

An approach to the multidimensional assessment of food security and environmental sustainability: A vulnerability framework for the Mediterranean region

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Introduction

Food and nutrition security and environmental sustainability are indispensable prerequisites for human sustainable development and, presenting several interrelated factors of change, need to be jointly evaluated.

Multidimensional approaches and modeling tools are strongly demanded for capturing essential nonlinearities and complex behavior in a sustainable food system perspective.

The Mediterranean region is a geographically interlocked and heterogeneous area, presenting conditions of vulnerability leading to food and nutritional insecurity and related environment degradation.



Poor consumption and dietary transition, leading to the double burden of malnutrition (over and undernutrition), are closely related to behavioral socioeconomics and environmental drivers affecting the food system.



Policy-makers need evidence-based information to lead public policy interventions towards sustainability.

Indicators are essential in informing action but need conceptual contextualization and methodological organization to be expressed.

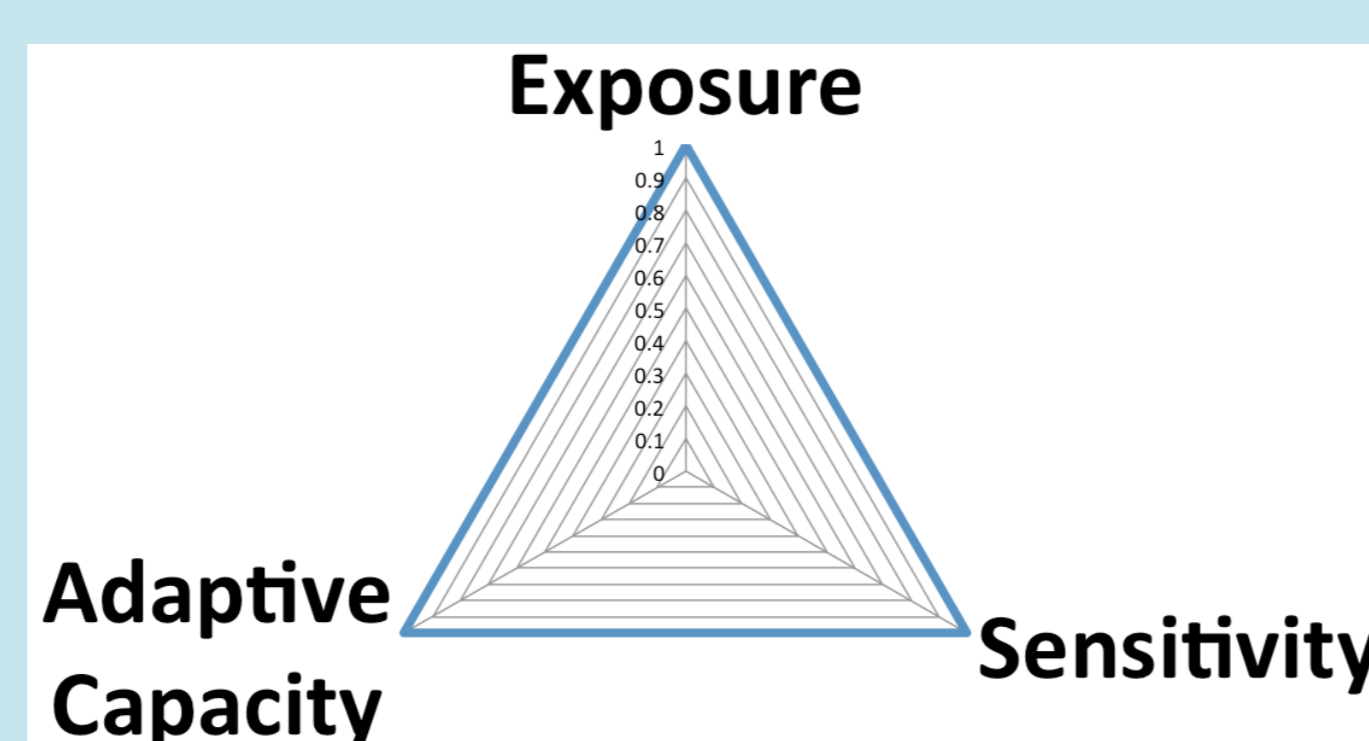
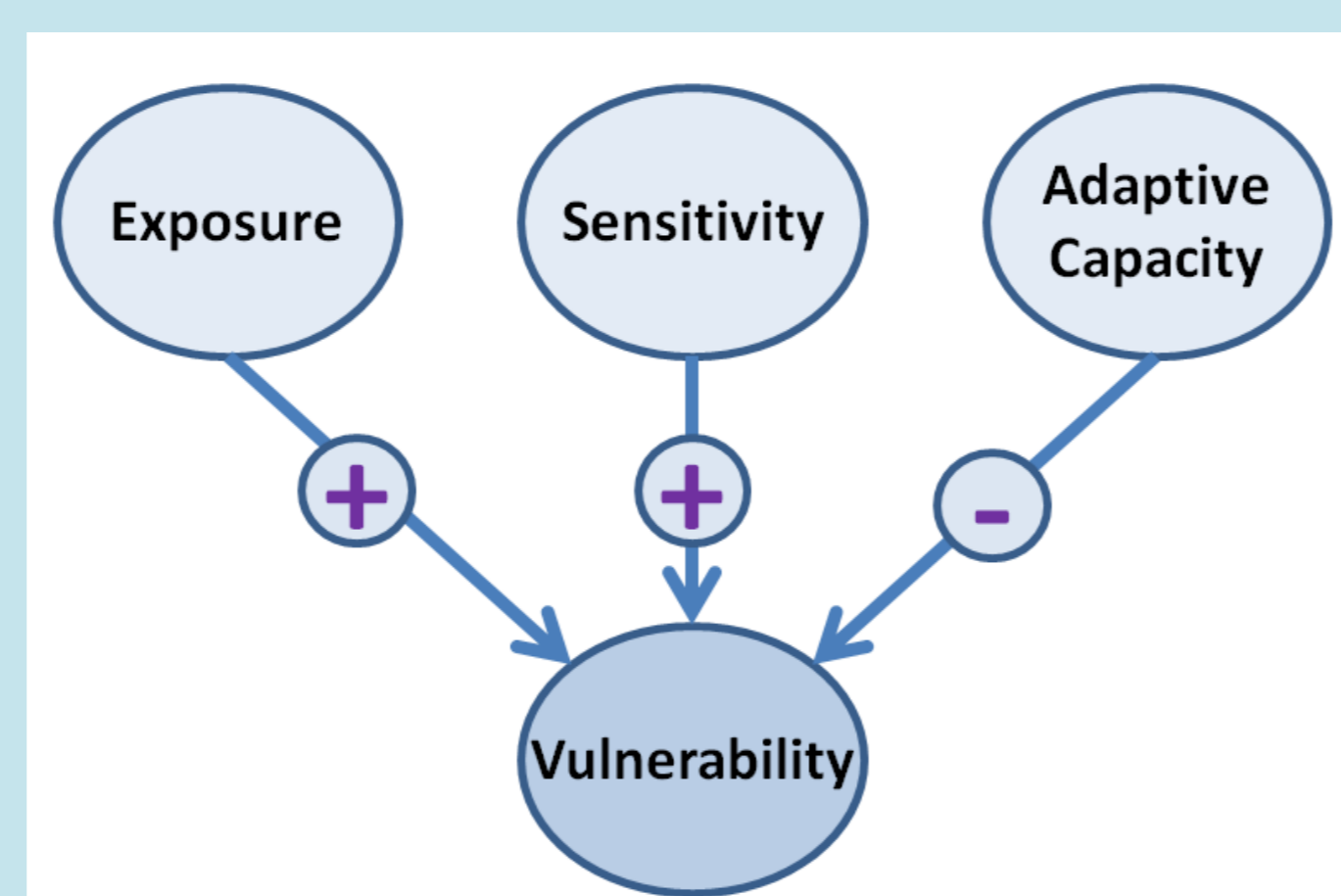
Aims

Creating a framework to link concepts, methods and metrics, for a multidimensional joint analysis of food and nutrition security and environmental sustainability.

Achieving evidence-based scientific knowledge and metrics to inform stakeholders, including policy-makers on response interventions to major changes at national and regional scale.

Methodological approach

- A coupled issue-vulnerability approach is applied to the analysis of sustainable food security and diets, using methods from natural disaster and sustainability sciences.
- A causal factors approach analyzes the vulnerability hotspots and the dynamics of phenomena, instead of directly targeting the final outcomes.
- Exposure, Sensitivity and Resilience are components of vulnerability that are taken into account for the assessment.
- A DELPHI selection process is used to select the relevant indicators.



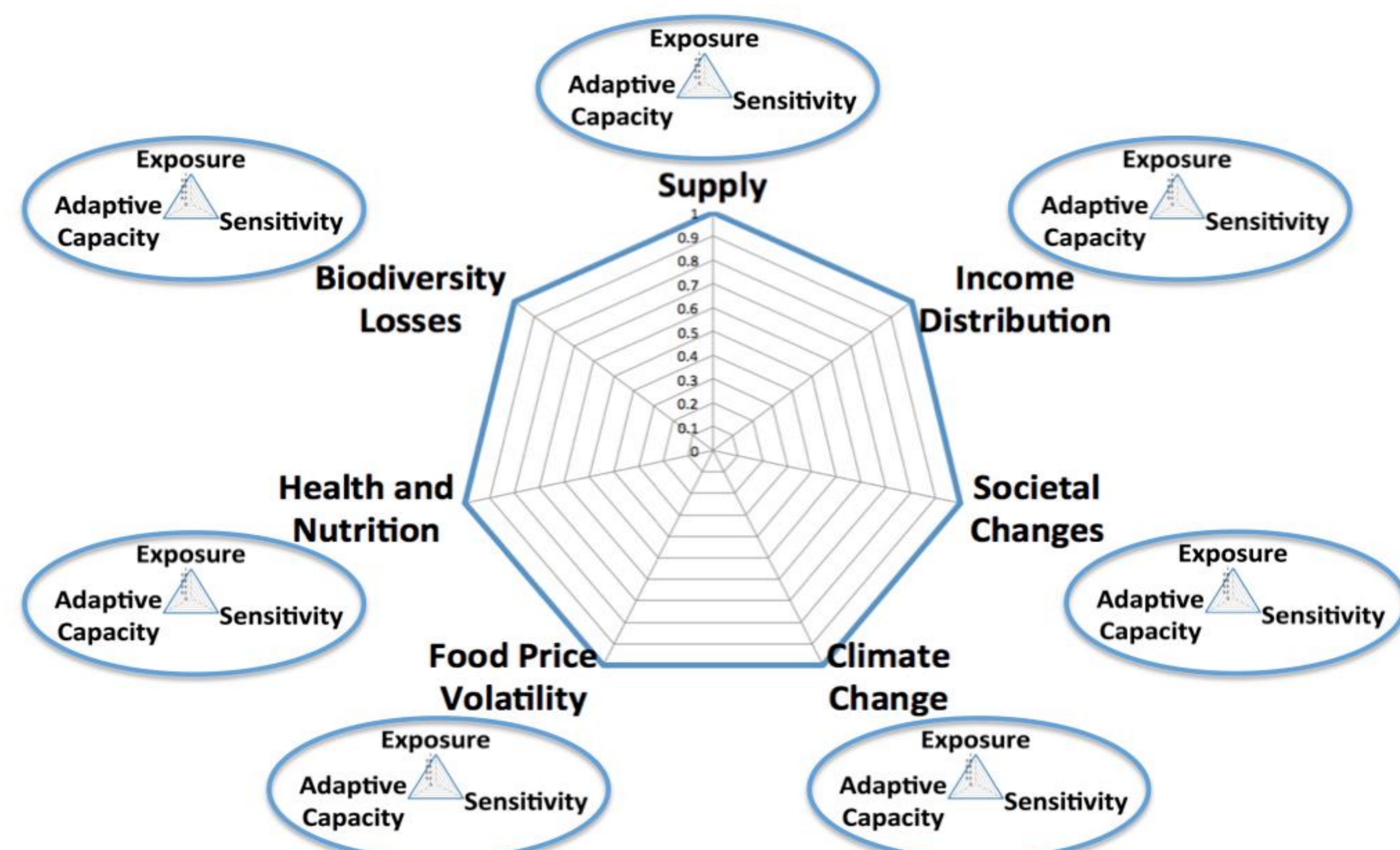
Results

An innovative and coherent assessment framework is identified for measuring the sustainability of food systems.

The framework improves metrics and information analysis, introducing novel methods for scientific knowledge.

Improving information, through causal factor analysis, deepens the understanding of phenomena for decision-making and response purposes.

Participatory and multidisciplinary vulnerability-based methods indicate direction for assessing environmental, economic, social and health impacts and factors of change affecting food and nutritional security and environmental sustainability in a sensitive geographic region.



Conclusions

The vulnerability approach enables investigating causal factors as sequential dynamics of the food system.

Issues and challenges for food security and environmental sustainability have to be defined before choosing assessment methods.

Use of the participatory approach of the DELPHI method allows objective evaluations, reaching consensus.

Vulnerability approach and analysis are necessary for sustainability research, providing conceptual and methodological understanding of food security, and global change knowledge connecting science and decision-making.

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Research activities:

We are applying this methodology at a national level to study several critical food-related issues in Mediterranean countries, recognizing the role of experts through the Delphi method.

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