

Scenario building and planning tools (SBP)

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Integrated models: Scenario building and planning

1 Introduction

Scenario Building and Planning (SBP) models are highly integrative tools which are capable of representing a wide variety of social, economic, and environmental aspects of the Earth system. They can be used to develop and structure complex scenarios. They tend to include interfaces that are designed for engaging non–expert decision makers or members of the general public in the creation and analysis of scenarios in participatory workshop settings. They can be easily applied to analyse various policy measures and other human activities, e.g. environmental management.

2 Methodology

SBP tools often use simplified models of the actual processes involved, although at times formal models are incorporated. Different types of simplified models may be included, such as statistical models, process models, or summary models that embed formal model results within the SBP tool. Although simplified, the models may still require significant data inputs. SBP tools are usually structured to allow different types of simplified models used and the source data involved to be combined in a customized manner. The analytical approach is often based on systems dynamics approaches. Convenient user interfaces are often provided for a wide range of user groups, including non–experts.

3 Process

The process of determining which issues to include and the range of scenarios to be analysed by a SBP tool is usually done collaboratively by the tool creator and the intended owner/user of the tool. Very often this is done with strong stakeholder involvement as well (meaning, other interested parties beyond the owner/user). Actors and their activity spaces also have to be defined in the SBP tool. Interactions and feedback loops between various elements and actors have to be defined. As most SBP tools are not too demanding with respect to computer power, scenario and model refinement can be done in an iterative way.

4 Review

4.1 Evaluation results

Scenario building and planning tools provide the link between process–based, formal modelling and broader scenario analysis. Most SBP tools are based on information and modelling relationships derived from external sources, including other models and scenario studies, which can be combined to create new scenarios or pose new questions. Most SBP are equipped with convenient user interfaces and are especially suited for stakeholder participation activities, such as workshops with non–expert decision makers, or with community groups. They are very flexible in their structural features, thematic and spatial focus. Some SBP tools are based on system dynamics approaches, which provide the possibility of non–linear effects and surprising results. The integrated and complex nature of such tools often leads to non–expert audience demands for outcome and process interpretation that must be met by workshop facilitators.

4.2 Experiences

SBP tools have been applied to a wide range of local to regional planning and visioning exercises. Moreover, future scenarios on society–nature interactions, with a focus on policy interventions, have been analysed. These tools can be easily applied to the case of biofuel energy scenarios and will provide valuable results, especially if intensive stakeholder interaction is considered important.

Scenario building and planning tools (SBP)

4.3 Combinations

SBP tools are closely related to all kinds of modelling tools and scenario analysis approaches.

4.4 Strengths and weaknesses

Strengths:

- Highly integrative
- Very flexible structure
- Able to represent non-linear behaviour, feedback loops and surprises
- Requires limited computer power
- Usually especially suited for participatory engagement, when developed with appropriate, convenient user interfaces

Weaknesses:

- Demanding with respect to input data
- Simplified model structures may poorly represent actual nature of sub-systems
- Internal relationships not very transparent, plausibility of results is contingent on relationship assumptions

4.5 Further work

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4.6 References of the tool

QUEST

http://www.basinfutures.net/play_gb_quest.cfm

Carmichael, J., J. Tansey and J. Robinson (2004) "An Integrated Assessment Modeling Tool", Global Environmental Change 14, pp. 171–183.

POLESTAR

<http://www.seib.org/polestar/>

THRESHOLD-21

<http://www.threshold21.com/>