METHODS FOR NEXUS ASSESSMENT: TRENDS, NEEDS AND RECENT DEVELOPMENTS

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Roadmap

• Problem background: Nexus concept vs. methods
• Research question: What can be learned from applied nexus cases
• Methods: Review and analysis
• Findings
  ▪ Desired features of methods
  ▪ Examples of methods
• Next steps: Future research design
Nexus Concept ≠ Method
“…complex food-water-energy nexus security problems are so-called wicked problems to which there is no easy definition and no easy solution”

(Allouche, Middleton & Gyawali 2015, p. 621)
Needs

- Relationships, interactions and feedbacks
- Effective implementation
- Political and social aspects
- Method accessibility
- Dynamic context
Research Aims

• Knowledge base
• Identify desired features
• Highlight best practices
• Inspire further improvements
245 → 77 show methods

35 identify features
Analysis

• Trends over time
• Journal discipline
• Scale of analysis
• Purpose of nexus assessment
• Method type and discipline
• Approach (quantitative, qualitative, mixed methods)
• Interdisciplinary or disciplinary methods
Nexus methods publications over time
40 different journals

- Water resources
- Environmental science and policy
- Energy
- Engineering
- Global change
- Food systems
- Social science
Multiple Process
Local City Region Nation Transboundary Global

Scale of nexus assessment
Other (Energy, Geophysical models, Food systems, Development, Agriculture)
Approach

- Interdisciplinary
- Single discipline

- Multiple methods
- One method

- Qualitative
- Quantitative
- Both
Aim of studies analyzed

• Resource efficiency
• Integrated policy
• Sustainability
ANALYTICAL FRAMEWORK
35 conceptual articles → ANALYTICAL FRAMEWORK
35 conceptual articles → INNOVATIVE CONTEXT COLLABORATION IMPLEMENTATION
How do nexus assessments address these key features?
Integrated modeling
Module-based approaches
Systems thinking
Dynamic approaches
Quantitative + Qualitative
Historical and institutional analysis
Mixed Methods
Discourse analysis
Case studies
Transdisciplinary
Interdisciplinary
Participatory
Iterative

COLLABORATION

Photo credit: UNDP
Scenario analysis
Participatory
Site-specific
Case-by-case
Conclusions

• New approaches that utilize quantitative and qualitative methods
• Address social and political dimensions
• Incorporate different knowledge bases and emphasize collaboration
• Recognize site-specific elements

• Next steps: need for a “toolbox” of options and best practices
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