Food Security and Valuing Water

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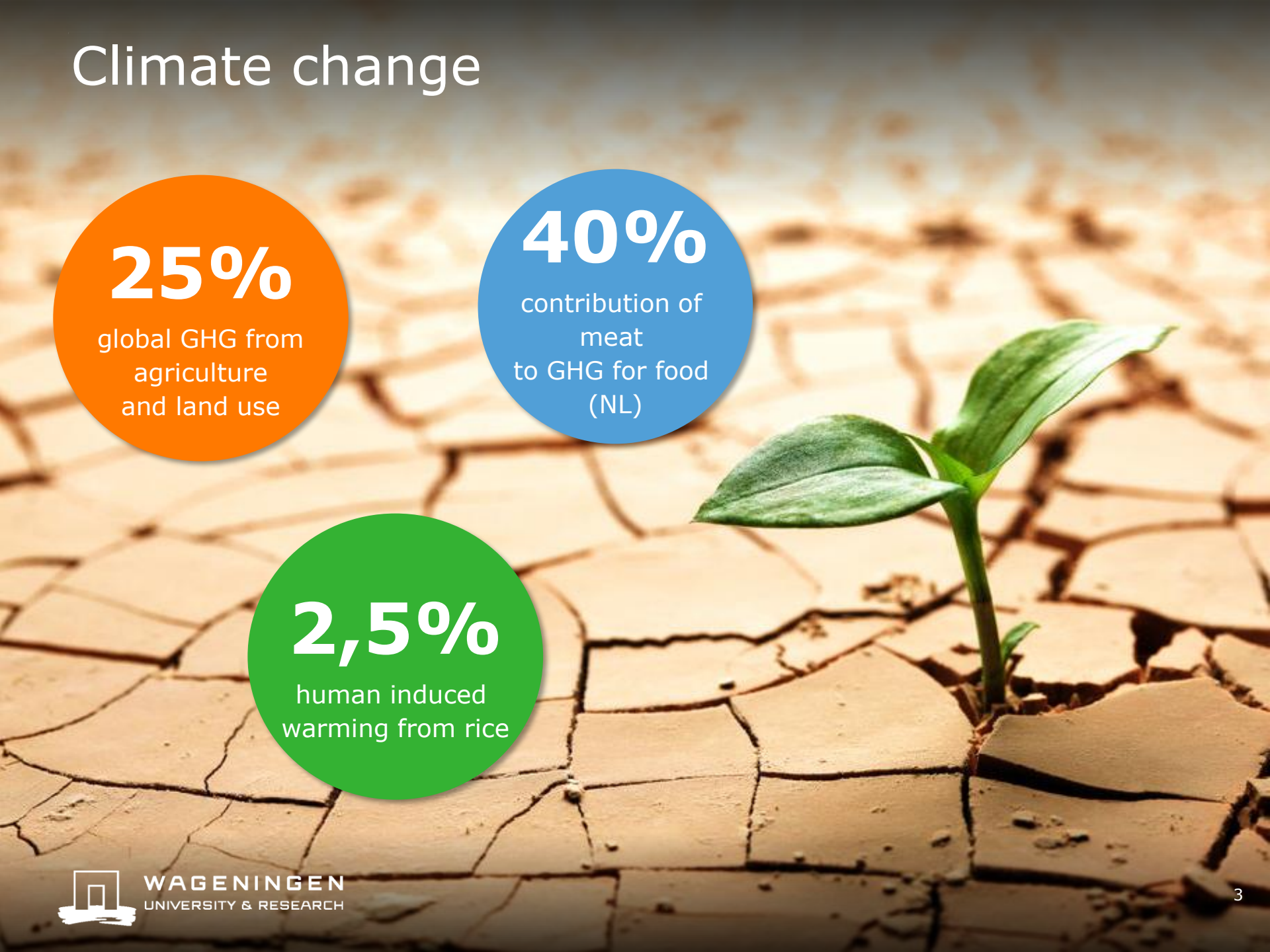
821 million undernourished
2 billion undernourished:
- 500 million obese,
- 30% of some regions anaemic
>500kcal
Food
wasted p.p.

Climate change



70% of fresh water is frozen, 29% groundwater

70%
fresh water
for agriculture

95%
agricultural jobs
depend on
fresh water

in 22 countries
in Asia and Africa:
waterstress level are
>70%

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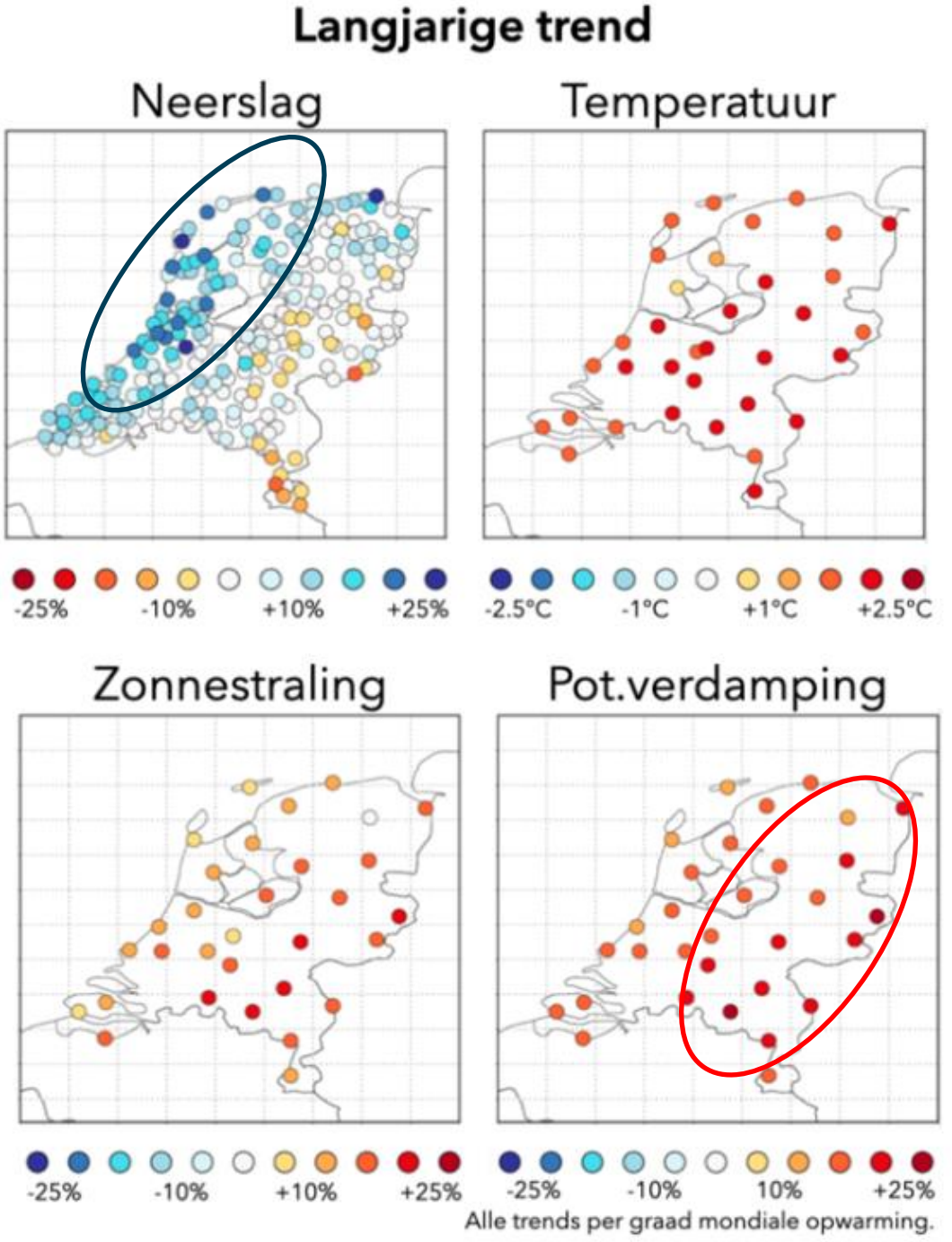
Water & Climate

Changing patterns: volumes, geographical location and time



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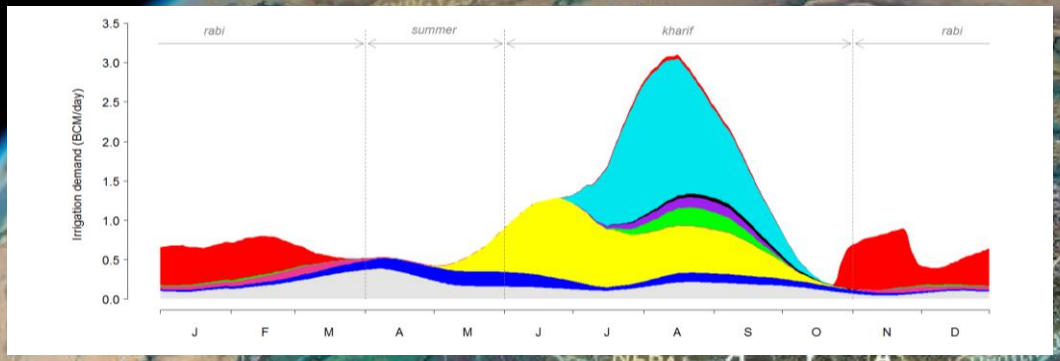
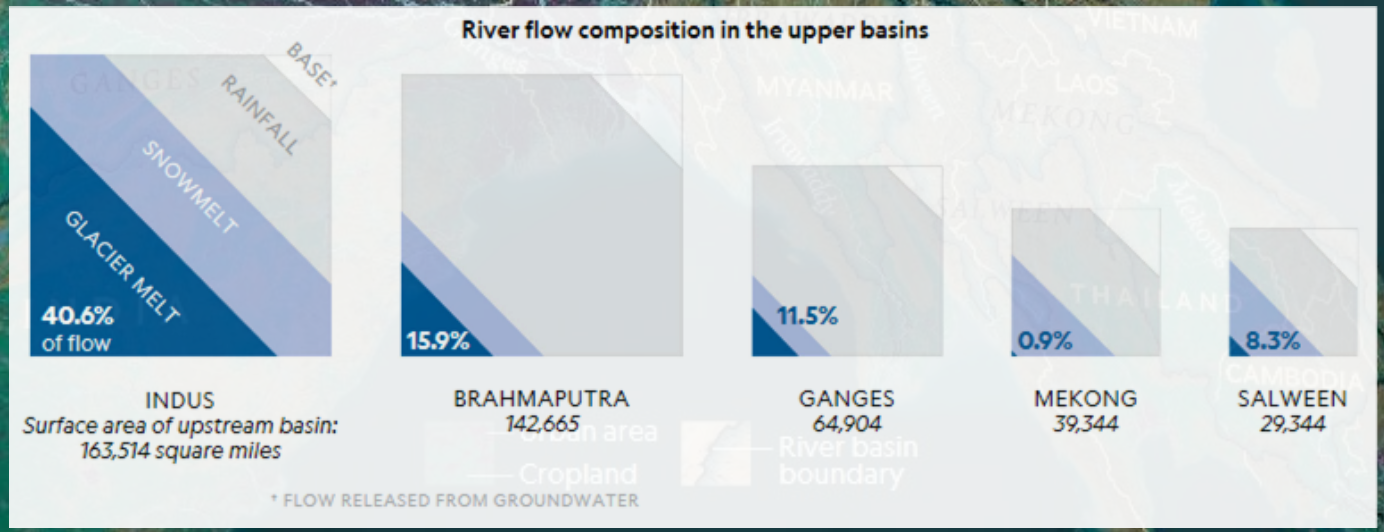
Water towers of the world



Himalaya:

- Water tower of the world, Third Pole
- 10 major rivers
- Farmers and agriculture rely on meltwater



We need a transition in our Food System

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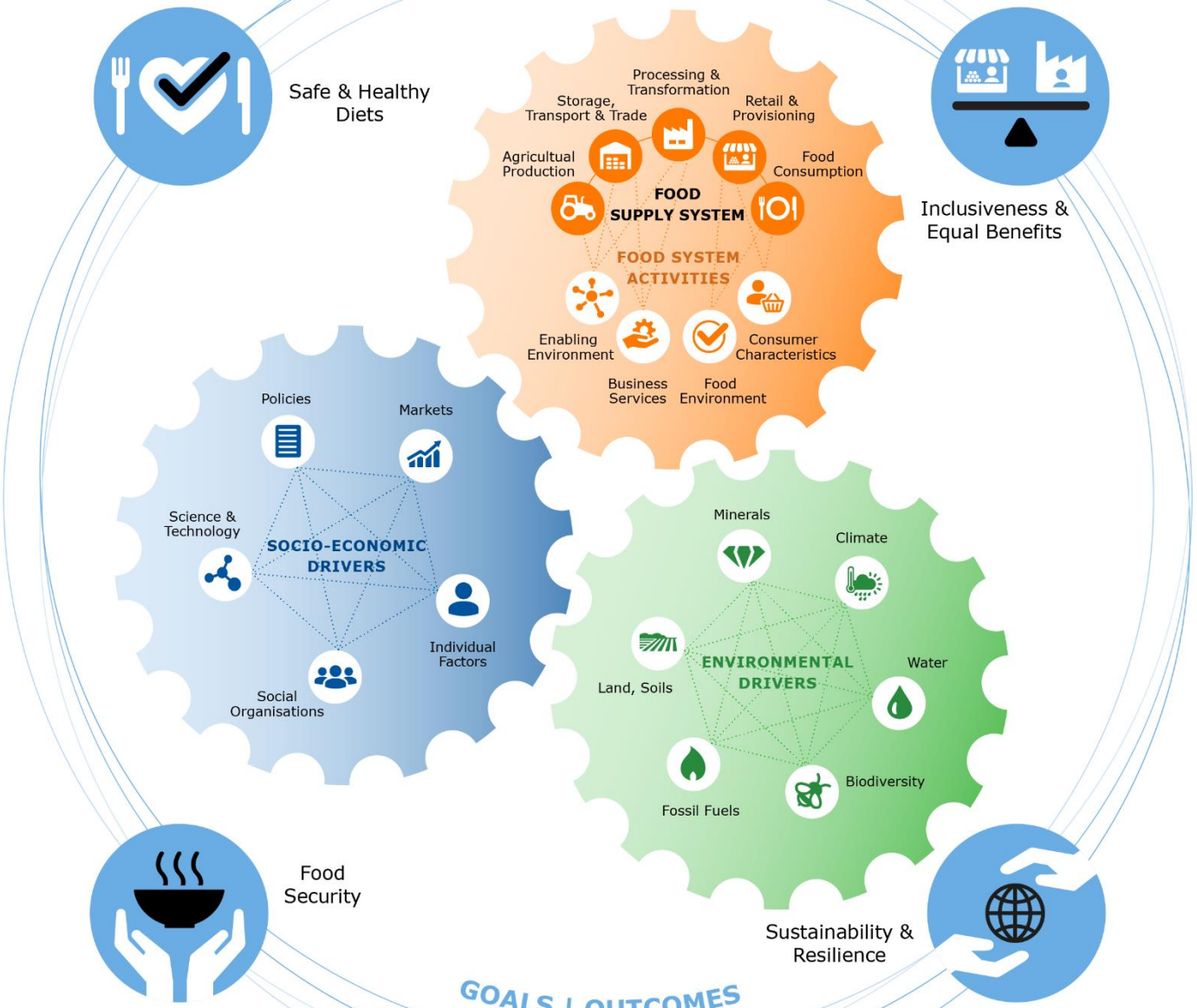
Food systems framework

Van Berkum et al. 2018, Wageningen University & Research



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Transition Pathways

The Netherlands & Europe

Water/Food challenges in the Netherlands:

- Water demand and availability
- Salinisation
- Soil subsidence
- Nature inclusive agriculture

16%

NL GDP depends on fresh water

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I. A system approach

- Mekong
- Bangladesh
- Urban + Rural
- Multiple Scales
- Nature Based Solutions
- Technology/ Irrigation

Understanding systems, drivers, pressures, spatial planning, water management, governance

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II. Adapt agri to variety of water quality

High level (Salinity)

- Aquaculture and weed production
- Coping with salt water intrusion
- Silvopasutural systems
- (sea)Desalinization for irrigation

Intermediate

- Integrated management
  - Reuse of urban and drainage water
  - Brackish groundwater for irrigation
  - Brines management (env. constraints)
- Salt tolerant crops

Inland

- Coping with floods, droughts, brackish groundwater
- Irrigation & Drainage
- Soil management
- Drought tolerant crops

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II. Adapt by mixing systems

e.g. Mangroves in shrimp culture:

Pond Ecology benefits
- Capture mud
- Create food
- Remove nutrients
- Provide shading

Economic benefits
- Increase shrimp quality and yield
- Diversify products for increased economic resilience

II. Adapt by mixing systems

E.g. crop & livestock (dairy)

Benefits: Nutrients recycling; income in dry periods,

III. New strategies (Food from water)

Seaweeds (Indonesia)

Ecology (nutrients), diversify economy, coastal communities development, CO2 sequestration

Questions:

- Business case under different socio-economic settings
- Factors that enable or constrain farmer acceptance
- What is the global potential for food from seaweed

III. New strategies (urban and rural)

Fish for Kibera (Nairobi, Kenia)

Link rural and urban areas, protein diversification, value chain development, food safety (cold storage)

In Short

- Apply a systems approach
- Nature based solutions and new technology
- 'Blue Oceans' Strategy to rethink our systems - *together*

"A ship is always safe at the shore, but that is not what it is built for."

Albert Einstein

Thank you !

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