

Innovation in the agri-food system and the bioeconomy

Introduction

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This book focuses on innovation in the agri-food system and the new paradigm drawn by bioeconomic approaches and principles. It draws on contributions presented during the 29th EURAGRI annual conference held in Luxemburg (September 2015) as well as on other workshops organised as part of EURAGRI. EURAGRI is an informal gathering of EU research and higher education organisations and ministries interested in agri-food research. It works as a platform of exchange and discussion on topics of common interest pertaining to the organisation, orientation and outlook of agri-food research in Europe in connection with global changes. It holds annual conferences and organises workshops twice a year.

The topic of the 29th EURAGRI annual conference – and of this book – was chosen as a rather natural response to increasing concerns in the sphere of agri-food research. Additionally, there is a need to tackle increasingly complex issues that develop from pressing societal challenges and the subsequent far-reaching transformations in how agriculture and food systems operate.

The key word is sustainability. Agri-food research is needed to come up with solutions that can simultaneously reduce the environmental footprint of agriculture and agri-food systems, cope with climate change, provide a fair income to farmers and other economic agents in the system, and ensure a reliable supply of safe and healthy food and other biomass-based products at a reasonable price. It must also answer citizens' concerns about fairness and ethics and foster social acceptance of innovations.

Foresight studies can help imagine the shape of our future in this regard. The fourth SCAR foresight exercise, the executive summary of which is included in this book¹, sets the scene of the emergence of a bioeconomy that is able to respond to societal challenges thanks to holistic and reflexive governance. The bioeconomy in a desirable future will be based on giving top priority to food production when trade-offs between different biomass uses are required, on the cascading approach to biomass exploitation and on a waste-free circular economy. How the bioeconomy operates will depend on the relative balance of biomass supply and demand. The desired bioeconomy will be intensive in knowledge, widely participative and inclusive. It will be centred on people, departing from the agri-food systems of today and of the past, primarily based on narrow economic paradigms and where technological innovation is often imposed by dominant actors. It is to be expected that social sciences and the humanities will take a crucial, if not leading, role in illuminating research and facilitating implementation.

The emergence of the bioeconomy has far reaching effects on the way our agri-food research system is organised and operates. This is precisely the theme of the 30th EURAGRI annual conference (Tartu, Estonia, September 2016).

Research alone is, of course, unable to design and implement solutions to such complex issues and to impose the emergence of a sustainable bioeconomy. Co-ordinated efforts by all stakeholders – starting with decision makers – are required, as there is an urgent need to align sector-focused

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¹ We would like to express our appreciation to the European Commission for allowing the inclusion in this book of the executive summary of the fourth SCAR foresight exercise.

policies. As will be discussed in the following pages, the EU has already started to co-ordinate its Common Agricultural Policy and research policy (as part of Horizon 2020) via the European Innovation Partnership for Agriculture (EIP-AGRI). Some Member States, such as Luxembourg, have begun to do the same.

In addition to sound policies and a smart research system, the emergence of the bioeconomy of our desired future will depend on involvement from all stakeholders. Here, the key word is innovation. The word innovation expresses the conviction – as noted in one of the chapters in this book – that our future belongs to us, that it is not imposed by determining factors, constraining as they may be. While innovation has now become a buzzword, it has been extensively used over only the past decade when we realised that societal challenges were the key drivers of agri-food systems and that as a result, simple, one-directional, linear solutions were becoming insufficient. Sustainability itself can be considered an innovation as it can only be obtained by the commitment of all to change our ways. Measuring sustainability is a good illustration of the innovation process in all its complexity. It requires differing views and interests from different fields to be reconciled (see the remarkable contribution by Vera Bitsch in the following pages).

A considerable part of this book is devoted to the innovation paradigm and deals with the new concept of the knowledge and innovation system (KIS). The KIS (or AKIS for our concerns – agricultural knowledge and innovation system) reflects the way stakeholders interact in the agri-food system and beyond to produce a range of innovations (technological, organisational, social, etc.) aimed at solving their problems and addressing their concerns. Such innovations often combine features that are endogenous and exogenous to the agri-food systems. To be suited to the bioeconomy of our desired future, the AKIS must tackle radical and systemic innovations. It will help to cope with large economic risks and put a new focus on human capital by fostering new approaches to education and capacity building. It will strengthen the professionalism of how interactions between actors of the so-called “triple helix” (government, industry, academy) are managed. It will promote the structuring of triple helix clusters at the local level to encourage innovation. Universities and other knowledge organisations will build incentive and reward systems to motivate researchers and academics to engage private operators and civil society, while public policies will boost public-private partnerships.

Readers may find the lines above idealistic and unrealistic. This may be so, but the examples and case studies presented in this book allow for cautious optimism. It is interesting that such encouraging case studies come from the horticultural sector, one of the sectors which is most exposed to wide fluctuations in consumer demand and which has undergone far-reaching technological and organisational changes in the past decade, requiring for rapid adaptation and restructuring. The demand for sound support to innovation has been high in the sector and has resulted in the establishment of a partnership with the Swedish University of Agricultural Sciences (SLU, Alnarp campus), a regional innovation platform with the abovementioned characteristics. This initiative was soon used as a reference in Sweden and beyond, such as in the German national strategy for the horticultural sector designed by the Leibniz Institute of Vegetable and Ornamental Crops (IGZ).

The book also describes difficulties encountered by certain AKIS set in cultural and historical contexts that are unfavourable to knowledge circulation and sharing due to a generalised lack of trust between stakeholders. This is the case of the Opole Voivodship in Southern Poland presented in Chapter 6, where information and knowledge are retained by actors for their own short-term benefit. This jeopardises innovative projects that could accomplish more than simply spending public money allocated to creating innovation clusters in that region.

The emergence of multidimensional AKIS and the gradual development of the bioeconomy organised around the cascading approach and the principles of the circular economy call for revisiting the value chain concept. The way to understand value chains must evolve to take into account the cascading approach, the zero waste principle, the collapse in energy and matter flows and the central importance of human capital and trust. This book provides a cutting-edge value chain analysis that convincingly shows the need to renew conceptual approaches to food systems. The growing acknowledgement by value chain analysts of the growing role of social factors, the necessary – if difficult – connection of scales (from local to global) and temporalities (what are the cultural roots of social values?) call for new paradigms and concepts based on the principles of the bioeconomy and the circular economy.

This book is the first of a series of EURAGRI e-books. They offer a way to share the insights gleaned from the constructive interactions of the EURAGRI conferences and workshops with those who did not attend.

