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Structuring the water quality policy problem: Applying Q-methodology to explore perspectives in hydrology, government, and community

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Recognizing the interrelatedness of water management and conceptual value of IWRM, many water resource governance systems are shifting from hierarchical arrangements towards more collaborative and participative networks. Increasing calls for participation recognize the value of drawing on social, political-administrative, and other kinds of knowledge in addition to technical water expertise. Participatory mandates, coordination bodies, and science-policy networks have emerged to facilitate knowledge integration, promote adaptive capacity, and align organizations in poly-centric systems.

Since the maintenance and effectiveness of such arrangements are contingent on trust and alignment rather than command and control, and since diverse stakeholders are engaged to co-produce knowledge, collaborators must grapple with identifying shared goals, developing knowledge management strategies to organize inputs, and attaining early progress to promote ongoing cooperation. But guidance is limited with respect to how such integrative aims are to be accomplished.

This research explores how systematic (but not necessarily convergent) problem structuring can support the forming, reordering, and cohering of water resource networks, especially when a complex issue – in this case, water quality management – rises to prominence on the policy agenda. In the early stages of a water quality project in the Brantas River Basin, Indonesia, stakeholder discussions suggested divergent conceptualizations of water quality and ideas about what conditions 'matter'. Thus, instead of taking hydrological data as the starting point, this research first asks: What Brantas River(s) are we talking about, and why? Q-methodology is used to identify alternative perspectives on water quality held by a diverse set of stakeholders, including hydrologists. The analysis explores which aspects of the policy problem are consistent, which are contested, and whether problems indicated by hydrological science overlap, conflict, or cohere with those perceived by other stakeholders.

The research posits that, if scientists, engineers, decision-makers, community leaders, and other participants can appreciate areas of convergence and divergence regarding the water quality problem itself, they can lay groundwork for knowledge co-production; recognize opportunities for cooperation; better locate science in the problem space; and identify potential early wins to secure

commitment. The research also asks to what extent consensus in problem structuring is necessary, or whether it is sufficient to identify strategies that are acceptable to different ontological viewpoints.