Building a community understanding of flood risk in Southwell, Nottinghamshire

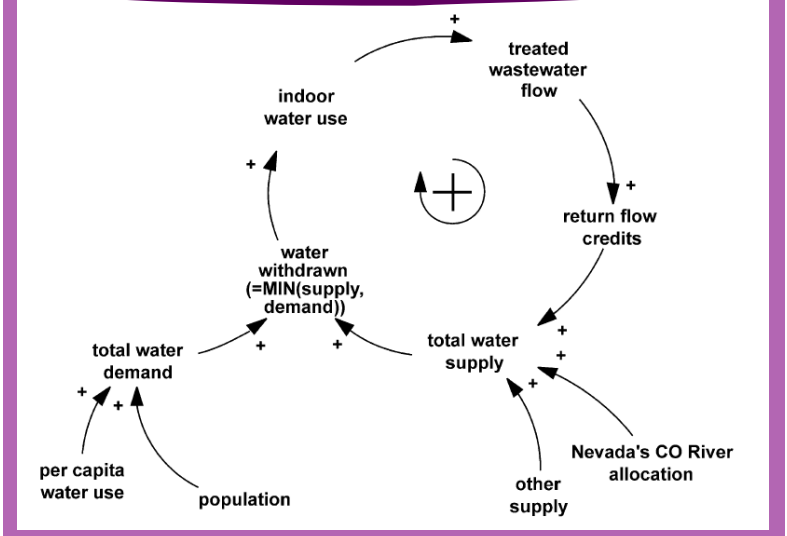
E-Bulletin #3
Causal Loop Diagrams

Diagrams have long been used in participatory modelling to allow researchers to move away from equations (which are accessible to only a few) to diagrams of how systems work. Causal loop diagrams are most often used in the early stages of projects, and therefore act as a continually evolving picture of the groups' understanding of a system. By introducing them early on, it is hoped that the basic function of the system can be thought through before model building commences.

The diagram to the right shows a simple causal loop diagram. It consists of a number of named **variables** (e.g. [indoor water use]) and the **relationships** between them, shown by arrows. Each relationship has a plus or minus sign, which we term it's **polarity**. A plus indicates that as one variable increases, it causes the linked variable to also increase. For example if [indoor water use] increases, then the amount of [treated wastewater flow] will increase too. A minus sign indicates that as one variable increases, it causes the linked variable to decrease.

The example to the right contains another key feature of causal loop diagrams, the **feedback loop**. In this case the feedback loop is **reinforcing**. In other words, as you go around the loop many times, the variables all increase with one another, they are strengthened or 'reinforced'. A negative loop is one where the variables all decrease, and is described well by the term **downward spiral**.

We will be using our causal loop diagram as a 'stepping stone' to introduce some key ideas within system dynamics before we go on to build a model. The aim of causal loop diagrams is not to be precise, but to capture a sense of the cause > effect processes that are going on, organise information and highlight connections. We have already gone some way to creating this diagram—the first workshop saw us create variables and start to organise these into a cause > effect structure. We will build on this in workshop two.



An example causal loop diagram with a positive feedback loop showing water use in Las Vegas, Nevada (from Stave, 2003)

Workshop Two

The second workshop will see us using the list of variables developed for each risk hotspot, to build a causal loop diagram of the causes and effects of risk during the 2013 flood event.

Workshop Two - Thurs 26th February 2015

7:00pm—9:00pm

Main Hall Boardroom, Brackenhurst Campus

Next Steps

If you missed workshop 1 but are still interested in finding out about the project, or taking part in future workshops, please get in touch. A new agenda for workshop 2 will be issued about a week prior to the workshop. Past agendas, minutes and background reading on the project are available on request.

For more information contact Shaun Maskrey:

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A Partnership between Southwell Flood Forum and the University of Nottingham, funded by the Engineering and Physical Sciences Research Council.

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