# INNOVATION FOR SUSTAINABILITY

## Small Farmers Facing New Challenges in the Evolving Food Systems

**Edited by** Gianluca Brunori, Stefano Grando

RESEARCH IN RURAL SOCIOLOGY AND DEVELOPMENT

**VOLUME 25**

# INNOVATION FOR SUSTAINABILITY

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# INNOVATION FOR SUSTAINABILITY: SMALL FARMERS FACING NEW CHALLENGES IN THE EVOLVING FOOD SYSTEMS

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Howard House, Wagon Lane, Bingley BD16 1WA, UK

First edition 2020



**British Library Cataloguing in Publication Data**
A catalogue record for this book is available from the British Library

ISBN: 978-1-83982-157-8 (Print)
ISBN: 978-1-83982-156-1 (Online)
ISBN: 978-1-83982-158-5 (Epub)

ISSN: 1057-1922 (Series)


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Certificate Number 1985
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# LIST OF ACRONYMS

| | |
|---|---|
| AHM | Agricultural Household Model |
| AKIS | Agriculture Knowledge and Innovation Systems |
| CAP | Common Agricultural Policy |
| CFS | Community food security |
| CSP | Conditions-Strategies-Performances |
| FAO | Food and Agriculture Organization of the United Nations |
| FNS | Food and Nutrition Security |
| GMO | Genetically Modified Organism |
| HACCP | Hazard Analysis and Critical Control Points |
| HLPE | High Level Panel of Experts on Food Security and Nutrition |
| IA | Institutional Arrangements |
| ICT | Information and Communications Technologies |
| IMF | International Monetary Fund |
| MEA | Millennium Ecosystem Assessment |
| MLP | Multilevel Perspective |
| OECD | Organization for Economic Cooperation and Development |
| RD | Rural Development |
| RR | Reference Region |
| SCP | Structure-Conduct-Performance |
| SES | Socioecological Systems |
| STS | Sociotechnical Systems |
| UNEP | United Nations Environment Programme |
| VSD | Vulnerability Scoping Diagram |

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# FOREWORD

The volume provides an in-depth exploration of the determinants, dynamics and outcomes of rural and agricultural change processes, with a special focus on the role of family farming.

Covering both the system and the farm level of analysis, the book offers a comprehensive view of approaches and models capable to grasp different complementary aspects of the development trajectories followed by farms, food systems and territories facing multidimensional drivers of change and exposed to a range of vulnerability factors. The emerging characters and roles of innovation networks and social learning, as well as the decision-making processes at the farm level are explored in particular depth, with attention to the multidimensional societal expectation from agriculture, family farms and rural areas, with specific attention to food and nutrition security concerns.

The contributions have been first elaborated as conceptual frameworks of some recent EU-level research projects, with the participation of a wide range of contributors with diverse scientific, professional and geographical background. This gives the volume the capability to interpret the plurality of agricultural change and innovation processes taking place in different spatial contexts, with specific attention to the role small farmers can play in these processes.

The original documents have been adapted for this publication in a volume, while retaining their specificity. This background makes each contribution readable as a document in itself as well as in continuation with one another. It also involves a limited degree of overlapping, as some concepts or categories are addressed in more than one chapter. Far from creating redundancy, we believe this gives the reader the opportunity to confront with an issue or a conceptual category through different lenses and from different perspectives, deepening their understanding. The references made from one chapter to another aim at the same objective.

More specifically, the large part of Chapter 1 comes from the framework developed for the project SALSA[1]; Chapters 2, 3 and 4 (with the related Appendix)

[1]SALSA – Small farms, small food businesses, and sustainable food security. Funded under Horizon 2020, grant agreement n. 677363. http://www.salsa.uevora.pt/en/.

are the result of the unpacking of the framework of TRANSMANGO[2], with some elements taken form SALSA project outcomes in Chapter 2; Chapter 5 is an exception, as it reproduces with some adaptation a paper already published by the authors[3]; Chapter 6 comes from the framework of SUFISA[4] whereas Chapter 7 (and most of Chapter 8) relies on the work carried out for the framework of INSIGHT.[5]

[2]TRANSMANGO – Assessment of the impact of drivers of change on Europe's food and nutrition security. Funded under the seventh FP, grant agreement n. 613532. http://www.transmango.eu/.

[3]Brunori, G., Galli, F., & Grando, S. (2016). Sustainable agri-food systems: A reflection on assemblages and diversity. *Systèmes alimentaires/Food Systems*, 1, 21–39. Classiques Garnier, Paris, 2016.

[4]SUFISA – SUstainable FInance for Sustainable Agriculture and fisheries. Funded under Horizon 2020, grant agreement 635577. https://www.sufisa.eu/.

[5]INSIGHT – Strengthening Innovation Processes for Growth and Development. Funded under the sixth FP, contract n. 44510. https://cordis.europa.eu/project/rcn/84139/factsheet/en.

# ACKNOWLEDGEMENTS

The editors and the contributors are deeply grateful to all the colleagues that have participated in the activities of the projects whose conceptual frameworks have been adapted for this publication. Any research project, and any outcome of such projects, is a collective endeavour to which each partner and each involved person contribute. Special thanks also to Sophie Barr and Emma Leverton, who helped the editors in the complex work of revision and refinement of the book's content and editing.

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# INTRODUCTION

Stefano Grando and Gianluca Brunori

## ABSTRACT

*The Introduction describes the rationale and the aim of the book, together with an overall view on its content with a brief illustration of the content of each of the following chapters. The various chapters provide a wide-ranging multidisciplinary exploration of approaches and models capable to account for small farm's role in the food system and in its outcomes, with specific attention to food and nutrition security and system resilience, as well as to suggest policies capable to influence the food systems' development trajectories towards sustainable configurations.*

**Keywords**: Conceptual framework; small farming; family farming; food system; food and nutrition security; innovation

Small farms represent an important component of food systems and rural areas, as a source of occupation and livelihood, elements of social and economic diversity, cradles of grass-root innovation and experimentation, co-creators of landscapes. Their role in the achievement of important societal challenges such as Food and Nutrition Security (FNS), resilience and sustainability of food systems and of rural areas is widely recognized. However, their capacity to adapt to changing conditions and to contribute positively to the emerging societal

**Innovation for sustainability**
**Research in Rural Sociology and Development, Volume 25, 1–6**

**ISSN: 1057-1922/doi:10.1108/S1057-192220200000025002**

challenges depends on their capacity to innovate and on the effectiveness of their strategies they can implement.[1]

This suggests the need for a systemic understanding of those dynamics, based on a conceptualization of farms' environment as a source of vulnerability and change, but also as a cradle of opportunities. This conceptualization requires thinking in terms of 'food systems', considered in both their functional and their territorial dimensions (the latter being particularly relevant when dealing with small farming) and with specific focus on their capability to provide expected outcomes, first and foremost FNS. Within this context, small farms' strategic choices and innovation trajectories can be observed, to derive elements useful for a reflection on the policies better suited to support these dynamics.

The book provides a wide-ranging multidisciplinary exploration of approaches and models capable to account for small farm's role in the food system and in its outcomes, with specific attention to FNS and system resilience, as well as to suggest policies capable to influence the food systems' development trajectories towards sustainable configurations. The aim is to develop a conceptual framework guiding further research and policy design, to move progressively towards higher FNS and to enhance food systems' capability to meet societal expectations in a sustainable way, with a valorization of the role of small farming.

## AN OVERALL VIEW ON THE BOOK'S CONTENT

Fig. 1 provides a comprehensive view over the various sections in which the book is articulated. Small farms are analyzed in the context of the food system within which they operate. The first part focuses on the food systems and their

[1]We acknowledge the tremendous heterogeneity in small farm socioeconomic, cultural and technological situations with related concepts and discourses, and the need to be able to accommodate very different social, cultural, economic and historical situations. Besides, the strict connection between farm and household needs in farmers' decision-making processes raises the issue of the difference between small farming and family farming. Most of small farms, but not all, are family farms, and also many large farms are family owned. In addition, as argued by the Food and Agriculture Organization of the United Nations (FAO) family, farms represent an extremely diverse group with different socioeconomical and agroecological conditions (FAO, 2014). The different definitions, and the different contexts to which those definitions are applied, may require a combination of criteria tailored to each region in order to have meaningful aggregations of data about 'family', but also 'small' farms. An example is given by the think-tank GRAIN (2014) that adopted different thresholds for the identification of 'small' farms (ranging from 200 ha in Argentina to 1 ha in Vietnam). The observation of the diversity of the criteria utilizable to identify a small farm, and the reflection on the strong and weak points of the various solutions, link the final decision to the specificities of each exercise (case study, policy measure, etc.) and leaves the room open for context-based criteria based on qualitative elements (forms of farm–household relations, relational patterns with the food system and with the broader general environment), alongside quantitative ones.

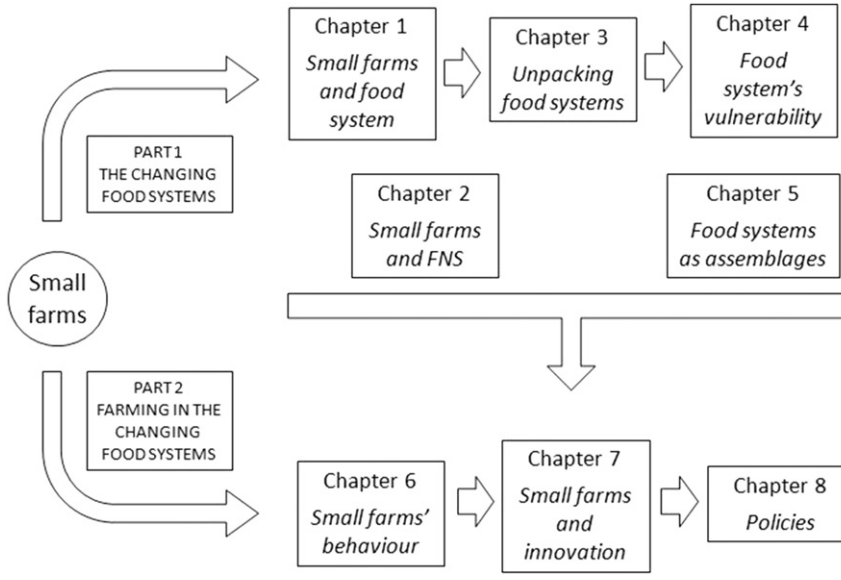


*Fig. 1.* An Overall View on the Volume.
*Source:* Author created.

relations with small farming, and on FNS, seen as one of the main system outcomes to which small farms can contribute, preparing the ground for the more small farms-centred second part. The horizontal arrows connect the chapters that more strictly follow each other. Chapters 2 and 5 provide key additional elements of the overall picture: an insight into FNS as one of the key system outcomes, and a different complementary vision of the food system, respectively.

Chapter 1 provides a first systemic analysis of the environment in which small farms operate. The food system is first represented in its functional elements, to be then explored in its spatial dimension. Food systems are not detached from the territory: an effective conceptualization must take into account the geographical dimension in which actors operate, originating material and immaterial flows. Thus, Chapter 1 provides a conceptualization of territorialized food systems, seen as a set of relations between actors located in a regional geographic space and coordinated by territorial governance (Rastoin, 2015). Analyzing a food system in the context of a specific territory, geographical elements like distances, spatial distribution, physical and administrative borders become key factors that influence the systems' capability to provide sustainable FNS and the other goals society expects from them. Besides, this territorial approach is particularly suited to valorize relevance, limits and potentials of family farms' contribution to these outcomes.

Among the food system's outcomes, FNS remains a key concern also in developed countries. Chapter 2 analyzes food and nutrition security unpacking

the four dimensions in which the concept is articulated: availability, access, utilization and stability. Then the concept is explored, beyond the official definitions, by getting through the various frames that shape the public debate on food and nutrition security. These frames are: the classical productivist view emerged in the early post-war period; the neo-productivism, promoting a sustainable intensification aimed at producing more food while reducing negative environmental impacts; the entitlement approach based on Sen's reflections on people's capability to access food; the food sovereignty (Via Campesina, 1996) which regards food insecurity as an outcome of unequal power relations; the livelihood approach focused on the assets that determine the living gained by the individual or household; the right to food (De Schutter, 2014) based on the status of each individual as a rights-holder; the similar but less individualistic food democracy and food citizenship perspective; the community food security, again close to the food citizenship but with emphasis on communities and localization. Finally, small farms' contributions to food and nutrition security are accounted for, on the base of the SALSA project outcomes.

Chapter 3 deepens the analysis of the food system, unpacking the model and exploring each of its assets and functions, with an eye on power relations among actors and on the main drivers of change. To analyze more deeply and in a systemic perspective food system outcomes, and the contribution that small farming can give to the achievement of those outcomes, a detailed analysis of food systems is required, which highlights its components, activities and dynamics. This analysis, which represents the focus of this section, provides the base for the description of the food system vulnerability developed in the following Chapter 4. Drivers of change and governance emerge as key categories to consider. Governance (that also includes actors external to the food systems) is called 'reflexive', as long as it characterizes a system that is able to reflect upon the conditions and the forms of its own functioning, to detect and analyze threats and to change accordingly (Voss, Bauknecht, & Kemp, 2006), with the involvement of actors external to the food systems.

In Chapter 4, the focus moves to food systems' vulnerability. In a rapidly and unpredictably changing world, vulnerability of farming and food systems becomes a key issue. The conceptual bases for food vulnerability analysis and food vulnerability assessment are discussed in a systemic perspective with an eye to the transition approach (Geels, 2004) as a perspective capable to analyze how novelties can develop and influence the system capability to fulfil societal functions, and FNS in particular. First, a framework for assessing people food vulnerability is presented together with a simple vulnerability model where the three dimensions of exposure, sensitivity and adaptive capacity are considered (Adger, 2006). These models are then used in the Appendix to Chapter 4 as a base for the development of a seven-step method for conducting participatory vulnerability assessments of the food systems.

A further step in the development of a representation capable to grasp food systems' complexity is developed in Chapter 5. Food systems are neither fully consistent structures resulting from an overall planning, nor stable a long time. The transition towards more sustainable and less vulnerable food systems

capable to pursue FNS goals in a changing environment needs organizing the diversity of food models that coexist within a territory, which involve different actors and evolve over time according to the changing actors' objectives and capabilities. Understanding this picture requires a shift from a systemic to an 'assemblage' approach (DeLanda, 2006), where actors engage themselves in different configurations, on the base of their different agendas. Four levels at which assemblage processes can occur are identified in the chapter: around a firm, a function, a town or a region. It is within these assemblages that the activity of small players and their contribution to sustainable FNS can be effectively identified and possibly promoted.

Chapter 6 opens the second part of the Volume, focussing on the small farms' role and dynamics within the evolving food system. Assessing small farmers' actual and potential contribution to the change towards a sustainable FNS requires a deep understanding of their strategic decision-making processes. These processes take place in a context highly conditioned by internal and external conditions, including the complex relations between farm and household, which are mapped and described. Building on an adaptation of a Porters' model (Porter, 1990), the chapter investigates how farmers, given those conditions, define their strategies (in particular their innovation strategies) aimed at economic and financial sustainability through a multidisciplinary analysis of scientific literature.

The way is now paved to analyze innovation systems, as in Chapter 7, with a nonlinear and multidimensional vision based on actors assembling themselves in a geographical space where resources and information are used to generate change. This leads to consider knowledge as an asset co-generated by the interaction of different actors within agricultural knowledge and innovation systems (AKIS) (Leeuwis & van den Ban, 2004). Agriculture and countryside are experiencing deep transformations towards concentration and globalization on one side and postproductivism and rural development on the other (Van der Ploeg et al., 2000). These processes of change require innovation policies aimed at pursuing 'second-order' innovation based on new goals and new rules. From a transition perspective (Geels, 2004) these radical innovations can develop within niches to a certain extent protected from mainstream market forces, to be then progressively embodied into higher structuration levels (the 'regimes').

Finally, Chapter 8, which concludes the volume, develops what was argued in Chapter 7 in light of the need to identify policies capable to support sustainable, resilient and food-secure systems where the role of farmers, and small farmers in particular, as active drivers of change is fully recognized. The chapter presents a discussion on innovation policy guidelines consistent with the illustrated frameworks, and on the best governance arrangements to support system change vis-à-vis pressures that are both internal and external to the sociotechnical networks (Smith, Stirling, & Berkhout, 2005). Attention is given to the definition of adequate measures to support transition towards a sustainable, resilient and food-secure system with a valorization of small farms' role.

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# PART I

# CHANGING FOOD SYSTEMS

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