Why we need today to design sustainable agricultural and food production systems in the Mediterranean area?

What are the main methodological challenges?

Alexandre Meybeck, FAO

1st Mediterranean Forum
Designing Sustainable Agriculture and Food Production Systems under Global Changes in the Mediterranean
18-19 July 2016, Montpellier

Food and Agriculture Organization of the United Nations

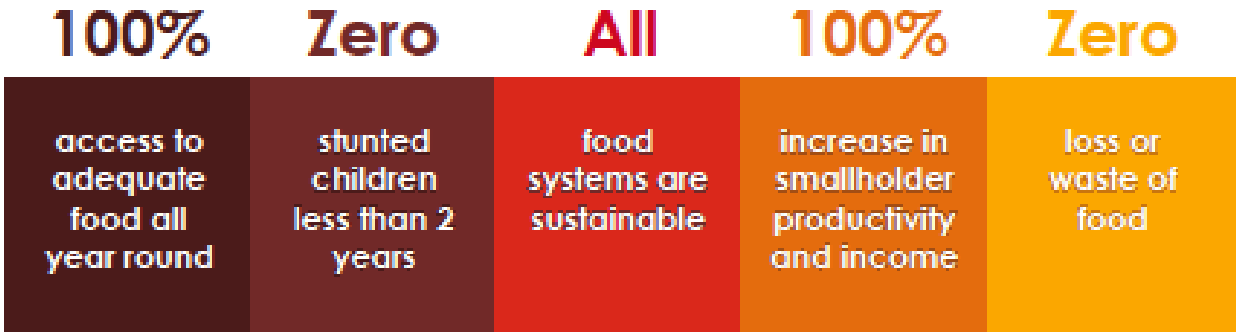
Outline

- Sustainability is a condition for FSN
- The global food system is not sustainable. Sustainability challenges are particularly accute in the Mediterranean
- Some methodological challenges

Sustainable food systems/UN agenda

- Zero Hunger challenge launched by the SG in Rio+20
- Sustainable food systems at FAO conference 2013,
- Theme of World Food Day 2013
- Food losses and waste in a context of sustainable food systems, in CFS 2014, HLPE report
- ICN2
- SDGs
- FAO/UNEP program on sustainable food systems integrated in the 10 YFP on SCP

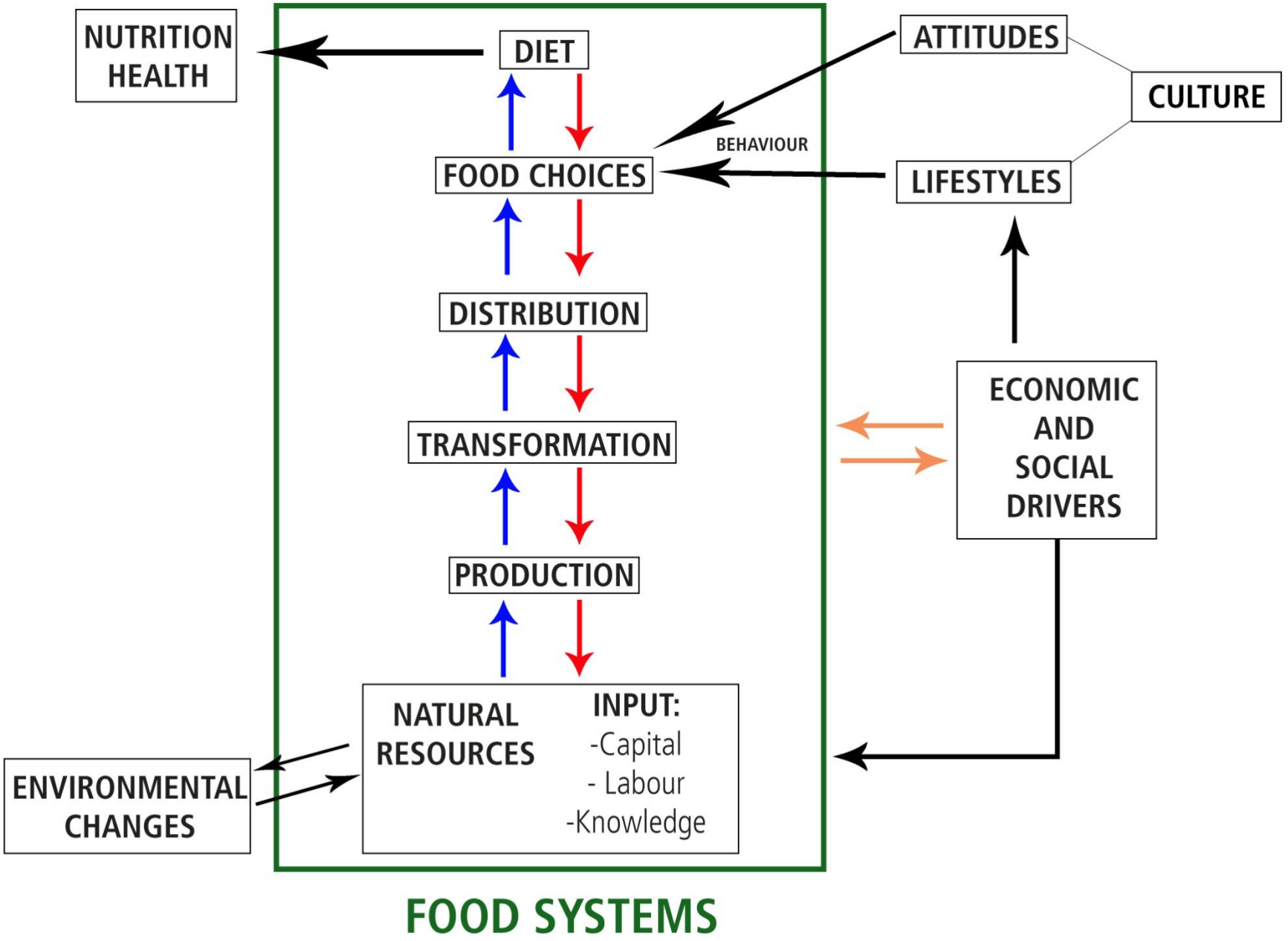
Zero Hunger Challenge



Hunger can be eliminated in our lifetimes.

Sustainable food system

- A ***Sustainable Food System*** (SFS) is a food system that ensures food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition of future generations are not compromised. (HLPE 2014)



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Challenges

- Triple burden of malnutrition
- Majority of the poor and hungry are food producers
- Growing demand, in quantity, quality and diversity
- Food production & consumption already exerts considerable pressure on environment
- Resources fragile & scarce
- Climate change
- Food systems are increasingly dependent of international trade

Malnutrition

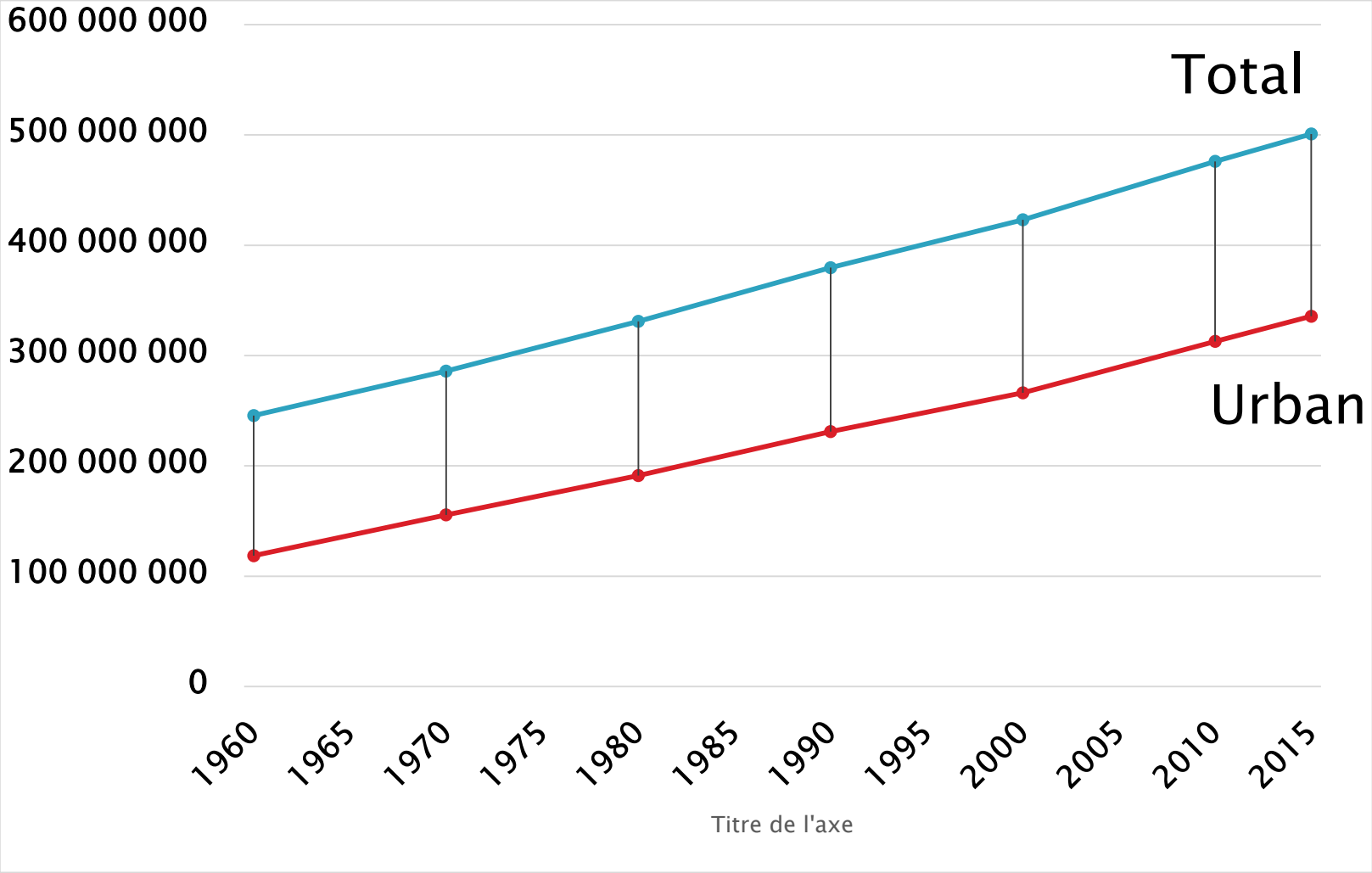
- **795 million** people are undernourished
- **Over 2 billion people** world wide suffer from micronutrient mal nutrition
- In 2014, more than **1.9 billion adults**, 18 years and older, were overweight. Of these over 600 million were obese

- Increases in unhealthy patterns are outpacing increases in healthy patterns in most world regions (Imamura et al, 2015)

Nutrition transition

- Undernutrition still significant in theSouth
- Rate of stunting still significant in many southern and Eastern countries of the Mediterranean
- Increase of overweight and obesity, to alarming rates

Population Mediterranean



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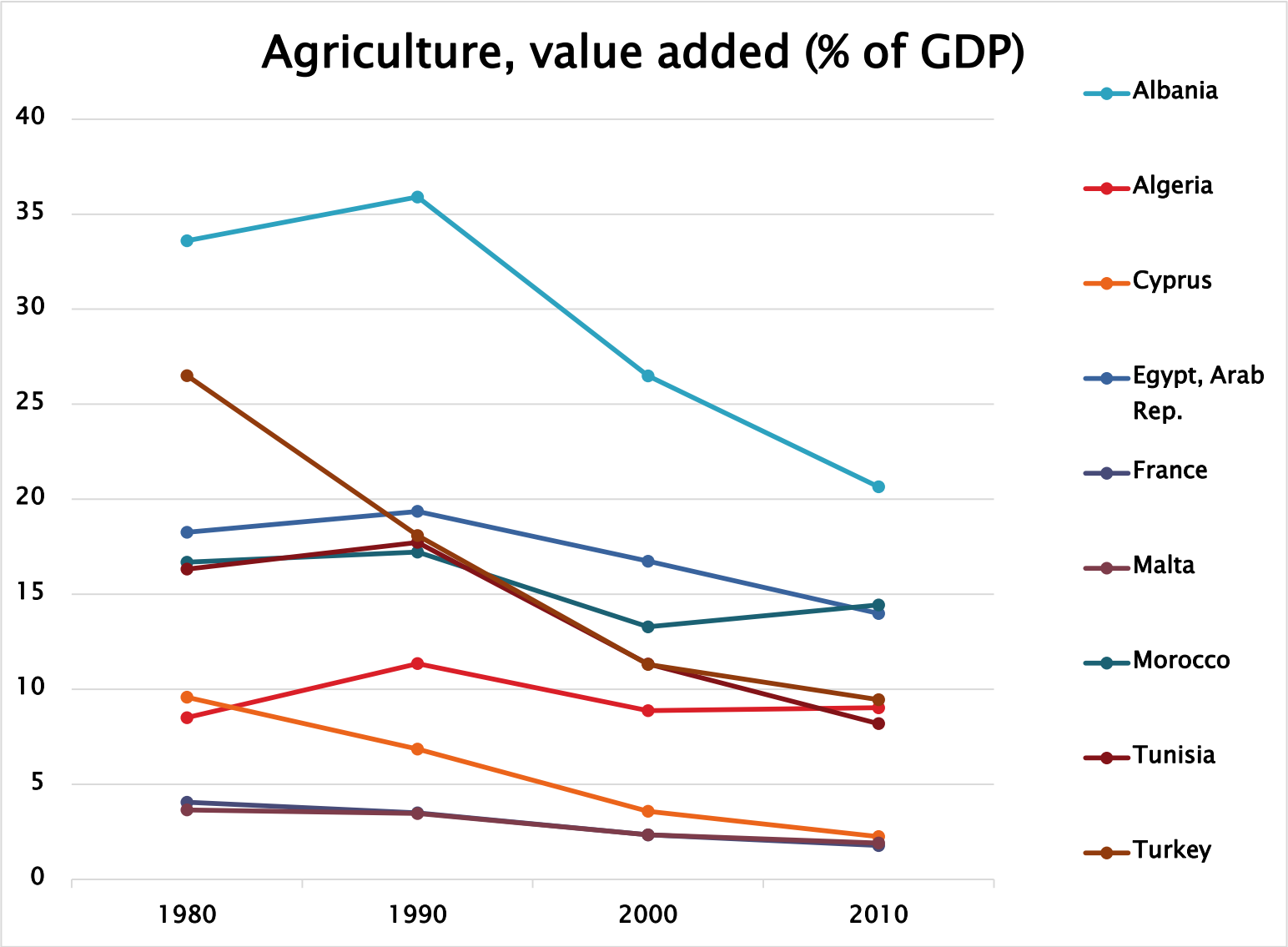
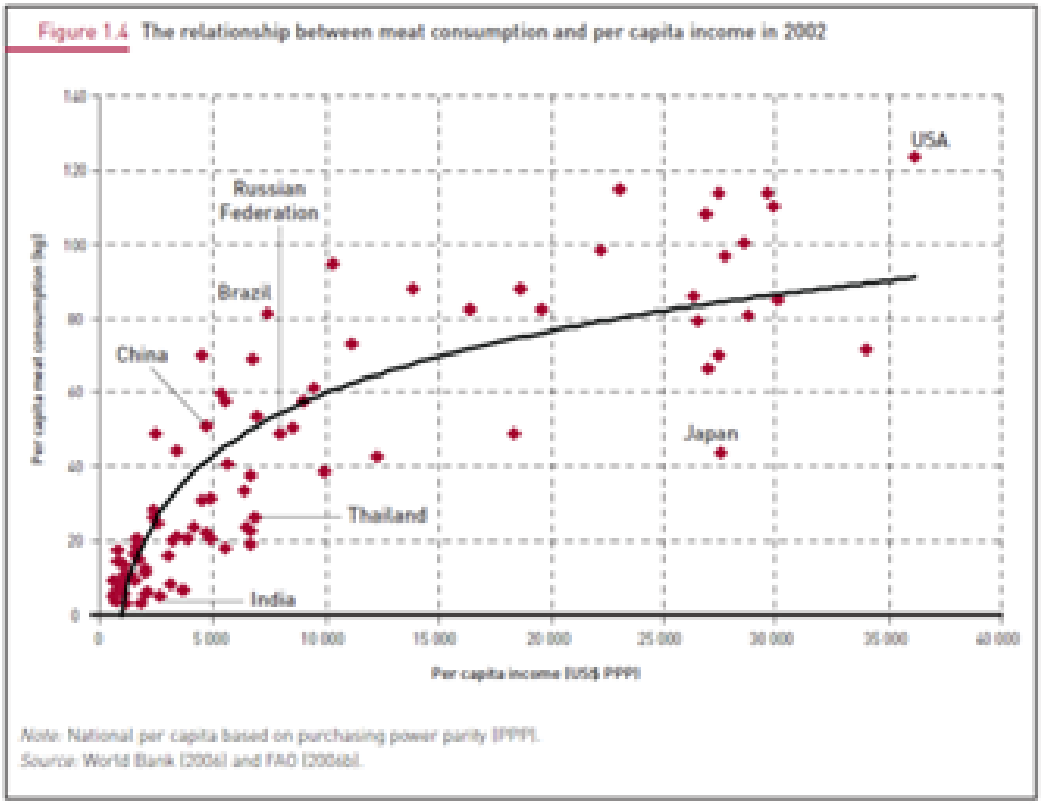

Agriculture, value added (% of GDP)
40
35
30
25
20
15
10
5
0
1980
1990
2000
2010
Albania
Algeria
Cyprus
Egypt, Arab Rep.
France
Malta
Morocco
Tunisia
Turkey

Access

- 38% of the global workforce depends on agriculture
- In Southern and Eastern Mediterranean countries, 25% to 45% of the population get the majority of their revenues from agriculture.

Per capita GDP and meat consumption by country



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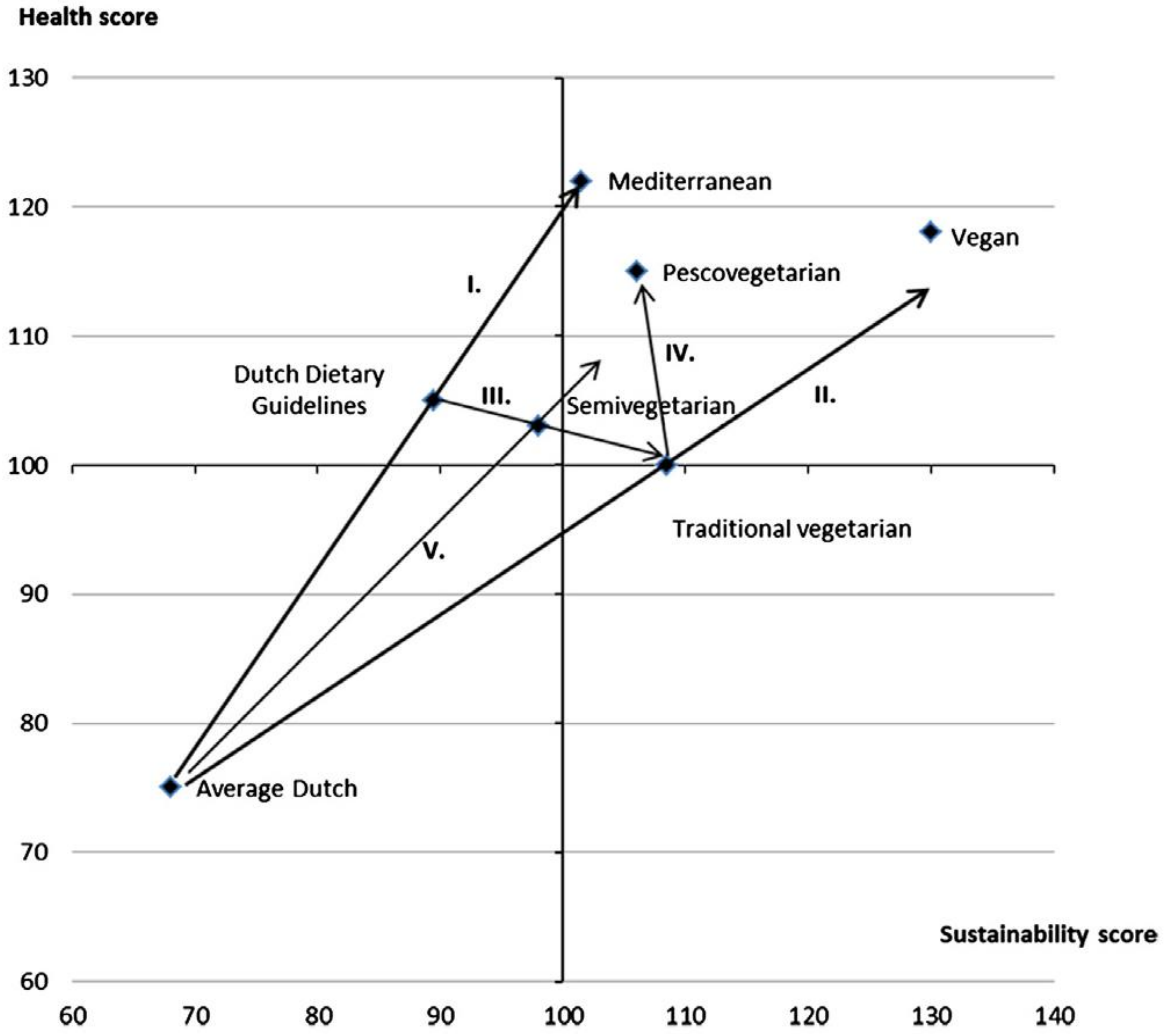
Comparaison of different diets impacts on health and environmental sustainability (Van Dooren, et al., 2014)

- Matrix with a comparison of the health and sustainability scores of different diets (Health score of 100 complies with WHO and Dutch guidelines; a sustainability score of 100 complies with a 20% reduction in GHG and a 44% reduction in LU).
- To explore both scores of the current Dutch diet, we analysed diets with a health focus (I) and animal protein reduction (II), as well as combinations of the two.
- The arrows illustrate the different options to improve the scores. (I) Health focus, (II) animal protein reduction, (III) dietary guidelines diet towards animal protein reduction, (IV) vegetarian diet towards health focus, (V) easiest choice for simultaneously higher health and sustainability score (semi- and pesco-vegetarian).



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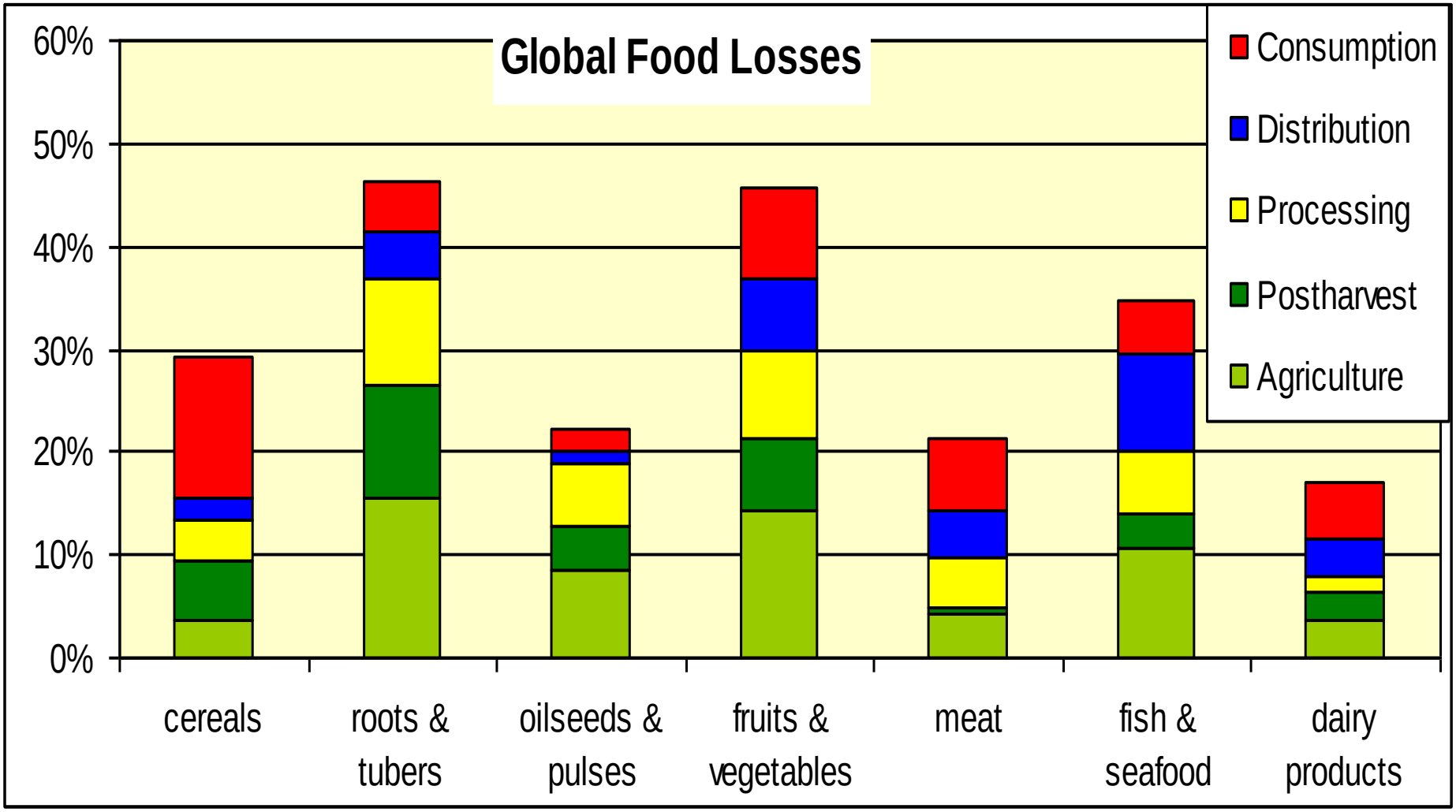

FAO, 2011

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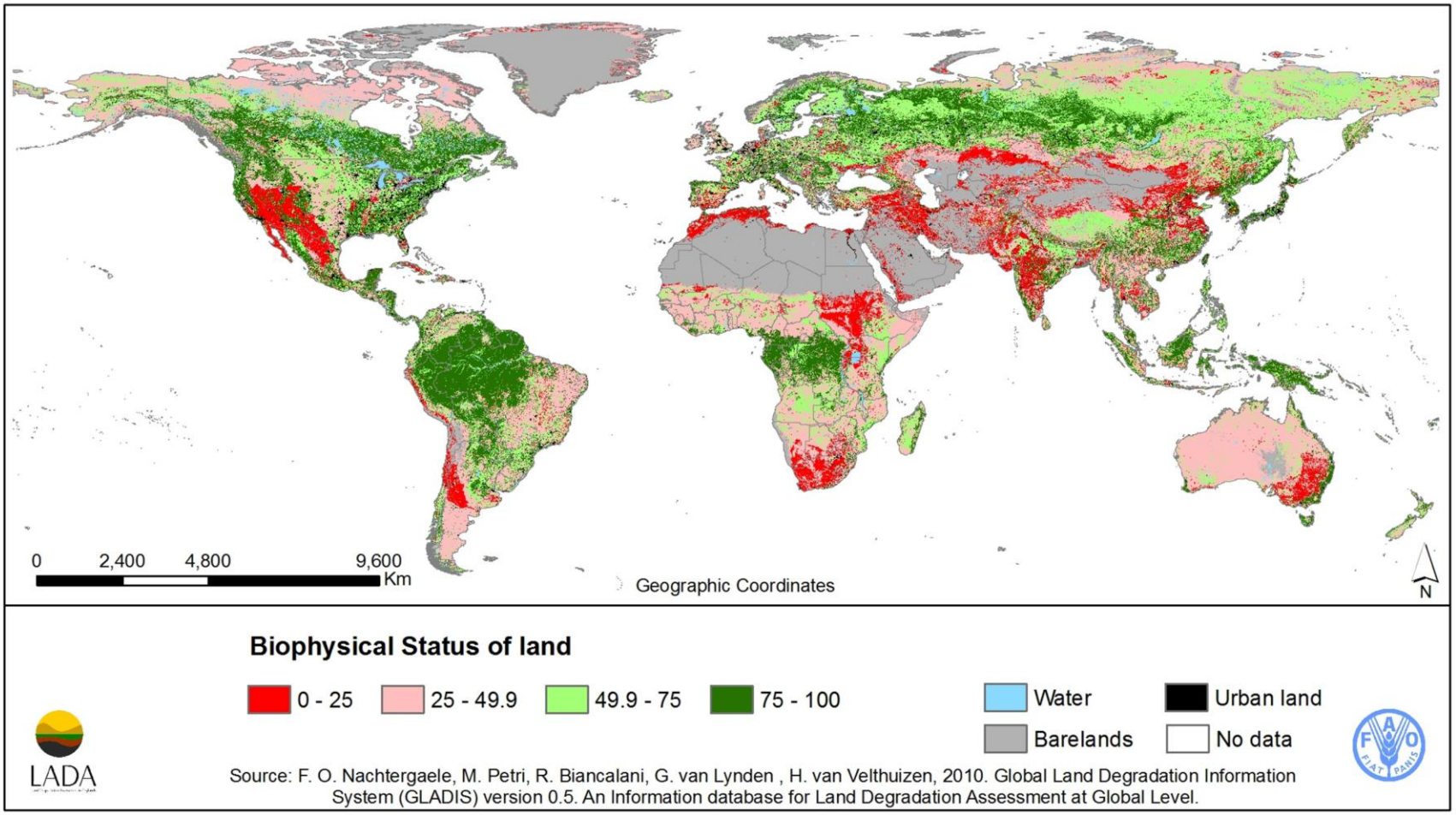
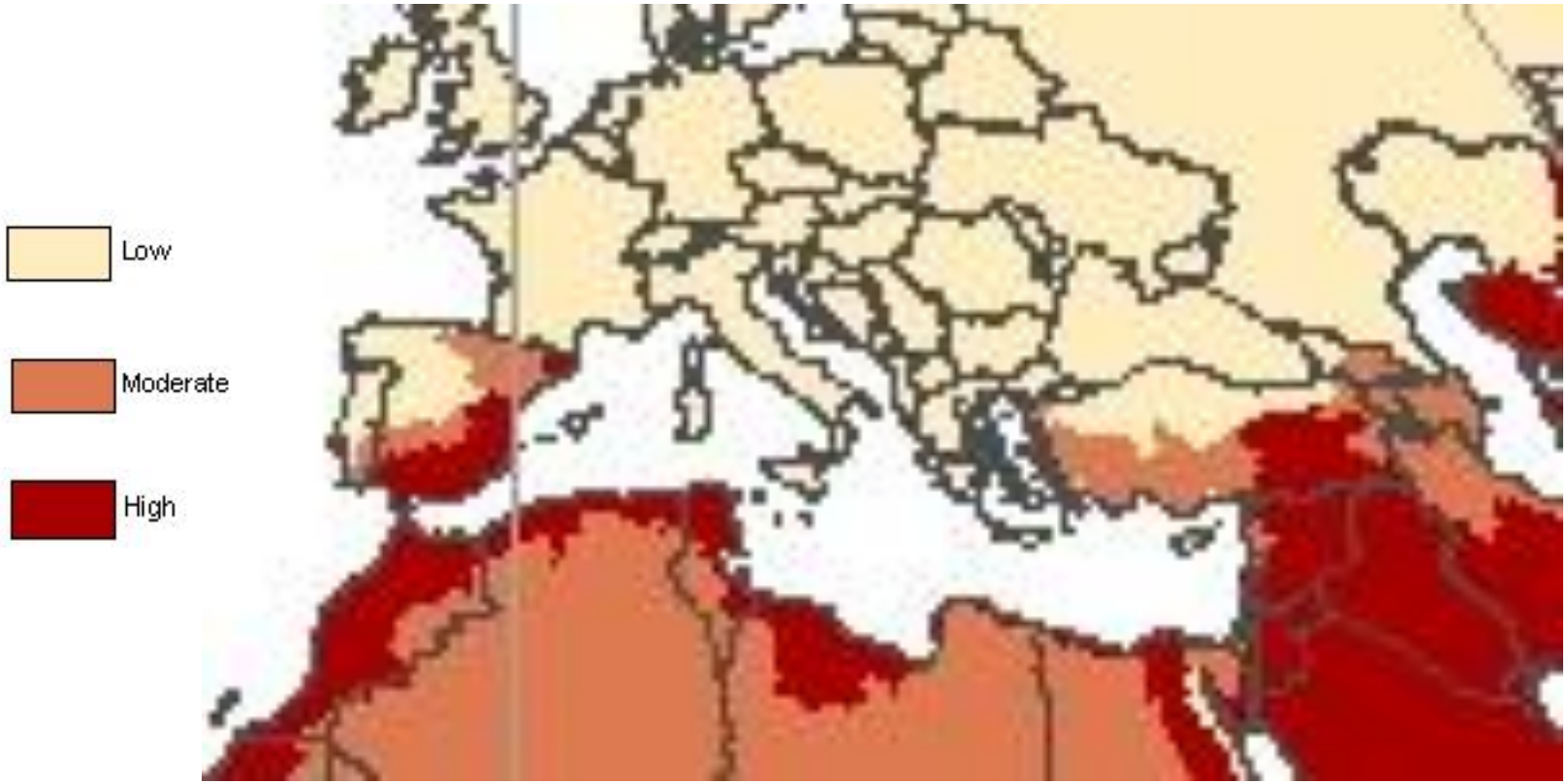
Land distribution and access

Regions	Cultivated land (million ha)	Population (million)	Cultivated land per capita (ha)
Low-income countries	441	2 651	0.17
Middle-income countries	735	3 223	0.23
High-income countries	380	1031	0.37
Total	1 556	6 905	0.23

Land degradation



Levels of water scarcity



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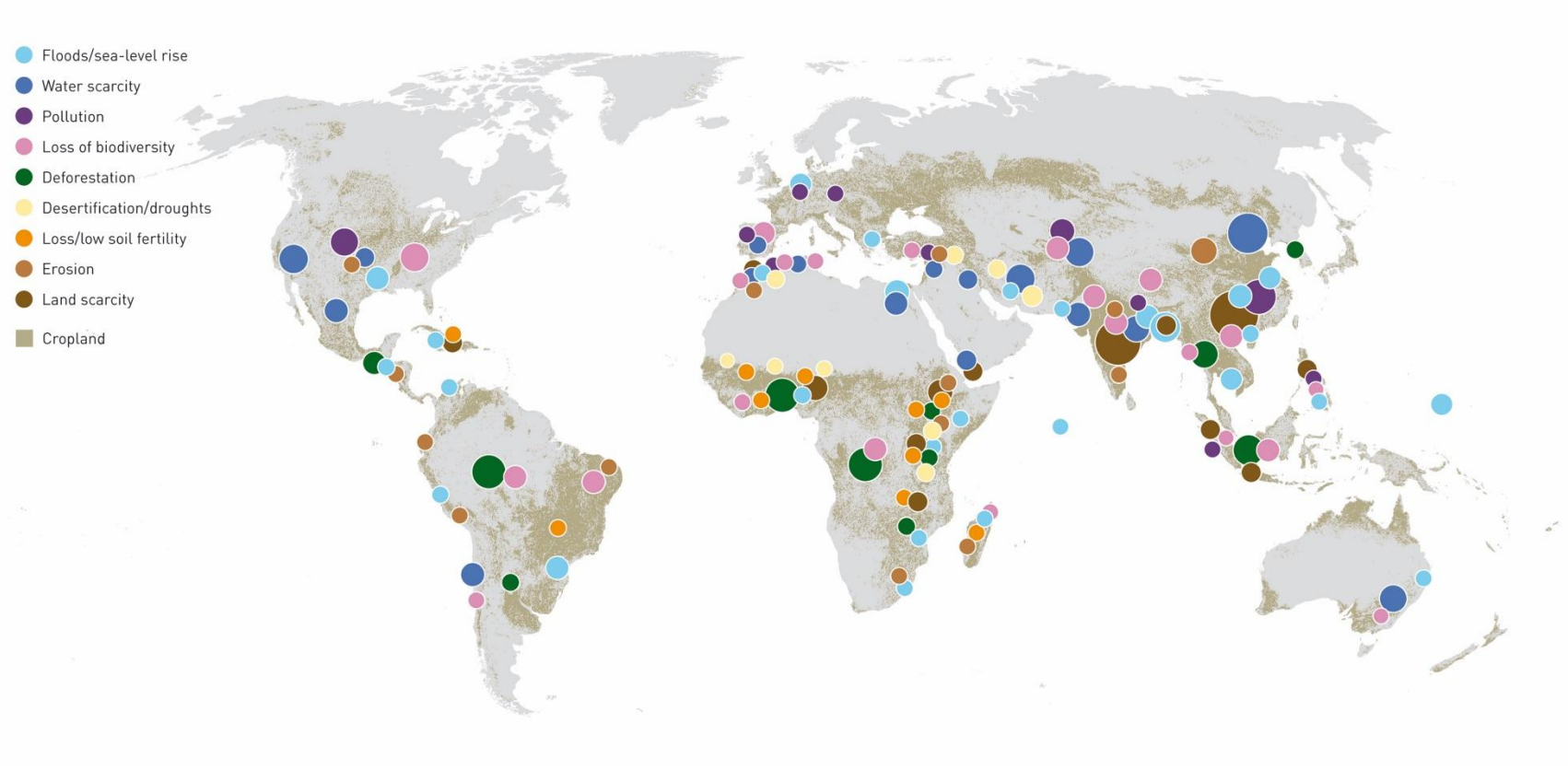
Different Puglia's localvarietiesof carosello and barattiere (Cucumis melo L.). (Renna et al., 2014)

Systems at risk



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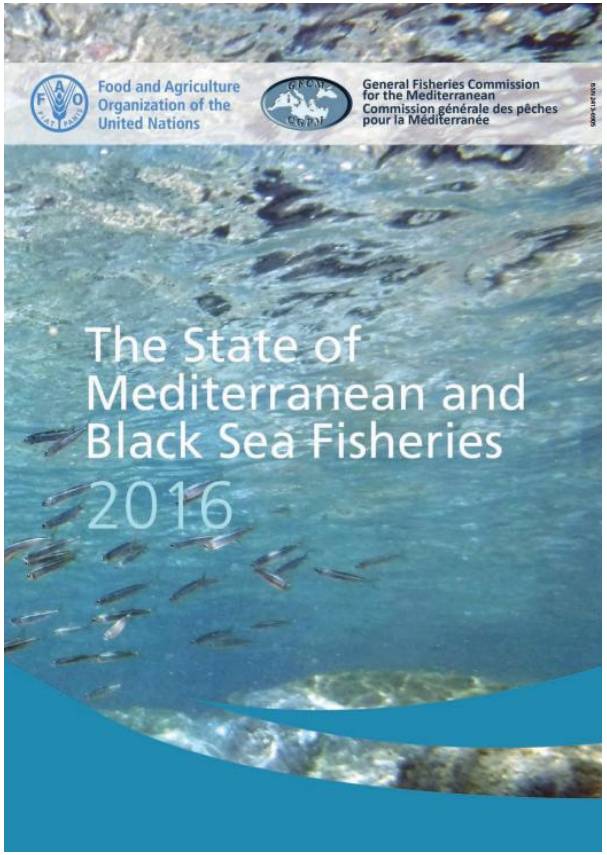
Systems at risk

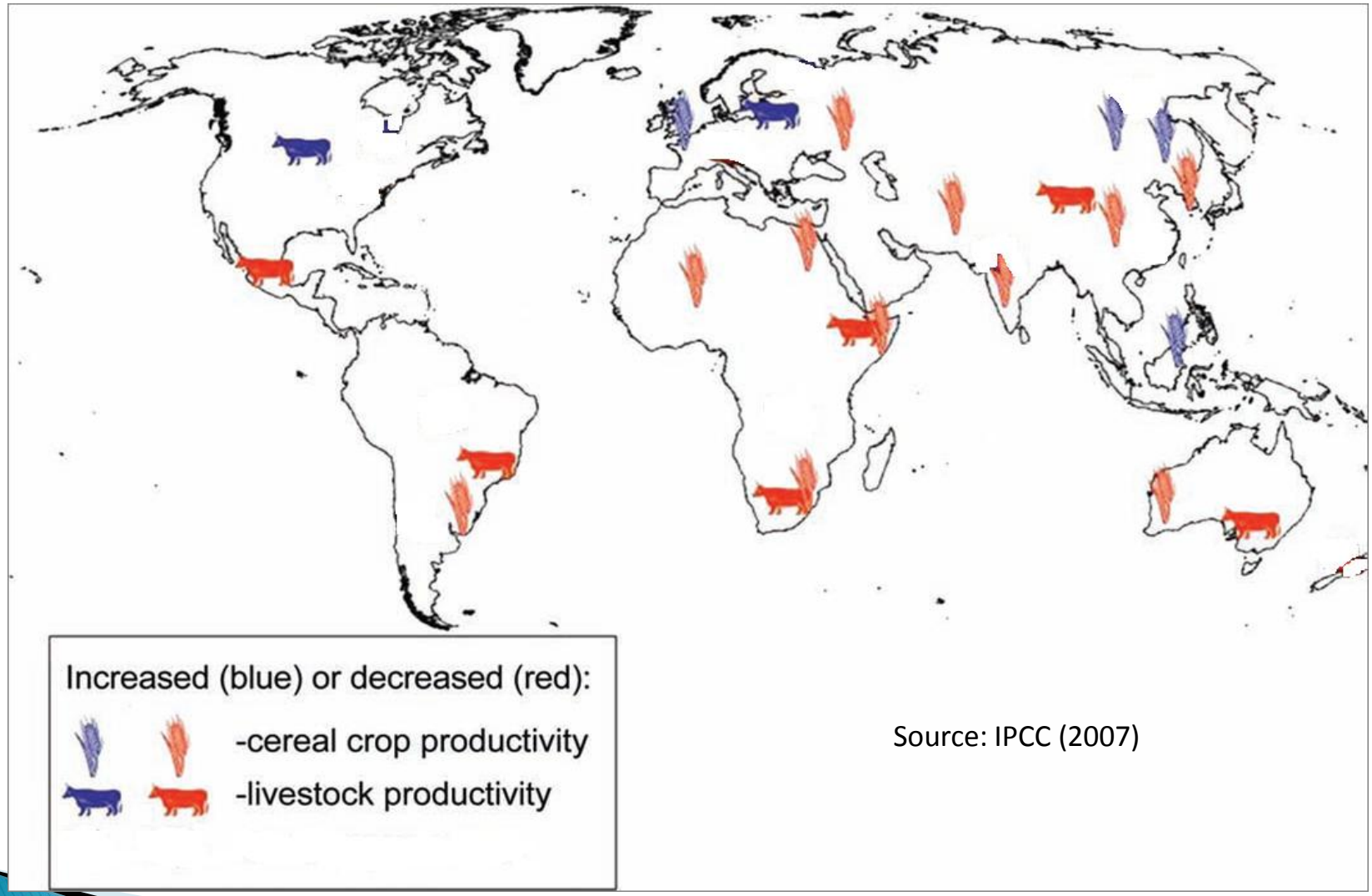
The State of Mediterranean and Black Sea Fisheries

- http://www.fao.org/3/a-i5496e.pdf



85% of fish stocks assessed are fished at biologically Unsustainable levels

Productivity trends by 2050

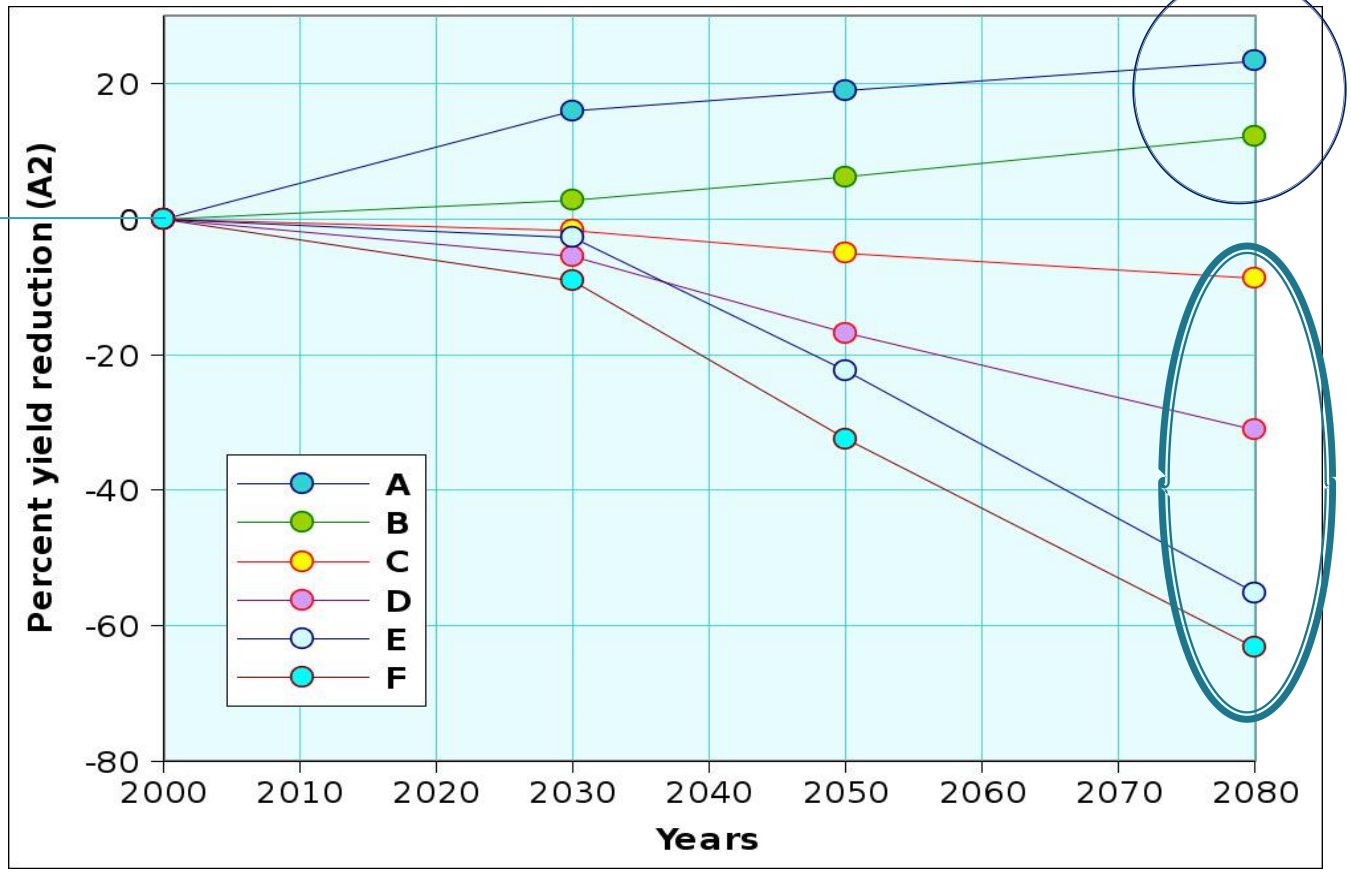


Source: IPCC (2007)

Projected yields in Morocco

0%

Yield Variation



Irrigated crops

Rainfed crops

A: *irrigated maize and irrigated seasonal vegetables - B: irrigated fruits and vegetables - C: fodder crops and vegetables - D: rainfed cereals and legumes - E: rainfed wheat and barley - F: Other rainfed crops*.

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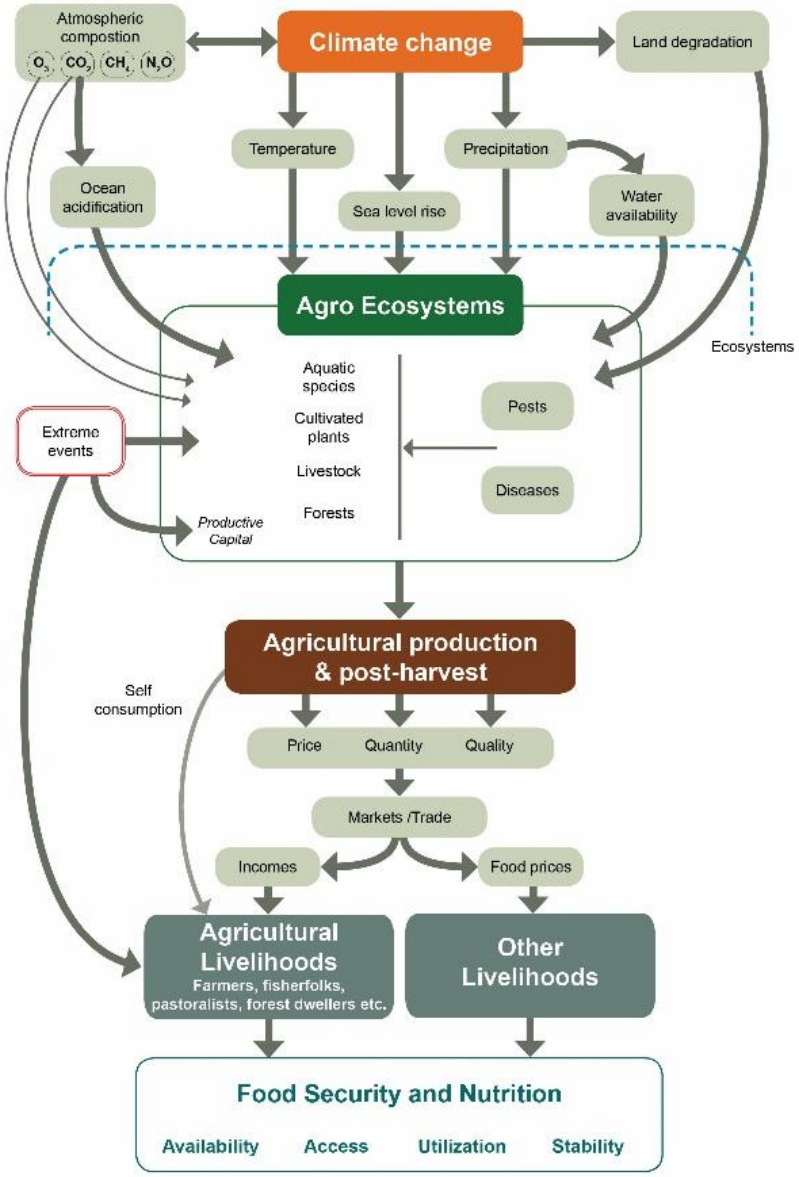
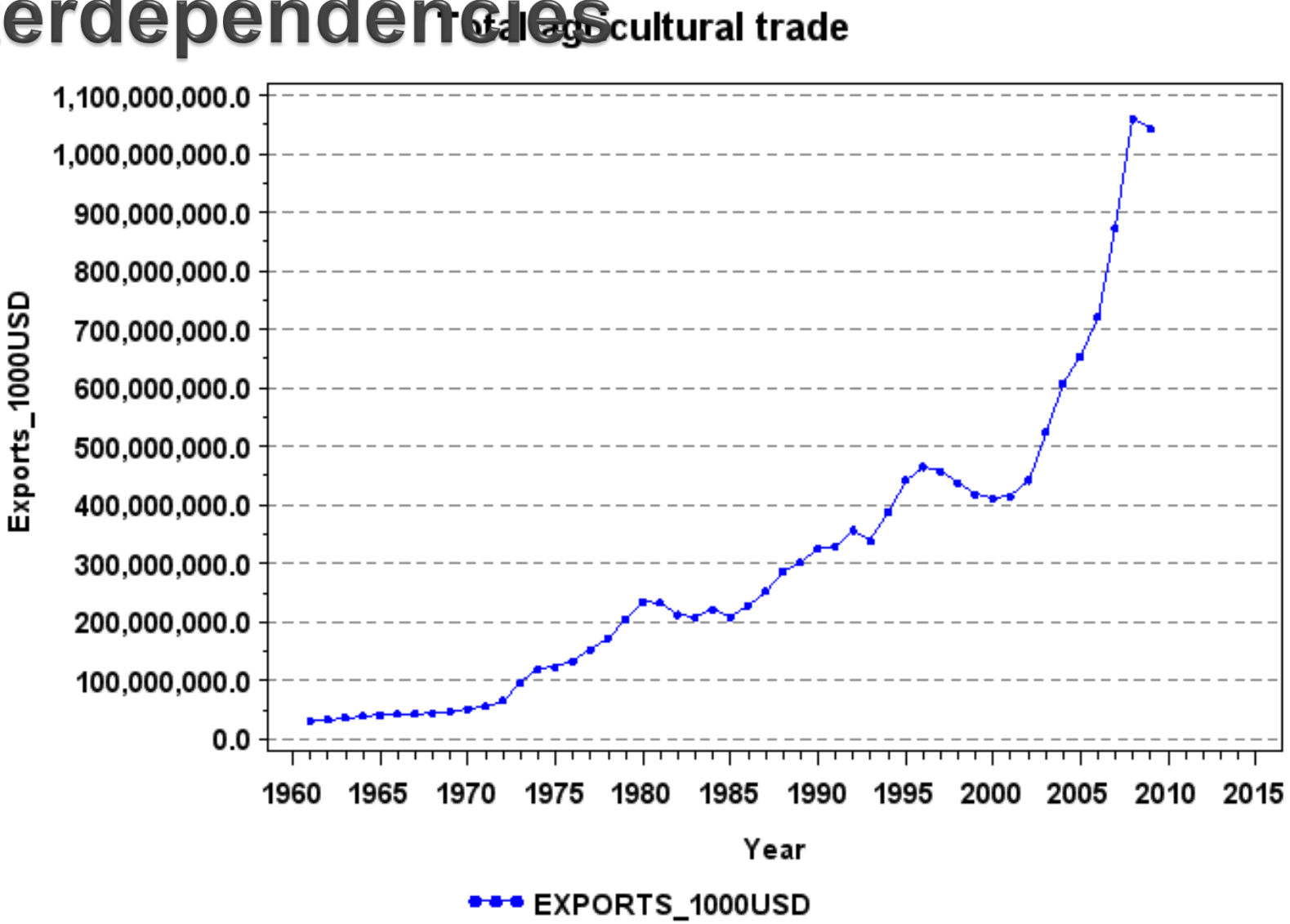
Cascading Impacts

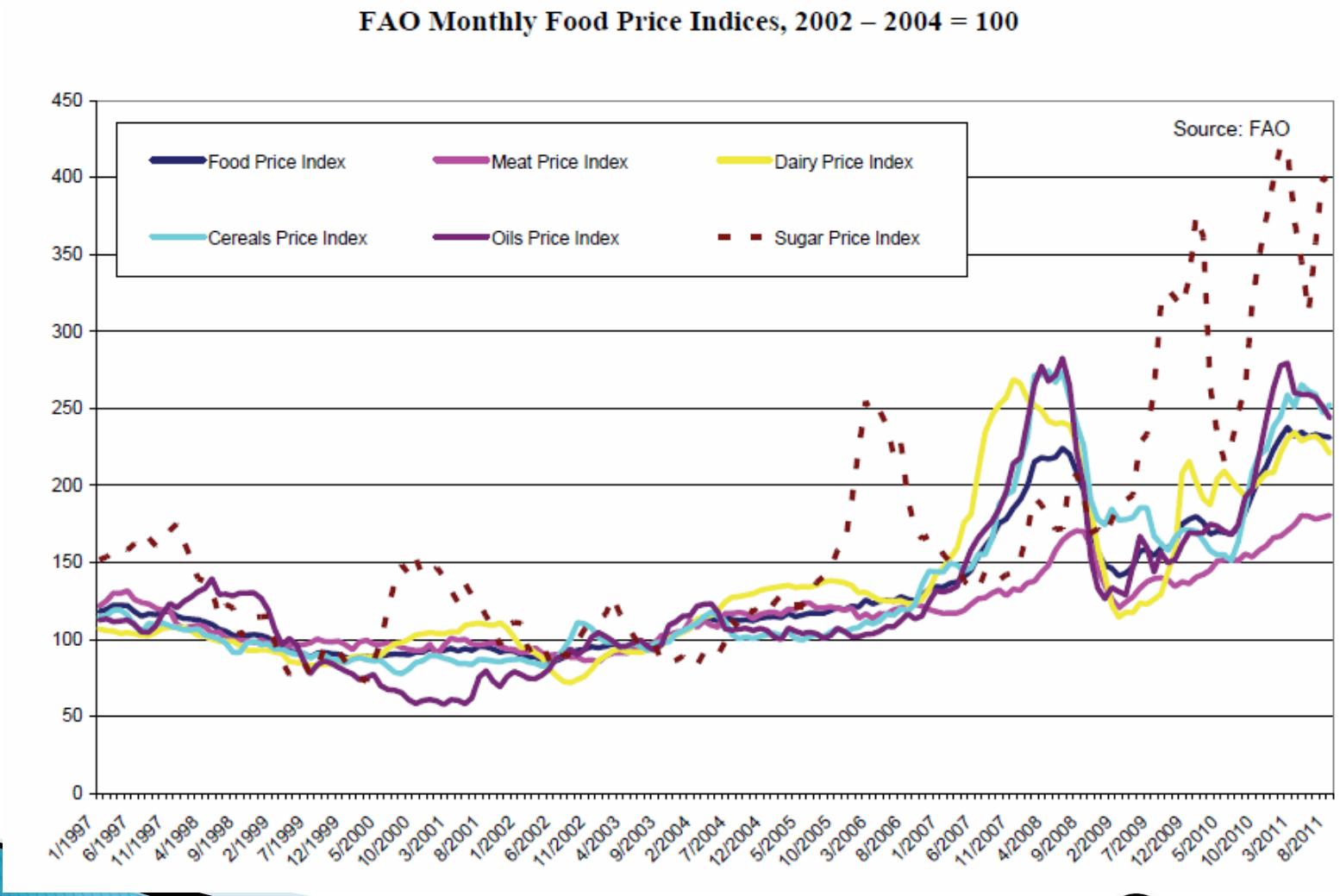


Globalization and economic interdependencies



Source: Faostat Database

Food price increases and high price volatility



Source: FAO, 2011

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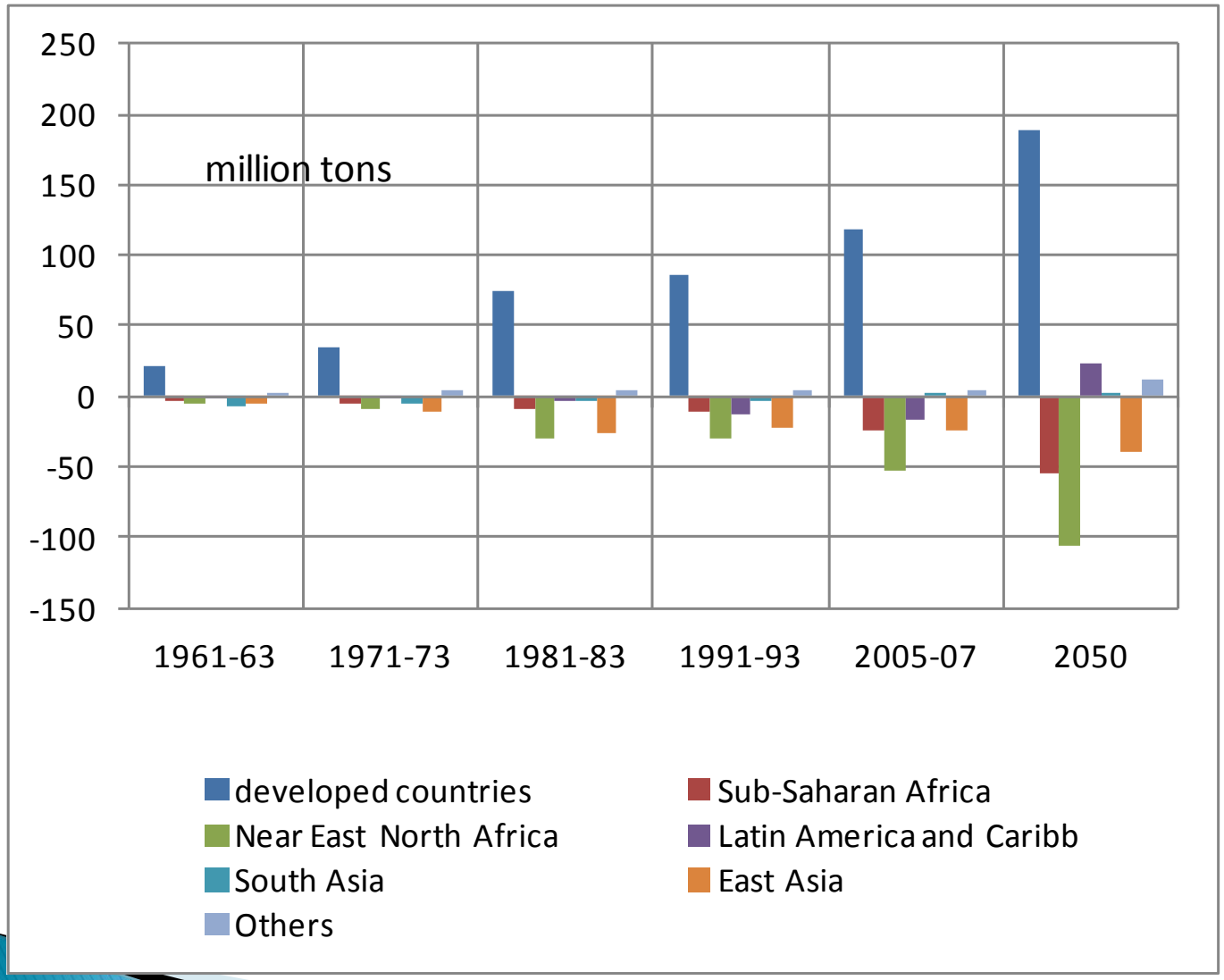
Past and projected evolution of cereals net trade



Source: AT2050

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Methodological challenges

- From global theoric to concrete, operational
- Avoid risk of paralysis
- Pluri/transidisciplinary
- Determine priorities
- Provide clear and complete information

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Transform food systems?

- Production systems
- Lifestyles
- City planning
- Food culture
- Drivers of change?

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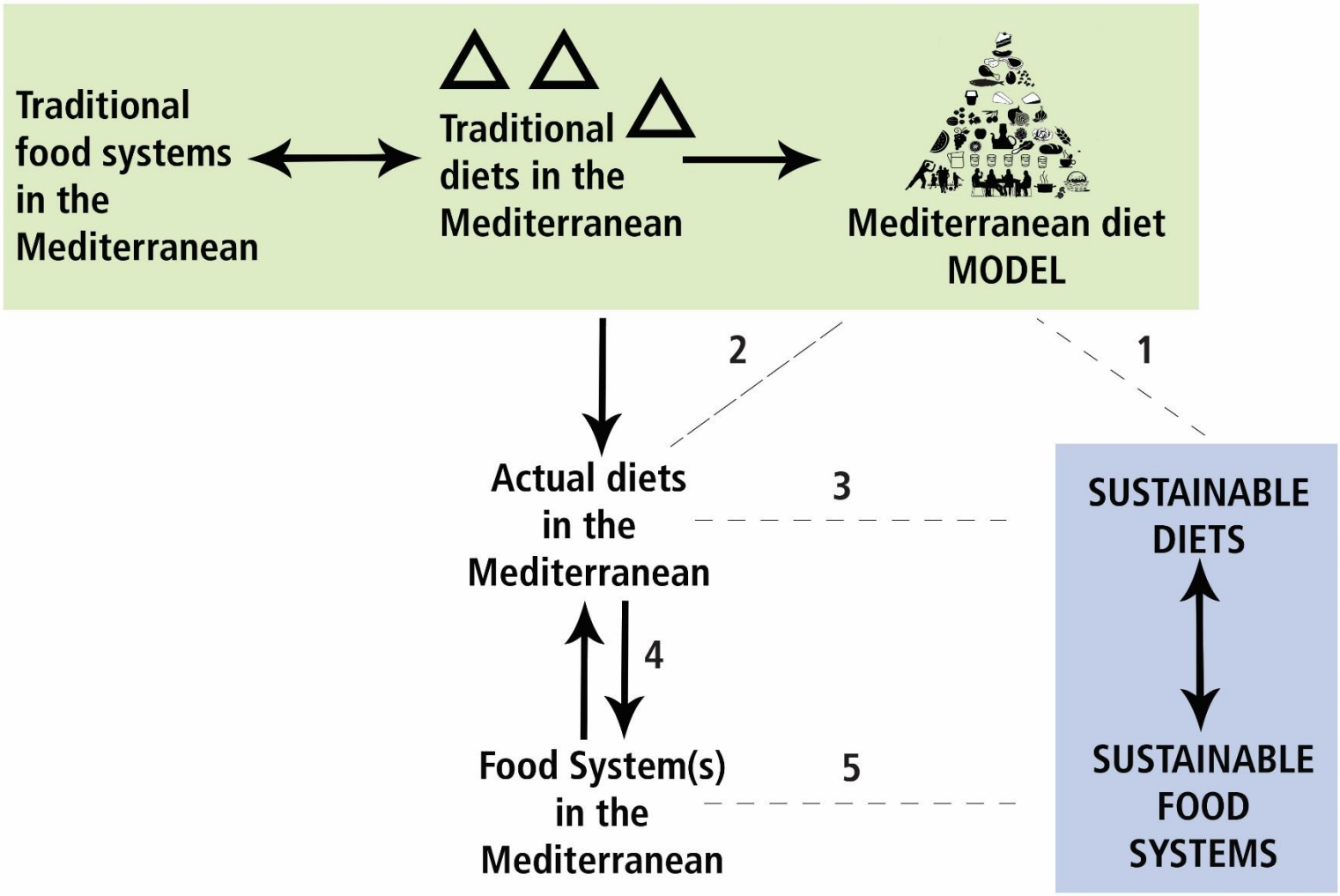
From concepts to actual diets



Governance of what?

- natural resources
  - shared resource (water, fish, pasture)
  - shared space (forest, protected area)

- food chain

- voluntary standard

- territory

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Governance: how?

- places, institutions
- inclusiveness
- commun understanding of the issues
- shared values?
- shared knowledge (assesment, monitoring)

Opportunities

- The Mediterranean as a case study
- Tradition of dealing with/ managing resource scarcity
- Strong tradition of « integrated approaches » (geography)
- Human capital
- Identity

- Mediterranean as a model. Ex water management, diet…