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## Exploring the potential of combining participative backcasting and exploratory scenarios for robust strategies: Insights from the Dutch forest sector

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### ABSTRACT

Literature critiques current predictive scenario approaches applied in the forest sector. Backcasting -a means to create normative scenarios- seems promising, but sparsely used. Combining backcasting with exploratory scenarios (combined scenario approach) seems appropriate to address these critiques. We performed such an exercise with the participation of Dutch forest sector stakeholders. A one-day *workshop* was successfully executed, in terms of process, results, and participant satisfaction. A robust strategy was formulated, consisting of cross-scenario actions related to marketing, public opinion, and education. Novel methodological elements were included, related to the desired end-point, visually represented by ecosystem services ladders. Although the method requires the capacity to prepare, use and learn from scenarios, which is not easily attained, the main added value lies in the 'soft' results. It fits in with the government's shifted focus towards policy approaches that include social engagement, effectiveness and social support. It provides structured accounts of informed decisions towards ownership, transparency, legitimacy and accountability, and thus aids in grasping increasing complexity and uncertainty. We recommend continued testing the usefulness of the combined scenario approach (and thus tapping in to the diversity of participative methods offered by future studies), carefully choosing the duration of the workshops, applying broad stakeholder involvement, and continuing the use of ecosystem services ladders.

### 1. Introduction

In the forest sector world-wide, dealing with the future and its uncertainties is common practice (Hoogstra, 2008, p. 2). Forest growth analysis, trade analysis and outlook studies are used to develop views about the future in strategic planning and policy making (Pelli, 2008). Over the last 10–15 years, however, instigated by climate-induced uncertainties, interest in scenario development as a means to take into account future uncertainties has increased (Hoogstra-Klein et al., 2015, this issue). Examples include Lempert and Schlesinger (2000), Millar et al. (2007), Coreau et al. (2009), Vergragt and Quist (2011), Hurmekoski and Hetemäki (2013), De Jong (2014), Wagner et al. (2014), and Sandström et al. (2016). Den Herder et al. (2014) (p. 7) discuss successful examples in Finland and Germany, and other examples can also be found in Sweden (Carlsson et al., 2015; Nordin and Sandström, 2016), the UK (Forestry commission, 2011), and in developing countries (e.g., Wollenberg et al., 2000).

The scenario studies performed thus far in the forest sector have had a strong focus on timber and applied predictive, quantitative, model-based approaches (Pelli, 2008; Wilkinson and Eidinow, 2008; Hurmekoski and Hetemäki, 2013; Pelli and den Herder, 2013; Den Herder et al., 2014). More recently, literature also brings forward that the benefit of using scenario methods could be increased by making full use of the wide array of concepts and methods the field of future studies<sup>1</sup> has to offer (see e.g., Pelli, 2008; Hurmekoski and Hetemäki, 2013; De Jong, 2014; Den Herder et al., 2014; Näyhä et al., 2015; Westholm, 2015, and Hoogstra-Klein et al., 2015, this issue). For reviews on the large body of concepts, methodologies, practices and processes applied in future studies we refer to e.g., Schoemaker (1993), Van Notten et al. (2003), Börjeson et al. (2006), and Priess and Hauck (2014). From this wide array, in this paper, we will focus on exploratory scenarios and backcasting. Combining these, answers to the call in natural resource management to approach issues in an indeterminate, interdisciplinary, and participative manner (Lawrence,

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<sup>1</sup> The use, and definition of this term, or other terms suggested as substitutes, are subject of debate; see e.g., Sadar 2010.

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2017), and thus can serve as a valuable contribution during management planning and policy-making.

Exploratory scenarios do not focus on quantitative model-based outcomes, but describe different possible images of the future (Börjeson et al., 2006). Backcasting focuses on what images of the future are preferred (*normative scenarios* (Börjeson et al., 2006)). Such a process starts with a group determining a desired future goal and then, working backwards from that future goal, deciding what short-term and longer-term actions are needed to achieve that goal (Robinson, 1982).

The choice for these two approaches is based on the following reasons;

Firstly, the inherent uncertainty associated with future developments the forest sector is faced with, calls for an indeterministic approach (Lempert and Schlesinger, 2000; Millar et al., 2007; Coreau et al., 2009; Hurmekoski and Hetemäki, 2013; Lawrence, 2017). It is especially in exploratory scenario development that this view to the future is taken as a starting point (Börjeson et al., 2006).

Secondly, participation of public and private actors has become a widely applied concept in natural resource management world-wide (Arnstein, 1969, European Commission, 2001 p. 5, Appelstrand, 2002, Wodschow et al., 2016). Backcasting departs from a (shared) normative view of the future (Börjeson et al., 2006; Quist and Vergragt, 2006). Both exploratory scenario development and backcasting offer the opportunity to apply more participative, qualitative and flexible methods and thus enable to take the multitude of stakes, values and perceptions of diverse stakeholders into account (Verbij, 2008 p. 203, Brugnach et al., 2011, Van Berkel and Verburg, 2012, Hetemäki, 2014, De Bruin et al., 2015).

Thirdly, there is a need for scenarios that include a broader spectrum of issues, originating from both the social as well as the natural sciences, instead of a narrow focus on timber (Robertson and Hull, 2003; Liu et al., 2007; Brand et al., 2013; Klenk and Wyatt, 2015). Methods used in exploratory scenarios development and backcasting also offer the opportunity to incorporate knowledge from different disciplines. Applying such methods would therefore allow to address the complexity of current issues in forest management since they enable to simultaneously address the diverse factors, their interactions, as well as their uncertainties. A few examples of such issues are climate change, globalized forest-products markets, international forest and environmental policies and technological changes (Bernstein et al., 2000; Gezelius and Refsgaard, 2007; Lee et al., 2011; Wilkinson et al., 2013; Fenning, 2014; Hetemäki, 2014). Adding exploratory scenarios and backcasting to the scenario approaches currently used, addresses the need to offer a *'more versatile perspective on ongoing structural and societal changes'* (Den Herder et al., 2014 p. 7).

Lastly, the predictive scenario studies performed thus far provided forest managers and policy makers with an image of the future, usually of external factors beyond their control, which do not offer the possibility to directly discuss short-term actions needed (Gavigan, 2001; Miles, 2002; Pelli, 2008; Brand et al., 2013; Näyhä et al., 2015). It is precisely the strength of the combination of scenario development and backcasting that it facilitates a discussion on short-term policies in the context of long-term uncertain futures, thus contributing towards robust actions (Kok et al., 2011). The combination thus not only helps understanding future developments and specific challenges, but also facilitates a pro-active assessment of these future opportunities and challenges, as opposed to a reactive stance (Vergragt and Van der Wel, 1998; Palacios-Agundez et al., 2013; Milestad et al., 2014). In turn, this can offer a concrete contribution to current issues and inform the decision making of forest managers and policy-makers.

Taking the above into account, there is a clear potential added value of combining exploratory and normative scenario approaches as first applied by Banister et al. (2000). Especially because backcasting is being overlooked (Hoogstra-Klein et al., 2015, this issue) while exploratory scenarios are gaining more attention in the forest sector. A relatively small number of studies in the forest sector have combined

exploratory and normative scenario approaches, which will be discussed further in Sections 2.3 and 2.4. The objective of this paper is, therefore, to present the methods and results of a stakeholder workshop, emphasizing methodological adaptations and novelties to an existing approach combining exploratory and normative scenarios, and an evaluation of this new method. By doing so, we will explore its added value drawing on the results from the backcasting process, our own insights, and those of the participants. Reporting on a one-off workshop aiming at methodology testing, we cannot provide a methodological blue-print on how these types of studies should be conducted, but we conclude with our suggestions towards an updated methodology. We align with the EC report *'A practical guide to regional foresight'* (Gavigan, 2001) which stresses the importance of learning from each other's endeavours in the field of foresight. Therefore we aim to share our insights and thereby draw attention to the currently underused resources of the field of future studies.

Our method draws on Kok et al. (2011) who applied the combined scenario approach to the European water sector. With some alterations, it was applied within the EU INTEGRAL project in 20 forested case-study areas (see Introduction this special issue). In this paper we focus on the Dutch case. This case presents an interesting example because, over the last 7 years, Dutch nature policy has gone through a dramatic shift. After 2010, policy goals were altered, subsidies were cut, and policy implementation was decentralized (Buijs et al., 2014). The national government now aims to achieve a *"robust and versatile natural environment that prospers in a dynamic society"*, and to *"protect as well as use its natural capital"*. It sees the natural environment as a source of both societal and economic development. The government has shifted its focus towards policy, planning and strategy making approaches that include social engagement, effectiveness, and social support (Ministry of Economic Affairs, 2014). As a consequence, several forest management organizations, both public and private, shifted management goals from a focus on recreation and biodiversity, to combining these with increased timber harvest rates. But however, the Dutch forest sector, thus far, has not joined in the developing interest for scenario methods. This appears surprising since, at least at national level, the use of foresight in other Dutch policy fields, has become a known and applied practice (Van der Duin et al., 2009).

The paper is structured as follows; we will start in Section 2 by elaborating more on concepts on which the wide array of methodologies and approaches in the field of future studies are based, in order to position the theoretical background our method is based on. We elaborate on the method applied in our study in Section 3. After presenting the results in Section 4, we will conclude by discussing the potential added value of this approach and our suggestions towards an updated methodology.

## 2. Theoretical background

In contrast to predictive scenarios, exploratory and normative scenarios rest on an indeterministic approach in which *"it is accepted that inherent uncertainty and limited predictability are inescapable"* (Wagner et al., 2014 p. 32). These types of scenarios are seen as appropriate to support flexible and adaptive decision-making (Schwartz, 1996; Wollenberg et al., 2000; Van der Heijden et al., 2002) when dealing with long time-horizons, complexity and uncertainty (Dreborg, 1996; Peterson et al., 2003; Henrichs et al., 2010; Kok et al., 2011), as is the case in the forest sector. In this section we will elaborate further on the concepts behind these approaches and the rationale for combining them.

### 2.1. Background of backcasting

Backcasting looks towards the future, focusing on what should happen; how a(n) (un)desirable future can either be attained or prevented (Robinson, 1990). It is intervention oriented; it sees the

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