Salinity impacts on agriculture in sub-Saharan Africa: State of the art and call for action

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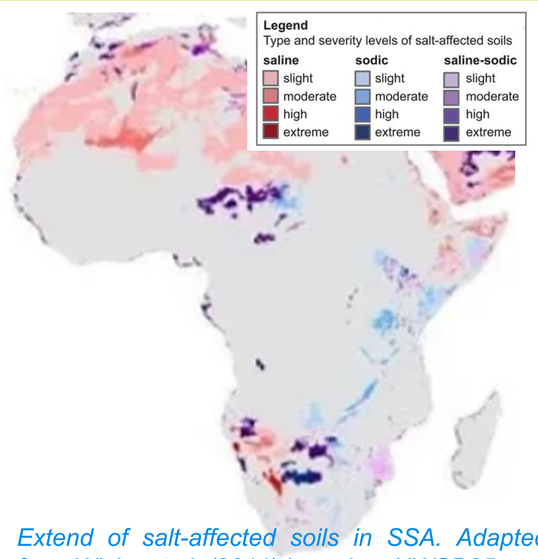
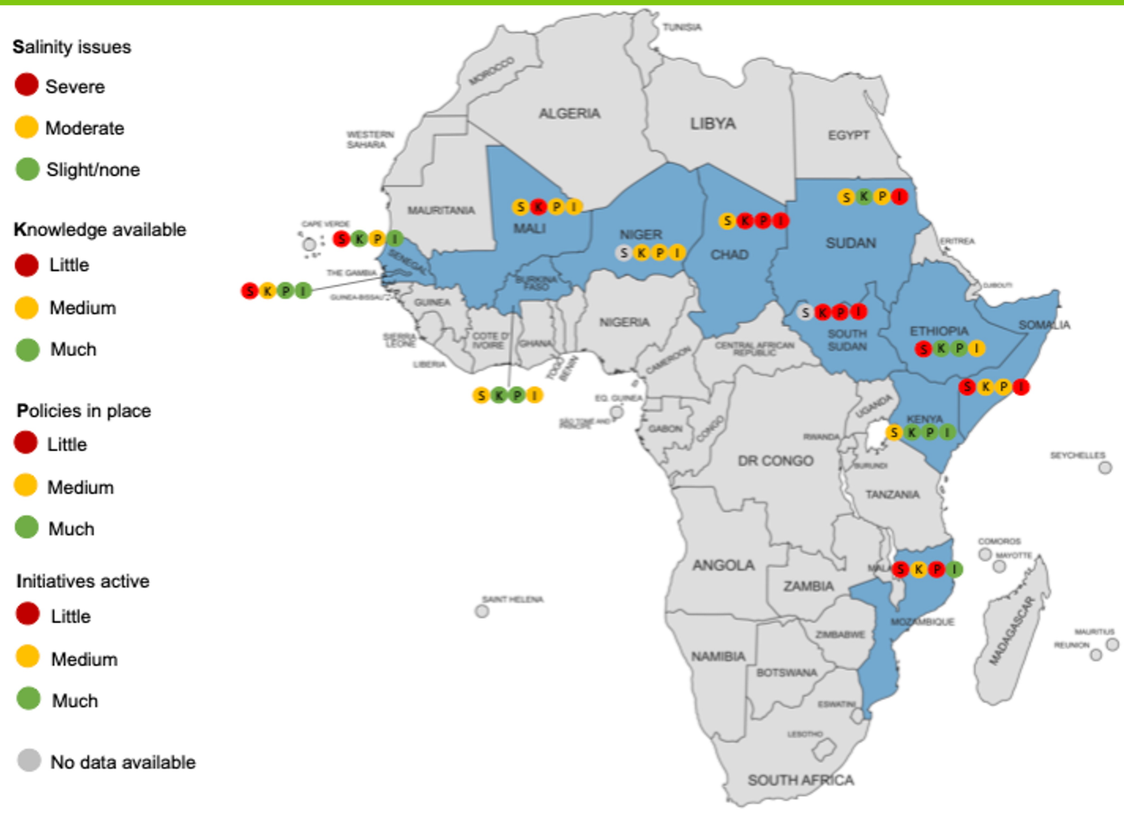
1. Context, Objective and Methodology



Extend of salt-affected soils in SSA. Adapted from Wicke et al. (2011) based on HWSD25.

- Soil and groundwater salinization is a major but understudied challenge for agriculture in sub-Saharan Africa (SSA), with published estimates of salt-affected soils ranging widely (19-161Mha), highlighting information deficits.
- Objective: systematizing the available information and identifying knowledge gaps and action needs.
- Methodology: key-informant interviews, questionnaires, desk research, and field visits.

2. Salinity Research, Regulation and Initiatives in SSA



Spread of salinity issues, knowledge and policies on salinization across the sub-Saharan region

- Considerable disparities exist in salinity research, with coastal countries better studied than inland ones.
- Inconsistent measurement methods cause varied salinity estimates, highlighting the need for standardized assessments.
- National salinization policies are limited and often only appear under international biodiversity and desertification agreements; more targeted regulations are needed.
- Countries with more salinity research have more initiatives addressing the issue, while those with less information have fewer efforts focused on it.

3. Salinity Impacts in SSA

Economic

Increasing loss of yields and productive lands

Environmental

Reduced soil/water quality and biodiversity loss

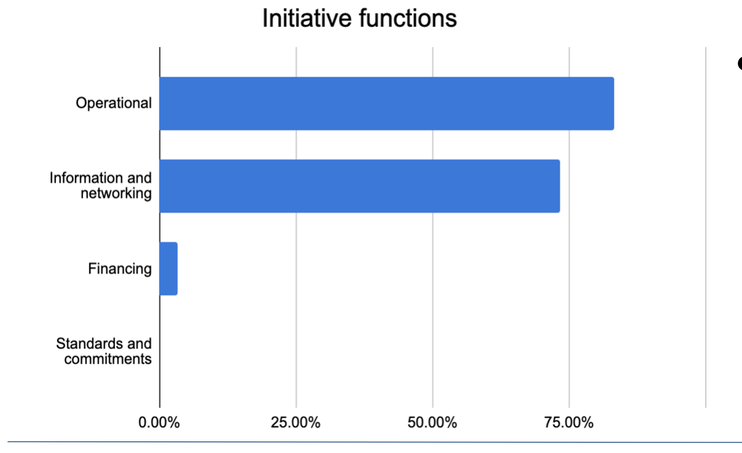
Social

Increased poverty and migration to cities

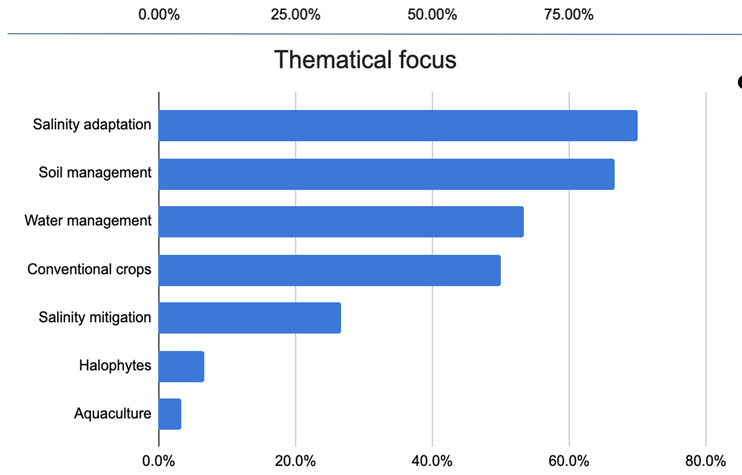
Cultural

Change of agricultural practices

4. International Initiatives on Salinization



- Most initiatives focus on operational functions (83.3%) and information sharing (73.3%), with few dealing with financing (3.3%); 56.7% combine operational and networking functions.



- Initiatives focus more on adaptation to salinization (25.3%) than on mitigation (9.6%), with a strong emphasis on soil and water management, while conventional salt-tolerant crops are favored over halophytes, and aquaculture remains under-represented.

5. Case Study: Rice Production in Eastern Africa

Salt-affected rainfed lowland rice field in the Incomati estuary (Mozambique).

- Salt-affected lowland rice production areas are found across Eastern Africa, comprising coastal and inland environments, saline, sodic and saline-sodic conditions.
- Country-wide percentage shares lie between 6% (Tanzania) and 16% (Mozambique) of rice produced on salt-affected soils (van Oort 2018).
- Rice is the most prominent crop cultivated on salt-affected soils in SSA (FAO 2024). Estimates of salinity-induced yield losses are not available.
- R&D efforts, so far, focus on development of salt-tolerant varieties (led by IRRI). Promotion of other agronomic management strategies (e.g. soil improvement) and mitigation approaches (e.g. rehabilitation of irrigation/ drainage infrastructures) are lacking.

References & Acknowledgements

- Smaoui, J., Negacz, K., & van Tongeren, P. (2024). *Salinity in African Countries: From Local Challenges to Global Solutions*. (01 ed.) Institute for Environmental Studies (IVM). https://doi.org/10.17605/OSF.IO/MCB48. The study was commissioned by the Sustainable Development Goals Partnership, a program of the Netherlands Enterprise Agency.
- FAO. 2024. Global Status of Salt-affected Soils - Main report. Food and Agriculture Organization of the United Nations, Rome (forthcoming). The study was conducted by the International Network of Salt-affected Soils (INSAS) of the Global Soil Partnership (FAO).
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6. Recommendations & Future Perspectives

- ➔ Improve data coverage and research about inland and dryland salinity.
- ➔ Align data collection and laboratory analyses protocols across the region for better comparability.
- ➔ Improve knowledge exchange and cooperation among stakeholders across countries.
- ➔ Support effective initiatives and provide funding opportunities.
- ➔ Improve policy support through awareness raising amongst decision makers.

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