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"Towards a method of evaluating social innovation in forest-dependent rural communities: First suggestions from a science-stakeholder collaboration"
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1. Introduction

While the potential and challenges of involving stakeholders from the very early stages of research initiatives have been highlighted, and are well known in the forestry domain[1] (e.g., Jolibert and Wesselink, 2012; Jönsson and Swartling, 2014; Mårald et al., 2015; Kleinschmit et al., 2018), science-stakeholder collaboration is not always properly designed, implemented or effectively used in practice. Jolibert and Wesselink (2012: 100) explored the impacts of doing participatory-based research on policy, society and science through the analysis of levels and modalities of stakeholders' engagement in 38 EU-funded FP6 biodiversity research projects. According to the authors, "when fruitful interactions between science and society [stakeholders] occur during the whole research process this often results in the foundation of innovative research programmes and trans-disciplinary networks clustering around particular topics" (*ibidem*), but in half of the cases "stakeholders were engaged during the dissemination stage and not at critical stages of problem definition and methods selection" (*ibidem*). In reaction to this theory-practice gap, our paper presents the initial results of a science-stakeholder collaboration started at critical early stages of research within SIMRA, a Research and Innovation Action project funded by the EU through the Horizon 2020 program[2] (Kluvánková et al., 2018), to co-construct an evaluation method that can be used to evaluate the emerging concept of social innovation in forest-dependent rural communities in Europe.

In recent years, the European Union has increasingly embraced social innovation as a means for addressing a number of social and economic challenges such as delocalization of industry and loss of economic activities, ageing, migration, increasing poverty and consequences of global environmental change and financial crises, which neither classic tools of government policy nor market solutions are able to solve (Mulgan et al., 2007; Moulaert, 2013; Nicholls et al., 2015; Edwards-Schachter and Wallace, 2017; Moulaert et al., 2017). And such social and economic challenges are faced by several communities located in remote rural areas, including forest-dependent communities. At a time of overarching budgetary constraints, social innovation is considered an effective way of responding to specific social needs or broader societal challenges by mobilising people's creativity, promoting an innovative and learning society, and supporting social dynamics that foster technological

[1] In this paper, we refer to "forestry domain" in a broad sense, including activities, forest sector components, actors and policies connected with the use and management of forest resources. For example, "nature tourism" is included within the forestry domain if it is based on recreational or educational activities organized in a forest site or in relation to forest resources (e.g., Wilkes-Alleman, J., Ludvig, A., 2019).

[2] More information about the EU-funded Horizon 2020 project SIMRA (Social Innovation in Marginalized Rural Areas) that is at the basis of this definition is available at: www.simra-h2020.eu. Such project involves scientists, NGOs and practitioners aimed at understanding how social innovation emerges, what its impacts are and how it can be supported through policy.

innovations as well (Hubert, 2010: 7). In practice, the European Union has undertaken many initiatives[3] in order to foster and speed up the process of social innovation as a response to economic and social crises (Hubert, 2010).

In Europe, the main initial focus of social innovation was on addressing social disadvantage and exclusion more often in urban areas and urban communities, rather than rural contexts (e.g., Moulaert et al., 2005, 2017; MacCallum et al., 2009; Biggs et al., 2010; Bund et al., 2015). So far, few scholars have proposed how to interpret the concept in the rural arena (Neumeier, 2012; Bosworth et al., 2016; Bock et al., 2016). In the forestry domain[4] and in relation to forest-dependent communities, the topic has had even less attention, with a few papers focusing on European contexts published so far (e.g., Rogelja et al., 2018; Nijnik et al., 2018; Kluvánková et al., 2018; Ludvig et al., 2018a, 2018b; Wilkes-Allemann and Ludvig, 2019).[5]

This paper adopts the following definition[6], that focuses specifically on agriculture, forestry and rural development, and regards social innovation 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).

However, a uniquely commonly accepted definition is still missing (Hernández-Ascanio et al., 2016), and scholars have freely adopted their own interpretation of such a broad and multifaceted concept using proxy concepts (e.g., social entrepreneurship, social capital). As a consequence, the concept refers *de facto* to a wide range of initiatives dealing with diverse societal challenges, and it is probably more widespread in practice[7] than reported in scientific literature (ibidem), not emerging as strongly and as frequently everywhere. For example, it was noted that Anglo-Saxon countries are more socially innovative than the countries of continental Europe (Nicholls et al., 2015), where forest sectors are still predominantly hierarchically organized, dominated by public actors, and decisions are taken in a top-down manner (Buttoud et al., 2011; Brukas, 2015; Liubachyna, 2017; Rogelja and Shannon, 2017; Secco et al., 2017).

Being such a new, complex and multi-faceted concept, various knowledge gaps have yet to be filled in by research. Among others, it is not clear yet how to evaluate initiatives of social innovation and their impacts in remote rural forest-dependent communities. But the importance of monitoring and evaluation as tools to assist both policy makers and practitioners in supporting, designing and implementing programs and projects is internationally recognized (OECD, 2010). Evaluation applied in the forest sector deals with specific topics such as quality of forest governance at local level (Secco et al., 2014), climate change adaptation and mitigation (Klostermann at al., 2017), ecological impact assessment

[3] Including, for example, the Social Innovation Europe initiative (SIE), Social Business Initiative (DG Growth, 2011), Social Innovation Europe (2011), and Social Investment Package (DG Employment and Social Affairs, 2013) (ENSIS – European Network for Social Innovation and Solidarity, 2018), as well as calls for research and innovation actions within the Horizon 2020 programme.

[4] In this paper, we use the concept of "forestry domain" in a broad meaning, including any activity, initiative, context, discourse, and policy that refers to forest resources along the whole forest sector, not only to forest planning and harvesting activities.

[5] As of today, excluding the papers of this Special Issue and according to a search in Scopus database carried out in September 2018, only 17 papers have been published explicitly dealing with "social innovation" AND "forest" issues; only 3 of these 17 are referring to European contexts. On the contrary, technological, organizational and institutional innovations have been more extensively studied in the forest domain (Rametsteiner et al., 2005; Rametsteiner and Weiss, 2006; Kubeczko et al., 2006; Weiss et al., 2011; Slee et al. 2011; Matilainen et al. 2011; Ludvig et al., 2016a, 2016b; Živojinović et al., 2017).

[6] While finding a definition as well as identifying and categorizing examples of social innovation have been tackled with science-stakeholder collaboration too (Polman et al., 2017; Kluvánková et al., 2017), and data collection efforts are going on (Górriz-Mifsud et al. 2018), these aspects remain out of the scope of this paper and have been mentioned above here just with the intent of providing the reader with an overall understanding of these emerging concepts, still under development.

[7] Within SIMRA project, a catalogue of 54 examples of social innovation was identified according to this definition within the fields of agriculture, forestry and rural development in marginalized rural areas in EU and extra-EU Mediterranean countries (Price et al., 2016; Bryce et al., 2017), and has been compiled and published. The catalogue is neither fixed nor comprehensive. Rather, it provides an initial overview on the wide variety of social innovation cases already existing.

(Miller et al., 2017), and sustainability impact assessment (Sieber et al., 2018), but not specifically with social innovation. Information on the most appropriate (e.g., socially acceptable) approaches, methods and tools to evaluate social innovation in such contexts, as well as in urban contexts (Mieg and Töpfer, 2013; Brandsen et al., 2016), is still very limited.

Our paper aims at filling in this specific knowledge gap. It wants to set the scene for drawing an innovative evaluation method, which should be designed for capturing relevant aspects of social innovation, with a focus on rural forest-dependent contexts, and it should be developed with an early involvement of stakeholders. For this purpose, preferences and suggestions for approaches and methods for social innovation evaluation - as emerging from ad hoc stakeholders' consultations carried out in 2017-2018 - are reported and discussed in relation to existing evaluation approaches and methods as identified in literature. Through a qualitative analysis of the results of stakeholders' consultations compared with methods found in literature, the most important and useful characteristics to guide the development of a specific evaluation method for the future are listed and commented in a descriptive way. More specifically, the paper reports results and recommendations in relation to two earlier and critical stages of research on evaluation of social innovation. Following Jolibert and Wesselink (2012), these stages are identified as: (i) *problem definition*, i.e. the definition of what aspects/elements of social innovation should be evaluated (*What to evaluate?*); and (ii) *methods selection*, i.e. the selection of methods and tools particularly appropriate in the evaluation of social innovation (*How to evaluate?*). The ultimate, overall goal is the contribution to building a framework for the evaluation of SI through an interpretation of how evaluation should be applied. For a number of reasons (see section 2.1), we believe that the forestry domain and forest-dependent communities represent an interesting arena from where to start.

The paper is structured in five sections. Following this introduction (section 1), the background (section 2) explains the reasons for a science-stakeholders' collaboration focusing on evaluation and evaluation methods, and the reasons for putting the attention on the forest sector. Section 3 explains the material and methods used in our study. Section 4 reports results and discusses them. Section 5 concludes the paper.

2. Background

This section is divided into two sub-sections. The first one (2.1) explains the reasoning behind the concentration of the paper on the evaluation of social innovation in the forestry domain. The second one (2.2) refers to theoretical concepts that are at the basis of commonly used evaluation approaches and practices, which the paper is embedded in.

2.1 On the relevance of evaluating social innovation in the forest sector

There are several good reasons why the social innovation concept is being explored with special attention on the forest sector and forest-dependent rural communities. Here, we do not intend to be exhaustive and comprehensively describe all of them; rather, we mention some, as illustrative examples.

First of all, forest-dependent communities in Europe are particularly affected by several modern societal challenges that social innovation can contribute to solving: they are often located in disadvantaged regions, with severe climatic and morphological conditions, poor infrastructures, low incomes and limited access to services (schools, post offices, hospitals) (SIMRA, 2016). Looking at economic aspects, at least in Southern European countries, the forest-sector value is lower or significantly lower if compared with agricultural sector; forests are frequently considered just components of rural development rather than national strategic resources of the industrial sector; timber prices are decreasing, while the international timber trade is polarized by certain countries (Lovrić et al., 2018a). The value of

wild forest products is often underestimated and these products are exchanged in informal markets despite their importance for income generation in marginal rural areas (Cai et al., 2011); ecosystem services deriving from forests are considered very important and their value highly estimated (e.g., Merlo and Croitoru, 2005; Masiero et al., 2016, 2018, 2019; Bösch et al. 2018), even if sometimes it is difficult to estimate their monetary value (Hansen and Malmaeus, 2016), but land owners are often not remunerated for provisioning them (Thorsen et al., 2014). Looking at the social and environmental aspects, one of the most prominent phenomenon which has occurred in the last 50 years in remote rural areas in Europe is the decline and ageing of population due to urbanisation and rural-urban migration flows, with the consequent land abandonment, that led to the natural expansion of forest cover and increase in risks of hazards like landslides, pest attacks, forest fires exacerbated by climate change. Many other challenges exist, as forestry is "in the midst of gobal changes" (Farcy et al., 2019).

These dynamics bring new possibilities, but also new challenges. On the one hand, for example, forest-based social-oriented initiatives can be established to tackle some of these problems (e.g., projects of social inclusion of disabled people in forest management). On the other hand, the establishment of these initiatives can be long and complex, there are several risks associated to climate change that might have effects on them, global market competition is increasing, decision-making in forestry is often still dominated by public actors and decentralization and governance shifts are often ineffective (Secco et al. 2017). And, in the meanwhile, forest-dependent communities remain fragile and exposed to the effects of globalisation and urbanisation. Mobilising local people's creativity and endogenous resources by means of social innovations could contribute to re-build more resilient forest-dependent communities and enhance human well-being based on forest ecosystem services.

According to the definition adopted in this paper (Polman et al. 2017), key elements of social innovation are changes in social practices, and engagement of civil society actors. These social elements might refer for example to the concept of social capital (e.g., Bhatt and Altinay, 2013; Dietrich, 2016; Pisani et al. 2017), explored in forestry by e.g., Górriz-Mifsud et al. (2016, 2017), that includes the reciprocal trust among actors and can facilitate the creation of new public-private agreements to ease the inclusion of vulnerable and marginalized groups (e.g., disabled people, migrants/refugees) in forest management activities. An example of positive effects that could emerge from the insertion of social inclusive activities in the construction of more resilient forest-dependent communities could be the multi-cultural integration, as attested by the case of the social cooperative *Cooperativa Cadore* in Veneto region (Italy) (Puligheddu, 2019), which has specifically tackled the societal challenge of migration flows. Or, they can refer to the emerging demand for new social uses of forests (e.g., "forest bathing"), to tackle the increasing health care needs of disabled people, the elderly and other vulnerable groups (Cervinka et al., 2014). Social elements can also refer to the engagement of NGOs, voluntary associations, citizens' committees in forest management, in collaboration and coordination with forest public administrations, to tackle with the protection and enhancement of forest ecosystems and their services – such as in the case of *Community Woodland Llais y Goedwin* in Wales (United Kingdom) (Bryce et al. 2017; SIMRA database).

However, on the one hand, no specific evaluation methods have been developed so far that are able to combine all these inter-related issues, such as social factors that determine not only social and economic, but also environmental impacts (on forests). An *ad hoc* literature analysis (Secco et al. 2017, see section 3) found 26 out of 111 sets of frameworks and methods (23% of the total identified) that can be used for evaluation of social innovation

that explicitly (but not exclusively) refer to the forestry domain[8]. Most of them refer to rural development (81%) and/or land use management (62%) evaluations, adopting a multi-functionality focus that includes also forests. Thus, a lot has to be done to improve evaluation, not only of social innovation initiatives, within the forest sector.

On the other hand, the forestry domain has traditionally experimented labs for participatory approaches and governance shifts (e.g., forest certification, sustainable forest management standards, the Model Forest Network, payments for ecosystem services, REDD+ projects) that have several elements in common with the process of social innovation and their dynamics, from the involvement of a wide range of stakeholders, to the creation of innovative solutions based on new types of public-private or private-private partnerships (Lemos and Agrawal, 2006), to the outcomes and impacts. These comprise not only economic aspects (e.g., timber commercialization) but also the protection of forest resources and their ecosystem services, included those having cultural and social meanings. These experiences, extensively applied in the forestry domain for 20 years, provide lessons that might be useful for developing social innovation evaluation nowadays.

2.2 On the importance of innovating evaluation[9] applied to social innovation

It is widely accepted that evaluation of interventions, such as policies or projects, is likely to provide credible and useful information for better orienting decision-making, learning from the past and thus improving decisions in the future (e.g. Cashore, 2009; OECD, 2010). Both the literature and the practice of evaluation emphasize the "reliability and usefulness of findings. Their role is to improve information and reduce uncertainty" (OECD, 1999:6). Typically, the intention of evaluations of projects or policies is to identify the factors of success or failure, to assess the sustainability of results and long-term impacts, and to draw conclusions that may inform other interventions. According to the Common Evaluation and Monitoring Framework (CMEF) (European Commission, 2015: 66), for example, which is applied in evaluation of the Common Agriculture Policy (CAP) in both pillars (direct payments and rural development), "evaluation is a process of judgement of interventions according to their results, impacts and the needs they aim to satisfy". Usually, evaluation looks at the effectiveness, the efficiency, the coherence and at the relevance of an intervention (European Commission, 2015); also, it aims to determine the fulfilment of objectives and sustainability of the implemented actions (e.g., Morra-Imas and Rist, 2009; OECD, 2010; Khandker et al., 2010; Gertler et al., 2016). In short, these are known as evaluation criteria. They are used to understand whether an intervention achieved what was needed and led to the intended results and impacts.

This approach and criteria can apply to social innovation interventions too. Findings of evaluations can help both policy makers to reform or design policy instruments to support social innovation projects in rural forest-dependent communities, and/or practitioners to identify the most relevant aspects to be used as leverages for promoting and making effective and successful their entrepreneurial and social initiatives. However, in the current prevailing evaluation approaches, mainly the economic aspects and the projects' outcomes are of paramount importance, while other aspects remain secondary, as explained hereafter.

2.2.1 Current evaluation focuses on economic aspects

[8] 33.3% refer to agriculture and 21.6% to livestock. Other sectors identified are food, energy, cultural heritage, business, defence, education, industry, fishery, environment, medicine, mining, policy, and water.

[9] Sometimes evaluation and valuation are used as synonymous, as they both are about comparisons. However, they have different meanings and contents. While valuation is about comparing objects and is defined as an estimation of something's worth (a good), evaluation focuses on the relative merits of actions (projects) (Dasgupta, 1999). Valuation is commonly carried out through the use of purely economic-oriented and quantitative-based cost-benefit analysis.

In relation to the dominance of economic aspects in evaluation, so far, to our knowledge, no standards or mechanisms have been agreed for the evaluation of the impact and performance of social innovation (Nicholls et al., 2015), neither in urban or rural contexts, despite attempts having been made (Dayson, 2016). In the European Union, evaluation methods and tools have been developed for assessing the environmental impacts of economic activities (e.g. Environmental Impact Assessment) (European Commission, 2003), added values of specific initiatives within the rural development policies (e.g., value added of LEADER measured as improved social capital, improved local governance, and enhanced results – European Commission, 2017)**,** and economic impacts of entrepreneurial activities connected with new technologies. A range of approaches has been developed for the measurement of social impact within the fields of welfare economics, analysing the not-for-profit and the social entrepreneurship sectors (Mulgan, 2010; Ebrahim and Rangan, 2010). Despite the recognised key role of civil society in social innovation, EU policies have so far substantially emphasized the market and economic features of social innovation ahead of the social ones, paving the way for the transformation of the welfare state (Sabato et al., 2017; Fougère and Harding, 2012; Cools, 2017) and prioritizing social businesses over social movements (Moulaert et al., 2017). These types of focus have often narrowed the attention of evaluation to a few specific aspects, for example, the economic efficiency of public funds allocated to rural development, or the impacts of projects only in terms of employment rate or income level, while social aspects are underestimated or neglected. The EU Common Evaluation and Monitoring Framework (CMEF) has been questioned for not being able to properly highlight social aspects in evaluations (Yang et al., 2015; Piorr and Viaggi, 2015; Uthes et al., 2017) and efforts have been recently made to integrate these aspects (European Commission, 2017)**.** In sustainability assessments in forestry, socio-cultural aspects are contemplated weakly (Hyman, 1985; Rantala et al. 2012), while environmental aspects are more relevant (11 out of 26 of the frameworks, approaches and methods for evaluation that have been identified as applicable or applied to forestry refer to environmental aspects and impacts) (e.g., Kassa et al. 2009; Lindner et al. 2010; Verweij et al. 2016).

2.2.2 Current evaluation focuses on outcomes

In relation to the dominance of outcomes, this is mainly due to the attempt of linking problems with possible solutions, as suggested by the Theory-of-Change (ToC), at the basis of any evaluation approach. In evaluation, the first step is the identification of the so-called intervention logic, i.e. "the logical link between the problem that needs to be tackled (or the objective that needs to be pursued), the underlying drivers of the problem, and the policy options […] available to address the problem or achieve the objective" (European Commission 2015:10). The ToC is typically based on the analysis of a results chain detaining the causal sequence beginning with inputs, moving through activities and outputs, and culminating in outcomes, impacts and feedback and learning processes (Morra-Imas and Rist, 2009: 167). The approach has been applied in forestry too (e.g., Romero and Putz, 2018; FSC, 2018). Such a result chain can be visualized as in the real case of a social innovation focused on the forestry domain: the case of *Community Woodland Llais y Goedwin* in Wales (United Kingdom) (Bryce et al. 2017), reported in the SIMRA database. The elements of ToC reported in Figure 1 are self-explicatory.

<Figure 1 approximately here>

Such a sequence is connected to the policy cycle phases that can be defined as conception, formulation, implementation, and evaluation (European Commission, 2004), also in the forestry domain (Krott, 2005). However, the simplification introduced by using static

phases along a linear temporal scale does not take into account the iterative and dynamic processes common to real life deliberative policy cycle phases (e.g., Buonanno and Nugent, 2013; Dunn, 2015), that have been tackled in relation to forestry too (e.g., Shannon, 2015; Kouplevatskaya-Yunusova and Buttoud, 2006; Górriz-Mifsud et al., 2016). While this chain implies linear relations, that are quite simplistic, multi-causation or results model can draw greater attention to the non-linearity of cause and effect (GIZ, 2013)[10], but this implies methodological challenges for any evaluation practice, as pointed out in other fields of application (e.g., Ramaswamy et al., 2018; Barry et al., 2018).

3. Materials and methods

This paper is based on (i) a literature analysis, and (ii) a stakeholder consultation, both carried out as part of the H2020 SIMRA project activities[11].

The first one allowed for the identification of existing frameworks, approaches, methods and tools that could be used to evaluate social innovation and its impacts. Twenty-six out of 111 analysed sets of evaluation frameworks, methods and tools (23% of the total) explicitly refer to forestry. The material used in this paper is based on those frameworks, approaches, methods and tools as identified by the project (Secco et al. 2017) that apply to forestry specifically. However, most are not exclusively designed and applied to forestry. Rather, forestry is one of the various components that can be analysed, while some are specific to evaluating environmental impacts of forest-wood chains (Lindner et al. 2010). The second one allowed for the understanding of which approaches, methods and tools stakeholders prefer, suggest or recommend for use in evaluation of social innovation in rural contexts on the basis of their own experience and expertise. Results of the ad hoc stakeholders' consultations carried out on evaluation methods represent the core material used in this paper.

A group of 34 international experts and stakeholders[12] in agriculture, forestry and rural development was consulted about their preferences and recommendations on methods and tools that would support the assessment and evaluation of social innovation in marginalised rural areas. According to their own declarations, 5 out of 34 invited stakeholders have a forest-specific background or expertise and 10 have a background specific to rural development which however includes forest-related issues. The remaining ones have agriculture-specific or cross-sector backgrounds.

The group was consulted for three different rounds of times, between in 2016 and 2017. The first round was based on an online consultation (July 2016); the second round on a face-to-face participatory workshop (October 2016) and the third round was again online

[10] The GIZ Monitoring and Evaluation Unit does not distinguish between outputs, outcomes, impacts, but simply refers to 'results'. According to this model, any output, outcome, or impact is a goal, and anything that may be achieved, more or less directly or indirectly, is a result.

[11] The identification of existing evaluation frameworks, approaches, methods and tools for analysis was carried out by expert teams each working on one of four main domains, namely the economic, social, environmental, and institutional aspects. They each followed common selection criteria and procedures defined by specific guidelines (Secco et al. 2016). Overall, 111 frameworks, approaches and methods were fully analysed through the use of 107 variables. They have been identified in the four domains and pre-analysed for the purposes of SIMRA project respectively by: ICRE8 (Greece) (economic aspects), University of Foggia (Italy) (social aspects), EFI (Finland) (environmental aspects) and DLO (The Netherlands) (governance/institutional aspects). The trans-disciplinary frameworks/approaches/methods and tools have been identified and pre-analysed by the University of Padova (Italy). More details are available on: Secco et al. 2017 (Deliverable 4.2; www.simra-h2020.eu).

[12] These experts and stakeholders are the official members of the SIMRA Social Innovation Think Tank (SITT), created **in** 2016 by the SIMRA Consortium. Since its creation, SIMRA has carried out three consultations, two online (July 2016 and July 2017), and one face-to face workshop (held in Bratislava, Slovakia, October 26 to 28 2016). The SITT stakeholder consultation is one of the key elements of SIMRA project, carried out under main responsibility and coordination of IFE SAS (Slovakia), which arranged both the workshop in Bratislava and the two online consultations. In the various rounds, the SITT members were consulted on several different issues related to social innovation in marginalised rural areas, not only on methodology aspects. More information are available at: www.simra-h2020.eu.

(July 2017). The two online consultations were carried out via the SurveyMonkey platform[13], while the face-to-face consultation was carried out by means of a 3-hours session during a workshop held in Bratislava (Slovakia).

In the first round, only one question was related to methods: the main aim was to help the group reflect on the implications of adopting different evaluation methods. 24 out of 34 invited stakeholders responded (one only partially).

In the face-to-face workshop, the consultation was divided into two parts. For the first part of the session, the world café participatory approach was adopted. Four topics were addressed by means of group debates in three rounds of discussions focusing on four topics related to evaluation methods and using various guiding questions[14]. The topics covered were: 1) outcome-oriented versus process-oriented evaluation methods; 2) qualitative versus quantitative evaluation methods; 3) primary and secondary data in evaluation practice; and, 4) participatory versus experts-based evaluation methods. Moreover, the type of manager of the evaluation (internal versus external) was discussed. During the second part of the session, participants were encouraged to brainstorm potential indicators to evaluate social innovation. Four facilitators and four rapporteurs synthesised the results, jointly working on each of the issues, on the basis of posters filled in by the facilitator and notes taken by the rapporteur during the discussion. Each round of discussions was recorded (with permission of participant stakeholders) and the recording used to complete a report (SITT Workshop report, 2016). Specifically, for the purposes of this paper, a qualitative content analysis of the stakeholders' statements as synthetized by rapporteurs based on recording during the consultation has been carried out, identifying key concepts and relevant sentences with respect to the discussed topics (Mayring, 2000, 2014; Krippendorff, 2004; Drisko and Maschi, 2016). The participatory technique used in the world cafè, with various rounds of discussion, is comparable to focus groups (Krueger and Casey, 2000), and the discussed topics allowed us to develop a thematic analysis (Wilkinson, 2004).

In the third round, online, stakeholders were asked to reflect on the use of a descriptive versus a normative approach in assessing social innovation, and to suggest examples of indicators (responses were received from 18 stakeholders). However, only the results on indicators are used in this paper, while the discussion on the descriptive vs. normative approach in the evaluation remains out of the scope.

The four topics proposed for the face-to-face consultation on evaluation methods were based on the four criteria typically used for identifying different types of evaluation: the scope of evaluation (process-oriented or result-oriented); methods used for evaluation (qualitative, quantitative and mixed), in connection with the use of primary or secondary data; the manager of evaluation (internal or external); and, the role of stakeholders in the evaluation (participatory or expert-based) (European Commission, 2004; Morra-Imas and Rist, 2009).

In the next section, results are presented and discussed by following the four topics, i.e. the main characteristics used to differentiate various types of evaluation.

4. Results and discussion

The following sub-sections present the results of the stakeholders' consultation on evaluation methods, divided into the two critical stages of research: problem definition (*What to evaluate?)* and methods selection (*How to evaluate?)*. Results of literature analysis are used

[13] An invitation to join the survey was sent by email to stakeholders by the coordinator of the activity (IFE SAS, Slovakia), in collaboration with the project coordinator (The James Hutton Institute, UK); the invited stakeholders had 3 weeks to reply; 1 question in the first round and 4 questions in the third round were related to evaluation methods.

[14] The guiding questions are the following: What information would you (as a stakeholder) like to obtain from an evaluation of social innovation? If you were tasked, how would you evaluate social innovation? How would you measure social innovation? What would you expect from those methods? What are their pros and cons?

to show the position of scientists. Discussion focuses on the stakeholders-scientists gaps and the possibilities/challenges of filling them for future advances in evaluation methodology.

4.1 Problem definition: what to evaluate?

This question deals with two issues: the issue of preferring process-oriented vs. result-oriented[15] evaluations (4.1.1), and the issue of which results should be analysed (4.1.2). They are separately presented hereafter, with some final considerations (4.1.3).

4.1.1 Process-oriented vs. outcome-oriented evaluation approach

The process-oriented evaluation approach focuses on *how* the process is organized and implemented (OECD, 2010), assuming that the characteristics of the process are instrumental to the effectiveness and successfulness of the later phases of policy and project implementation. The result-oriented evaluation approach focuses on what are the contents of the policy or project evaluated, and their consequences and impacts (in the short-medium-long terms, and on ecological, economic, social and institutional domains).

In the first online round of consultation, most stakeholders (78.3%) considered assessing social effects of social innovation (outcomes) to be very important, followed by how social innovation is organized and implemented (process). Similarly, looking at the existing evaluation frameworks, approaches and methods, 31% of those identified in literature as being applicable or applied in forestry can be classified as process-oriented, while 46% as outcome/result-oriented (in the remaining 23% the evaluation approach is not specified). Therefore, it seems there is a convergence between what stakeholders prefer and what scientists apply, being considered the evaluation of the results of social innovation more important than the evaluation of the process itself.

However, all stakeholders highlighted the importance of measuring both the tangible (hard) and intangible (soft) elements of social innovation, as well as the need to identify factors that contributed to success or failure in the social innovation process, and several of the critical factors explicitly mentioned in the third online consultation refer to the process and how it is organized and implemented. These factors include: involving a wide range of stakeholders; defining from the outset clear and realistic targets, benchmarks, tasks, responsibilities, expectations, scenarios, proposals for alternative solutions, expected outputs (in terms of benefits to the public); ensuring regular meetings and options for discussion forums; providing information to the local media; gaining support and interest from the local community and the wider public; building mutual trust among involved actors; securing a partnership between those who implement and those who initiated the process; formulating the requirements for securing the sustainability of the project's solution, including measurable parameters (indicators).

From such a list, it appears quite clearly that evaluating the factors that determine successful social innovation processes is similar to evaluating the factors that guarantee successful participatory processes in forestry (e.g., Shannon, 1989; Shannon, 2003; Finger–Stich, 2003; Blondet et al., 2017). "Building mutual trust among involved actors" in successful social innovation processes, for example, makes us think of the trust that needs to be formed both in-between participants (Kvarda and Nordbeck, 2012) as well as between participants and the governance system in forest participatory processes (e.g., Ruppert-Winkel and Winkel, 2011; Faehnle and Tyrväinen, 2013; Saarikoski and Raitio, 2013). "Ensuring regular meetings and options for discussion forums", considered relevant in social innovation

[15] Process-oriented evaluation relates to "formative evaluation" (OECD, 2010: 30). Outcome-oriented (or result-oriented) evaluation relates also to impact evaluation or "summative evaluation" (OECD, 2010: 35). More information is available at URL: www.oecd.org/dac/evaluation/2754804.pdf

processes, was a procedural tool mentioned in forest policy negotiation processes (e.g., Winkel & Sotirov 2011). At the basis of such similarities, there is the creation and management of networks among actors and, the creation of new public-private partnerships that characterise stakeholders' active participation in new forest governance arrangements (Arts and van Tatenhove 2006; Arts et al., 2014; Giessen and Buttoud, 2014; Sarkki et al., 2017), as well as the potential development of social innovation in forestry (Bryce et al., 2017; Cardoso, 2016; Polman et al., 2017; Nijnik et al. 2019). While the evaluation of social innovation processes in forest-dependent communities can start from the analysis of participation and governance mechanisms, other elements should be included as well (Kluvánková et al. 2018).

The limited use of process-oriented evaluation approach with respect to the outcome-oriented one might be partly due to the fact that it is harder to design and measure process-oriented indicators, while analysing complex and "fuzzy" process dynamics is often difficult and costly, requiring the collection of primary data at the local level (Baker and Mehmood, 2013). One participant mentioned a process-oriented possible indicator as "*institutions and resources to facilitate the transfer of the outcomes across communities*"; others suggested: "*institutions (i.e. rules of the game in support of the process development*"; "*number of [...] new actions for developing the results*"; "*inclusiveness*" of social innovation, "*existence of a process coordinating body*". Also, process-oriented evaluation should be able to address the "*informality of processes*". They refer to process in terms of implementation mechanisms and policy instruments, but they look like items to be evaluated rather than indicators to be measured. In other words, while it is clear that, for example, the "*inclusiveness*" of the social innovation process should be evaluated, it remains unclear what indicators should be measured, and on the basis of which variables, to formulate an evaluation judgement on how inclusiveness was organized and implemented. So far, only a few frameworks have been proposed for evaluating and designing forest collaborative processes, that suggest criteria or indicators for process evaluations that can be applied to social innovation (Kassa et al. 2009; Sandker et al. 2010; Faehnle and Tyrväinen, 2013; Secco et al., 2014; Eiter and Vik, 2015). The dominance of indicators focussing on outcomes emerges also in the literature analysis: 65% of the evaluation frameworks, approaches and methods applied in forest sector propose the use of this type of indicators, while 61% propose the use of process indicators. The difference between the two types is not so significant also because many of the frameworks and methods propose both outcomes and process indicators.

4.1.2 Which results/outcomes should be evaluated

In the consultations, stakeholders did not discuss in detail the types of outcomes that should be measured or evaluated. An observation shared by all stakeholders was that different national contexts mean that what is social innovation in one country may be standard practice in another. Therefore, the social improvement to be measured as an outcome depends upon the context; and any evaluation should start with the analysis of the specific situation (context analysis). However, common outcomes that are important for stakeholders may be deducted from examples of indicators formulated during consultations. In particular, two stakeholders mentioned indicators able to describe "*positive outcomes*" and "*benefits*" that the social innovation is likely to result in; others suggested: "*employment (or number of new jobs for local residents) created*"; "*population change*"; "*number of individuals and/or groups (and/or percentage of rural population) profiting/benefiting from social innovation*"; "*percentage of rural population covered by the social innovation*"; "*number of activities derived from the action people involved after the starting of the process*"; "*number and type of stakeholders involved*"; "*consensus on the results*"; "*disseminated information*". Others pointed out economic aspects, namely "*reduction of costs*", "*investment made (expenditure)*" and "*social return on investment*". The last one can be found also in the scientific literature and

it is used by economists: called SROI, is one promising indicator for measuring extra-financial values (i.e. environmental and social values) normally not reflected in conventional cost-benefit analysis. It focuses on impact on stakeholders and identifies a new way to evaluate the performance of investments (e.g., Nicholls et al., 2012; Cordes, 2017; Watson et al., 2016). In short, outcomes to be evaluated should include positive outcomes on well-being i.e. improved socio-economic status and quality of life.

Despite other relevant indicators being suggested[16], because of their relevance with respect to the social innovation definitions, we focus the attention on the challenges related to "positive outcomes on well-being", particularly in forest-dependent communities.

First of all, experience shows that social innovation does not necessarily bring positive effects on the whole society. Such positive effects can be limited to a few groups of persons within the forest-dependent community, while being detrimental to others. This means that trade-offs should be carefully considered and investigated in the evaluation practice. While they are considered in relation to economic and environmental aspects of forest resources management (e.g., INVEST[17], Heines et al., 2018; Ager et al., 2017**),** they hardly refer to social trade-offs.

Secondly, in certain circumstances, social factors that determine social innovation might have a "dark side", connected with nepotism, excessive demands on group members to provide support to others, restriction of freedom as a result of excessive informal control, exclusion of out-group members and "down-levelling" of norms (the so-called negative social capital, mentioned in forestry by e.g., Gorriz-Mifsud et al., 2016 and firstly conceptualised by Portes, 1998 and Gargiulo and Benassi, 1999). Clearly, there are normative implications[18] in the concept of positive outcomes, but these remain out of the scope of this paper.

Finally, as mentioned, evaluation focus is generally about socio-economic outcomes (and, only partially, institutional). This suggests that while social innovation is not yet understood as a sustainability issue in terms of environmental impacts, this is a key issue in forest-dependent communities. Changes in the environment due to social innovation, e.g. in forest resources and related ecosystem services, determine real or potential changes in human well-being (e.g., TEEB, 2010; Haines-Young and Potschin, 2013; Melnykovych et al. 2018) and affect the quality of life. Examples are the following (Bryce et al. 2017; SIMRA online database[19]): the Carbon Smart Forestry (Slovenia), based on the reestablishment of forests-common-based forest management rules that allow the EUSTAFOR climate change mitigation forestry guidelines to be followed more effectively; the EconoMountain (Portugal), based on the adoption of a partnership with shepherds for implementing a new technique of goat grazing to control forest fires, where the outcome clearly refers to the forest protection from fires; the Laggan Forest Trust (UK), based on a community leasing agreement to set up a mountain biking venture in a Forestry Commission forest that had been destined for privatisation,

[16] Other suggested indicators of relevance for evaluating social innovation include: satisfaction of different categories of actors; motivations of different categories of actors; quantitative and qualitative characteristics of networks and their dynamics; change in capacity; change in soft skills; level of civil society engagement; policy changes; the number and quality of innovative products and services that the social innovation initiative brought.

[17] InVEST enables decision makers to assess quantified trade-offs associated with alternative management choices and to identify areas where investment in natural capital can enhance human development and conservation. The tool set currently includes 18 distinct ecosystem service models designed for terrestrial, freshwater, marine, and coastal ecosystems. It also includes a number of "helper tools" to assist with locating and processing input data, and understanding and visualizing outputs. More information are available at http://www.naturalcapitalproject.org/invest/.

[18] This issue was explored in one of the online consultations: descriptive versus normative approaches of evaluation. As it was not debated face-to-face and only few considerations emerged, we do not include observations on this point in the text. In short, while it is accepted that social innovation can be described (e.g. how it is structured, who are the actors involved, how it works), there are doubts about adopting normative standards for the evaluation of whether a social innovation initiative is "good" in its various development stages. One stakeholder stated: "*I would refuse to use* [standards/thresholds/requirements of social innovation] *since I doubt their usefulness in valuing*"; another suggested to use, as guiding standards, "*Environmental sustainability, justice and equity*".

[19] For more examples and information see: http://www.simra-h2020.eu/index.php/simradatabase/

where the outcomes refer to the recreational use of forests; the Montagne Fiorentine Model Forest (Italy); and many others.

Thus, especially in social innovation interventions realized in forest-dependent communities, evaluation should explicitly include environmental outcomes. Moreover, special attention should be given to evaluating the impacts of social innovation through actual changes in policy (which is, per se, an institutional impact).

4.1.3 To conclude: integrating process- and outcome-oriented evaluation

Some of the consulted stakeholders highlighted that evaluation depends on whether social innovation *in itself is defined as a process or as a result*[20], and on the length of social innovation project or activity. Others suggested that both process and results need to be evaluated, because of the relevance of the *relationship between process and outcome*. This approach suggested by stakeholders was recently embraced in the evaluation of the European LEADER Programme, where the focus is on both the result of the approach (Community-Led Local rural Development approach) and whether it was more effective (in terms of social and economic outcomes) than a top-down approach (Dax et al., 2016; European Commission, 2017). In all cases, consulted stakeholders considered a process-oriented evaluation as a learning process, as pointed out by literature (Szijarto et al., 2018). It requires focusing on intangible features (e.g. interactions between different types of actors, with proactive or reactive attitudes), and allows exploring failures: in cases where results/outcomes have not been achieved, reviewing the process may enable the identification of the factors that led to failure. Process matters both in the case of positive and negative (or no) results, and much remains to be done to link social innovation processes with desired policy outcomes (Koontz and Thomas, 2006).

During the debate, one stakeholder observed that: "*first you look at outcomes and then, depending on the results (positive/negative) we look to the process".* This view underlines the challenge for evaluators in changing the frames of evaluations from outcome-oriented to process-oriented, and raised questions regarding the parameters that are easiest to obtain, and the specific methods to be used. These issues are developed in the next section, while a summary of the main suggestions expressed by stakeholders is reported in Table 1.

<Table 1 approximately here>

4.2 Methods selection: how to evaluate?

This question deals with various issues, which refer to the characteristics of evaluation. They are presented hereafter as: evaluation methods (qualitative/quantitative) (4.2.1), types of data (primary/secondary) (4.2.2); evaluator (internal/external) (4.2.3); and approach in terms of experts/stakeholders involvement in evaluation (4.2.4).

4.2.1 Type of evaluation methods (qualitative/quantitative/mixed)

In the first online consultation a majority of respondents (65%) considered mixed methods as most appropriate for the evaluation of social innovation, followed by qualitative (26%) and quantitative (17%) methods. The relevance recognized to mixed methods by stakeholders is confirmed by the practice and the literature analysis: for example, in the evaluation of the EU Rural Development Programme, with its forest-related measures, the emphasis on quantitative methods has moved increasingly to include mixed methods and

[20] The same dilemma was highlighted in the forest domain, where the distinction between participation as "an end in itself" or as "a mean to an end" was described (Buchy & Hoverman 2000).

approaches to evaluate how needs are addressed and goals achieved (Cristiano and Proietti, 2014; Vidueira et al., 2014; Yang et al., 2015). For example, Yang et al. (2015) propose a combination of: (i) spatial econometrics; (ii) stakeholder analysis; and, (iii) qualitative interviews, as a way to address the currently highlighted weaknesses of the EU Common Monitoring and Evaluation Framework, that have been sometimes questioned for not being able to properly highlight social aspects in evaluations. According to the literature analysis, among the 80 evaluation tools analysed that applied to forestry, use of qualitative data was found in 44% of the cases, quantitative in 27% of the cases and mixed data in 29% of the cases. Thus, it seems that the adoption of evaluation approaches based on qualitative data rather than quantitative is dominant with respect to the others.

Qualitative and quantitative approaches were identified by stakeholders as complementary: they can be used together, in triangulation, yielding different types of evaluation results which support each other by providing in-depth information on the process and more synthetic information (indicators and indexes) on outcomes of a social innovation project. This approach is typically used by scientists in multi-criteria assessments, frequently adopted in forestry or forest-related fields of study, as, for instance, in QUICKSCAN (Verweij e al., 2016), which combines expert knowledge with spatial and statistical data, in STELLA (e.g., Kassa et al., 2009), which combines diagram-based modelling of resources stocks and flows with stakeholders opinions, and in Fuzzy Cognitive Mapping (e.g., Papageorgiou and Salmeron, 2013) and others (e.g., Rantala et al., 2012; Melnykovych et al., 2018). However, integrating quantitative and qualitative methods requires typically advanced skills, able to combine significantly different approaches, and this might be one of the reasons for mixed data being used in a limited number of cases with respect to the use of qualitative data.

On the one hand, qualitative methods and data (e.g., story-telling derived from semi-structured interviews, field notes, conversations, photographs, etc.) provide in-depth information, insight on what different groups of stakeholders obtain from a project or activity like social innovation in forest management, and their overall perceptions of benefits. According to stakeholders' opinions, qualitative data is "*about the description of reality in the participant's own words*". Stakeholders considered qualitative approaches necessary when describing results *because* social innovation is context-specific: "*Personal paths or life stories could be used to follow an individual's personal history*", which is considered to be relevant and most appropriate in understanding and describing the social innovation process. However, the main limitation mentioned for qualitative approaches is the risk of subjectivity. According to the literature analysis, these approaches are applied in institutional and policy evaluation, for example in research on Institutional Resources Regimes (e.g., Gerber et al. 2009; Knoepfel, 2011), and on Innovation System Approach (e.g., Lundvall, 1992; Freeman, 1995; Edquist and Johnson, 1997).

On the other hand, quantitative methods and data are not always popular amongst practitioners who see the risk of losing out on the contextual richness of specific cases, however, are considered useful when lobbying policy makers and funders. Stakeholders agreed that quantitative evaluation is "*about numerical information*" and that numbers and graphs help to communicate more effectively and directly to policy makers. They think that a disadvantage of quantitative methods is that they include the use of complex analytical software that requires high professional competence. Quantitative approaches were also mentioned as being easier and cheaper to conduct than qualitative ones; and more appropriate for describing outcomes and impacts. According to the literature analysis, it emerges that among the methods using indicators, 94% refer to results/outcomes (and 88% more specifically to impacts)[21].

[21] The total is higher than 100% because in some methods there are indicators of various types.

Even if the integration of qualitative and quantitative methods and data might be complex, it is feasible and advisable. As one stakeholder noted, "*Qualitative is about telling stories, but you can take numbers out of stories and tell stories out of figures*". Some stakeholders reported techniques for transforming data collected with qualitative-based methods (e.g. face-to-face interviews) into quantitative data (e.g., Likert scales on "*satisfaction with the project, self-confidence, self-esteem and capacity building*").

Techniques converting qualitative into quantitative data could help inform policy makers, supplying the figures, graphs and numbers that are easily understood and usable for decision-making. These methods[22] are increasingly used in forestry and environmental resources management, examples being those based on Social Network Analysis (SNA) tools (e.g., Bodin and Crona, 2009; Secco et al., 2014; Paletto et al., 2015; Lovrić et al. 2018; Schröter et al. 2018). SNA is being increasingly used in evaluations, especially in relation to rural development and social capital issues (e.g., Pisani et al. 2017). According to our opinion, it can be successfully applied to social innovation evaluation too, as it allows measure changes in the number of actors involved in the network, as well as to analyse the diversity of the stakeholders and the quality of connections within the network (e.g., in terms of trust) (Borgatti et al. 2002, 2009, 2013).

More generally, synthetic indicators are used in 69% of the existing evaluation frameworks, approaches and methods found in the literature analysed. Whether we can interpret this as a way to provide forest policy makers with what they want or need to have in order to better make decisions for further interventions, thus going in the direction of filling the science-policy gaps (van den Hoven, 2007; Wistbacka et al., 2018), it has to be further investigated (Maryudi et al., 2018). In the case of social innovation, the quantitative and qualitative approaches can be integrated depending on the phase of development and the size of the social innovation evaluated: in small or recently launched projects, the analysis could focus on the process of development and the short-term impacts. Which may be qualitative, since there may be a challenge related to the availability of quantitative results (e.g., outcomes/impacts are not yet visible), and thus the costs of evaluation. However, not all stakeholders agreed on the idea of converting qualitative information into quantitative: some argued that "*to measure the degree of satisfaction on a scale is a qualitative process. Thus, qualitative aspects of social innovation require using qualitative methods*". Whatever the position of stakeholders, during the discussions in the face-to-face consultations, it was clear that different stakeholders had different levels of understanding (and some confusion) about qualitative and quantitative methods and data. The fact that quantitative research is the systematic empirical investigation of observable phenomena via statistical, mathematical or computational techniques and, it relies on quantitative methods and quantitative tools of analysis (e.g. statistical analysis), while qualitative researchers study things in natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them (Denzin and Lincoln, 2005), and it relies on qualitative methods or data collection (e.g. interviews and observation) and on qualitative methods of analysis (e.g. narrative and grounded theory), was not clear to everyone. Efforts should be made in research to design and test ways for integrating these methods, thus improving the reciprocal knowledge and understanding between qualitative- and quantitative-based scientists and opening options for multi-disciplinary collaborations.

4.2.2 Type of data (primary/secondary)

Stakeholders' discussion highlighted the lack of secondary data on social innovation, the importance of primary data to identify the specific context of social innovation, and the need

[22] Other methods, not specific but applicable to forestry too, are the Analytical Hierarchy and the Analytical Network Process (Saati, 1996, 2008).

to use them both complementarily. The predominance of primary data in evaluation frameworks, methods and tools applicable to the forestry domain is visible in the literature too: the source of data is primary in 49% of the cases, secondary in only the 10% of the cases, and mixed in 40% of the cases (in 1% of cases it was not specified).

Stakeholders suggested the following methods for the collection of primary data: focus groups and participatory methods; semi-structured interviews; and stakeholder analysis, emphasising the importance of gathering soft data on interactions, feelings and activities (reiterating the idea that process has to be explored before results). They also mentioned longitudinal surveys for studying pre- and post- conditions. "Soft data", such as perception, vision, expectation, preferences of stakeholders and involved actors, are considered particularly relevant in evaluation. In forestry there is a long tradition of studies focusing on forest owners' perceptions and preferences[23] (e.g., amongst the most recent: Pynnönen et al., 2018; Matilainen et al., 2019), as well as stakeholders' opinions (e.g., Focacci et al., 2017; De Meo et al., 2018) which evaluation methods for social innovation can get inspired from. However, among the tools based on primary data that were found in the literature analysis, only a few include the text of questions or questionnaires used for data collection (e.g., Polman, 2002), thus limiting the capacity of practitioners and evaluators to apply and replicate in their own evaluations methods that are proposed by scientists. This might be a problem in the science-policy-stakeholders interaction (Kleinschmit et al., 2018): scientists developed the vast majority (85%) of the evaluation frameworks, methods and tools applicable or applied in the forestry domain identified in literature[24]. It seems that also in this field science is not able to fully fulfil the needs of policy makers and stakeholders.

Secondary data are considered relevant and useful for analysis at a large scale (e.g. national level), whereas primary data are considered necessary for social innovation projects that are locally specific. Therefore, the evaluation of interventions in forest-dependent communities is likely to be performed at the local level, as already pointed out by some scholars (Secco et al. 2014, Schröter et al., 2018), and this is valid for social innovations too. Stakeholders also stressed that data should be easy to use and interpret, available, recent and reliable. However, reliability of evaluation is based on the use of SMART indicators in less than half of the methods analysed (44% of the cases), while RACER indicators are used only in 22% of them[25]. On this issue, much has still to be done to improve the current evaluation methods.

4.2.3 Type of evaluator (internal/external)

Stakeholders highlighted the importance of having both an internal and external evaluation, including therefore an evaluation carried out by local, internal evaluators and one carried out by national or international experts who do not know the local conditions and the needs or aspirations of the local people who initiated and developed the social innovation. Perception of actors directly involved in the initiative might significantly differ from those of external evaluators, yet be complementary because they capture different aspects. An internal evaluation of the group may help to understand how forest actors involved in the process feel. For this reason, satisfaction with the project, self-confidence, self-esteem and capacity building are aspects that should be captured in an evaluation. An external evaluation might come to a different conclusion, and focus on different aspects (e.g., on the use of financial

[23] By March 2019, by searching in SCOPUS database with the key words "forest owner*" AND "preference*" within the title, abstract and key words, 111 papers were identified. Searching for "forest owner*" AND "perception*", 128 papers were identified.

[24] Other organizations that developed evaluation methods applicable in forestry are: NGOs (42%), consultants (38%), private enterprises (19%), policy makers (15%) and institutional organisations (4%).

[25] SMART is an acronym, which defines the characteristics that indicators should have: Measurable, Achievable, Reliable, Time-bound (different sources use some letters referring to different meanings, but these are the most commonly used). The RACER acronym refers to indicators that are: Relevant, Acceptable, Credible, Easy and Robust (DEVCO, 2016, 115).

allocated resources). According to the literature analysis, 50% of the evaluation frameworks, methods and tools identified as applicable or applied to the forestry domain was carried out by external evaluators (e.g., Kassa et al., 2009; Kulak et al., 2014), while only in 27% of the cases by an internal self-evaluation[26] (e.g., Gujit and Woodhill, 2005; Haines-Young and Potschin, 2013; Secco et al., 2014). Thus, evaluation approaches proposed by scientists do not fully correspond to the preferences of characteristics for evaluation as expressed by stakeholders in the consultation. Lessons on this specific issue can be learned from forest certification audits, where the expertise of external evaluators matters (Maletz and Tysiachniouk, 2009) and external evaluators are supposed to be supported by local experts and the audit itself requires local stakeholders' consultation (Cubbage et al., 2003; Brotto and Pettenella, 2018).

4.2.4 Role of stakeholders in evaluation (participatory/expert-based)

Stakeholders pointed out the need for complementarity between the two approaches. Expert-based approaches were considered to have more credible results, while participatory processes were considered to legitimize the results, increase ownership and ultimately adoption and implementation. For example, participatory approaches were seen as crucial for assessing the 'feeling' or intangible aspects such as interactions of actors through indicators of trust, involvement of the community in innovative approaches, and the level of acceptance and exchange of new practices. The importance of assessing social innovation through the process of social mobilisation, somehow using this option to increase the familiarity of stakeholders with participatory approaches, was also pointed out. Not surprisingly, stakeholders also urged reflection on the need to avoid subjective biases and carefully assess responses. Moreover, one of the perceived risks of initiating participatory approaches in evaluation was the loss of interest of participants.

These risks and potential drawbacks, as well as potential benefits, are well described in participatory-based forest initiatives in general (e.g., Blondet et al., 2017; Kleinschmit et al. 2018). Less than half (46%) of the methods analysed relies on participatory approaches. For example, assessments such as strategic environmental assessment (SEA), sustainability assessment (SA) and social and environmental strategic assessment (SESA), based on participatory-approaches, have the potential to act as platforms for science-stakeholder knowledge brokerage (Sheate and Partidário 2010), but the final outcome depends significantly on how the process is designed (Blondet et al., 2017). However, undoubtedly, a pro-active attitude of actors involved in the social innovation during the evaluation is a key factor. The literature analysis shows that 49% of the frameworks, approaches and methods applicable or applied to the forestry domain propose fact-based indicators, while 61% propose perception-based indicators for evaluations. Perception being a "soft data" on social innovation considered particularly relevant by consulted stakeholders (see 4.2.3), and accepted by scientists as a reliable source of information, as "all firms and individuals take actions based on their perceptions" and sometimes "it is difficult to come up with alternatives to perceptions data" (Kaufmann and Kraay, 2007:3).

5. Conclusions

Some of the gaps that emerge from the analysed methods so far proposed or applied in forestry seem not fully aligned with the stakeholders' expectations and suggestions. In relation to the guiding question "*What to evaluate*?" current literature seems to focus more on the evaluation of results/outcomes of social innovation, than on the evaluation of the process; and to emphasize socio-economic impacts, rather than environmental impacts. However,

[26] In the remaining 23% of the cases, an evaluation was not empirically performed.

environmental impacts might be particularly relevant in the case of social innovations that happen in forest-dependent communities, being directly linked with outcomes on human well-being through ecosystem services. While policy makers and scientists prefer outcome-oriented evaluation, process-oriented are equally important, and valuable to actors such as members of a social forestry cooperative who can learn from the failure of building a network (and not just from its successes). In relation to the guiding question "*How to evaluate*?", from the analysis it emerges that both qualitative and quantitative methods are needed, to (1) provide a deeper understanding of the context and process, and (2) to communicate more effectively the results and outcomes of the social innovation. The first supports understanding of perception, motivation, quality of the network, feelings, and other intangible factors, considered fundamental to social innovation; while the second reaches out to orient policy-makers and funders. The triangulation of quantitative- and qualitative-based results of evaluation, combining numbers, figures and synthetic indicators with story-telling, as well as documents and texts analysis, can be a strategy more fully valued and regularly implemented by scientists and evaluators. Moreover, existing methods identified in literature are more centred on expert-based and external evaluation, than on participatory-based and internal (self-) evaluation. The underlying risk of this is that evaluation may remain more focused on the expectations of organisations (external evaluators) that have different perspectives on what is most relevant in a certain forest-dependent community as an outcome of social innovation. Participatory-based evaluation can help change priorities of evaluation, giving more value to satisfaction, feelings and happiness of involved actors and beneficiaries of social innovation initiative than on the pure economic efficiency. Finally, primary sources of data remain paramount with respect to secondary data. The latter is less readily available and might be more useful for large-scale (e.g. national) analysis than for local specificities that characterise social innovation in forest-dependent communities.

Indeed, results point out the need to concentrate evaluation efforts towards a new direction: (i) stakeholders recognise the importance of having information on the process based on evaluation findings, to learn about the dynamics that foster or hinder social innovation and to take the evaluation in itself as a collaborative learning opportunity; (ii) aspects usually considered in participatory processes (e.g., mechanisms to involve stakeholders, create consensus and solve conflicts) as well as governance shifts (e.g., new governance arrangements to facilitate private-public partnerships) in forest-dependent communities can provide ideas and lessons to support the development of an innovative and ad hoc method; (iii) outcomes remain fundamental, but they are generally context - and social innovation - specific, thus leading to difficulties in the generalisation and comparison of results, thus making the thinking of evaluation at a local scale..

Recommendations to guide future development of evaluation methods to be applied in this field can be synthetize hereafter. First, when analysing outcomes, negative effects and trade-offs have to be considered with positive as well. Second, as a key sustainability issue, the evaluation of the effects of social innovation should consider environmental impacts as well, this being particularly important in relation to the impacts of social innovation on forest ecosystem services. Third, it is not enough to focus on outcomes when analysing social innovation, the process in itself is particularly important and techniques for integrating qualitative-based methods and data with quantitative-based methods and data have to be improved. Fourth, similarly to participatory processes as experienced in forestry, ways to motivate actors to participate in evaluation need to be found. Fifth, empirical evidence is needed about the appropriateness of any evaluation method, that should demonstrate to be reliable, effective and not too costly, while being also acceptable to the local community and stakeholders. Such empirical studies are currently going on within the H2020 SIMRA project, where 11 cases of social innovation are being evaluated and possible evaluation methods are being tested. However, further cases are expected to validate preliminary findings.

We believe that the results and observations synthetized in this paper will help not only research in developing a method for the evaluation of social innovation, but also policy-makers in reinforcing the use of evaluation as a decision-support tool in forest policy and governance reforms. While the study has been carried out with a focus on forest sector and forest-dependent communities, our results can easily be applied in general to any rural contexts that face similar social challenges.

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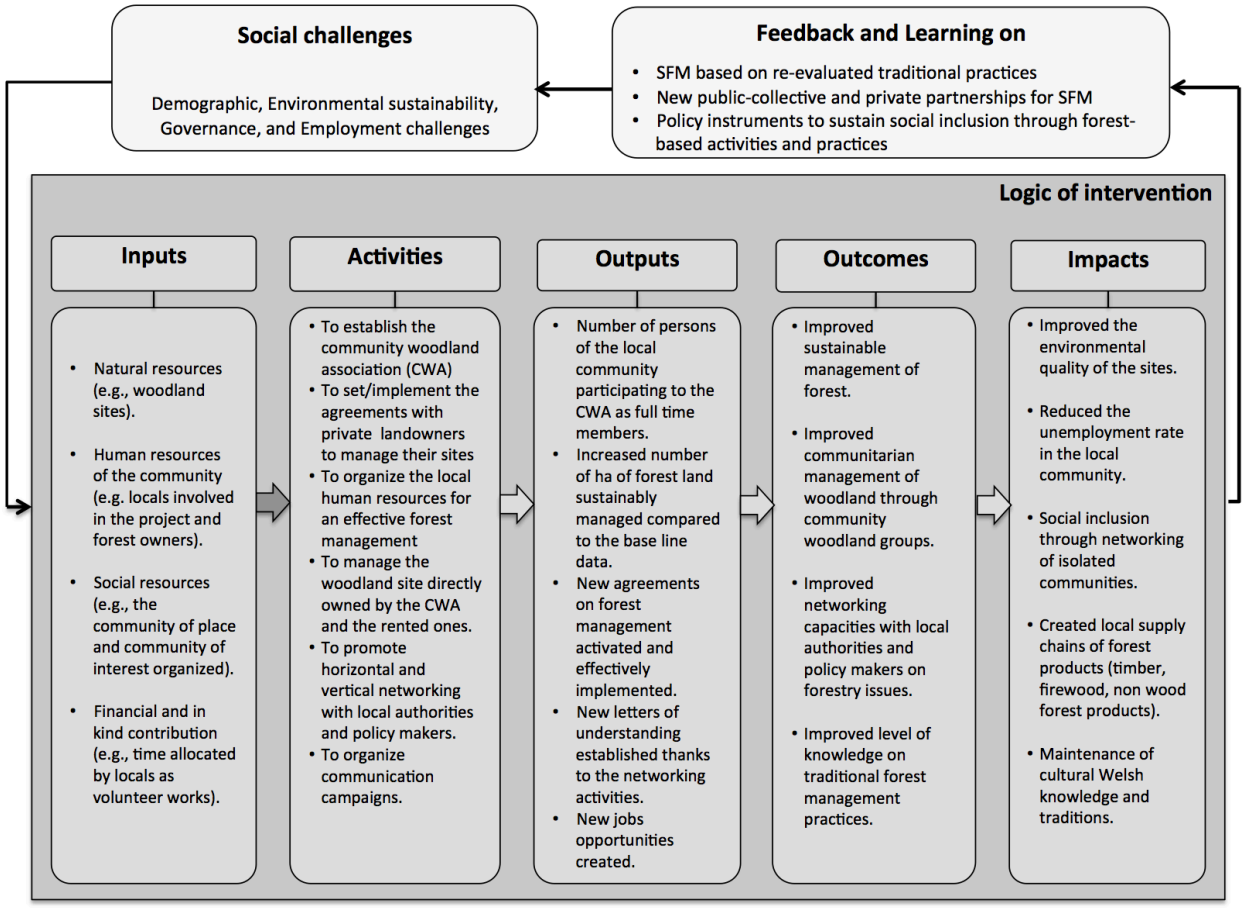
Figure 1 – Key elements of the Theory-of-Change (ToC) applied in the case of *Community Woodland Llais y Goedwin* in Wales (United Kingdom).



Source: own elaboration based on the SIMRA database of social innovation cases.

Table 1. Summary of responses of SIMRA face-to-face stakeholders' consultation on four topics about methodological issues of the evaluation of social innovation.

Topic 1: Outcome-based evaluation vs. Process-based evaluation	
• It fulfils political expectations. • A limited set of indicators may be enough to measure the concrete results of a project, but may not be enough to identify it as a SI or not.	• Process is an important element in SI • Process-oriented evaluation is a learning process • Evaluation needs to rely on participatory approaches • It needs to focus on the informality of process • It needs to address motivation of participants
Topic 2: Qualitative methods vs. Quantitative methods	
• More suited to measure SI because it explains how and why the project was successful • In-depth information about a case study and the process • Used to assess short-term impacts of projects • Used to collect information that can be transformed into quantitative data • Some drawbacks: Subjective, Training of evaluators can be lengthy, Requiring further resources	• Easier to communicate to policy-makers • Easier to measure • Can be used to assess longer-term impacts of project • Quantitative data are important for policy makers • Possible drawbacks: data analysis can be subjective, Requires specific competences
Topic 3: Secondary data vs. Primary data	
• Data on economic and environmental impacts is difficult to access and interpret • Data on enterprise innovation is available in some countries (e.g. Czech Republic – Innovation Survey), but often without an evaluation of impacts • Cheaper and processed • Support analysis at large scale (but need to define first at what scale the SI happens) • No data available on activities and social impacts of SI • Does secondary data actually help SI evaluation?	• SI is locally specific and needs primary data • Local data should be of broad use, for various purposes and relevant for policy and research • The focus should be on processes • "Soft data" is key: perceptions, visions, expectations, preferences, gaps • Analyse impact on different groups • Analyse intermediate impacts • Self-assessment • Data should be directly usable (easy to interpret), available, easy to use, recently collected, reliable • Enable a two-way communication process • Collected internally or externally • Requires time, money, and generally not supported by institutions • Careful with data transfer and generalisations • Potential for subjectivity in data collection
Topic 4: Expert-based vs. Participatory-based	
• Avoid bias, strive for objectivity • More experience in evaluation • Credibility of report results • Creates recommendations derived from participatory approaches • Effective for quantitative evaluations • Ensure validity of feedback to qualitative methods • Increase confidentiality of personal opinions • Possibility to generalise	• More effective from the perspective of end-users • Can validate results • Can be designed by experts • Ensures legitimacy • Enables capturing of process • Ensures ownership of results • Enables bottom-up mobilisation/lobbying • Allows scaling-up of results

Note: For topic A: Facilitator: Elena Pisani (University of Padova, Italy); rapporteur: Diana Valero (Perth College, UK). For topic B: Facilitator: Catie Burlando (University of Padova, Italy); rapporteur: Martin Špaček, IFE SAS (Slovakia). For topic C: Facilitator: Riccardo Da Re (University of Padova, Italy); rapporteur: Andrej Udovč, IFE SAS (Slovakia). For Topic D: Facilitator: Laura Secco, (University of Padova, Italy); rapporteur: Carla Barlagne (James Hutton Institute, UK).

Source: SIMRA stakeholders' consultation workshop, Bratislava, 28th October 2016.