Project

Theme 8 | Interactive spatial tools to support the development of regional adaptation strategies

Description of research

In past years the urgency to incorporate adaptation in regional planning has grown (Runhaar et al., 2012). As the effects of mitigation measures, such as emission reduction, take several decades to have effect. Adaptation measures are seldom a respond to climate change alone (Adger et al., 2007). For example, soil subsidence in peat meadow areas also occurs under current climate conditions. The development of regional adaptation strategies consist of several stages. In this research the widely used decision-making framework (e.g. Ribeiro et al., 2009; de Bruin et al., 2009) of Willows and Connell (2003) is used to deduct adaptation tasks (Figure 1).

Assessing risks is usually a measuring and modelling exercise. In this research the focus is on the support of planning tasks linked to the identification and appraisal of options. Identification of options includes exploration and design. Exploration is the search for problems and opportunities, while design combines and allocates adaptation measures. Appraisal involves assessment and ranking of options (evaluation) and selection or adjustments of these options (negotiation).

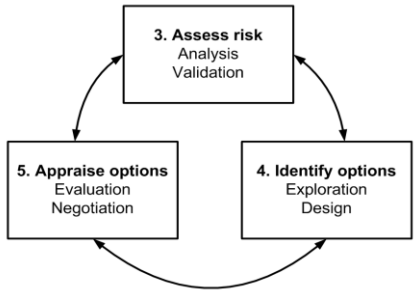

Figure 1. Decision-making framework (Willows and Connell, 2003) and adaptation tasks.

Tools will be developed to support map related tasks. Tools in this paper refer to spatial instruments that can be used interactively by stakeholders during planning workshops. This will include tools to support generation of alternatives (Janssen et al 2008). Tools to support evaluation and feedback to design (Janssen ,1992, Eastman et al., 1998; Malczewski, 2006). Tools to support negotiation (Feick and Hall, 2002, Belton and Stewart, 2002 Stewart et al., 2009) and, finally, tools linked to spatial objectives such as connectivity, shape and fragmentation (Janssen et al., 2008).

Within this project we use an interactive mapping device (the 'Touch table') to support participatory planning workshops (Figure 2). The table is used in a series of workshops with various stakeholders to generate, assess and discuss adaptation strategies for the case studies that are part of the 'Hotspot Fen meadows and shallow lakes'. A geographical information system (GIS) serves as a platform for developing the applications with multiple interactive spatial tools (Figure 3). Knowledge transfer is a primary target and is achieved through direct involvement of stakeholders in the planning workshops.

Figure 2. Photograph of workshop session with 'Touch Table'.

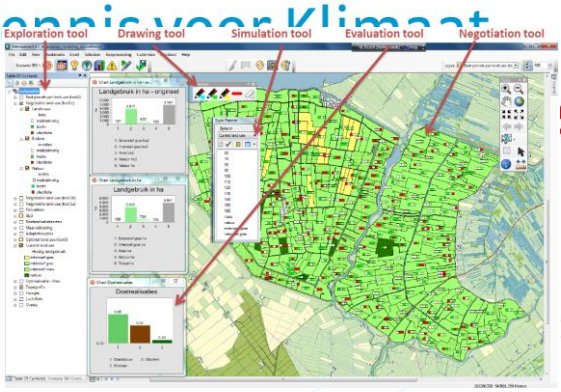

Figure 3. GIS application with multiple spatial support tools.

Research question

What spatial support tools are best suited for which tasks in the development of regional adaptation strategies?

The most important conclusions

- Spatial support tools were tailored to the regional context.
- Workshop results showed that interactive participation promotes stakeholder involvement and encourages knowledge exchange and acceptance of adaptation options.
- Before actually using spatial tools, participants prefer to test them. As suggested by the experience from the case studies, complexity of tools has to be minimized and transparency maximized.
- A dynamic support tool requires additional time from the participants to become familiar with it but provides more insight in underlying processes, which increases both performance and confidence.

Possible applications from the project

- 'Hotspot Fen meadows and shallow lakes'.
- Strategy for Fen meadow areas ("Structuurvisie Veenweide")
- Water policy plans ('Watergebiedsplannen')

Bottlenecks of the project

- User friendliness of the software
- Calculation time
- Acceptance of tools in the planning process
- Reluctance towards implementation of tools
- Overload of information
- Communication of the complexity and uncertainty of scientific results
- Availability of information such as costs
- Implementation of a tool for a study area is time consuming

Opportunities for the project

- Visualizations
- Improvement of user interface
- Incorporation of fast models (runtime of seconds)
- Incorporation of costs and benefits
- More adaptation options

More information

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