

Agricultural Innovation Seminar

Innovation Thinking for Food System Transformation

Aim

The role of innovation for food system transformation is increasingly acknowledged, but what this actually entails and how innovation thinking can be applied and encouraged in practice often remains unclear. This seminar aimed to bring a large existing Dutch body of practice and -theory on agricultural innovation together and explore how new insights can be put to use for global food security.



Program (The Hague, April 17, 2019)

- **Lunch & networking**
- **Setting the scene** Making the case for innovation thinking
- **Case pitches**
- **Four parallel break-out sessions** In-depth discussions
- **Plenary discussion** Harvesting insights for policy
- **Wrap-up** Reflections and next steps

Setting the scene: How innovation thinking can help to foster food system change

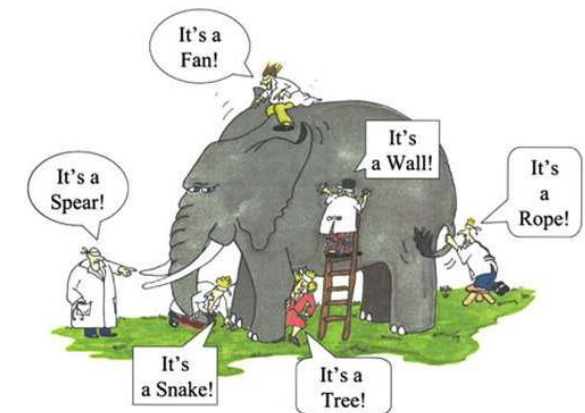
– by Cees Leeuwis (KTI-WUR)

In the upcoming policy note on food security, the Dutch government strives to connect Dutch expertise with local knowledge and innovation to enhance food security, and the need for food system transformation is emphasized. But what are we talking about when we talk of food systems? In general, systems can be described as complex entities in which the elements that constitute the system create feedback and feed forward loops. There are different ways to approach a system, ideas may vary on what is needed to change it, and with every approach a different part of the system might be emphasized more than others. Whereas one might focus on the infrastructure that connects the different parts of the system, others might focus on the function that a system has. Neither of them are wrong, but they may lead to entirely different perspectives on how a system should change. The Netherlands has a rich and famous history in innovation thinking in agriculture. This legacy is important to understand and intervene in food systems.

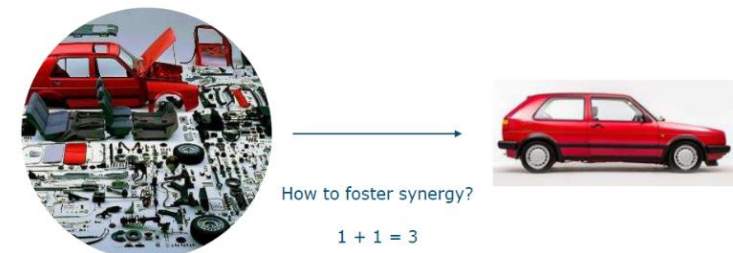
Key to a systems approach is that no-one has a complete overview and that actors are often not aware of the system they are part of, or the interdependence between the different elements of the system. Yet, these stakeholders are the only ones who can change it. How can different parts of the system be leveraged to successfully transform it? When we talk of food system transformation, we might all have a clear picture of what that system should look like: sustainable, climate-smart, inclusive, healthy. However, what leverage points in the system should be addressed, and how, in order to get there? Although there is no clear-cut answer, innovation is key to explore the different options and foster change.

We do not necessarily need to work on system transformation as such. It helps to create a framework in our minds, but this often does not appeal to actors we are working with. Instead, we can investigate how different parts of the system create a synergy, and make an effort to **support** different elements of the **change processes**:

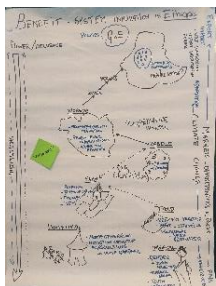
- **Create awareness** among actors about the system they are part of, enhance the feeling of interdependence and involve them in research and planning
- **Build coalitions** and create mutual understanding of the different perspectives, perceived risks, and develop a shared vision
- **Identify bottlenecks and leverage points for change**
- **Encourage diversity**: by creating variation of alternatives – both technical experimentation, and institutional diversity
- **Acknowledge and manage conflict**: it is part of a change process
- **Increase pressure**: pressure evokes innovation and change



No actor has full overview of the food system they are part of.
Yet... they are the only ones who can change it.



Systems: the whole is more than the sum of the parts



Case 1: BENEFIT – by Irene Koomen (WCDI)

BENEFIT is the Bilateral Ethiopia Netherlands Effort for Food, Income and Trade Partnership and is the umbrella under which five different programs are implemented on different levels of the food system in Ethiopia: from household level, to district level, to governments and international markets. With the different programmes BENEFIT aims to address and trigger different leverage points in the food system. Taking the perspective of farmers is key. The innovation in this large programme is not necessarily found in technology, but also in ways of thinking, farming practices, establishment or strengthening of collaboration/commodity platforms and integration at different levels and scales. The sum of social and technological innovations creates a synergy in which entire sectors can be transformed.

Case 2: East-West Seed Knowledge Transfer – by Rutger Groot (East-West Seed)

The **case** brought in by East-West Seed (EWS) focuses on training of farmers, for example in the programme “Making Vegetables Markets Work for Smallholder Farmers” in Myanmar. The idea behind this approach is that if farmers are not aware of the innovations and technologies available, or are not able to access them, they cannot benefit from it. EWS therefore actively goes into the field to bring innovations and required capacities to the farmers. However, blindly taking on a new technology brings risks, which discourages farmers to adopt new practices. It is therefore essential that farmers are able to see the innovation and the fact that it works, and see the benefits for themselves. EWS does so by showcasing innovations and the change it can bring along, for example through model farms. Farmers are then able to visit the farm, witness the innovation being applied in their own context and get inspired to adopt the innovation on their own farms. This led to over 12,000 farmers to adopt improved technology and services, leading to increased income of 50% or more for 20% of these farmers.







Case 3: Omnivent Myanmar – by Errol van Groenewoud (Omnivent)

Omnivent is specialized in storage facilities and works worldwide. Instead of working on demand, Omnivent approaches farmers to show what possibilities are and what might be needed to improve the quality of storage, and with that decrease post-harvest losses. In Myanmar, a low-cost solution was needed, so Omnivent sat down with local farmers and businessmen to redesign elements using local materials (plywood, bamboo, concrete) or cheaper options (climate sensors from Pakistan rather than from NL). The cells need electricity (solar panel) and access to 4G internet (for decentral servicing). Similar to the approach adopted by EWS, Omnivent showcases innovations that work on two on-farm test sites. In addition, Omnivent advises on what works for which context (e.g. how to store, where, for how long) and how such innovations can be financed. Supporting the financial benefits for the farmers with calculations is key to showing the potential impact of new storage practices. This innovation process took place in collaboration with a [consortium of Dutch partners](#).

Case 4: DNA self-toxicity – by Peter Jens (Koppert)

The **case** of Koppert is based on the phenomenon that uptake of extracellular DNA from the same species (whether plant, fungi, or insect) can be harmful to an organism and may inhibit growth or even lead to death of the organism. This could explain how population density control works, but also how soil sickness in agriculture emerges. DNA self-toxicity technology offers a great potential for different applications, such as biocontrol, fighting tropical skin disease or other medical conditions.

This shows the importance of always seeking connections between different sectors and explore how innovations in one sector may benefit the other. This is not just a nice-to-have, but an essential way of working. In a one-health approach, we have to acknowledge the interconnectedness of health of plants, animals and humans. This may mean that in the agricultural sector we have to *unlearn* the way we think, and acknowledge the need to think across sectors and cooperate in a more competitive way, for example with the nutrition and health sectors. This requires an open space, or networks, where one can innovate and engage with policymakers and the broader public throughout the process. This is not only a public sector investment: a company like Koppert invests in PhD research.

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Biocontrol in Agriculture
 Inhibit growth of fungi, nematodes, insects larvae and weeds
- 
Gut Microbiome Stabilizers
 Inhibit proliferation of species/ strain specific pathogens
- 
Topical Skin Conditions
 Inhibit Malassezia, bacterial/fungal skin conditions and Dandruff
- 
Medical Conditions
 Inhibit bacterial respiratory disorders, acute medical conditions like Cancer

Success factors from the cases

- Being able to adapt the technology itself to make it fit-for-purpose.
- Constructing test systems that “show, not tell”.
- The NL consortium in Myanmar was able to introduce improvements throughout the value chain (not only post-harvest).
- The presence of an active broker between companies and local government (in this case, an Agricultural Councillor but could also be a non-public broker: attitude & network access counts).
- Working with entrepreneurial farmers who can motivate other farmers as well.
- Work with a cascade of trainers to ensure that local farmers are trained by local trainers.

Challenges encountered

- The local innovation system has gaps: there is often no coordination or innovation policy on local/district level, while this is essential for technologies to further develop.
- How to bring innovation to smaller farmers or cooperatives (frugal innovation), or more specific: how to find entrepreneurial farmers?
- A lot of studies are commissioned and available, but too often nothing happens afterwards to these insights. How can systems be sensitized to pick up on innovations?
- The centrally funded PSD apps are relevant for Dutch SMEs: but it would help if more support would be available for demonstration of new innovative technology in new markets.
- A food system is everywhere. It is difficult to jump between the different scales within the system. Moreover: on which scale should you engage?
- Reports are often based on a specific set of indicators, but that does not capture the intangible aspects of the programme. How can these be better captured?



Lessons learned from the cases

- When aiming to build capacity among farmers to adopt certain innovations, it is important to take into account the different factors that determine capacity: quality of agribusiness, business servers, functional capacity to work with complexity.
- Always aim for sustainability: this means not just implementing an external (governmental) programme, but work within viable vegetable markets, existing institutions, and look beyond a commodity by taking the surrounding ecosystem/landscape into account.
- Often, innovations are presented as a package of different innovations. It is important that such packages can be adapted, or only partially implemented when the context requires so.
- For innovations to be truly accepted, they have to be embedded in a social system: pay specific attention to social acceptance of new technologies and ideas.

How can policy-makers support innovation thinking?

- Acknowledge the importance of a holistic approach: collaborate with other stakeholders and recognize the need to enhance capacity of actors to collaborate.
- Policymakers can fulfill the important role of a broker: convening and linking partners within the value chain. This is often not covered by private sector organizations.
- Recognize that much break-through innovations currently do not come from countries like the Netherlands. Need for investment, even if success is not guaranteed.
- Innovations are everywhere: be open towards innovations coming from the local level and stimulate these. In many cases, hesitation to adopt bottom-up innovations is observed: it does not always match with the ideas at higher levels on what agricultural systems should look like.
- Policymakers are in the right position to ask critical questions: are we doing the right things, are we using the *right tech*?

Concluding remarks

– by Krijn Poppe (WEcR), Cees Leeuwis (KTI-WUR) and Melle Leenstra (MoFA)

When looking at food systems, innovations and how innovations can contribute to food system transformation, it is important to realize that there is a wide variety of players in the food system, each with their own role and their own perspective. A first step is therefore to widen our views and acknowledge the other players in the field: this applies to any actor within the food system. A next step is to think beyond sectoral boundaries and become aware of the interconnectedness of, for example, the agriculture, nutrition and health sector. This may not only help us unlearn what we thought we knew, but also to get inspired by innovative ideas in different fields.

In all this, connections should be maintained between research, innovation (at any level) and policy. If innovations are to be embraced on a more systemic level, it is key that universities, ministries and extension services adopt their own innovation policies and practices. This means that we, whether private sector, government or knowledge institute, should always seek to connect with local actors: what are existing policies, practices and innovation systems? How can “our” ideas and innovations fit this specific context and create a synergy with what is already there?

Bringing actors around the table, learn from each other’s perspectives and create a mutual understanding of what we are working towards is crucial to be able to contribute to sustainable food system transformation. It is the policymakers’ responsibility to facilitate these connections, ask the right questions to trigger innovation thinking, and always keep an eye on those who are supposed to benefit from the technology. After all, ultimately innovation starts on the farm - where farmers experiment daily to overcome their binding constraints. The more they do this together with other stakeholders, the higher the chances they will find the right leverage points to shift food systems towards more desirable outcomes.



Organizations present

- BoP Innovation Center
- Dutch Ministry of Agriculture (LNV)
- Dutch Ministry of Foreign Affairs
- East-West Seed
- Food & Business Knowledge Platform
- ICRA Foundation
- KIT Royal Tropical Institute
- Koppert
- Livestock & Livelihoods
- Omnivent
- RVO NL
- SNV
- WUR (WEcR, WCDI, KTI)

Reporting

Lotte Roosendaal, Herman Brouwer (2019) Food & Business Knowledge Platform/Wageningen CDI. Thanks to Geert Westenbrink, Cees Leeuwis, Krijn Poppe, Frans Verberne, Irene Koomen, Peter Jens, Errol van Groenewoud, Rutger Groot.

Downloads

- [The introduction and four pitches \(PDF\)](#)
- [Presentation by Cees Leeuwis \(PDF\)](#)

