

How can we involve stakeholders in the development of water scenarios? Narew River Basin case study

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This work presents the results of the water scenario development process carried out in the Narew River Basin within the SCENES Project – Water Scenarios for Europe and Neighbouring States. The overall project objective was to create water scenarios on the Pilot Area level as well as at the Pan-European level. The Narew River Basin in Poland had been selected as one of 10 Pilot Areas in which scenario development process has been conducted using methods proposed within the project. Developed scenarios were elaborated in the participatory process by invited key water stakeholders representing varied sectors and institutions. The main present drivers for the study area, present and future relations between them as well as possible scenarios and challenges to achieve them are presented in this work. The proposed approach has intensely involved the stakeholders in the scenario development process, resulting in the set of scenarios suitable for further quantification and use in modelling exercises. Moreover, uniquely in the Narew River Basin the stakeholder were also involved in the scenarios quantification procedure.

Applied scenario development process consisted of four steps: a) characterising present and near future, b) looking at the future (long-term visions), c) critical review of developed visions, d) playing it back (short-term options), in which a sequence of the qualitative and semi-quantitative methods were used. In the Narew River Basin case four scenario development workshops were organized in 2008-2011 to carry out the process according to proposed four step methodology. In the whole process in the Narew River Basin three qualitative methods (card-technique, discussion groups and collages) and three semi-quantitative methods (Fuzzy Cognitive Mapping, spidergrams and time trends) were used. The selected methods for scenario development process aimed at transition from basic qualitative to quantitative information which can be more useful e.g. in further modelling exercises. Four steps of scenario development process are ordered in a way that makes a logical sequence, starting from a simple description of the present situation and ending with collection of semi-quantitative data about the water issues. Such an approach reduces the data gap between qualitative storylines and quantitative models.

At the beginning of work, present drivers playing the most important role in the Pilot Area were defined by using card-technique. Individual factors regarded as the most important for the Narew River Basin, were coupled into the following 12 main groups of factors: *Flood protection, Water quality in lakes, Water-sewage management, Nature valuable areas, Spatial planning, Land amelioration systems, Impact of agriculture on water resources, Agriculture, Tourism, Role of forest, Transboundary co-operation, Water retention*. Once the main drivers were recognized, the importance of the drivers was set by use of the spidergrams method. Next, one of the semi-quantitative methods, Fuzzy Cognitive Mapping (FCM), was used for recognition of present situation in the Narew River Basin. The starting point for creating the Fuzzy Cognitive Maps (FCMs) was a set of main drivers defined by the card-technique method. Stakeholders were free to modify and/or add new main drivers, and they determined the relations and feedback between the drivers. In this way stakeholders created an almost complete system representation, presented in a simple way and giving new insight and understanding of such a complex system as the Narew River Basin. Next task of the scenario development process was oriented on drawing the future visions of the Narew River Basin by using collages technique. “Fast-track” scenarios based on Global Environment Outlook (GEO-4) prepared by United Nations Environment Programme (UNEP, 2007), which describe the possible ways of what the world and Europe will look like in 2050 were used as a starting point for discussing and developing future visions for the Narew River Basin. Subsequently, backcasting procedure, including a selection of objective (a desired future state) to be reached by 2050 and casting back from this end point to find out the possible ways to reach this objective, was applied to the visions elaborated previously. Backcasting exercise allowed to identify main obstacles and opportunities that occur ‘along the way’ when reaching the desire future and milestones, interim objectives and the (policy) actions necessary to achieve the proposed scenarios. At the end potential trends and magnitude of changes in values of the selected characteristics used as parameters for modelling for two different scenarios have been determined by inquiring the stakeholders.