



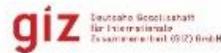
INITIATIVE ON
NEXUS Gains

Groundwater games and other tools: Combining approaches for systemic change in groundwater governance

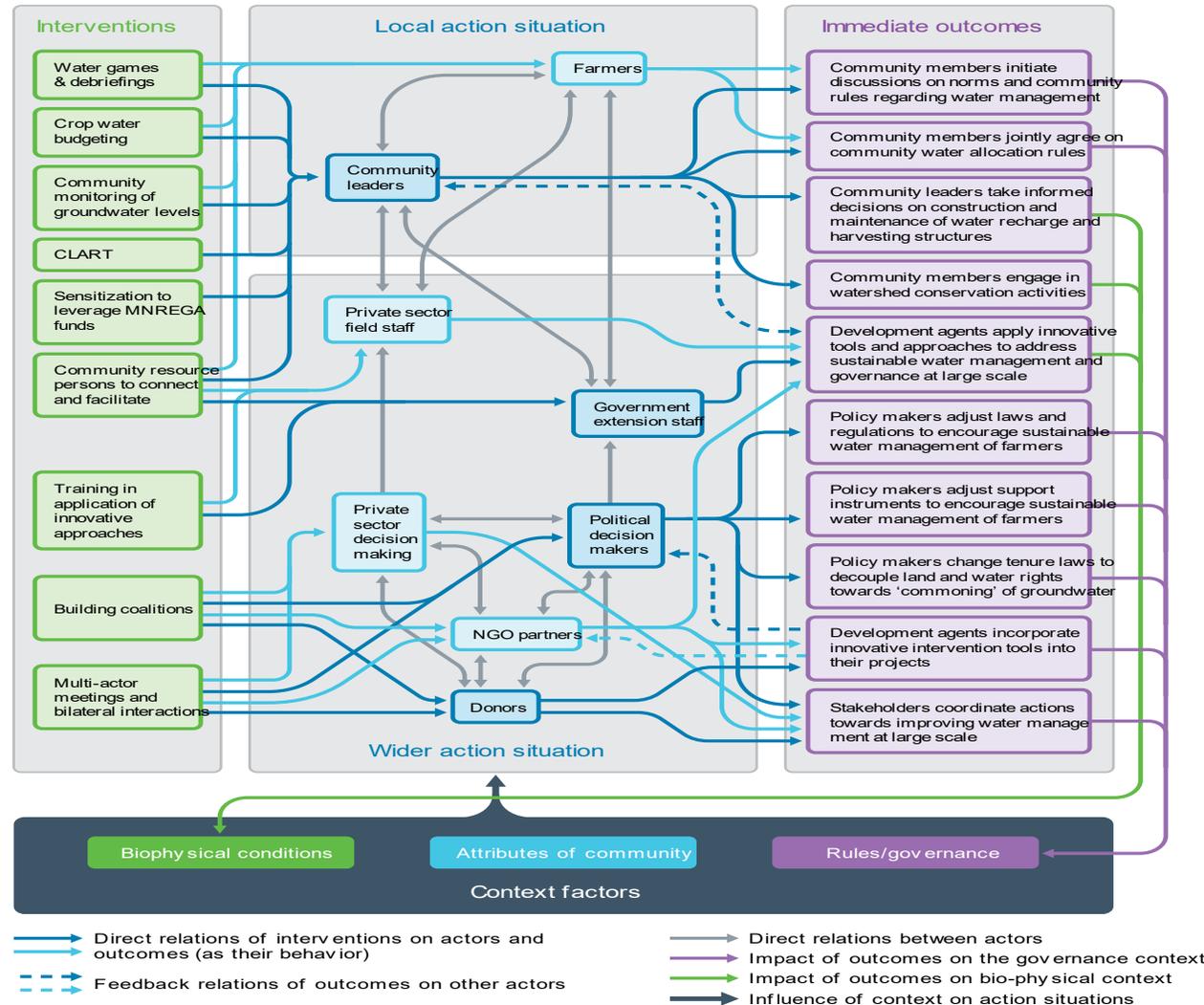
Richu Sanil

Foundation for Ecological Security

Nexus Gains Webinar – November 20th, 2024,



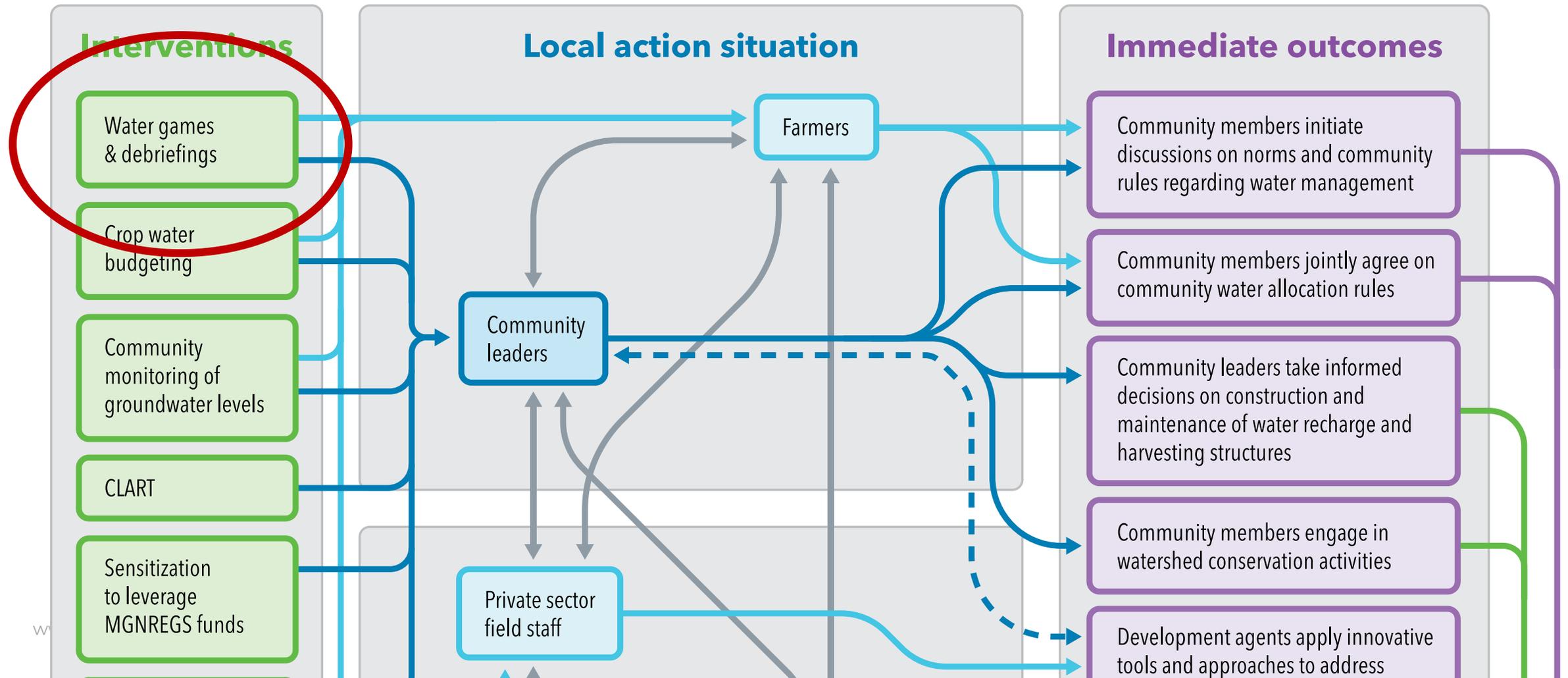
COMBINING TOOLS AND APPROACHES FOR SYSTEMIC CHANGE



Behavioural change requires clarity about which actors need to change which behaviour.

Sanil, R., Falk, T., Meinzen-Dick, R., & Priyadarshini, P. (2024). Combining Approaches for Systemic Behaviour Change in Groundwater Governance. *International Journal of the Commons*, 18(1), 411-424
Link: <https://thecommonsjournal.org/articles/10.5334/ijc.1317>

ADDRESSING LOCAL LEVEL GOVERNANCE AND MANAGEMENT



EXPERIENTIAL LEARNING

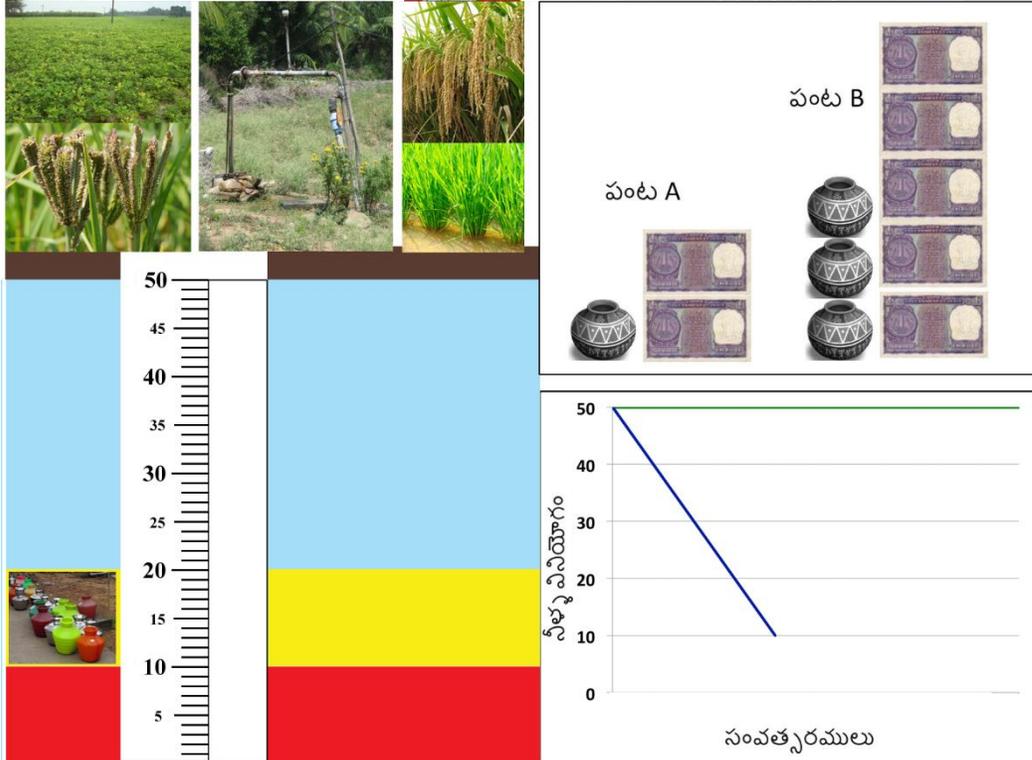


- ...as structured spaces to acquire knowledge by experiencing, reflecting, and experimenting,
- ...shape “mental models” and understanding of relationships
- ...helps understand what motivates people to cooperate,

GROUNDWATER GAME



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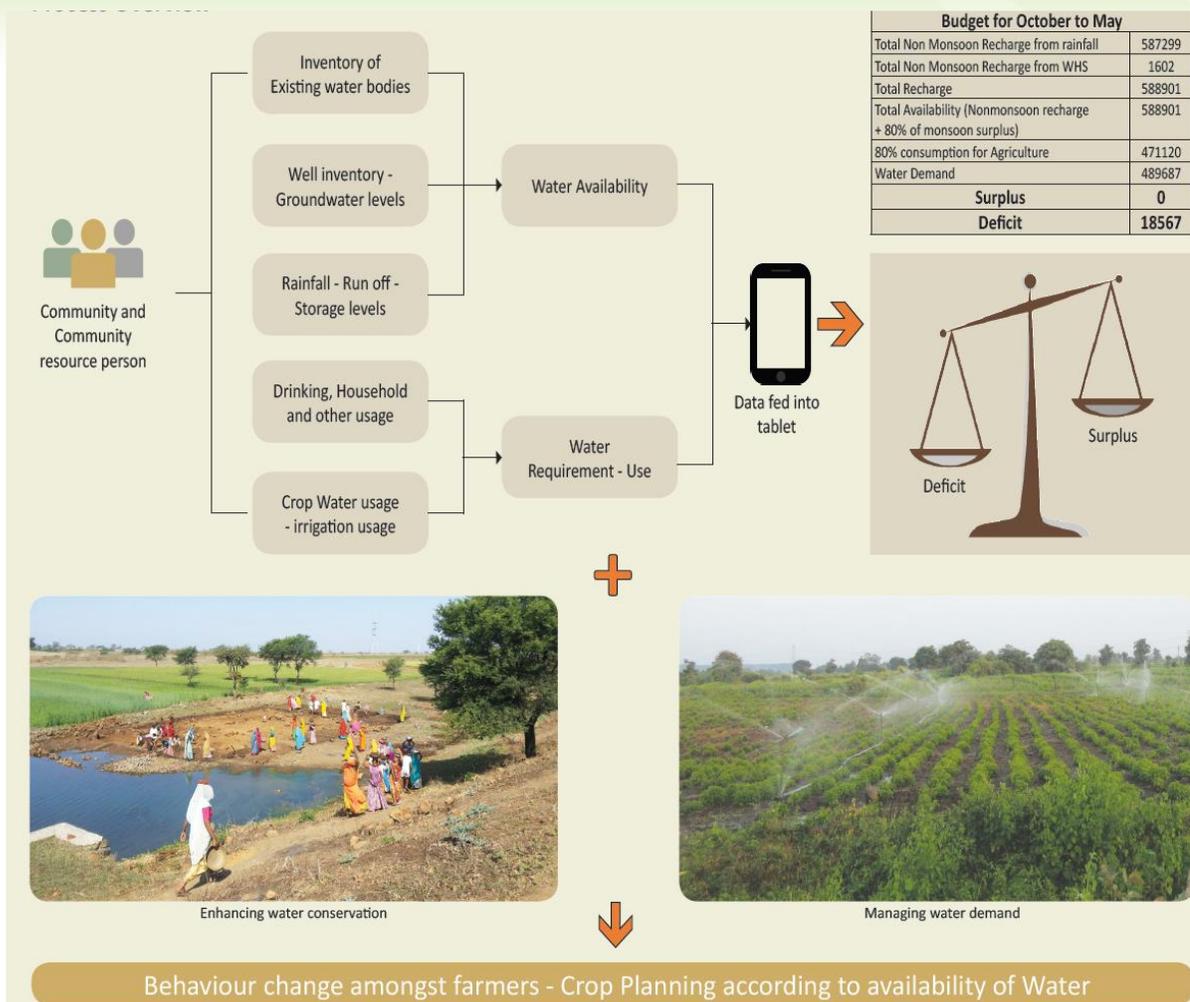


- Groups of 5 men or women (separately)
- Choose crop
- A takes 1 unit water, gives 2 units money
- B takes 2 units water, gives 3 units money
- 2 units (total) for domestic water
- 7 units recharge
- See effect on water table over multiple “years”
- First no communication, then communication allowed

COMMUNITY DEBRIEFING

- Everybody is invited
- Basics of game described
- Share general game results
- Small group discussions led by game participants
- Engage community in discussions about:
 - How this relates to own experiences and challenges farming
 - Lessons and insights participants gained from the experience
 - Possible solutions





Crop Water Budgeting

- Sensitize on the 'shared' nature of water (especially, groundwater).
- Create shared understanding of water balance.
- Bringing decisions about crop choices from 'individual' to 'collective' domain.
- Enable real time scenario planning for cropping.

Enhancing capacities for optimal water use



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PADDY



GROUNDNUT

Crop Change- Water intensive crops to low water consuming crops



Variety Change- Water intensive & long duration varieties to low water consuming & short duration varieties



Change in practices- Application of compost, in-situ decomposition of crop residues, mulching etc.



Irrigation scheduling- Irrigating the crops at critical stages with optimum quantum of water

Change in irrigation method- Increasing water use efficiency by adopting micro irrigation



Nurturing Systems Thinking

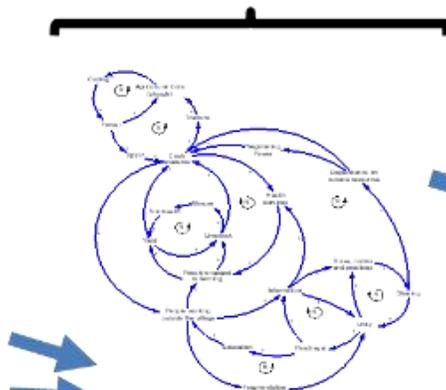


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Mapping socio-economic-ecological interactions influencing livelihoods

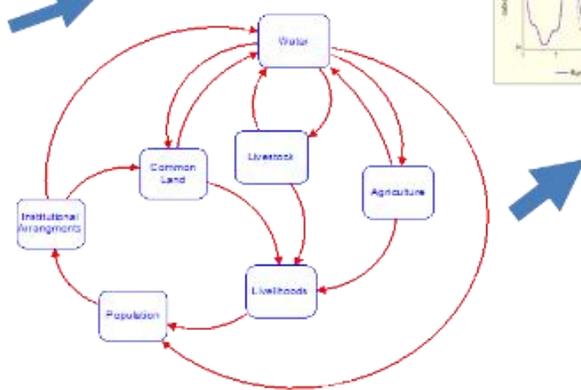
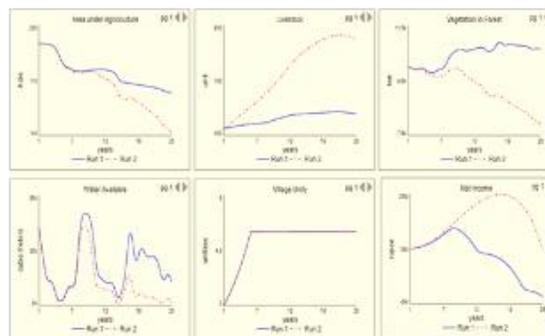


Analysis & Synthesis
CLDs



Simulation Model

Data Collection and Model Calibration - identifying operational pathways



Community Based System Dynamics (CBSD)

- Builds on Participatory Rural Appraisal (PRA) and Group Model Building methods
- Helps understand the interconnections between resource systems, and surfacing upstream-downstream issues.
- Helps visualize the long term changes and stimulates discussions around thresholds in the system.



COMMUNITY RESPONSES TO GAMES AND CWB



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State	Name of village	Rules/Discussion Theme	Translated text from the Village Records
Rajasthan (Bhilwara)	Chandgadh	Water conservation around grazing lands	Villagers often utilise water from the ponds in the grazing land for irrigating their crops. A village meeting will be called to understand and decide the quantity of water available in the pond, how much water should be extracted, and also the quantity to be left for the animals in the pond before extracting water from the pond.
		Drilling of the borewells	It has been well recognised in the village that drilling deep borewells is causing low water level in the village, hence there is a need to ban borewell drilling in the village
	Ren	Water scarcity as a concern	The village recognizes decreasing water levels as a matter of concern. Village meetings will have focused in-depth discussions on water scarcity, quantity being extracted in the village and also the cropping pattern
	Fatehpura	Water conservation	The water level in water harvesting structures of the villages should be maintained to a certain level and if it is reduced, the water will be reserved and made available for drinking purposes for the animals.
		Village planning	All the members will take part and present the yearly plan of the village in the gram sabha
		Cropping pattern	The crop types to be grown will be grown and decided after a discussion in village meeting
		Punishment	If the rules that are made for the betterment of the village will not be abided by any individual, they will be punished.

Combining Games with other Tools

Actors	Tool	Desired outcome	
Farmers, community leaders	Participatory GW monitoring & visualization	Data, Information, Knowledge	Awareness of GW conditions
	Water games & debriefing	Knowledge, Motivation	Realize need to act together
	Crop water budgeting	Knowledge, Agency	Reduce GW consumption
	CLART to identify where to do recharge & connection to MGNREGA program	Knowledge, Agency	Increase GW recharge

- **The games and debriefing** increase that motivation by showing how the information can be useful, but the games alone would not provide enough guidance to act, such as on when and how farmers can reduce groundwater extraction or increase recharge; the informational tools provide that guidance.
- The combination of tools therefore is intended to contribute to **knowledge, motivation, and agency**

Thank you very much!

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