IWRM Action Hub

IWRM TOOL - C2.02

Shared Vision Planning and Collaborative Modelling

Summary

Shared Vision Planning (SVP) and Collaborative Modelling can be used to support taking more informed decisions and avoid disputes over water resources management. SVP supports developing common understanding among stakeholders and can lead to joint action and benefit sharing. This Tool introduce SVP and collaborative modelling, its benefits, processes and best practices.

What is Shared Vision Planning and Collaborative Modeling?

SVP for water resources management was first developed by the Institute of Water Resources, US Army Corps of Engineers, to ensure that all stakeholders develop a common understanding of the water issues, including their interlinkages to different components of the socio-hydrological system (Tool C2.04). Collaborative modeling adds transparency and wider engagement to more Decision Support Systems (DSS), which have been traditionally reserved to technical specialists and modelling experts. It also combines stakeholder engagement and computer modeling, which are both increasing being used in water resources. The three pillars of SVP are (Palmer, Cardwell, Lorie and Werick, 2013):

- Traditional water resources planning,
- Structured public participation, and
- Collaborative computer modeling to formulate water management solutions

While implementing the tool, all stakeholders and model developers are introduced to each other from an early phase of the model development. As they work together, stakeholders are formally introduced to technical models, their development, application, potential benefits and limitations. At the same time stakeholder knowledge, interests, and needs are actively considered, incorporated and valued in the model, allowing flow of information between stakeholders and also with modelers. The use of this approach can support Multi-Stakeholder Partnerships (Tool B3.05) and transboundary cooperation assessments (Tool C1.08) and dialogues (Tools C6).

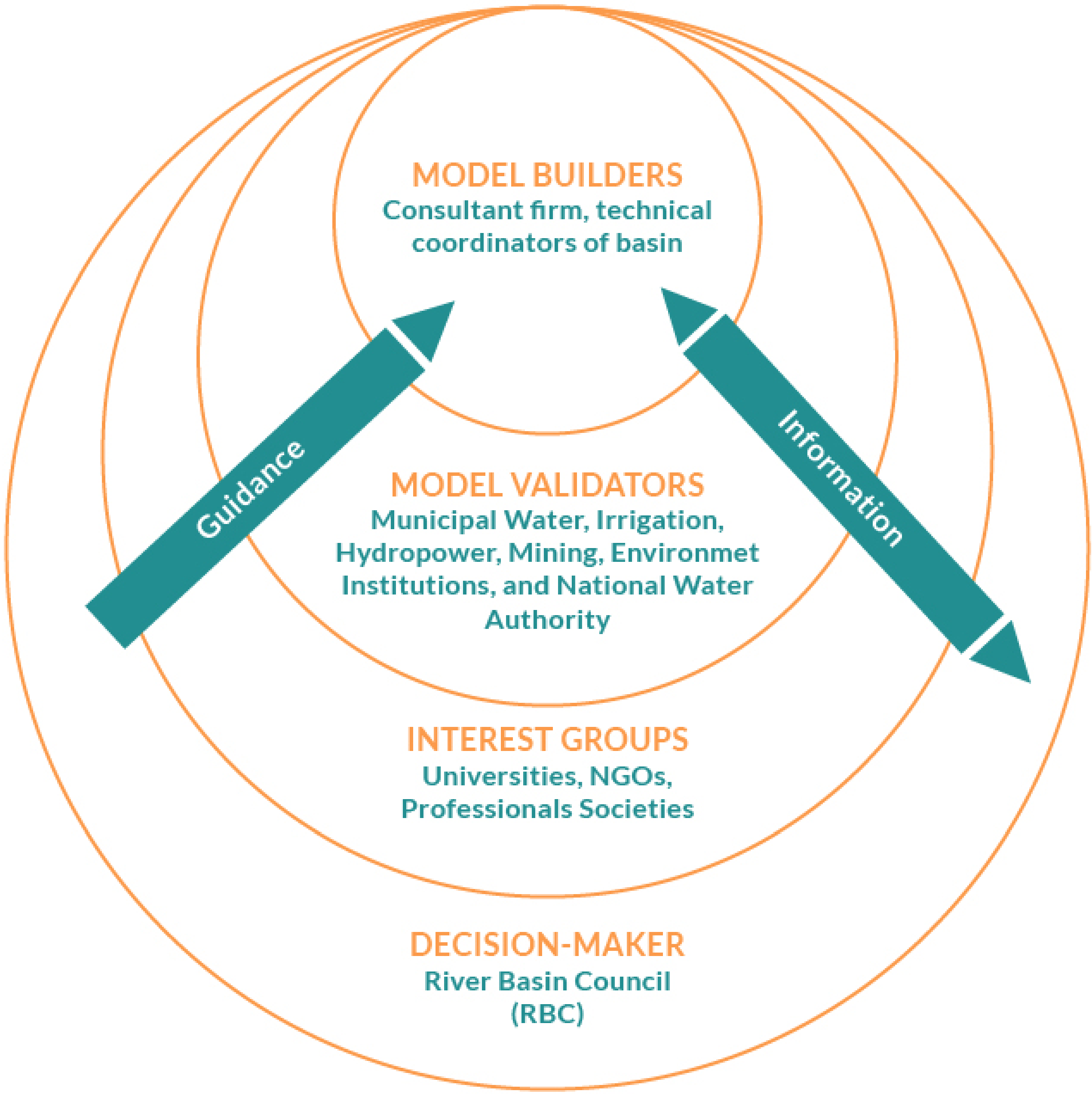

Figure 1. Circles of Influence during Shared Vison Planning (Adapted from Mendoza, Cardwell and Guerrero, 2013)

Shared Vision Planning is best suited for multi-stakeholder and multi-issue situations. As parties begin to confront the need to plan for growing scarcity of water under competing demands, it brings sectors together for resolution. It is also useful in situations that have limited data sharing, little shared knowledge resources and no common database (Tool C2.05). The best modelling applications show parties an overall picture of the situation and to put the water conflict situation in context.

Benefits of Shared Vision Planning and Collaborative Modelling

Collaborative modelling requires additional effort and time to the already burdensome task of water resources planning. However, it also offers multiple benefits for equitable and joint actions. Firstly, SVP can illustrate the benefits of cooperation and spread awareness amongst stakeholders regarding its resultant trade-offs. This pushes parties towards sharing benefits, rather than simply sharing flows.

Many problems faced in water resources planning are semi-structured or unstructured due to the complexities associated with both natural and built water systems. These complexities are further amplified as water is a shared resource for many different socio-economic functions across different stakeholders (Basco-Carrera, Warren, Van Beek and Jonoski, 2017). SVP helps to build a common language and understanding about the water resources helping structure the problem while also finding solutions with a common consensus.

Since the stakeholders take part in model development, the results and decisions made using the models are credible and acceptable. The tool can then be effectively used to generate and evaluate alternatives. This leads to technically sound decision making accompanied by greater trust between stakeholders in the decision making process. Proper construction of SVP and collaborative modelling can greatly reduce the adversarial nature of the planning processes, facilitating agreements on the facts and reducing the mysteries associated with the modeling process (Palmer, Cardwell, Lorie and Werick, 2013).

Collaborative modelling holds the promise of widely acceptable decisions in divisive and uncertain environments. Furthermore, it can facilitate ‘buy-in’ to implement the decisions taken. In short, collaborative modelling can help to operationalise IWRM, leading to the development of plans that satisfy economic, social, and environmental objectives.

Shared Vision Planning and Collaborative Modeling Process

At the beginning of SVP and collaborative modeling, all relevant stakeholders, their interests and potential roles must be identified through a stakeholder analysis (Tool C1.03). Participatory and collaborative modelling approaches must be flexible to facilitate stakeholder engagement during all the planning phases to allow the complexity associated with IWRM to be adequately addressed (Basco-Carrera, Warren, Van Beek and Jonoski, 2017). The process starts with a participatory approach and moves identify and define the problem through discussions and discourse. It then moves towards collaboration for joint knowledge production, model co-design, joint decision making and finally joint action. There are seven major steps, of which steps 1 to 5 can be repeated iteratively in a non-linear fashion:

1. Build a team and identify stakeholders, decision makers, and experts;
2. Develop objectives and categories for evaluation;
3. Describe the status quo by using the collaboratively built model;
4. Jointly formulate alternatives;
5. Evaluate alternatives and develop recommendations using the model;
6. Synthesise results in a plan and implement it;
7. Update the plan.

Model Types and Selection Criteria

Shared Vision Modellers may use a variety of types of models to support the project purpose. However, any Shared Vision Planning model should be acceptable and trusted by the participants. Stakeholders do not require to have a comprehensive background in modelling in order to participate in the process as the model selection is dependent on the user friendliness, interactivity and accessibility.

The model selection also depends on its ability to test real time evaluation of scenarios and options to develop outputs which address all interests of stakeholders. The model must also be reliable and detailed to provide a basis for decision making. Data inputs and outputs can be both quantitative or qualitative in nature, as they both provide important information for decision-making. Qualitative tools such as Casual Loop Diagram can support the development conceptual portions of the model (Baki, Rozosa and Makropoulos, 2018). With inclusion of qualitative information, the public has more flexibility to produce better alternatives and cooperate amongst each other.

There are a number of software products that are suitable for developing models for Shared Vision Planning. The ones that are most frequently used are STELLA, Powersim and Microsoft Excel. These models share characteristics of being transparent and responsive which support the SVP process. Models in SVP and collaborative modelling are communication tools facilitate decision making rather than providing narrow deterministic solutions.

For example, STELLA was used in southern Italy to describe the interactions among multiple stakeholders for irrigation planning. The model identified critical feedbacks and enhanced the understanding of the water system between stakeholders and amongst government representatives by presenting the possible consequences of their decision and actions (Pluchinotta, 2018). Similarly collaborative modelling was applied in northern Ghana to understand and connect agent based models with biophysical models. The model development was based on a variation of serious games (Tool C2.03) and enhanced understanding of trade-offs for better decision making (Daré, Venot, Le Page and Aduna, 2016).

Best Practices in SVP and Collaborative Modelling

It is often helpful to begin the exercise of developing objectives, performance measures, and methods in smaller groups. The first small group exercises can be conducted in homogenous groups to ensure that people of similar interests can help each other clarify and develop objectives and measures in a relatively safe environment. The second round would then be heterogeneous so that people with different viewpoints begin to compare their interests and values, and to test their ideas with people who have other perspectives.

Best practice recommendations gleaned from collaborative modelling experiences documented by Korfmacher (2001); Voinov et all. (2018); and Langsdale et al. (2013) include:

- **Stakeholder Selection:** It is important to garner support from decision-makers to ensure that stakeholder voices are heard and the voices influence the decision making process. It is also important to carefully select stakeholders aiming for a diversity of sectors and scales represented. Special attention should be given to women, elders, youth, indigenous and other traditionally marginalised populations to ensure that SVP and collaborative modelling is inclusive.

- **Model Selection:** Software selected must be easy to use and accessible to all stakeholders to ensure consistent two way communication through the language of a common model. The accessibility also develops greater transparency, a sense of ownership and increased trust in the process.
- **Engagement Process:** The process must be approached with humility, open mindedness to the inputs and wishes of stakeholders. This type of engagement in model development and technical analysis will allow effective discourse for shared learning.
- **Iteration and feedback process:** Initially building a simple model early in the process, and improving it over time with input from stakeholders and experts is recommended. This fosters an iterative process that values stakeholder contributions to foster an iterative process. Similarly, the model and modeller should have the capacity to rapidly accommodate modifications and new alternatives according to stakeholder feedback. Frequently asking the team and all the participants, 'Who will use the model?' and 'How will it be used?' throughout the process can ensure the path to acceptable and concrete decisions.
- **Team selection:** Choice of modellers with collaborative skills and diverse modelling abilities to consider different stakeholder perspectives an ease the modelling process. Furthermore, facilitators with the ability to understand and appreciate importance of stakeholder engagement and what modelling can support consensus building.

Thematic Tagging
Gender , Youth

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