Organic World Congress 2020 | FRANCE

SEPTEMBER 21ST TO 27TH, 2020 IN RENNES
AT THE COUVENT DES JACOBINS • RENNES MÉTROPOLE CONFERENCE CENTRE
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OWC 2020 Paper Submission - Science Forum

Topic 3 - Transition towards organic and sustainable food systems

OWC2020-SCI-786

WHAT ARE THE POLICIES NEEDED TO UPSCALE ORGANIC FOOD CHAINS? FINDINGS FROM THE TYFA SCENARIO EXERCISE

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Preferred Presentation Method: Oral or poster presentation

Full Paper Publication: Yes

Abstract: Upscaling organic farming (OF) and agroecology (AE) in Europe will have major implications across the whole food-chain. As both the intensity and the geography of food production would undergo significant changes, it will affect the current rationale of the entire food chain, namely collectors, processors, traders, retailers and at the end, consumers. The challenge is to identify how the business models should evolve at each link of the chain to accompany the large scale transition towards OF/AE, thus delivering the specific food attributes associated with OF/AE.

Based on the Ten Years For Agroecology scenario (TYFA), the paper first identifies the structural changes implied in food chains organization by a full transition to OF/AE across Europe. It then explores the policy changes needed at the EU level in order to accompany such a transition. The range of policies concerned is wide. The proposed analysis may inspire an EU policy agenda towards sustainable agriculture and food.

Introduction: The dominant food system rationale leads to global environmental impacts, such as climate change (IPCC, 2019) and biodiversity (IPBES, 2019) . The need to consider sustainable farming in the wider frame of sustainable food systems is now a well-established result (iPES Food, 2016). OF is now identified as a credible option to address those concerns (Muller *et al.*, 2017), although its compatibility with a “carbon-neutral” world has been debated. In the case of Europe (EU), Poux & Aubert (2018) suggest that the generalization of agroecology, encompassing the basis of organic farming is a defendable option for both climate and biodiversity, provided a shift towards a flexitarian diet.

However, the nature and magnitude of biotechnical changes associated with such assumption question the entire food system, which in its present rationale is not consistent with the upscaling of organic farming. The paper addresses what are the needed changes and what are their policy implications.

Material and methods: The present paper is based on analysis carried on in the TYFA project. The first stage of this project proposed an original modelling of agricultural production at EU 28 level, assuming that the entire production turns to agroecological methods (Poux & Aubert, 2018) . Such methods encompass the fundamental of organic farming, namely pesticide-free and synthetic fertilisers-free production. A key characteristic of TYFA is to connect permanent grassland fertility cycles (through ruminants) with cropping systems.

TYFA's assumptions leads to major changes in production. Its intensity drops, with positive environmental impacts, with -30% and -45% in physical gross output for, respectively, vegetal and animal production. The need to close fertility cycles at territorial level also reshuffles the geography of crop and animal production towards non specialized regions.
The implications of these changes in production patterns (intensity and geography) on food value chains re-organisations, business models transformations and policy changes needs have been explored using a food system model characterizing fluxes of food / feed / industrial uses within Europe, and between Europe and the rest of the world.
The analysis has followed four main steps:

1. Characterization of the key features of the existing European FS along two main dimensions (material fluxes + business models)
2. Identification and analysis of the **current policies** underlying the current food system organization
3. Analyse of the **consequences of changes of material fluxes** taking place in TYFA onto **food chain business models**
4. Development of assumptions on the **policy changes** needed in order to support the occurring of (3).

Results: The structure and governance of today's food chains within our food system has been extensively described. A key result of our literature review is that the dominant agro-industrial food system stands on the production of the largest amount of commodities in concentrated areas of supply, following an economy of scale logic (IPES Food, 2016). The economic organization of the food market at the boarders of EU (global markets) and within the EU (domestic) set standards influencing production patterns. In return, the global companies influence policy making on these standards accordingly to their own interests.
While the Consumer's choice is frequently presented as the main driver for change towards more sustainability, this choice appears as being influenced by a set of factors (price, sanitary standards, marketing and information,…) which are themselves connected to a set of different policies: trade, competition, CAP, health and environment to quote the major ones.
TYFA – and more generally all kind of scenarios addressing environmental sustainability in relation with changes in food and diet — stands on the fundamental assumption that societal changes will be the key driver for changes in the food system. But this assumption is sometimes linked with the somehow naïve one that it will simply consist in the duplication and upscaling of the existing food niches relying on short chains, community supported markets. While such trend might have its share in a transition scenario, the analysis of agro-environmental challenges shows that changes need to cover organization of the whole EU food system. It is not then only a matter of niches, but a matter of large scale livestock and crop sectors, with the issue of the animal feed industry to be centrally addressed. This leads to the need to consider trade policies as a pivotal issue for change, in particular in the perspective of soya imports and the possibility to defend non-tariff barriers justified by the quality of food Europeans demand (GMO-free, biodiversity friendly,…). This analysis also leads to the need to organize a transition towards an agroecology-consistent network of agro-industries, consisting in units processing lesser amount of products, more diversified and better distributed over the territory. This looks only possible with a combination of higher selling prices along the food chain and less capital costs in absolute terms. Such business model entails changes in the setting of food and environmental standards (e.g. on animal welfare, preventing animal concentration on the basis of socio-political preferences) which become drivers in the power relation in the value-chain, instead of being the adjustment variables of the mass agro-industrial system.
CAP, notably through the provision of payment for ecosystem services, might also play a role in the transition thanks to the public support of farmers' income, based on payments that no longer encourage over-investment.

Discussion: Our analysis tends to address under-estimated issues in literature dealing with AE/OF transition. A current paradigm in this regards is based on the duplication of niches which, currently, are based on the avoidance of intermediaries (industry, retailer). This is workable at low scale and on food systems based on proximity and trust-based relationship. But upscaling AE/OF changes the very organization of the food system, and there is then a need to consider the role of intermediaries and to build a consistent food chain accordingly.

Changing the scale and keeping the environmental and social attributes of OF is a tricky challenge as the debate over the "industrialization" of OF shows. Such path is strongly questioned through the angle of its impact on the nature of organic production and on environment at the end. We suggest that a scenario like TYFA, based on a strong sustainability paradigm, can shed light on the challenges of organizing the food system and political intervention.

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Disclosure of Interest: None Declared

Keywords: Food system, Political Agroecology, transition to organic