PARTICIPATORY AND COLLABORATIVE MODELLING: KEY TO SUSTAINABLE AND INCLUSIVE DEVELOPMENT

▲ *Updating the Jalaur River Basin Master Plan in the Philippines*

In line with the Sustainable Development Agenda 2030, Integrated Water Resources Management (IWRM) is seen as the process which promotes the coordinated development and management of water, land and related resources to achieve sustainable development. Lessons learnt from the past show that the implementation of IWRM encounters major difficulties if most stakeholders continue to use traditional planning mechanisms

The lack of knowledge about the system of water resources, disagreements between water users and an inadequate focus on operationalisation are frequent causes of limited acceptance and problems with the practical implementation of IWRM plans. Informed decision-making and stakeholder engagement in the planning and decision-making processes are therefore important to create the enabling conditions for sustainable water-resource planning and management.

Participatory and collaborative modelling can further sustainable development since it supports informed decision-making and inclusive development. We have looked at how to develop and use computer-based simulation models with a participatory or collaborative modelling approach for managing water resources in order to improve their use and strengthen ownership. In essence, participatory and collaborative modelling helps to bring modellers, stakeholders and decision-makers together to improve the decision-making process. Typically, these parties are involved in water resources management but they tend to follow separate pathways. On the one hand, technical experts build analytical models to provide institutions with high-quality information. On the other, stakeholders engage in consultations about existing problems in the river basin and help to develop possible interventions. These two pathways are often in parallel and tend to meet only at the beginning of the process when data is being collected and at the end when model results are presented for discussion and decision-making. Stakeholders often have little option but to accept the results obtained by the technical experts. They tend to see models as 'black boxes' which they understand poorly and in which they lack confidence; they are therefore often suspicious about the outcomes and decisions made.

Participatory and collaborative modelling establishes strong connections between technical experts and stakeholders. Stakeholders feel they are part of the process as their knowledge, interests and needs are actively considered and valued. Together, technical experts and stakeholders build consensus, they have a sense of ownership of the solutions developed and they trust the decision-making process. Moreover, the use of participatory and collaborative modelling makes the modelling process more efficient. The combination of both technical and local knowledge helps to establish a more accurate model. Data collection does not become a bottleneck in the modelling process and models can be validated faster.

Co-development of a meta-model for the Bangladesh Delta Plan 2100

Nine study cases were used to develop and test four methods for participatory and collaborative modelling. The topics and countries include river basin planning in Indonesia and the Philippines, water quality management in Turkey and Indonesia, adaptive planning in Bangladesh, groundwater management in the Netherlands, and flood risk management in the Netherlands and Tanzania.

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Further reading
https://publicwiki.deltares.nl/display/CM/Collaborative+Modelling+in+Deltares