The *Wheel of Water*
Research Programme

Collaborative catchment planning using the WaterWheel process and tools

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Designing a collaborative multi-stakeholder processes

"[I liked] the way the workshops began with giving people a sense of belonging – that their contribution mattered – the stories and how the sets of values were built up – something they believed of value ended up on the wheel and they could see it there – a connection to the wheel." Case study participant

The Wheel of Water research programme set out to improve our understanding of approaches that involve the wider community in determining acceptable water resource limits. It developed a framework to support integrated decision making and develop processes that take into account environmental, economic, social and cultural implications (the four "well beings"), particularly at the catchment scale. In support of this process, the concept of a WaterWheel diagram was developed to enable stakeholders to develop a holistic view of the key implications across the four well beings.

The programme initiated a pilot planning process to determine acceptable water resource limits in two case studies – in the Wairau Valley (Marlborough) and Mangatarere (Wairarapa) catchments. Each case study involved the formation of a representative collaborative group, and then a series of 4-5 facilitated workshops, each led by a dedicated project team. The groups used these workshops to understand their range of values, to develop useful planning scenarios and create useful indicator sets to assess progress in the desired direction. Through interviews with participants, debriefs, and a cross-case analysis, we were able to evaluate the knowledge and skills developed by participants and project teams, and critically analyse the tools and techniques used throughout the process.

Integration is key

We found that successful collaborations will involve the use of an integrated framework that links process, modelling and the use of graphics and diagrams to support systems thinking. Teams managing these collaborative processes need to understand how many different elements link together to comprise a successful initiative. The use of graphical representations of the final implications through a waterwheel diagram is important to ground a holistic process.

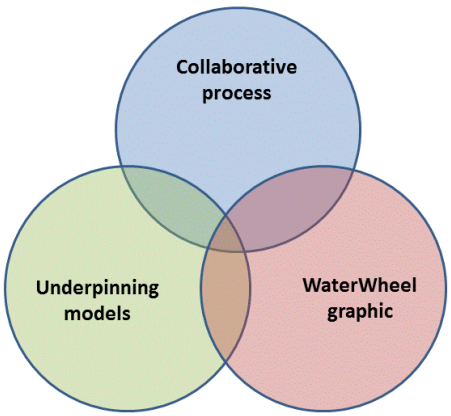

Figure 1: WOW framework to support collaborative catchment planning

The WaterWheel framework integrates three broad elements to support collaborative planning approaches (Figure 1). The first is the underpinning collaborative process that integrates technical and social knowledge. The second is the use of a graphical tool for visualising the nature and scale of potential trade-offs across the four well beings. The third element provides underpinning models for providing data to populate each indicator (spoke) in the WaterWheel diagram. These approaches cover the development of assessments for both technical (e.g. LimSim) and social (e.g. rubrics) indicators.

A WaterWheel diagram helps present complex information in a visually simple and accessible way, and provides stakeholders with a way of assessing the desirability of scenarios across the four well beings. It displays the assessed values of several indicators on a single plot (Figure 2). Each spoke of the WaterWheel represents an indicator. The length and colour of the spokes indicate the acceptability of the indicator value on a scale defined by four categories: poor, fair, good and excellent. These may mirror the categories in the National Objectives Framework. Long green spokes indicate that the outcome for a particular indicator is excellent.

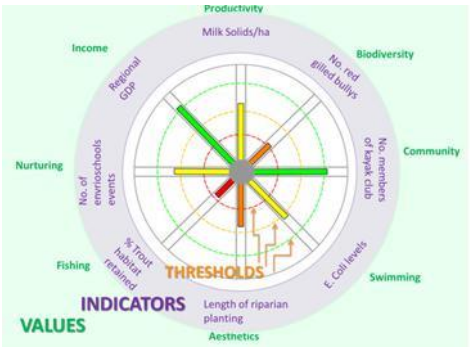

Figure 2: An illustrative WaterWheel diagram showing values, indicators and thresholds

Yellow, orange and red spokes of decreasing length show the indicator is at a good, fair or poor level. The process of developing WaterWheel diagrams requires participants to discuss values, indicators, scenarios/outcomes and limits of acceptability. Our experiences suggest that these discussions are fundamental to all collaborative water management, although not always easy to achieve.

Managing an integrated process

In order to achieve the range of useful and constructive discussions that are required we need to appreciate that a successful "collaboration" is composed of a number of interlinked components. These encompass social process components (running the workshops, sharing knowledge, etc.) and those that relate to the specific outcomes sought (content components such as catchment values, indicators, catchment scenarios, etc.).

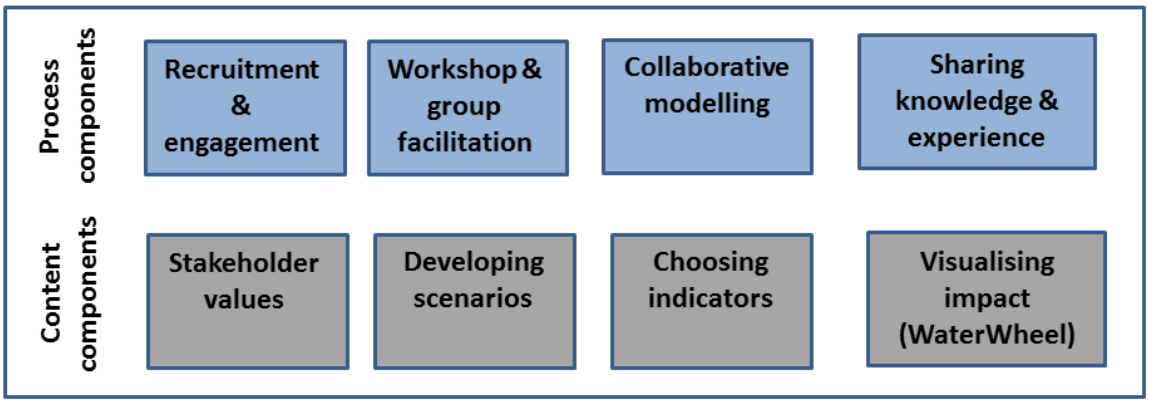

Figure 3: Diagram of a "collaborative process" illustrating how it is made up of a number of interlinked components.

Figure 3 shows these two key component areas involved in each case study exercise, along with a number of sub-components. The process elements could be applicable to a wide range of collaborative governance processes. They relate to the management aspects of collaborative initiatives in many different contexts. The content elements refer to the range of exercises involved in compiling the groups' description and visualization of their catchment system. This system understanding then helps to crystalize the objectives and methods that could be applied to manage towards outcomes desired by the group.

Case study outcomes

We found that the collaborative, facilitated approach enhanced the sharing of knowledge and the development of a broader understanding of the catchment of the participants. Using processes and facilitation techniques that fostered safety and trust allowed the group to draw upon their collective knowledge, as well as information from other sources. Most participants in both case studies considered that they had developed a greater understanding of their catchment, and many specifically mentioned the importance of gaining knowledge from their fellow participants. At the end of the case studies, participants also demonstrated an increased understanding of a broader picture (beyond the river itself and encompassing the whole catchment) and the complex interconnections between the different values that they hold. The use of multiple scenarios with outcomes demonstrated across multiple WaterWheel diagrams were generally observed by participants as being key to the development of this new understanding, along with the support of systems diagrams.

Key programme lessons

- Collaborations take time and need to be developed with a clear expectation of a shared outcome in mind, even though the exact shape of that outcome cannot be specified in advance.
- Good facilitation is needed to support open conversations. These conversations will often need to include those being run by key stakeholder groups within the process (science team, modelling team, key sector groups, etc.)
- A multi-disciplinary project team comprising relevant technical, policy, facilitation and engagement skills, involved throughout will bring rigour to the process.
- Care must be taken to ensure different knowledge systems are all appreciated and used within the wider process. These will include knowledge from science, local and traditional systems.
- Stakeholder values underpin the process. However, it is important to remember that these are not separate from the process, and need to be revisited iteratively in the light of different discussions and contexts.
- Indicators should cover the important values most susceptible to change.
- WaterWheel diagrams and other visualisation tools are important to help present complex information in a visually simple and accessible way.

For more information

For more detail about the programme, case studies and findings see: Fraser, C., Fenemor, A., Turner, J., Allen, W., 2014. The Wheel of Water Research Programme: Insights about collaborative catchment decision-making processes – reflections from two case studies, MBIE, C1205601. Aqualinc Research Limited. Available on-line at http://learningforsustainability.net/pubs/WOW-casestudylessons.pdf

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