Model based capacity building for sustainable water management

Justus Gallati[1]

[1]Institut für Modellbildung und Simulation FHS St. Gallen, Poststrasse 28, 9001 St. Gallen

Capacity building has been recognised a critical factor for sustainable water resources management. This project aimed at investigating role, potentials and limitations of using a simulation model to support capacity building, training and decision making in a river catchment in Kenya. It was part of a broader initiative focusing on capacity building for sustainable water resources management in the larger Mt. Kenya region. A systems model has been developed to analyse the effect of different water management schemes along a river in a catchment on water flow and agricultural production. It addresses in particular the question how water productivity, and in turn, agricultural production can be increased over the whole catchment.

Simulation results show that a combination of rain-fed agriculture, construction of storage facilities, and increase of water use efficiency generates optimal agricultural production. The model provides a prototype of an inter-active tool to analyse different scenarios and their performance. A workshop with stakeholders demonstrated the potential of this tool for use in capacity building and decision making. It also highlighted the requirements for further development of the prototype in order to create a product that can be easily customised and successfully utilised.

The project demonstrates that the proposed systems model is a useful integrative approach to create insightful results at an aggregate level. Integrating a number of (aggregated) processes into a dynamic model provides an instrument that is able to stimulate learning amongst involved stakeholders. For decision making two main benefits have been pointed out: to sensitise decision makers for an integrative approach and to make visible the (intended and/or unintended) effects of political decisions.