

Climate change and food security from a food system perspective

April 24, 2021, Vincent Linderhof



The Mediterranean diet



Outline

- Introduction
- Definition and concepts (food security, SDGs, food systems)
- Illustrations for the Mediterranean region
- Final remarks

Food security

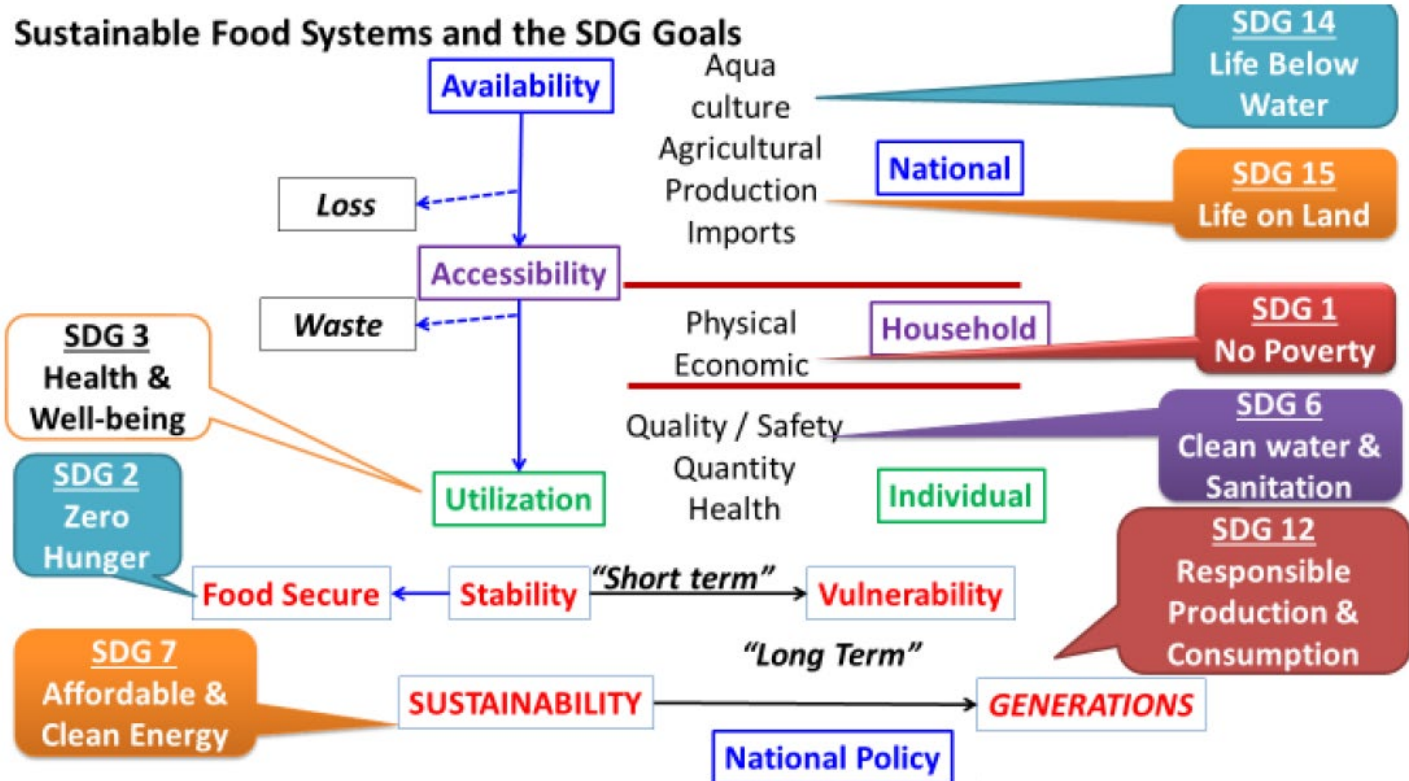
- The 4 pillars of food security:
 - Availability
 - Affordability/accessibility
 - Utilization
 - Stability

FAO (2009) World Summit on Food security

Sustainable Development Goals

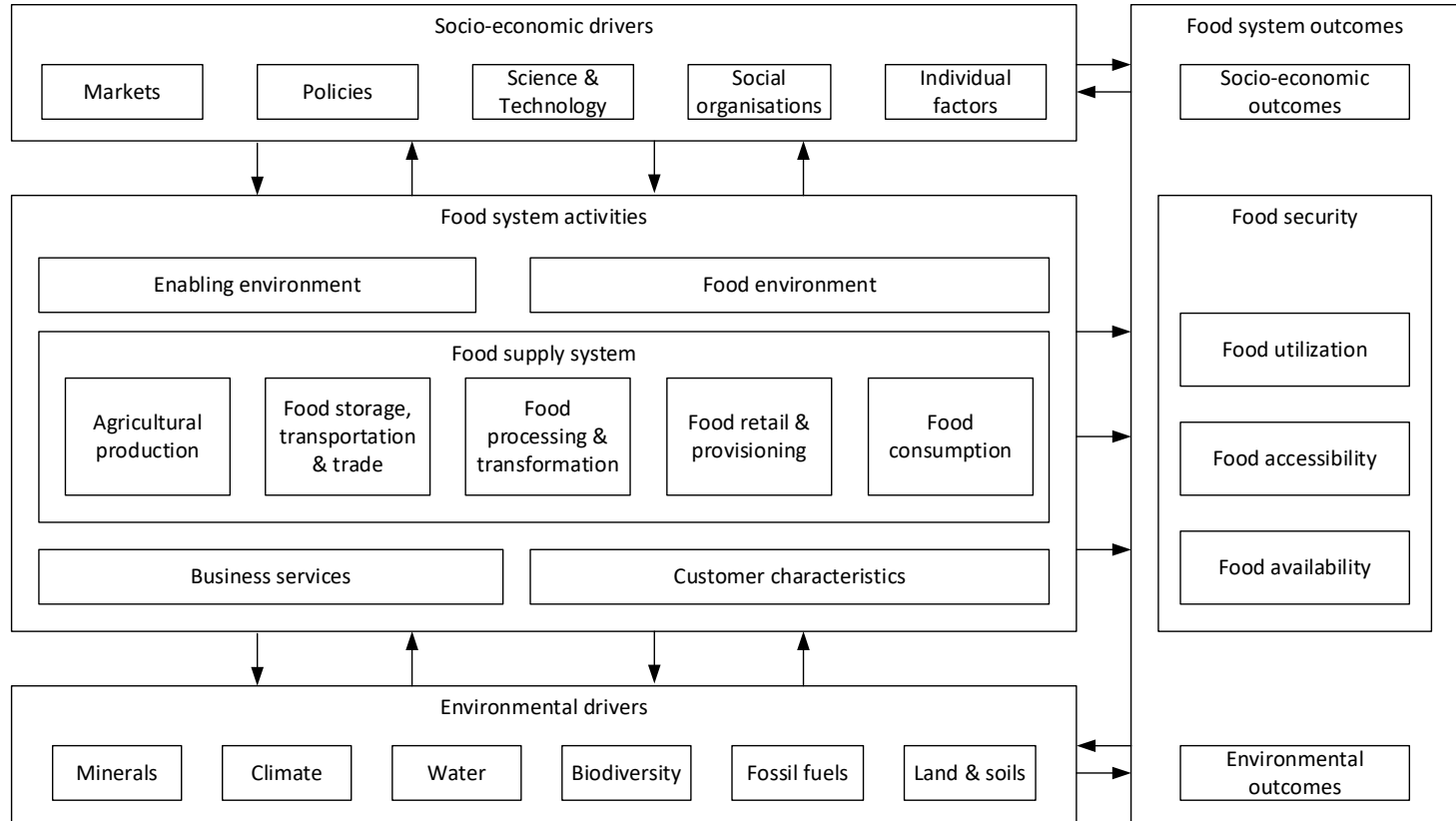


Food security & Sustainable Development Goals



Source: Elliot M. Berry (2019). "Sustainable Food Systems and the Mediterranean Diet" *Nutrients*.

Food system approach: framework



Food system approach: different perspective



The Mediterranean diet

Source: Sarah Metz, Amanda Daum, and Jullanar Suprunchik (2019). The Environmentally Friendly Diet



How does climate change threaten food sustainability in the Mediterranean region?

- Growing water shortages
- Climate change impacts on agriculture
 - Rising temperatures;
 - Changing rainfall patterns;
 - Pest and diseases;
 - Reduced soil fertility.
- Rising sea level: infrastructure and buildings
- Declining fish stock (with over-fishing)



How can the Mediterranean diet reduce its contribution to climate change?

Pyramid for sustainable Mediterranean diet

- Nutritional value
- Portions
- Frequency of intake

Source: Lluís Serra-Majem, Adriana Ortiz-Andrellucchi, Cristina Ruan-Rodríguez, Almudena Sánchez-Villegas (2016). “The Mediterranean diet as an example of environmental sustainability”. *Journal of Environmental and Health Science*



Food sustainability index for the Mediterranean region

- Measures the performance of countries on environmental, economic and societal aspects.
- Benchmarking
- Three components:
 - Sustainable agriculture
 - Nutritional challenges
 - Food loss and waste
- Component scores based on a scale of 0-100, Overall score is weighted average of components score (experts)

Food Sustainability Index: benchmarking

FSI rank	Overall	Sustainable agriculture	Nutritional challenges	Food loss and waste
1	France 74.8	Italy 73	France 68	France 84.9
2	Spain 70.4	France 71.5	Portugal 68	Spain 77.1
3	Portugal 69.5	Spain 69.2	Greece 65.6	Italy 76.7
4	Italy 69	Israel 68.9	Spain 64.9	Portugal 72.1
5	Israel 63.1	Portugal 68.5	Israel 62.3	Turkey 59.6
6	Turkey 62.9	Turkey 68.3	Turkey 60.8	Israel 58
7	Greece 61.6	Greece 67.9	Tunisia 58.7	Jordan 56.7
8	Jordan 58.9	Jordan 64.9	Italy 57.4	Egypt 56.3
9	Egypt 57.1	Lebanon 61.9	Jordan 55.1	Greece 51.5
10	Morocco 53.9	Egypt 61	Lebanon 55	Tunisia 49.7
11	Tunisia 53.1	Morocco 60.6	Egypt 53.9	Morocco 47.5
12	Lebanon 53.1	Tunisia 51	Morocco 53.6	Lebanon 42.3

Source: Barilla Center for Food & Nutrition (2017) Fixing food: the Mediterranean region.

Recent initiative

- Food system transformation for the Mediterranean region.
- Memorandum of understanding between
 - Food and Agriculture Organization of the United Nations (FAO)
 - International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) and
 - the Union for the Mediterranean (UfM)
- Plan of action to be shared at the 2021 UN Food Systems Summit

Concluding remarks

- Improving the environmental performance and sustainability of Mediterranean diets
- Trade-offs between nutritional values and environmental pressures
- Food systems transitions:
 - Awareness raising is a major challenge from nutritionist to farmer and consumer (Climate change is a global challenge, but each individual person needs to contribute)
 - Changing diets is a transition that takes time

Thank you

Vincent Linderhof

Vincent.Linderhof@wur.nl