

## Advancing agroecology in Europe through a scenario exercise: a political and methodological framework

Xavier Poux, Sarah Lumbroso (AScA & EFNCP),  
Pierre-Marie Aubert, Sébastien Treyer (IDDRI)

The current European agricultural model is in crisis. Over the last 10 years, it has had to cope with numerous challenges: prices instability, decrease in farmers' incomes, environmental unsustainability, vulnerability to climate change, safety crisis, social contestations, etc. The need to deeply transform this model is now widely acknowledged. Among the candidate for such a change is an agroecological model, understood here in a broad perspective which encompasses not only technical aspects but also organisational, political and economic ones. While agroecology has served as a guiding principle for numerous projects in Europe over the last 15 years, it has not yet been able to bring about changes at a larger scale. Agroecology is indeed often disregarded as a plausible candidate for the transformation of European agriculture, on the main argument that it would have such an impact on yields that the consequences on both global food security and the European trade balance would outbalance any other benefit.

This article has received financial support from the French government in the framework of the programme "Investissements d'avenir", managed by ANR (the French National Research Agency) under the reference ANR-10-LABX-01. This research also received financial support from the Fondation Charles Léopold Mayer pour le Progrès de l'Homme (FPH).

### KEY MESSAGES

Against this backdrop, this policy brief seeks to demonstrate the value added of a scenario exercise that explicitly describes possible transition pathways towards an agroecology transition in Europe to fuel the policy debate on European agriculture transformation. It proposes orientations on how to frame such an exercise from both a methodological and a political point of view:

- **1. From a methodological point of view, we show the need for a scenario exercise to be multi-scalar and to integrate four perspectives:**
  - a. an agrarian system approach, linking agroecological transition processes at the landscape level to the evolution of global food supply at the European level;
  - b. an analysis of the trends and drivers of change on the "consumption side", and particularly possible and necessary changes in diets;
  - c. a food chain perspective, which reflects upon how current trends in the food chain should be inflected to allow for technical and commercial changes at the farm level;
  - d. an institutional perspective, which identifies how the European regulatory framework needs to be changed and what are the levers to remove socio-technical lock-in.
- **2. From a political point of view, we demonstrate that to really open strategic opportunities, a scenario exercise should:**
  - a. not only describe a picture of the European agriculture converted to agroecology 20 years down the line but also narrate the pathway(s) through which such a transition could happen;
  - b. compare an agro-ecological scenario to a business-as-usual (BAU) scenario to enable a wide and symmetrical discussion of potential costs and benefits of both scenarios, in particular the possible deadlocks of the BAU, that are often not explicitly discussed, as well as the whole range of benefits of an agroecological transition scenario, that are often disregarded.

## FRAMING THE AGROECOLOGICAL POLICY DEBATE IN TERMS OF FUTURE SCENARIOS

Agroecology (AE) is gaining importance in the research and policy agendas. For its upholders, one of its main advantages is to propose a holistic change, addressing the systemic nature of challenges to be addressed. An AE transition project goes further than scaling up of AE innovations; it needs to reverse the present trend in which systems relying on AE are disappearing under the pressure of industrial agri-food chain. Advancing such a project thus needs to deal with two main challenges:

- Reframing the debate from a static comparison of current performances of existing farming systems to a comparison of transformation scenarios.
- Testing whether a conversion to AE at the scale of the whole EU agro-food systems is possible, enabling a fairer comparison with the BAU on each scenario's performance across the three dimensions of sustainable development.

This leads to conceptually think of the AE transition project in a future-oriented perspective in order to make explicit the possible long-term, radical changes, of the EU agrifood systems and to quantify their consequences on land-use, production and diets. To build such an AE transition scenario and to use it for the advancement of agroecology in Europe implies to make assumptions and choices, based on existing literature, which also reflect the normative standpoint of the AE transition project, and to define a method for both designing the scenario and using them in different political arenas.

## THE EUROPEAN/GLOBAL ISSUE OF AN AGROECOLOGY TRANSITION

The most common argument raised to disqualify the agroecological transition option is that “agroecology will not be able to feed 9 billion people in 2050”. And indeed, contrary to tropical areas where literature suggests that AE systems increase productivity, AE in Europe will not increase yields. Given the favourable pedoclimatic context and the technological system developed over the last 60 years, it is on the contrary likely to lead to lower yields for the main productions such as cereals or oil crops. In this perspective, to what extent would such a change impact global agricultural output and global food security?

As of today, world food security does not rest on Europe-EU28, as it is currently a net importer of food/feed. Even if EU28 is a net exporter of

cereals (6 Mt), its weight has to be compared to the 2,500 Mt produced in the world (thus 0.24%). In short, if the world is only seen in global averages, it does not “need” EU28 export and EU has no potential to become a major player. It is however necessary to analyse in more details for which productions EU28 exports might play a critical role for the food security of specific regions, and for which ones, particularly feed products, reducing EU28 imports would be critical not to increase tensions on global markets.

More fundamentally, the issue of food security is not an issue of food supply, but depends largely on access. As such, one crucial variable determining the level of world food security is the degree of poverty in developing countries, not the availability of food on global markets.

One of the main adjustment variables for EU food-print in the future is the share of animal products in the diet, as livestock consumes around 50% of cereals. As an order of magnitude, let us just say that the present production amounts to 1.6 t of cereal/person while 0.3 t would be enough to bring the calories needed for one person/year. There is thus room for strategic export outside Europe, even with lower production, but this would imply significant changes in European diets. This topic will be further addressed later on.

## METHODOLOGICAL CHALLENGES FOR BUILDING AE TRANSITION SCENARIOS FROM A SOCIO-TECHNICAL STANDPOINT

### A scale issue: the need to both upscale and downscale

Many authors conceive the development of AE as a bottom-up and grass-root based process. This approach allows capturing a wide range of matters of interest for civil society groups: local employment, local environmental management (biodiversity, landscapes, soil conservation, water protection), local governance and autonomy. This local entry also helps to put at the heart of the AE transition processes the diversity of agricultural products, seeds, knowledge, institutions and cultures. Because AE transition is intimately linked to multifunctionality, then an AE transition scenario needs to capture local dimensions.

In addition to this local perspective there are two reasons to link this landscape/territorial approach to other levels:

- The need to check that the sum of local AE transition experiences will produce enough food and in a balanced way to cover the needs of future EU diets, taking into account the diversity of exporting and importing areas in Europe.

- A number of political, social and economic variables that affect—if not determine—changes in agricultural systems are associated with processes occurring either at the national or European level, hence the need to consider it.

As a whole, an AE transition scenario should then combine bottom-up and top-down approaches, as it is neither the local application of a centralised productive plan, nor a consistent image magically resulting from up-scaling local initiatives. An agrarian system perspective could help to build an intermediate level of analysis by capturing the diversity of eco-agrarian situations while proposing a synthetic understanding of this diversity. Such a perspective can be mobilised in two complementary perspectives:

- A vertical and technical perspective, in which the issue is twofold: to analyse how a combination of EU agrarian systems can feed European citizens altogether; to assess the extent to which synergic crop and livestock systems will allow to close fertility cycles and have a sufficient level of productivity.
- A horizontal perspective addressing territories and spatialized issues: the vitality of rural communities, the spatial distribution of jobs, the values associated to farming and their impact on agricultural demography.

### Changes in diets and food chains

Linking vertical and horizontal dynamics is however not only a matter of farming system. It also depends on (i) the evolution of European diets, which in turn affect the demand for specific agricultural product; and on (ii) the structure of food chains, which convey raw materials and food from one place to an other and thus link farm production to diets, and can be considered as the segment of the whole system driving the evolution of the others.

Changes in diets are a crucial issue, and notably the share of meat/dairy products in EU diets consistent with a sustainable EU land use. The central question of the desirable share of livestock products in our diet must consider complex and contradictory aspects including livestock welfare, environmental, cultural and health issues. Another burning issue is the level of pesticides citizens are likely to “accept” in their diet: are they to be banished, considering the irrelevance of legal thresholds in terms of ecotoxicology? Are they to be “only” reduced to a nearly harmless level for feasibility reasons?

Reflecting on the organisation of food chains should take stock of the fact that an AE transition scenario goes against spatial specialisation and

intensification of food supply basins, while this is strongly driven by economies of scale. Thinking of an AE transition scenario thus implies to reflect on possible changes in the current organization of food chains: how to make them happen, with what consequences for farmers?

### The role of policies and institutional frameworks

The technical and organisational changes that would be consubstantial or necessary for an AE transition process are connected with a broad set of public domains of intervention. In this perspective, two key ideas can be put forward:

- One policy alone cannot make all the changes required by the AE scenario. There is notably a need to combine, on the one hand, approach of environmental and rural development policies, and on the other hand, food policies that are not restricted to agriculture, but encompass the whole food chain, consumer behaviours, health and food safety issues.
- The magnitude of change to be envisaged in the policy field is significant. The current necessity to re-evaluate all the policies justifying the EU project might be considered as an opportunity to put radical reform on the agenda of the EU. While the overall budget needed in an AE transition scenario is not necessarily significantly different from a conventional/BAU one, policy goals are radically different, in terms of both the beneficiaries and the contributors to the different policies. Changes in goals also entail changes in means—human, financial—and governance. The feasibility of these changes will depend on the level of political resistance to change, but also other types of institutional or socio-political lock-in, that all should be addressed to better represent possible pathways of transformation.

## INTRODUCING/POSITIONING AE TRANSITION SCENARIOS IN THE POLITICAL DEBATE

### Comparing competing narratives against an explicit set of criterion

Debates on the future of agro-food systems are framed by some competing paradigms, which consider different directions for change of agro-food systems. AE transition can be linked with a sufficiency narrative, in which agro-ecosystems are both productive and respectful of ecosystems. This narrative competes with the “productivity” and “sustainable intensification” ones, in which sustainability is mainly framed in terms of increase of yield as the main answer to resource scarcity.

There is thus a need to provide a comparative assessment of scenarios that accounts for the difference of framing. This would help to discuss the desirability of the AE transition scenario with respect to other, more conservative ones. In this perspective, formalising a BAU scenario for European agro-food systems is important to show that the continuation of existing trends is also a transformation scenario, that needs to be discussed as such and not as if it was just the conservation of current farming systems. Communicating this scenario in a future-oriented debate should lead its participants to assess if this BAU scenario is feasible and desirable, and highlight who would be the losers and winners.

For this comparison to be politically relevant there is a need to build a specific assessment grid. Criteria on employment, environmental issues, farm dependency on inputs might call for alternative radical scenario against the scenarios embedded in productivity. More precisely, comparing scenarios is a way to reveal implicit criteria, and is in itself a form of assessment. For example, the potential disappearing of jobs in the agro-chemical industries in an AE transition scenario must be confronted against the creation of new jobs at farm and retailing levels. Changes of prices/costs reflect new shares in the whole value chain and thus new winners and losers: what is considered as a “cost” today can also be a gain in the future.

### Addressing the difficulties: what transition(s) for AE?

Most scenarios focus on describing a future image of a system, but do not propose a pathway between the present and this image, leaving possible transition pathways implicit. However, in the case of an AE scenario, built on a normative objective, considering seriously transition issues is essential. Firstly, it participates in the robustness and credibility of the final image by showing its feasibility. On another level, it is also a condition of access to the future-oriented debate on European agriculture: an AE scenario tends to be denied by the dominant actors of this debate, claiming not only that the final image might not be desirable, but also because there would be no possible pathway to attain it. In order to make an AE transition scenario exist in the debate, showing its feasibility through the rigorous formalisation of a transition pathway (or several possible ones), assessing roadblocks, lock-in effects and levers of actions is therefore a key condition.

## CONCLUSION: THE SPIRIT BEFORE THE FIGURES

Coming back to our founding question—“*how to make an AE transition scenario convincing?*”—our conclusion can be more specific regarding the two different ways one can choose to answer it. The first one is more quantitative, considering that decision-makers and stakeholders can only be convinced by figures derived from robust models. Indeed, quantification is needed to check that fundamental laws of nature are obeyed (e.g. the fact that one cannot produce more than what fertility cycles allows); and such checking can mobilise a lot of effort in order to be fully equipped.

The second way of addressing the question is to point to values. The above discussion on transition pathways concludes on the necessary changes in worldviews in order to make another food system happen. In our view, this social perspective is prior to any further valuation, notably of socio-economic order. The transition towards AE will firstly depend on the social interest it is able to raise. Quantification is needed to show that an AE transition scenario is feasible and to what extent and on which performance criteria it is performing better than the BAU. In our case, it is useful in order to show and prove that the AE transition scenario does not lead to necessarily restrict food options to cereals and vegetables in the future. But this alone is not enough to show that it is desirable, which is its first condition to happen—and thus making worth being quantified. In this perspective, the spirit—i.e. the values—of the scenario must precede the effort of quantification in the logic of the enterprise.

Working on the values might seem unconvincing, as if it seems “too easy” to rely on an assumption that values can be changed and will change to make the AE transition pathway plausible. But it would reversely be a mistake *not to* consider changes in values and their consequent effects. History has shown that similar changes have already taken place in the past. The present is blurred and bears anxiety in many perspectives, but there is at least one robust conclusion: it is very unlikely that the values and governance systems based on the “infinite world”, and the related belief in unlimited growth, will be able to sustain for long. The scenario perspective enables to elaborate on differing and alternative values. This does not mean that it would be sufficient to conceive a utopia to make it real; but it is all the same likely that there is no way for a radical transformation to take any consistency if it is not properly designed as a utopia, discussed and put in the debate on futures. How to make it, in which *fora*, is a discussion out of the scope of this document, but it is clearly its final perspective. ■