

Producer-consumer-networks as drivers of sustainability transition in rural regions. Two cases from Costa Rica

Redes de productores-consumidores como impulsores de la transición hacia la sostenibilidad en contextos rurales.

Dois casos de Costa Rica

Redes de produtores-consumidores como impulsionadoras da transição para a sustentabilidade em regiões rurais.

Dois casos da Costa Rica


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Abstract

Successful sustainability transitions are crucial to answer to ongoing crises. Focusing strongly on biocultural heritage, local customs and traditions, as well as the natural environment and landscape aesthetics, rural regions have great potential to promote sustainable development and growth. This sustainable development of rural regions further contributes not only to local, but also to national and supranational development by strengthening sustainable economic growth, alleviating unemployment and poverty, and improving living conditions. Local entrepreneurs are continuously included in discussions on sustainability transitions in rural regions as an important driver through their innovative entrepreneurial activities. By comparing two example regions within rural areas of Costa Rica - the Dota and Turrialba region - the role of these entrepreneurial endeavors is illustrated. For this purpose, we exemplify how both regions contribute to rural, sustainable development based on their geographical, entrepreneurial, and collective characteristics. Specifically, the role of entrepreneurs' specific mind- and skillset, their embeddedness in producer-consumer-networks and the encompassing geographical context is investigated. Implications on the different levels of analysis are drawn in terms of learning opportunities for both, the respective included regions, as well as supra-regional development in a broader sense. The sCoRe project is presented as an exemplary initiative designed to foster collaboration between rural entrepreneurs and academic initiatives to enhance local producer-consumer-networks.

Keywords: Sustainability transition, innovation, entrepreneurial mindset and skillset, rural development, sustainable community building



Resumen

Transiciones exitosas hacia la sostenibilidad son cruciales para hacer frente a las diversas crisis en curso. Considerando el patrimonio biocultural, las costumbres y tradiciones locales, así como el entorno natural y la estética del paisaje, los contextos rurales muestran un gran potencial para promover el desarrollo sostenible y el crecimiento. El desarrollo sostenible de estos espacios favorece no sólo al ámbito local, sino también al desarrollo nacional y supranacional al fortalecer el crecimiento económico sostenible, reducir el desempleo y la pobreza, así como mejorar las condiciones de vida. En las discusiones sobre las transiciones hacia la sostenibilidad en contextos rurales, el emprendedurismo a escala local es constantemente considerado como un importante impulsor gracias a las actividades empresariales innovadoras que produce. Se ilustra el rol de los emprendimientos al comparar dos casos dentro del contexto rural costarricense, particularmente los cantones de Dota y Turrialba. Con este propósito, se ejemplifica cómo ambas regiones contribuyen al desarrollo rural sostenible basado en sus características geográficas, empresariales y colectivas. Específicamente, se investiga el papel de la mentalidad y las habilidades específicas de los emprendedores, su inserción en redes productores-consumidores, así como la influencia del contexto geográfico. Se extraen implicaciones en los diferentes niveles de análisis en términos de oportunidades de aprendizaje tanto para las regiones consideradas, como para el desarrollo suprarregional en un sentido más amplio. Se presenta el proyecto sCoRe como una iniciativa ejemplar diseñada para fomentar la colaboración entre emprendedores rurales e iniciativas académicas para mejorar las redes locales de productores y consumidores.

Palabras clave: Transición hacia la sostenibilidad, innovación, mentalidad y habilidades de emprendedurismo, desarrollo rural, construcción de comunidades sostenibles.



Resumo

Transições bem-sucedidas para a sustentabilidade são cruciais para responder às crises atuais. Com um forte enfoque no patrimônio biocultural, costumes e tradições locais, além do meio ambiente natural e da estética da paisagem, as regiões rurais possuem um grande potencial para promover o desenvolvimento e o crescimento sustentáveis. O desenvolvimento sustentável dessas regiões rurais contribui ainda mais não apenas para o desenvolvimento local, mas também para o desenvolvimento nacional e supranacional, fortalecendo o crescimento econômico sustentável, aliviando o desemprego e a pobreza, e melhorando as condições de vida. Os empreendedores locais são continuamente incluídos nas discussões sobre as transições para a sustentabilidade em regiões rurais como um importante motor através de suas atividades empresariais inovadoras. Comparando duas regiões de exemplo dentro das áreas rurais da Costa Rica - as regiões de Dota e Turrialba - é ilustrado o papel desses empreendimentos. Para este fim, exemplificamos como ambas as regiões contribuem para o desenvolvimento rural sustentável com base em suas características geográficas, empreendedoras e coletivas. Especificamente, é investigado o papel da mentalidade e conjunto de habilidades específicas dos empreendedores, sua inserção em redes produtor-consumidor e o contexto geográfico abrangente. Implicações nos diferentes níveis de análise são extraídas em termos de oportunidades de aprendizado para ambas as regiões incluídas, bem como o desenvolvimento suprarregional em um sentido mais amplo. O projeto sCoRe é apresentado como uma iniciativa exemplar projetada para fomentar a colaboração entre empreendedores rurais e iniciativas acadêmicas para aprimorar as redes locais produtor-consumidor.

Palavras-chave: Transição para a sustentabilidade, inovação, mentalidade e conjunto de habilidades empreendedoras, desenvolvimento rural, construção de comunidades sustentáveis

Introduction

To answer to recent and ongoing crises such as climate change or loss of biodiversity, far-reaching socio-ecological transformations are crucial. Without large-scale socio-cultural, political, economic, and technological transition processes, a sustainable and socially just future seems impossible. According to [Loorbach et al \(2017\)](#), this necessary sustainability transition needs to aim at greener and more inclusive development within socio-technical, socio-institutional, and social-ecological systems, and in the words of [Markarda et al. \(2012\)](#), [Coenen & Truffer \(2012\)](#) and [Ramos-Mejía & Jauregui-Becker \(2018\)](#), through deep structural changes which involve diverse degrees of cooperation and conflict among all stakeholders involved. In the quest for sustainability transitions in rural regions, the dynamics of innovation and entrepreneurship, as well as their interplay within the socio-technical and socio-ecological rural landscapes assume particular significance.

Against this backdrop, the current work employs a theoretical framework modified from [Fastenrath & Braun's \(2018\)](#) approach to the

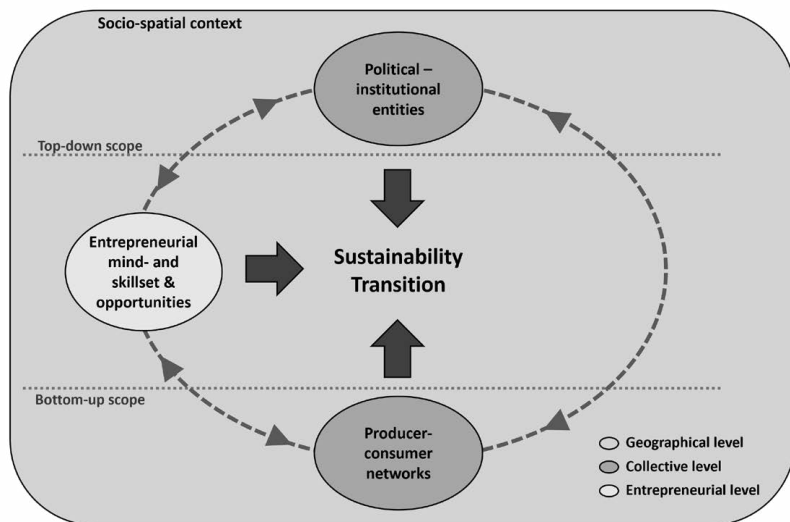
economic geography of urban sustainability transitions, by incorporating impressions from transition processes towards sustainability, innovation for sustainability, entrepreneurship as a driver of sustainability transitions, and the entrepreneurial mind- and skillset, and applies it to the rural contexts of Dota and Turrialba. This approach chooses to explore the role of producer-consumer networks in driving sustainability transitions in rural regions. By examining the specific case examples of Dota and Turrialba in Costa Rica, the pivotal roles of local niche actors at the entrepreneurial level, socio-cultural and institutional structures at the collective level, and spatial contexts at the geographical level are being identified and discussed. This provides nuanced insights into how these factors contribute to shaping sustainability transitions in rural areas.

Transition processes towards sustainability

While the significance of sustainability transitions remains largely unquestioned, there are many theories on actors that are involved and could lead this change. [Bamberg et al. \(2021\)](#) proposed a socio-technical systems view that considers individuals as embedded in “transformations of layered socio-technical systems” ([Bamberg et al., 2021, p. 2](#)). [Geels \(2002\)](#) and [Wallis et al. \(2021\)](#) mention that this view builds on the multilevel perspective that captures the complexity of societal change as interactions of different levels of actors. According to this multilevel perspective, future-oriented and potentially disruptive innovations happen at the micro-level in niches that provide experimental spaces for new ideas, the above according to [Geels \(2002\)](#) and [Wallis et al. \(2021\)](#)). Continuing with this last author and returning to Bamberg, the meso-level constituted by current regimes, institutions and technologies can be urged to change by events on the macro-level including cultural, economic, or political developments. Later, Bamberg and Geels explain that this pressure on the regime can then create windows of opportunity for the micro-level of innovations created in niches to move forward and enter the mainstream market. The multilevel perspective and socio-technical systems view stress the importance of local niche actors and their agency as well as the groups, networks and cultural and societal structures that define their scopes of action.

A similar framework of sustainability transition dynamics has been proposed by [Fastenrath & Braun \(2018\)](#) (see Figure 1). [Smith et al. \(2005\)](#) stipulate that it similarly considers a broad range of actors, including regulatory and institutional support, that can be found on different levels. Here, sustainability transitions are the product of a broader network of socio-cultural, political-institutional and economic structures as well as socio-technical and socio-ecological systems. Considering the top-down political institutional structures, policy making and governance of sustainability transitions plays an important role, as affirmed by [Pereira et al. \(2018\)](#). Sustainability transition has been used as a fundamental basis for policy programs at local, national, and international levels and is used as an approach to enable transformative networks and experiments as well as to evaluate innovation policies. For this par, [Loorbach et al. \(2017\)](#) say that the approach to governance for sustainability transitions contributes with instruments for analyzing, evaluating, or experimentally influencing (transformative) agency within the policy-making context. Looking at bottom-up socio-cultural structures, niche actors and radical innovations can influence sustainability transitions in similar ways as described in the multi-level perspective framework.

Figure 1. Sustainability transition dynamics in rural areas of Costa Rica.



Own elaboration based on [Fastenrath & Braun \(2018\)](#).

According to [Hansen & Coenen \(2015\)](#), sustainability transitions and their influences are further embedded in the larger socio-spatial context, strengthening the perspective of sustainability transitions as geographical processes. Accordingly, the socio-spatial embeddedness attribute relates directly with the conditions of specific places, regions, communities, which condition the responsive engagement towards this transition; as stipulated by [Coenen & Truffer \(2012\)](#) and [Longhurst \(2015\)](#). On the other hand, [Truffer et al. \(2015\)](#) establish in this sense, the specific cultures, institutions, political systems, networks, and capital stocks that have developed in these spaces have a direct saying in how the actors rooted within them promote new technologies and network relationships, develop new lifestyles, and are willing to embark upon new policies that support sustainability transitions.

Innovation for sustainability

A key part of sustainability transitions relates to innovation within the niches that can then influence the meso- and macro-level. According to [Castree et al. \(2013\)](#), innovation entails transforming a fresh idea into a novel product or process, achieving its successful commercialization, and exploring new ways to produce, promote, or distribute an existing product or process. Innovation transcending technological advances manifests through a holistic approach that embraces creative resource management, the advocacy of responsible business practices, and the pursuit of distinctive solutions to local challenges, reflecting a broader perspective on innovation that encourages diverse forms of creativity and problem-solving. Typically, innovation involves three phases: conception (the generation of a novel idea), implementation (the application of the idea for commercial purposes), and dissemination (the widespread adoption of the innovation in society); the above stipulated by [Aoyama et al. \(2011\)](#). Now, [Mayer & Baumgarther \(2014\)](#) say that in contemporary theoretical dialogues on regional development, there is acknowledgment of innovation manifested through social innovations, entrepreneurial endeavors, expansive creative industries, establishment of sustainable food systems, inter-sectoral connections, and comprehensive farm modernization. These explorations, say [Kratzer & Ammering \(2019\)](#), have also conceived innovation as an important driver of sustainable regional development, including its importance

to tackle global challenges like climate change, food security, ecological conservation and ecosystem services, as well as energy transitions.

For [Fitjar & Rodríguez-Pose \(2011\)](#), emphasizing innovation as a process is imperative, particularly when considering its intricate linkage to specific geographical locations. A comprehensive understanding of this connection necessitates the consideration of social and institutional dynamics unique to each space, which encompasses policies, networks, and social values. Previously, [Rodríguez-Pose & Crescenzi \(2008\)](#) said these factors assume a pivotal role in cultivating the necessary interaction and knowledge exchange essential for propelling innovation forward. In light of the aforementioned, innovation exhibits a critical characteristic by being territorially grounded, extending beyond environments exclusively oriented towards technology; in the words of [Doloreux & Dionne \(2008\)](#).

Entrepreneurship as driver of sustainability transition

When considering actors who can play a key role in sustainability transitions, entrepreneurs are continuously included in discussions on local innovation-driven development; as stipulated by [Sherrard & Alvarado \(2017\)](#), and later confirmed by [Pliakoura et al. in 2020](#). Entrepreneurship, for its part, is defined as the pursuit of identifying, assessing, and capitalizing on opportunities to introduce novel products and services, innovative organizational methods, markets, processes, and raw materials by organizing efforts that were previously nonexistent; as according to [Shane \(2003\)](#). [Kuratko \(2017\)](#) affirms that the entrepreneurial process involves envisioning, instigating change, and fostering creation by channeling energy and passion into designing and implementing innovative ideas and solutions. A more recent document from [Avelar et al. \(2024\)](#) say that successful entrepreneurs embody a unique blend of innovation, risk-taking, perseverance, self-motivation, visionary leadership, flexibility, and adept networking, forging a path towards transformative business endeavors.

According to [McMullen & Shepherd \(2006\)](#), entrepreneurship requires taking action based on identifying opportunities, which generates uncertainty for entrepreneurs. The concept of uncertainty plays a central role in most entrepreneurial theories. Various perspectives focus on how entrepreneurs perceive uncertainty and their likelihood of acting based on their knowledge; as exemplified by [Busenitz \(1996\)](#), [Kirzner \(1979\)](#), [Kaish](#)

& Gilad (1991) and Gaglio & Katz, (2001). In contrast, other perspectives emphasize the willingness of individuals to tolerate uncertainty and act based on motivation, attitude, or risk propensity, as mentioned by Knight (1921), Schumpeter (1934), Douglas & Shepherd (2000) and McMullen & Shepherd (2006); whom suggest that these two streams represent different aspects of the uncertainty experienced in entrepreneurial decision-making and that the elements that determine whether a person will act entrepreneurially include knowledge, motivation, and stimulus.

By its very definition, entrepreneurship is inherently intertwined with innovation. According to Mayer & Baumgartner (2014), entrepreneurs, in their pursuit of novel opportunities, engage in the creative process of transforming ideas into tangible products or services, showcasing the symbiotic relationship between entrepreneurial endeavors and the dynamic force of innovation in driving economic and societal progress. This intrinsic link underscores the indispensable role of innovation as a driving force behind entrepreneurial success and its broader impact on sustainable development; in words of Hossain et al. (2023).

Similar to other spatial contexts, Müller & Korsgaard (2018) explain rural areas accommodate diverse entrepreneurial activities that unfold in intricate processes, engaging multiple stakeholders and blending innovation with tradition. Significant processes manifest in innovative approaches to conventional farming-based activities and manufacturing; in accordance with Alsos et al. (2014), as well as in non-traditional activities linked to tourism and experience economies, as noted by Avendaño et al. (2022b). Hence, entrepreneurship gains particular significance in rural settings, as rural entrepreneurs distinguish themselves from their counterparts by not only leveraging local resources but also actively contributing to their development, thereby fostering the growth of the local economy. According to Gyimah & Lussier (2021), in reality, small businesses within rural communities are deemed crucial for attaining sustainable economic development, as they serve as an important catalyst for reducing poverty, generating employment, fostering resilience, and promoting economic progress.

Considering the above, Tödting et al. (2011) explain it is important to highlight how spatial context plays a pivotal role in innovation and entrepreneurship, influencing various aspects of entrepreneurial activities. Peripheral regions, like many rural areas, are characterized by “institutional

thinness”, indicating a lack of knowledge production organizations such as universities, lower human capital levels, reduced service provision, and weaker institutional structures compared to core regions. This thin institutional structure in rural areas is associated with lower economic development at the aggregate level, as stipulated by the [Organization for Economic Co-operation and Development \(OECD\)](#), (2006). However, [Mayer & Baumgartner \(2014\)](#) say there is notable variation among rural areas, with some experiencing significant economic development driven in part by innovation and entrepreneurial activities.

The significance of local resource endowments (i.e. set of spatial or spatially bound resources uniquely available to entrepreneurs operating in the local spatial context) and spatial bridging (i.e. way in which entrepreneurs connect their local economies with national and global contexts or flows) is crucial in influencing entrepreneurship in rural areas in which entrepreneurs are deeply embedded in their local environments, influencing their decisions regarding production, collaboration, hiring, and market selection; according to [Müller & Korsgaard \(2018\)](#). The spatial context serves as a unique toolkit for entrepreneurs, offering a finite set of resources - both material and immaterial - that shapes the types of ventures possible, thus enabling entrepreneurs to create distinct products and practices. However, [Avendaño et al. \(2022b\)](#) say relying on local resources also imposes constraints on entrepreneurial activities, limiting the range of businesses or products that can be pursued and setting input-related restrictions on growth. In essence, spatial context, with its diverse resource endowments, proves to be a significant opportunity for rural entrepreneurship.

[Korsgaard & Tanvig \(2015\)](#) affirm that research within the entrepreneurship domain has embraced the concept of “place”, expanding the spatial context to encompass experiential dimensions. Within this framework, the significance of representations, meanings, imagery, and emotional ties to specific locations emerges as a critical factor influencing entrepreneurial processes in various ways. An important example is the impact of emotional attachment to a place on decisions related to location, at times deviating from economic rationality. [Kibler et al. \(2015\)](#) say entrepreneurs can leverage representations of place, such as imagery, heritage, and brands, as valuable assets in both urban and rural settings. Importantly, contemporary contributions at the intersection of spatial context and entrepreneurship

emphasize that spatial contexts encompass not only the physical and material geographies of locations but also socio-cognitive aspects involving representation, meanings, communities, and attachments; in words of [McKeever et al. \(2015\)](#).

Entrepreneurial mind- and skillset

Several scholars attempted to conceptualize entrepreneurial characteristics to answer the question of why some become entrepreneurs and others do not. Here, it is important to consider an entrepreneurial mindset as well as entrepreneurial skills that enable individuals to identify opportunities, leverage resources and act successfully in uncertain and complex environments, for example, [Naumann \(2017\)](#). Personality characteristics and personal traits may promote the likelihood of individuals first getting involved in entrepreneurship, explained by [Davis et al. \(2016\)](#). This author also says however, once individuals are engaging in entrepreneurial activities, their mind- and skillset gains more value than certain predisposed traits.

[McGrath & MacMillan \(2000\)](#) defined an entrepreneurial mindset as the ability to operate and perform under conditions of strong uncertainty. As such an ability, entrepreneurial mindset is seen as a combination of cognitive, behavioral, and emotional aspects that can be developed, learned, and altered, according to [Kuratko et al. \(2021\)](#), e.g., through entrepreneurial education, building of knowledge, skills and competencies or developing a frame of mind, as mentioned by [Larsen \(2022\)](#) and [Lynch & Corbett \(2023\)](#). [Naumann \(2017\)](#) mentions elements of entrepreneurial mindsets have been conceptualized by different researchers. For instance, in a synthetic literature review, core attributes of an entrepreneurial mindset were found to be cognitive tuning and goal orientation, a heuristic-based decision logic, alertness, prior knowledge and social interaction. [Daspit et al. \(2023\)](#) similarly stressed the importance of recognizing and acting on windows of opportunities as well as value creation, adaptability and resilience, cognition and decision-making with limited information in uncertain and complex environments. [Cui and Bell \(2022\)](#) add creativity and place a focus on behavioral execution by stating that “to utilize an opportunity, an individual should adapt to risky and uncertain situations in which to create novel ideas and execute them by means of network, resources, and support from others” ([Cui and Bell, 2022, p. 9](#)).

However, entrepreneurs should not only dispose of a certain mindset but also need specific skills to be successful. [Smith et al. \(2005\)](#) conclude in their multidimensional model of measuring venture growth that technical and industry-specific competencies or skills significantly affected venture growth. Conversely, Smith's model suggests that traits are significant predictors of success by influencing skill sets and entrepreneurial motivation, but they have a weak relationship with venture growth. According to [Ray \(1993\)](#), entrepreneurship education and training should prioritize the development of skills rather than the modification of behavior. Ray argues that no specific personality traits can predict success and identifies 30 skills that entrepreneurs should acquire. These skills are associated with different categories related to the entrepreneur, opportunities, resources, social networks, customers, and management. Among the essential skills that Ray has identified are the ability to identify new product and service opportunities, evaluate opportunities, think critically, have persuasive communication skills, negotiation skills, interpersonal communication skills, listening and information acquisition skills, and problem-solving skills. Thus, the idea of an entrepreneurial mindset and entrepreneurial skill set demonstrate notable overlap, together highlighting the significance of specific attitudes and skills for entrepreneurial success.

Two rural regions as case examples

Zooming in on the role of entrepreneurs with their specific mindsets and skill sets for sustainability transitions in rural regions, the study exemplifies how two cases of rural regions in Costa Rica – the Dota and the Turrialba region – provide spaces for regional, peripheral innovations for sustainability through entrepreneurship. Following multi-level perspectives of sustainability transitions, three different levels are considered. On a geographical level, the description revolves around the regional characteristics these places hold and what supports innovation in these regions. On an entrepreneurial level, the depiction focuses on the ways entrepreneurs in the regions exhibit entrepreneurial mindsets and skill sets and how they exploit opportunities inherent in their region. On a collective level, the study centers on the role of the embeddedness of entrepreneurs in producer-consumer networks for seizing innovation. Two specific examples of local producer-consumer networks are examined in this context.

With an integration of backgrounds and methods, the present research takes on an interdisciplinary approach integrating concepts and frameworks from the field of geographical sciences and psychology by combining competencies and perspectives along the research process, in words of [Aboelela et al. \(2007\)](#). Different authors have long stressed the crucial role that interdisciplinary research and a linkage with everyday life experiences can play in dealing with complex societal issues such as sustainability transitions, for example in [Kaufman & Cleveland \(1995\)](#), [Lang et al. \(2012\)](#), [Lux et al. \(2019\)](#), [Bergmann et al. \(2021\)](#), [Caniglia et al. \(2021\)](#) [Jahn et al. \(2022\)](#) and [Kny et al. \(2023\)](#).

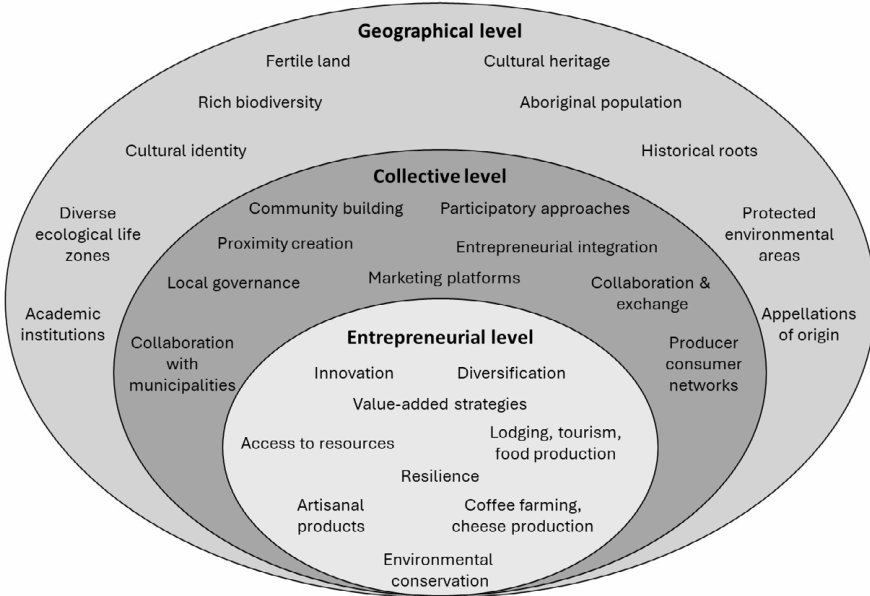
Furthermore, the study adopts a community-based participatory approach grounded in the principles of co-creating solution- and action-oriented, transferable knowledge. This involves the inclusion of multiple actors and perspectives throughout the process, as highlighted by previous research, for example in [Lang et al. \(2012\)](#), [Caniglia et al. \(2021\)](#) and [Kny et al. \(2023\)](#). Examining case examples, the integrative perspective applied here allows for the consideration of specific characteristics of the research setting and its local embeddedness, particularly in terms of context dependencies, in words of [Lam et al. \(2021\)](#). This inclusive approach enables the exploration of various success factors in interdisciplinary research, including addressing practitioners' needs, interests, and restrictions, active communication, attachment to concrete sites, providing research-based learning, and creating lasting impact and transferability, according to [Bergmann et al. \(2021\)](#). The interdisciplinary framework employed in this study aims to approach sustainability transitions in rural regions not only from place-based but also from individual-centered perspectives, addressing real-world problems in the field.

Methodology

The present study adopts an exploratory and qualitative approach, combining data from different sources such as field visits, interviews, self-reports, and participative observations within the context of collaborative project-related activities. These activities involve various stakeholders, including entrepreneurs, representatives of entrepreneurial networks, political actors, and key informants in the regions. Consistent with the exploratory nature of the research, the multi-source approach ensured the

inclusion of diverse data for analysis, facilitating the triangulation of results with additional information. Data collection on behalf of all four authors primarily took place during three extensive visits to the study areas (January-March 2022, November 2022, February 2023). After conducting on-site visits, data sources including field visit protocols, interview transcripts, and notes from self-reports and participative observations were collected and examined. Employing the multilevel perspective proposed by Geels (2002), which considers Fastenrath & Braun's (2018) sustainability transition dynamics framework, the results were subsequently categorized within the geographical, collective, and entrepreneurial spheres. The allocation of aspects to these three levels was driven by the aim to enhance the level of reflexivity, foster dialogue, facilitate consensus building, and incorporate diverse perspectives during the analysis process, aligning with the exploratory nature of the research. Figure 2 provides an overview of the three levels and respective key characteristics that were extracted from the case examples.

Figure 2. Key characteristics of the three-level model identified in the case examples.



Own elaboration.

Geographical level

Considering the geographical level of the two case examples, it is interesting to examine the characteristics that make Dota and Turrialba fertile regions for innovation and entrepreneurship. Here, the geographical characteristics of the regions of Dota and Turrialba in Costa Rica provide a unique foundation for fostering innovation and entrepreneurship.

Located between 9° 39' north latitude and 85° 58' west longitude, Dota spans 458.72 km² and is situated in the province of San José and comprises three distinct districts: Copey, Jardín, and Santa María. The dynamic landscape for varied economic activities is further enhanced by the diverse altitudinal gradient, ranging from 500 to over 3300 meters over sea level, encompassing several different ecological life zones. Notably, Dota stands out as a premier coffee-producing county globally, exporting high-quality coffee at premium prices. Beyond coffee, the cultivation of diverse agricultural produce adds to the region's economic portfolio. The agricultural and natural beauty of Dota serves as a picturesque backdrop for sustainable initiatives. Environmental protection measures, covering over eighty percent of the territory and including reserves like Los Santos Forest Reserve and Los Quetzales National Park, highlight Dota's commitment to biodiversity preservation and sustainability. This rich environmental tapestry, coupled with the recent appellation of origin certification for "Tarrazú" coffee, positions Dota as a hub for agro-tourism and sustainable entrepreneurship. The potential for community rural tourism, supported by local cooperatives and coffee micro-mills, aligns with Dota's capacity to not only preserve its natural resources but also catalyze innovation and entrepreneurship for community development.

As a second example of a rural highland region, Turrialba is located between 9° 47' north latitude and 83° 29' west longitude and spans 1,642.67 km². It is situated in the province of Cartago and comprises 12 districts: Turrialba, La Suiza, Peralta, Santa Cruz, Santa Teresita, Pavones, Tuis, Tayutic, Santa Rosa, Tres Equis, La Isabel and Chirripó. Its elevation ranges from 300 to 3340 meters over sea level, giving rise to various cultivation conditions. The slopes of the Turrialba volcano provide fertile land, ideal for cattle farming and high-quality cheese production, with the Turrialba Cheese being a certified appellation of origin and the region's signature product.

Additionally, the diverse topography and geomorphology of Turrialba enable the production of various crops and vegetables, with coffee, sugar cane, and cocoa being particularly significant. The area is home to various environmentally protected regions, including Guayabo National Park and Turrialba National Park. It contains a rich pre-Columbian heritage, with Guayabo being the most notable pre-Columbian site in the country. Furthermore, a significant aboriginal Cabecar population resides in the county's eastern section. With these rich environmental and cultural treasures and history, the region yields excellent potential for many small-scale entrepreneurial activities, ranging from traditional businesses like cheese production to innovative products, such as in the gourmet sector. The county's community organization serves as an essential backbone of these activities.

While literature primarily emphasizes entrepreneurship and innovation in urban settings within developed economies, both Dota and Turrialba stand out as examples, highlighting the potential for rural areas to function as favorable spaces for innovation and entrepreneurial endeavors. Its stunning natural landscapes are complemented by a human resource characterized by a significant capacity for innovation, a key element for fostering entrepreneurial ventures. The local population's historical and traditional roots, particularly in coffee farming or cheese production, contribute to a strong territorial connection and cultural identity. These factors represent valuable local assets with high potential for innovation and entrepreneurial initiatives. In the case of Dota, the presence of a regional headquarters of the Instituto Nacional de Aprendizaje (INA), offering professional formation in various fields, exemplifies a modest yet crucial form of institutional support for innovation and entrepreneurship in Dota. Similarly, in Turrialba, institutions like the Centro Agronómico Tropical de Investigación y Enseñanza (CATIE), the Costa Rican University or the INA contribute to the region's entrepreneurial efforts. With its ACTIVA program, CATIE aims to facilitate the formation of innovative entrepreneurial activities and access to funding. At the same time, the Costa Rican University also has students from different fields who are eager to support entrepreneurs, and the INA provides vocational training to help people develop the skills needed for innovative entrepreneurial activities. This potential, in turn, triggers economic development that simultaneously contributes to community sustainable development.

The regions' entrepreneurial landscapes extend beyond traditional activities, with recent ventures in artisanal products based on local resources demonstrating a commitment to local authenticity and conveying the biocultural value of the region. The entrepreneurial movement reflects a trend of diversification and expansion of products and services. This includes strategies by primary sector producers to add value to their offerings and integrate into diverse market chains, demonstrating a capacity for innovative approaches to economic development.

The geographical characteristics of both Dota and Turrialba not only provide a solid foundation for innovation and entrepreneurship but also uniquely facilitate a sustainability transition in economic practices and spatial configurations. The diverse altitudinal gradients create a mosaic of ecological life zones, offering an opportunity to explore and implement sustainable practices tailored to specific environments. A high commitment to environmental protection measures exemplifies the regions' dedication to biodiversity preservation. This commitment aligns impeccably with the principles of a sustainability transition, prioritizing ecological resilience. Moreover, a profound connection to the cultural heritage of pre-Columbian ancestry and the importance of ties within the community emphasize a sustainability transition considering social dimensions. The rural regions' potential as hubs for sustainable entrepreneurship exemplifies the importance of region-specific, high-quality produce. By leveraging its unique geographical attributes, Dota and Turrialba can foster a transformative shift towards more sustainable economic practices.

Collective level

For the collective level, we were interested in the role the embeddedness in a producer-consumer-network plays for entrepreneurs to pursue innovation activities. As demonstrated, in both Dota and Turrialba with their similar yet distinct geographical features, entrepreneurs disposing of a pronounced entrepreneurial mind- and skillset pursue a variety of innovative economic activities striving towards a sustainability transition. In the following, we will outline how the embeddedness in two distinct producer-consumer-networks offers great potential for catalyzing these innovative entrepreneurial activities, but also, which challenges these networks face in the process.

In the case of Dota, the Vive Dota network strives to establish a local producer-consumer network for entrepreneurs in the county of Dota. Envisioned as a means of supporting integrated rural community entrepreneurial activities on a county level, the network seeks to differentiate itself from traditional approaches characterized by dispersed and unarticulated initiatives. In collaboration with the Municipality of Dota, initial efforts involved the identification, organization, articulation, and coaching of local economic entrepreneurs. These entrepreneurs perceived the potential in their economic activities, and a series of participatory instruments were implemented, complementing community involvement with academic accompaniment, as identified by [Avendaño et al. \(2022a\)](#). The network aims to develop its current webpage prototype into a marketing platform designed to promote the county's diverse entrepreneurial activities, touristic experiences, and the Dota product as a whole.

The embeddedness in the producer-consumer network Vive Dota plays a key role in shaping the environment for entrepreneurs pursuing innovation activities in Dota. The network aims to establish a local producer-consumer network that goes beyond traditional, dispersed initiatives, striving for a more integrated and cohesive approach to support rural community entrepreneurial activities. The collaboration with the Municipality of Dota underscores the significance of local governance in fostering such networks. However, the current organizational framework exhibits a degree of ambiguity, with concerns about the lack of clarity in delineating responsibilities and coordination mechanisms among stakeholders. Despite these challenges, the existence of the Vive Dota network demonstrates an initial step towards creating a platform for entrepreneurs to showcase their diverse activities.

Despite the involvement of diverse stakeholders and elements of agency in Dota's innovation and entrepreneurial initiatives, the overall organizational framework appears to be characterized by a certain degree of ambiguity. The formerly active, albeit somewhat indistinct, participation of key stakeholders, including the Dota Municipality and other institutions, implies a feeble and unclear structure with insufficient institutional support. Despite the adoption of the One Village, One Product (OVOP) philosophy in collaboration with the Japanese International Cooperation Agency (JICA), obtaining support from the National University for identifying and characterizing local entrepreneurial initiatives, as well

as promoting its own Vive Dota network as marketing strategy, concerns arise due to the lack of clarity in delineating responsibilities and coordination mechanisms. The organizational framework's robustness is unclear and the overall integration of the various efforts appears somewhat fragmented. In this context, despite the involvement of various stakeholders and initiatives, the organizational structure of Dota's innovation and entrepreneurial environment seems fragile and requires clear delineation to genuinely strengthen the county's potential for innovation and entrepreneurship, thereby contributing significantly to comprehensive sustainable development.

To enhance innovation and entrepreneurship and contribute to Dota's evolution into a more sustainable community, the county must transition towards a more cohesive strategy that harnesses community, entrepreneurial, and business capacities. This strategic shift involves establishing a coordinating organization to support entrepreneurs in defining their business models, promoting collaboration and exchange, and creating a marketing platform to showcase the resources and products offered by the county's entrepreneurs.

In the case of Turrialba, turri.cr represents a local producer-consumer-network. At the core of the network's activity lies an online platform which aims to create a direct connection between local entrepreneurs of the rural Turrialba region and consumers in the metropolitan area of Costa Rica. A special focus of the platform lies in creating proximity between entrepreneurs and consumers. For this purpose, the online platform displays written and audiovisual material on the entrepreneurs' stories and encourages consumers to get to know producers and the origin of their consumed products. Also, the platform holds close ties to the municipality of Turrialba. Being embedded in the network thus signifies an additional potential of streamlining innovation activities. The turri.cr platform contributes to a sustainability transition in various ways. First, it circumvents intermediaries such as big supermarket chains which local entrepreneurs are oftentimes not able to enter. Being part of the platform enables local entrepreneurs to directly access new market segments, such as consumers from the metropolitan area, or environmentally conscious, small-scale tourists. Thus, the network aims at shortening food supply chains and creating economically sustainable systems. Second, the network contributes

to social sustainability by promoting a focus on the social component of rural development. It includes local stakeholders as main actors within the development of their businesses. With local entrepreneurs also becoming virtually visible on the website of the network, this is especially beneficial for the regions' technological advancement. Third, the network depicts ecological sustainability by acknowledging sustainable practices and including entrepreneurs' certifications. For example, the label of the Bandera Azul (*Blue Flag*) certifies entrepreneurs who comply with certain standards regarding the handling of natural resources or waste management. The denomination of origin label also requires producers to take certain measures, e.g., regarding animal welfare.

Taken together, in both Dota and Turrialba, the producer-consumer-network unites entrepreneurs with different levels of professionalism and connects entrepreneurs with producers. This offers unique opportunities in terms of visibility, accessibility and connectedness to seize synergy effects. However, while the networks can constitute an important resource for the entrepreneurs in their business development, the lack of other resources is reported, potentially limiting the networks' impact. Specifically, most entrepreneurs report a lack of financial or time resources limiting access to certain knowledge and skills in at least one area crucial for developing their business, such as accounting, marketing, web design or social media. According to [Robinson et al. \(2012\)](#), thus, when equipped with these necessary resources, rural areas offer great opportunities to further develop already existing local businesses and structures and foster new innovations. In this context, it has been suggested that entrepreneurs would benefit greatly from extra-regional resources in certain stages of their business development; in words of [Alsos et al. \(2014\)](#).

Entrepreneurial level

On the entrepreneurial level, the two case examples offer insights into the role that entrepreneurs and entrepreneurial networks play for innovation contributing to sustainability transitions. Entrepreneurs in both regions exhibit a distinctive entrepreneurial mind- and skillset through their capacity for innovation and adaptability, particularly evident in their diversification efforts. The entrepreneurial community showcases a proactive approach to economic development by not solely relying on traditional

activities, such as coffee farming, but also venturing into artisanal products and other entrepreneurial initiatives. This willingness to explore and embrace new ventures reflects an openness to innovation and a recognition of the need for economic diversification, essential components of an entrepreneurial mind- and skillset. The ability to identify and exploit opportunities beyond conventional practices demonstrates a forward-thinking orientation among entrepreneurs.

Moreover, the entrepreneurial mind- and skillset is evident in the emphasis on value addition and the integration into diverse market chains. Entrepreneurs in the region are not merely content with primary sector activities; instead, they actively seek ways to enhance the value of their products and services. This commitment to value-added strategies aligns with the entrepreneurial mind- and skillset's core principles of creating distinctive offerings and maximizing their market appeal. The successful integration into diverse market chains reflects an entrepreneurial approach that goes beyond local markets, showcasing an awareness of broader economic dynamics and a strategic mindset to position products at regional, national, and even international levels. Overall, the entrepreneurs demonstrate a resilient and forward-looking entrepreneurial mind- and skillset, leveraging their local assets and community capacities to navigate challenges and contribute to the region's sustainable development.

Some academic investigations shed light on the innovation and entrepreneurial strides within Dota. One notable study by [Villalobos et al. \(2020\)](#) conducted an inventory of goods and services with articulation potential to boost Dota's local economy. Additionally, [Avendaño et al. \(2022b\)](#) undertook an extensive exploration involving the identification, characterization, and spatial analysis of economic entrepreneurship typologies in the region. These academic inquiries collectively reveal a nuanced picture of Dota's economic landscape. Contrary to the historical reliance on the primary sector, particularly in coffee production, recent developments indicate a clear evolution in the entrepreneurial movement within the county. The implementation of product and technological innovation, rooted not only in local resources but also in a diverse array of approaches, underscores this transformation. The heterogeneity of these innovations is highlighted in the various entrepreneurial typologies identified, such as handicrafts, integral farming and food production, coffee micro-mills,

gastronomic offer, lodging, tourism and recreation, as well as complementary services.

Likewise, in Turrialba, previous research indicates clear tendencies of innovative practices. [Eissler \(2015\)](#) investigated innovation characteristics in smallholder coffee farmers of the region and identified the importance of access to resources like education and training or technologies and community as a crucial support network. [Blanco & Riveros \(2005\)](#) investigated the case of food routes of the Turrialba cheese and stressed the innovative potential of agritourism activities in this sector. More recently, [Candelo et al. \(2019\)](#) investigated the benefits of coffee tourism in Costa Rica, including the case study of Naturalba, a small producer from Turrialba. Results stress the importance of diversification for business continuation and development, farmers' empowerment and cooperation as well as sustainability aspects on an environmental, social and economic level. Similar to the case of Dota, these results suggest that an entrepreneurial transformation shifting the region's strong focus on traditional Turrialba cheese and coffee production towards a diversification of products and services has taken place, including gourmet food items, gastronomic offer, or tourism, among others, yielding great potential to the region.

This diversity in entrepreneurial initiatives not only enriches the regions' economic fabric but also contributes significantly to the promotion of the communities' sustainability. The integration of these varied typologies reflects a multifaceted and holistic approach to economic development, aligning with the broader perspective on innovation observed in the region. As Dota and Turrialba embrace innovation across different sectors, they will foster resilience and adaptability, key elements in promoting sustainable growth and community well-being. The prevalent entrepreneurial mind- and skillset serves as a facilitator for sustainability transition within the community. The distinctive characteristics of Dota's entrepreneurs, such as their capacity for innovation, adaptability, and proactive approach to economic development, as well as their awareness towards the importance of environmental conservation, align with the principles of sustainability transition. By diversifying their economic activities and venturing into artisanal products, entrepreneurs in Dota and Turrialba showcase a willingness to explore new ventures, reflecting an openness to innovation and a recognition of the necessity for economic diversification – essential

components of a sustainability transition. Furthermore, the emphasis on value addition and integration into diverse market chains demonstrates a commitment to creating distinctive offerings with broad market appeal. This strategic mind- and skillset not only positions products at various levels, from local to international markets, but also showcases an awareness of broader economic dynamics. The entrepreneurial mind- and skill set thus becomes a driving force in fostering a transformative shift towards ecological resilience, social equity, and economic prosperity – the core tenets of sustainability transition.

Discussion and Outlook

Commencing with a systematic exploration, the following section delves into the inherent variables within the producer-consumer networks, subjecting them to scrutiny across geographical, collective, and entrepreneurial dimensions. Each variable is rigorously identified and defined, laying the foundation for a comprehensive understanding of the intricate interplay shaping the sustainability landscape in these milieus (see table 1). The subsequent exploration delves into the nuanced interpretation of these variables within the unique contexts of Dota and Turrialba, unraveling the localized intricacies that influence the sustainability trajectory. Furthermore, the discussion critically evaluates the implications of these producer-consumer networks as drivers of sustainability transition, shedding light on the far-reaching consequences and potential synergies that emerge from these dynamic networks, contributing to the broader discourse on sustainability transition.

Table 1. Variables and implications of Dota & Turrialba’s producer-consumer networks as drivers of sustainability transition

Level	Variable	Definition	Dota	Turrialba	Implications
Geographical	Resource Endowment	Set of spatial or spatially bound resources uniquely available to entrepreneurs operating in the local spatial context (Müller & Korsgaard, 2018).	Diverse altitudinal gradients including varied ecological life zones, sustaining the cultivation of diverse agricultural produce, such as premier coffee production (including the Tarrazú certification); extensive coffee appellation of origin environmental protection measures, and a strong potential for community-based rural tourism.	Fertile volcanic soils with varying topography supporting diverse agricultural production, such as sugar cane and premier dairy production (including the Turrialba cheese appellation of origin certification), complemented by access to educational resources like CATIE and UCR, together forming unique opportunities for entrepreneurial ventures.	Resource endowments of Dota and Turrialba facilitate sustainable shifts by enabling diverse eco-friendly ventures. Both counties represent rural innovation niches based on local resources, depicting fertile scenarios with strong potential for driving rural development towards sustainability.
	Spatial Bridging	Way in which entrepreneurs connect their local economies with national and global contexts or flows (Müller & Korsgaard, 2018).	Achieved through the individual initiatives of entrepreneurs, there is limited institutional support aimed at reducing supply chain flows and promoting the positioning of local products in various markets, thus emphasizing the reliance on entrepreneurs' independent endeavors to connect Dota's products beyond local boundaries.	Turrier network connects local producers directly with national markets, enabling consumers to support and access fresh, artisanal, and safe products while recognizing and promoting the origin and efforts of Turrialba's local ventures and entrepreneurs on a national scale.	Spatial bridging in Dota relies on individual entrepreneurial efforts, lacking institutional support, productive chaining, and producer/consumer connectivity. Turrialba's model, via an online platform, showcases local products nationally, aiding sustainability. Dota's local-national connection can benefit from the experience of the Turrier network, strengthening eco-friendly rural development via enhanced consumer-producer links.

Level	Variable	Definition	Dota	Turrialba	Implications
Collective	Community Engagement	Fostering active participation, collaboration, and interaction among local stakeholders, producers, and consumers to collectively support and enhance sustainable economic activities and relationships (PACE & NEI, 2019).	The Vive Dota network was conceived from a series of participatory activities amongst entrepreneurs to identify community capitals and strengthen synergies. Its strong reliance on the Municipality of Dota as its original propeller and organizer has provided initial support and guidance, though this dependency presents challenges due to the changing political landscape and a marked lack of supporting financial resources and business skills, thus impacting the network's stability and continuity over time.	The privately owned and managed Turri cr network facilitates direct connections between rural entrepreneurs and metropolitan consumers while emphasizing proximity, sharing entrepreneurs' stories, fostering ties with the municipality and other local institutions, streamlining innovation, shortening food supply chains, and promoting social sustainability through local stakeholder involvement. Integrating local coordinators with rural entrepreneurs to communicate the importance of digital and innovative channels will solve mistrust of private efforts.	In Dota, strong community ties rely on municipal support but face challenges due to political shifts and resource constraints, affecting stability. UNA supported small enterprises by facilitating participatory workshops and field visits, fostering synergies, collaboration, research, and coordination with local stakeholders to enhance products, services, and project management knowledge. The Turri cr network fosters direct rural-urban connections, innovation, and sustainability, yet may lack broader institutional support and diversified entrepreneurial participation. Both regions show potential for enhancing sustainability transition but grapple with dependency and resource limitations impacting continuity and scalability, thus presenting certain degrees of community engagement but not meeting up to its potential as a driver for sustainable transition.
	Network Embeddedness	Integration and involvement of entrepreneurs within a local producer-consumer network, influencing innovative activities while presenting clear organizational and coordination mechanisms (Klyver et al., 2008; Boxu et al., 2022).	The Vive Dota network faces challenges regarding the clarity of organizational structure and coordination mechanisms among stakeholders. Additionally, the network faces a deficiency in having an online platform to facilitate broader market reach and connectivity among its participants, both producers and consumers.	The turri cr platform faces challenges in meeting producers' marketing and business needs. There is a need to strengthen partnerships with internal or external stakeholders to understand available resources that could support rural entrepreneurs.	Network embeddedness lacks clarity in Dota's Vive Dota network. Integration and coordination gaps hinder contributions and momentum towards sustainability transition. Clear organizational structures and an online platform are vital for broader market connectivity and innovative, sustainable practices among stakeholders. In order to meet the marketing and business needs of the producers, the Turri cr network recognizes the importance of establishing stronger connections with local stakeholders. It is not feasible for the network to handle everything independently, which is why they intend to collaborate with service entrepreneurs, such as photographers, videographers, designers, and accountants. This partnership will enable them to gather valuable information and enhance the products of the entrepreneurs, which, in turn, will create job opportunities in the region.

Level	Variable	Definition	Dota	Turrialba	Implications
Entrepreneurial	Entrepreneurial Typologies	Categorization of the different types of ventures or entrepreneurial initiatives that take place in a specific spatial context (Avendaño et al., 2022b).	Handicrafts, integral farming and food production, coffee micro-mills, gastronomic offer, lodging, tourism and recreation, as well as complementary services.	The Turri.cri platform supports a series of entrepreneurs related with artisanal, innovative and traditional gastronomic products such as dairy goods, beverages, coffee, sweets, gourmet, and sauces.	The heterogeneous mix of ventures reflects innovation across artisanal, gastronomic, and traditional sectors, key in propelling the transition toward sustainable practices.
	Entrepreneurial mind- and skillset	Abilities to adapt to and act under uncertainty, paired with skills like opportunity spotting, innovative approaches, critical thinking, and effective communication for successful entrepreneurship development (Kuratko et al., 2021; Naumann, 2017)	Local entrepreneurs demonstrate adaptability, innovation, proactive venture development and aggregate value to local resources, including a strong environmental consciousness, driving a transformative shift towards sustainability transition.	The network and its members display a multifaceted approach that emphasizes diversification, innovation across various sectors such as dairy goods and gourmet food, fostering marketing collaboration, recognition of local entrepreneurship efforts, and sustainable practices, contributing to the region's economic dynamics.	The Entrepreneurial Mindset in Dota and Turrialba, evident through adaptability, innovation, collaboration, and sustainability practices, catalyzes a sustainable shift. By leveraging local resources, fostering diverse ventures, and emphasizing eco-consciousness, both regions' entrepreneurial mindset reflects what is necessary to become an important driver towards sustainability transition, amplifying economic dynamics and promoting eco-friendly rural development.

Own elaboration.

Geographical level

The regions of Dota and Turrialba harbor a wealth of untapped social and natural resources, ripe for sustainable entrepreneurial endeavors. Geographically diverse and abundant in natural resources, these areas provide fertile ground for entrepreneurial innovation anchored in sustainable practices. Delving deeper into these regions unveils not only their scenic landscapes but also their cultural wealth, offering a trove of lesser-known traditions and practices waiting to be transformed into entrepreneurial ventures; in words of [Villalobos et al. \(2020\)](#). The depth of heritage and robust community bonds within these areas serves as a wellspring of cultural capital, laying the groundwork for the creation of authentic, culturally rooted products and immersive experiences. Exploring and harnessing these lesser-known cultural practices could potentially cultivate new economic avenues that align with sustainability goals, fostering a harmonious blend of tradition and innovation, according to [Kamara \(2022\)](#). Beyond cultural capital, these regions display inherent social networks embedded within communities, forming a reservoir of social capital vital for collaborative entrepreneurship. Additionally, the rich biodiversity prevalent in these areas stands as a form of natural capital, offering a myriad of unexplored possibilities for sustainable ventures. [Drover \(2017\)](#) explain strategic partnerships and funding opportunities present avenues to access financial capital, further fueling entrepreneurial endeavors. Together, these diverse capitals encapsulate the multifaceted wealth awaiting exploration by entrepreneurs, providing a comprehensive landscape of untapped resources conducive to sustainable innovation and growth within Dota and Turrialba.

To grasp the full potential that lies within these regions, a systematic analysis of their inherent capital related to different capital forms could be highly beneficial to not only understand existing but also currently lacking forms of capital. Moreover, forging collaborative partnerships between local entrepreneurs and esteemed academic and educational institutions such as the National or Costa Rican University, INA or CATIE can catalyze a knowledge exchange crucial for propelling product innovation and fostering sustainable transitions. By capitalizing on these institutional collaborations, entrepreneurs can access invaluable resources, guidance, and mentorship, solidifying the foundation for a robust entrepreneurial ecosystem rooted in sustainability principles.

The evolving entrepreneurial landscape in Dota and Turrialba reflects a strategic pivot toward diversifying products and integrating into broader market chains. This strategic shift emphasizes the value addition to primary sector produce and the promotion of artisanal goods derived from local resources. Notably, the commitment to adopting eco-friendly farming techniques and active conservation efforts underlines a dedication to sustainability transitions. These endeavors resonate with the ethos of ecological resilience, positioning these regions as potential vanguards of sustainable entrepreneurship. By fostering economic development through these ventures, not only is local economic growth bolstered, but a framework for broader community sustainable development is established, advocating for inclusive growth and equitable distribution of benefits across society.

Furthermore, there is great potential in the regions learning from each other's strengths. For example, the producer-consumer network in Dota can glean insights from Turrialba's model in diminishing spatial barriers and forging robust consumer-producer connections. Turrialba's *turri.cr* network effectively leverages online platforms to bridge geographical gaps, allowing direct interaction between rural entrepreneurs and consumers in metropolitan areas. Emphasizing the development of a similar online platform, Vive Dota could transcend geographical constraints, enabling broader consumer access to local entrepreneurial activities. By adopting storytelling elements and multimedia content showcasing the unique narratives behind products, Vive Dota can strengthen emotional ties between consumers and producers, enhancing authenticity and trust. Integrating certifications for sustainable practices, akin to Turrialba's Bandera Azul (*Blue Flag*) label, further fortifies consumer confidence and aligns with evolving consumer preferences, empowering Dota's entrepreneurs to expand their market reach and foster sustainable entrepreneurship beyond geographical boundaries. This potential reciprocal learning and knowledge exchange is not limited to the regions of Dota and Turrialba but could extend beyond that to other regions in Costa Rica or Latin America.

Collective level

Beyond individual entrepreneurial endeavors, the strong potential of both the Dota and Turrialba regions can be found in the embeddedness and engagement of entrepreneurs in the community. Characteristics

of these communities include interaction, collaboration, and involvement of entrepreneurs with each other and with other local stakeholders. Thus, promoting the ties and capacities of the community could be another key factor in supporting local development. Hyman (2002) says this process of community building first involves detecting assets, set-ups and capitals that are beneficial for the community. In a next step, community building aims to strengthen these capitals by starting from where the communities currently are. Hence, community building relies strongly on empowerment and collaboration at eye level to arrive at an integration of different resources within the community that enhances the community as a whole, in words of Beckley et al. (2008). For its part, Banks & Shenton (2001) explain building the capacity of communities can involve measures such as training, resource identification and development or initiatives to identify specific capital and synergies as well as enhance collaboration.

In the context of Dota and Turrialba, the sustainability-driven entrepreneurial pursuits heavily rely on the entrepreneurs' involvement in distinct producer-consumer networks like Vive Dota and *turri.cr*. These networks aim to facilitate innovative economic activities while promoting sustainability transitions. However, challenges persist in organizational frameworks, resource availability, and integrating external expertise. Vive Dota, in partnership with the Municipality of Dota, aims to establish a cohesive local network, but faces ambiguities in organization and stakeholder responsibilities. Strengthening the organizational structure is crucial to enhance innovation and entrepreneurship. In contrast, *turri.cr* in Turrialba creates direct connections between local entrepreneurs and consumers, bypassing intermediaries, and promoting social and ecological sustainability. Despite their strides, resource limitations hinder the networks' impact, emphasizing the need to address resource deficiencies and incorporate extra-regional expertise for sustainable entrepreneurship in both regions.

Addressing the challenges of both Dota and Turrialba and incorporating external expertise is vital for fostering sustainable entrepreneurship in both regions, highlighting the importance of clear organizational frameworks, academic and institutional support, as well as adequate resources (e.g., time or financial resources) for network effectiveness and entrepreneurial capacity building.

According to [Manzo & Perkins \(2006\)](#), important leverage points to further develop community capacity could be found in strengthening social ties and an overall sense of community by fostering social cohesion as well as sensitizing for the great individual and collective value of strong communities. The same authors additionally propose that community capacity can also include political dimensions relating to opportunities for participation, empowerment, involvement in decisions or political initiatives and agencies to support the community. These different leverage points could be engaged to foster community building both in Dota and Turrialba while focusing on meeting the communities where they currently are in terms of specific needs and challenges.

Entrepreneurial level

The success of business endeavors is contingent on the entrepreneurs' mind- and skillset providing them with proficiency and attitudes that are beneficial for their entrepreneurial journey. According to [Naumann \(2017\)](#) and [Daspit et al. \(2023\)](#), this mind- and skillset relates to being able to act and make decisions under uncertain conditions, searching and leveraging opportunities, driving innovative approaches, competent networking and communication as well as prior knowledge. While entrepreneurs in both regions exhibit certain characteristics of an entrepreneurial mind- and skillset, other attitudes and skills decisive for entrepreneurial success might still be lacking. Therefore, to foster sustainable development of entrepreneurial ventures, both regions could profit strongly from initiatives aiming to evolve entrepreneurs' mind- and skillset. These initiatives could relate to entrepreneurial education facilitating courses on cognitive skills relevant for entrepreneurship, positive attitudes towards becoming an entrepreneur or specific skills and competencies for entrepreneurial careers; in words of [Larsen \(2022\)](#). Later, [Naumann \(2017\)](#) and [Lynch & Corbett \(2023\)](#) explain that in fact, access to entrepreneurial education prior to and in the process of starting entrepreneurial endeavors has been related to lower failure rates of these businesses.

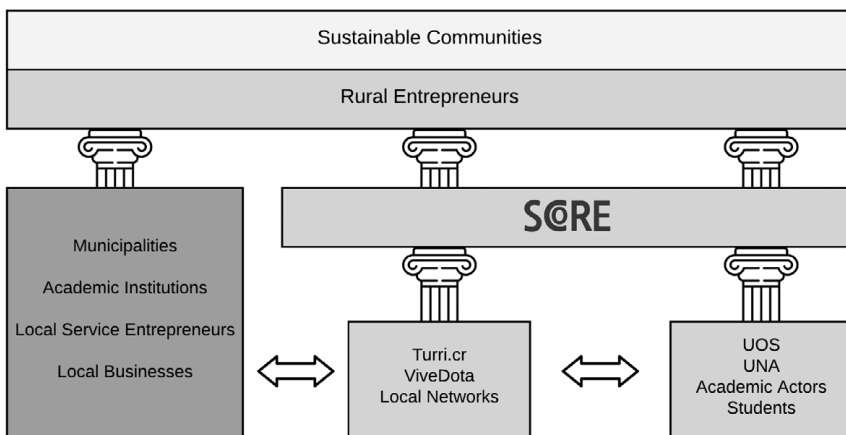
According to [Alsos et al. \(2014\)](#), it has been suggested that rural development depends on extra-regional resources supporting entrepreneurs with specific knowledge and skills. [Sancho \(2010\)](#) suggests that successful initiatives to support entrepreneurs include linkage of the local community

with wider regions, organization of networking opportunities and tailored support for specific entrepreneurs answering to the crucial need for certain essential skills. Therefore, equipping entrepreneurs with the necessary resources and skills can catalyze not only the development of individual entrepreneurs, but on that basis promote sustainable rural development in the whole of Costa Rica. This calls for innovative ways of building networks for entrepreneurs and acquiring the missing skills despite entrepreneurs' limited financial and temporal resources.

***sCoRe* as an example project**

The *sCoRe* project (Sustainable Communities through Rural Entrepreneurship) stands as an exemplary initiative designed to foster collaboration between rural entrepreneurs in the counties of Dota and Turrialba and students from Costa Rican and German universities. With a primary focus on enhancing the local networks of producers and consumers based on student participation according to their formation specialties, *sCoRe* also aims to facilitate cultural and educational exchange. The following discussion describes *sCoRe*'s holistic approach to stimulating collaboration, creating lasting impacts at various levels of engagement related to sustainability transition in these particular rural contexts. For an overview of the structure of the project, (see figure 3).

Figure 3. The *sCoRe* project: structure and stakeholders.



Own elaboration.

On the geographical level, *sCoRe* promotes spatial bridging by bringing together entrepreneurs and consumers across different locations. In Turrialba, this spatial bridging is fostered by supporting the network *turri.cr* in their efforts to connect local producers with potential consumers from the Central Valley area. These efforts close the geographical gap between the groups of entrepreneurs producing local, sustainable and artisanal products and consumers who look for these products while supporting the preservation of natural and cultural capital. The project *sCoRe* supports *turri.cr* by providing additional resources, academic support and an exchange of experiences with other networks. Moreover, *sCoRe* plays a pivotal role in fostering rural entrepreneurship within the Dota region by actively participating in the enhancement of the organizational framework of the ViveDota network. Simultaneously, it undertakes the strategic task of conceptualizing and structuring the digital platform, recognizing its significance in facilitating spatial connections between entrepreneurs of varied typologies within Dota and potential consumers situated in disparate locations.

On the entrepreneurial level, both regions demonstrate a need of extra-regional resources for entrepreneurs and the respective networks. Here, *sCoRe* focuses on establishing a program to connect selected local entrepreneurs from the existing networks in Costa Rica's Dota and Turrialba regions with student tandems of Costa Rican and German universities, particularly the University of Osnabrueck (UOS) and the Universidad Nacional (UNA). The goal of the program is for students to directly provide specific resources to entrepreneurs or networks, which benefit from these resources for business development. To ensure long-term effects of the program, special attention is paid to establishing structures that allow for independent continuation of activities as well as creating a collective memory with a sustainable digital structure in which knowledge is secured and connected. By transferring students' knowledge to newly arrived students via an extensive debriefing and a common knowledge base, it is ensured that entrepreneurs can benefit continuously from the program. Moreover, providing entrepreneurs with long-term access to resources such as subject-specific sources of knowledge is essential. This includes the long-term vision that the support by various cohorts of students enables the producers to develop further financial resources, eventually reaching a point where they can outsource the respective activities, rendering the students' support

mute. However, through a common knowledge base, they are still able to access specific resources. In turn, students benefit from the practical insights with experienced entrepreneurs and develop their professional and intercultural competencies. For this purpose, students are selected based on their field of study, their Spanish language proficiency and further competencies and experiences relevant to the project. An extensive preparation, mentoring and guidance of students during the entire practical experience can be regarded as a crucial success factor for the program. Whether local entrepreneurs can fully benefit from the students' support depends to a great extent on adequate preparation and guidance of the students during their practical experiences. Intercultural reflection is needed on various levels of culture, such as national cultural aspects or urban vs. rural living spaces. Therefore, preparation workshops focusing on intercultural training as well as input on entrepreneurship are conducted with the students before their stay as part of the onboarding process.

On the collective level, sCoRe aims to contribute to strengthening collaboration and linkage within the entrepreneurial networks, bridging the gap between different actors in the regions, and contributing to community-building and harnessing synergy effects. Through the program connecting students with entrepreneurs, mutual connections and exchange within and between the regions are encouraged. This is achieved for example by networking events or joint workshops, as well as the students' presence and involvement in activities in both regions, thereby transferring experiences and knowledge. Moreover, the area of application of the students' support involves a more systematic approach to current capital, synergy and collaboration opportunities within the networks. Based on this systematization, efforts regarding community building and engagement are taken.

Conclusion

Sustainable development of rural regions holds great potential in driving a sustainability transition and furthering development not only for the specific regions but also on a national and supra-national level. Local entrepreneurs can be regarded as key drivers of this rural development by igniting innovation and contributing to development that can be considered as ecologically, economically, and socially sustainable. By comparing case examples of the two Costa Rican regions of Dota and Turrialba on

a geographical, entrepreneurial and collective level, we identified current capitals and challenges of the regions' communities. Specifically, we highlighted how the entrepreneurial activities and their embeddedness in consumer-producer-networks as well as the geographical context holds great potential for sustainable rural development and what the two regions can gain from each other in a mutual learning process. The integrative nature of this study, drawing upon insights from geographical sciences and organizational psychology, emphasizes the importance of interdisciplinary research, approaches, and discussions in comprehensively understanding and advancing sustainable rural development paradigms, as well as contributing to the broader discourse on sustainability transition in rural contexts.

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