



# Analyzing social innovation as a process in rural areas: Key dimensions and success factors for the revival of the traditional charcoal burning in Slovenia

Todora Rogelja<sup>a,\*</sup>, Alice Ludvig<sup>b</sup>, Gerhard Weiss<sup>b</sup>, Jože Prah<sup>c</sup>, Margaret Shannon<sup>d</sup>,  
Laura Secco<sup>a</sup>

<sup>a</sup> University of Padova, Department of Land, Environment, Agriculture and Forestry (TESAF), Via Dell'Università 16, 35020, Legnaro (PD), Italy

<sup>b</sup> University of Natural Resources and Life Sciences Vienna, BOKU and EFI- European Forest Institute Forest Policy Research Network, Feistmantelstrasse 4, 1180, Vienna, Austria

<sup>c</sup> Slovenia Forest Service, Ljubljana Central Unit, Večna Pot 2, 1001, Ljubljana, Slovenia

<sup>d</sup> Faculty of Environmental and Natural Resources, Institute of Environmental Social Sciences and Geography, University of Freiburg, Tennenbacher Str. 4, 79106, Freiburg, Germany

## ARTICLE INFO

### Keywords:

Forestry  
Rural communities  
Reconfiguration of practice  
Charcoal land  
In-depth empirical study

## ABSTRACT

In rural areas, the social innovation (SI) process emerges as a response to negative socioeconomic trends or gets triggered by open windows of opportunity, bringing solutions that revitalize the rural fabric through the voluntary involvement of the local community. As such, SI is increasingly recognized as a tool to support rural development and transformative change. Regardless of increased interest and research, there are still calls for empirical evidence on the SI process, its effects, and the success factors. Our study responds to this research gap by providing empirical evidence on the 20 years of the development of a remote rural area – Charcoal Land – that sparked the revival of traditional charcoal burning in Slovenia. To better understand how such processes roll out on the ground, we conducted the case study, using a combination of document reviews, key informant interviews, semi-structured interviews, and participatory observations. Using event sequence analysis, we mapped key events in the development of the Charcoal Land and distinguished five key dimensions (Context, Trigger, Agency, Phases, and Effects) based on a framework for analyzing SI as a process of SI. Then, we inductively recognized three key success factors that were crucial for the revival of traditional charcoal burning in Slovenia: the embeddedness of innovators in multiple networks, strategic use of narratives for obtaining resources, and legitimization by the local community and public actors. Our results indicate that the development of the Charcoal Land can be regarded as an SI process that sparked the reconfiguration of traditional charcoal burning and its revival in Slovenia. The voluntary engagement of various actors (e.g., charcoal burners, foresters, local authorities) led to the formation of evolving agencies with the capacity to repetitively rearrange around common projects and goals. Through diversification of activities, traditional charcoal burning started being performed small scale and for educational, touristic, culinary, cultural, and commercial purposes. Over the last 20 years, traditional charcoal burning scaled up and out of the local territory of the Charcoal Land to other geographical and policy levels. Due to three success factors, and through institutionalization, traditional charcoal burning became recognized as an intangible cultural practice, as well as monitored forestry and agricultural practices.

## 1. Introduction

EU policies and programs increasingly recognize SI as an important tool for rural areas to develop new solutions to respond to wicked problems and improve local living conditions at the grassroots level. Additionally, an emerging body of literature stresses the relevance of SI in rural areas (Banerjee et al., 2021; Bock, 2016; Bosworth et al., 2016;

Lindberg, 2017; Neumeier, 2012), highlighting that SI “represents an important pillar of sustainable rural development processes” (de Fátima Ferreiro et al., 2021, p. 2). In rural development, SI has the potential to promote the reconfiguration of local resources through bottom-up processes on the local level and connect them with established strategic aims and instruments on the policy level (Nemes, 2005, p. 1). As such, SI is simultaneously dependent on local resources and participation, and

\* Corresponding author.

E-mail address: [todora.rogelja@unipd.it](mailto:todora.rogelja@unipd.it) (T. Rogelja).

<https://doi.org/10.1016/j.jrurstud.2022.12.030>

Received 21 June 2022; Received in revised form 13 November 2022; Accepted 19 December 2022

Available online 13 January 2023

0743-0167/© 2023 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

relations among actors across geographical and organizational boundaries (Copus et al., 2017; Jungsberg et al., 2020). By building local resources and capacities and connecting them with wider structures and environments (Katonane Kovacs et al., 2016; Neumeier, 2017), SI becomes a means to satisfy local needs and simultaneously create economic value (Edwards-Schachter and Wallace, 2017; Moulart et al., 2017; Mulgan et al., 2007; Nicholls et al., 2015; Ubels et al., 2019).

Studies on SI processes in rural areas focused mostly on various aspects of SI governance, usually addressing one or several concepts: place-based context (i.e. Baker and Mehmood, 2013; Olmedo et al., 2021; Steiner et al., 2021), policy conditions (i.e. Ludvig et al., 2021a; Lukesch et al., 2020; Rogelja et al., 2018; Živojinović et al., 2019), the ways of SI development (i.e. Sarkki et al., 2021; Vercher et al., 2022; Chen et al., 2022), actors and agency (i.e. Vercher, 2022; Jungsberg et al., 2020; de Fátima Ferreira et al., 2021; Nordberg et al., 2020), as well as SI effects and success factors (i.e. Govigli et al., 2020; Castro-Arce and Vanclay, 2020; Steiner et al., 2021; Ravazzoli et al., 2021; Novikova, 2022).

What findings of the previous studies have in common is that the SI process is conditioned by civil self-organization and voluntary participation (Bock, 2016; Sarkki et al., 2019b; Ubels et al., 2019). Through participation and deliberation (Kruger and Shannon, 2010; Shannon, 1989), SI encourages collaborative local linkages and collective learning cultures (Sarkki et al., 2019a), creating new relational values (García-Llorente et al., 2018; Georgios and Barraf, 2021; Sarkki et al., 2019a). Newly created networks act as platforms for the exchange of ideas and the development of innovative solutions. Through the institutionalization of innovative capacities, new relations and values are built across wider spatial and socio-political environments (Richter and Christmann, 2021). Those new structures could coexist with the traditional ones or replace them with new governance arrangements (Pisani et al., 2020), contributing to sustainable development and social change (Bock, 2016; Howaldt et al., 2018). Indeed, scholars of transformative innovation (Avelino et al., 2014.; Castro-Arce and Vanclay, 2020; Haxeltine et al., 2016) stress the transformative power of SI to create new agency that changes agendas and institutions. In this way, transformative SI influences “socio-political roles and routines, beliefs, knowledge, power flows, and resources” (de Fátima Ferreira et al., 2021), and thus is a normative process, that can result in all shades of positive as well as negative transformations (Avelino et al., 2019).

Due to the diversity in the research of SI in rural areas, the research field is fragmented and dispersed between several fields (Bataglin and Kruglianskas, 2022). How the SI process rolls out “on the ground”, and achieves its transformative effects in practice is just one of several significant gaps to address. Firstly, scholars are still calling to provide more empirical evidence on the SI processes (Klůvanková et al., 2018; Richter and Christmann, 2021; Vercher et al., 2022), so that success factors can be identified. Secondly, most studies until now tend to deeply focus on one or a few aspects of SI (i.e. Coelho de Souza et al., 2021; Henderson et al., 2020; Ludvig et al., 2019; Lukesch et al., 2020; Richter and Christmann, 2021). Although previous studies make valuable contributions to the state-of-the-art knowledge on SI, there is still a lack of empirical studies that follow SI processes long-term or on several levels. There are even fewer studies that provide such long-term longitudinal analysis in in-depth detail, capturing not just the emergence and reconfiguring, but also consolidation and institutionalization of forest-based SI initiatives, as well as their effects and success factors.

We hope that our study contributes to filling these identified gaps by doing a longitudinal analysis of an in-depth case study (from the emergence through scaling to institutionalization of the SI) by applying a comprehensive analysis framework with five SI dimensions (context, trigger, agency, process of reconfiguration, effects). With the aim to better understand how the SI process rolls out on the ground to achieve positive effects we provide empirical evidence on the five SI dimensions (deductively derived) and inductively derive success factors for the SI.

Section two briefly presents five dimensions of the framework for analyzing SI in marginalized rural areas (based upon Secco et al., 2017),

while section three introduces the materials and methods used. Section four answers to the research question by presenting deductive results on the Charcoal Land development, structured according to the five key dimensions of the framework. Section five reflects the inductively derived findings on three key success factors of the Charcoal Land initiative. Finally, section six discusses the findings and concludes with reflections on the limitations of the study and avenues for future research.

## 2. Framework for analyzing social innovation as a process

There are numerous approaches to the study of SI and related definitions (Cajaiba-Santana, 2014; Howaldt et al., 2018; Howaldt et al., 2014; Hubert and Bepa, 2010; Mulgan et al., 2007; Moulart et al., 2017; Polman et al., 2017; Ravazzoli et al., 2021). SI can be “broadly seen as activities, practices, and approaches that help communities achieve goals where previously needs were unmet or unrealized” (Daniel and Jenner, 2022). The European Union Horizon 2020 Project “Social innovations in marginalized rural areas – SIMRA” (<http://www.simra-h2020.eu/>) embraced both the process and product view of state-of-the-art definitions (Secco et al., 2017), proposing that SI can be defined as

*“the reconfiguring of social practices, in response to societal challenges, which seeks to enhance outcomes on societal well-being and necessarily includes the engagement of civil society actors.”* (Polman et al., 2017, p. 12)

Building on the existing literature (Dalla Torre et al., 2020; Klůvanková et al., 2018; Secco et al., 2017) and following the SIMRA definition of social innovation (Polman et al., 2017, p. 12), we understand forest-based SI as

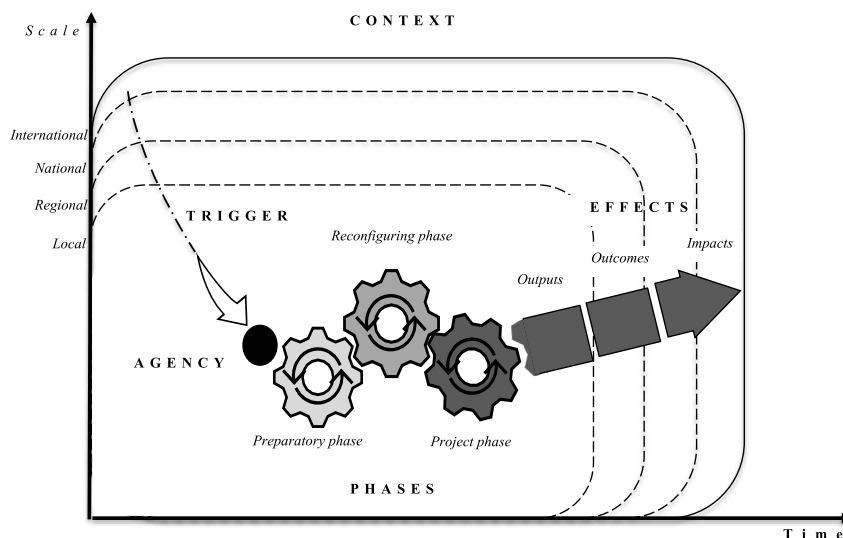
*the process of the change in social practices related to forest-based resources triggered by locally manifested yet global issues or windows of opportunity and driven by the voluntary, collective agency with the aims to positively influence collective well-being.* (Own elaboration)

Following the SIMRA framework, our analysis approach highlights five key dimensions (Context, Trigger, Agency, Process of reconfiguration, Effects) and respective components (preparatory, reconfiguring, and project phase; outputs, outcomes, impacts) of SI as a process, as illustrated in Fig. 1.

SI is embedded in context, which relates to various spatial-temporal ecosystems with their social, political, and economic settings. It typically includes the policy framework conditions, formal and informal governance and institutional arrangements, as well as tangible (e.g., raw materials, existing infrastructures) and intangible resources (e.g., culture, identity) (Secco et al., 2017). On the local level, this context is perceived by actors/agents in the SI process, as “all the tangible and intangible resources that are available, accessible to, recognized and used by actors/agents (or conversely, that hinder actors)” (Secco et al., 2017, p. 45).

SI process starts with a trigger. This can be a social, environmental, economic, or other complex problem, that was not been successfully solved before (Secco et al., 2017). It is usually embedded in higher contextual levels and has negative effects on the local level, manifesting in terms of unsatisfying social, environmental, and economic conditions and needs. Actors on the local level are triggered by a discrete event or situation that makes an impetus for them to exercise agency - act to improve the situation “on the ground” and contribute to collective well-being. In certain occasions, actors can be triggered by the “open doors of opportunity”, that are perceived as a window for action and persuasion of common goals.

Agency refers to the intentional actions of agents within and against social structures (Bandura, 2001; Emirbayer and Mische, 1998; Hewson, 2010; Sewell, 1992). Although voluntary engagement of civil society (such as community members) plays a crucial role in the SI process, other actors (public, or market) are often a part of it as well (Butzin and Terstriepe, 2018; Dalla Torre et al., 2020; Richter and Christmann, 2021). SI agency represents a dynamic, distributed, and collective agency, as SI agents act intentionally for the ‘common good’ (not just a few individuals or



**Fig. 1.** Simplified representation of SI as a process including key dimensions (context, trigger, agency phases, and effects) and components (scale and time; preparatory phase, reconfiguring phase and project phase; outputs, outcomes, impacts) (Own elaboration based on Dalla Torre et al., 2020; Kluvankova et al., 2017; Ravazzoli et al., 2021; Secco et al., 2017).

organizations), voluntarily devoting energy and resources to common actions (Dalla Torre et al., 2020; Kluvanková et al., 2018; Slee et al., 2018). Scholars on transformative SI particularly call for the importance of the emergence, reconfiguration, and dissolution of agency in the SI process (Avelino et al., 2017; Haxeltine et al., 2016; Wittmayer et al., 2017).

Agents of SI are actors - individuals and organizations - who collectively share individual and collective values, ideas, willingness to act, reflexivity, and capacity for change towards SI (Secco et al., 2017, p. 51). Actors' specific values, visions, trust, willingness to act, reflexivity, and capacity for change influence how actors/agents seek to change practices in response to specific needs. In the SI process four types of actors can be distinguished: innovators have an idea that may be visionary but not necessarily applicable in practice given prevailing conditions; followers are the ones that take up the idea and make it acceptable, feasible, and often amplify and implement it in its initial stages; transformers adopt the idea early on and contribute to network change and growth; and implementers realize and consolidate the idea through projects (, p. 51 Secco et al., 2017).

The reconfiguration of social practices is the core of SI (Polman et al., 2017). It is the process of change of the behavioral patterns, through voluntary enacting of collective agency that aims to improve outcomes on societal wellbeing. Empirically, it can be observed as a bundle of activities that actors may carry out in collective action.

The process of reconfiguration starts with the preparatory phase. It includes all those activities that innovators (and their followers) carry out to prepare the ground for more systematic collective action for collective benefits. The preparatory phase begins with the emergence of agency when a small group of actors engage in collective action to co-develop and implement novel ideas. Novel ideas are usually imagined by the innovators, who also take preliminary activities for making things happen into practice. They are further picked up by followers, who together with the innovator creates a so-called clique. The clique further develops ideas and implements them through collective action (Górriz-Mifsud et al., 2018; Secco et al., 2017). As a few more actors (the followers) join they decide to “believe and take up the idea, and make it acceptable, feasible, and often amplify and implement it in its initial stages” (Secco et al., 2017, p. 49).

The preparatory phase leads to a process of changing of governance arrangements; networks or attitudes, which marks the second phase called reconfiguring of social practices. Social practices “refer to everyday practices and the way they are typically and habitually performed in

(much of) society” (Holtz, 2014, p. 1). Through this phase, the SI agency grows, by attracting more actors (the transformers), that test and consolidate the novel idea leading to changed practices. They manifest as new organizations, networks, or governance arrangements (Secco et al., 2017). “Changes in governance arrangements refer to formal institutions (as policies, laws, regulations, guidelines, codes, standards), as change and adaptation of governance and institutional arrangements in relation to the role of public entities and authorities in facilitating social innovation (both internally and externally)” (Secco et al., 2017, p. 56).

The project phase is composed of a project or projects with respective activities, procedures, and practices needed to implement and realize SI ideas in practice. In this stage, the implementers also join the SI initiative, acting regularly and producing effects (Secco et al., 2017). At this point, SI initiatives or projects can become institutionalized, in a way that new rules are established or existing ones are reaffirmed. Through SI projects the novel SI ideas are implemented and the activities may spread to higher levels of the system (Secco et al., 2017). This spreading of SI projects can happen over wider spatial, geographical scales (scaling-out), or over the administrative or social levels (scaling-up). Precisely at the local levels, scaling requires investment into networking, as well as flexible legislative instruments (c.f. Rogelja et al., 2018). On the case of Romania, (Ludvig, 2022) show how one of the keys for networking across and beyond regions is first and simply that others need to know about the SI activities in order to connect and learn from examples.

In the further developments SI generate effects in terms of outputs, outcomes, and impacts (such as relationships, collaborations, networks, institutions, and other new governance arrangements) (Górriz-Mifsud et al., 2018, p. 21). Outputs are the first, immediate, and often tangible results of SI initiative in terms of products, services, and capacities, that are delivered by and derived from SI. Outcomes are mid-term effects on the direct beneficiaries that often emerge over the mid-term, while impacts are long-term effects manifesting in behavioral changes that produce new routines, decisions, rules, and institutions at higher levels. Outputs and outcomes of SI initiatives in the long term lead to the improvements in nested social systems (impacts) that revitalize the rural fabric (Dalla Torre et al., 2020), and through time to an enhanced well-being of wider societal groups (Baker and Mehmood, 2013; Bock, 2016; de Fátima Ferreiro et al., 2021).

*“In this sense, social innovation should not be considered as a “neutral process”, i.e., just a change, rather, it should be considered for its capacity to lead to something new as compared with historical and/or recent*

trajectories in social action, thus being connected with transformability” (Dalla Torre et al., 2020, p. 5).

Trough institutionalization and scaling SI can positively or negatively manifest on various level and further influence SI development and broader societal groups. In this way, SI embraces development trajectories (Vercher et al., 2022) or reconstructive cycles (Sarkki et al., 2021) in terms that can either make the difference in system change or succumb to system reproduction (Pel and Bauler, 2014).

### 3. Material and methods

We conducted an in-depth case study of the revival of the charcoal burning practice in Dole pri Litiji (Central Slovenia) (Ludvig et al., 2019; Rogelja, 2019). The case study research method is “an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used” (Yin, 1984, p. 23). A single case study is the most appropriate method to study the same single case through time (Yin, 2009, pp. 46–51), thus suitable for studying the revival of traditional charcoal burning over 20 years.

Data collection and analysis were composed of four nonlinear, loosely organized, and iterative phases (Fig. 2): shallow and deep zooming in and shallow and deep zooming out (Nicolini, 2012). Zooming in focuses on “the details of the accomplishment of a practice in a specific place to make sense of the local accomplishment of the practice and the other more or less distant activities”. Zooming out expands

“the scope of the observation following the trails of connections between practices and their products” (Nicolini, D., 2009, p.120). This approach can provide “a convincing and defensible account of both the practice and its effects on the dynamics of organizing, showing how that which is local contributes to the generation of broader effects” (Ibid., p.121).

The research process started with the shallow zooming out phase. In this phase, we conducted the first key-informant interview and started a document review, familiarizing with the overall revival of the traditional charcoal burning in Slovenia. This was crucial for defining the central subject on which we focused in the zooming-in phase – the group of innovators and followers which we refer to as the Charcoal Land initiative. In the shallow zooming-in phase, we continued with key informant interviews and document review and started collecting additional data using semi-structured interviews. In this phase, we also started with participatory observations of the charcoal burning in the case study area. In the deep zooming-in phase, we completed the key informant and semi-structured interviews. We also completed the content analysis and conducted an event-sequence analysis to map all crucial events. Finally, in the deep zooming-out phase, we analyzed the development of the Charcoal Land initiative and compared it with the SI process. Based on that, we derived three key success factors. In each phase, a combination of data collection and analysis methods was used, as summarized in Table 1.

Through our analysis, three key factors that were crucial for the successful revival of traditional charcoal burning inductively emerged from the findings.

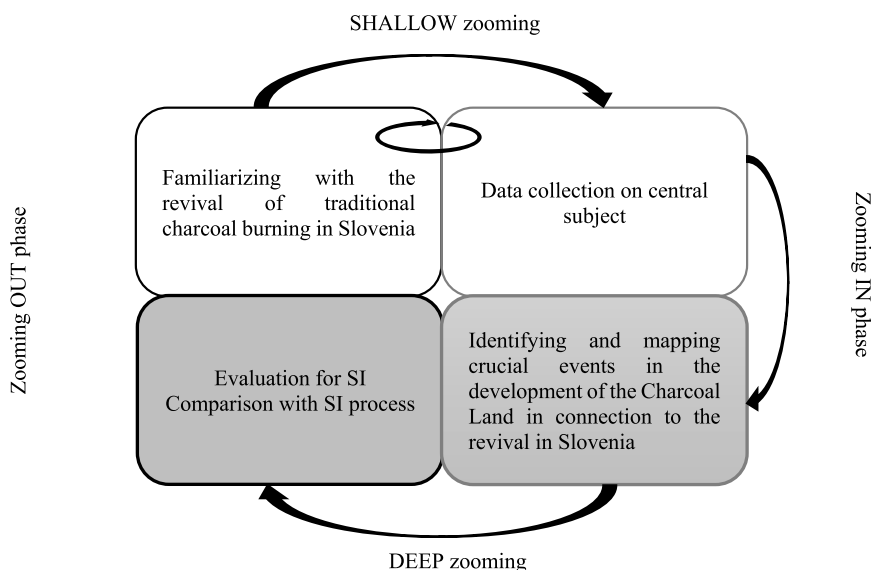


Fig. 2. Interrelations of zooming-in and zooming-out phases (Own elaboration based on Nicolini, 2012).

Table 1  
Summary of used data collection and analysis methods used in each zooming phase.

Zooming phase	Data collection methods	Time	Data analysis methods	Related to section
<b>Shallow out</b>	Key informant interviews (KII1)	2017	Content analysis	4.1. Context
	Document review (AD Id1-602)	2018		4.2. Trigger
<b>Shallow in</b>	Document review (AD Id1-602)	2018	Content analysis	4.2. Trigger
	Key informant interviews (KII2)	2018		4.3. Agency/Actors
	Semi-structured interviews (SSI1-10)	2018		4.4. Process
	Participant observations (PO 2017/18)	2017/2018		
<b>Deep in</b>	Key informant interviews (KII3-5)	2019	Content analysis	4.3. Agency/Actors
	Semi-structured interviews (SSI11-21)	2019	Event-sequence analysis	4.4 Process
	Participant observations (PO 2018/19)	2018/2019	Visual mapping	4.5. Effects
<b>Deep out</b>	–	2019	Narrative analysis	
			Assessment of SI dimensions and components	5. Key success factors
			Mapping of SI process	6. Discussion

Source: Own elaboration



3.1. Data collection

To methodologically triangulate our data (Denzin, 2017) we relied on four research methods: key informant interviews (KII), document review, semi-structured interviews (SSI), and participant observations (PO).

Key informant interviews (KII)<sup>1</sup> were conducted with the leader of the initiative five times during the first half of 2018 (KII 1–5). As the purpose was to let the key informant tell the story of the revival of the traditional charcoal burning in Slovenia, they were unstructured, with a minimum control of the informant’s response (Whitehead, 2005). The interviews lasted from 1 to 4 h and were recorded and transcribed. In the first interview, the key informant told the overall story of the revival of the traditional charcoal burning, contributing to the definition of Charcoal Land as a central subject. The second conversation focused on the identification of crucial events of the Charcoal Land initiative, while the following three conversations went into detail about each event.

Semi-structured interviews with other actors (SSI) are ones in which the researcher has a written list of guiding questions and topics that need to be covered but tries to maintain low control over the interview (Whitehead, 2005). During 2018–2019, the lead researcher conducted twenty semi-structured interviews – twelve with public actors, and eight with non-public actors (Table 2). Actors were interviewed to validate findings from document review and key informant interviews. The interviews lasted from 30 to 90 min. Fourteen interviews out of twenty

**Table 2**  
Overview of interviewed actors.

Type	Organization	Number of interviewees	Interview Id
<b>Public actors</b>	State Forest Service	4	KII1-5, SS11, SS17, SS19
	Agricultural and Forestry Chamber	2	SS14, SS114
	Municipality of Litija	4	SS110, SS111, SS119, SS120
<b>Non-public actors</b>	Development Center Litija	1	SS16
	Private Forest Owners Association	1	SS15
	Touristic Association of Slovenia	1	SS18
	Cultural Tourist and Recreation Center Radece	1	SS112
	Section for Preservation of Natural and Cultural Heritage/Charcoal burners’ Club	4	SS13, SS115, SS116, SS118
	Local Community Dole	2	SS113, SS117
	Cultural and Artistic Society Dole	1	SS12
<b>Total interviewees</b>		<b>21</b>	
<b>Total interviews</b>		<b>25</b>	
Unstructured, in-dept interviews		5	
Semi-structured interviews		20	

Source: Own elaboration

<sup>1</sup> The lead researcher had shallow professional acquaintance with the key informant before starting her Ph.D. The key informant introduced the lead researcher to the local inhabitants of Charcoal Land and charcoal burners and engaged in a series of long key informant interviews. The key informant also facilitated access to the archive documents. The lead researcher spent several periods in the area, conducting participant observations and semi-structured interviews. The lead researcher spent time with several charcoal burners’ families, participated in practicing charcoal burning and attended events related to charcoal burning in the area. The lead researcher also attended three national charcoal-burning events. As a sign of gratitude, the lead researcher held a voluntary creative workshop for children during Local Community Day 2018 and became a supporter of the Slovenian Charcoal Burning Association in 2019. Up to date, the lead author is in a contact with the key informant, several charcoal burner families in the Charcoal Land, and is a supporter of the Association. ‘Declarations of interest: none’.

were recorded and transcribed. For the six interviews where approval for recording was not obtained, handwritten notes documented the interview. For interviews, a protocol with guiding questions was used. Each interview was adapted to the respondent, although the central topic in interviews stayed the same evolving around the involvement of identified actors in the Charcoal Land initiative.

The document review consisted of going through and chronologically sorting nine registers of archived documents (total of 602 documents) of the Charcoal Land initiative. Archive documents (AD) spanned the period of 1999–2019. They contained e-mail correspondences, notes, minutes of meetings, idea drafts, project proposals, calls for projects, media publications, invitations, journal articles, posters, tickets, etc. Each document was sorted, red, the content was analyzed (identified Major events in the charcoal Land and revival of the traditional charcoal burning) and extracted data were entered in an Excel file. The documents spanning the time period 1999–2004 were additionally analyzed using narrative analysis (Section 3.2).

Ethnographic (participant) observations (PO) (Whitehead, 2005, p. 12) were used for getting a sense of the social setting of the Charcoal Land and charcoal burning culture in general in Slovenia. The lead researcher spent longer (several weeks) and shorter periods (1–2 days) in the Charcoal Land over 2 years (June 2017–June 2019), taking part in various activities, ranging from farm and family events (i.e., dismantling the charcoal pile, going to Sunday church and attending the Sunday lunch), to charcoal burners or community events (i.e., helping in organization and celebration of Local Community Day, taking part in a traditional hike on the Charcoal path). During the observations (or immediately after them), the lead researcher wrote down the details of the observations in the field diary. Whenever possible, the researcher photographed or video recorded the events with the permission of the present persons. Those observations were crucial in understanding the culture and life of inhabitants of the case study area, the work of the charcoal-burner, the relationships within the community, as well as the challenges and struggles the community is facing today. In addition, those opportunities were used for informal chats about charcoal burning and the impacts of its development on the area, as well as for getting a sense of the voluntary engagement as well as organizational efforts of involved actors.

3.2. Data analysis

Archive documents and interviews were analyzed by the lead researcher using content analysis (Mayring, 2014). For document analysis, we used an Excel table with the following categories – identification number of a document (Id), the original title of the document, year, month, date, location, document type, from (person or organization), to (person or organization), aim, reason, a summary of the content, data on actors mentioned in the document and researcher’s comments. Each document (602 total, period 1999–2019) was then categorized into corresponding events and activities, while 185 documents (period 1999–2004) were analyzed in depth (e.g., involved persons, organizations, roles of identified actors, narrative themes). As all documents were in Slovenian language, only the lead researcher conducted this analysis. Extracted data were translated into English and organized based on the Id of the document (AD Id). Data from documents served for the event sequence analysis as well as narrative analysis.

Narratives emerged inductively from the content analysis of documents and interviews, and were analyzed using narratives-in-interactions (Earthy and Cronin, 2008). This approach regards narratives as ‘small stories’ related to traditional charcoal burning produced during the meetings and other events that were used to support the development of the Charcoal Land initiative.

Interviews were analyzed using content analysis (Mayring, 2014). The following categories were used: actor, actors’ organizational role, initial involvement in the initiative, the reason for involvement, role in the initiative, event, narrative, activities, cooperation with other actors, constraints for involvement, and overcoming constraints. This data was

used to validate findings from document analysis as well as responses from other interviewees.

For reconstructing the development of the Charcoal Land Initiative, we used *event-sequence analysis* (ESA) (Spekkink, 2013). ESA is a research approach suitable for the systematic longitudinal analysis of process phenomena. Sequence refers to the temporal order of things, while events refer to elements in that sequence (Abbott, 1990, pp. 376–377). The process is “a sequence of events that describe how entities emerge, develop, and possibly dissolve over time. To define something as a process is to define a *central subject* as well as the different types of *events* that the central subject endures or makes happen” (Spekkink, 2013, p. 345). At the beginning of the analysis, with the key informant, we defined the central subject as a group of key actors involved in the development of the Charcoal Land initiative over time. The sequence in our case is the temporal order of real-life events of the above-mentioned group of actors during the process of the Charcoal Land initiative’s development. Each event consists of a set of incidents – an empirical description of activities leading to an event. This analysis enabled us to visually map the events.

#### 4. Five dimensions of the social innovation (SI) process in the revival of traditional charcoal burning in Slovenia

This section presents the empirical results on the traditional charcoal burning and its revival through the development of the Charcoal Land along five SI dimensions. In Section 4.1 we present the first SI dimension – the context as the results of the shallow zooming out phase. Within this dimension we briefly set out the spatial, socio-demographic, economic and environmental context of the case study area of Dole pri Litiji), and we delineate the historical rise and fall of traditional charcoal burning). In section 4.2 we present the results on the second dimension of SI – the trigger, as being the result of the shallow zooming (out and in). Then in section 4.3. We briefly reflect on actors (shallow and deep zooming in), to present rich evidence on the reconfiguration process in section 4.4. (deep zooming in) and effects (deep zooming in) in section 4.5.

##### 4.1. Context

###### 4.1.1. Case study area - dole pri litiji, central Slovenia, European Union

Today, the Charcoal Land makes geographical brand that loosely refers

to area that falls under the administrative unit of the Local Community<sup>2</sup> Dole pri Litiji located in the eastern part of the Municipality of Litija. It is positioned in the center of Slovenia on the western part of the Posavje Hills, about 37 km southeast of the capital city of Ljubljana. The local community Dole pri Litiji covers approximately 55 km<sup>2</sup> (25% of the Municipality territory) and is characterized by hilly to rugged terrain. It includes 28 villages and hamlets, with approximately 770 inhabitants in 250 households. The households are individual or in a group of few, connected by poor road infrastructure.

There are approximately 120 farms in the area. Most of them are small and fragmented with 2–5 ha of farmland. Only six households have farms bigger than 5 ha. As 60% of all agricultural areas are on the steep slopes, farming is characterized by extensive grassland management. Focus on self-supply of food and feed is strong and most of the farms produce forage crops and silage maize. Vegetables and fruits for human consumption are usually produced in the gardens next to individual households (Höher et al., 2017).

The local community Dole pri Litiji can be described as “marginalized rural area” in the European Union context, due to the presence of three main features (Govigli et al., 2020): (1) physical constraints (remoteness, limitations for agriculture), (2) poor infrastructure, and (3) social marginality manifested in a lack of public services (i.e. health services), lack of job opportunities nearby (minimum drive by car of 1 h to reach cities for work), as well as lack of cultural and educational services.

Forests in the local community Dole pri Litiji fall under the Local Forest Management Unit (LFMU) Dole. It amounts to 8464 ha from which forest area covers 5420.78 ha (64%). Growing stock is about 279.4 m<sup>3</sup>/ha, with an annual increment of 6.86 m<sup>3</sup>/ha. With 1264 private forest owners, the average size of a private forest estate is 4.3 ha. Realized annual fellings amount to 90.3% of planned fellings, which is quite a high percentage having in mind that 95.4% of forests are privately owned (Zavod za Gozdove Slovenije -Območna Enota Brežice, 2017, pp. 17–40). This makes private forest owners in Dole active, which is not the case for most private forest owners in Slovenia (Malovrh et al., 2015).

*“Local forests are well managed by owners, which are fairly well-equipped with adapted forest machinery as well as tractor semi-trailers for the transport of wood and chips” (Höher et al., 2017, p. 17).*

Since 2001, about sixteen charcoal burners in Dole prepare about thirty charcoal piles (Picture 1 - right). The size of the charcoal pile varies from 5



**Picture 1.** Left: Industrial, large scale, traditional charcoal burning in Slovenia in XIX century (Source: Slovenia Charcoal Association, 2019), Right: Traditional charcoal burning in educational and touristic purposes in Charcoal Land in 2017 (Credit: Anže Rogelja)

<sup>2</sup> Local Community is the sub-unit of local self-government, established by the statutory act of the Municipality, and based upon geographical location.

to 30 m<sup>3</sup>, with an annual exception of one “giant” charcoal pile (up to 200 m<sup>3</sup>, which is the maximum in the recent history achieved in the summer of 2019).

#### 4.1.2. The rise and fall of traditional, unsustainable charcoal burning

Charcoal burning in Slovenia is a 1000-year-old practice, which was intensively performed until the Second World War (WWII) solely for economic purposes. After WWII, the traditional charcoal burning decreased, and until the 1980s almost disappeared. In the late 1990s, a few charcoal burners from the village Dole pri Litiji (today known as the Charcoal Land) together with two district foresters started reviving the practice of traditional charcoal burning.

Although charcoal burning was widespread in other areas of Slovenia since the Renaissance period (e.g., Pokljuka), it was brought to Dole pri Litiji by Italians around 1848. Until WWII charcoal production was the only single source of earnings since there were no other job opportunities (Prah, 2004, 2009). During WWII, charcoal production decreased, but it bloomed again in the post-war period. The coal was exported mainly to Italy, while among the domestic consumers were the large customers of two local factories (Sevnik, 1936). The intensive charcoal burning had devastating effects on the environment, as forests were heavily degraded and the air was polluted by charcoal burning smoke (Picture - left). In average, the total emissions of charcoal produced in retorts or kilns as product are estimated at around 0.22–0.35 t CO<sub>2</sub>e/t (Siteo, 2017). With the development of industry and technology, the intensity of the charcoal burning practice decreased. In the 1990s, only in a small number of villages in the local community Dole, charcoal burners could be found.

#### 4.2. Trigger

1999: The Charcoal Land initiative started in 1999, in Slovenia, in the area of the Local Community of Dole, the village of Dole pri Litiji. It started as a response to the harsh economic situation, rural depopulation, and loss of traditional knowledge in the local community, with the window of opportunity recognized by initiators of the Charcoal Land initiative. The main aim of the initiative was not only to revive traditional charcoal burning, but also to preserve its culture and improve the economic situation of this marginalized village (KII1, SSI1, SSI12, SSI15). One of the hopes of the initiative was also to attract youth to stay connected to the village (KII1, SSI1, SSI3). The window of opportunity was spotted by two district foresters that were aware of rural development and other funds that could be obtained by local inhabitants for sustainable, active forest management and local community development (KII1, SSI1).

#### 4.3. Agency

We conceptualized agency as intentional acting of actors involved in SI. As such, actors cannot be distinguished from their acting, thus we present the main identified actors in Table 3 and their acting through the description of the process of SI, while we discuss the agency as a broader concept in the discussion section.

#### 4.4. Process

Process of the revival of traditional charcoal burning in Slovenia was composed of a series of crucial events as presented in Fig. 3. We grouped those events into SI phases.

##### 4.4.1. Preparatory phase

1999–2000: Initiation The idea was initiated by two district foresters – the innovators, who noticed that traditional charcoal burning was still

**Table 3**

Overview of main identified actors and their roles in SI process.

Organization	Actor	Role in SI
State Forest Service Local Unit Radece (SFS LU)	Regional forester 1	Innovator Leader
	Regional forester 2	Innovator
	Director of the local unit	Follower Transformer
State Forest Service Regional Unit Brezice (SFS RU)	Director of the regional unit	Transformer Implementer
State Forest Service, central Unit (SFS CU)	Director	Transformer
Local community (LC) Dole	President	Follower Implementer
Municipality of Litija	Mayor Deputy mayors	Transformer
Chamber of Agriculture and Forestry (CAF) – Unit Dole	Unit leader	Follower Implementer
Primary School (PS) Gabrovka	Director	Follower Implementer
Primary School Gabrovka – Unit Dole (PSU Dole)	Teacher	Follower Implementer
Section for the preservation of Natural and Cultural Heritage	Charcoal burners	Followers Implementers

Source: Own elaboration

practiced by a few families in Dole pri Litiji. They came to the idea to revive traditional charcoal burning, also to increase the self-dignity of the charcoal burners:

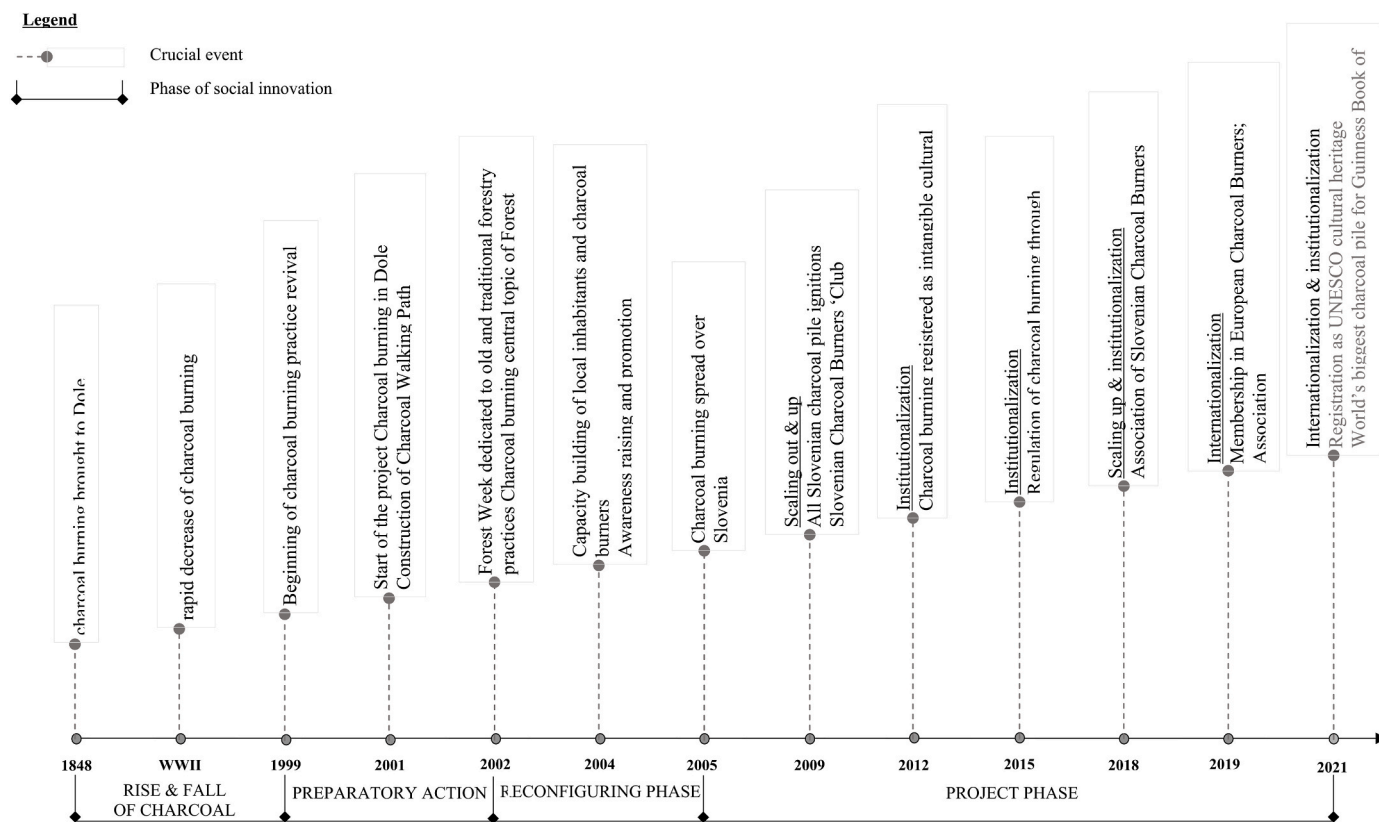
*“Maybe the most important aim for me personally was to bring back dignity to the charcoal burners. You know, at the beginning those people were reluctant to publicly say that they are charcoal burners. They did not regard that as something special, you know the knowledge they have and way of life they live” (KII 1)*

In the year 2000, the innovators mobilized a few active charcoal burners and created the clique (KII1, SSI1, SSI).

**2000 – 2001: Idea development** - In the year 2000, this clique mobilized the Local Community (the follower), and elaborated the idea in the working draft called *Charcoal burning in Dole* (Slo. *Oglarjenje na Dolah*), listing all the potential benefits of the revival of charcoal burning practice (AD ID4, KII2, SSI2). In 2001, this small group of actors attracted several more charcoal burners (additional followers and implementers) and formed the Section for Preservation of Natural and Cultural Heritage, under the Sports Society Dole pri Litiji. (AD ID12, SSI2, SSI4). Simultaneously, they attracted new actors - the transformers (e.g., State Forest Service, Sports Club, Municipality) - to support the initiative. These affirmed the idea in the wider community during the celebration of the Local Community Day (ADs ID9, 10, KII2, SSI12). Together with local inhabitants (implementers) and State Forest Service (SFS) they constructed and at the end of 2001 also registered the Charcoal Path as an educational and recreational trail (AD ID25) in the national directory of hiking trails. They also decided to try to connect the official starting of the project *Charcoal burning in Dole* with the Forest Week, a yearly national forest event in 2002 (AD ID22).

The voluntary engagement of all actors involved in the initiative was recognized by all respondents of the SSI as a key factor in the success of the initiative. Charcoal burners reported that the organization and engagement in charcoal-related activities demand a lot of time and work, which is not easy to find due to the farm or work obligations. Every meeting, event, or activity charcoal-burners attend means time stolen from farm, work, forest, or family and invested in the development of the common idea (KII3, SSI2, SSI12, SSI14, SSI18, PO 2017-2019). This was also confirmed by the archive documents (113 CE,





**Fig. 3.** Timeline of the development of the Charcoal Land initiative and crucial events in the reconfiguration of traditional charcoal burning practice in Slovenia (Source: Own elaboration based upon Rogelja, T. 2019).

114 CE). For example, for the construction of the Charcoal Path, 16 inhabitants of the Charcoal Land volunteered 105 h of manual work, while for the preparation of the Forest Week 2002 a total of 56 volunteers worked a total of 805 h of manual work and 56 h of machinery work. The SFS contributed technical expertise and machinery, while two private enterprises donated material (113 CE) (Fig. 3).

#### 4.4.2. Reconfiguring phase

**2002 – 2004: Promotion, growth, testing, and consolidation** – As the SFS director dedicated the Forest Week 2002 to traditional forest practices and skills, the ignition of the charcoal pile in Dole was a central event (AD ID28, KII3, SSI8). The Forest Week 2002 included many side activities, such as publishing the book about charcoal cooking in Dole pri Litiji, a literary competition, a photo competition, and the painting workshops in the area of Dole pri Litiji (AD ID31). The Forest week 2002 was promoted in local and national media (ADs ID 41,42), and attracted politically important persons (such as the Minister for Agriculture, Forestry and Food) to ignite the charcoal pile (ADs ID 54–56), which gave the national visibility to charcoal burning in Dole (KII2, SSI5 - 8,10,12).

After the Forest Week 2002, the Local Community Dole took part in the project Development Nucleus (*Slo. Razvojno jedro*), the aim of which was to connect farmers and inhabitants in the rural networks, improve the quality of living, provide information about the markets for the rural product, and help inhabitants in placing their products on the market. As a part of this project, a series of capacity-building workshops were organized by the Development Center (implementer) by a private enterprise (implementer) in 2004. These workshops resulted in a SWOT analysis, a new vision, two pillars with three strategic aims, and concrete project ideas for further development of the area (not only the charcoal burning). The workshop participants identified the potential financing sources and marketing strategies for each project idea and organized teams around them (AD ID 165-167). They also identified a lack of leadership capacities. Concurrently, one district forester was posted to another management unit, while

the other (the innovator) started to collect information on how far in Slovenia charcoal burning was still practiced.

#### 4.4.3. Implementation phase

**Projects (2005 – ongoing):** In this period, the Charcoal Land continued with already developed activities, such as a yearly traditional walk on the Charcoal Path, a yearly celebration of the Local Community Day, occasional painting colony, literal events, culinary events, etc. (ADs ID 186, 188, 190, 191,202, PO, 2017–2019). Each of those was and still is attended by important public figures (e.g., directors, politicians, commissioners, foreign experts, etc) and followed with media attention (KII3,4,5, ADs ID187, 198, 207, PO, 2017–2019). In parallel, one charcoal-burner family oriented toward charcoal-

Related educational and cultural activities, another towards economic production of charcoal, and other 14 charcoal burners in the Charcoal Land continued preparing 1–3 piles of charcoal for individual consumption and selling to the Agricultural Cooperative (SSI14, KII3).

**Scaling out (2005 – 2009):** During the celebration of the Forest Week 2005, the charcoal pile was ignited in Rakitnica, Slovenia (scaling out). Besides the charcoal pile in Rakitnica, in the period 2005 –

2008 other charcoal piles were ignited in other Slovenian regions: Bled, Sv. Mohor, Ribnica, Gabarska Gora, Sostanj, Postojna, Skofja Loka, Idrija, Mislinja and Gorenja vas (KII3). In those areas, charcoal burners organized in local Charcoal clubs.

**Scaling up (2009):** From the beginning of 2009, the districts forester (the innovator), State Forest Service (the follower), Cultural Touristic Recreational Center (the implementer), and charcoal burners (the implementers) intensively worked on the organization of the national charcoal burning event (ADs ID 192, 207, 209, 216, 230, 244, 245, 250, 252, 256). During one of the organizational charcoal burners meetings, they connected and informally established the Slovenian Charcoal Burners' Club (*Slo. Klub oglarjev Slovenije*) (KII4, ADs ID 260–262, SSI12. SSI20). They organized the event *All Slovenian charcoal pile*



ignitions (Slo. *Vseslovensi prizig kop*) as a series of ethnological events giving central parts to the simultaneous ignition of twenty charcoal piles all over Slovenia (ADs ID 271, 272, 286, 289, 290, 292–294, 308) as well as in Serbia and Austria. Since then, under the Slovenian Charcoal Burners’ Club, charcoal burners gather once a year (often in conjunction with the Forest Week celebration) in a different location.

Institutionalization (2012-ongoing): In 2012, charcoal burning was registered as an intangible cultural heritage into Slovenian Register of Cultural Heritage (MIZKS, 2012). The carrier of traditional charcoal burning practice is the charcoal burner’s family oriented toward cultural and educational activities (SSI 15).

In 2015, charcoal burning was regulated by the Decree on subsidiary activities on farms (Official Gazette No. 57/15 in 36/18). It has to be registered by an agricultural holding (farm) as complementary activity in agricultural holding, under the group of activities Processing of Forest Timber Assortments Traditional charcoal making within this category belongs to performing complementary activities related to traditional agricultural knowledge, services or products (code 2.200 - felling). During the registration of traditional charcoal burning as a complementary activity, it also has to be registered in *Craft register* managed by The Chamber of Craft and Small Business of Slovenia. No other policies or subventions are tailored towards this initiative or charcoal making in general. Funds are obtained from charcoal selling, additional activities and through the support of other involved (mainly public) actors.

During the national charcoal burner’s gathering in September 2018, the informal Slovenian Charcoal Burners’ Club changed its legal status to the Association of Slovenia Charcoal Burners (KII5). In September 2019, the Association of Slovenia Charcoal Burners became a member of the European Charcoal Burners Association (PO 2019). In 2020, the largest charcoal pile in the world, with a capacity of 350 m<sup>3</sup> of wood was ignited in the Charcoal Land. Plans include the registration of traditional charcoal burning in Slovenia in the UNESCO list of cultural heritage, and the world’s biggest charcoal pile for the Guinness Book of Records (KII5, SSI13).

#### 4.5. Effects of the Charcoal Land initiative

Our results show that the positive effects of the Charcoal Land initiative are highlighted across environmental, social, economic, and institutional domains. Effects of the development of the Charcoal Land also showcase the cross-sectoral nature and the multi-level and multi-scale character of SIs (Dalla Torre et al., 2020). Over the time, the effects of the Charcoal Land initiative (Table 4) span across multiple levels starting from the micro-level of the individual (i.e. charcoal burner), meso level of community (i.e. social group, village), to the macro-level of society (i.e. forest sector) (Ravazzoli et al., 2021). Over time, outputs also span across local, regional, national, and international scales producing, outcomes and impacts (Table 4).

As immediate outputs of the Charcoal Land initiative were both tangible and intangible, and we consider them to be the effects of SI *sensu stricto*, as they can be fully and directly attributed to the Charcoal Land initiative. The first tangible outputs initiative produced with the construction and registration of the Charcoal Path at the end of 2001 (ADId9, KII1, SSI1, 5, 9), as well as with the info boards that mark the area of the Charcoal Land that were installed in 2003 (ADId50, 174, 245; KII2; SSI1, 3, 7, 9, 10; PO 2017). Intangible outputs of the Charcoal Land initiative are manifested in increased social cohesion (KII2, SSI 2, 3, 6, 7, 15, 19), increased role of women in the charcoal burning (PO 2017-2019, KII1, SII 5, 8, 12, 13, 14), etc.

*“Well, I would say that what we did in the Charcoal land, was in general very positive. Our practice is alive, and it also spread over Slovenia. It is a lot of effort to organize any event, but we have a great time doing it, we sing, drink and have fun. We also earn some small money for selling charcoal, but we also have other activities that bring people and money to our area. Yet, some things are still not improved, like infrastructure, and young people leaving.”* (SSI18)

Intangible outputs (i.e. geographical brand, increased self-dignity of charcoal burners – SSI4, ADId184, 152) manifested later as outcomes

**Table 4**  
Positive effects of the Charcoal Land Initiative.

Level	Domain	Effect	Source of information
<b>Individual</b>	Social	Increased self-dignity of charcoal burners	KII, SSI, PO
	Economic	Increased income of charcoal burners	SSI, PO
		The increased role of women in charcoal burning in Dole	KII, SII, AD, PO
<b>Social group (charcoal burners)</b>	Social	The reemergence of charcoal burners as a social group	PO, SSI, KII
	Political	Increased power for participation in decision-making	Assumption based on institutionalization and scaling
		Strengthened social cohesion, increased social capital	SSI, KII, PO
<b>Local (village)</b>	Social	The charcoal pile has become a cultural symbol, and no public event goes without a charcoal pile ignition	KII, SSI, AD, PO
	Cultural	The area is marked as Charcoal Land – a territorial brand	SSI, PO, KI, AD
	Economic	Diversification into educational and touristic activities	PO, SSI, AD
		Participation in national and EU projects	AD, KII, SSI
		Municipality investments in village infrastructure	SSI
<b>Sectoral (Forest sector)</b>	Environmental	Activation of forest owners to actively manage their forests and preserve the cultural landscapes	KII, AD, SSI
	Economic	Adding value to low-quality wood (usually used as wood for heating) by producing charcoal	KII, SSI
	Social	Charcoal burning is a link between forestry and touristic, educational, and cultural activities	AD, KII
<b>National</b>	Cultural	The spread of charcoal burning all over Slovenia to more than twenty different locations	AD, PO, KII, SSI
	Social	Registration of charcoal burning as intangible cultural heritage (2012).	AD, SSI, KII
		Establishment of the Slovenian Charcoal Association (2018).	PO, AD
		Membership in the European Charcoal Association (2019).	PO, AD
		Planned registration of traditional charcoal burning in Slovenia in the UNESCO list of intangible cultural heritage.	SSI, KII

Source: Own elaboration

<sup>3</sup> Written permission for publishing the name is obtained from the district forester.

and impacts, often on the higher administrative (e.g., national level: Association of Slovenian Charcoal Burners – ADI56, PO 2018), and/or social levels (e.g., charcoal burners as a social group – ADId 152; PO 2018). To those we refer as the effects of SI *sensu lato*, as they can be partially or indirectly attributed to the Charcoal Land initiative. Over 20 years, the outcomes of the Charcoal Land initiative contributed to the institutionalization which led to new formal (e.g., Regulation of charcoal burning) and informal rules (e.g., role of women in ignition of the charcoal pile in Dole). They also scaled up and out of local territory to the higher geographical and policy levels, contributing to the knowledge transfer from Dole pri Litiji to other geographical regions.

*“Yes, we did go to other areas to teach them [other charcoal burners] how to do that [make a charcoal pile and burn charcoal]. But, I did not do it, it was my father and mother who did that. We [charcoal burner and his wife] needed to stay at home, to take care of farm and the children”* (SSI 3, square brackets added for clarity).

Traditional charcoal burning is registered as an intangible cultural heritage in Slovenia, and the practice is now carried by approximately 50 charcoal burners in 20 areas in Slovenia. They feel they know how to do something special and worthwhile.

*“At the beginning, it was very hard to do what he [the leader of the initiative] asked us to do. We were not used to go to the fairs and show ourselves – it was embarrassing. But we did it. And today we are proud to say that we are charcoal burners and to show our practice.”* (SSI 16, square brackets added for clarity).

They do that for the maintenance of traditional knowledge and cultural heritage, the preservation of traditional landscapes, active and sustainable private forest management, diversification of agricultural activities, and additional income (Imperl et al., 2021).

*“Charcoal burning is still alive in our country and that it means the cultural identity of places as well as rural development. Our charcoal burners are no longer just those who preserve the cultural landscape, reduce the overgrowth of meadows and provide care in the young forest, they become teachers, researchers and guides.”* (AD ID488)

Besides positive effects, the revival of the traditional charcoal burning had also some negative effects, with the respect to the of CO<sub>2</sub> emissions and other environmental impacts (e.g. smoke, particle matters). Although, the environmental assessment of traditional charcoal burning was out of the scope of this article, some studies find that traditional charcoal burning in the charcoal piles produces the emissions of 1593 g CO<sub>2</sub>/kg dry matter (Siteo, 2017), and that the charcoal is a more concentrated fuel than wood, whose combustion emits about 87% less smoke and toxic gases than wood (Ankona et al., 2022).

## 5. Key success factors for the revival of traditional charcoal burning in Slovenia

The event-sequence analysis, in combination with a narrative analysis, led to the inductive recognition of three key success factors that were crucial for the revival of traditional charcoal burning in Slovenia: the embeddedness of the innovator in multiple networks, a strategic use of narratives for obtaining resources, and legitimization by the local community and public actors.

### 5.1. Embeddedness of the innovator in multiple networks

*“You know, you need somebody like Jože<sup>3</sup> [district forester], who people here know, respect and trust”* (KII 15).

As mentioned by our respondent, the innovator was the district forester with well-developed local, regional, and national networks within the agriculture, forestry, tourism, and education sectors. He is a member of several other civil society organizations and a distinguished Slovenian volunteer.

He was able to mobilize local capacities and resources because as district forester he enjoyed certain respect and a high level of trust from local inhabitants (KII15, SSI13, PO 2017-2019). He also held a good professional reputation within his organization (SFS) and generally in the forest, tourism and rural development sectors. In this way, he was able to connect the initiative with other public and private actors and their networks. These networks made the resources (e.g., technical expertise, material resources) available to the Charcoal Land initiative and further mobilized the implementers around particular events and activities.

Due to the embeddedness of the innovator, the Charcoal Land initiative had also access to tacit knowledge of the priorities, practices, and procedures of actors that were potential followers and implementers. As the innovator explained,

*“Well, I knew all those persons from before. I worked in this Local Unit since the 1980s. I knew who they are, where they live and work, what they value, and what they might support”* (KII 2).

Tacit knowledge about other reachable public and private actors enabled the initiative to develop the charcoal burning narrative attractive for followers from the forestry, tourism, and education sector in the preparatory phase of the initiative. By engaging crucial followers (e.g., SFS, Local community) the initiative obtained the needed resources to kick up the process of SI. Followers and implementers also legitimized and promoted the initiative, contributing to awareness-raising and further mobilization of resources.

### 5.2. Strategic use of narratives for obtaining resources

*“When you put things like that and present the idea [of charcoal burning] in a way that is good for everything and everybody, there is no director or politician who is going to refuse to support it. We are not crazy to work against ourselves”* (SSI8, square brackets added for clarification).

As illustrated by the quote, the Charcoal Land initiative developed a narrative around the revival of traditional charcoal burning and connected it to relevant policy topics in Slovenia, such as rural development, green tourism, sustainable forest management, etc. The initiative strategically used certain themes from that narrative (Table 5) to persuade and ‘win’ the individuals it was addressing.

For example, when asking for official support and approval to develop the charcoal burning idea the innovator first unofficially addressed the leaders of the local and the regional forestry units, by focusing on the themes of *Charcoal making for active private owners* and *Charcoal making as a contributor for sustainable forest management*. He managed to persuade them to officially support the initiative by highlighting the benefits of charcoal burning to sustainable forest management of private forests. On the other hand, when lobbying for the support of the Local community Dole, the initiative changed the theme of charcoal burning, stressing it would contribute to rural development of the area and improve the livelihoods of charcoal burners and other inhabitants, etc.

**Table 5**

Themes used to construct the narrative of traditional charcoal burning in the preparatory phase.

No	Theme	Example
1	<b>Charcoal burning for active private forest owners</b>	<i>“Charcoal burners are private forest owners who manage their forests. Charcoal burning can help us in reducing the afforestation of agricultural land.” (AD ID2)</i>
2	<b>Charcoal burning as a contributor to sustainable forest management</b>	<i>“For charcoal, people in Dole use low-quality wood, obtained from silvicultural works. Today, they manage their forest in a sustainable way.” (AD ID2)</i>
3	<b>Charcoal burning for increasing income</b>	<i>“Charcoal selling can be an additional source of farm income, and thus increase the income of rural inhabitants.” (AD ID4)</i>
4	<b>Charcoal burning as a cultural and natural heritage</b>	<i>“In Dole, there are still twenty charcoal piles burning every year. This is, without any doubt a valuable cultural and natural heritage.” (AD ID2)</i>
5	<b>Charcoal burning for giving people a sense of worth</b>	<i>“Our idea is to bring back to people the sense of worth, the feeling that they know and do something special and unique.” (AD ID4)</i>
6	<b>Charcoal burning as a touristic activity</b>	<i>“By getting recognizable, charcoal burning can attract people into the area, and we could offer many touristic activities, such as the Charcoal Path, or workshops.” (AD ID5)</i>
7	<b>Charcoal burning as education</b>	<i>“This way, our charcoal burner is not just an active forest owner, but also a teacher of how to interact with forest and nature” (AD ID2)</i>

Source: Own elaboration

This ability of the initiative to strategically use different themes with appropriate arguments was crucial for mobilizing other followers and implementers to engage and support the initiative. Followers and transformers contributed to awareness-raising and promoted the initiative. Through their involvement followers and transformers also legitimized the initiative.

### 5.3. Legitimization by the local community and public actors

*“We [SFS] were able to support it [the idea] and be flexible, as there is nothing in the Law on Forests or our rulebook that was against it. But we could not give any financial support at that time, as it was not planned in our budget. Instead, we found other ways to provide them what they needed” (SSI9, square brackets added for clarification).*

As noted in the quote above, the material resources were not only the only one needed for carrying out the charcoal burning. What the initiative needed first was to make charcoal burning visible and accepted again. From the beginning of the preparatory phase, the Charcoal Land initiative carefully and strategically outreached for the first followers, by liaison with local inhabitants and SFS. The initiative first grounded the idea in the local community, so that local events also include charcoal burning. The initiative further strategically outreached to SFS, to initiate the beginning of the project Charcoal Burning in Dole in connection with the National Forest Week in 2002. They knew that this connection would help channel certain resources and get dedicated public campaigns and national media coverage. The engagement of SFS in the charcoal burning activities signified the approval of charcoal burning as a sustainable forestry activity, acknowledging its contribution to cultural heritage, recreation, tourism and rural development.

Further on, the initiative legitimized traditional charcoal burning through awareness-raising and promotion. In 2002, all main national newspapers were covering the initiation of the project of Charcoal Burning in Dole and spread the news on this traditional forest practice.

The initiative also started promoting at various fairs and produced informational materials about the charcoal burning in Dole (ADID42). In addition, the initiative strategically brought public figures to each of its events, often in connection with some cordial role (e.g., giving the introductory speech, igniting the pile, etc.). In this way, traditional charcoal burning got again well-known and accepted in Slovenia. In addition, media attention increased the attractiveness of the events and brought more visitors to the area and brought new customers to the charcoal burners in the Charcoal Land. In this way, influential followers and transformers contributed to the acceptance and expansion of charcoal burning outside the local community (scaling-out) and the scaling-up to higher administrative levels through the later formation of the Slovenian Charcoal Burners Association.

## 6. Discussion and conclusions

In our study, we wanted to better understand how SI process rolls out on the ground to achieve positive impacts. With this purpose we analyzed 20 years of the development of the Charcoal Land along five SI dimensions (context, trigger, agency, reconfiguration process and effects). Our results provide evidence that the development of the Charcoal Land can be regarded as a SI process, as it features all five SI key dimensions sparking the revival of the traditional charcoal burning.

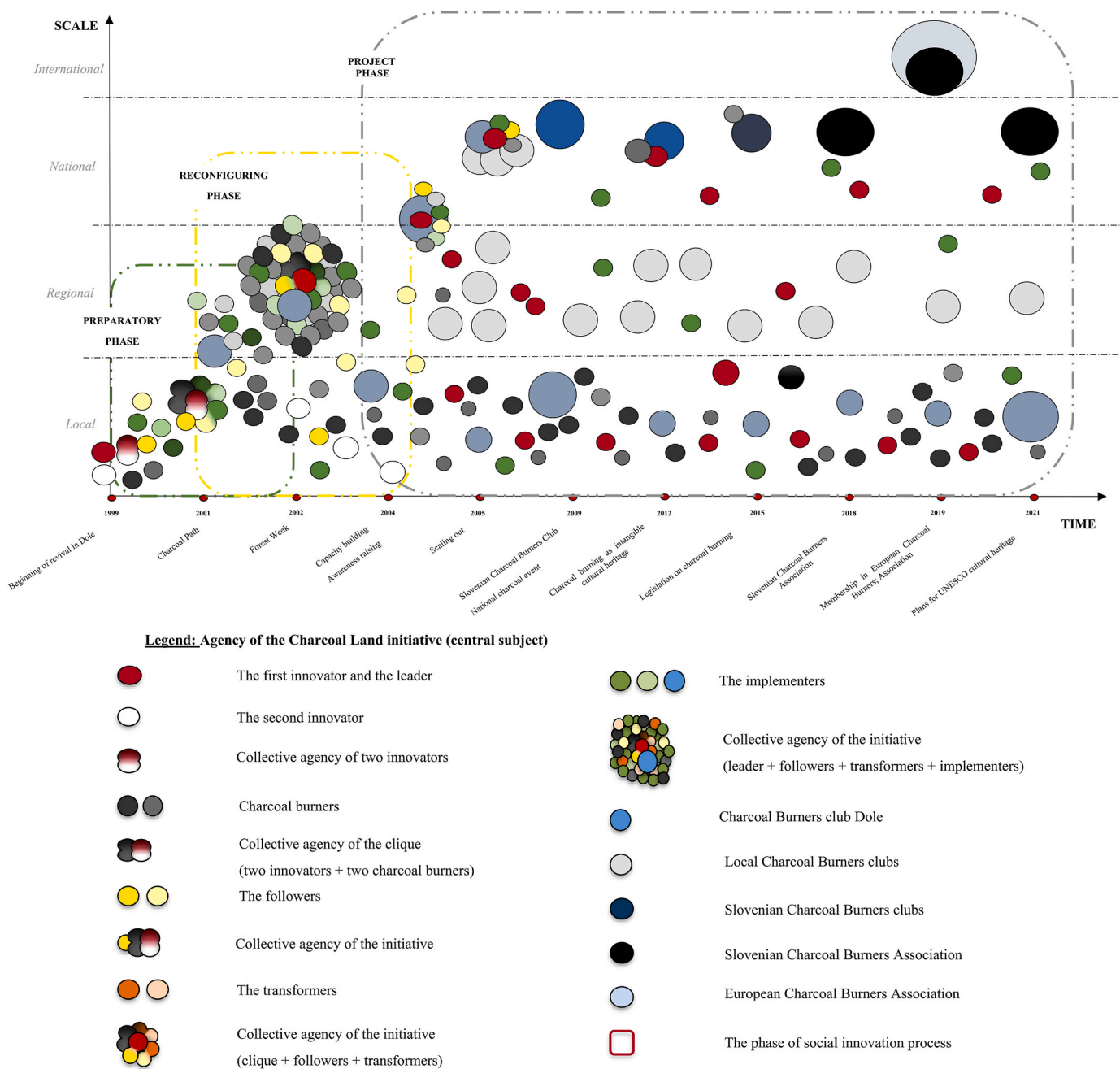
In the development of the Charcoal Land, both geographical and historical context proved inevitable for better understanding of SI process. As in line with previous studies, our findings indicate that remoteness and economic deprivation of the area were contextual drivers (Castro-Arce and Vanclay, 2020) for initiation of the initiative and voluntary engagement of charcoal burners. Further on, although the contextual drivers played important role, the trigger was actually “open doors of opportunity” (Moulaert et al., 2017), spotted by two local foresters. Although the traditional charcoal burning was not a pressing issue in the area, the different way of thinking about charcoal burning practice as an opportunity to generate new activities linked to the multifunctionality of forests and to complement farming activities was the trigger for starting the initiative. Our findings are also aligned with literature on SI, that recognizes that SI can be triggered by individual needs and/or positive events (doors of opportunities opened due to external shocks or disturbances in governance systems and markets), which in our case were opportunities that EU policies would bring to Slovenia with its EU accession in 2003 (Steiner et al., 2021; Neumeier, 2012).

Our results indicate that SI a process was initiated by two innovators who spotted the doors of opportunity for the revival of traditional charcoal burning. Innovators started the voluntary engagement of various actors (e.g., charcoal burners, foresters, local authorities) that had led to the formation of evolving agencies with the capacity to repetitively rearrange around common projects and goals. Those findings indicate that “on the ground”, SI process is not linear – SI phases overlap, making the boundaries blurry, depending on new relations among the actors and the activities of the initiatives throughout time (Fig. 4).

In this way, our research demonstrates that phases of the development of SI should not be taken as fixed, as SI agency evolves through time and undertakes new parallel actions (Avelino et al., 2014.; Dalla Torre et al., 2020; Haxeltine et al., 2016; Wittmayer et al., 2017). Although it might be more convenient to represent the SI process linear, clearly identifying key dimensions and components of SI, the nestedness of social-environmental systems and underlying SI dynamics should be considered.

As in line with previous studies our results indicate that the SI process does not produce impacts linearly, rather it is a cyclical reconstructive process, often representing “just a new beginning, with the different, and often improved situation, but still with remaining challenges” (Sarkki et al., 2021, p.14).

Our findings highlight the dynamics of the SI process revealing the



**Fig. 4. The evolution of agency trough phases of SI process (Own elaboration):** The figure illustrates the growth of agency during preparatory and reconfiguring phases of SI process, and then rearranging of the agency around newly developed activities or new project. Each circle in the project phase represents newly created agencies – on the local level agency of individual charcoal burners’ families, on the regional level formulation of new charcoal burning clubs all over Slovenia (Scaling out); on the national level formation of Slovenian Charcoal burners Club, and later Association (scaling up), and on international level accession of Association of Slovenian Charcoal burners into European Charcoal Association. The meaning of circles is given in the legend below. The size of the circles in the collective agency is illustrative, reflecting the number of actors.



evolution of agency throughout time. In this way, we add to the evidence that “SIs are evolutionary processes with continuously reconfiguring networks, attitudes and governance mechanisms” (Vercher et al., 2022). The most intensive and rapid developments are notable early in the process of SI, during the preparatory and reconfiguring phase. The agency emerged with the innovators, formed a clique further mobilizing followers, and was strategically rearranged around assigned activities to outreach further for needed resources, as proposed by Secco et al. (2017). At the end of the preparatory phase, we also noticed the dissolving of the agency (Haxeltine et al., 2016), when one of the innovators detached from the initiative. At the same time, the initiative continues with the major event in 2002, and the agency reshapes around the second innovator.

The project phase was composed of numerous projects on different levels throughout time. It was characterized by a diversification of activities, institutionalization, and scaling. Through diversification of activities, traditional charcoal burning started being performed small scale and for educational, touristic, culinary, cultural, and commercial purposes. In this phase, there is the continuous reshaping and evolution of the agency that concentrated on new projects and developing new activities and events. In this sense, one can speak about the emergence of many new agencies around each project, each with new aims and objectives. This dynamics of the analyzed SI process is in line with literature on social innovation that cautions that SI initiatives evolve and transform over time (Neumeier, 2012; Sarkki et al., 2021; Haxeltine et al., 2016; Secco et al., 2017).

Our study adds to the evidence on the institutionalization and scaling of the forest-based SI. Through the development of the initiative, the tight relationship with public actors contributed to legitimization and further institutionalization of new meaning of traditional charcoal burning practice, as other literature suggests (González and Healey, 2005; Healey et al., 2002). On this way, social innovation *per se* got mainstreamed, and rolled-up to other geographical levels. From the very beginning, the activities and events in the Charcoal Land were well accepted by numerous public actors from forestry, tourism, and local administration. At the same time, through institutionalization processes, the charcoal burners got both regulated and monitored by the state as well as dependent on public actors at least to some extent. In a transformative view-point, this development might capture the dynamic of SI, limiting its transformative potential of the established institutional structures (Pel and Bauler, 2014). Having in mind current policy framework conditions for the development of forest-based SI in Slovenia, initiatives like the Charcoal Land had little choice to continue operating by searching for funding through finding their way to regulations and inevitably being institutionalized by both formal and informal rules ().

On the other hand, studies (Lukesch et al., 2020; Ludvig et al., 2020; Ravazzoli et al., 2021; Rogelja et al., 2018; Sørensen and Torfing, 2011) on SI increasingly highlight the importance of public actors in SI, as intermediaries in SI. Based on the comparison of nine SI cases across the EU, Ravazzoli et al. (2021, p.22) concluded that support of public policies and actors is crucial to “further assist bottom-up needs, to empower civil society and local actors (e.g., government bodies, NGOs) to act together within collaborative decision-making processes and innovative institutional/governance arrangements”. Having the mediator, who was able enable knowledge sharing and create shared values for transforming the practice is a key success factor for forest-based social innovation, as forestry actors have strong core beliefs and are hardly susceptible to change (Sotirov et al., 2017).

Inductively we derived three key success factors for the development of the Charcoal Land and revival of the traditional burning. One of those factors was embeddedness of an innovator in multiple networks (e.g.

local community, state forest service, touristic organizations, etc), who acted as an “intermediary actor” able to bridge different levels (Jungsborg et al., 2020; Pisani et al., 2020). Embeddedness of an innovator also fostered the trust in the Charcoal Land and enabled the initiative to get access to resources (Castro-Arce and Vanclay, 2020). Further on, this contributed to the legitimization by public actors and various organizations operating on different levels, being the second success factor. The legitimization of the revival of traditional charcoal burning by local inhabitants of remote village was necessary for the approval of the new way of practicing that simultaneously represented local cultural values and needs, while legitimization by public actors enabled scaling and institutionalization (Castro-Arce and Vanclay, 2020; Ludvig et al., 2021b; Steiner et al., 2021). Lastly strategic use of narratives was the third success factor, as it presented charcoal burning as an appealing practice, leading to raised awareness, and increased importance and popularity of the initiative and the traditional charcoal burning. In addition the formulation of narratives of traditional charcoal burning played a crucial role “in the construction of individual and social identities and the efforts dedicated to the development and communication of collectively shared worldviews” (Wittmayer et al., 2019, p. 102433).

Our study contributes with the efforts to understand the “process” behind social innovation in empirical terms, providing comprehensive evidence that the charcoal burning practice in Slovenia reconfigured, as today it is performed with the new meaning, and sustainably, without devastating impact on the forests and the environment (as shown in Picture 1). What we learned from the Charcoal Land initiative case, is that this unsustainable way of practicing changed, as the practice reconfigured towards small scale, in limited quantities (average 1–2 charcoal piles per charcoal family: average pile 15 m<sup>3</sup>). Nowadays, the practice is performed in tight collaboration with state advisory service and monitored by forest state authorities.

Although the practice is performed sustainably in accordance with forest management plans, it should be noted that charcoal burning practice does have environmental impacts, related to CO<sub>2</sub> emissions and air quality. In the context of climate change, this should be especially paid attention to, also in relation to forest degradation, as if practice is practiced over large scale and in high quantity, the impact on forest resources (as well as on air quality and human health) will be devastating (as illustrated in section 4.2 on context).

The way of practicing also changed, as today’s charcoal burners use modern tools and equipment. Thus, the fully manual labor that was in the past needed for traditional charcoal burning is nowadays done at least partially with mechanization (Sevnik, 1936; PO 2017-2019). In practice, the Charcoal Land became a geographical brand that stands for high quality, sustainable charcoal. Women play an increasingly important role in the charcoal burning in Dole, as well as in activities developed around it (PO 2017-2019). Besides that, the revival of the charcoal burning practice resulted in the creation of new networks (e.g., charcoal burners – SFS – local community Dole), new organizational forms (e.g., charcoal burner’s clubs), as well as new governance arrangements (e.g., new regulation of charcoal burning), creating direct and indirect effects on various levels. Long term effects of the initiative are also manifested in institutionalization through legislation and formation of Charcoal burners clubs and national association. Due to this, the development of the Charcoal Land can also be regarded as a transformative SI, as it strongly contributed to reemergence of the charcoal burners as a social group in Slovenia, and sparked the revival of traditional charcoal burning with the new meaning.

Limitations of the study stem from the exploratory character and the longitudinal qualitative design of the research. As we conducted an exploratory longitudinal study focusing on the central subject, we did not conduct an in-depth assessment of each effect of the Charcoal Land

initiative. In this sense, the in-depth assessment of the project phase that includes all new developed projects and revival in other geographical regions fell out of the scope of this research. Another limitation was related to the time bias of respondents, as on several occasions respondents were not able to exactly recall all involved persons or other details of key events. This issue we mitigated with triangulation of data collection and analysis methods.

Regardless of limitations, our approach enabled us to get very detailed insights into the development processes in terms of preparation and reconfiguration of social practices. Our findings also open other various questions and avenues for future research. With this respect further analysis of the distribution of power among public actors and charcoal burners would be useful for an in-depth assessment of effects, contributing to the literature on governance of SI. Having in mind the extraordinary role of the leader, the application of leadership theory would provide a better understanding of the drivers and capacities of the district forester. A multiple comparative case study on identified charcoal burners clubs in Slovenia would contribute to a better understanding of the process of their formation, as well as their social, ecological, and economic impacts. Further on, sociological research could be undertaken to better understand the meaning of charcoal burning to local inhabitants, their motivation and values, the role of gender in charcoal burning. Another area that would have practical implementation would be an evaluation of forest ecosystem services related to traditional charcoal burning, as well as impact assessment.

The revival of the traditional charcoal burning in Slovenia provides a good practice example of how this traditional practice can be practiced more sustainably, minimizing harmful environmental and health effects and simultaneously contributing to rural development, forestry, environment, education, and culture. It illustrates the multifunctionality of forests and their diverse potential, not just through direct ecosystem products and services, but as well as through indirect opportunities that make the basis for a rural development and green, circular bioeconomy. As such, it is highly relevant today, especially for countries such as Brazil (Rittl et al., 2015) or Palestine (Billig et al., 2022), where communities might be reluctant to technological innovation. In those countries, charcoal is a source of subsistence, whose large-scale production has highly negative impacts on the environment and society. In this sense, the Charcoal Land, and current way of practicing traditional charcoal burning in Slovenia might serve as an example for reducing the negative environmental effects through down-scaling, diversification and institutionalization of traditional practice, that can span multi-functional, close-to-nature, sustainable forest management, rural entrepreneurship, and new income sources for local communities.

#### Ethical Statement for solid state ionics

Hereby, I, undersigned, Todora Roglja consciously assure that for the manuscript *Analyzing social innovation as a process in rural areas: key dimensions and success factors for the revival of the traditional charcoal burning in Slovenia* the following is fulfilled:

- 1) This material is the authors' own original work, which has not been previously published elsewhere.
- 2) The paper is not currently being considered for publication elsewhere.
- 3) The paper reflects the author's own research and analysis in a truthful and complete manner.
- 4) The paper properly credits the meaningful contributions of co-authors and co-researchers.
- 5) The results are appropriately placed in the context of prior and existing research.
- 6) All sources used are properly disclosed (correct citation). Literally copying of text must be indicated as such by using quotation marks and giving proper reference.

- 7) All authors have been personally and actively involved in substantial work leading to the paper, and will take public responsibility for its content.

The violation of the Ethical Statement rules may result in severe consequences.

To verify originality, your article may be checked by the originality detection software iThenticate. See also <http://www.elsevier.com/editors/plagdetect>.

I agree with the above statements and declare that this submission follows the policies of Solid State Ionics as outlined in the Guide for Authors and in the Ethical Statement.

#### Author statement

Rogelja, T.: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing - Original Draft, Visualization, Revision, Ludvig, A.: Conceptualization, Writing - Review & Editing, Revision, Weiss, G.: Term, Conceptualization, Writing - Review & Editing, Supervision, Revision, Shannon, M. A.: Term definition, Conceptualization, Validation, Writing - Review & Editing, Supervision, Revision, Prah, J.: Investigation, Writing - Original Draft, Revision, Secco, L.: Conceptualization, Resources, Writing - Review & Editing, Supervision, Revision.

#### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

#### Data availability

Data will be made available on request.

#### Acknowledgments

This study is part of the Ph.D. project titled 'Governance Capacity of Public Actors for Forest-based Social Innovation' conducted under the scholarship of Land, Environment, Resources and Health Doctoral School, at the Department of Land, Environment, Agriculture, and Forestry of the University of Padova. The study was partly supported by a grant from the European Forest Institute (EFI) Short Scientific Visits 2017–2018 titled 'Analyzing Governance Capacities of Public Actors for Supporting Forest-Based Social Innovation Initiatives – Moving Beyond Lead Roles of Public Actors to Building New Collaborative Governance Arrangements'. We are grateful to the European Forest Institute, and the University of Freiburg, the Faculty of Environment and Natural Resources - Institute of Environmental Social Sciences and Geography, as well as the Chair of Forest Management and Economics for their support. We owe our gratitude to Slovenian Forest Service, charcoal burners in the Charcoal Land, and all interviewees who dedicated their time to making this research possible. Finally, we are deeply grateful to the reviewers and editor for their valuable comments and suggestions for improving the red-line of the article. Open Access Publishing was enabled under the funding of University of Padova under the CRUI Consortium Agreement.

#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jrurstud.2022.12.030>.

## References

- Abbott, A., 1990. A primer on sequence methods. *Organ. Sci.* 1, 375–392. <https://doi.org/10.2307/2634970>.
- Ankona, E., Nisnevitch, M., Knop, Y., Billig, M., Badwan, A., Anker, Y., 2022. The eastern mediterranean charcoal industry: air pollution prevention by the implementation of a new ecological retort system. *Earth Space Sci.* 9 <https://doi.org/10.1029/2021EA002044>.
- Avelino, F., Wittmayer, J., Haxeltine, A., Kemp, R., O'Riordan, T., Weaver, P., Loorbach, D., Rotmans, J., 2014. Game changers and transformative social innovation the case of the economic crisis and the new economy TRANSIT working. Paper 1. Available at: [http://www.transitsocialinnovation.eu/content/original/TRANSIT%20outputs/91%20Gamechangers\\_TSI\\_Avelino\\_etal\\_TRANSIT\\_workin\\_gpaper\\_2014.pdf](http://www.transitsocialinnovation.eu/content/original/TRANSIT%20outputs/91%20Gamechangers_TSI_Avelino_etal_TRANSIT_workin_gpaper_2014.pdf).
- Avelino, F., Wittmayer, J.M., Kemp, R., Haxeltine, A., 2017. Game-changers and transformative social innovation. *Ecol. Soc.* 22 <https://doi.org/10.5751/ES-09897-220441>.
- Avelino, F., Wittmayer, J.M., Pel, B., Weaver, P., Dumitru, A., Haxeltine, A., Kemp, R., Jørgensen, M.S., Bauler, T., Ruijsink, S., O'Riordan, T., 2019. Transformative social innovation and (dis)empowerment. *Technol. Forecast. Soc. Change* 145, 195–206. <https://doi.org/10.1016/J.TECHFORE.2017.05.002>.
- Baker, S., Mehmood, A., 2013. Social innovation and the governance of sustainable places. *Local Environ.* 20, 321–334. <https://doi.org/10.1080/13549839.2013.842964>.
- Bandura, A., 2001. Social cognitive theory: an agentic perspective. *Annu. Rev. Psychol.* 52, 1–26. <https://doi.org/10.1146/annurev.psych.52.1.1>.
- Banerjee, S., Lucas dos Santos, L., Hulgård, L., 2021. Intersectional knowledge as rural social innovation. *J. Rural Stud.* <https://doi.org/10.1016/J.JRURSTUD.2021.04.007>.
- Bataglin, J.C., Kruglianskas, L., 2022. Social innovation: field analysis and gaps for future research. *Sustain. Times* 14. <https://doi.org/10.3390/su14031153>.
- Billig, M., Badwan, A., Ankona, E., Anker, Y., 2022. Charcoal Production in Palestinian villages - the Paradox of resistance to innovation driving rural development. *J. Rural Stud.* 89, 25–34. <https://doi.org/10.1016/J.JRURSTUD.2021.11.009>.
- Bock, B.B., 2016. Rural marginalisation and the role of social innovation; A turn towards xenogenous development and rural reconnection. *Sociol. Rural.* 56 <https://doi.org/10.1111/soru.12119>.
- Bosworth, G., Rizzo, F., Marquardt, D., Srijker, D., Haartsen, T., Thuesen Aagaard, A., 2016. Identifying social innovations in European local rural development initiatives. *Innovat. Eur. J. Soc. Sci. Res.* 29, 441–461. <https://doi.org/10.1080/13511610.2016.1176555>.
- Butzin, A., Terstriepe, J., 2018. Actor and roles in social innovation. In: *Atlas of Social Innovation – New Practices for a Better Future*. Sozialforschungsstelle, TU Dortmund University, Dortmund, pp. 78–81. Available online at: [https://www.socialinnovationatlas.net/fileadmin/PDF/Atlas\\_of\\_Social\\_Innovation.pdf](https://www.socialinnovationatlas.net/fileadmin/PDF/Atlas_of_Social_Innovation.pdf).
- Cajaiba-Santana, G., 2014. Social innovation: Moving the field forward. A conceptual framework. *Technol. Forecast. Soc. Change* 82, 42–51. <https://doi.org/10.1016/j.techfore.2013.05.008>.
- Castro-Arce, K., Vanclay, F., 2020. Transformative social innovation for sustainable rural development: an analytical framework to assist community-based initiatives. *J. Rural Stud.* 74, 45–54. <https://doi.org/10.1016/J.JRURSTUD.2019.11.010>.
- Chen, H.C., Knierim, A., Bock, B.B., 2022. The emergence of social innovation in rural revitalisation practices: a comparative case study from Taiwan. *J. Rural Stud.* 90, 134–146. <https://doi.org/10.1016/j.jrurstud.2022.02.003>.
- Coelho de Souza, J., da Silva Pugas, A., Rover, O.J., Nodari, E.S., 2021. Social innovation networks and agrifood citizenship. The case of Florianópolis Area, Santa Catarina/Brazil. *J. Rural Stud.* <https://doi.org/10.1016/J.JRURSTUD.2021.09.002>.
- Copus, A., Perjo, L., Berlina, A., Jungsberg, L., Randall, L., Sigurjónsdóttir, H., 2017. *Social Innovation in Local Development: Lessons from the Nordic Countries and Scotland* (No. 2). ISBN 978-91-87295-46-1. Stockholm, Sweden.
- Dalla Torre, C., Ravazzoli, E., Dekker, M.D., Polman, N., Melnykovich, M., Pisani, E., Gori, F., Re, R. Da, Vicentini, K., Secco, L., 2020. The role of agency in the emergence and development of social innovations in rural areas. Analysis of two cases of social farming in Italy and The Netherlands. *Sustainability* 12, 1–25. <https://doi.org/10.3390/su12114440>.
- Daniel, L.J., Jenner, P., 2022. Another look at social innovation: from community - for community. *Int. J. Innov. Stud.* <https://doi.org/10.1016/J.IJIS.2022.04.001>.
- de Fátima Ferreira, M., Sousa, C., Sheikh, F.A., Novikova, M., 2021. Social innovation and rural territories: exploring invisible contexts and actors in Portugal and India. *J. Rural Stud.* <https://doi.org/10.1016/J.JRURSTUD.2021.04.013> (in press).
- Denzin, N.K., 2017. *Triangulation: a case for methodological and combination evaluation-introduction*. In: Denzin, N.K. (Ed.), *Sociological Methods: A Sourcebook*. Routledge, ISBN - 978-1-351-48906-5.
- Earthy, S., Cronin, A., 2008. Narrative analysis. In: Gilbert, N. (Ed.), *Researching Social Life*, third ed. Sage, London, pp. 420–440. 978-1-4129-46661-2.
- Edwards-Schachter, M., Wallace, M.L., 2017. 'Shaken, but not stirred': sixty years of defining social innovation. *Technol. Forecast. Soc. Change* 119, 64–79. <https://doi.org/10.1016/j.techfore.2017.03.012>.
- Emirbayer, M., Mische, A., 1998. What is agency? *Am. J. Sociol.* 103, 962–1023. <https://doi.org/10.1086/231294>.
- Zavod za Gozdove Slovenije, Enota Brežice, Območna, 2017. *Gozdnogospodarski Načrt Gozdnogospodarske Enote Dole 2017 - 2026*. Stev. 08-07/17. Brežice, Slovenia.
- García-Llorente, M., Rubio-Olivar, R., Gutierrez-Briceno, I., 2018. Farming for life quality and sustainability: a literature review of green care research trends in Europe. *Int. J. Environ. Res. Publ. Health* 15, 1282–1300. <https://doi.org/10.3390/ijerph15061282>.
- Georgios, C., Barraí, H., 2021. Social innovation in rural governance: a comparative case study across the marginalised rural EU. *J. Rural Stud.* <https://doi.org/10.1016/J.JRURSTUD.2021.06.004>.
- González, S., Healey, P., 2005. A sociological institutionalist approach to the study of innovation in governance capacity. *Urban Stud.* 42, 2055–2069. <https://doi.org/10.1080/00420980500279778>.
- Górriz-Mifsud, E., Marini Govigli, V., Ravazzoli, E., Dalla Torre, C., Da Re, R., Secco, L., Pisani, E., Ludvig, A., Weiss, G., Akinsete, E., Barlagne, C., Baselice, A., Bengoumi, M., Brnkalkova, S., Dijkshoorn-Dekker, M., Egarter, S., Gramm, V., Hayder, M., Herrmann, P., Kozova, M., Lopolito, A., Nawar, M., Niedermayr, J., Perlik, M., Pfusterschmid, S., Polman, N., Prokofieva, I., Prosperi, M., Rodríguez, C., Sarkki, S., Slee, B., Spacek, M., Udovc, A., Vassilopoulos, A., Wagner, K., 2018. Deliverable D5.1 case study protocols and final synthetic description for each case study. Accessible from: <http://www.simra-h2020.eu/index.php/deliverables/>.
- Govigli, V.M., Alkhaled, S., Arnesen, T., Barlagne, C., Bjerck, M., Burlando, C., Melnykovich, M., Fernandez-Blanco, C.R., Sfeir, P., Górriz-Mifsud, E., 2020. Testing a framework to co-construct social innovation actions: insights from seven marginalized rural areas. *Sustain. Times* 12. <https://doi.org/10.3390/SU12041441>.
- Haxeltine, A., Jørgensen, M.S., Pel, B., Dumitru, A., Avelino, F., Bauler, T., Blanco, I.L., Chilvers, J., Cipolla, C., Dorland, J., Elle, M., Garido, S., Kemp, R., Kunze, I., Longhurst, N., Pataki, G., Rach, S., Renema, J., Ruijsink, S., Strasser, T., Tawakol, D., Weaver, P., Wittmayer, J.M., 2016. On the agency and dynamics of transformative social innovation. *TRANSIT Work. Pap. No. 7*, p. 1–35. Accessible from: <http://www.transitsocialinnovation.eu/working-papers>.
- Healey, P., Magalhaes, C. De, Madanipour, A., Pendlebury, J., 2002. Place, identity and local politics: analysing initiatives in deliberative governance. In: Hajer, M.A., Wagenaar, H. (Eds.), *Deliberative Policy Analysis: Understanding Governance in the Network Society*. Cambridge University Press, ISBN 978-0521530705, pp. 1–25.
- Henderson, F., Steiner, A., Farmer, J., Whittam, G., 2020. Challenges of community engagement in a rural area: the impact of flood protection and policy. *J. Rural Stud.* 73, 225–233. <https://doi.org/10.1016/j.jrurstud.2019.11.004>.
- Hewson, M., 2010. Agency. In: Mills Albert, J., Europos, G., Wiebe, E. (Eds.), *Encyclopedia of Case Study Research*. Sage Publications Inc., Thousand Oaks, California, ISBN 978-1412956703, 12–16.
- Höher, M., Tretter, H., Athavale, S., Strimitzer, L., Krizmanić, M., Vrček, V., Šegon, V., Markovska, N., Bohzhaliev, V., Aleksov, T., Dimov, L., Szadovski, I., Jerotić, S., Gluce, M., Krajnc, N., 2017. Deliverable N° 4.1: Techno-Economical Assessment Reports of Bioenergy Value Chains and Their Potentials in the Target Villages. Vienna, Austria. Accessible from: <https://ec.europa.eu/research/participants/documents/downloadPublic?documentId=080166e5bf396f09&appId=PPGMS>.
- Holtz, G., 2014. Generating social practices. *J. Artif. Soc. Soc. Simulat.* 17, 1–11.
- Howaldt, J., Butzin, A., Domanski, D., Kaletka, C., 2014. Theoretical approaches to social innovation – a critical literature review. In: A deliverable of the project: 'Social Innovation: Driving Force of Social Change' (SI-DRIVE). Dortmund, pp. 1–160. Accessible from: [http://www.si-drive.eu/wp-content/uploads/2014/11/D1\\_1-Critical-Literature-Review\\_final.pdf](http://www.si-drive.eu/wp-content/uploads/2014/11/D1_1-Critical-Literature-Review_final.pdf).
- Howaldt, J., Kaletka, C., Schröder, A., Zirngiebl, M., 2018. *Atlas of Social Innovation – New Practices for a Better Future*. Sozialforschungsstelle, TU Dortmund University, Dortmund.
- Hubert, A., 2010. Empowering people, driving change. In: *Social Innovation in the European Union*, Bepa. Publications Office of the European Union, Luxembourg. <https://doi.org/10.2796/13155>.
- Imperl, M., Podgoršek, J., Prah, J., Rogelja, T., Tielke, K.J., Zorčić, I., 2021. *Oglje Je Črno Zlato. Društvo Ogljarjev Slovenije, Dole Pri Litiji*. ISBN 978-961-95598-0-2.
- Jungsberg, L., Copus, A., Herslund, L.B., Nilsson, K., Perjo, L., Randall, L., Berlina, A., 2020. Key actors in community-driven social innovation in rural areas in the Nordic countries. *J. Rural Stud.* 79, 276–285. <https://doi.org/10.1016/J.JRURSTUD.2020.08.004>.
- Katonane Kovacs, J., Varga, E., Nemes, G., 2016. Understanding the process of social innovation in rural regions: some Hungarian case studies. *Stud. Agric. Econ.* 118, 22–29. <https://doi.org/10.7896/j.1604>.
- Klůvankova, T., Gežik, V., Špaček, M., Brnkalkova, S., Slee, B., Polman, N., Valero, D., Bryce, R., Alkhaled, S., Secco, L., Burlando, C., Kozova, M., Miller, D., Nijnik, M., Perlik, M., Pisani, E., Price, M., Sarkki, S., Weiss, G., 2017. Report D.2.2 transdisciplinary understanding of SI in MRAs. Accessible from: <http://www.simra-h2020.eu/index.php/deliverables/>.
- Klůvanková, T., Brnkalková, S., Špaček, M., Slee, B., Nijnik, M., Valero, D., Miller, D., Bryce, R., Kozová, M., Polman, N., Szabo, T., Gežik, V., 2018. Understanding social innovation for the well-being of forest-dependent communities: a preliminary theoretical framework. *For. Policy Econ.* 97, 163–174. <https://doi.org/10.1016/j.forpol.2018.09.016>.
- Kruger, L.E., Shannon, M.A., 2010. Getting to know ourselves and our places through participation in civic social assessment. *Soc. Nat. Resour.* 13, 461–478. <https://doi.org/10.1080/089419200403866>.
- Lindberg, M., 2017. Promoting and sustaining rural social innovation. *Eur. Public Soc. Innov. Rev.* 2 <https://doi.org/10.31637/epsir.17-2.3>.
- Ludvig, A., Hujala, T., Živojinović, I., Weiss, G., 2019. Social and institutional innovations in family forestry. In: Hujala, T., Toppinen, A., Butler, B. (Eds.), *Services in Family Forestry*. Springer, Cham, pp. 269–285. <https://doi.org/10.1007/978-3-030-28999-7>.
- Ludvig, A., Rogelja, T., Asamer-Handler, M., Weiss, G., Wilding, M., Živojinović, I., 2020. Governance of social innovation in forestry. *Sustain. Times* 12, 1065. <https://doi.org/10.3390/su12031065>.
- Ludvig, A., Sarkki, S., Weiss, G., Živojinović, I., 2021a. Policy impacts on social innovation in forestry and back: institutional change as a driver and outcome. *For. Policy Econ.* 122, 1–7. <https://doi.org/10.1016/j.forpol.2020.102335>.



- Ludvig, A., Sarkki, S., Weiss, G., Živojinović, I., 2021b. Policy impacts on social innovation in forestry and back: institutional change as a driver and outcome. *For. Policy Econ* 122, 102335. <https://doi.org/10.1016/j.forpol.2020.102335>.
- Ludvig, A., Diaconescu, A., 2022. Social Innovation and the Forest Bioeconomy: Challenges and Prospects for Romania. In: Giurcă, A., Dima, P. (Eds.), *The Plan B for Romania's Forests and Society*, 7. Editura Universităţii "Transilvania", Braşov, pp. 112–118. ISBN 978-606-19-1463-0.
- Lukesch, R., Ludvig, A., Slee, B., Weiss, G., Živojinović, I., 2020. Social innovation, societal change, and the role of policies. *Sustain. Times* 12, 1–28. <https://doi.org/10.3390/SU12187407>.
- Malovrh, Š.P., Nonić, D., Glavonjić, P., Nedeljković, J., Avdibegović, M., Krč, J., 2015. Private forest owner typologies in Slovenia and Serbia: targeting private forest owner groups for policy implementation. *Small-scale For* 14, 423–440. <https://doi.org/10.1007/s11842-015-9296-8>.
- Mayring, P., 2014. Qualitative Content Analysis Theoretical Foundation, Basic Procedures and Software Solution e-book, Klagenfurt, Austria. Accessible from. <https://nbn-resolving.org/urn:nbn:de:0168-ssaar-395173>.
- MIZKS, 2012. Opis enote žive kulturne dediščine - oglarstvo. Accessible from. <http://www.nesnovnadediscina.si/register>.
- Moulaert, F., Mehmood, A., MacCallum, D., Leubolt, B., 2017. Social Innovation as a Trigger for Transformations - the Role of Research. Publications Office of the European Union, European Commission, Luxembourg. <https://doi.org/10.2777/68949>.
- Mulgan, G., Tucker, S., Ali, R., Sanders, B., 2007. Social Innovation: what it Is, Why it Matters and How it Can Be Accelerated. The Young Foundation, London, UK. Accessible from 1-905551-03-7/978-1-905551-03-3. <https://youngfoundation.org/wp-content/uploads/2012/10/Social-Innovation-what-it-is-why-it-matters-how-it-can-be-accelerated-March-2007.pdf>.
- Nemes, G., 2005. Integrated rural development - the concept and its operation. In: KTI/IE Discuss. Pap. Accessible from. [http://www.policy.hu/nemes/publikaciok/muhelytaulmany2005\\_6.pdf](http://www.policy.hu/nemes/publikaciok/muhelytaulmany2005_6.pdf).
- Neumeier, S., 2012. Why do social innovations in rural development matter and should they be considered more seriously in rural development research? - proposal for a stronger focus on social innovations in rural development research. *Sociol. Rural.* 52, 48–69. <https://doi.org/10.1111/j.1467-9523.2011.00553.x>.
- Neumeier, S., 2017. Social innovation in rural development: identifying the key factors of success. *Geogr. J.* 183, 34–46. <https://doi.org/10.1111/geoj.12180>.
- Nicholls, A., Simon, J., Gabriel, M., 2015. *New Frontiers in Social Innovation Research*, Palgrave Macmillan. Palgrave Macmillan, London, UK. <https://doi.org/10.1057/9781137506801>.
- Nicolini, D., 2009. Zooming in and zooming out: a package of method and theory to study work practices. In: Ybema, S., Yanow, D., Wels, H., Kamsteeg, F. (Eds.), *Organizational Ethnography: Studying the Complexities of Everyday Life*. Sage Publications Inc., London, ISBN 978-1-84787-046-9, pp. 120–138.
- Nicolini, D., 2012. *Practice Theory, Work, and Organization - an Introduction*. Oxford University Press, Oxford, 978–0-19-923159-1.
- Nordberg, K., Mariussen, Å., Virkkala, S., 2020. Community-driven social innovation and quadruple helix coordination in rural development. Case study on LEADER group Aktion Österbotten. *J. Rural Stud.* 79, 157–168. <https://doi.org/10.1016/J.JRURSTUD.2020.08.001>.
- Novikova, M., 2022. Social innovation impacts and their assessment: an exploratory study of a social innovation initiative from a Portuguese rural region. *Soc. Sci.* 11 <https://doi.org/10.3390/socsci11030122>.
- Olmedo, L., van Twuijver, M., O'Shaughnessy, M., 2021. Rurality as context for innovative responses to social challenges – the role of rural social enterprises. *J. Rural Stud.* <https://doi.org/10.1016/J.JRURSTUD.2021.04.020>.
- Pel, B., Bauler, T., 2014. The Institutionalization of Social Innovation between Transformation and Capture (No. Working Paper 2). Brussels, Belgium. Accessible from. <http://www.transitsocialinnovation.eu/working-papers>.
- Pisani, E., Andriollo, E., Masiero, M., Secco, L., 2020. Intermediary organisations in collaborative environmental governance: evidence of the EU-funded LIFE sub-programme for the environment (LIFE-ENV). *Heliyon* 6, e04251. <https://doi.org/10.1016/J.HELIYON.2020.E04251>.
- Polman, N., Slee, B., Kluvánková, T., Dijkshoorn, M., Nijnik, M., Gezik, V., Soma, K., 2017. Report D2.1 Classification of Social Innovations for Marginalized Rural Areas. Accessible from. <http://www.simra-h2020.eu/index.php/deliverables/>.
- Prah, J., 2004. Primeri dobrih praks: oglarska pot. In: *Turistične Gozdne Poti in Varstvo Narave*, pp. 1–6. Radovna.
- Prah, J., 2009. *Project TCP/SVN/2901 Annex 9 - 7b Final Report: Charcoal Use and Trade in Slovenia (Ljubljana, Slovenia)*.
- Ravazzoli, E., Torre, C.D., Re, R. Da, Govigli, V.M., Secco, L., Górriz-Mifsud, E., Pisani, E., Barlagne, C., Baselice, A., Bengoumi, M., Dijkshoorn-Dekker, M., Labidi, A., Lopolito, A., Melnykovich, M., Perlik, M., Polman, N., Sarkki, S., Vassilopoulos, A., Koundouri, P., Miller, D., Streifeneder, T., Nijnik, M., 2021. Can social innovation make a change in European and Mediterranean marginalized areas? Social innovation impact assessment in agriculture, fisheries, forestry, and rural development. *Sustain. Times* 13, 1–27. <https://doi.org/10.3390/SU13041823>.
- Richter, R., Christmann, G.B., 2021. On the role of key players in rural social innovation processes. *J. Rural Stud.* <https://doi.org/10.1016/J.JRURSTUD.2021.04.010>.
- Rittl, T.F., Arts, B., Kuyper, T.W., 2015. Biochar: an emerging policy arrangement in Brazil? *Environ. Sci. Pol.* 51, 45–55. <https://doi.org/10.1016/J.ENVSCL.2015.03.010>.
- Rogelja, T., 2019. *Governance Capacity of Public Actors for Forest-Based Social Innovation*. Dr. Diss. University of Padova. Accessible from. <https://www.research.unipd.it/handle/11577/3424738>.
- Rogelja, T., Ludvig, A., Weiss, G., Secco, L., 2018. Implications of policy framework conditions for the development of forestry-based social innovation initiatives in Slovenia. *For. Policy Econ* 95, 147–155. <https://doi.org/10.1016/j.forpol.2018.07.011>.
- Sarkki, S., Ficko, A., Miller, D., Barlagne, C., Melnykovich, M., Jokinen, M., Soloviy, I., Nijnik, M., 2019a. Human values as catalysts and consequences of social innovations. *For. Policy Econ.* 104, 33–44. <https://doi.org/10.1016/j.forpol.2019.03.006>.
- Sarkki, S., Taras, P., Melnykovich, M., Zahvoyska, L., Derbal, J., Voloshyna, N., Nijnik, M., 2019b. Beyond participation! Social innovations facilitating movement from authoritative state to participatory forest governance in Ukraine. *Landsc. Ecol.* 34, 1601–1618. <https://doi.org/10.1007/s10980-019-00787-x>.
- Sarkki, S., Torre, C.D., Fransala, J., Živojinović, I., Ludvig, A., Górriz-Mifsud, E., Melnykovich, M., Sfeir, P.R., Arbia, L., Bengoumi, M., Chorti, H., Gramm, V., Marco, L.L., Ravazzoli, E., Nijnik, M., 2021. Reconstructive social innovation cycles in women-led initiatives in rural areas. *Sustain. Times* 13, 1–22. <https://doi.org/10.3390/SU13031231>.
- Secco, L., Pisani, E., Burlando, C., Da Re, R., Gatto, P., Pectenella, D., Vassilopoulos, A., Akinsete, E., Koundouri, P., Lopolito, A., Proserpi, M., Tuomasjukka, D., Den Herde, M., Lovric, M., Polman, N., Dijkshoorn, M., Soma, K., Ludvig, A., Weiss, G., Živojinovic, I., Sarkki, S., Ravazzoli, E., Dalla Torre, C., Streifeneder, T., Slee, B., Nijnik, M., Miller, D., Barlagne, C., Prokofieva, I., 2017. Demonstrator D4.2 set of methods to assess SI implications at different levels: instructions for WPs 5&6. Accessible from. <http://www.simra-h2020.eu/index.php/deliverables/>.
- Sevnik, F., 1936. *Oglarstvo v Sloveniji (Carbonisation du Bois en Slovenie)*. Šumarski List. *Rev. Foro* 60, 281–320.
- Sewell, W., 1992. A theory of structure: duality, agency, and transformation. *Am. J. Sociol.* 98, 1–29. <https://doi.org/10.1086/229967>.
- Shannon, M.A., 1989. *Managing public resources: public deliberation as organizational learning*. PhD Dissertation. <https://doi.org/10.16953/deusbed.74839>.
- Sitoe, A., 2017. Charcoal, Carbon Emissions, and International Conventions/protocols. Accessible from. [https://energypedia.info/images/4/4a/EN-Charcoal%2C\\_carbon\\_emissions\\_and\\_international\\_ventions%3Bprotocols-Almeida\\_A\\_Sitoe.pdf](https://energypedia.info/images/4/4a/EN-Charcoal%2C_carbon_emissions_and_international_ventions%3Bprotocols-Almeida_A_Sitoe.pdf).
- Slee, B., Clotteau, M., Lukesch, R., Weiss, G., Ludvig, A., 2018. How can social innovation support the future of food and farming. *Policy br.* Accessible from. <http://www.simra-h2020.eu/index.php/policy-briefs/>.
- <https://www.drustvo-oglarjev.si/zgodovina-oglarjenja-na-slovenskem.html>.
- Sørensen, E., Torfing, J., 2011. Enhancing collaborative innovation in the public sector. *Adm. Soc.* 43 (8), 842–868. <https://doi.org/10.1177/0095399711418768>.
- Sotirov, M., Blum, M., Storch, S., Selter, A., Schraml, U., 2017. Do forest policy actors learn through forward-thinking? Conflict and cooperation relating to the past, present and futures of sustainable forest management in Germany. *For. Policy Econ* 85, 256–268. <https://doi.org/10.1016/J.FORPOL.2016.11.011>.
- Spekink, W., 2013. Institutional capacity building for industrial symbiosis in the Canal Zone of Zeeland in The Netherlands: a process analysis. *J. Clean. Prod.* 52, 342–355. <https://doi.org/10.1016/j.jclepro.2013.02.025>.
- Steiner, A., Calò, F., Shucksmith, M., 2021. Rurality and social innovation processes and outcomes: a realist evaluation of rural social enterprise activities. *J. Rural Stud.* <https://doi.org/10.1016/J.JRURSTUD.2021.04.006>.
- Ubels, H., Haartsen, T., Bock, B., 2019. Social innovation and community-focussed civic initiatives in the context of rural depopulation: for everybody by everybody? *Project Ulrum 2034*. *J. Rural Stud.* <https://doi.org/10.1016/J.JRURSTUD.2019.02.019>.
- Vercher, N., 2022. The Role of Actors in Social Innovation in Rural Areas. *Land* 11. <https://doi.org/10.3390/land11050710>.
- Vercher, N., Bosworth, G., Esparcia, J., 2022. Developing a framework for radical and incremental social innovation in rural areas. *J. Rural Stud.* <https://doi.org/10.1016/J.JRURSTUD.2022.01.007>.
- Whitehead, T.L., 2005. *Basic Classical Ethnographic Research Methods: Secondary Data Analysis, Fieldwork, Observation/Participant Observation, and Informal and Semi-structured Interviewing, Ethnographically Informed Community and Cultural Assessment Research Systems (EICCARS)* Working Paper Series. Maryland. Accessible from. [https://www.depts.ttu.edu/education/our-people/Faculty/additional\\_pages/duemer/epsy\\_5382\\_class\\_materials/2019/Basic-Classical-Ethnographic-Research-Methods-Whitehead-2005.pdf](https://www.depts.ttu.edu/education/our-people/Faculty/additional_pages/duemer/epsy_5382_class_materials/2019/Basic-Classical-Ethnographic-Research-Methods-Whitehead-2005.pdf).
- Wittmayer, J.M., Avelino, F., van Steenberg, F., Loorbach, D., 2017. Actor roles in transition: insights from sociological perspectives. *Environ. Innov. Soc. Transit.* 24, 45–56. <https://doi.org/10.1016/j.eist.2016.10.003>.



Wittmayer, J.M., Backhaus, J., Avelino, F., Pel, B., Strasser, T., Kunze, I., Zuijderwijk, L., 2019. Narratives of change: how social innovation initiatives construct societal transformation. *Futures* 112, 102433. <https://doi.org/10.1016/j.futures.2019.06.005>.

Yin, R.K., 1984. *Case Study Research: Design and Methods*. Sage Publications, ISBN 978-0803956636.

Yin, R.K., 2009. *Case Study Research Design and Methods*, fourth ed. Sage Publications Inc. -13. 978-1412960991.

Živojinović, I., Ludvig, A., Hogl, K., 2019. Social innovation to sustain rural communities: overcoming institutional challenges in Serbia. *Sustain. Times* 11, 7248. <https://doi.org/10.3390/su11247248>.