METHOD FACTSHEET

Scenario planning

Introduction

Scenarios are defined within the OpenNESS project as ‘plausible, simplified description(s) of how the future may develop, based on a coherent and internally consistent set of assumptions about key driving forces’ (Priess & Hauck 2015). Scenarios can be developed with the help of expert input or wider public participation, and can take various shapes, including qualitative or quantitative scenarios, exploratory or anticipatory scenarios, and baseline or policy scenarios (Alcamo 2001). Scenario planning is one branch within the broader field of Futures Thinking, including diverse methodological approaches (Marien 2002). In scenario planning, various tools and techniques are applied (often in combination) to develop plausible and internally consistent descriptions of alternative future options (Johnson et al. 2012). Assumptions about future events or trends are questioned, and uncertainties are made explicit (Bohensky et al. 2006). Scenario planning typically takes place in a workshop setting, where participants explore current trends, drivers of change and key uncertainties, and how these factors might interact to influence the future (Schoemaker 1995). Although scenario planning is not a de facto valuation tool, scenarios can be used to explore how ecosystem services might change in the future and how these changes can influence human well-being. Therefore by comparing and evaluating scenarios we can also reveal the value of related ecosystem services.

Keywords

Future thinking; Uncertainty; Decision support; Public engagement; Value plurality.

Why would I chose this approach?

Scenario planning is primarily used as a decision support tool. It can be used to assess the possible future impacts of various drivers of change (including external drivers such as climate change or internal drivers such as different policy interventions) (Priess & Hauck 2014). Scenarios can combine qualitative and quantitative data collected from various information sources. They can take into account uncertainty and complexity inherent to many decision making situations, especially if a larger time horizon is involved in the decision (Peterson et al. 2003). The process of scenario development – if it follows a participatory approach – can accommodate creative thinking and social learning (Johnson et al. 2012), and can therefore support joint problem definition and consensus building (Priess & Hauck 2014).
Most cases found in the literature assess only a few selected ecosystem services as part of scenarios (Hauck et al. 2015), but scenario planning can also apply a comprehensive approach to ecosytem services when assessing the possible consequences of changes in ecosystem services provided at a certain place (see e.g. the MA scenarios). Scenarios can also highlight the bundles and trade-offs between key ecosystem services, by indicating how they might change under common conditions (i.e. whether they change together or on seperately).

The spatial scale at which scenario planning has been applied in the ecosystem services literature ranges from the local to the global (Alcamo et al. 2008). Different spatial scales can be combined in multi-scale scenarios (Kok et al. 2007). Spatial resolution is highly variable depending on the tools and approaches used during the process. If scenarios are developed in a participatory way using various knowledge forms and described primarily in qualitative terms, spatial resolution might be coarse. If scenario narratives are used as inputs to modelling, scenarios can be translated into fine-tuned, spatially explicit quantitative estimations (depending on the availability of data and expertise). As a result of this, scenario planning can be a useful decision support tool for awareness raising (by knowledge sharing, see e.g. Johnson et al. 2012), priority setting (by comparing and evaluating future alternatives, see e.g. Geneletti 2012) and instrument design (by discussing the range of policy options and managing the potential conflicts between them, see e.g. Palomo et al. 2011, Pearson et al. 2010).

What are the main advantages of the approach?

- Addresses complexity and uncertainty in a transparent and creative way;
- Facilitates learning and allows for the integration of diverse knowledge forms and plural and heterogeneous values;
- Well-established approach, there are global and regional scenarios available in the literature (e.g. IPCC, MEA, IPBES is in progress) which can be used for comparison and down-scaling;
- Scenarios can be developed in a participatory way which makes possible the active engagement of different stakeholders and hence can create a science-policy-public interface;
- It is possible to consider a range of policy or response options, and assess how robust those options are to the different scenarios developed.

What are the constraints/limitations of the approach?

- Robustness and internal consistency of scenarios is a key requirement which can only be guaranteed if quality control mechanisms are built in the process;
- The quantification and modelling of narrative scenarios is often highly demanding in terms of expertise, time and other resources;
- A participatory scenario planning process requires good facilitation skills and resources;
- Participatory scenario planning is time consuming for local stakeholders.

What types of value can the approach help me understand?

Scenario planning can help reveal diverse and heterogenous values, including ecological, sociocultural and monetary values. It is especially suitable for including future-related values such as option and bequest values. It has however some limitations for incorporating the intrinsic values of nature – to this end combining scenarios with biophysical modelling might be necessary.

How does the approach address uncertainty?

Uncertainty is explicitly addressed by creating and comparing different plausible futures. It can be tackled both qualitatively (in scenario narratives) and quantitatively.

How do I apply the approach?

For detailed information on how scenarios can be developed see the OpenNESS synthesis paper on scenarios (Priess & Hauck 2015). Here we sketch out a general stepwise approach including the major phases of an integrative scenario development process (adapted from Priess & Hauck 2015).

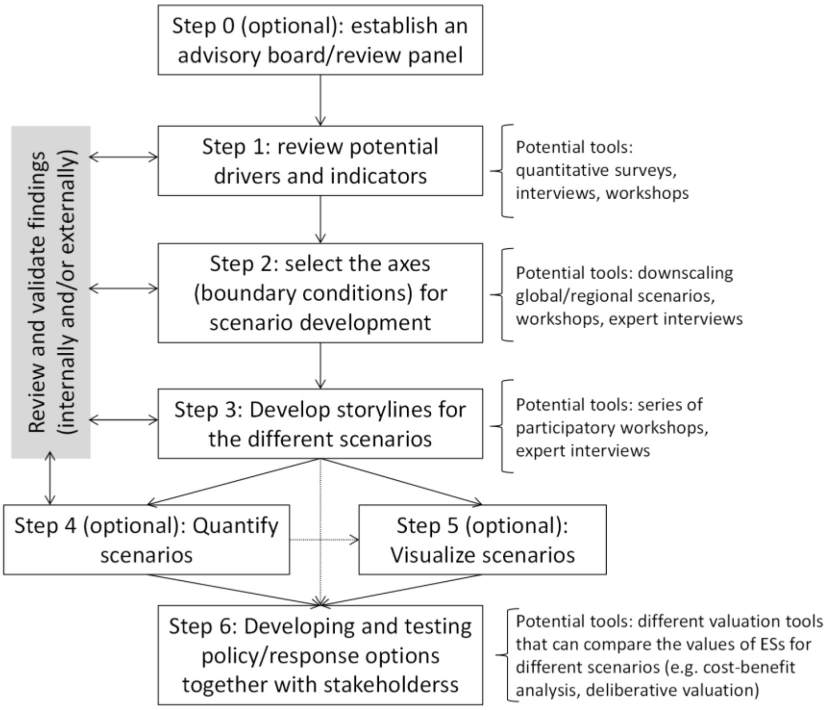

Figure 1. Steps for developing and using Scenarios for decision support around ecosystem services.

Requirements

Requirements		Comments
Data	□ Data is available □ **Need to collect some new data (e.g. participatory valuation)** □ **Need to collect lots of new data (e.g. valuation based on surveys)**	Data requirement depends on the type of scenario and availability of existing data. Qualitative scenarios require less data which can be collected through participatory workshops. Quantitative scenarios might need extensive numerical data input.
Type of data	□ **Quantitative** □ **Qualitative**	Scenarios can be both qualitative (summed up in narratives, images, screenplays) and quantitative (including numerical information in forms of graphs, tables and maps).
Expertise and production of knowledge	□ **Working with researchers within your own field** □ **Working with researchers from other fields** □ **Working with non-academic stakeholders**	Scenarios can be developed solely based on scientific knowledge, although including various disciplines and the general public can increase the robustness of scenarios.
Software	□ **Freely available** □ **License required** □ **Advanced software knowledge required**	Depends on the type of scenarios qualitative/ participatory scenarios does not need any extra software support, quantitative scenarios might require licensed software and always necessitates advanced modelling/ programming skills

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Time resources	□ **Short-term (less than 1 year)** □ Medium-term (1-2 years) □ Long-term (more than 2 years)	(It might require more time if stakeholders are heavily involved in a series of workshops or if special data has to be collected).
Economic resources	□ Low-demanding (less than 6 PMs) □ **Medium-demanding (6-12 PMs)** □ High-demanding (more than 12 PMs)	(This will vary depending on the tools applied).
Other requirements	Special expertise might be necessary if scenarios are combined with modelling and/or mapping (computation, modelling) or scenarios are developed in a participatory way (facilitation skills)	

Where do I go for more information?

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