



Trustworthy AI for Water Management

Accelerating Climate Progress with AI:
From Science to Action
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Ongoing Challenges to Water & Food Security

2. Systems Framework

- Stakeholders don't trust or see relevance of data to their daily decisions (e.g., research demonstrations aren't representative of local field conditions).
- Concern about the integrity of "accounting systems" (due to uncertainty and constantly changing conditions).

1. Understanding the Decision Context & Process

Trust Building

DECISION-MAKING THROUGH COMMUNITY CONSULTATION

Trust Building

AI SUPPORTED CONSULTATION - A VALUE-DRIVEN PROCESS



ALIGN PROBLEM DEFINITION

- Catalog mitigation strategies, concerns & constraints
- Surface conceptual models
- Synthesize diverse perspectives



TRADE-OFF & RISK ASSESSMENTS

- Co-develop scenarios
- Facilitate model implementation (e.g., hybrid modeling)
- Decompose Uncertainty



MODEL-BASED FIELD RESEARCH

- What/where/when to collect data

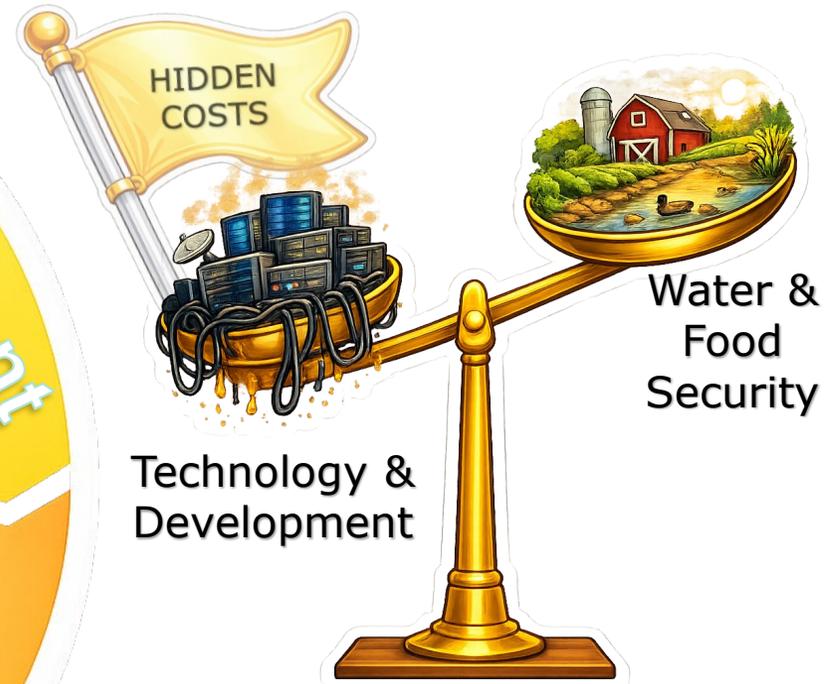


RISK MANAGEMENT:

- Transparency
- Spurious Results
- Drift/Context Shifts

Trust Building

A SHARED SYSTEMS FRAMEWORK BASED ON RELATIONSHIP TO WATER





Center on Water

Alexandra Fries, Integration and Application Network (ian.umces.edu/media-library)



Addressing Challenges to Water & Food Security

Trust Building through Collaboration:

- Commit to knowledge co-development
- Elevate conceptual modeling
- Multi-Model:
 - Promote creative, mechanistic-based hypothesis exploration - beyond treated vs untreated
 - Explore context shifts through nested modeling
 - Decompose and reduce uncertainty
 - Strive for model parsimony – not more data
- Support model-based monitoring & research
- **AI as an Essential Support Tool:** Fast-track facilitation, pre/post-model data syntheses



With gratitude for time and
follow-up conversation,

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