plays a major role because these actors enable easy access to new knowledge and capabilities that give rise to innovations and that provide novelties for this STI, the region, and the tourism industry.

Finally, *collective talent* (B.03) was scarcely mentioned (20 mentions) and had little or no association with the other codes. However, detailed analysis of the arguments of the interviewees not only reveals the skills of those involved in the development of STI processes and practices but also shows that the innovations developed in this CBTO stem from the exchange of knowledge and ideas with public and private actors.

4.3. Meeting social needs

The interviewees reported that the *opportunity of employment* is one of the main social benefits of this CBTO (72 mentions). The microenterprises within the park guarantee employment not only for members (*ejidatarios*) and their immediate family but also for other family members (cousins, nephews, and uncles). Despite the seasonality of tourism, the families seek to involve family members and employ others, preferably from the same community. The motivation of the *ejidatarios* to continue creating new tourism goods and services in the park stems from the level of unemployment in this community prior to its focus on tourism. For the members of this community, *employability in microenterprises* (C.01) is strongly related to *access to opportunities* (C.02; co-occurrence = 0.14) and *female empowerment* (C.07; co-occurrence = 0.16). The matrix of co-occurrences (see Appendix A) reveals this strong association because of the role of these microenterprises as an alternative to unemployment. Employment also represents an opportunity for women (wives of members) to position themselves as key social actors in

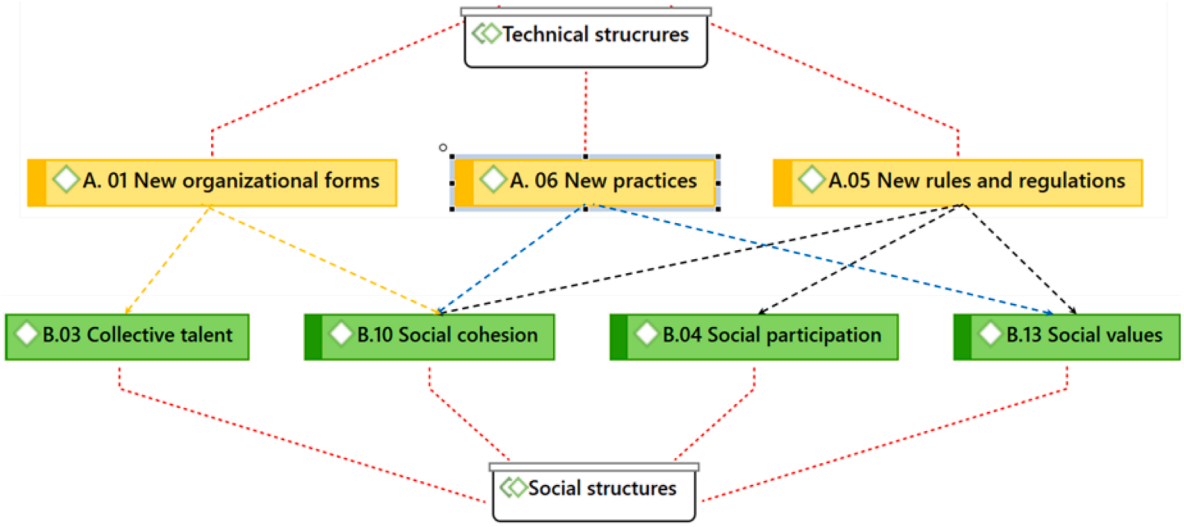

Fig. 4. Relationships between technical structures and social structures.

the effective production of tourism services. Employability is highly valued by the members of the CBTO, as reflected by the association with *social values* (B.13; co-occurrence = 0.11).

In social relations, female empowerment has become increasingly important in the development of this CBTO. The contributions of women in tourism have enabled them to participate and make decisions not only on their microenterprise but also on the park in general. This aspect shows the association between benefits and social transformation in the form of women's employability and thus empowerment. Women who lead or participate in businesses have achieved recognition among the members of the community, according to the interviews.

Female empowerment (C.07) is one of the key impacts of the CBTO. Women have reached positions of power and leadership. Employment has given women dignity and has highlighted their skills and capabilities. Women feel respected and self-confident, which is important in communities with a history of gender inequality. This code has an association with social benefits such as *employability* (C.01; co-occurrence = 0.13) and *access to opportunities* (C.02; co-occurrence = 0.15). The strongest association is between *female empowerment* and *female participation* (B.09; co-occurrence = 0.65). This result shows that women have played a leading role in entrepreneurship and social innovation, enabling women's empowerment, economic autonomy, and equity. Women have their own income, take actions regarding their microenterprises, and participate in the decisions of the CBTO. Together, these actions make them feel empowered.

The interviewees also cited *social empowerment* (C.04) as a widespread process in the community. This category has a stronger association with elements that belong to the social structures category, particularly *social participation* (B.04; co-occurrence = 0.18) and *social values* (B.13; co-occurrence = 0.13). *Social empowerment* is explained by members' capacity to act as a group in favor of the collective needs of those who participate in this social enterprise. This CBTO is made up of formal organizations that encourage participation and decision making by members. This system guarantees control of the CBTO and community life itself.

Social cohesion (C.04) has a high co-occurrence with *safety* (C.03; co-occurrence = 0.12). The members of the CBTO take care of each other. *Bosque de las Truchas* is a safe place. There is a low crime rate, and people know each other. This situation creates social cohesion and prevents antisocial behavior such as theft and drinking.

Access to opportunities (C.02) is the third most cited social benefit. The interviewees reported that employment in microenterprises has allowed them to make improvements in their family life such as paying for higher education for their children, buying a car or a house, and improving their living conditions. Hence, this category is related to *human development* (C.09; co-occurrence = 0.11). Among the most commonly cited benefits by interviewees are better income and access to health and education.

The reduction of *environmental damage* (C.10) is strongly associated with *conservation of natural resources* (C.05; co-occurrence = 0.39) and *environmental improvements* (C.08; co-occurrence = 0.35). The members recognized that they had implemented practices such as the separation of garbage and the elaboration of natural compost, thereby improving the tourists' image of the park. However, these actions have benefited not only the tourists' image of the park but also the environment where they work and live. The co-occurrence matrix shows that these codes have a reciprocal association (see Appendix A).

Finally, inclusion of *vulnerable groups* (C.06), *fight against discrimination* (C.11), and *safety* (C.03) are social outputs of secondary relevance, according to the interviews. The *inclusion of vulnerable groups* (C.06) and the *fight against discrimination* (C.11) are related to the structure of social participation.

5. Discussion and conclusions

The emphasis on market-oriented business innovation and economic growth has limited the role of non-technological innovation in tourism development, particularly in rural tourism. In this paper, we describe the STI process developed within a CBTO in a rural Mexican community. The study of *El Bosque de las Truchas* ecotourism park is just one example of a sustainable development strategy created and developed by rural communities in response to the global economic changes that have affected local territories in this region.

The main goal of this research is to understand transformational changes and identify the drivers of the transformation of social relationships and the impact on the community of *El Bosque de las Truchas*. The study reveals the key importance of beneficiary involvement through networks and appropriate organizational structures. This paper presents a single successful case of an *ejido* that reflects the reality of other Mexican CBTOs.

Analysis based on grounded theory reveals the technical and social structures that make it possible to meet the social needs of the CBTO members. This study shows that innovation in rural environments has elements that not only respond to market needs but also help rural communities through social inclusion, quality of life, citizen participation, empowerment, and other aspects aligned with the principles of sustainability.

This research confirms that innovation processes are both technical

and social in terms of their goals and their means (González et al., 2010; Moulaert et al., 2005, 2017). The results regarding the STI process described in this paper broadly relate to collective action by those who are directly and indirectly involved. The resulting model shows the strong reciprocal interdependence between the social and technical dimensions of the STI process. For instance, *new norms and regulations* within the CBTO are based on a set of *social values* shared by the community. The resulting process of formalisation is developed and enacted through *social participation*. These rules work because of a shared mindset. At the same time, this regulatory framework preserves and enhances *social cohesion* (Geels, 2010).

Likewise, the development of the social dimension of the STI process requires an organizational framework (*new organization forms*) where interactions result in increased *social cohesion* and the enhancement of *collective talent*, thanks to organizational structures that support governance processes and enable the exchange of knowledge and expertise (Moulaert et al., 2017).

Organizational liaison devices, together with a standardized regulatory framework, pave the way for the development of *new practices* at the inter-organizational level. Once again, the technical system is not enough by itself. New practices will not really be shared (i.e., will not have the same interpretation and execution) without a set of shared *social values* and a common purpose and without a design of new practices resulting from a process of *social participation*.

The analysis also shows that *new products and services* resulting from the STI process are less relevant to overall CBTO performance than *new practices, organizational forms*, and *rules and regulations*. This finding shows that the main impact of innovations that involve all community members relates to social transformations, which are highly valued by the actors involved (Jenson and Harrison, 2013; Moulaert et al., 2017).

The resulting STI model shows that stakeholder collaboration also plays a key role in building an efficient organization that addresses economic, social, and environmental needs (Geels, 2010). Together, this organizational framework provides the context for knowledge to be transferred and transformed through dense internal and external networks.

Regarding performance in terms of meeting the social needs of the CBTO community, *employability* is the most important benefit of this STI model. This issue is critical given the crisis faced by local territories in Mexico (Eversole et al., 2014; Villa and Melo, 2015; Kluvánková et al., 2018; Rogelja et al., 2018). In this case, employment is a cornerstone of the social well-being of the families involved in the park. It has a strong link with *access to other opportunities* (education, health, and material benefits) not only for *ejidatarios* and their families but also for *vulnerable groups* (women) and other inhabitants of the area.

Innovation in this social enterprise has helped transform social relationships between agents (Duarte and Ruiz, 2009; Capellá, 2002; Simon et al., 2014). Microentrepreneurs have internal and external networks, enabling them to interact to acquire skills and transfer knowledge with other actors. People, especially *women, feel empowered* by participating in the economy, attending meetings, and holding positions of leadership. Economic independence has enabled women to improve their living conditions and provide their families with educational opportunities. In some ways, STI has improved equity, as reported by Twining-Ward and Ferguson (2011), who pointed out that tourism promotes gender equity.

Female empowerment is a key outcome in the context of this case study. The income of women has brought them economic prosperity and greater independence, as well as the opportunity to provide professional education for their children, as suggested by Kabeer (2005). Evidence of this empowerment is the strong association between female participation and female empowerment. Interestingly, discrimination was not commonly mentioned in the interviews, in contrast to the study by Bernal and Cechini (2018), who emphasized strong discrimination in Latin America. Again, STI has transformed social relationships through social cohesion and equity (Terstriep et al., 2015).

Finally, the STI process developed within this CBTO has made it possible for locals to become profoundly aware of caring for the environment and to reduce environmental damage by implementing new rules and regulations. For this CBTO, caring for the environment is a priority and a key social value that results in *environmental improvements*, which are strongly related to the conservation of natural resources.

This study has both practical and academic implications. It presents a successful case that helps highlight policies and good practices that can be replicated in similar communities. The research is important not only because of what the interviewees reported but also because of what they did not report. The interviews, together with the direct observations and the notes taken by the researchers, reveal a detailed picture of the social reality. The social and technical systems of CBTOs are closely interrelated, with the stakeholders benefiting from the fulfillment of social needs (Geels, 2010). This study makes four contributions to the research community. First, it provides evidence of the strong interrelationships between the technical and social systems, which feed off each other to drive the social change of the CBTO. The development of organizational devices, norms, and practices cannot be created in a vacuum. Instead, they need to be grounded in a common set of social values and a common purpose. This organizational context regulates and aligns participation and exchange between CBTO members and other stakeholders, promoting social cohesion, facilitating the development of collective talent, and reinforcing the system of social values, thus creating a virtuous circle. Second, this study provides a deeper understanding of the STI process in social entrepreneurship. Third, it presents analysis of networks not as sources of power but as a part of the socio-technical system that offers common benefits. Fourth, it characterizes the STI system in the *ejido*, a century-old organization found in rural Mexico. This contribution is important because there is no research on this type of CBTO.

However this research is not without limitations. Crucially, the findings cannot be generalized to other CBTOs. However, it may be assumed that they reflect the pattern of tourism development in other CBTOs in the region given that these social enterprises are led by communities that engage in STI to meet collective needs. This limitation opens the way for future research.

CRediT authorship contribution statement

Jessica Mendoza-Moheno: Conceptualization, Methodology, Writing - review & editing. **Erika Cruz-Coria:** Methodology, Formal analysis, Writing - original draft. **Tomás F González-Cruz:** Conceptualization, Writing - review & editing, Supervision, coordination.

Declaration of Competing Interest

The authors declare no conflict of interest.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.techfore.2021.120949.

Appendix A Matrix of co-occurrences

Note: The cells represent co-occurrences or associations between reported phrases or codes.

Item number		A.03 (16)	A.06 (61)	A.02 (5)	A.05 (48)	A.01 (49)	C.08 (44)	C.01 (72)	C.03 (16)	C.02 (68)	C.09 (43)	B.13 (77)	B.03 (20)	B.04 (86)	B.10 (57)	B.09 (84)	C.04 (46)	C.06 (16)	C.05 (29)	C.11 (4)	C.10 (31)	C.07 (89)
		coef.	coef.	coef.	coef.	coef.	coef.	coef.	coef.	coef.	coef.	coef.	coef.	coef.	coef.	coef.	coef.	coef.	coef.	coef.	coef.	coef.
A.03	New products/services (16)	0,00	0,01	0,00	0,00	0,00	0,00	0,06	0,00	0,08	0,04	0,08	0,03	0,03	0,03	0,01	0,05	0,14	0,00	0,00	0,00	0,02
A.06	New practices (61)	0,01	0,00	0,00	0,00	0,01	0,11	0,10	0,01	0,14	0,09	0,17	0,04	0,11	0,09	0,03	0,08	0,00	0,06	0,02	0,10	0,03
A.02	New processes (5)	0,00	0,00	0,00	0,00	0,00	0,00	0,01	0,00	0,03	0,00	0,00	0,00	0,00	0,03	0,00	0,00	0,00	0,00	0,00	0,00	0,00
A.05	New rules and regulations (48)	0,00	0,00	0,00	0,00	0,02	0,24	0,03	0,07	0,04	0,02	0,16	0,01	0,12	0,11	0,00	0,12	0,02	0,10	0,00	0,10	0,01
A.01	New organizational forms (49)	0,00	0,01	0,00	0,02	0,00	0,06	0,10	0,00	0,05	0,08	0,09	0,11	0,05	0,16	0,04	0,03	0,03	0,07	0,00	0,03	0,05
C.08	Environmental improvements (44)	0,00	0,11	0,00	0,24	0,06	0,00	0,01	0,00	0,01	0,00	0,23	0,00	0,10	0,03	0,02	0,07	0,00	0,35	0,00	0,39	0,02
C.01	Employability (72)	0,06	0,10	0,01	0,03	0,10	0,01	0,00	0,07	0,14	0,08	0,11	0,06	0,05	0,08	0,16	0,08	0,07	0,03	0,01	0,01	0,13
C.03	Safety (16)	0,00	0,01	0,00	0,07	0,00	0,00	0,07	0,00	0,06	0,05	0,03	0,00	0,03	0,12	0,03	0,09	0,03	0,05	0,00	0,02	0,01
C.02	Access to opportunities (68)	0,08	0,14	0,03	0,04	0,05	0,01	0,14	0,06	0,00	0,11	0,07	0,07	0,05	0,07	0,16	0,09	0,08	0,03	0,03	0,01	0,15
C.09	Human development (43)	0,04	0,09	0,00	0,02	0,08	0,00	0,08	0,05	0,11	0,00	0,08	0,02	0,03	0,05	0,12	0,07	0,09	0,00	0,00	0,01	0,14
B.13	Social values (77)	0,08	0,17	0,00	0,16	0,09	0,23	0,11	0,03	0,07	0,08	0,00	0,00	0,03	0,05	0,01	0,13	0,04	0,13	0,00	0,11	0,02
B.03	Collective talent (20)	0,03	0,04	0,00	0,01	0,11	0,00	0,06	0,00	0,07	0,02	0,00	0,00	0,00	0,04	0,01	0,08	0,00	0,00	0,00	0,00	0,01
B.04	Social participation (86)	0,03	0,11	0,00	0,12	0,05	0,10	0,05	0,03	0,05	0,03	0,03	0,00	0,00	0,08	0,02	0,18	0,04	0,07	0,00	0,07	0,04
B.10	Social cohesion (57)	0,03	0,09	0,03	0,11	0,16	0,03	0,08	0,12	0,07	0,05	0,05	0,04	0,08	0,00	0,01	0,08	0,03	0,05	0,00	0,04	0,02
B.09	Female participation (84)	0,01	0,03	0,00	0,00	0,04	0,02	0,16	0,03	0,16	0,12	0,01	0,01	0,02	0,01	0,00	0,04	0,04	0,03	0,02	0,02	0,65
C.04	Social empowerment (46)	0,05	0,08	0,00	0,12	0,03	0,07	0,08	0,09	0,09	0,07	0,13	0,08	0,18	0,08	0,04	0,00	0,04	0,03	0,00	0,00	0,01
C.06	Inclusion of vulnerable groups (16)	0,14	0,00	0,00	0,02	0,03	0,00	0,07	0,03	0,08	0,09	0,04	0,00	0,04	0,03	0,04	0,00	0,00	0,00	0,00	0,02	0,02
C.05	Conservation natural resources (29)	0,00	0,06	0,00	0,10	0,07	0,35	0,03	0,05	0,03	0,00	0,13	0,00	0,07	0,05	0,03	0,03	0,00	0,00	0,00	0,15	0,01
C.11	Fight against discrimination (4)	0,00	0,02	0,00	0,00	0,00	0,00	0,01	0,00	0,03	0,00	0,00	0,00	0,00	0,00	0,02	0,00	0,00	0,00	0,00	0,00	0,00
C.10	Reduction environmental damage (31)	0,00	0,10	0,00	0,10	0,03	0,39	0,01	0,02	0,01	0,01	0,11	0,00	0,07	0,04	0,02	0,00	0,02	0,15	0,00	0,00	0,00
C.07	Female empowerment (89)	0,02	0,03	0,00	0,01	0,05	0,02	0,13	0,01	0,15	0,14	0,02	0,01	0,04	0,02	0,65	0,01	0,02	0,01	0,00	0,00	0,00

References

Ahlborg, H., 2015a. Walking Along the Lines of power. A systems Approach to Understanding Co-Emergence of society, Technology and Nature in Processes of Rural electrification. PhD Thesis. Chalmers University of Technology, Department of Energy and Environment, Göteborg, Sweden.

Ahlborg, H., 2015b. Walking Along the Lines of power. A systems Approach to Understanding Co-Emergence of society, Technology and Nature in Processes of Rural electrification. PhD Thesis. Chalmers University of Technology, Department of Energy and Environment, Göteborg, Sweden.

Alegre, I., Berbegal-Mirabent, J., 2016. Social innovation success factors: hospitality and tourism social enterprises. Int. J. Contemp. Hospital. Manage. 28 (6), 1155 1176, 0.1108/IJCHM-05-2014-0231.

Allen, J.P., 2004. Redefining the network: enrollment strategies in the pda industry. information. Technol. Peop. 17 (2), 171 185. 10.1108/09593840410542493.

Altinay, L., Sigala, M., Waligo, V., 2016. Social value creation through tourism enterprise. Tour. Manage. 54, 404–417, 10.1016/j.tourman.2015.12.011.

Aquino, R., Luck, M., Schanzel, H., 2018. A conceptual framework of tourism social entrepreneurship for sustainable community development. J. Hospital. Tour. Manage. 37, 23–32. https://doi.org/10.1016/j.jhtm.2018.09.001.

Berg, L.M.N, 2014. Sunshine in Ikisaya: Exploring a research-Introduced Social Enterprise and Its Potential to Provide Basic Electricity Services and to Reduce Vulnerability in a Kenyan village. University of Oslo, Norway. Master thesis. Centre for Development and the Environment.

Bernal, M.E., Cecchini, S., 2018. Social innovation in latin america and the caribbean. In: Howaldt, J., Kaletka, C., Schröder, A., Zirngieble, M. (Eds.), Atlas of Social innovation. New practices For a Better Future (pp. 128-130). Sozialforschungsstelle. TU Dortmund University:, Dortmund.

Bhattacharyya, S.C., 2010. Shaping a sustainable energy future for india: management challenges. Energ. Polic. 38 (8), 4173–4185, 10.1016/j.enpol.2010.03.045.

Blanco, I., Cruz, H., Martínez, R., Parés, M., 2016. El papel de la innovación social frente a la crisis. ciudad y territorio. Estudi.Territorial. (188), 249–260. XLVIII.

Bock, B., 2016. Rural marginalisation and the role of social innovation; a turn towards nexogenous development and rural reconnection. Sociol. Rurali. 56 (4), 552–573, 10.1111/soru.12119.

Bock, B., 2012. Social innovation and sustainability; how to disentangle the buzzword and its application in the field of agriculture and rural development. Studi. Agricult. Econ. 114, 63. https://doi.org/10.7896/j.1209, 57.

Bonoma, T., 1985. Case research in marketing: opportunities. problems, and a process. J. Market. Res. 22 (2), 199–208.

Bosworth, G., Rizzo, F., Marquardt, D., Strijker, D., Haartsen, T., Aagaard Thuesen, A., 2016. Identifying social innovations in european local rural development initiatives. innovation: the. Europ. J. Soci.Sci. Res. 29 (4), 442–461, 10.1080/13511610.2016.1176555.

Brown, H.S., Vergragt, P.J., 2008. Bounded socio-technical experiments as agents of systemic change: the case of a zero-energy residential building. Technol. Forecast. Soc. Change 75 (1), 107–130.

Brown, H.S., Vergragt, P., Green, K., Berchicci, L., 2003. Learning for sustainability transition through bounded socio-technical experiments in personal mobility. Technol. Analy. Strateg. Manage. 15 (3), 291–315.

Butkeviciene, E., 2009. Social innovations in rural communities: methodological framework and empirical evidence. Soc. Sci. 1 (63), 88–97.

Byrne, R., Smith, A., Watson, J., Ockwell, D., 2011. Energy Pathways in Low-Carbon Development: From Technology Transfer to Socio-Technical Transformation. Working Papers from the STEPS Centre. University of Sussex, Brighton, UK.

Capellá, H., 2002. El Espejismo Del Turismo En Tres áreas rurales: Terra Alta, Matarranya y Els Ports. In Los Espacios Rurales Entre El Hoy y El mañana: Actas del XI Coloquio de Geografía Rural. Santander, Cantabria, España, pp. 79–88.

Capello, R., 1999. Spat. Transf. Knowled. High Technol. Milieu.: Learn. Versus Collect. Learn. Process. 33 (4), 353–365, 10.1080/00343409950081211.

Caravaca, I., González, G., Silva, R., 2005. Innovación, redes, recursos patrimoniales y desarrollo territorial. Revis. Eure. 5–24. XXXI(94)http://doi.org/10.4067/S0250-71612005009400001.

Casas, A., Soler, A., Pastor, J., 2012. El turismo comunitario como instrumento de erradicación de la pobreza: potencialidades para su desarrollo en cuzco (perú). Cuadern. de Turis. 30, 91–108. https://revistas.um.es/turismo/article/view/160461.

Cepeda, G., 2006. La calidad en los métodos de investigación cualitativa: principios de aplicación práctica para estudios de caso. Cuadern. de Economí. y Direcció. de la Empres. 29, 057–082.

Charmaz, K., 2006. Construting Grounded Theory: A Practical Guide through Qualitative Analysis. Sage, Thousand Oaks:

Chaurey, A., Mohanty, P., 2007. Distributed generation and rural electrification in the sundarbans. In: Choudhuri, S.P.G. (Ed.), Renewable Energy in the Sundarbans. The Energy and Resources Institute (TERI), India.

Clancy, J., Ummar, F., Shakya, I., Kelkar, G., 2007. Appropriate gender-analysis tools for unpacking the gender-energy-poverty-nexus. Gend. Res. 15 (2), 241–257. https://doi.org/10.1080/13552070701391102.

Coenen, L., Benneworth, P., Truffer, B., 2012. Toward a spatial perspective on sustainability transitions. Res. Polic. 41 (6), 968–979. https://doi.org/10.1016/j.respol.2012.02.014.

Cruz, E., Zizumbo, L., Cruz, G., Quintanilla, A.L., 2012. Las dinámicas de dominación capitalista en el espacio rural: la configuración de paisajes turísticos. Cuadern. de Desarroll. Rura. 9 (69), 151–174, 10.11144/Javeriana.cdr9-69.ddce.

De Prá Carvalho, A., Kindl da Cunha, S., Ferreira Lima, L., 2017. Denes carstens, d. the role and contributions of sociological institutional theory to the socio-technical

approach to innovation theory. Revista. de Administra. e Innovação. 14, 250–259, 10.1016/j.rai.2017.02.001.
Duarte, T., Ruiz, M., 2009. Emprendimiento, una opción para el desarrollo. Scientia Et. Technica. (43), 326–331. XV10.22517/issn.2344-7214.
Edquist, C., 2005. Systems of innovations: perspective and challenges in. eds) vol. 181-208. In: Fagerberg, J., Mowery, D.C., Nelson, R.R. (Eds.), The Oxford Handbook of Innovation. Oxford University Press, Oxford, New York.
Eversole, R., Barraket, J., Luke, B., 2014. Social enterprises in rural community development. Communit. Dev. J. 49 (2), 245–261. 10.1093/cdj/bst030.
FCCyT, 2016. Ecosistema De Innovación Social En México. Foro Consultivo Científico y Tecnológico, AC, México.
Férnandez, M., Castillejos, B., Ramírez, A., 2012. Empresas sociales y ecoturismo en bahías de huatulco, méxico. diagnóstico de la gestión empresarial. estudios y perspectivas en turismo. Estudi. y Perspecti. en Turis. 21 (1), 203–224.
Fischer, G., 2011. Socio-technical systems – a meta-design perspective. Int. J. Sociotechnol. Knowled. Develop. 3 (1), 1–34, 10.4018/jskd.2011010101.
Geels, F., 2010. Ontologies, socio-technical transitions (to sustainability), and the multi-level perspective. Res. Polic. 39, 495–510.
Geels, F.W., Kemp, R., 2007. Dynamics in socio-technical systems: typology of change processes and contrasting case studies. Technol. Soc. 29 (4), 441–455. https://doi.org/10.1016/j.techsoc.2007.08.009.
González, S.; Moulaert, F.; Martinelli, F. ALMOIN: how to analyze social innovation at the local level. in can neighborhoods save the city? community development and social innovartion; Moulaert, F., Martinelli, F., Swyngedouw, F., González, S., Eds.; Routledge: London, United Kingdom, 2010, pp. 49–67.
Gray, D.E., 2009. Doing Research in the Real World (2nd ed.). Publications, SAGE.
Gutiérrez, O., 2010. Desarrollo de la metodología innovación rural participativa en la zona andina central de colombia. Agronomí. Colombian. 28 (3), 525–533. https://revistas.unal.edu.co/index.php/agrocol/article/view/14816/37537.
Harrisson, D., Laberge, M., 2002. Innovation, identities and resistance: the social construction of an innovation network. J. Manage. Studi. 39 (4), 497–521, 10.1111/1467-6486.00301.
Hielscher, S., Seyfang, G., Smith, A., 2011. Community Innovation for Sustainable Energy. Norwich, UK.
Hoogma, R., Kemp, R., Schot, J., Truffer, B., 2002. Experimenting For Sustainable transport: The approach of Strategic Niche Management. Spon Press, London and New York.
Howaldt, J., Kaletka, C., Schröder, A., 2018. Social innovation on the rise-results of the first global mapping. In: Howaldt, J., Kaletka, C., Schröder, A., Zirngiebl, M. (Eds.), Atlas of Social innovation. New practices For a Better Future. Sozialforschungsstelle. TU Dortmund University, Dortmund, pp. 12–15.
Jacob, M., Tintoré, J., Aguiló, E., Alfonso, B., 2003. Innovation in the tourism sector: results from a pilot study in the balearic islands. Tour. Econ. 9 (3), 279–295, 10.1177/135481660300900303.
Jamal, T., Stronza, A., 2009. Collaboration theory and tourism practice in protected areas: stakeholders, structuring and sustainability. J. Sustainab. Tour. 17 (2), 169–190, 10.1080/09669580802495741.
Jenson, J., Harrison, D., 2013. Social Innovation Research in the European Union. Approaches, Findings and Future directions. Policy Review, European Commission, Directorate-General for Research and Innovation. Publications Office, Luxembourg. http://ec.europa.eu/research/social-sciences/pdf/social_innovation.pdf.
Kabeer, N., 2005. Gender equality and women's empowerment: a critical analysis of the third millennium development. Gend. Dev. 13 (1), 13–24, 10.1080/13552070512331332273.
Kieffer, M., 2016. La cohesión social: elementos de análisis comparativo de dos iniciativas de turismo rural comunitario en chiapas. Méx.. Ecologí. Políti. 69–73.
Kirwan, J., Ilbery, B., Maye, D., Carey, J., 2013. Grassroots social innovation and food localization: an investigation of the local food programme in england. Glob. Environment. Chang. 23, 830–837 https://doi.org/10.1016/j.gloenvcha.2012.12.004.
Kluvánková, T., Brnkaláková, S., Spacek, M., Slee, B., Nijnik, M., Valer, D., 2018. Understanding social innovation for the well-being of forest-dependent communities: a preliminary theoretical framework. For. Polic. Econ. 97, 163–174, 10.1016/j.forpol.2018.09.016.
Knickel, K., Tisenkopfs, T., Peter, S., 2009. Innovation processes in agriculture and rural development. results of a cross-national analysis of the situation in seven countries, research gaps and recommendations. final report-comparative analysis and synthesis, strengthening innovation processes for growth and development. Six. Framew. Programm., Scienti. Suppo. Polici.- SSP:44510 65–84.
Leach, M., Rockström, J., Raskin, P., Scoones, I., Stirling, A.C., Smith, A., Thompson, J., Millstone, E., Ely, A., Arond, E., 2012. Transformi. Innov. Sustain.. Ecol. Socie. 17 (2).
Lee, J., Árnason, A., Nightingale, A., Shucksmith, M., 2005. Networking: social capital and identities in european rural development. Sociol. Ruralis. 45 (4), 269–283, 10.1111/j.1467-9523.2005.00305.x.
Leeuwis, C., Aarts, N., 2016. Communication as intermediation for socio-technical innovation. J. Sci. Communi. 15 (6), 1–12, 10.22323/2.15060302.
Lepratte, L., Thomas, H., Yoguel, G., 2011. Socio technical systems. Innov. Develop. 3359, 1–26. http://mpra.ub.uni-muenchen.de/3359/.
Lewis, J., 2016. Using ATLAS.ti to Facilitate Data Analysis For a Systematic Review of Leadership Competencies in the completion. PhD. Degree-Granting Salve Regina University, Salve Regina.
Lowe, P., Phillipson, J., Lee, R.P., 2008. Socio-technical innovation for sustainable food chains: roles for social science. Trend. Food Sci. Technol. 19, 226–233, 10.1016/j.tifs.2007.11.005.
Malek, A., Costa, C., 2015. Integrating communities into tourism planning through social innovation. Tour. Plann. Develop. 12 (3), 281–299, 10.1080/21568316.2014.951125.
Martínez-Cerdá, J.F., Torrent-Sellens, J., González-González, I., 2020. Socio-technical e-learning innovation and ways of learning in the ict-space-time continuum to improve the employability skills of adults. Comput. Hum. Behav. 107, 105–124, 10.1016/j.chb.2018.10.019.
Mbaiwa, J., Stronza, A., 2010. The effects of tourism development on rural livelihoods in the okavango delta, botswana. J. of Sustainab. Tour. 18 (5), 635–656, 10.1080/09669581003653500.
Millard, J., Weerakkody, V., Missi, F., Kapoor, K., Gayani, F., 2016. Social innovation for poverty reduction and sustainable development: some governance and policy perspectives. Proceed. 9th Int. Confer. Theo. Pract. Electronic. Govern.. Montevid. Urug. https://doi.org/10.1145/2910019.2910079.
Mottiar, Z., Boluk, K., Kline, C., 2018. The roles of social entrepreneurs in rural destination development. Ann. Tour. Res. 68, 77–88, 10.1016/j.annals.2017.12.001.
Moulaert, F., 2009. Social innovation: institutionally embedded territorially (re) produced. In: McCally, D., Moulaert, F., Hillier, J., Haddock, S (Eds.), Social Innovation and Territorial Development (pp. 11-23). Ashgate Publishing Limited, England, United Kingdom.
Moulaert, F., Martinelli, F., Swyngedouw, E., González, S., 2005. Toward alternative model(s) of local innovation. Urb. Studi. 42 (11), 1969–1990, 10.1080/00420980500279893.
Moulaert, F., Mehmood, A., MacCallum, D., Leubolt, B., 2017. Social Innovation As a Trigger For transformations. The role of research. Publications Office of the European Union. Luxemburg, Luxemburg.
Muñoz, S., 2006. Manejo comunitario de recurso naturales en el ejido betania, selva lacandona, chiapas. In: Anta, S., Arreola, A., González, M., Acosta, J. (Eds.), Ordenamiento Territorial comunitario: Un Debate De La Sociedad Civil Hacia La Construcción De Político Públicas (págs. 131-150). Secretaría de Medio Ambiente y Recursos Naturales, Instituto Nacional de Ecología, México.
Murray, R., Caulier, J., Mulgan, G., 2010. The Open Book of Social Innovation series: Ways to design, Develop and Grow Social Innovation. T.Y. NESTA Ed, London, United Kingdom, p. 10.
Neumeier, S., 2012. Why do social innovations in rural development matter and should they be considered more seriously in rural development research? -proposal for a stronger focus on social innovations in rural development research. Sociol. Ruralis 52 (1), 48–69, 10.1111/j.1467-9523.2011.00553.x.
Oeij, P., van der Torre, W., Vaas, F., Dhondt, S., 2019. Understanding social innovation as an innovation process: applying the innovation journey model. J. Bus. Res. 101, 243–254. https://doi.org/10.1016/j.jbusres.2019.04.028.
Okazaki, E., 2008. A community-based tourism model: its conception and use. J. Sustainab. Tour. 16 (5), 511–529 https://doi.org/10.1080/09669580802159594.
Oosterlynck, S., Kazepov, Y., Novy, A., Cools, P., Barberis, E., Wukovitsch, F., Sarius, T., Leubolt, B., 2013. The Butterfly and the elephant: Local social innovation, the Welfare State and the New Poverty Dynamics. Herman Deleeck Centre of Social Policy-University of Antwerp: Antwerpwein, Belgium.
Orozco, P.A., 2010. Naturaleza del ejido de la propiedad ejidal. características y limitaciones. Revis. Mexican. de Derech. 12, 163–193.
Ortíz, T., 2007. Turismo rural y campesinado, una aproximación social desde la ecología, la cultura y la economía. Convergenci.. Revis. de Ciencia. Sociale. 15 (47), 237–261.
Parayill, G., 1999. Conceptualizing Technological change: Theoretical and Empirical Explorations. Rowman & Littlefield, Oxford.
Paré, M., Ospina, S., Subirats, J., 2017. Social Innovation and Democratic leadership. Communities and Social Change from Below. Elgar Ed.:, Massachusetts, United States, pp. 34–42. https://doi.org/10.1111/1468-2427.12689.
Patrono, A., Sutanti, A., 2016. The ecosystem of social enterprise: social culture, legal framework, and policy review in indonesia. Pacif. Sci. Revi. B: Humaniti. Soci. Sci. 2, 106–112 https://doi.org/10.1016/j.psrb.2016.09.020.
Quandt, C., Ferraresi, A., Kudlawicz, C., Martins, J., Machado, A., 2017. Social innovation practices in the regional tourism industry: case study of a cooperative in brazil. Soci. Enterpri. J. 13 (1), 78–94 https://doi.org/10.1108/SEJ-12-2015-0038.
Ray, C., 2000. Endogenous socio-economic development in the european union-issues of evaluation. J. Rura. Stud. 16 (4), 447–458, 10.1016/S0743-0167(00)00012-7.
Richter, R., 2019. Rural social enterprises as embedded intermediaries; the innovative power of connecting rural communities with supra-regional networks. J. Rura. Stud. 70, 179–187, 10.1016/j.jrurstud.2017.12.005.
Rogelja, T., Ludvig, A., Weiss, G.S., 2018. Implications of policy framework conditions for the development of forestry-based social innovation initiatives in slovenia. For. Polic. Econ. 95, 147–155, 10.1016/j.forpol.2018.07.011.
Rösing, M., Marques, L., Portella, R.R., Goncalves, V.A., 2017. An overview on social innovation research: guiding future studies. Brazil. Bus. Revi. 14 (4), 385–402, 10.15728/bbr.2017.14.4.2.
Scheyvens, R., 2002. Tourism For Development: Empowering Communities. Prentice Hall, Harlow, Essex, p. 28.
Schot, J., Hoogma, R., Elzen, B., 1994. Strategies for shifting technological systems: the case of the automobile system. Futur. 26 (10), 1060–1076.
Shucksmith, M., 2002. Endogenous development, social capital as social inclusion: perspectives from leader in the uk. Sociol. Rurali. 40 (2), 208–218, 10.1111/1467-9523.00143.
Simon, J., Millard, J., Keller, J., Carpenter, G., Schimpf, G., Leszek, P., 2014. Doing social innovation: a guide for practitioners. a deliverable of the project: "the theoretical, empirical and policy foundations for building social innovation in europe" (tepsie). european commission–7th framework programme. Europ. Commiss., DG Res., Brusse.

Smith, A., Kern, F., Raven, R., Verhees, B., 2014. Spaces for sustainable innovation: solar photovoltaic electricity in the uk. Technol. Forecast. Soc. Chang. 81, 115–130, 10.1016/j.techfore.2013.02.001.
Smith, A., Voß, J.P., Grin, J., 2010. Innovation studies and sustainability transitions: the allure of the multi-level perspective and its challenges. Res. Polic. 39 (4), 435–448. https://doi.org/10.1016/j.respol.2010.01.023.
Sørensen, F., 2007. The geographies of social networks and innovation in tourism. Tour. Geographi. 9 (1), 22–48, 10.1080/14616680601092857.
Sovacool, S.Clarke, Johnson, K., Crafton, M., Eidsness, J., Zoppo, D., 2013. The energy-enterprise-gender nexus: lessons from the multifunctional platform (mfp) in mali. Renew. Energ. 50, 115–125, 10.1016/j.renene.2012.06. 024.
Stake, R.E., 2005. Qualitative case studies. In: Denzin, N.K., Lincoln, Y.S. (Eds.), The Sage handbook of Qualitative Research (p. 443–466). Publications Ltd, Sage.
Stirling, A., 2009. Direction, distribution and diversity! pluralising progress in innovation. Sustain.y Develop. 32, 2–31.
Strauss, A., Corbin, J., 1998. Basics of Qualitative research: Techniques and Procedures For Developing Grounded Theory (2nd ed.). Sage, Thousand Oaks, CA.
Terstriep, J., Kleverbeck, M., Deserti, A., Rizzo, F., 2015. Comparative Report on Social Innovation Across Europe. Deliverable D3.2 of the Project Boosting the Impact of SI in Europe through Economic Underpinnings» (SIMPACT), European. European Commission, DG Research & Innovation, Brussels. Commission –7th Framework Programme.
Twining-Ward, L., Ferguson, L., 2011. Informe Mundial Sobre Las Mujeres En El Turismo 2010-2012. OMT y ONU-Mujer: Madrid, Spain, pp. 1–9.
Ulsrud, K., 2015. Village-level Solar Power in practice: Transfer of Socio-Technical Innovations Between India and Kenya. University of Oslo, Oslo.
Vajirakachorn, T., 2011. Determinants of Success For Community-Based tourism: The case of Floating Markets in Thailand. Dissertations &Theses. Texas A&M University, Texas.
Villa, L., Melo, J., 2015. Panorama Actual De La Innovación Social En Colombia. B.I. Desarrollo. Bogotá, Colombia, pp. 5–81.
Winther, T., Ulsrud, K., Saini, A., 2018. Solar powered electricity access: implications for women's empowerment in rural kenya. Energ. Res. & Soci. Science 44, 61–74, 10.1016/j.erss.2018.04.017.
Yoguel, G., 2000. Creación de competencias en ambientes locales y redes productivas. Revista. de la Cepal. (71), 105–119, 10.18356/f3756f6d-es.

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