



Food and Agriculture
Organization of the
United Nations

Salt-affected soils: threats and potentials

Joint meeting of INSAS and SUSTAIN



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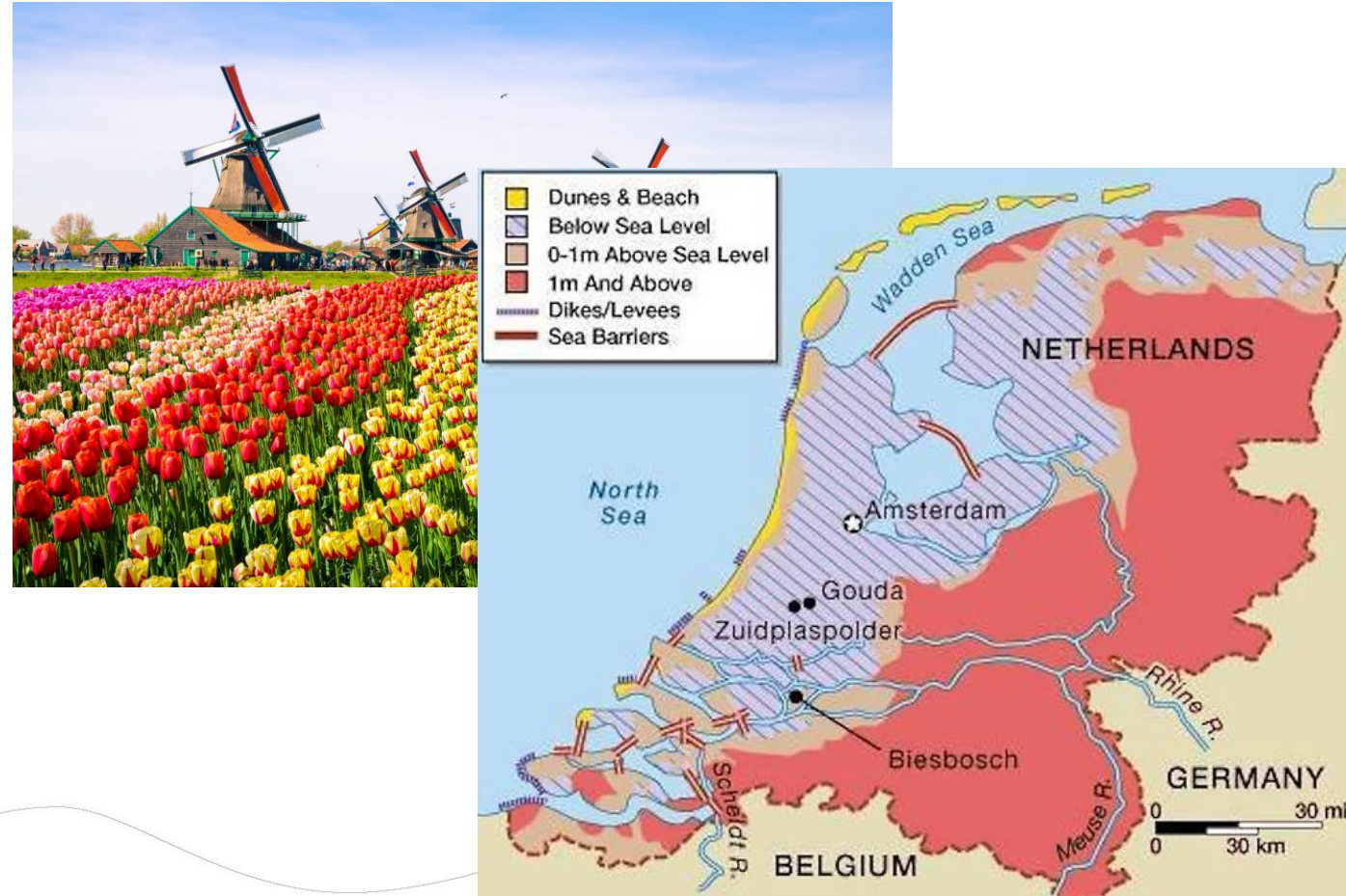
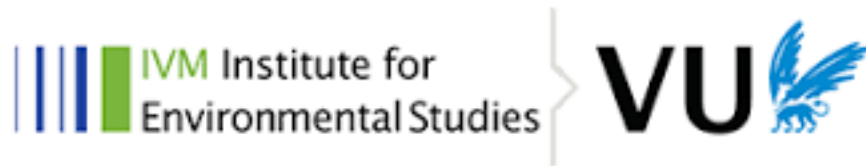


Valencia, Spain
May 27-31, 2024



From Niche to Global: Unlocking the Scaling Potential of Saline Agriculture

Pim van Tongeren



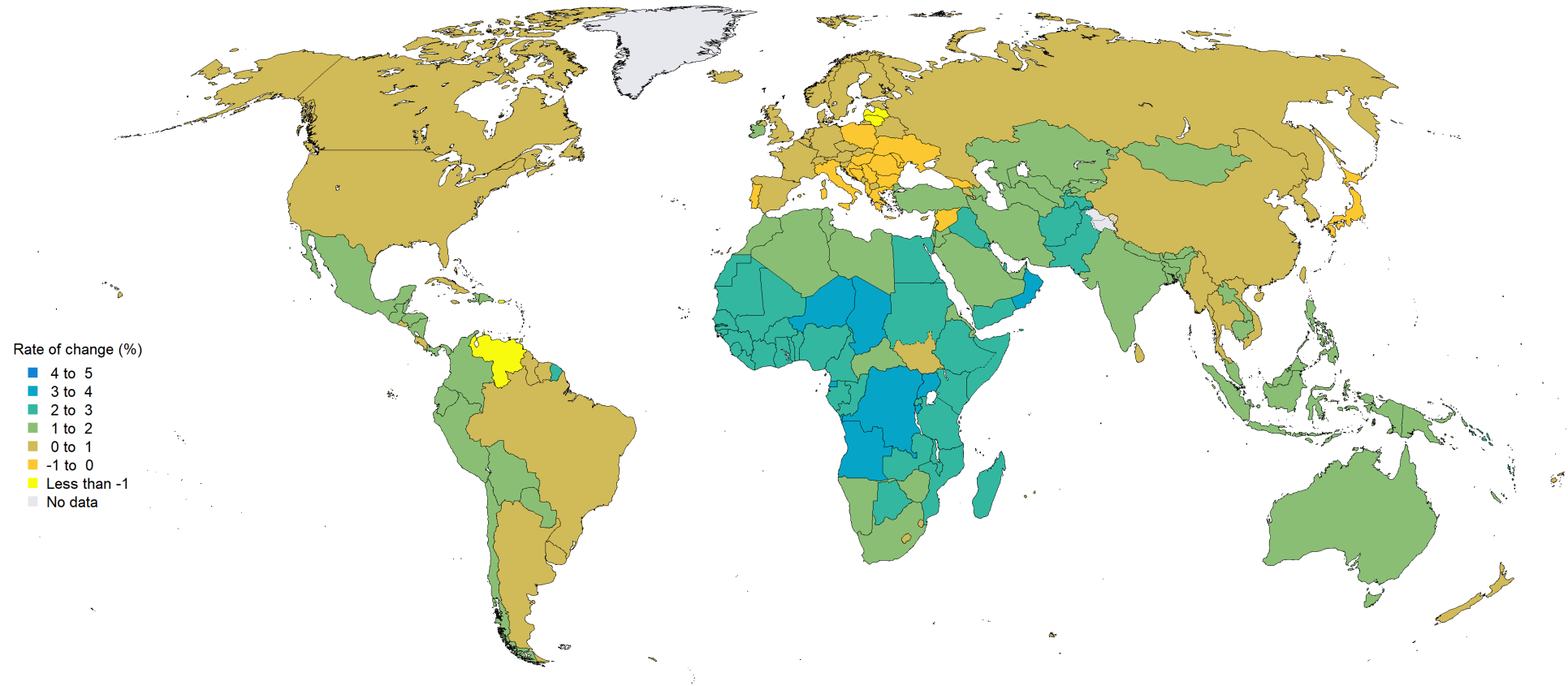
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- How do we foresee our future in which we sustainably interact with salt-affected environments?

Average annual rate of population change (%), 2015-2020



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Data source: United Nations, DESA, Population Division. *World Population Prospects 2019*. <http://population.un.org/wpp/>

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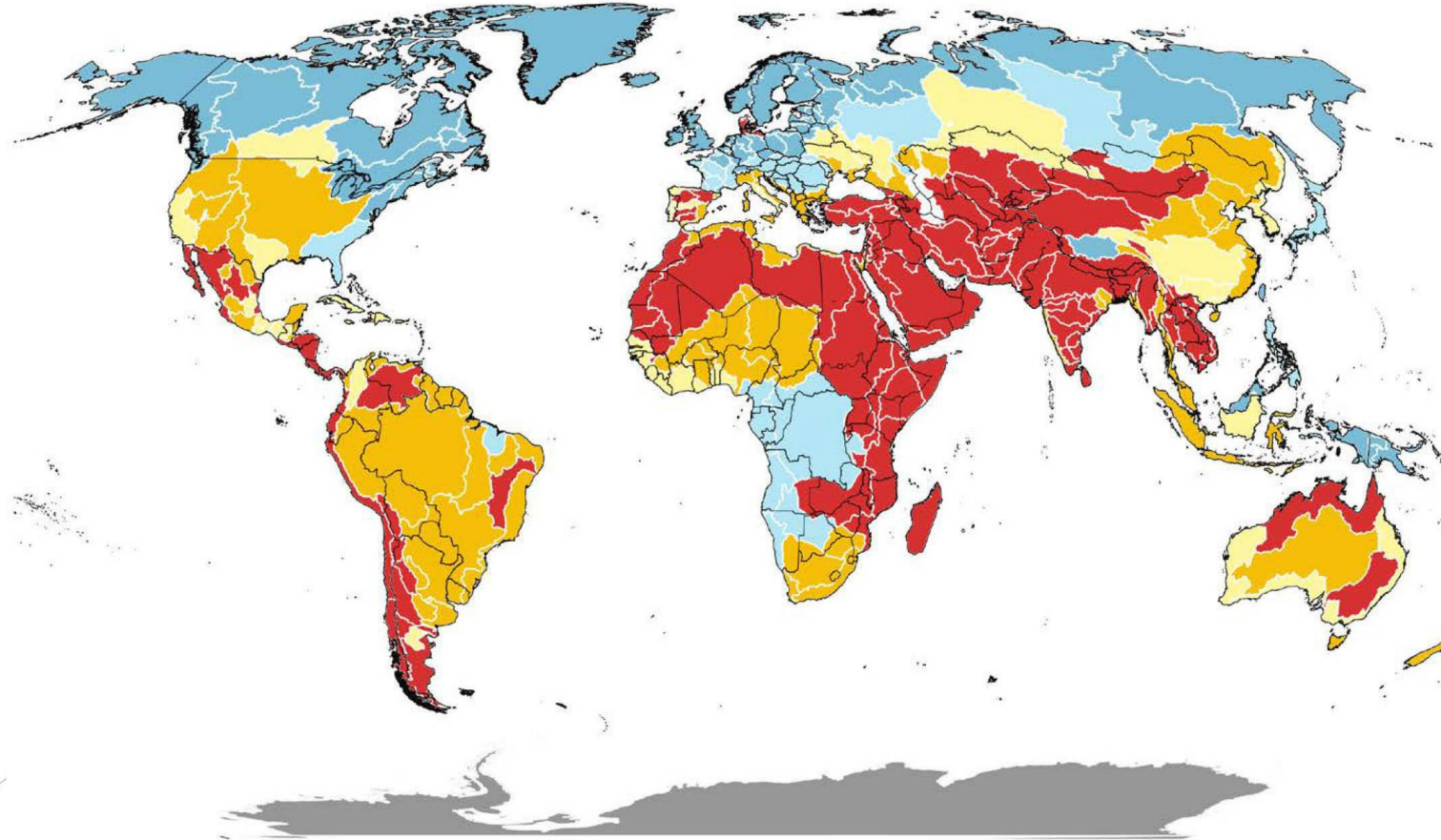
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Level of Water Stress due to Agricultural Sector (FAO & UN-Water, 2021)

0 - 10% 10% - 25% 25% - 50% 50% - 75% 75% - 100%

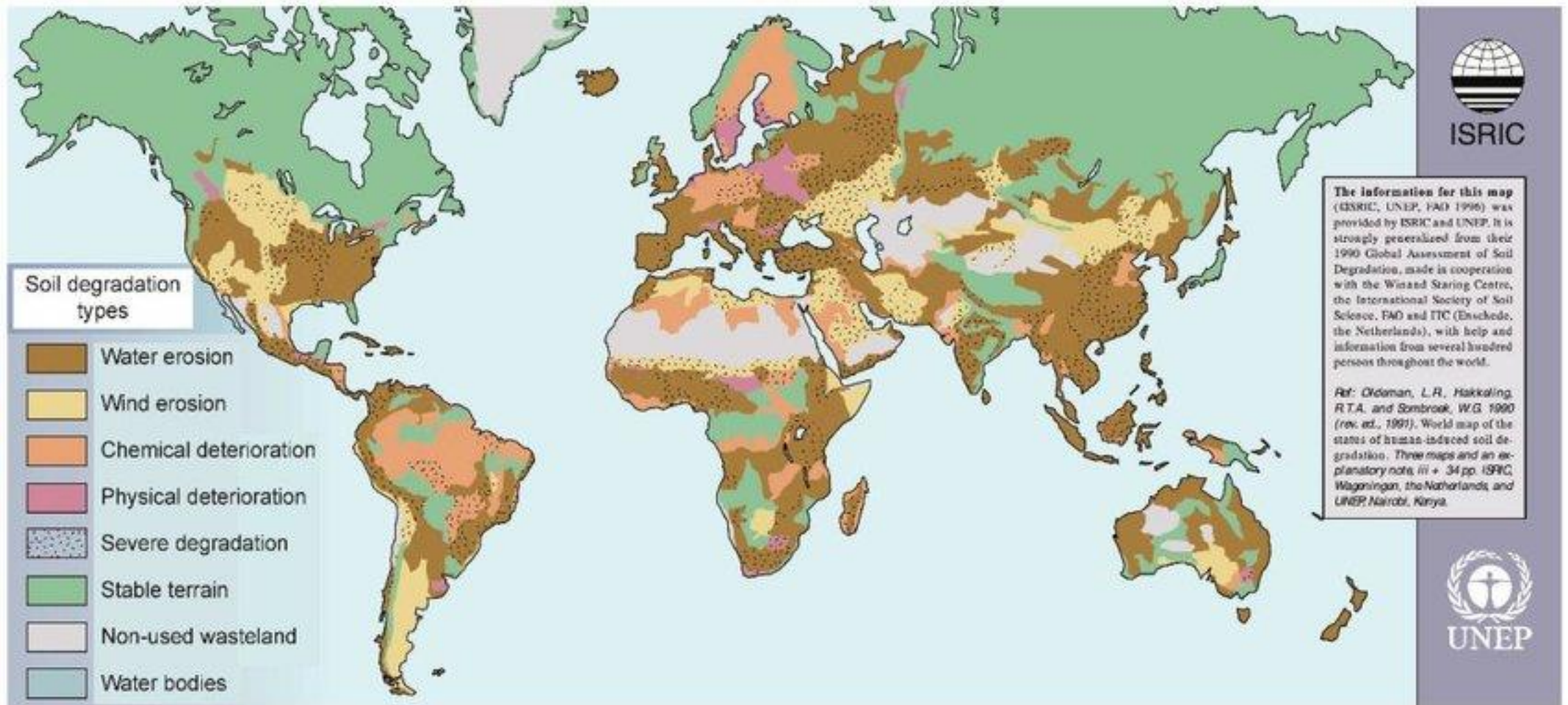


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(ISRIC & UNEP, 1996)

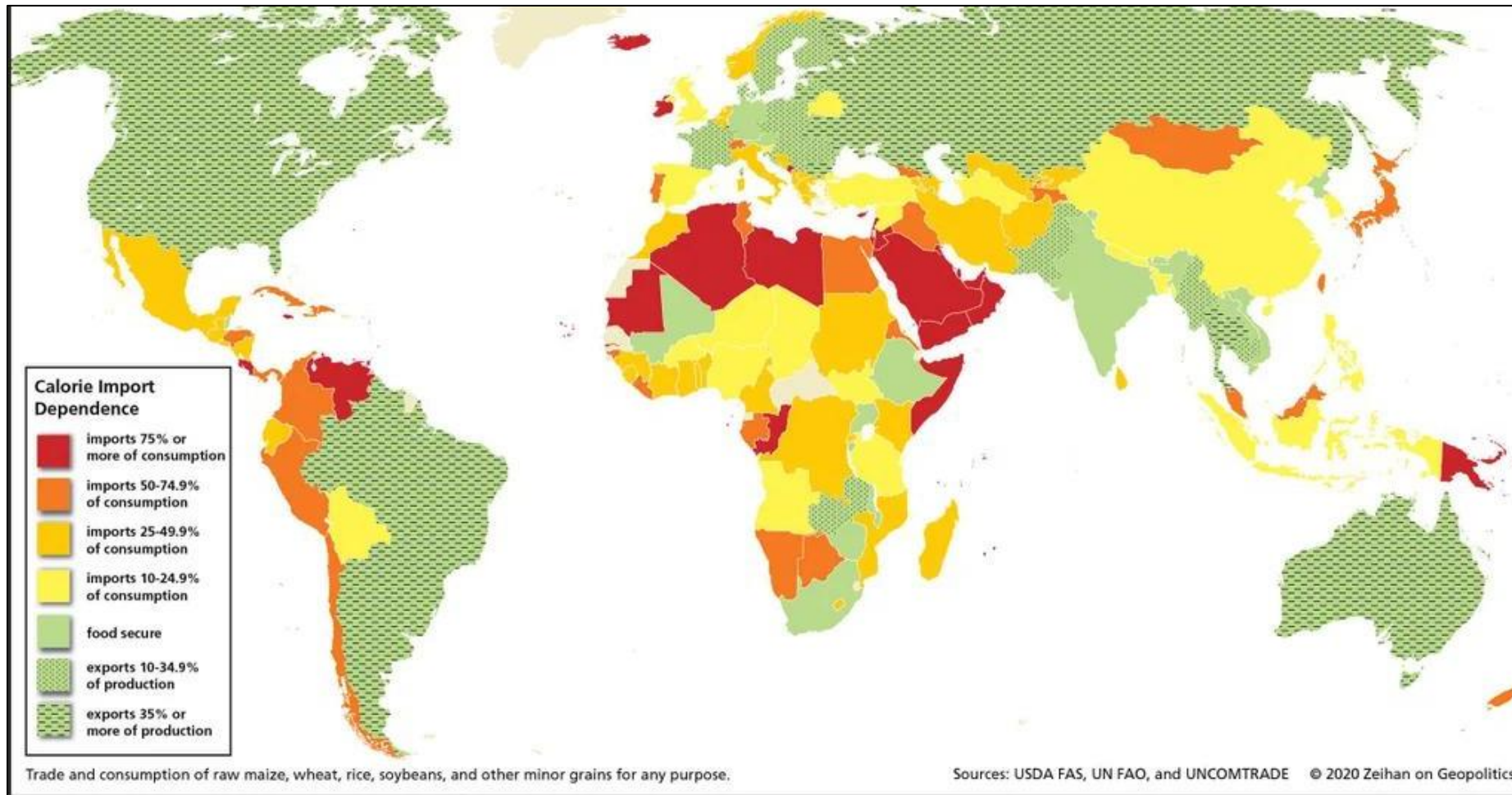


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Food (in)security?



Economic risks:

- Price Volatility
- Trade Deficits
- Exchange Rate Fluctuations

Food security risks:

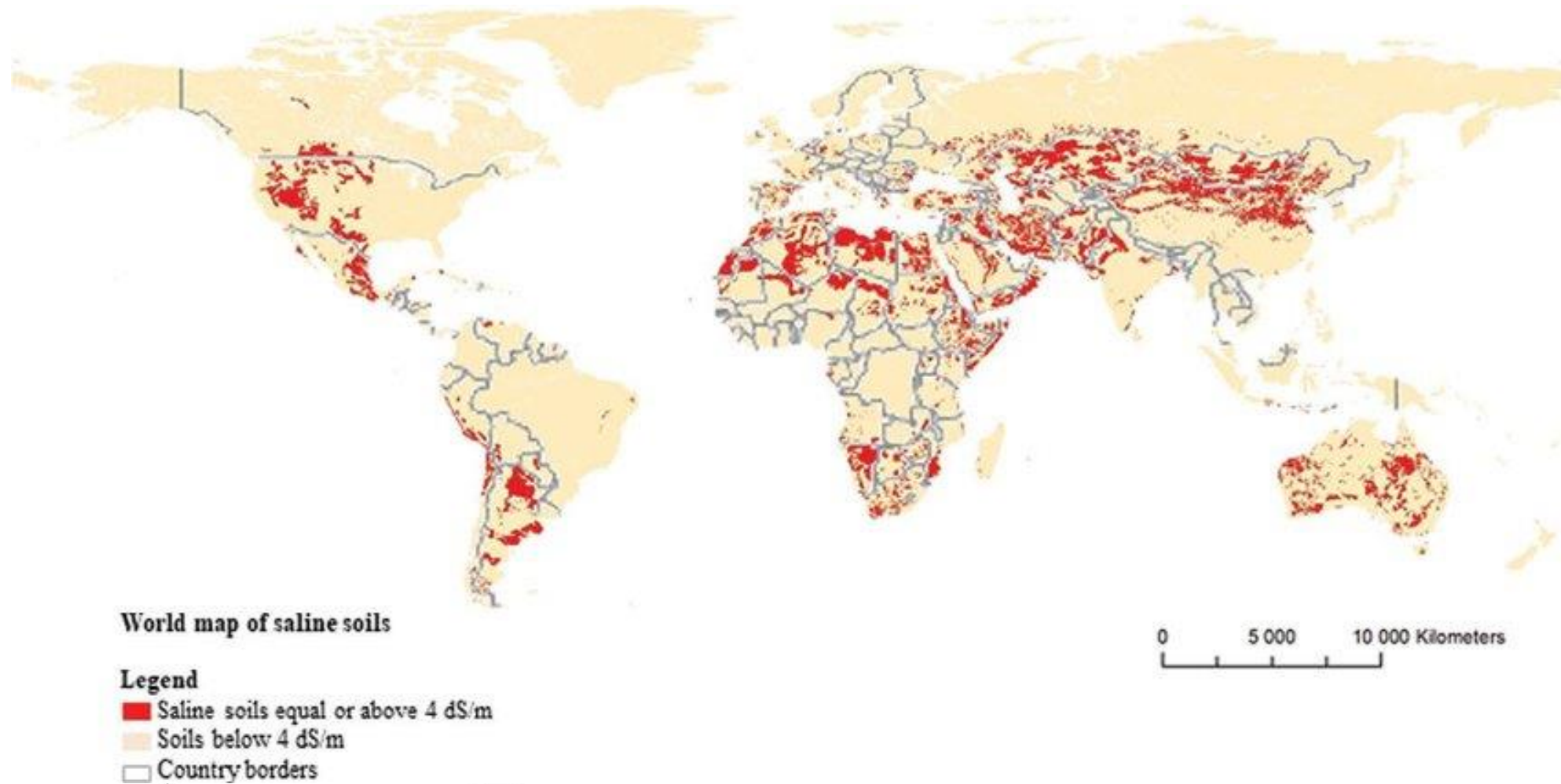
- Dependence on External Sources
- Limited Domestic Production

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World map representing countries with salinity problems based on Negacz et al. (2019)



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- How can we meet the growing food demand in a changing world?

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Saline Agriculture (halophytes)



Stichting de Zilte Smaak

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Saline Agriculture (conventional crops)



Pictures from Saline Agriculture Worldwide

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Saline Agri Map

Welcome to the Saline Agri Map!

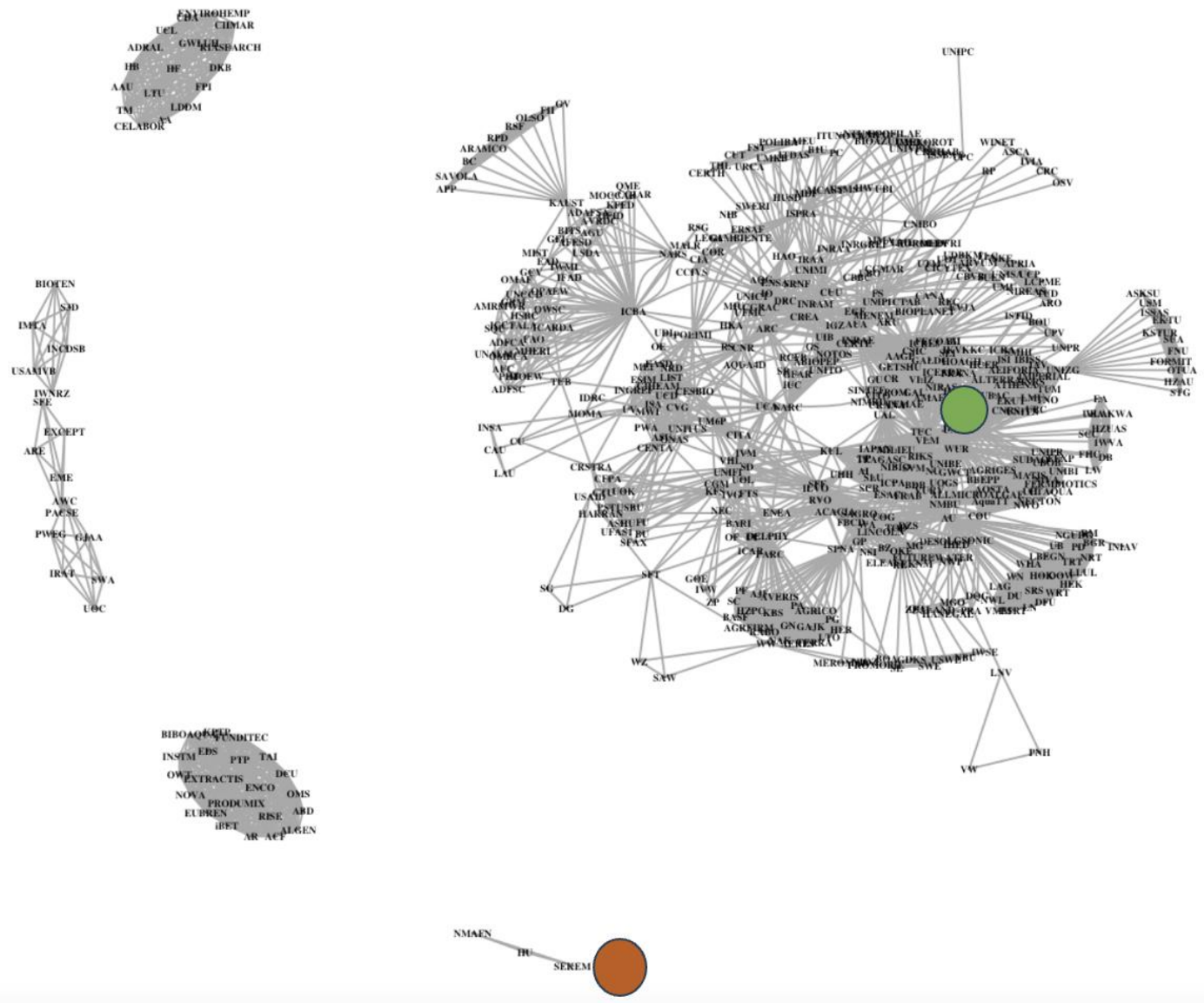
This online platform presents an overview of saline agriculture projects. You can browse through the world map, click on projects of interest, and read more about each initiatives' details.



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- The concept of "network power" refers to the influence, control, or centrality that actors within a network possess
- Potential problems arising from disparity in Network Power:
 - 1) Structural Inequality
 - 2) Resource Distribution
 - 3) Knowledge Production
 - 4) Dependency and Vulnerability

- How can we ensure equitable power distribution within our networks?

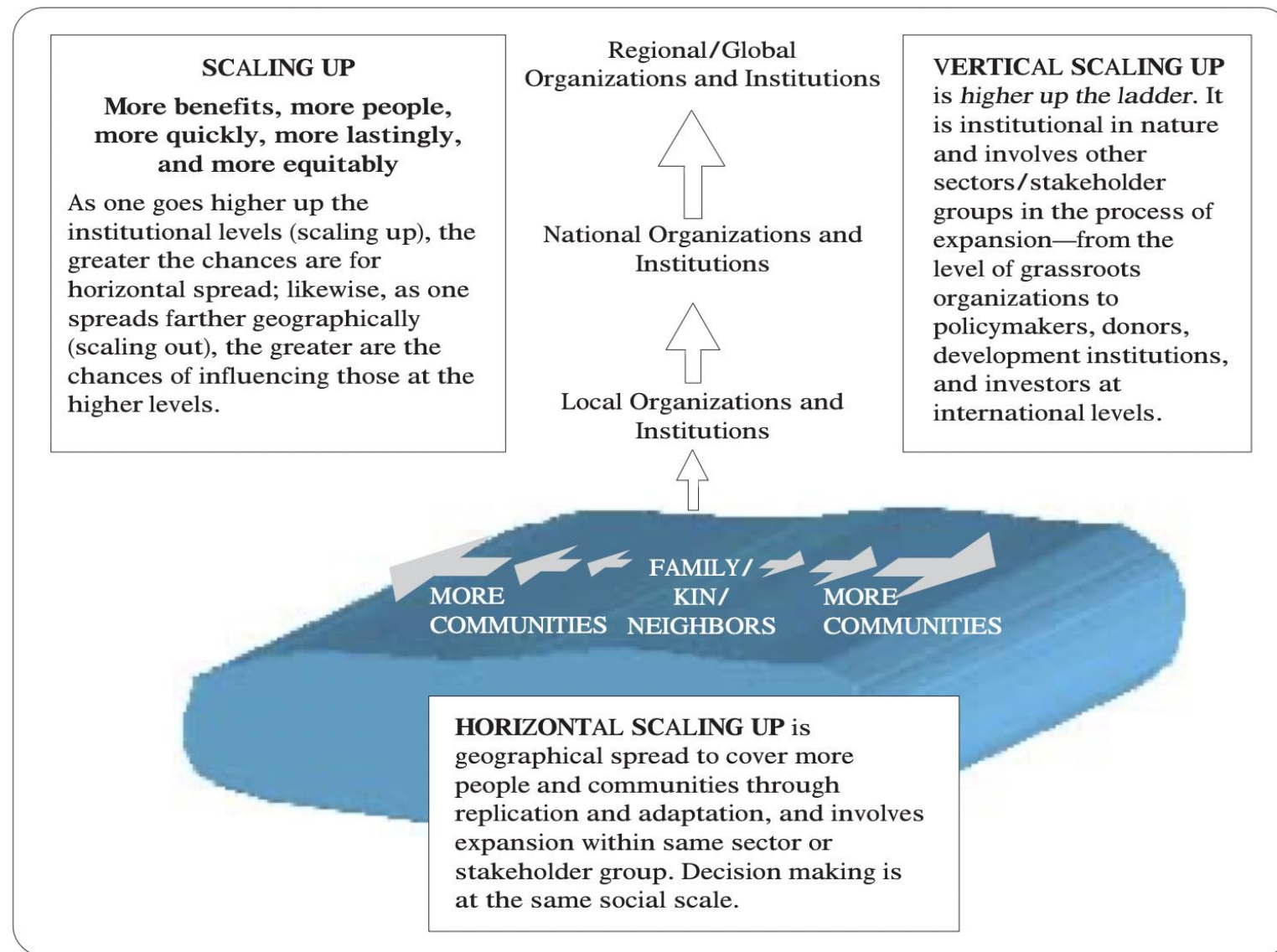
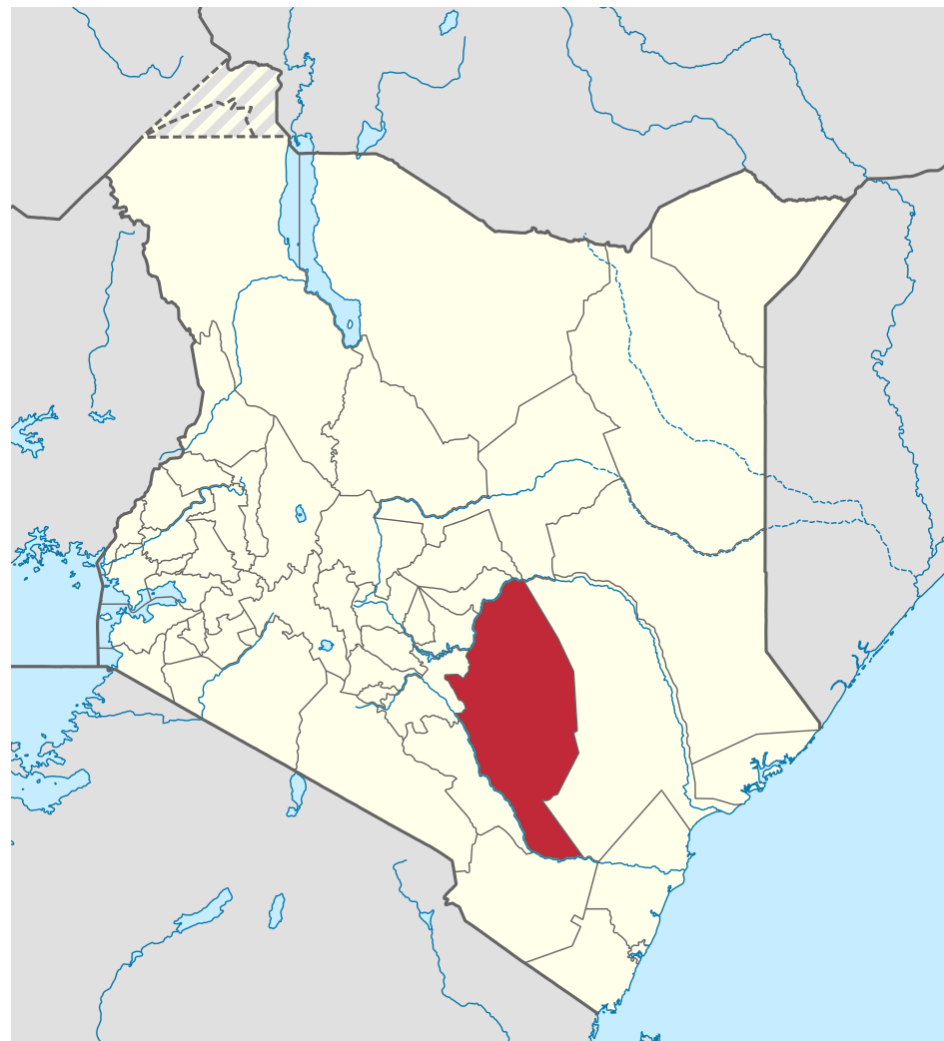


Figure 1. Definitions of scaling up (adapted from IIRR, 2000, p. 17).

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Necessary to scale *core innovations*

- Favourable market conditions
- Supportive policies
- Financial investments
- Access to knowledge
- Organizational capacity to pilot projects and prove concepts



Picture from IWMI

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- **Formative lock-in** - dominant technologies (e.g., external fertilizers, ploughing, GM seeds with specific herbicides) dictate cropping systems.
- **Juridical lock-in** - regulations (e.g., GMO bans) limit choices.
- **Economic lock-in** - harmful practices (e.g., pesticide use) offer short-term private gains but harm public goods.
- **Physical/biotic lock-in** - climate change or soil depletion limiting farming options.

- How can we successfully scale saline agriculture?

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- How do we foresee our future in which we sustainably interact with salt-affected environments?
- How can we ...
 - ... meet the growing food demand in a changing world?
 - ... ensure equitable power distribution within our networks?
 - ... successfully scale saline agriculture?

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“ El que lee mucho y anda mucho, ve mucho y sabe mucho. “

-> He who reads a lot and walks a lot, sees a lot and knows a lot

“ Del poco dormir y del mucho leer, se le secó el cerebro, de manera que vino a perder el juicio. “

-> From reading too much, and sleeping too little, his brain dried up on him and he lost his judgment.



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Thank you

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Sustainable use of salt-affected lands



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