Social innovation in high-quality agricultural systems: metrics for assessing processes and outcomes

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Abstract

Social innovation and high-quality agricultural systems are important for rural development. However, there is little information on methods for measuring the process and outcome of social innovation, particularly at the regional level. This study aimed to answer the following research question: Which social innovation metrics can be applied to analyze rural development at the regional level? We carried out a systematic review of the literature on factors and indicators of social innovation, assessed the characteristics of social innovation in value-added agricultural production systems in developed countries, and proposed social innovation indicators for evaluating value-added agricultural systems in developing countries on the basis of an in-depth analysis of empirical cases and discussions with an expert on the field. Key elements of the process and outcome dimensions of social innovation were identified and used to generate factors, subfactors, indicators, and subindicators. The literature review showed that more research is needed on the outcomes of social innovation in rural systems, as data on this topic are limited. Because most analyses of social innovation and its metrics in developing countries focus on the quality of production systems, future studies should investigate the social transformations promoted by rural tourism and biodiversity valorization.

1. Introduction

Important contributions have been made to the understanding, evaluation, and advancement of social innovation in recent decades. Social innovation can be defined as changes in attitudes, behaviors, or perceptions of a group of people that, in relation to the group's horizon of experiences, lead to new and improved ways of collaborative action within the group and beyond (Neumeier, 2017; 2012). It implies structural transformation of society and social relations (Moulaert et al., 2013). Howaldt and Schwarz (2010) further defined social innovation as a new combination or configuration of social practices in a given social context requested by actors or constellations of actors in an intentional and directed manner as a means to better satisfy or respond to social needs and problems. According to the European Commission (2013), Hubert (2011), Smith, Voβ and Grin (2010), and Butkeviciene (2009), social innovation involves the development and implementation of new ideas (products, processes, or models) that address social needs and create new relationships or social collaborations.

Social innovation, often related to the concept of sociotechnical innovation, is similar to technological and economic innovation in that it is triggered by an initial stimulus, for instance, a need or incentive to change attitudes or behaviors, which can be internal or external to the actors involved in the social innovation process. However, social innovations focus on changing attitudes, behaviors, or perceptions and are non-material; material results are secondary and directed toward building assets rather than meeting needs (Neumeier, 2012). Above all, social innovation supports social learning, social capital, the social sector, and social interactions for knowledge exchange (Edwards-Schachter and Wallace, 2017; Nicholls and Murdock, 2012). An innovation is social when, whether disseminated by for-profit or nonprofit organizations, it is socially accepted, widespread throughout society or in certain subareas of society, and institutionalized as a new practice or routine (Howaldt and

Schwarz, 2010). This type of innovation seeks to deliver values that are less related to profit and more related to quality of life, solidarity, and well-being (Hubert, 2011). Bock (2016), Neumeir (2012), Moulaert (2008), Moulaert et al. (2005), and Lee et al. (2005) argued that the various elements of social innovation—such as creative ideas, innovative actions, organization, personal and collective empowerment, and sustainability—must be integrated to transform the dynamics of multilevel governance and the institutional apparatus toward social development.

The actors involved in social innovation include individuals, organizations or networks, and territories or systems (Howaldt and Schwarz, 2010; Cloutier, 2003). Therefore, the theme can be analyzed at the macro, meso, or micro level (Bund et al., 2015; Nicholls and Murdock, 2010). Social innovations have two major dimensions: process and outcome/product (Hubert, 2011; Moulaert et al., 2005; Cloutier, 2003). The process of social innovation is characterized by:

- Changes in social relations, especially with regard to governance, that increases the level of satisfaction and participation of social groups, especially private groups.
- Strengthening of social movements and initiatives and empowerment of individuals and communities.
- Satisfaction of human needs that are not met or perceived as important by the market or the State (Hubert, 2011; Moulaert et al., 2005).
- Diversity of actors, which is essential for the development of new solutions. Plurality of points of view contributes to a more complete representation of the problem, its causes, and possible solutions.
- Cooperation between various actors through strategic alliances, partnerships, multi-actor networks, and multidisciplinary teams.

- Promotion of learning and knowledge creation (Hubert, 2011; Cloutier, 2003).
- Proposal of solutions that focus on beneficiaries and are created with them, preferably by them, but never without them.
- Acknowledgment of the diversity of ethnic, age, religious, and other social groups.
- Adoption of holistic approaches to social problems.
- Development of solutions aimed at the local community instead of national or global communities.
- Valorization not only of certifiable skills but also of skills associated with innovation and discovery.
- Appreciation of social artists and establishment of a new mode of governance for learning (Hubert, 2011).

The outcomes of social innovation comprise:

- Meeting of the neglected social needs of groups, communities, or segments of society that are more vulnerable and less able to engage in or benefit from the market economy.
- Provision of public social, health, and education services through redistributive measures, particularly for vulnerable groups such as children and the elderly (Hubert, 2011; Moulaert et al., 2005).
- Generation of social and humanitarian values by improving well-being as well as social justice, inclusion, cohesion, and integration (Edwards-Schachter and Wallace, 2017).
- Reorganization of institutional roles and introduction of new laws and social programs (Hubert, 2011; Cloutier, 2003).
- Changes in attitudes, core values, strategies, policies, structures, organizational processes, public services, and working conditions (Hubert, 2011).

Because the process of social innovation implies that new forms of interaction and problem-solving are established, its outcome is societal transformation. A third dimension, called the empowerment dimension, is also used to define social innovation (Moulaert et al., 2005; Bund et al., 2005). It is characterized by sociopolitical capability and access to resources necessary for achieving the product of social innovation.

Many authors have contributed to the discussion on the theme by presenting historical perspectives and theories (Moulaert, MacCallum, and Hillier, 2013; Bock, 2012; Bignetti, 2011; Moulaert, 2008; Cloutier, 2003). Some have discussed social innovation in the context of rural development and reconnection (Neumeir, 2017; 2012; Bock, 2016; Moulaert et al., 2005; Moulaert and Nussbaumer, 2005), distinguishing it from business innovation (Pol and Ville, 2009). Evidence of social innovation in rural settings can be seen in Mediterranean empirical cases (Petruzzella, Brunori, and Antonelli, 2017), in grassroots movements in Italian food systems (Rossi, 2017), in Lithuanian rural communities (Butkeviciene, 2009), and in Brazilian agroecological networks promoting voluntary certification schemes (Rover, Gennaro, and Roselli, 2017; Rover, 2011). The theme arose because contemporary society sought new ways to solve its problems and demands, which are more complex and, therefore, necessitate a more robust and interdisciplinary approach. In the field of community development and adaptation to the market, traditional organizational models such as corporations, cooperatives, and associations are sometimes ineffective in organizing different groups with similar demands and objectives.

For Benedek et al. (2016), the relevance of social innovation is no smaller than that of economic and scientific innovation. In fact, economic and scientific innovations tend to reinforce social problems that can only be addressed with social innovation. According to the authors, there is a need for strong interaction between the different forms of innovation to improve the living conditions of the inhabitants of a given region. Community well-being can

only be achieved when the following factors are taken into consideration: human conditions, physical and emotional safety, self-esteem, level of competence, relational needs, family relationships, social infrastructure, and environmental conditions (Benedek et al., 2016).

The growing importance of social innovation in political circles and the academia makes it essential to explore methods of assessing and measuring social innovation, as pointed out by Carra et al. (2018), Benedek et al. (2016), Alfaro and Gómez (2016), Bund et al. (2015), Chobotová (2015), Xavier, Naveiro, and Aoussant (2015), Krlev et al. (2014), Antadz and Wesley (2012), Reeder et al. (2012), and Murray, Caullier-Grice, and Mulgan (2010). Social innovation can be measured in terms of project performance or an organization's capacity for innovation. The innovation capacity of spatial units may be analyzed at the national (macro), regional (meso), or municipal (micro) level (Bund et al., 2015; Nicholls and Murdock, 2010). The meso level incorporates microregions and settlements, and the micro level, organizations (Benedek et al., 2016).

Bund et al. (2015) applied a spatial approach to measure the social innovation of a society at macro and micro levels. The authors underscored that, although national data on social innovation indicators may be more readily available (because of national surveys), municipal and regional data can provide more relevant information to policymakers and practitioners, because locals are the best suited to study and shape social innovation processes in their context. Benedek et al. (2016) observed that there is a need for new and up-to-date solutions to address the social and economic problems of small communities (such as territories). According to the authors, engineering, natural sciences, and economic-based innovations need to be developed in conjunction with social innovations to secure the wealth and well-being of a given community. Not only social innovation but also methods of measuring this phenomenon are urgently needed for societal development at different levels, particularly at the regional level (Bund et al., 2015). Focusing on high-quality agricultural production

systems in rural communities, this article addresses the following question: Which social innovation metrics can be applied to analyze rural development at the regional level?

Process and empowerment dimensions alone cannot drive social innovation (Moulaert et al., 2005; Bund et al., 2005). Moulaert et al. (2005) stated that although academic discussions often focus on process and empowerment, the product dimension has become increasingly relevant in times of growing social challenges and reduced welfare. This does not, however, contradict the fact that social innovations are often characterized by a combination of all three dimensions (Bund et al., 2015). Antadze and Wesley (2012) recommended that the development of metrics should be incorporated into the social innovation process as a central aspect of development assessment.

This study investigates methods for measuring social innovation in high-quality agricultural production systems in rural areas at the regional level and proposes a theoretical model for assessing social innovation in rural territories. The specific objectives were to (i) systematically review the scientific literature on metrics and indicators of social innovation; (ii) assess the characteristics of social innovation in value-added agricultural production systems in developed countries; and (iii) propose social innovation indicators for value-added agricultural systems in developing countries. This study is based on the premises that social innovation plays an important role in neo-endogenous rural development (Neumeier, 2012; Lee et al. 2005) and that high-quality production systems contribute to this process (Tashiro, Uchiyama, and Kohsaka, 2019; Ilbert, 2015; Rueda and Lambin, 2013; Dogan and Gokovali, 2012; Perez-Aleman, 2012; Bowen, 2010; 2009; Barham, 2003). The theoretical model presented here may support the elaboration of public and private policies to stimulate social innovation and sustainable agricultural production in developed and developing countries. In the following sections, we present the methodological aspects, results and discussion, and final considerations of this investigative work.

2. Methodological aspects

The complexity of the object at hand necessitated an applied research and qualitative approach. We decided to focus our analysis on high-quality agricultural production systems and use an exploratory and descriptive research design. Descriptive research has as its primary objective the description of specific events (a phenomenon and its characteristics) experienced by individuals or groups of individuals. It allows the researcher to gain a better understanding of the relationships between various factors and elements that influence a given phenomenon. A descriptive approach is qualitative in nature because it relies on the researcher's analytical and integrative skills and personal knowledge of the social context in which events are embedded. Qualitative research focuses on understanding rather than predicting phenomena (Lambert and Lambert, 2012; Bhattacherjee, 2012).

The methodological approach comprised the following steps: (i) theoretical investigation of social innovation metrics through a systematic review of the literature (Section 2.1) and an in-depth analysis of studies examining social innovation at the regional/territorial level; (ii) discussion about social innovation indicators with a subject matter expert at the University of Pisa, Italy (method used in Secco et al., 2019 and Bund et al., 2015); (iii) theoretical review on social resources, social capital, and institutional approaches; (iv) systematic survey of cases and experiences related to high-quality agricultural production and tourism using scientific bases and books; (v) analysis and classification of the factors identified in steps i, iii, and iv into four measurable categories: social resources, social capital, environmental and natural resources, and formal and informal institutions; (vi) development of an analytical model for measuring social innovation; and (vii) word cloud analysis of model elements.

2.1. Systematic review of social innovation metrics

The systematic review was conducted within the framework of Levy and Ellis (2006) following the protocol of Conforto, Amaral, and Silva (2011) (Table 1).

Table 1. Systematic review protocol.

Method
Based on the framework of Levy and Ellis (2006) and the roadmap of Conforto, Amaral, and Silva (2011)
Research question
Which measurement methods, models, and indicators have been proposed for assessing social innovation?
Objective
Systematically review the scientific literature on social innovation measurement methods, models, and indicators
Databases
Web of Science and Scopus (selected in a preliminary search)
Keywords
Social innovation, indicator, measurement, model
Search strings
Boolean operators were defined in a preliminary search. Three strings were used: (“measurement” AND “social innovation”); (“indicator” AND “social innovation”); (“model” AND “social innovation” AND “agr*”).
Inclusion criteria
- Books, book chapters, journals, and proceedings - Scientific production on measurement methods, models, and indicators of social innovation - Scientific production in English and Portuguese
Exclusion criteria
There were no date restrictions.
Eligibility assessment
- Exclusion of duplicates between databases. - Exclusion of articles not available in full. - Exclusion of articles on the basis of the abstract, keywords, and title. - Exclusion of articles on the basis of the introduction and conclusion. - Selection of articles after full text assessment.
Tools
The São Paulo State University (Brazil) and the University of Pisa (Italy) provided access to the databases. Microsoft Excel was used to analyze the data.

Source: the authors.

A total of 15 articles were included in the review (Table 2). Four articles not retrieved by the search strategy but identified through Google Scholar were also added (Benedek et al., 2016; Unceta, Castro-Spila, and Fronti, 2016; Bund et al., 2015; 2013).

Table 2. Database search and article selection.

Database	**Web of Science**	**Scopus**
Search dates	October 29 to 31, 2018 June 24, 2019	
Records retrieved	56	112
Selected on the basis of the title, keywords, and abstract	23	21
Selected on the basis of the introduction and conclusion	7	11
Selected after full text assessment	7	8

Source: the authors.

3. Results and discussion

3.1. Social innovation metrics

Table 3 presents a synthesis of scientific studies related to social innovation metrics within the context of rural territorial development, which is the focus of this article.

Table 3. Summary of studies included in the systematic review of social innovation metrics within the context of rural territorial development.

No.	Study	Indicators and level of analysis[1]
1	Chiodo et al. (2019)	Proposes social innovation indicators. Spatial-territorial approach applied to tourism villages in Argentina and Italy.
2	Lozano et al. (2019)	Does not propose indicators. Provides important contributions to the understanding of social capital in the context of nonprofit organizations in Chile and Colombia.
3	Secco et al. (2019)	Does not propose indicators. Uses literature review and expert assessment to examine social innovation as a process and outcome in forest communities. Qualitative and quantitative study based on external data, interviews, and expert opinion.
4	Temple et al. (2018)	Does not propose indicators. Literature review and evaluation of social, human, and economic factors influencing the sustainable development of rural areas in developing countries.
5	Carra et al. (2018)	Proposes social innovation indicators. Regional-spatial approach applied to public administration projects in seven neighborhoods of an Italian city.
6	Farias et al. (2017)	Does not provide indicators but proposes a model for evaluating social innovation in the Brazilian semiarid. Regional-spatial approach based on the Sustentare methodology[2].
7	Zulazli et al. (2017)	Proposes indicators for measuring social innovation at the organizational level in Malaysia. Spatial-organizational approach.
8	Rover, Gennaro, and Roselli (2016)	Does not propose indicators. Analysis of social innovation in a rural community in southern Brazil (Ecovida network).
9	Dax and Oedl-Wieser (2016)	Does not propose indicators. Reinforces the importance of social innovation in the context of rural development in the European Union through the LEADER approach.

10	Alfaro and Gómez (2016)	Proposes social innovation indicators. Analysis focused on project innovation capacity in public administration.
11	Benedek et al. (2016)	Proposes a methodology and indicators for measuring the potential for social innovation and defining the operating conditions and frameworks of a decision support system for generation of social innovation. Macro-spatial approach (19 counties in Hungary).
12	Unceta, Castro-Spila, and Fronti (2016)	Proposes indicators. Organizational approach aimed at for-profit and nonprofit organizations, universities, and technology centers.
13	Bund et al. (2015)	Proposes indicators. Spatial approach for analysis of social innovation at the macro and micro levels.
14	Gobattoni et al. (2015)	Does not provide social innovation indicators. The study proposes a model of attitudes towards traditional activities that can be used to identify social leverage based on the LEADER approach (European Union). Provides information to local managers to reach financial resources for effective rural development.
15	Chobotová (2015)	Proposes indicators. Macro-spatial approach and projects related to public administration in the Czech Republic. Supports decision-making in social project financing and scaling-up.
16	Xavier, Naveiro, and, Aoussat (2015)	Proposes indicators. Regional-spatial approach (Ecovida network) used for the analysis of social innovation at the organizational, institutional, and individual levels.
17	Krlev, Bund, and Mildenberger (2014)	Proposes indicators. Macro-spatial approach adapted for peer-to-peer implementation across the European Union and other countries.
18	Bund et al. (2013)	Proposes indicators. Macro-spatial approach.

19	Antadze and Westley (2012)	Proposes indicators. Micro-spatial approach developed for organizations to assess the impacts of social finance.

[1] According to Benedek et al. (2016) and Bund et al. (2015).

[2] Localized approach focused on social protagonism and participation, dialectics, alterity, learning, cooperation, and social control.

Source: authors' elaboration based on the referred studies.

Research on social innovation indicators is scarce and recent, with 12 articles identified, the earliest published in 2012 (Antadze and Westley, 2012). The number of studies applying social innovation indicators to evaluate rural territorial development is even smaller, with only 8 articles identified. Although all selected articles provided relevant contributions to discussions on the theme, of the 19 articles analyzed, only 9 focused on regional development at the micro or territorial level (including the study of Bund et al., 2015, which used a nationwide dataset but analyzed social innovation indicators at the local level).

It is important to highlight that, based on the whole review developed, they will be assumed from this topic as indicators and subindicators while outcomes of the social innovation and factors and subfactors while social innovation process. Table 4 summarizes the factors and indicators of social innovation processes and outcomes reported in micro-territorial studies. Social innovation dimensions are classified according to Moulaert et al. (2005) and Bund et al. (2005).

Table 4. Studies analyzing factors and indicators of social innovation processes and outcomes at the micro-territorial level.

No.	Study, level of analysis, and dimension	Social innovation factors and indicators
1	Chiodo et al. (2019) Regional Process dimension	1. Integration of resources (integration of different local assets, informal to formal integration). 2. Actor engagement (level of community involvement, public engagement, public and private partnerships, common agenda, formal organization among local actors). 3. Coordination and networking (local support organization, networking at the extralocal level, participation and involvement in activities promoted by extralocal organizations).
2	Farias et al. (2017) Regional Process dimension	Sustentare methodology: 1. Autonomous management: strengthens the agency capacity of farmers, recognizes local knowledge, and increases social capital. 2. Know-how: prioritizes local demands and promotes interaction between farmers, technicians, and researchers through collective learning. 3. Empowerment: participatory community planning and problematization. 4. Local sustainability: actions aimed at meeting the demands of the community in terms of participatory planning. 5. Assessing and monitoring sustainability: examines the sustainability of innovation as farmers reshape local practices to solve problems and measures the contribution to rural development and quality of life. 6. Communication for development.
3	Rover, Gennaro, and Roselli (2017) Regional Process dimension	1. The driving forces (such as increased rural development or exchange of knowledge and seeds) behind the participation of social actors. 2. The actor–network dynamics underlying social structure and organizational change (network and communication levels). 3. Non-social elements in decisions taken by social actors (agrobiodiversity is prioritized). 4. Dependence and relation of the general organizational dynamics of the Ecovida network in each microregion as well as its relationship with sectoral policies, regulations, and rules.

4	Dax and Oedl-Wieser (2016) Regional Process dimension	1. Learning processes. 2. Implementation of cross-sectoral projects. 3. Overlapping responsibilities. 4. Institutional learning. 5. Exposure to new social trends.
5	Bund et al. (2015) National Process dimension	Measurable dimensions of social innovation capabilities at the local level: 1. Social needs. (A) Needs requiring action and social progress (field-specific): data analysis of social structures, integration indicators, degree of social progress, social monitoring. (B) Discourse analysis: public petitions, urgent needs reported in citizen surveys. 2. Financial resources. (A) Financial-economic background (core fiscal debts, unemployment rate). (B) Public social expenditure. (C) National funds, private social expenditure, philanthropic funds. (D). Private spending. 3. Political support (organizational anchoring in authorities). (A) Staffing of the organizational unit, structural localization and decision-making authority of the organizational unit. (B) Political environment for social innovation, social initiatives coordinated by the local authority, format/degree of citizens' participation. 4. Social capital and networks. (A) Environment, density of civil society organizations, density of social enterprises, personal resources, density of volunteers, share of highly qualified persons. (B) Social values and attitudes (e.g., solidarity), attitudes toward engagement, innovation culture (e.g., risk-taking).
6	Gobattoni et al. (2015) Regional Process and outcome dimensions	1. Perceived impacts on the landscape. 2. Perceived impacts on the socioeconomic system. 3. Ecological vision of the world. 4. Attitude toward traditional activities. 5. Sense of place. 6. Perceived quality of the environment. 7. Knowledge of quality systems. 8. Participation and integration.

7	Carra et al. (2018) Regional Outcome dimension	1. Participation (number of participants in associations and workshops, including volunteers). 2. Project effectiveness. 3. Political solutions adopted in the neighborhood. 4. Increase in community social capital, represented by changes in relational characteristics, such as improved cooperation between actors that interact with the municipality in a citizenship agreement. Examples of relational variables are the importance assigned by individuals to their relationship, the willingness to relate, and the satisfaction of each of the signatories of the agreement. Indicators can be integrated with a participatory assessment process based on focus groups.
8	Xavier, Naveiro, and Aoussat (2015) Regional Outcome dimension	1. Social actors (individuals or groups): level of autonomy and emancipation, life quality, sense of work, new forms of division and coordination of work (cooperation and creation of learning), new social actors (previously excluded or marginalized), new social roles and/or rearrangement of existing social roles, changes in reciprocal expectations of social relations involving excluded persons, level of inclusion of users or beneficiaries in the decision, conception, development, and delivery of goods and social services, level of autonomy, new relations between work colleagues and family members. 2. Organizations: forms of organization, legal and economic aspects, new forms of division and coordination of work, new organizational configurations and network structures, mixture of available resources (mercantile, non-mercantile, and reciprocity), new forms of governance (interaction with public policies and collective entrepreneurship), level of participation of different stakeholders in decision processes, new possibilities for market access (public and private), purpose of organizations and individual and collective benefits (monetary or not) achieved by mediation of such organizations. 3. Institutions: changes in the legal, political, and economic environments, universalization of rights, legislation on social inclusion and defense of minorities.
9	Temple et al. (2018) Regional Outcome dimension	Outcomes of the studied cases: 1. Human capital. 2. Social capital creation networks and increased interaction between stakeholders. 3. Knowledge infrastructure. 4. Local development.

Source: authors' elaboration based on the referred studies.

This systematic review analyzed studies conducted in rural regions of developed and developing countries, including Italy (Chiodo et al., 2019; Carra et al., 2018), the European Union (Dax and Oedl-Wieser, 2016; Bund et al., 2015; Gobattoni et al., 2015), Argentina (Chiodo et al., 2019), Brazil (Farias et al., 2017; Rover, Gennaro, and Roselli, 2017; Xavier, Naveiro, and Aoussat, 2015), and developing countries (Temple et al., 2018). Three studies (References) investigated social innovation in the Brazilian semiarid and southern region (Ecovida network). Chiodo et al. (2019), Farias et al. (2017), Rover, Gennaro, and Roselli (2017), Dax and Oedl-Wiesser (2016), Gobattoni et al. (2015), and Xavier, Naveiro, and Aoussant (2015) made relevant contributions to the measurement of social innovation and rural territorial development.

The multi-case research of Chiodo et al. (2019) was conducted in rural villages in Argentina and Italy. The aim was to develop a model for measuring and monitoring the "collaborative processes" that stands behind the tourist enhancement of local assets. Theoretical analysis revealed the presence of adaptive problems related to tourism transition in the local economies that needed to be addressed through co-evolutive processes involving stakeholders from different sectors within a common agenda and a structured management of the transition by the collective impact approach.

Farias et al. (2016) addressed social innovation as an epistemic and methodological practice for sustainable rural development in the Brazilian semiarid. A sociotechnical, constructivist approach (Sustentare methodology) was applied aiming at social construction of the market. The authors identified that the economic relations of communities were characterized by reciprocity (solidarity between families), proximity between actors (trust), market autonomy, new forms of social (producer–consumer) organization, and mobilization of different actors.

Under the LEADER approach (second pillar of the Common Agricultural Policy as of 2003), Gobattoni et al. (2015) developed a methodology for identifying leverage points for rural development based on attitudes toward traditional agricultural activities. The model revealed several factors influencing farmers'attitudes, information that is especially important to guide communities in promoting social innovation (Gobattoni et al., 2015). Dax and Oedl-Wiesser (2016) highlighted the importance of the LEADER approach in promoting social innovation in European rural areas.

Xavier, Naveiro, and Aoussant (2015) discussed the concepts and challenges of management systems focused on social innovation based on a unique case in southern Brazil: the Ecovida network, recognized for its innovative, solidary, and ecological character. The authors identified that social innovation can be promoted through partnership and transparency with farmers and members, participation and commitment to the network, and preservation of the environment and social values. The network stimulates reflections on life quality and sustainable practices, such as reduction of consumption and waste, reuse of materials, and recycling of products and effluents.

The Ecovida network was also studied by Rover, Gennaro, and Roselli (2017). The authors showed that the network promoted ideological engagement; transformation of the model of rural development based on agroecology and biodiversity; exchange of knowledge, information, and technical skills; decentralized and multidirectional social networks, with decision-making at different levels; open and transparent communication; engagement in specific markets; and compliance with regulations, good farming practices, and national organic legislation.

All evaluated studies had similar methodological characteristics and conclusions regarding the aspects that constitute social innovation. The studies adopted qualitative and exploratory approaches and used the following data-gathering and analysis techniques: field

work; direct observation; non-standard interviews with key informants; analysis of secondary data (official statistics and documents); study of history, beliefs, and documents; participant observation; and ethnography (direct interaction with people in their daily lives)[1]. Elements observed in the development of high-quality production systems and tourism were collaborative processes, relational proximity, changes of attitudes, new forms of social organization, construction of social networks, information exchange, and knowledge generation.

Gobattoni et al. (2015) and Carra et al. (2017) used quantitative approaches and applied questionnaires to different agents in the analyzed regions. However, according to Bund et al. (2015), the complexity and social embeddedness of social innovation, added to the scarcity of data available on the topic, demand an in-depth analysis of the social reality of study populations, going beyond variables and dimensions.

3.2. Relationship between social innovation in high-quality agricultural production systems and rural development

Social innovation has been shown to effectively promote territorial development. Carra et al. (2018) observed changes in the community through public actions brought by the *Quartiere Bene Comune* (neighborhood common good) policy of the municipality of Reggio Emilia, Italy, such as increased participation, social capital, and project effectiveness. According to the authors, citizens and associations participated in community project activities, committed themselves to advertising the projects, and recognized the value of public action. Participants reported a high level of satisfaction from achieving results, built strong relationships with each other and with the municipality, and regained confidence in the

[1] Social innovation indicators were also identified through literature reviews and a five-step evaluation process (preparation, confrontation, construction, measurement, and validation of results), as shown in Temple et al. (2018).

public institution (Carra et al., 2018). Petruzella, Brunori, and Antonelli (2017), in an analysis of social innovation in Mediterranean rural territories, highlighted the occurrence of social cohesion in local communities, connection with external agents, and valorization of local resources, biodiversity, conservation rules, and ethical codes.

Neumeir (2012) discussed social innovation in the context of rural development on the basis of cases from Austria and Germany, linking tourism, agriculture, and territory. The author argued that collective learning, coordination, and communication between different actors and networks and other means of cooperation are extremely important for the success of neo-endogenous regional development. In his view, neo-endogenous rural development can only be successful if it is based, encouraged, and supported by the development of social innovations—the pillars of sustainable rural development. Other contemporary works on agricultural production systems and rural and territorial development (involving geographical indication, certification, and tourism), although not directly related to the social innovation approach, stress the importance of implementing strategies and developing products and processes aimed at communities and rural development (European Commission, 2013; Smith, Vob, and Grin, 2010), collective action (Coq-Huelva, Sanz-Canada, and Sanchez-Escobar, 2017; Bock, 2016; Neumeier, 2012), and reproduction of human, social, financial, and cultural capital (discussed in sequence).

Coq-Huelva, Sanz-Canada, and Sanchez-Escobar (2017) studied the social dynamics of olive oil production systems with protected designation of origin and organic products in Sierra de Segura, Spain. The authors observed that collective actions promoted by cooperatives and organizations increased farmers' awareness and respect for nature, stimulating the production of differentiated products with higher market value.

Lamine, Garçon, and Brunori (2019) assessed social innovation in agricultural systems in Southern Ardèche, France, and Genoa, Italy, and observed that agroecological transitions are

promoted by a combination of diverse initiatives, including geographical indication (GI), collective brands, and alternative food networks aimed at valorizing local products. These transition mechanisms are reinforced by governance aimed at innovation, involving public policies, dedicated market mechanisms, new price schemes, and collective actions.

Knichel et al. (2018) investigated 14 case studies[2] of strategies implemented by farmers and other rural actors in an effort to maintain quality of life and ensure continuity of rural activities, mainly through transformation and adaptation to new challenges, opportunities, and social changes. Economic performance, competition, competitiveness, and growth were found to be counterproductive. The key factors for rural prosperity were personal well-being, valorization of rural areas, sense of community, knowledge exchange, promotion of partnerships, multistakeholder cooperation through supportive schemes, and protection of the environment (Knichel et al., 2018).

Further evidence that social innovation is the basis for sustainable rural development in developing countries was presented by Rover, Gennaro, and Roselli (2017)[3], Xavier, Naveiro, and Aoussant (2015), and Radomsky (2009). Radomsky (2009), in analyzing the Ecovida network in Brazil, observed that voluntary certification increased farmer credibility within the network and the market, promoted individual and collective social actions, created new consumer habits, and increased awareness about certification. Ecovida also encouraged, according to the author, appreciation of local and traditional knowledge of farming, ways of life, and political practices.

These reports show that social innovation implies social change in rural areas, whether in the form of territorial organization or interaction between actors. The organizational

[2] Studies were conducted in 2014/15 as part of the RETHINK project: Rethinking the links between agricultural modernization, rural development, and resilience in a world of growing demands and finite resources.
[3] Rover, Gennaro, and Roselli (2017) argued that there are still few empirical data on social innovation initiatives in rural areas. They emphasized that social innovations are crucial for promoting rural development because of the great socioeconomic vulnerability of rural populations.

dynamics of territories are influenced by actions aimed at increasing production quality, such as certifications (including collective marks), GI, local tourism, and biodiversity valorization.

Most studies on the influence of certification focus on economic benefits (which are subject to price variation). It is generally because of these benefits that farmers seek social and environmental certification schemes (Rueda and Lambin, 2013; Beuchelt and Zeller, 2011). Perez-Aluman (2012) pointed out that the need to meet a rigorous set of criteria, market trends, and consumer preferences drives institutional and individual changes. Such changes promote the adoption of quality and environmental standards as well as social networks for knowledge exchange and increased access to resources (Perez-Aluman, 2012). Certification can also stimulate the adoption of new technologies and increase transparency and traceability in market transactions, according to Rueda and Lambin (2013).

GI is a sign used on products that have a specific geographical origin and qualities, reputation, or characteristics that are essentially attributable to their origin (Wipo, 2017). GIs help maintain the diversity of local food crops (Bowen, 2009) and provide opportunities for income and employment, preventing the abandonment of rural areas (Dogan and Gokovali, 2012). Tashiro, Uchiyama, and Kohsaka (2019), Ilbert (2015), Bowen (2010; 2009), and Barham (2003) portrayed GI as a tool for rural development, as it can reconnect people, production, and places. According to Bowen (2010), GIs are linked to environmental resource protection, increased knowledge, and promotion of cultural practices. GIs open the way for local production to reach extralocal markets (Bowen, 2010)[4].

Regarding tourism, Petruzzella, Brunori, and Antonelli (2017) discussed that rural areas are natural sources of social, environmental, and cultural value and that many initiatives of

[4] It is worth mentioning that GIs are not always linked with community development, as shown by Neilson, Wright, and Aklimawati (2018) in a study on Indonesian coffee producers. There was little evidence and limited likelihood of tangible economic benefits for farmers, attributed to the inability of local institutions that support GIs to strategically relate to the practices of leading actors of the coffee production chain. However, according to the authors, GIs seem to foster a sense of regional pride and cultural identity.

territorial development are based on the valorization of this identity. Tourism creates a link between local events and extralocal communities. However, the role of tourism in rural development depends on the level of education, experience, and training of managers, as shown by an empirical study on the impact of managerial intentions on small rural tourism communities in Portugal (Dinis et al., 2019).

3.3. Factors and indicators of social innovation identified in the literature and development of theoretical models

Territorial-level analysis of factors and indicators of social innovation in rural agriculture and tourism allowed us to identify metrics to assess social innovation processes and outcomes.

3.3.1 On the process of social innovation

A set of key elements were identified as contributive to social innovation processes (Table 5).

Table 5. Key elements of social innovation processes.

Elements	**References**
Engagement and participation of social actors	1, 5, 8, and 11
Interaction between actors	3 and 6
Autonomous management	6
Local sustainability	6 and 11
Project implementation	10 and 11
Social networks and social capital	5, 8, 10, and 11
Coordination and level of networking	1 and 5
Civil society and farmer initiatives	2, 8, and 11
Resilience and governance	4
Communication for development	6 and 8
Importance of non-social elements in decisions made by social actors	5 and 8
Knowledge and learning	4, 5, 8, and 11
Institutional learning	10
Normative structures	7 and 8
Institutionalized initiatives	2 and 11
Feature integration	1 and 8
Agri-environmental management	7 and 11

[1] References are coded as follows: 1, Chiodo et al. (2019); 2, Lamine, Garçon, and Brunori (2019); 3, Temple et al. (2018); 4, Knichel et al. (2018); 5, Rover et al. (2017); 6, Farias et al. (2017); 7, Coq-Huelva, Sanz-Canada, and Sanchez-Escobar (2017); 8, Petruzzella, Brunori, and Antonelli (2017); 9, Dax et al. (2016); 10, Bund et al. (2015); 11, Neumeier (2012).
Source: the authors.

On the basis of discussions with an expert on the subject of social innovation and rural development, the key elements of social innovation processes were grouped into four factors: social resources, social capital, environmental and natural resources, and formal and informal institutions. It is noteworthy that some of the elements converged with those proposed by Hubert (2011), Moulaert et al. (2005), and Cloutier (2003), particularly with respect to the participation and integration of various social actors, multilevel governance, networks, knowledge, and learning. Non-converging elements were related to rural territorial development.

Process-level social innovation factors, subfactors, and their interactions are depicted in Figure 1. The model proposed for evaluating social innovation processes in high-quality production systems is presented in Table 6.

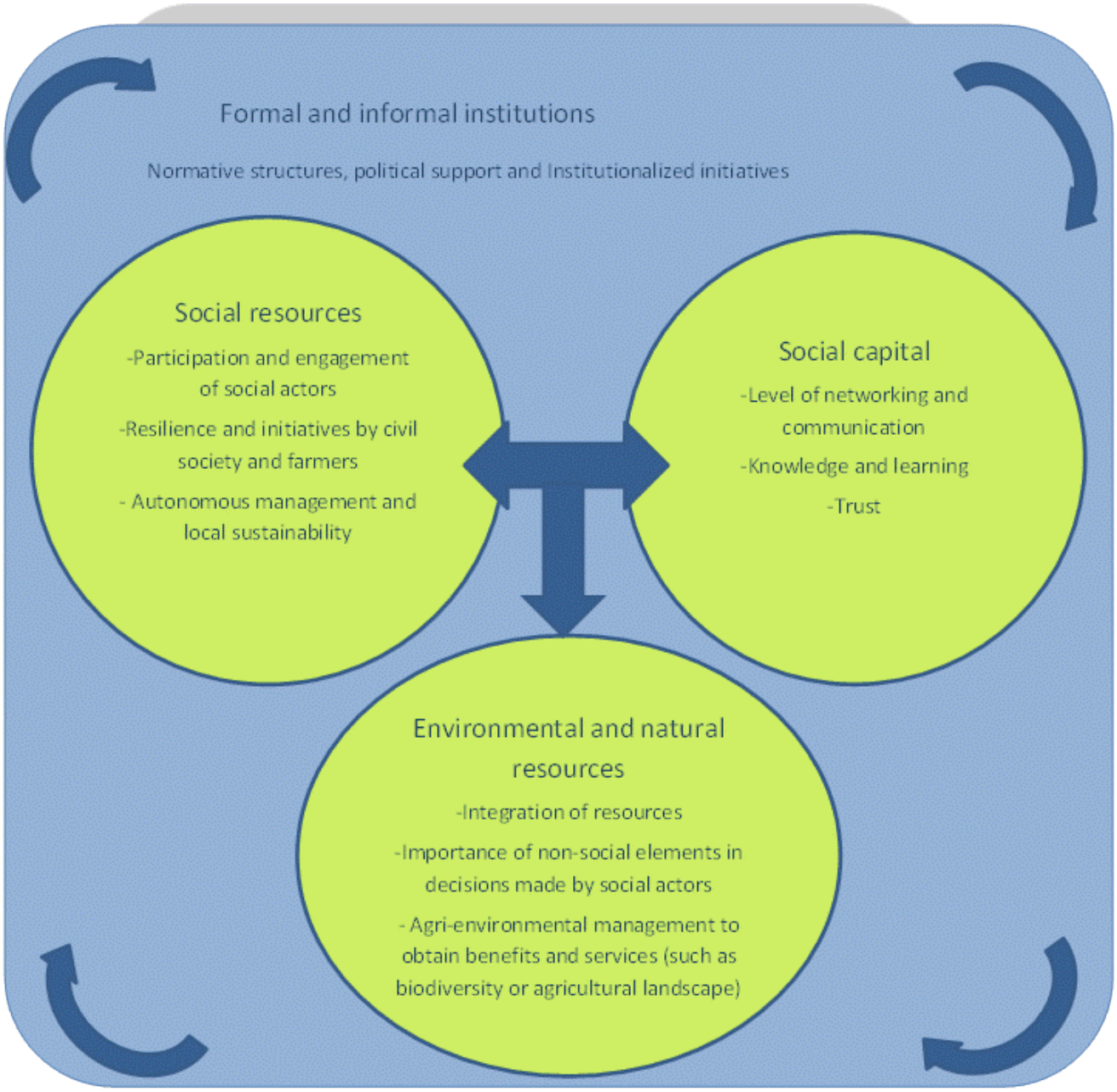

Figure 1. Framework for process-level analysis of social innovation in high-quality production systems. Source: the authors.

Table 6. Proposed model for process-level analysis of social innovation in high-quality production systems.

Factor	Subfactor	Assessment methods [1]
Social resources	Participation and engagement of social actors	- Creation of support organizations and institutions (and number of them) - Level of community involvement - Development of a common agenda between all actors
	Autonomous management and local sustainability	- Participatory community planning involving problematization by farmers - Creation of horizontal relationships for cooperation and participation in the change process - Level of interaction of producers, technicians, and researchers for collective learning - Level of recognition of local knowledge by rural producers - Level of increased knowledge of local demands
	Resilience and initiatives by civil society and farmers	- Level of capacity to conserve existing functions and structures (persistence) - Level of capacity to deal with uncertainty through reorganization and learning (adaptability) - Level of capacity to create a wholly new trajectory that involves a change in the very nature of the system (transformation) - New solutions and projects implemented by farmers (and number of them) - New solutions and projects implemented by civil society (and number of them)
Social capital	Level of networking and communication	- Level of involvement of actors in local networks (between individuals and within groups and the local community) - Level of involvement of local actors in extralocal networks (activities for promotion, branding, empowerment, innovation, process development, event organization, market orientation, and product sales) - Level of information flow in the local network - Level of Internal–external information flow - Multilevel governance and change implementation
	Knowledge and learning	- Level of technical knowledge of rural producers - Level of individual engagement in experiments - Level of collective engagement in experiments
	Trust	- Level of trust in institutions - Level of trust in local actors - Level of trust in external actors

Environmental and natural resources	Integration of resources	- Level of integration of different assets involved - Presence of collective marks for local products (and number of them) - Presence of geographical indication (and number of them)
	Importance of non-social elements in decisions made by social actors	- Agrobiodiversity is prioritized - Landscape products are prioritized - Agrobiodiversity/landscape products stimulate coordination and engagement in specific markets - Level of diversity of values regarding production systems
	Agri-environmental management to obtain benefits and services (such as biodiversity or agricultural landscape	- Creation of protected areas (and areas size) - Reforestation (and areas size) - Harvests are limited to a sustainable yield - Reduction of environmentally harmful activities or pollution - Restoration of degraded areas (and areas size)
Formal and informal institutions	Normative structures	- Creation of social conduct norms at the community level (and number of them) - Creation of norms for organizational and production processes (and number of them)
	Political support	- Political support at the municipal level - Political support at the governmental level
	Institutionalized initiatives	- Level of institutionalized initiatives, such as chambers of agriculture and farmers' organizations

[1] Suggested rating scales: 0 = no and 1 = yes (in affirmative case, quantify if possible) or 0 = requirements not fulfilled, 0.5 = requirements partially fulfilled, and 1 = all requirements fulfilled.

Source: the authors.

Social resources are understood as organized associations, public and private institutions, and attitudes through which society meets physical, psychological, economic, and social needs (Donenfeld, 1940) and adjusts to complex institutional and social demands (Apperlgen and Klohn, 1999). Sandstrom, Elman, and Lindholm (2017) made an analogy between social resources and commons goods: both have the power to bring people together for a common purpose. Resilience emerges precisely from the ability to create and reestablish relationships based on interactions in space and time between humans and organizations (Darhofer et al., 2016).

Social resources and capital are connected by actors' need to make social connections, create norms and work routines, and develop creative actions for projects aimed at increasing the quality and boosting the development of rural production systems and communities. Social resources flourish with the participation, engagement, and resilience of social actors as they begin to problematize and interact within internal and external networks to share information, knowledge, and, when possible, multilevel governance formats. The result is increased social capital in the form of trust and a management system focused on autonomy and local sustainability. These characteristics were also identified in analyses of social innovation in rural development by Chiodo et al. (2019), Rover, Gennaro, and Roselli (2017), and Radomsky (2009).

According to Coleman (1988) and Smith (2000), social capital can be understood as the structures of obligations, expectations, and reliabilities; effective behavioral norms and sanctions; and information channels. Prety and Ward (2001) and Prety and Smith (2001) defined social capital as trust, reciprocity and exchange, common rules, standards, and sanctions, and network and group connectivity.

Networks can be established through bonding, bridging, and linking social capital. Bonding social capital describes the ties between people with similar perspectives and goals,

usually within a group. Bridging social capital refers to the ability of groups to relate to other groups who may have different views, particularly between communities. Such horizontal connections can sometimes lead to the establishment of new forms of organizational management and structure that unite a large number of individuals and groups. Linking social capital describes the ability of groups to engage vertically with outside agencies, either to influence their policies or to use resources (Pretty and Ward, 2001).

Putnam (1993; 1995) and Coleman (1988) highlighted the importance of information channels as a form of social capital. Information exchange is inherent to social relations. It provides the basis for action. Actors can acquire knowledge and technical skills through involvement in individual and collective experiments by valuing local knowledge and generating new knowledge on the basis of local demands. This social capital is therefore generated in the face of the need to adapt and change. According to Ostrom (2000), social capital also manifests itself as shared knowledge, understandings, norms, rules, and expectations about patterns of interactions that individuals share in routine activities and that are related to human capital. Human capital is the acquired knowledge and skills that an individual applies to an activity. Different forms of human capital exist. It can be defined as the acquisition of new capacities as well as the learning of constraints, qualities that are essential for building effective social capital (Ostom, 2000).

Trust is an important condition for local–local and local–extralocal interactions to occur (Farias et al., 2016). Because it facilitates coordination and cooperation for mutual benefit, trust is understood as a form of social capital in the perspectives of Putnam (1993; 1995), Prety and Ward (2001), Prety and Smith (2001), and Ido (2019).

Multilevel governance (i.e., decentralized governance by social actors), according to Koopmans et al. (2018) and Pahl-Wostl (2009), enhances adaptability to local policy changes

and circumstances, increases the possibility of creating added value, promotes policy legitimacy and transparency, and empowers local individuals.

In a rural context, social actions, initiatives, and relations are directed toward natural and environmental resources that can be used in high-quality production systems, promoting territory valorization. Yin and Pierce (1993) observed that integrated resource management attempts to optimize, over the long term, the benefits of using natural and environmental resources. This form of management involves the active participation of diverse groups and individuals from public and private sectors who attempt to share different perceptions of resources, co-ordinate and analyze a broad range of information, and illuminate alternative courses of action and associated trade-offs (Yin and Pierce, 1993). Nevertheless, because of its nature and complexity, integrated resource management must take into account biophysical, economic, sociocultural, institutional factors, and their interrelations.

In the proposed model, actors must integrate various resources, such as the environment, landscapes, traditional and value-added products, and agrobiodiversity. Apperlgen and Klohn (1999) described this phenomenon as the development of social resources and the capacity to adapt to institutional and social demands. The adaptive capacity of a unit is largely determined by the price it will pay to undergo social and technological processes of change, according to the authors.

Formal and informal institutions play an important role throughout this process. Institutions are responsible for creating normative frameworks, implementing policy actions, and institutionalizing initiatives, as perceived by Lamine, Garçon, and Brunori (2019) and Rover, Gennaro, and Roselli (2017). According to North (1991), institutions are the humanly devised constraints that structure political, economic, and social interactions. They consist of informal constraints (sanctions, taboos, customs, traditions, and codes of conduct) and formal rules (constitutions, laws, property rights). Scott (2008; 2010) defined institutions as social

structures composed of cultural–cognitive, normative, and regulative elements that, together with associated activities and resources, provide stability and meaning to social life. Ohlssom (2000) defended that, to adapt to a context of scarcity of natural resources, society must change its rules and regulations, administrative bodies, and economic incentives (in other words, its institutional structure). Political support and institutionalized initiatives can also be understood as an important social resource, as brought by Donenfeld (1940) and Apperlgen, and Klohn (1999).

3.3.2 On the outcomes of social innovation

Few indicators of social innovation outcomes are described in the literature. Their main elements are summarized in Table 7.

Table 7. Key elements of social innovation outcomes.

Elements	**References**[1]
Attitude changes toward traditional activities	1 and 3
Community participation and social integration	1 and 3
Constituted social capital networks and interactions with stakeholders	2
Policy solutions	1
New social rules, forms of organization, work division and coordination	4
Participation of different stakeholders in decision-making	4
Investment in human capital and knowledge infrastructure	2
Knowledge of quality systems	3
Increased community social capital	1 and 2
Changes in reciprocal expectations	4
Perceived impacts on the socioeconomic system	3
Perceived impacts on the landscape	3
Perceived environmental quality	3
Institutional actions	4

[1] References are coded as follows: 1, Carra et al. (2018); 2, Temple et al. (2018); 3, Gobattoni et al. (2015); 4, Xavier et al. (2015).

Source: the authors.

Key elements were grouped into four (measurable) factors: social resources, social capital, environment and natural resources, and formal and informal institutions. Some elements converged with those proposed by Edwards-Schachter and Wallace (2017), Hubert (2011), Moulaert et al. (2005), and Cloutier (2003), including attitude changes, reorganization of the institutional roles, social inclusion, and new forms of organization. Other elements identified in the literature were not included because they could not be applied to the rural context.

Figure 2 shows the framework for outcome-level analysis of social innovation, and Table 8 presents the proposed model. In the model, social resources and capital are interrelated.

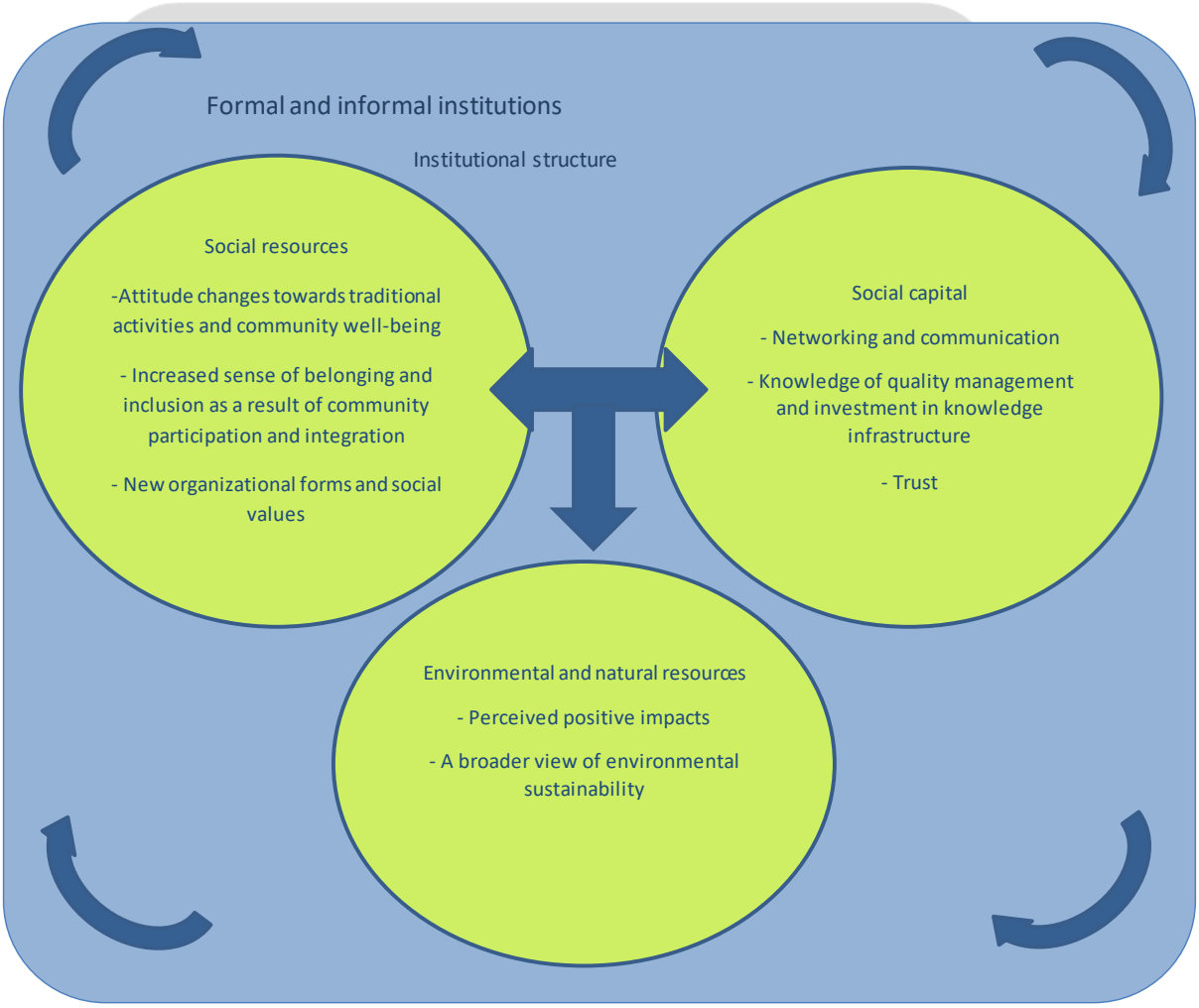

Figure 2. Framework for outcome-level analysis of social innovation in high-quality production systems. Source: the authors.

Table 8. Proposed model for outcome-level analysis of social innovation in high-quality production systems.

Factor	Subfactor	Assessment methods [1]
Social resources	Attitude changes toward traditional activities and community well-being	- Attitude changes toward environmental preservation - Attitude changes toward production methods and practices - Increased well-being for individuals and families
	Increased sense of belonging and inclusion as a result of community participation and integration	- Level of participation of new social actors (previously excluded or marginalized) - Reciprocal expectations in social relations involving excluded persons - Level of inclusion of users or beneficiaries in the conception, development, and delivery of goods and services (and number of them) - Sense of place and belonging
	New organizational forms and social values	- Creation of support organizations and institutions (and number of them) - New organizational configurations (network structures or projects) - New forms of work division and coordination (cooperation and learning) - Social valorization of the individual and the community resulting from new organizational configurations or working methods
Social capital	Knowledge of quality management and investment in knowledge infrastructure	- Level of knowledge of rural farmers about quality production systems (management, certification, geographical indication) - Level of individual engagement of farmers in experiments - Level of collective engagement of farmers in experiments
	Networking and communication	- Relationships and connections between individuals and within the community - Level of involvement of local actors in extralocal networks (activities for promotion, branding, empowerment, innovation, process development, event organization, market orientation, and product sales) - Level of local information flow - Level of internal–external information flow - Multilevel governance and change implementation
	Trust	- Level of trust in institutions - Level of trust in local actors - Level of trust in external actors

Environmental and natural resources	Perceived positive impacts	- Level of perceived impacts on the landscape - Level of perceived impacts on the socioeconomic system - Level of perceived environmental quality
	A broader view of environmental sustainability	- A more ecological view of environmental and natural resources - Agrobiodiversity and landscape activities are valued as sources of income
Formal and informal institutions	Institutional structure	- Changes in the legal and political environments - Changes in the economic environment - Legislation to promote social inclusion and defend minority rights

[1] Suggested rating scales: 0 = no and 1 = yes (in affirmative case, quantify if possible) or 0 = requirements not fulfilled, 0.5 = requirements partially fulfilled, and 1 = all requirements fulfilled.

Source: the authors.

Social resources are described as changes in attitude toward traditional activities related to means of production and environmental preservation. With the participation and integration of actors, these changes may culminate in increased sense of place and belonging (based on the knowledge shared in the territory, for the territory), increased well-being and inclusion of community members (brought by diversification of actors involved in community projects aimed at generating social and economic value), and creation of new forms of organization that can increase the social value of individuals and the community. Such results are supported by the findings of Carra et al. (2018), Temple et al. (2018), Gobattoni et al. (2015), and Xavier et al. (2015).

Communities should be assessed before and after the implementation of innovative actions, such as product certification and territorial valorization programs, to obtain information on their medium- and long-term effects on social resources. Social resources materialize as the degree of involvement of local actors in networks, information exchange, and knowledge generation is increased and the levels of trust in inter- and intra-organizational and institutional levels are enhanced. Multilevel governance is ideal for rural development, as it allows social actors to change their worldview and have an effective impact on the use of natural and environmental resources, as discussed by Gobattoni et al. (2015) and Xavier, Naveiro, and Aoussant (2015). The concepts of social resources advocated by Sandstrom, Elman, and Lindholm (2017), Apperlgen and Klohn (1999), and Donenfeld (1940) support these ideas, as do those advocated by Lin, Ensel, and Vaughn (1981), who understand social resources as embedded in social relationships constructed by social actors.

The effects of sustainable high-quality agricultural production systems and tourism on the environment may positively influence not only socioeconomic factors but also agrobiodiversity and landscape. Such changes may further increase income opportunities, as

highlighted by Gobattoni et al. (2015). This process of transformation implies changes to regulatory frameworks and creation of laws for social inclusion and the defense of minorities (Carra et al., 2018; Xavier, Naveiro, and Aoussant 2015).

Word clouds of process-level and outcome-level analyses of social innovation are presented in Figure 3.

(a)

(b)

SOCIAL:
Common element of greater centrality and representativeness

Figure 3. Word clouds generated from factors, subfactors, indicators, and subindicators of social innovation processes (a) and outcomes (b) in high-quality agricultural production systems. Source: the authors.

Word clouds are one of the most popular visualization methods for text documents; it is a graphical presentation of a text, generated by plotting keywords in a two-dimensional space. The font size indicates the frequency of the word (Castellà and Sutton, 2014). Clouds were elaborated on the basis of the factors, subfactors, indicators, and subindicators of social innovation processes and outcomes (Tables 6 and 8, respectively). In Figure 3a, the most frequent terms were local, social, resources, network, actors, learning, producers, engagement, and organizations; and in Figure 3b, the terms new, social, decisions, capital, landscape, quality, roles, and perceived were more relevant. Both models differ, as the process and outcome of social innovation vary according to its planning, implementation, and analysis.

The models corroborate the importance of the social element (as also discussed by Edwards-Schachter and Wallace, 2017; Nicholls and Murdock, 2012; Howaldt and Schwarz, 2012; Hubert, 2011) in the process and outcomes of social innovation. Social actors, their relationships, decisions, and attitudes have the potential to generate new organizational formats and increase social inclusion and social value. It is important to highlight that, although the models were based on for-profit agricultural systems, they take into consideration environmental and local resources, territory valorization, and institutional aspects, which are the basis of these systems.

The models also revealed the relevance of the interaction among human, environmental, cultural, and financial capital, as argued by Petruzzella, Brunori and Antonelli (2017), Bock (2016), Neumeir (2012), Moulaert (2008), Moulaert et al. (2005), and Lee et al. (2005).

These different forms of capital can be directed toward valorization of products, processes, or nature as a whole for rural development.

4. Final considerations

The literature on social innovation and its indicators has increased over the past decades. Empirical evidence of social innovation in rural areas of developed and developing countries was presented in this study. A territorial approach to assessing social innovation showed that the relationship between social innovation actions and rural development are at the basis of several organizational and territorial systems, such as high-quality agricultural systems with product certification and geographical indication, in agreement with the initial assumption of this study, and more broadly, with rural tourism and biodiversity conservation. In-depth analyses of social innovation indicators and metrics revealed that social change, reconnection with local and extralocal actors, and valorization of local resources are the foundation of productive and organizational structures in rural areas.

At the institutional–political level, the LEADER program was an example of the possible changes that public policies can promote in rural areas. Especially in developing countries, public policies are crucial for continued rural development.

This study contributed to the literature by exploring the differences between the processes and outcomes of social innovation. Factors, subfactors, indicators, and subindicators were generated for the analysis of both dimensions of social innovation using empirical data. The models are based on social resources, social capital, natural and environmental resources, and institutions. However, they differ in aspects related to social valorization, social inclusion, individual well-being, and appreciation of nature, factors that are viewed as outcomes of a successful social innovation. This article did not seek to exhaust the topic on social

innovation assessment in rural areas; rather, it sought to advance the literature by making important integrative contributions to the theme.

More research is needed on the outcomes of social innovation in rural systems, as data on this topic are limited. Because most analyses of social innovation and its metrics in developing countries focus on the quality of production systems, future studies should investigate social transformations promoted by rural tourism and biodiversity valorization.

Acknowledgments

The authors thank the São Paulo State Research Foundation (FAPESP, grant no. 2018/18294-4) and the Sao Paulo State University (UNESP) for the financial support.

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