Social innovation to address sustainability challenges and enlarge the opportunities provided by forests for a green and just transition of marginalised mountain areas

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ABSTRACT

In this paper, we provide conceptual and practical insights into social innovation, highlighting its role in achieving a more sustainable provision of ecosystem services from forests, as well as its role in tackling societal challenges and utilising the opportunities available in marginalised mountain areas across Europe. The findings indicate that social innovation and innovative governance mechanisms are crucial for the promotion of sustainability and multi-functionality in mountain forestry, as well as for the enhancement of a smart, green, and just transition of marginalised rural areas, so that forest-dependent communities, living and working in the vicinity of woodlands, can become healthier, happier, and more prosperous. The results show that social innovation has a power of enabling forest-dependent communities and woodland-based social enterprises to build and realise their capacities, while reducing existing inequalities, and promoting social justice and inclusion. There is also empirical evidence to suggest that by adding to improving human wellbeing, social innovation can create new responses to pressing social demands (e.g., for climate neutrality) that are not adequately addressed by markets or existing (e.g., public) institutions. We believe that the conceptualization and operationalisation of social innovation in the context of multi-functional forestry, offered by this research and its findings, can help informing forest policy and management decisions and the design of practice measures for Green Recovery and a long-term sustainability of socio-ecological systems in marginalised mountain areas.

KEYWORDS

Natural capital, ecosystem services, woodlands, communities, stakeholder engagement, sustainability, resilience

1 INTRODUCTION

Social innovation (SI) creates new responses to pressing social demands which affect the process of social interactions. As defined by the EU funded project SIMRA, SI is "*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). The reconfiguration of social practices includes the creation of new institutions, networks, and governance agreements in forestry that seeks to enhance societal outcomes, especially but not exclusively for disadvantaged groups, and recognizing the likelihood of trade-offs among competing interests. And while social practices may include diverse institutions, they necessarily rely on the voluntary engagement of civil society actors.

Social innovation comprises new institutional environments (e.g., formal, and informal rules) and arrangements (spatial and procedural), related actors' relationships and interactions (e.g., new attitudes, values, behaviours, skills, interactions, networks, collaborations, learning processes) and new fields of activity (e.g., social entrepreneurship, social enterprises). Social innovation manifests itself in participation, in social relationships and collaborations, and new governance mechanisms that it initiates advance the social capital further and can create new SIs (Nijnik et al., 2019).

The objective of this paper is to share a synthesis overview of key results of forest research within the EU H2020 SIMRA project (Social Innovation in Marginalised Rural Areas) and its follow ups, as well as the authors' work supported by their national governments. The article provides some conceptual and practical insights into social innovation, highlighting its role in achieving a more sustainable provision of ecosystem services (ES) from forests, tackling societal challenges, and utilising the opportunities available in marginalised mountain areas of Europe. The findings (e.g., in Barlagne et al., 2021a; Nijnik et al., 2021; Nijnik et al., 2022), indicate that social innovation and enhanced governance mechanisms are crucial for transition towards a more sustainable development of forestry, as well as for the enhancement of smart and inclusive growth of forest-dependent communities that are living and working in the vicinity of mountain woodlands.

2 METHODS

2.1 Methodological considerations

This paper is underpinned by the work of the SIMRA project, the overarching aim of which was to improve existing understanding of social innovation and increase the prospects for its successful implementation on the ground. The SIMRA work tackled the following main areas: i) development of frameworks for the categorization, understanding, and operationalizing SI in different settings of marginalized rural areas in Europe and North Africa (Vercher et al., 2019; Sarkki et al., 2019) and pertaining to the forest sector (Barlagne et al., 2021b; Ludvig et al., 2018a; Nijnik et al., 2021; Slee et al., 2021); ii) identification and understanding of reasons for diverging paths of SI development in regions with similar conditions (Kluvankova et al., 2022); iii) advancement of an integrated set of methods for evaluating SI, and its impacts (Secco et al., 2019); iv) evaluation of success factors for SIs co-constructed by scientific and stakeholder labs in selected case studies (Ravazzoli et al., 2021); v) communication of new knowledge to policy makers (Ludvig et al., 2018b; Slee et al., 2022) and communities of practice; and vi) promotion of collaborative learning and research networking in forestry (e.g. establishment of IUFRO Unit 4.05.05) and new partnerships, and galvanizing innovation actions (Melnykovych et al., 2018) for making viable and durable impact.

The trans-disciplinary science has addressed the complexity and causalities of SI actions, linking abstract (i.e., system) knowledge through the innovation and learning processes (i.e., transformation knowledge) towards the development of experience-based competencies and skills for making impacts (i.e., target knowledge, which is e.g., a set of SI outputs, such as new policy recommendations; proposals for institutional or behavioural changes), as illustrated in Figure 1.

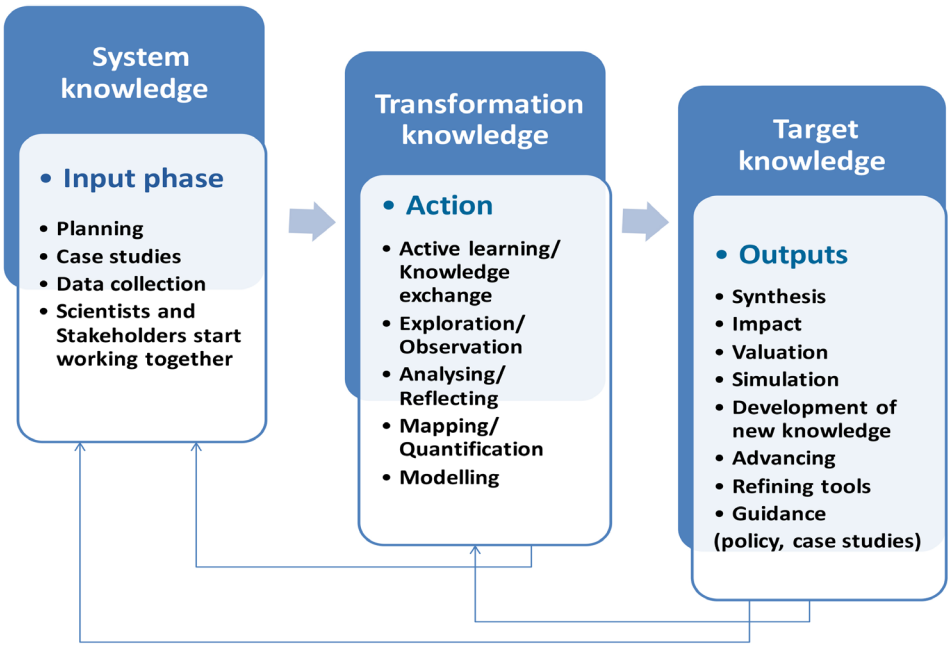

Figure 1. Systems model of knowledge flow (Nijnik et al., 2022)

The multi-actor driven approach adopted first of all targets case studies where researchers 'set the scene' on existing scientific knowledge, and stakeholders provide input to developing trans-disciplinary knowledge and co-constructing investigations. The innovative knowledge and approaches developed jointly in the science and stakeholder labs flow throughout the research phases to support the build-up and promotion of SIs on the ground. The integration of participatory approaches into the designing and implementing of solutions to addressing sustainability challenges instigated by SIMRA has been reinforced by the trans-disciplinary knowledge of FirEuRisk (concerning forest fire risk management) and through a science-society-policy interface by SHERPA. Along with SIMRA, these EU H2020 projects have added value to the formulation of recommendations for future policies relevant to rural areas, including the forest sector, while their follow-up, the Horizon Europe RURACTIVE project, aims to empower marginalised rural communities to act for change.

2.2 Detailed method description

The research followed a semi-qualitative route and applied, amongst other methods, a review of relevant literature and 'face-to-face' questionnaire surveys of respondents in selected case studies as well as participatory approaches, with application of visualization tools (e.g., a Virtual Landscape Theatre; Wang et al., 2022) and quantitative methods to analyse the data (e.g., PQ-method of MCA; PCA; SNA, and statistics). Stakeholder evaluation approaches and participatory techniques were advanced, refined, and applied innovatively, including for natural capital valuation. The PQ method, for example, was used to identify, analyse, and explain attitudes and perspectives, amongst representatives of local communities and forestry associated stakeholders, regarding sustainability changes in selected European mountain areas, and on the role of SI in multi-functional present and future developments of forestry (Nijnik et al., 2020; Miller et al., 2020a). Among others, the following methodological approaches, linked to the theory of social innovation, were elaborated:

1. A spiral model (adapted from The Young Foundation, 2012) for examining SIs through the entire cycle: from *ideas, to prototyping and piloting, to implementation, and up-scaling (or out-scaling, or spreading deep).* It is also a cycle from ideas to products and markets (e.g., new entrepreneur opportunities), and towards innovative policy and governance mechanisms. The ultimate aim was to enhance SIs that are both driven by end-users and relevant to them. Attention was given to new social partnerships, horizontal and vertical networks, specifically those involving representatives of the forest sector and forest-dependent communities.
2. A systematic *theoretical framework* for categorising, understanding, and operationalising social innovation in different settings (Kluvankova et al., 2018; 2021; Nijnik et al., 2020; 2021). This framework relies on novel systematic ways of integrating different types of knowledge, existing data, tools, and approaches with the beyond-the-state-of-art science to produce operational methods for end-users to practically initiate SIs, and to innovate and spread their initiatives (e.g., scale up, scale out and scale deep) through innovation actions.

3. An *innovative methodological framework* that integrates qualitative and quantitative methods (Secco et al., 2019; Secco et al., 2022). It is based on a critical review and categorization of existing evaluation techniques and the designing of an integrated set of approaches and tools for assessing and evaluating social innovation's and of their impacts.

3 RESULTS

The EU H2020 SIMRA (2020) project has advanced the state-of-the-art understanding of social innovation and innovative governance in the forest sector (and beyond), and how to boost them to enhance societal well-being in marginalised rural areas. Drawing on the theories identified above, and connecting them to policies (Slee and Mosdale, 2020) and practices in an open society (BEPA, 2011), a new theoretical and context-specific knowledge of social innovation was co-created and operationalised. The knowledge was advanced of how social innovation emerges and develops, and how it can be scaled up and out and make adaptive or transformative changes on the ground.

An *online SIMRA database of examples* of social innovations was produced with an interactive map interface and filters to enable easier searching by topic and characteristic. A Catalogue of Diversity of social innovations comprises N≥ 400 (243 validated) examples, including on woodland development and innovative forest governance (Valero and Bryce, 2020; Miller et al., 2020b). Social innovations for reconfiguring rules for the use and management of forests include collaborative management groups for planning loggings, changing ownership of forests, introducing innovative grassroots practices to evaluate natural capital of woodlands and monitor sustainability in using natural assets, as well as pilot projects to introduce and develop new participatory practices in forest management.

The results improved existing understanding of how the diversity of opinions on forestry changes could influence the selection and evaluation of sustainable forest policy decisions. Social innovations associated with reconfiguring perceptions of sustainable forest management primarily aim at securing continuity of local ways of life and increasing well-being. Revitalization of forest-dependent communities requires that forest management is economically beneficial for people, providing the material basis for them to continue living in the locality. Sustainability is perceived as a sense of community and identity, good social relationships within and between communities and towards other stakeholders (e.g., forest companies; authorities), and also as local stewardship which respects and connects people and nature.

The different importance accorded by respondents to the integration of woodlands in landscapes, made us aware of public priorities and of factors that can hamper ecosystem-based adaptation policies and management practices. At times, entirely opposite attitudes towards forestry development and the key objectives of the future of forestry in uplands were revealed (Nijnik et al., 2018). However, people interviewed from across European mountain areas placed strong emphasis on woodland regeneration. The respondents paid particular attention to the recognition of the importance of biodiversity conservation and nature preservation, forest multi-functionality, and people's rights to enjoy the beauty of landscapes (Nijnik et al., 2010; Nijnik et al., 2017). The heterogeneity of existing

perspectives, and attitudinal commonalities and differences across stakeholder groups and individuals within these groups were identified and explained. The results represent a consensus on the importance of woodlands, as offering a range of benefits to people, and to the environment and economy.

In addition to the unique database of examples of SIs, the innovations identified and explained built on the empirical evidence received from SIMRA 11 Type A Case Studies and its 7 social Innovation Actions, the majority of which had some association with woodlands. The cases highlight capacities for the revitalisation of continuous cover forestry practices, locally beneficial nature-based tourism, use of non-wood forest products, grazing practices, gaming, etc. These practices do not necessarily require discontinuing commercial forestry, but rather that the reconfiguring of forest management and use is characterised by changes towards a more sustainable and multi-functional forestry.

Divergent Development Pathways (DDPs) of social innovation were identified and explained on the basis of empirical evidence from the case studies, and the knowledge developed enabled an explanation of why regions with similar initial conditions for social innovation may display diverging paths (Nijnik et al., 2018; Kluvankova et al., 2021). The knowledge was advanced in relation to: i) barriers, success factors and lessons learned from the social innovations initiated and/or advanced in different contexts and scales; ii) how to launch, boost and spread social innovations and help revive local, forest-dependent communities, and improve their well-being; iii) how to build capacities and develop collaborations to promote innovative forest governance and make forestry more sustainable and resilient under conditions of the climate changes (e.g. with the increase of forest fires) and other challenges, from global to local.

The findings indicate that social innovation usually emerges as a response to triggers, both positive and negative, and that policy instruments and management strategies can also be negative triggers. For example (Nijnik and Sarkki, 2019), industrial loggings may have negative impacts on local and small-scale use of the forest by communities (e.g., for nature-based tourism or non-wood forest products). Local people would benefit from more sustainable forest management and could respond with social innovations that advance sustainability.

The conceptualisation of social innovation (e.g., with respect to what it is; how it evolves; how local knowledge and cultures can be integrated into decision-making processes) is being supported by new knowledge of how the impact of social innovation on the ground can be assessed (SIMRA, 2020). An evaluation manual, consisting of a set of tools and evaluation criteria (underpinned by a database of frameworks, approaches, and methods for evaluation) that can be adapted to the specific needs, has been developed (Secco et al., 2019). It is designed for use by researchers and practitioners and improves their understanding of the methodological implications of the evaluation of social innovations and their impacts. It also provides guidance for operationalizing the practice of evaluation: for an internal, self-evaluation of SIs, or for external evaluation of the programmes, including in the forest sector (Secco et al., 2022).

4 DISCUSSION AND CONCLUSION

An advanced understanding of SI and innovative forest governance is of importance for inter-disciplinary forest science and for decision-makers (Ludvig et al., 2018; SIMRA, 2020). This concerns the realization that: i) forward-thinking and well-designed policies can nurture transitions towards sustainability (Rametsteiner and Weiss, 2006); ii) multi-level policy interventions can strengthen innovation systems and best solutions can be upscaled through multilevel processes (Weiss et al., 2020); iii) top-down stimulating policy must be properly connected with bottom-up endogenous actions; iv) strong social capital can contribute positively to the advancing and spreading of knowledge (Buttoud et al., 2011) and triggering SIs (Bock, 2016), therefore, promoting sustainability (whereas weak social capital undermines civic engagement and good forest governance).

Social innovation is a critical component for addressing sustainability challenges and leveraging the opportunities offered by multi-functional forests in marginalized mountain areas (Nijnik et al., 2019; 2021; Melnykovych et al., 2019; Kluvankova et al., 2021). Social innovations usually emerge at a grassroots level but may be mainstreamed. Local innovations are often manifestations of global trends. However, without stakeholder engagement and concrete changes on the ground and at various locations, global trends remain hypothetical. Therefore, social innovations need to be supported at multiple levels, including as part of global change strategies by forest relevant policy and governance towards futures that secure environmentally sustainable and socially equitable forest management and use. However, there are underlying challenges that must be overcome to facilitate the emergence and development of social innovations. The ways forward may lie through:

- *Enhanced inter- and trans-disciplinary collaboration.* Multi-functional forests are complex social-ecological systems, requiring a deep understanding of the interplay between ecological, social, and economic factors. Thus, success of social innovations would require close collaboration amongst academia-policy-practice experts from diverse fields, including forestry, ecology, and social sciences.
- *Participatory approaches that involve local stakeholders in the evaluation of natural capital and ecosystem services and the co-creation and implementation of social innovations.* In mountain areas, where local communities are often marginalized and lack access to resources and the decision-making power, participatory approaches that engage the communities in innovation processes (e.g., to tackle forest fires) are therefore crucial, as well as knowledge sharing (e.g., of good practices and lessons learned) and continuous encouragement of SIs and of innovators. These actions are necessary to ensure that the innovations meet the needs of people and are sustainable.
- *Development of social innovations responsive to the cultural and ecological contexts of the localities.* A one-size-fits-all approach will likely be ineffective and could even lead to unintended negative consequences. Social initiatives must be tailored to the place-specific needs, opportunities and challenges and account for the local culture, and ecological and socioeconomic conditions.
- *Adequate funding and policy support.* Social innovations may need significant upfront investment, and the returns on investment may not be apparent, especially in the short term. Therefore, it is important to make SIs attractive to

policymakers and funders, so that they recognize the long-term benefits of SI initiatives and provide the resources and policy support necessary to enable the emergence and sustaining of social innovations. Exploiting new opportunities for raising external funds and/or making SIs more self-sufficient (e.g., through social enterprises) is important either.

This research is ongoing. The knowledge of social innovation in forestry is still less advanced than in other sectors of the economy. Social innovation pertaining to forest management and use is not that easy to design, initiate, and to develop, and spread. New relationships among citizens, forest-dependent communities, public-private bodies, foresters, advisors, and researchers need to be developed. In our new EU Horizon Europe project of RURACTIVE we aim to share the state-of-the-art knowledge around smart solutions (developed by SIMRA, SHERPA, FirEUrisk and other projects) to enhance the capacities of local communities to act for societal change.

Issues that merit further attention include: what are development paths of social innovation in forestry and what are the implications for their effectiveness? How to empower the development of forest-based SI solutions to climate and environmental challenges? What models of social innovation are most effective for improving mental health and the well-being of people? What are the perceptions and motivations of the innovators initiating and developing social innovations? How to foster, deepen and sustain social innovations, and to scale them up and/or out?

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