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Review

Evaluating collaborative planning methods supporting programme-based planning in natural resource management

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ABSTRACT

Programme-based Planning of Natural Resources (PBPNR) is an evolving planning frame for solving complex land use, environmental and forest management problems within hierarchically administrated funding and decision-making schemes. PBPNR acknowledges that an effective planning process requires the combined consideration of environmental, technological, economic and socio-political factors. To reach acceptability, commitment and operability, PBPNR processes need to foster collaboration and learning. For this study, an analysis of 43 collaborative planning methods was conducted to examine their potential to be applied within PBPNR. We present the approach of screening the applicability of methods for specific needs that may occur in PBPNR. The approach is based on a list of key criteria for the phases of a collaborative planning process: problem identification, problem modelling and problem solving. The features of each method were qualitatively assessed and peer-reviewed by a team of experts. Most of the methods are able to deal with qualitative data, support processes to increase transparency in planning and capture the preferences of the participating stakeholders. They also produce understandable results for the three phases. Contrarily, many methods do not offer features to handle uncertainty, nor do they satisfactorily stimulate creativity and innovation in the planning process. The results show that the overall applicability of the reviewed methods for the three planning phases varies according to a cluster analysis basing on the capabilities of the methods. Methods such as "Planning for Real", "Open Space" and "A'WOT" seem to be particularly promising for a broad range of planning situations.

1. Introduction

Compiling and running programmes is a contemporary way to govern and organize project-driven change (Pellegrinelli, 1997). Programme-based planning (PBP) can be defined as an overall concept including approaches to develop programmes (e.g. on national, regional and local levels) and approaches to implement the measures (e.g. strategies, projects) of existing programmes. More specifically, Programme-based Planning of Natural Resources (PBPNR) entails the task of contemplating and solving complex land use, environmental and forest management problems (see Margerum, 2008; Olsen and Shindler, 2010) as well as rural development challenges (Shucksmith, 2010). PBPNR is being continuously employed as hierarchically administrated and funded processes of e.g. rural development and forest policies as well as agri-environmental governance (Thiry, 2002; Pülzl and Rametsteiner, 2002). Based on international and/or national and sub-national levels of decision-making, PBPNR is eventually concretized in local/regional quests for reasonable developmental steps.

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In many European countries there exists a long tradition of top-down programming use of natural resources (e.g. Ollonqvist, 2002). In the new millennium participative procedures and bottom-up perspectives have been increasingly emphasised in policy formulations related to programmes (e.g. Gislerud and Neven, 2002). We can assume this trend to be further strengthened because of European Union's recent strategy formulations raising "inclusive growth" as one of the three priority areas, aiming *inter alia* "to strengthen the capacity of social partners and make full use of the problem-solving potential of social dialogue at all levels (EU, national/regional, sectoral, company)" (European Commission, 2010).

Many different concepts have been describing planning processes and characteristics that could be encompassed by PBPNR of today, for example Collaborative planning (Healey, 1997), Participatory modelling (Hare et al., 2003; Mendoza and Martins, 2006), Adaptive collaborative management (e.g. Olsson et al., 2004), Participatory action learning (Mayoux, 2005), Shared vision planning (Werick et al., 2010) and many others (e.g. Innes, 1995; Sager, 1994). However, there exists no uniform and accepted definition of PBPNR, which would allow the characterisation of the concept in line with other existing concepts in the scientific literature. The general purpose of all above concepts is evolving towards a common ground in sharing power and responsibility while handling uncertainty and complexity of the challenging planning situations (Armitage et al., 2009).

Serving this purpose, PBPNR is a planning approach to enhance local/regional programme-based innovation and development (see Kautonen, 2012) that incorporates the formal planning techniques, structured participation and often the utilization of computer-based decision support tools (e.g. Menzel et al., 2012) to reach a commonly agreed end-result. It allows the involvement of an appropriate combination of stakeholders (e.g. decision-makers, scientists and experts, administration, NGOs) to different phases of the process.

Various collaborative planning methods can be used to support the implementation of PBPNR. Methods can be applied separately for various steps in the planning process or they allow supporting the whole process by incorporating different stakeholder perspectives (see Kangas et al., 2010). Although also other different characterizations for the decision making and planning processes exist – such as adaptive management (McLain and Lee, 1996), participatory modelling (Carmona et al., 2013) or integrated multi-criteria analysis (Belton and Stewart, 2002) – three general phases are here considered to belong to the collaborative planning process:

- **Problem identification** involves the acquisition and analysis of information to understand and to define the different decision problems by identifying goals and objectives, management alternatives, related policies, resources, conflicts and interactions
- **Problem modelling** involves model building to represent both the relations between management options and outcomes of interest(s) of stakeholder groups and the management policy scenarios
- **Problem solving** involves the design of management plans with prioritizing options and determines the implementation process.

The number and variety of methods and approaches for supporting the above phases is vast (e.g. Sheppard and Meitner, 2005; Martins and Borges, 2007; Kangas et al., 2006). Professional planners have to be careful in selecting the most appropriate method for a given planning situation. The characteristics of each method make them more or less effective for a particular planning case. Therefore it is hypothesized that the methods have varying potential to support the three planning phases and the selection of appropriate method(s) might influence the success of the whole process. Moreover, there is no single method that fits each problem, but the sequence and combination of different methods may depend on the planning case.

The aim of this study was to develop and demonstrate a framework for evaluating collaborative planning methods, and thus provide help for planning consultants for the method selection phase of PBPNR processes. The practical phases of the research carried out for this study were: (i) identifying an array of collaborative planning methods potentially suitable for PBPNR, (ii) identifying and listing criteria for the evaluation of the methods, (iii) evaluating the methods according to planning phases and criteria, and (iv) providing recommendations on how planners can be supported in making a method's choice for a particular planning case.

2. Methods/materials

The selection of planning and collaboration methods considered applicable in the context of PBPNR and hence included in the analysis was based on literature reviews on collaborative planning and decision support methods (e.g. Fisher et al., 2007; Kangas et al., 2006; Martins and Borges, 2007) as well as screening of reviews and methods from web resources. In the review, the terms "participatory planning", "collaborative planning", "natural resources management (planning)" were used. These terms were supplemented with the three terms related to the phases of the collaborative planning processes. In addition, the searches were concentrated around the descriptions of the methods and around organizations that use these methods (e.g. consultant companies, organizations and ministries etc.). The search resulted in more than 60 methods. However, some of the methods were grouped together and some of the methods were recognized as modifications of other methods and thus they were excluded. The framework for evaluating the selected collaborative planning methods is shown in Fig. 1.

Short descriptions of the selected methods were compiled including information about the data requirements, expected outputs and benefits as well as an example on how they could be applied. In total, 43 methods were documented (Table 1). A short characterisation of each method including a reference for the origin or a well-documented application case is provided in Table 1.

To judge the potentials of each method in the context of PBPNR, a list of criteria was identified based on planning literature (Ansell

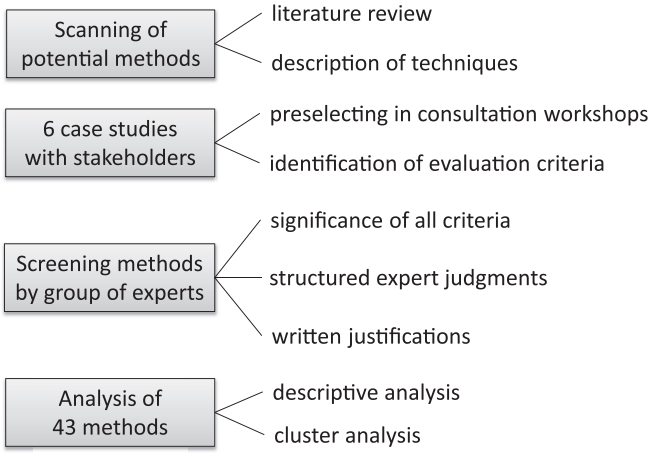

Fig. 1. Methodological steps in the analysis of the collaborative planning methods.