

Flood modelling using System Dynamics

A pilot method for Southwell, Nottinghamshire



We are working with communities in the UK to involve local people in decision making. In particular we want to involve these people in the modelling of flood risk, because we feel it is local people that have particular kinds of local knowledge which are missing from traditional models.

The modelling we do will never replace traditional 'hydrological' models used by the Environment Agency and consultants, but it is hoped that they can work alongside them.

A number of different methods exist for structuring local knowledge and experience in such a way that it can be used by decision-makers. These are collectively called participatory modelling techniques, because they aim to improve the level of **participation** by stakeholders. A stakeholder is anyone who is affected by an issue or has a role in its management.

System dynamics

One of the most popular methods is called system dynamics. It has been around for almost 50 years and has been used in a wide range of situations, including several areas of environmental management. The emphasis in this technique is on developing a model to investigate how a system behaves, and using that knowledge to design and test alternative policies.

Several pieces of software have been developed to support groups that wish to build a system dynamics model. These are all very graphical in nature, and are designed for people with no prior modelling experience. They are normally used as part of a series of workshops, where 10-15 stakeholders gather together to discuss an environmental issue and collectively model it.

The workshops

We have designed a series of five evening workshops that would run over the course of approximately six months. Both before and after the workshops, we would meet with key stakeholders and representatives to discuss the project and what they want to get out of it.

The workshops themselves will last about two hours each, and involve a number of **modelling tasks**. Some of these will be in small groups, and some will be whole-group discussions. In-between the workshops, work will continue back at the University of Nottingham, to analyse outcomes from the previous workshop, and to prepare any materials for the next.

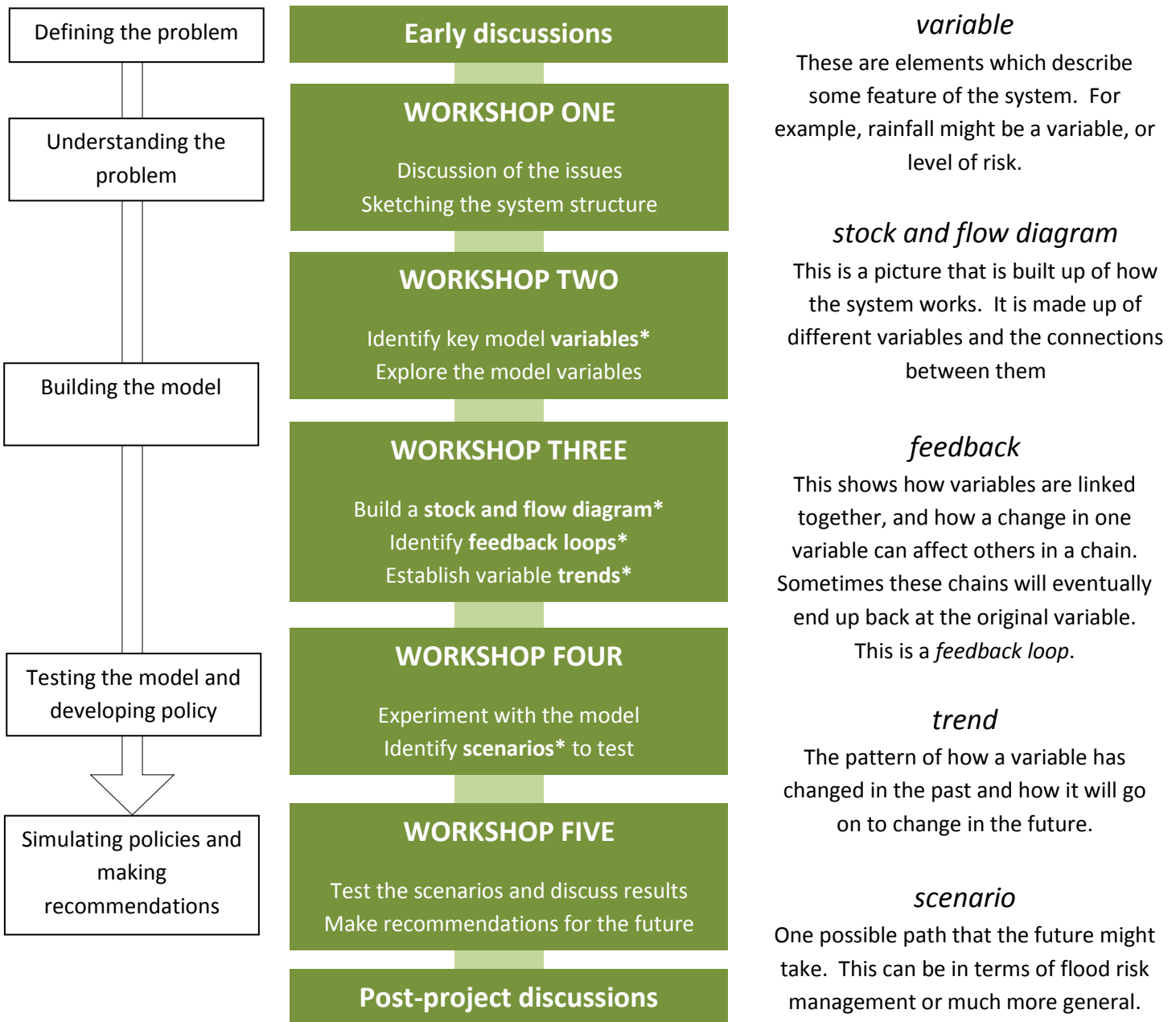
Throughout the process you will be kept informed by a fortnightly e-bulletin which will be sent out via e-mail to anyone who has attended a workshop or is generally interested in the project. These contain information about what goes on 'behind the scenes' in Nottingham, information on key terms and ideas, and other news related to the project work. We are also available by phone or e-mail if you have any questions or would like to get more involved.



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The stages of any modelling process are shown on the left. The workshop schedule is shown in the centre, along with **unfamiliar terms*** defined to the right.



The workshops would be run locally in Southwell. They would be run in the evening and refreshments would be provided. They would be organised to fit in with the needs of the participants. The cost of the hosting the workshops would be covered by the University of Nottingham.

If you would like any further information please do not hesitate to get in touch.