

Erik Mathijs

Two narratives in a world of scarcities

In 2011, the EU Commission published the report “Sustainable Food Consumption and Production in a Resource-Constrained World”.¹ It aimed to guide agricultural research in the EU to prepare for a smooth transition towards a world with resource constraints and environmental limits. The report identified a set of principles upon which our food system and agricultural research should be based.

The EU’s Standing Committee on Agricultural Research (SCAR) is a body established in 1974 and relaunched in 2005 to provide advice to the European Commission and EU member states on the coordination of agricultural research in Europe. SCAR has a tradition of commissioning foresight exercises to support its recommendations. In 2010, a group of external experts were commissioned to carry out a foresight exercise for the committee that would provide the building

blocks for longer-term perspectives to prepare the EU for a smooth transition towards a world with resource constraints and environmental limits. This resulted in the 3rd SCAR Foresight Exercise, published in 2011 (Freibauer et al., 2011), and revolved around three key concepts: scarcities, narratives and transition.



The report started by emphasizing that the changes taking place in the world create feedback effects that we poorly understand. Due to the interconnectedness of the combined scarcity challenges and the limited understanding of the feedback loops, the future is now more uncertain than ever. As indicated by figure 1, interactions, in particular feedbacks, can further intensify, accelerate or change directions when several

drivers are combined. These complex multiple interactions are critical for projections of global food security but unknown. These unknowns may pose a stronger and faster limit on global food production than any of the individual scarcities.

In addition, we were, and still are, ill-prepared to deal with such interconnected and highly dynamic issues. Due to the success of technological advances and substitution, the issue of resource scarcity has rarely featured on political or research agendas in recent decades. However, concerns about the availability of essential natural resources are now firmly back on worldwide agendas. These concerns have been further heightened by the emergence of ‘new scarcities’

with respect to climate and biodiversity. A feature of today's concern is the attempt to understand the complexities surrounding these scarcities, which in themselves involve a number of different dimensions. The interactions between the different dimensions and between the different scarcities themselves, are key to finding a rationale and sustainable route forward. It is essential to ensure that decisions are made that are conducive to the emergence of a more sustainable world. Given that the 2008/9 financial crisis has turned into an enduring political crisis, the depth and scale of which is still taking shape, it is clear that the need for a global approach to sustainable resource use is increasingly at odds with the trend of protectionism and 'resource nationalism'.

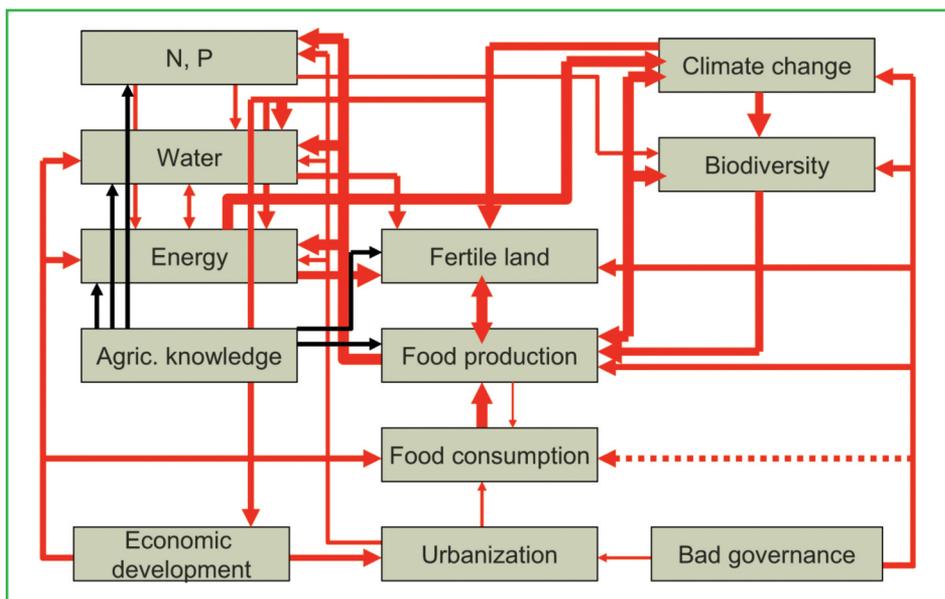


Figure 1: Scheme of interactions between scarcities. The size of the arrows indicates the intensity of the interactions. Arrows in both directions indicate complex, non-linear feedbacks. Source: Freibauer et al. (2011)

Next, echoing the messages of the IAASTD and others, the report brought to light that foresight studies and policy documents always use language or discourse that combines into a consistent storyline or narrative that reflects underlying worldviews and paradigms. These are sometimes made explicit, but are mostly implicit, particularly when the narrative reflects a dominant paradigm. Making these underlying worldviews explicit is a first step towards better understanding our possible futures. The danger of such narratives is that they are simplistic in that they do not capture the full complexity of underlying systems. The 3rd SCAR Foresight Exercise identified two main narratives that it used as lenses or perspectives that act as an entry point for analyzing scarcities and transitions.

The 3rd SCAR Foresight Exercise referred to the dominant narrative as the 'Productivity Narrative' and the alternative narrative as the 'Sufficiency Narrative'.

As authors we believed that these two concepts best summarized the underlying worldviews (see box below for detailed explanation). We emphasized that the two narratives represent extremes of a likely future pathway of agriculture and food. In reality it is expected that a mix of both extremes will be pursued and be necessary to deal with the diversity in trends, cultures and lifestyles.

The Productivity Narrative's main assumption is that economic growth is the only way forward for human development. Issues such as social inequality, resource scarcities and pollution are not ignored, but rather considered as constraints thus ignoring the underlying complexity of socio-ecological systems.

In the Sufficiency Narrative, demand is considered to be endogenous, i.e. part of the agro-food system and hence influenceable.

Demand is considered to be exogenous, i.e., determined by external factors external to the agro-food system. The social impacts of new technologies, as reflected in intellectual property right issues and market power, are often underestimated. This narrative also includes the assumption that ecosystems are best preserved if the existing cropland areas are subject to massive intensification, in a way that can stop further extension of cropland into forests and other natural ecosystems. This assumption might seem correct when examining the global level of production, consumption and use of resources such

as land, but when looking at the processes at stake, there is no evidence that intensification can lead to halting of the extension of cropland.

The Sufficiency Narrative's main assumption is that there are limits to growth imposed by the Earth's finite resources and finite assimilative capacity and by the vulnerability of its ecosystems that provide essential services to mankind. It believes that agro-ecological innovations and behavioural changes and changes in supply chains reducing demand are sufficient conditions to meet the world's food demand in 2050. Demand is considered to be endogenous, that is, part of the agro-food system and hence influenceable. However, economic, social and cultural barriers to a transition towards sufficiency are insufficiently taken into account by studies using this narrative. This narrative also contains an assumption that diversity is a better source of resilience, for the variety of systems considered: ecosystems and biodiversity, food patterns, markets, supply chains, agricultural production systems.

The effect of narratives can bear significant influence on policy and are in themselves generally not neutral. Resources (for instance for research) are often distributed according to the logic of the dominant narrative. The impact of this is that other perspectives – such as agro-ecology – have been given much less resources. In addition, many existing technologies have neglected important pieces of knowledge and retarded or prevented innovative solutions to emerging problems. Capacity building in some fields of research have to then be recreated from scratch, as in the field of agro-ecology. The report argues that research policies should give specific emphasis to building research capacity on ecosystem services that look at the ecological, social and economic conditions

The Productivity Narrative

The Challenge

World population will increase to an estimated 9.2 billion people in 2050, while agricultural productivity has been slowing down over the last decades. Rising income levels in emerging countries will shift diets to more protein rich food and will increase energy demand. Hence, there is a serious threat that food demand will not be met in 2050 leading to more hunger and political instability. In addition, resource constraints and climate change severely limit the world's capacity to expand food production.

The Solution

Scientific advances have the potential to bring forward new varieties, breeds and technologies that boost productivity and that at the same time take into account resource scarcities and environmental problems. To achieve this, massive investments need to be made in R&D, but also in the removal of barriers to adoption by farmers, such as infrastructure, trade barriers and access to markets.

The Sufficiency Narrative

The Challenge

World population will increase to an estimated 9.2 billion people in 2050, which will lead to dramatic environmental problems as system Earth does not have the capacity to support expected rates of consumption. In addition, current food systems produce waste, and overconsumption leads to mass health problems. The destruction of important ecosystems will have dramatic feedback effects that undermine the foundations of our food systems, leading to more poverty and conflict.

The Solution

Scientific advances have the potential to bring forward agro-ecosystems that are both productive, respectful for ecosystems and resource saving. However, to stay within the capacity of system Earth, demand increases need to be mitigated through behavioral change and structural changes in food systems and supply chains (among which food chain efficiency, reducing or re-using waste...), and environmental externalities need to be internalized in markets through appropriate governance structures that also address the disruptive effect of unregulated trade.

of production. At the same time, a much greater emphasis should be placed on socio-economic impact assessment of technologies, with specific reference to the impact on scarcities.

I now prefer to call these narratives the Efficiency and Sufficiency Narratives – in line with writers such as Wolfgang Sachs and Joseph Huber. While we presented the Efficiency and Sufficiency Narratives as extremes on a continuum, I now believe that we should consider them as necessary complements. In other words, efficiency is a necessary but not sufficient condition for sustainability and vice versa, sufficiency is a necessary but not sufficient condition for sustainability. We need both. This echoes the writings of the scholars mentioned earlier, but basically goes back to the Brundtland definition of sustainable development that combines the concept of needs with that of limitations.

1. **Well-being:** food and agricultural systems should serve the well-being and quality of life of all stakeholders involved: farmers and agribusiness should earn a sufficient income producing secure, safe and healthy food for consumers as well as public goods; fair access by all to a healthy food is critical for food security and well-being.

2. **Resource use efficiency and optimality:** given the increasing scarcities in vital resources, resources should be used as efficiently as possible (by avoiding waste, recycling and reducing our footprint), but they should also be used optimally, that is, where their contribution is greatest (by applying the cascading principle of resource contribution); this might imply radical changes in the way we look at the use of resources, shifting from an approach in terms of productivity to an approach in terms of sufficiency, where important changes in consumption patterns play an important role.

3. **Resource conservation:** to avoid the irreversible loss of natural resources, critical natural resources, including biodiversity, land and water should be maintained, taking into account the interaction between scarcities.

4. **Diversity and inclusion:** food and agricultural systems should reflect the territorial diversity present within the EU and worldwide; diversity may be instrumental for the resilience of our systems, but should also enhance the equitable access to affordable and healthy food and to natural resources.

5. **Transdisciplinarity:** research and innovation underpinning future food and agricultural systems should be truly interdisciplinary, that is, fully integrating the various sciences, including the social sciences and humanities, but be also transdisciplinary, that is, fully integrating the end user into research and innovation. Only in this way, the innovation gap between finding and adopting novelties can be overcome.

6. **Experimentation:** in order to develop the key breakthroughs needed to address the Grand Challenges of our time, research should be diverse, that is, ranging from blue sky research (fundamental research with no immediate applications) to applied research, but also based on different paradigms and narratives. Transdisciplinary research should have sufficient room for experimentation, not only in the technological realm, but also in the social.

7. **Coordination and impact evaluation:** research should be better coordinated across thematic domains as well as Member States. At the same research impacts should be better monitored and evaluated.

Generally, the operationalization of sufficiency involves product life extension, dematerialization and tertiarisation of products into services (the sharing economy, from ownership to use). Reichel (2016:24) argues that "...sufficiency is not just about producing and selling less physical products and having less ecological footprint; it first and foremost means to provide those kinds of products and services that enable consumers to live a lifestyle of sufficiency. It is all about re-

Two narratives in a world of scarcities

ducing energy and material use on the consumer side in an absolute manner; including prevention of the rebound effect”.

While such an operationalization can be imagined when it comes to durable goods, mobility, housing, etc., the realization of sufficiency in food production is much more difficult, given the very transient nature of food. Sufficiency has been mainly interpreted as a demand restraint, particularly with respect to meat consumption. Less is more means eating less but higher quality meat. But also agro-ecology has the potential to address sufficiency, as its main driving force is equilibrium rather than growth. Taken at a higher level, this would require consumers to adapt their demand to the carrying capacity of the Earth.

Agroecology has the potential to address sufficiency, as its main driving force is equilibrium rather than growth.

To conclude, a radical change in food consumption and production in Europe is unavoidable to meet the challenges of scarcities and to make the agro-food system more resilient in times of increasing instability and surprise. The expert group compiled a set of principles upon which our food system in general and research concerning our agriculture and food system in particular should be based (see box 1).

Endnote

1 Available at: https://ec.europa.eu/research/scar/pdf/scar_3rd-foresight_2011.pdf

References

Freibauer, A., Mathijs, E., Brunori, G., Damianova, Z., Faroult, E., Girona i Gomis, J., O'Brien, L., Treyer, S., 2011. Sustainable food consumption and production in a resource-constrained world. Luxembourg: Publications Office of the European Union. ISBN: 978-92-79-19723-9.

Huber, J., 2000. Towards industrial ecology: sustainable development as a concept of ecological modernization, *Journal of Environmental Policy and Planning*, 2:4, 269-285.

Reichel, A., 2016. Sufficiency in business strategies. In: *Sufficiency – Moving beyond the gospel of eco-efficiency*, Friends of the Earth Europe, Brussels.

Sachs, W., 1999, *Planet Dialectics. Explorations in Environment and Development*. Zed Books, London/New York. Principles for more resilient food systems and future research priorities in the EU (from Freibauer et al. 2011, p. 185)



Erik Mathijs (MSc, PhD Agricultural Economics) is Professor of Agricultural and Resource Economics at KU Leuven. His research focuses on the practices, metrics and policies fostering the transformation of the European agricultural and food system towards sustainability and resilience. He acted respectively as rapporteur and chair of the experts group of the 3rd (2011) and 4th (2015) Foresight Exercise for the EU's Standing Committee on Agricultural Research (SCAR).