

## CROSSCUTTING ASPECTS GOVERNING THE DANISH AGRI-FOOD TRANSITION

Green, agri-food transition governance comprises all the means of exercising control over, steering and directing the interplay of organizations, institutions, and practices that comprise society's food chains and agricultural systems in the process towards enhanced sustainability. Transition governance is both formal and informal, based variously on legal regulation, power, norms and values, and it requires sustained coordination across spatial (local-global) and temporal (short-, medium- and long-term) scales. Likewise, governance cuts across the public-private divide, by being enacted at the intersection and with the active participation of governments and political agencies, market actors, civil society groups, everyday citizen-consumers, as well as in crosscutting networks and partnerships. Here, non-human ecological entities and processes partake in and frame governance options.

Meeting the combined challenges of climate change, biodiversity loss, and land-system change requires for actors and agencies in the agri-food complex to rethink, redeploit, and reinvent instruments and mechanisms of governance at all scales, local to global, in order to orchestrate far-reaching green transitions (or transformations) of its socio-technical systems. In this process, while technological innovation plays a paramount role, social and cultural conditions and changes are necessary enablers for any comprehensive green transition. The socio-cultural sciences writ largely possess historically based knowledge and many necessary empirical cases and analytical tools to facilitate and enable the collective learning processes of transition, working in close collaboration with natural-technical sciences and stakeholders.

Historically, Denmark is known for its major coordinated political initiatives that have shaped the agricultural and other landscapes we know and live with today. We have, in the recent and distant past, experienced crises that required major political decisions to mobilize people, technologies, knowledge, and resources on a massive scale, such as the historical Enclosure (Udskiftningsen), Revent low's Peace Forest Ordinance (Fredskovsforordningen), the Health Society (Helseselskabet) and following the extensive drainage and plantation projects (Jensen 1975; Løgstrop 2007). As such, Denmark is not in a new political situation. The present rural countryside is equally highly historically conditioned: we are living with major area decisions that were made hundreds, sometimes thousands, of years ago. This includes past collective decisions, which have had major, but also often unforeseen and detrimental consequences for both human livelihoods, local communities, economies, climate and biodiversity. Today, society needs to learn from these past large-scale coordinated political in-

- initiatives and accelerate a socially and ecologically sensitive green transition that
- builds on trust, involvement, adaptability and co-creation
- include human-nature relationships
- is inclusive and fair, locally and globally

### TRUST-BASED, INVOLVING, AND ADAPTIVE TRANSITION MANAGEMENT

At the heart of agri-food transition stands a collective action problem, whereas the collective benefits in terms of health, climate, biodiversity, and upscaling of economic niche innovation stemming from a shift toward a more sustainable (including more plant-based) agri-food system are scientifically well-established (Prag & Henriksen 2020) and starting to be widely known, still few individual entities along the relevant value chains have sufficient incentives to change habitual behaviors and practices. Transition requires governance to change this vicious circle of lock-in into a virtuous circle of trust-based, involving, and adaptive change across the agri-food complex and society at large. Such a process hinges on facilitating practice-based learning and co-creation among all relevant private, public, and non-profit stakeholders, as well as broad-based dialogues with citizen-consumers to accelerate change in collective norms, behaviors and practices (Nyboerg et al. 2016; Herrero et al. 2020). At all stages of this process, reflexive evaluation, monitoring, and learning should take place, as part of addressing tensions and building shared understandings among stakeholders and to enable continual adjustments to practice and visions (Looftbaach 2010).

In setting up transition pathways, stakeholders and researchers should take as point of departure the considerable body of knowledge already available across the socio-cultural sciences on the dilemmas, constraints, and possibilities faced by actors across agri-food value chains. At the level of consumers, for instance, there is solid evidence showing how established dietary habits, lack of skills and knowledge on healthy and more plant-based diets, and perceptions of undesirable taste among large consumer segments, remain barriers to the wider diffusion of what is today niche plant-based food products (Graça et al. 2019). Moreover, research into behavioral and everyday practice change among citizen-consumers has shown that governance works best when combining tools from across three types of intervention: price incentives and choice environment design targeting individual choices; food guidelines, public procurement policies and other initiatives targeting social norms and peer acceptance; and the practice-near provision of new skills, knowledge, and materials targeting the level of everyday habits and convenience (Keller et al. 2016).

Similarly, research documents how farm-level decision-making is framed by a combination of factors, including formal rules and standards, market and supply chain forces, questions of legal liability, social networks and norms, as well as available technologies and the science-based advice carried by agricultural consultants (Baur 2020). Governance must seek to address these institutional dimensions of constrained farmer choices, including via sustainable financing mechanisms. More generally, policy research suggests that smart regulation can facilitate norm change (Nyborg et al. 2016), including by supplementing traditional supply-side agri-food policies (e.g., EU's common agricultural policy) with more hybrid and demand-side measures (Daughjieg & Feindt 2017). Here, the cases of organic and meat-substitute products suggest that large retailers and public procurement via its canteens, in particular, can play important roles (Tziva et al. 2020). Also, it matters for public receptiveness how agri-food policy measures are framed, in terms of appealing to public health, animal welfare, or environmental benefits (Whitley et al. 2018).

Some of the pathways of the sustainable transition of the food sector towards the 2030 and 2050 goals are known but primarily in terms of knowledge on general measures and technologies for shifting producer and consumer behavior. Thus, in order to ensure e.g., a more (climate-, biodiversity and species-) sensitive plant and animal production substantial challenges exist both in identifying and conceptualizing relevant transition pathways based on existing knowledge, and to include new insights and possibilities that emerge during the transition process. This involves identifying and conceptualizing implementation pathways and roles for producers and consumers and giving suggestions to the supporting policies, technology development and relevant financial models.

In implementing and gradually adjusting appropriate top-down policy mixes, an interplay should be established also with bottom-up civil society experiments, which provide practical knowledge and critical questions for markets and national learning (Eckersley 2020). Moreover, it is paramount for processes of technological innovation to facilitate broad-based public deliberation and involvement, in order to foster trust and ensure that socio-technical transition pathways remain locally appropriate and responsive to local development aspirations.

### A GREEN TRANSITION THAT THINKS HUMANS AND NATURE TOGETHER

We need to, secondly, ask ourselves what makes a good green transition, that is, what collective values it should

harbor and express. The landscape models promoted must meet a range of different needs and values besides from the four bottom lines (of people, profit, planet and progress). In addition, we need people at all levels in society to take the lead in this, not only in terms of demand, but also in terms of governance and value creation.

The green transition will challenge the prevailing view of nature, including taking for granted life and species hierarchies (Povonell 2016; Ting 2018). A green transition involves a switch from seeing humans as consumers, producers and nature destructors to protectors, governors and responsible co-creators (Descola & Palsson 1996). It is based on a radically non-hierarchical view of nature, where culture - and essentially humans - are not seen in opposition to nature, but as responsibly and also necessary for nature management and conservation with a view to biodiversity and crisis prevention due to imbalances in the relationship between man, animals, plants and nature. Nature experience, nature conservation, and natural wealth are values that presuppose clear and democratic interventions, governance and institutions.

In order to reduce and ultimately reverse the so far increasing distance between humans and other species, as well as between consumers and the agricultural sector, more bio-diverse and mosaic landscape vegetation structures should be encouraged, where humans and livestock act as nature managers and conservers. (Pre)historic and present-day cases of polyculture and landscape mosaic production systems, such as health farms, permaculture and rotational cultivation, can form vital inspiration for sustainable forms of governance and integrated human-nature systems (Fagundes 2013; Westenberg 2018). These combine and build upon high-intensity and low-intensity production land as well as a range of different kinds of ecologies, including pastures, croplands, fallows, forest and meadows and ecosystem services.

More generally, landscape mosaics point to the fact that nature does not have to be either enclosed or taken completely out of production systems in order to be protected. Exploring alternative production forms could imply developing alternative agricultural business and management models (e.g., health farms) and associated technologies, including rotational grazing and herding, removing drains, nitrogen redeposition and reforestation. There is international inspiration (e.g., from UK and the Netherlands but also from Asia, Africa, Latin America, Oceania) to be found in small-scale examples for use in nature (re)creation and combining nature conservation (e.g., NATURA2000) and cultural heritage protection. However, Denmark is in

## › Crosscutting aspects Governing the Danish agri-food transition

a unique position to become an international lightweight inventing and developing models of socially, culturally, and ecologically integrated landscape governance.

Landscape use and production systems as conservation can be scaled: it means that, even on the larger global scale, we must ensure a global balance in the green transition and make this transition fair to achieve social security. There will be a special focus on both densely populated and sparsely populated areas, both on green cities and landscape management. Solutions can accommodate skills development, education, digital platforms or other digital tools for use in peer-to-peer exchange or other citizen-engaging projects, where solutions arise on a small scale rather than on a large scale. Furthermore, research must be done into understandings of human interaction with nature and other animals in a new light with a connection to e.g., global health and the risk of new pandemics.

In short, a national and globally embedded green agri-food transition will inevitably involve comprehensive and collective value shifts that are not only related to biodiversity or humans' relationship with nature, but which will also influence livelihoods, beliefs, and identities on multiple levels. As a society, how do we create a space for discussing these issues? How do we meet in these dilemmas? How do we imagine sustainable future landscapes and 'talk green'? We need governance processes for acknowledging, balancing and handling dilemmas, conflicts, conflicting values and considerations that will arise rapidly and over time as well as finding ways of working together across differences. The historical, archaeological, and cross-cultural knowledge of the humanities attains here a key role in interdisciplinary collaborations.

### A FAIR AND DEMOCRATIC TRANSITION BASED ON LOCAL CO-CREATION

Finally, more research is needed on how to drive a transition that not only builds on but also fundamentally promotes a sustainable society with social justice, cultural viability, and global balance for the benefit of both people and nature. Here, stakeholders and researchers should build on but also move beyond established commitments to user involvement in technology-oriented living labs, landscape management as well as established practices of citizen and stakeholder involvement in planning and policy-making (Bulkeley & Betsill 2015; ENOIL 2006). Moving further in the direction of fairness-oriented and democratic co-creation promises not only a better chance of delivering on ambitious environmental targets by facilitating collective learning, but also to revitalize local economies, address rural-urban divides, and further social cohesion (Franz et al. 2015).

First, significant landscape changes and land redistributions must be accompanied by carefully organized participation of involved and affected citizens and stakeholders with a special respect for land tenure rights. Models for involving local citizens and affected parties – including representatives of non-human species – in the planning and management processes is an indispensable part of the agri-food transition (McCreavey et al. 2016). This process may be played out in various ways on multiple scales, and will be stretched out between formal and informal procedures, and between property right claims, citizen participation and knowledge-based justification. Investigation of experience with cutting-edge stakeholder involvement experiments is needed in order to establish a solid local basis for planned landscape changes, where the wishes and future plans and aspirations of local property owners and citizens sit center stage.

Second, living labs constitute a widely acknowledged methodology for fostering the kinds of stakeholder-inclusive technological innovation that sits at the heart of agri-food transition. At the same time, however, stakeholders and researchers should realize the gap between two important types of living labs - the user-centered and the citizen-centered, respectively - both of which should play key roles in the transition, yet in complementary ways (Garnache et al. 2020; ASC 2016). User-centered living labs are technocentric and market-oriented, serving as testbeds for new technologies and product design, by way of involving farmers, scientists, and civil society actors in the process of finding solutions and spurring early market adoption. Citizen-centered living labs, by contrast, are oriented to a broader and more holistic sense of local development, seeking to foster citizen-consumer empowerment and transformative learning as part of building more sustainable local communities. In Denmark, the cooperative movement tradition may be said to have relied on building strong ties between these two types of living labs, serving as inspiration also for future-looking transition.

Third, and relatedly, green agri-food transition creates a need for enhancing rural innovation capacities by way of revitalizing rural territories and policies (Carstensen & Bason 2012) - as well as ways of (re-)connecting rural-to-urban value chains as one way of fostering lower environmental footprints and quality of life in green cities (Banzhaf et al. 2018; Houlden et al. 2018). In the context of sectoral shifts and the decline of the relative importance of agriculture and forestry in the rural economies of Europe, agricultural employment has dropped considerably, also in Denmark, driven largely by productivity increase. New activities have developed in rural economies, including tourism, small-

scale and niche manufacturing and food production and business services. However, the food security agenda and the increasing demand for biomass for a variety of bio-based applications have again raised new interest in the economic opportunities related to primary production and the associated food and non-food value chains. This new interest is combined with stakeholder concerns over the capacity of rural areas to cater sustainably for all these needs while providing essential ecosystem services, amidst increasing urbanization (and soil sealing) and the pressure on land resources caused by climate change. There are also important questions around the impact that different types of value chains or renewed urban-rural linkages could have on local development and job creation. Evidence and knowledge should help policy-makers overcome such challenges and seize new opportunities, by helping them to develop the most appropriate governance approaches.

Ultimately, locally appropriate responses to and pathways for green transition need not only address questions of local social fairness and inclusiveness, but also to remain responsible to the wider global context of environmental and intergenerational justice. Overall, the collective action problems of climate and biodiversity are indicative of how societal decision-making processes have tended so far to remain insufficiently attuned to this global, long-term perspective. Amidst the need for a far-reaching collective learning process across diverse and sometimes conflicting values, not everything about the agri-food socio-technical transition is at present amenable to a linear or science-based planning approach. Inclusive, fair, democratic, and adaptive procedures of transition governance are needed to ensure the necessary societal commitment to turn present-day vicious circles into the virtuous circles needed to reach the green transition sustainability goals of 2030, 2050, and beyond.