Transformation scenarios for boosting organic farming and organic aquaculture towards the Farm-to-Fork targets

Scenarios narratives

Raffaele Zanoli (UNIVPM)

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Context

Achieving the Farm to Fork target of 25% share of organically managed farmland in the European Union by 2030 is a significant and ambitious goal that requires a concerted effort to address numerous challenges (Dimitri & Oberholtzer, 2009).

One critical aspect is the strengthening of the organic supply chain. This entails enhancing storage, transportation, and processing facilities to ensure organic products reach consumers promptly while maintaining quality standards (Baron & Dimitri, 2019). Improving these logistical components is essential for fostering consumer trust and satisfaction in organic goods.

On the supply side, establishing a supportive policy environment is paramount (Nguyen et al., 2021). The EU and national governments must enact and enforce policies that expedite the conversion to organic farming. Since transitioning from conventional to organic methods often incurs higher initial costs and entails a period of reduced yields, financial support, subsidies, and incentives are indispensable to stimulate farmers' conversion (Nguyen et al., 2021).

Addressing the demand side is equally crucial. Expanding the market for organic products and ensuring sustained demand are imperative goals (Dimitri & Oberholtzer, 2009). Educating consumers about the benefits of organic produce and raising awareness about its positive impacts on health and the environment can cultivate a stable market for organic farmers. In this context, the availability of resources, innovation processes aimed at enhancing climate change adaptability for organic farming, dedicated research efforts, and robust networking initiatives play pivotal roles (Dimitri & Oberholtzer, 2009).

By leveraging these resources and fostering collaboration within the organic farming community, the efficiency and productivity of organic agriculture can be enhanced, rendering it more appealing to farmers and consumers alike (Dimitri & Oberholtzer, 2009). Through a multifaceted approach encompassing policy support, consumer education, and technological innovation, the EU can strive towards realising its Farm to Fork targets and promoting sustainable agriculture across the continent.

In this paper, we present the results of a (normative) Scenario Analysis focusing on different paths that address these challenges simultaneously to achieve the 25% target.

Methodology

Normative scenario analysis is used in strategic planning and foresight to explore and envision possible future states based on normative assumptions and desired outcomes (Ducot & Lubben, 1980; Kok et al., 2011).

Normative scenario analysis is particularly useful when dealing with complex and uncertain environments where the future is shaped by various factors. Focusing on normative principles and desired values helps guide decision-making towards creating more sustainable, equitable, and desirable futures.

In our scenario analysis, we set the year 2040 as the time horizon, but in all scenarios, the 25% organic land target should be achieved by 2030. We followed a procedure described in Figure 1 involving both desk analysis provided by the scenario team (the authors of this paper) and an action-research approach consisting of stakeholder engagement through Delphi-type surveys, interviews, and a scenario workshop. Selected stakeholders consisted in 13 researchers and 8 other actors or experts of the organic sector.

After the initial desk research consisting of an analysis of the existing literature on global megatrends and scenarios of the agro-food sector, including organic farming, as well as previous analyses and interviews on enabling factors and lock-ins, a list of 51 driving forces was compiled (Step 1). Two rounds of Delphi surveying allowed the restriction of the list to 15 high-impact uncertainties used to model the future normative scenarios to reach the F2F targets (Step 2). Three possible states were qualitatively defined to span the potential evolution of each of the 15 selected drivers by the year 2040 (Step 3). The list of drivers and respective states is shown in Figure 2.

A plenary two-day workshop with the experts was organised to develop the scenarios. The workshop consisted of both plenary and group activities, and experts were guided into exploring relationships between variables/events that potentially may impact the future of the organic food and farming sector. During the workshop, experts co-created a shared foresight of the future. They sketched the potential role of the relevant stakeholders, as well as the desirability of each scenario for them.
Four scenarios leading to a 25% share of organic land in the EU by 2030 were defined based on contrasting and alternative storylines, subsequently described by written narratives. Experts were divided into two groups, respectively developing two Push (supply-driven) scenarios and two Pull (demand-driven) scenarios (Figure 2). Storylines were developed using logical cause-and-effect combinations of drivers/states to identify different and contrasting scenarios of the future of the organic sector. Unexpected and ‘surprise’ storylines were encouraged as long as they made sense. Internal consistency

was required, ensuring that each storyline was based on an underlying structural model of the drivers. Events described in the storylines should naturally follow each other. Each group of experts defined short, vivid names for scenarios and then wrote a short narrative, fleshing up the storylines and adding relevant details/implications ensuring always the internal consistency and credibility of each scenario.

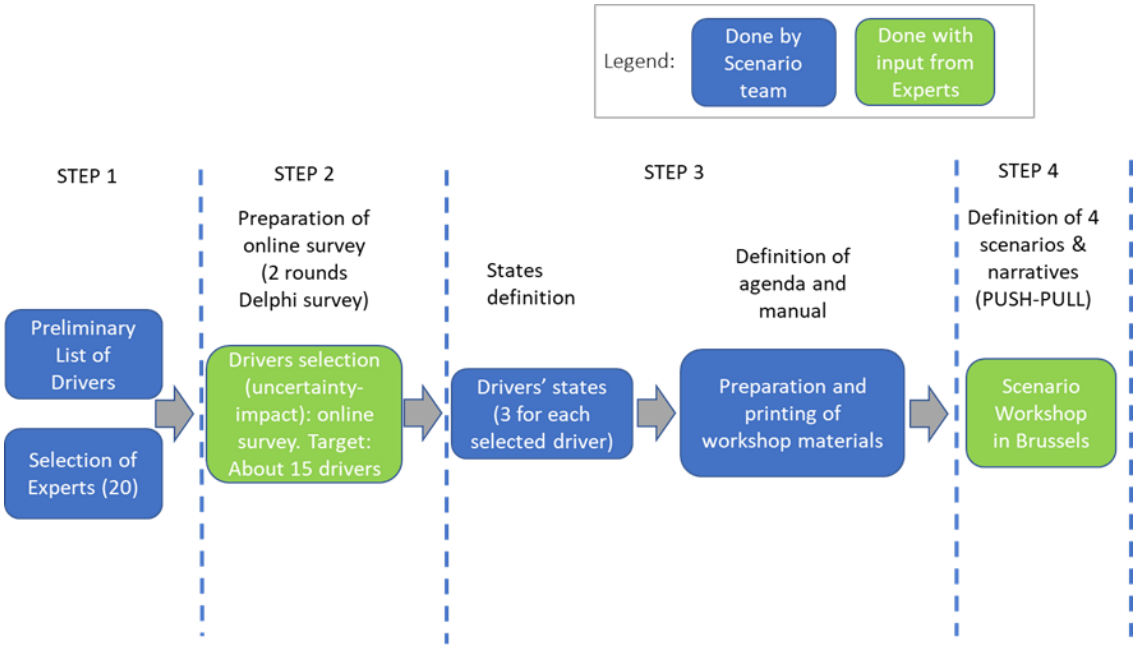

Figure 1 Scenario generation process for organic farming sector.

PUSH - POLICY DRIVEN SCENARIOS	DIVERGENT PATHWAYS FOR ORGANIC SECTOR
	GREEN PUBLIC POLICY
PULL-DEMAND DRIVEN SCENARIOS	ORGANIC ON EVERY TABLE
	ORGANIC POWER TO THE PEOPLE

		PUSH - POLICY DRIVEN			PULL - DEMAND DRIVEN		
	DRIVER	STATE 1	STATE 2	STATE 3	STATE 1	STATE 2	STATE 3
MEGA TRENDS	Political climate towards OF	Green Deal cancelled	Green Deal stalled	Green Deal +	Green Deal cancelled	Green Deal stalled	Green Deal +
	Water availability for farming	Water conflicts	Mixed corporate-public governance of water	Circularity and regulated water	Water conflicts	Mixed corporate-public governance of water	Circularity and regulated water
CONSUMERS PERSPECTIVE	Competition from alternative standards	Mainstream agriculture revival	Entropy of standards	Organic primacy	Mainstream agriculture revival	Entropy of standards	Organic primacy
	Food scares	Organic scandals	No pain, no gain	Conventional food scandals	Organic scandals	No pain, no gain	Conventional food scandals
	Sustainable and healthy diets	Going junky	Healthy but Grey	Healthy & Green	Going junky	Healthy but Grey	Healthy & Green
SUPPLY CHAIN	Large retail chains involvement	Fragmented supply	Networking	Big is better	Fragmented supply	Networking	Big is better
	Organic public procurement	Organic demand stays private	Fragmented public procurement	Public procurement boost	Organic demand stays private	Fragmented public procurement	Public procurement boost
POLICY	Eco-schemes, national/ regional policies OF	Unfavourable CAP	Neutral CAP	Favourable CAP	Unfavourable CAP	Neutral CAP	Favourable CAP
	NGT in OF	NGT liberalisation	NGT only in conventional	NGT-free EU	NGT liberalisation	NGT only in conventional	NGT-free EU
	Subsidised credit for OF/processor	Credit crunch for organic farmers	Credit lines for organic farmers	Organic finance	Credit crunch for organic farmers	Credit lines for organic farmers	Organic finance
FARMERS PERSPECTIVE	Conversion of arable farming systems	Concentrated growth	Lagger countries catching-up	Widespread uniform conversion	Concentrated growth	Lagger countries catching-up	Widespread uniform conversion
	Conversion of livestock systems	Concentrated growth	Lagger countries catching-up	Widespread uniform conversion	Concentrated growth	Lagger countries catching-up	Widespread uniform conversion
AKIS	Farm-gate relative prices of OP vs CP	No more premium	Uneven premiums	Premium prices are there to stay	No more premium	Uneven premiums	Premium prices are there to stay
	Capacity building in organic NGOs	Fragmented NGOs	Few EU/National strong lobbying	Development of Organic NGOs	Fragmented NGOs	Few EU/National strong lobbying	Development of Organic NGOs
	Training and education for OF	Organic AKIS stay marginal	Common AKIS for farming	Knowledge boost in OF	Organic AKIS stay marginal	Common AKIS for farming	Knowledge boost in OF

Figure 2 Scenario storylines.

"Green Public Policy" scenario narrative

Growing concerns among the public and policymakers regarding significant environmental challenges such as climate change, biodiversity loss, and issues related to water and soils have intensified. In response, there is a heightened focus on bolstering

and improving European policy frameworks, including initiatives like the Green Deal, Farm 2 Fork, and Biodiversity Strategies, along with subsequent policies. The escalating severity of extreme weather events, like droughts and floods, coupled with rising costs for energy, fertiliser, and imported feed, is prompting farmers to increasingly embrace and cooperate with green policies to mitigate risks.

The evolving political landscape, marked by the forming of new farmer networks, signals a proactive engagement with environmental concerns and a shift in production systems. There is an increasing collaboration between organic and agroecology organisations, as well as environmental NGOs. This collaborative effort extends to establishing diverse production standards, focusing on ensuring long-term resilience.

Building upon the commitments outlined in the CAP 2023-27, the future CAP reform strongly emphasises organic farming and agri-environmental support. Given the added environmental benefits, this strategic shift makes organic production more appealing, especially for arable producers. The pig and poultry systems witness a transition toward localised feed sourcing, leading to reduced intensity. Overall, livestock numbers decrease alongside reduced consumer demand for meat and dairy products.

The push for conversion to organic practices is primarily driven by policy initiatives and public support rather than market forces. While premium prices are not guaranteed and may experience fluctuations, policy measures actively support the organic Agricultural Knowledge and Innovation Systems (AKIS), supply chain, and market initiatives to encourage and facilitate conversion.

There is growing acceptance of organic practices at the national and local levels, with organic food becoming the standard in public institutions such as hospitals, canteens, and schools. The widespread adoption of organic practices is particularly encouraged in regions facing significant environmental challenges. Regions grappling with issues like abandonment find new opportunities to re-engage with farming.

While current organic regulations gain prominence, there is increasing pressure from other farming groups to develop alternative standards, such as integrated and regenerative approaches, including the introduction of EU sustainability labelling. Efforts to standardise and reduce greenwashing are essential to avoid the proliferation of competing standards. Adaptations to organic regulations are necessary to address emerging challenges related to climate, biodiversity, and consumer expectations, ensuring the continued predominance of organic practices.

“Divergent Pathways” scenario narrative

Concerns regarding food security, high inflation rates, and unfavourable reactions from farmers to reduced profitability contribute to a diminished focus on environmental policies. The prioritisation of social issues over environmental concerns results in an escalating trend of social fragmentation. A heightened emphasis accompanies this shift

to a productivist agenda, leading to the rollback of the Green Deal and a general weakening of the European Union's influence.
Certain member states or regions opt to uphold and cultivate robust organic policies and agri-environmental support. Committed member states actively encourage the consumption of domestic products. Organic non-governmental organisations play a pivotal role in sustaining political interest in these regions, with high levels of public engagement and demand acting as catalysts for imports and production from regions with less established domestic consumption.
Standards on greenwashing (green claims) reduce the proliferation of competing standards, and national organic regulations address new challenges, such as climate, biodiversity, and consumer expectations, to maintain the predominance of organic standards. This makes it more attractive for arable producers to convert to organic production with added environmental benefits. The policy supports organic AKIS, supply chain and market initiatives to motivate and facilitate a conversion. Conversion would be widespread, and farmers in regions where abandonment is a problem would find new opportunities for re-engaging with farming.
Conversely, in various countries, backing for organic and environmental policies faces withdrawal, prompting a minority of the public to harbour ongoing concerns about environmental issues. Mainstream agriculture revivals and mainstream agriculture lobbies improve efforts to support conventional farming development. This leads to a neutral approach to farming policies, with no significant changes toward stronger support for organic farming conversion.
NGT are allowed in conventional agriculture but banned from organic. Quality of conventional products does not always meet adequate standards, and food scandals arise for some food products. Food preferences become polarised and consumers are segmented into supporters and detractors of organic products. Consequently, individuals find themselves compelled to seek solutions independently due to uneven government engagement. This has led to a discernible split within the agricultural sector, with organic initiatives emerging in opposition to conventional methods, thereby deepening divisions among different regions, farmer groups, and social demographics. Innovative solutions are imperative within the organic sphere to address these challenges, placing a significant emphasis on fostering solidarity within the supply chain. Notably, organic non-governmental organisations (NGOs) are pivotal in organising autonomous initiatives that support the organic sector. The financial sector has also transformed, with private-sector sources, including organic companies, retailers, foundations, and payments for ecosystem services (such as water, carbon, and biodiversity offsetting), assuming heightened importance in sustaining these initiatives. The conversion to organic practices aligns more closely with market demand rather than purely environmental considerations. The growth of the organic sector is becoming concentrated in specific regional hubs for both arable and livestock systems, with consumption patterns gravitating towards urban centres where consumers wield greater

purchasing power. Price premiums remain steady for most organic products. Additionally, some countries and regions strategically orient themselves towards exporting organic products to areas characterised by high demand. In this evolving landscape, the concept of organic districts gains popularity and provides focal points for concentrated organic activities leading to large and stable organic supply chains. This multifaceted approach underscores the dynamic nature of the organic movement, where economic, environmental, and regional considerations intertwine to shape the future trajectory of the sector. regions with high demand.

"Organic on Every Table" scenario narrative

Organic farming's benefits for the environment and society are well understood by citizens and policymakers alike, and this is broadly reflected in their actions towards organic.

The Green Deal is challenged by the polarity between long-term green targets and emergency needs triggered by global crises and trade. However, evidence of the climate emergency and water issues keep environmental considerations prominent, triggering the agri-food industry push for NGTs. However, thanks to the lobbying of organic and like-minded NGOs and national authorities, the Green Deal remains, and NGTs are kept out of organic.

The push for protecting biodiversity and groundwater resources and reducing oxygen loss in rivers, lakes and local watercourses is connected to organic farming. It helps reinforce the positive political climate for organic.

Organic primacy is propelled and stands out from attempts from alternative standards and schemes to gain room and legal recognition in the sustainability and market domain. Nearly all people recognise the organic label as a guarantee for the food values they care about.

Organic food has reached all European families – in their houses when preparing dinner, but also at work and in restaurants, and is increasingly coupled with health-related attributes and claims. Organic food is widely included in schools and public canteens, through targeted green public procurement policies.

The organic premium still exists, but the price differential is smaller (except for animal products), partly because supply chain actors are empowered, and farmers have more direct involvement in the distribution chains and can broker better agreements with processors and distributors, which is reflected in the prices offered by large retail chains to their customers.

Large-scale retailers play a leading role in facilitating the mainstream availability of organic products by increasing the range of products and getting more involved in the organic food chain. They have also incorporated and consolidated some small-scale alternative and specialised retailers. However, alternative models are expanding and innovating, e.g., e-commerce, digital box schemes and CSAs, farmers' markets, new distribution models, and general farmer-consumer partnerships.

Organic farmers receive preferential credit due to their ecosystem services (e.g., carbon and biodiversity credits). Private investment funds and public support both play an important role in financing the sector.
While the generally positive policy and market conditions encourage a widespread conversion to organic for arable and permanent crops, livestock production is carried out in the context of wider societal shifts in relation to the diminishing role of animal products in healthy and sustainable diets. Issues such as appropriate production methods, animal welfare etc. are important, and grazing animal farming doesn't expand overall. Still, it is concentrated in specific areas, such as mountain regions and less favoured areas.
Organic Agricultural Knowledge and Information Services (AKIS) widely exists in all schools, agricultural training and advisory services, universities and research institutions and are becoming mainstream.
The current trends on AKIS sustainable farming are mainstreaming organic agriculture, placing it side by side with agroecology and regenerative methods.

"Organic Power to the People" scenario narrative

The heavy consequences of runaway climate change, biodiversity collapse, and escalating water scarcity profoundly affect European citizens. In the context of a divide between supporters and detractors of organic products, mainstream agricultural lobbies are increasingly targeting consumers to highlight the safety and convenience of food products derived from New Genetic Technologies (NGT). This practice is allowed for conventional products only.
In the face of inadequate political action at the European level, leading to the failure of Green Deal policies, citizens are taking their own initiatives to maintain the availability of organic food, as they recognise its crucial role in mitigating health and environmental crises.
Recognising the market potential, the private financial sector is developing specific credit lines for organic farmers. The steady market demand leads to stable premium prices for organic products, keeping organic farm-gate prices consistently higher than conventional ones for most productions. Consequently, the organic sector is witnessing a general increase in conversion for both arable crops and livestock systems.
Consumers are exerting significant pressure on retailers, driving the growth of alternative models through digital tools such as e-commerce, direct sales platforms, and strengthened cooperatives of both producers and consumers. In response, retailers are expanding their organic offerings and playing a more active role in facilitating future supply by encouraging farm conversion and fostering more equitable, sustainable relationships with other supply chain actors. NGOs and civil society movements play a crucial role in facilitating these connections and safeguarding the interests of all parties involved.

Despite a lack of action at the European level, national and regional governments are heeding the call of their citizens to address climate, nature, health, and resource scarcity issues. They provide funding and resources to expand organic agriculture through public procurement policies. National policymakers, the food value chain, and citizens are renewing their appreciation for the significant value of organic agriculture as the only legal standard.

In certain countries, the development of organic agriculture is also supported by active networks, where farmers share knowledge and experiences. This knowledge sharing is particularly facilitated by the rise of social networking and citizen science initiatives, driven by a deeper engagement and interest in environmental and health issues.

Project Coordinator: Stefano Orsini
Research and Innovation Manager at IFOAM Organics Europe
stefano.orsini@organicseurope.bio

Partners

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