Designing decision processes to overcome barriers to sustainable water systems

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Water management needs better decisions.

- Environmental deterioration
- Resource availability
- Reliability, efficiency, risk
- Health, productivity, social justice, peace
Designing decision support interventions

+ Mixed multi-methodology designs (MMD) promising for complex problems
+ Increasing number & better reporting
+ Experiential results indicate good/better outcomes

But:
- Absence of cross-case validation and evaluation
- Limited understanding of what works, when, why
- Design reflects consultant’s command of methods
- No agreed guidelines for classification & selection

→ Hinders targeted MMD design & uptake
Mingers & Brocklesby framework

Motivation: Classify PSM as basis for MMD to focus on those aspects that need particular attention.

- Three impact dimensions «worlds»
- Four main activities

Ex.: Soft Systems Methodology mapped

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<thead>
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What conceptual model?

\[ P(\text{DM success}) = f(S, P, M, a_i, MMD) \]
\[ , a_i = 1 \ldots 4 \]

1. How to operationalize social, personal, material, process, and success dimension?
2. In which way does MMD affect variables and hence, decision-making success?
3. Can adverse factor configurations be identified to inform targeted MMD design?
Understanding barriers and enablers

**Context**
Initial conditions and issues, environment (physical, organizational, regulatory)

**Actors**
Roles, perceptions, beliefs, norms, trust, interests

**Alternatives**
Anticipated performance (risk, ambiguity, benefits, liabilities)

**Process, tactics, structures of collaboration**
Directive or facilitative, hierarchies, committees, decision-making tactics

Outcomes
A practicable diagnostic framework

• Process dynamics and tactics
  → Nutt 2002, 2007, 2008; De Bruijn et al. 2010

• Participation, power & roles, organizational embedding, social network topography

• Goal alignment and sharedness
  → Kerr & Tindale 2004, Provan & Kenis 2008

• Information access and cognitive centrality

• 3 major water-energy projects
• 17 explanatory & 4 success variables, 9 hypotheses
• 12 interviews, questionnaire survey
• Qualitative analysis of decision-making process
• Social network analysis, collaboration in 3 phases
Default planning process

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Goal alignment, cognitive centrality & Information access

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Recommendations mapped to M&B's framework

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+ sponsors, implementers, end-users

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+ empower facilitators

+ sponsors, implementers, end-users

+ integrate analytic tactics

+ ensure sharing, discussion of unique information
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+ empower facilitators

Which tactics precisely? What process dynamics? Participation design throughout?

+ sponsors, implementers, end-users

+ integrate analytic tactics

+ ensure sharing, discussion of unique information

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Reflections on way forward

- We miss agreed conceptual models that link causes, symptoms & treatment to outcomes
- Diagnostic approaches & testing across cases needed to understand relationships
- Once established, decision support approaches can be compared and classified based on causes & symptoms they focus on to inform design
- For water: one-off project or training to develop ‘learning organizations’?
  → Study of past cases to inform ‘entry level’?
Conclusions

Analysis of past projects can provide relevant insights for tailoring interventions to a specific case. Longitudinal analyses of the decision process and social networks are just one example.

Let’s better use insights from neighbouring disciplines to enrich theoretical basis and generate insights for testing what works, when, and why. This will support better classification, comparison, selection, and development of best practices.

Thank you.


