Transdisciplinary pathways to sustainable and equitable access to water and sanitation

Professor Cheikh Becaye Gaye, UCAD Senegal / UNESCO-IHP

Session 3E2: *From research communities to end-users and citizens, enhancing cooperation through projects*

AfriWatSan

Université Cheikh Anta Diop de Dakar
LUX - MEA - LEX

UCL

UP Gro Unlocking the Potential of Groundwater for the Poor

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Transdisciplinary pathways include non-academic stakeholders in the process of knowledge production

Upper Awash Basin, Ethiopia

message 1: early involvement of stakeholders improves the focus, performance and use of research

Rufiji Basin, Tanzania

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challenging the “scarcity” paradigm

REPORTS

Global Water Resources: Vulnerability from Climate Change and Population Growth

Charles J. Vörösmarty,[1,2,4,5*] Pamela Green,[1,2,4]
Joseph Salisbury,[1,3,4] Richard B. Lammers[1,2,4]

The future adequacy of freshwater resources is difficult to assess, owing to a complex and rapidly changing geography of water supply and use. Numerical experiments combining climate model outputs, water budgets, and socioeconomic information along digitized river networks demonstrate that (i) a large proportion of the world’s population is currently experiencing water stress and (ii) rising water demands greatly outweigh greenhouse warming in defining the state of global water systems to 2025. Consideration of direct human impacts on global water supply remains a poorly articulated but potentially important facet of the larger global change question.

<u>transdisciplinary</u> pathways recognise:

“Access to resources, particularly by impoverished people, is controlled by a complex web of political, economic, cultural, social and physical factors. Narratives of resource availability are, however, often dominated by reductionist, physical evaluations of resources that embrace the ‘scarcity paradigm’ in which access or availability is inferred to be controlled predominantly or exclusively by its physical characteristics.”

(*GroFutures, AfriWatSan*)

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UKaid from the British people

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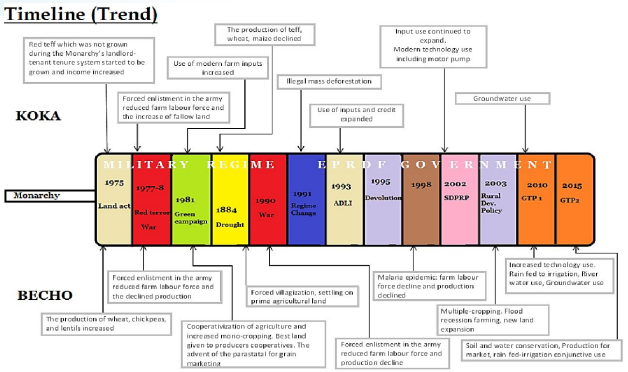
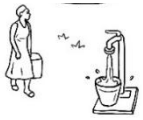
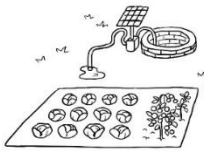
integrating physical and social sciences

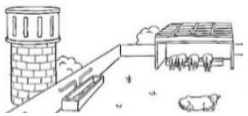


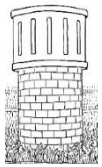
Physical Science	Social Science
• Quantifying resources and assessing quality • Test impact of *pathways* under land-use & climate change	• Stakeholder-led construction of *pathways* • Deliberative evaluation of *pathways* informed by physical science

Groundwater Development Pathways









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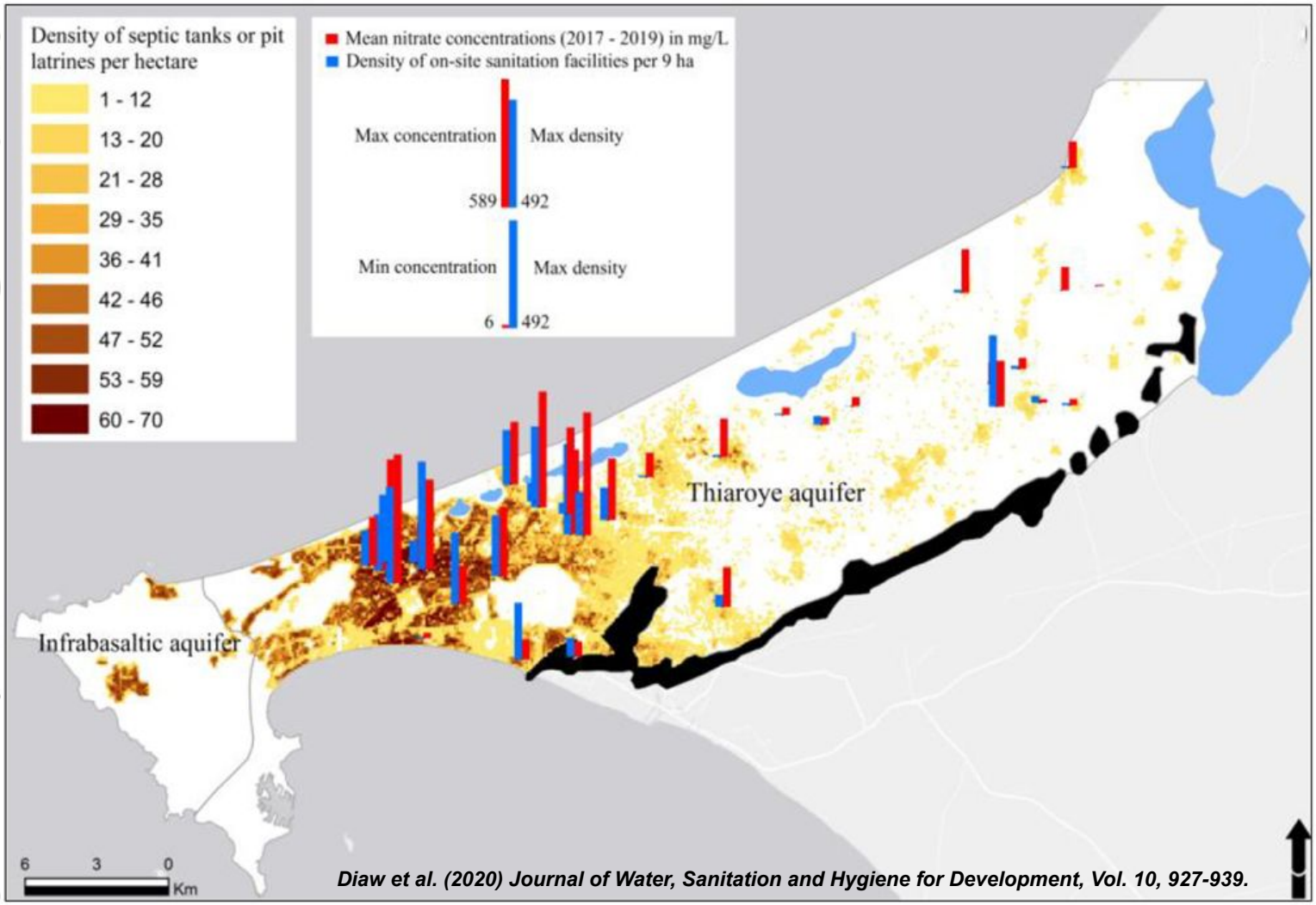
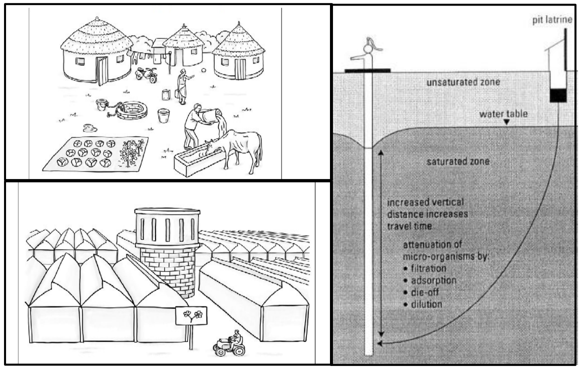
message 2: interdisciplinarity connects efforts to improve access to water, sanitation and hygiene

- in Dakar, density of on-site sanitation facilities relates directly to the magnitude of groundwater contamination by nitrate



Diaw et al. (2020) Journal of Water, Sanitation and Hygiene for Development, Vol. 10, 927-939.

pathways analysis: an inclusive, iterative approach to identifying a range of WASH futures



develop WASH development pathways

stress test these with scientific evidence

Discuss pathways

Develop a set of criteria

Operation and Maintenance

Equitable Access

Environmental Sustainability?

???

Score pathways under each criterion

Assign weight to each criterion

Reflect on outcome

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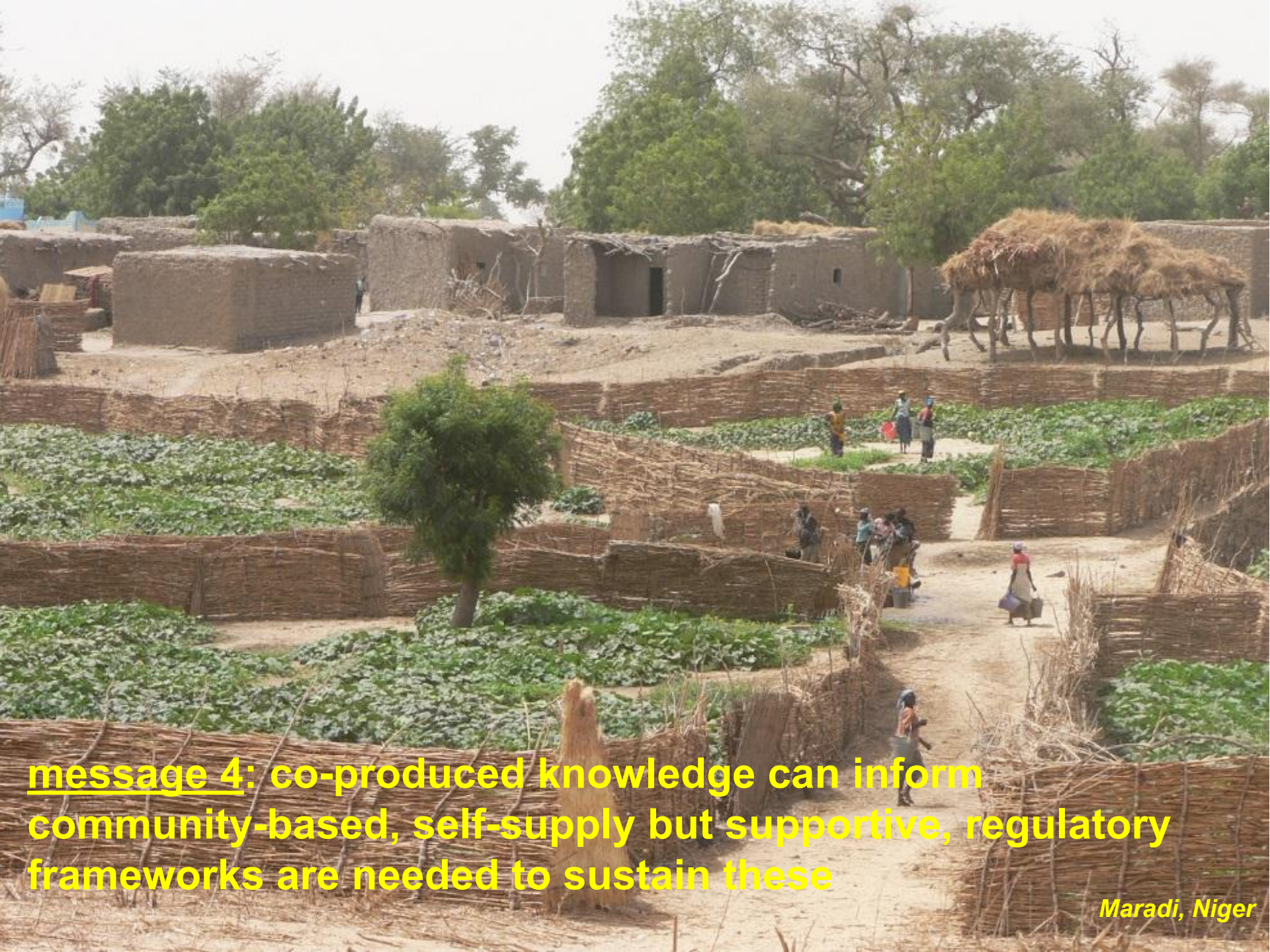
message 3: distributed groundwater resources support community-based and climate-resilient self-supply

Great Ruaha Basin, Tanzania



message 4: co-produced knowledge can inform community-based, self-supply but supportive, regulatory frameworks are needed to sustain these

Maradi, Niger