Supporting food system transformation – Mission-oriented agricultural innovation systems (MAIS) – an approach

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7 May 2021

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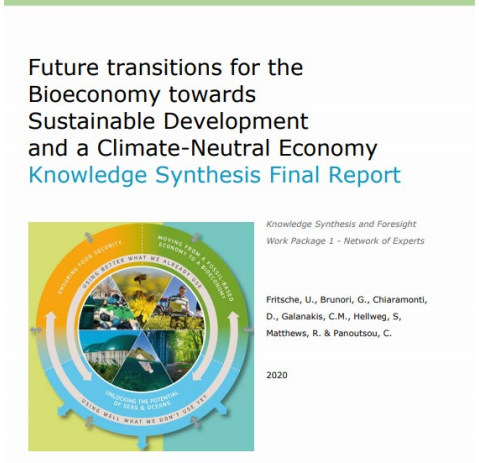
Agri-food systems transformation is hot!

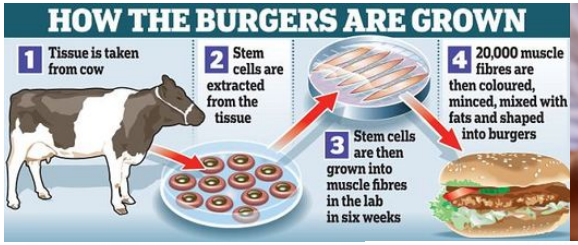
UNITED NATIONS FOOD SYSTEMS SUMMIT 2021



Transforming Food Systems Under a Changing Climate

Over 100 partners have come together in a new initiative to identify pathways for food systems transformation.

E.g. alternative proteins



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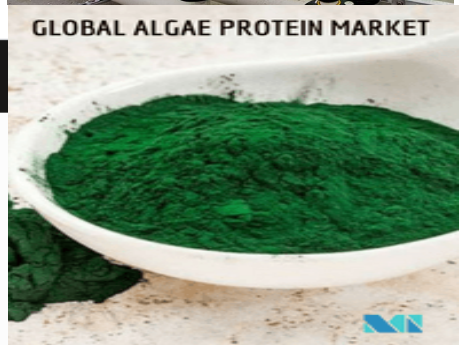
THE MEAT REVOLUTION

Forbes

Dec 31, 2020, 10:18am EST | 66,124 views

World's Largest Insect Protein Farm Signals Future Of Food Supply



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The Race For The Alternative Protein Market: Five Investment Areas To Watch

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AgriFutures F&A NEXT INVESTORS MEET FOOD AND AGRI STARTUPS GROW SPROUT ALEXANDRIA Venture Investments

US plant-based protein investment in 2020 will surpass 2019 as Q1 brings in $741m

May 14, 2020 Richard Martyn-Hemphill

What do future(s) of agriculture imply for Agricultural (Knowledge and) Innovation Systems?

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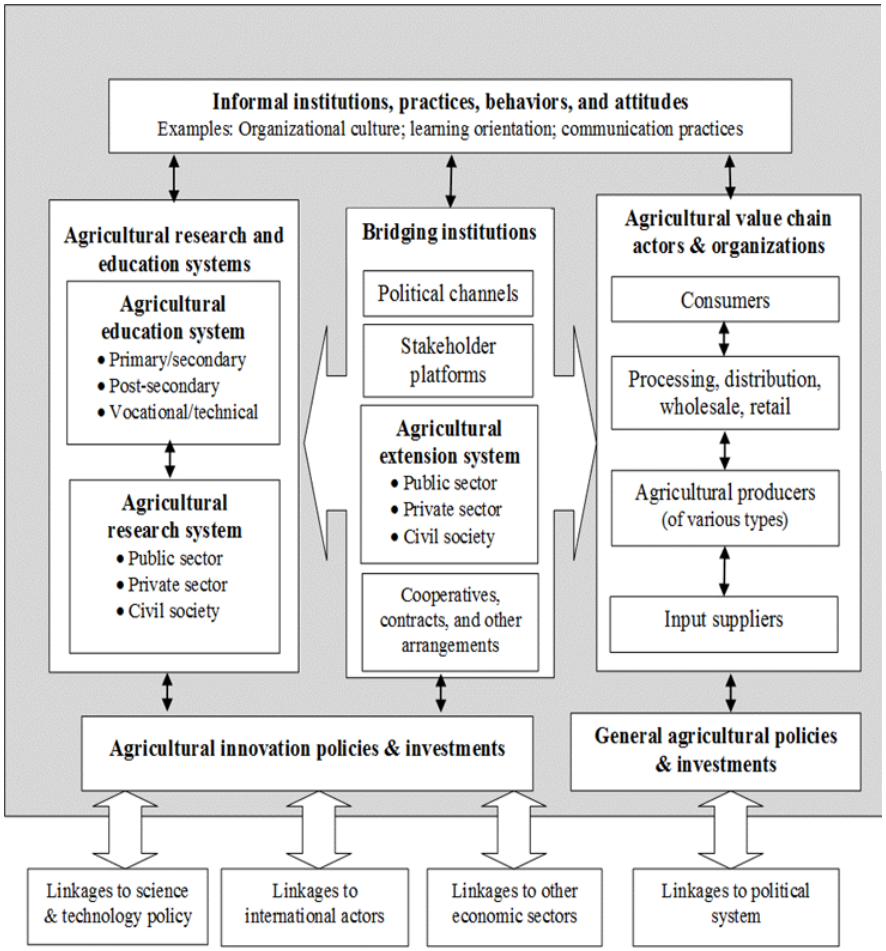
Agricultural (Knowledge and) Innovation Systems - AIS/AKIS



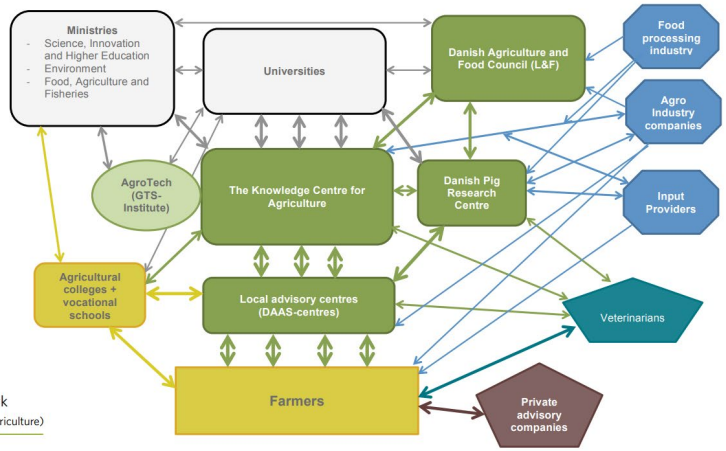


Figure 1: AKIS in Denmark
(Source: Knowledge Centre for Agriculture)

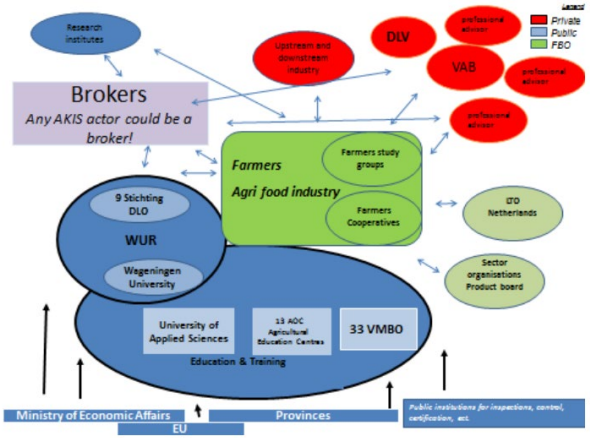


Figure 1: Overview and interaction of the main Dutch AKIS actors
Source: Caggiano, 2014

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Transition and transformation

- Different drivers: both natural, economic, and technological
- Some of these have a (potentially) disruptive nature and affect power balances
- Affect both agrifood sector and Agricultural (Knowledge and) Innovation Systems (AIS/AKIS)

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Why the agtech boom isn't your typical tech disruption

EuroChoices

Point de Vue

How can the EU Farm to Fork strategy deliver on its organic promises? Some critical reflections

Comment la stratégie de l'Union européenne 'de la ferme à l'assiette' peut-elle tenir ses promesses concernant la production biologique ? Quelques réflexions critiques

Wie kann die „Farm to Fork"-Strategie der EU ihre Bio-Versprechen einlösen? Einige kritische Überlegungen

Heidrun Moschitz, Adrian Muller, Ursula Kretzschmar, Lisa Haller, Miguel de Porras, Catherine Pfeifer, Bernadette Oehen, Helga Willer, Hanna Stolz

First published: 23 January 2021 | https://doi.org/10.1111/1746-692X.12294 | Citations: 2

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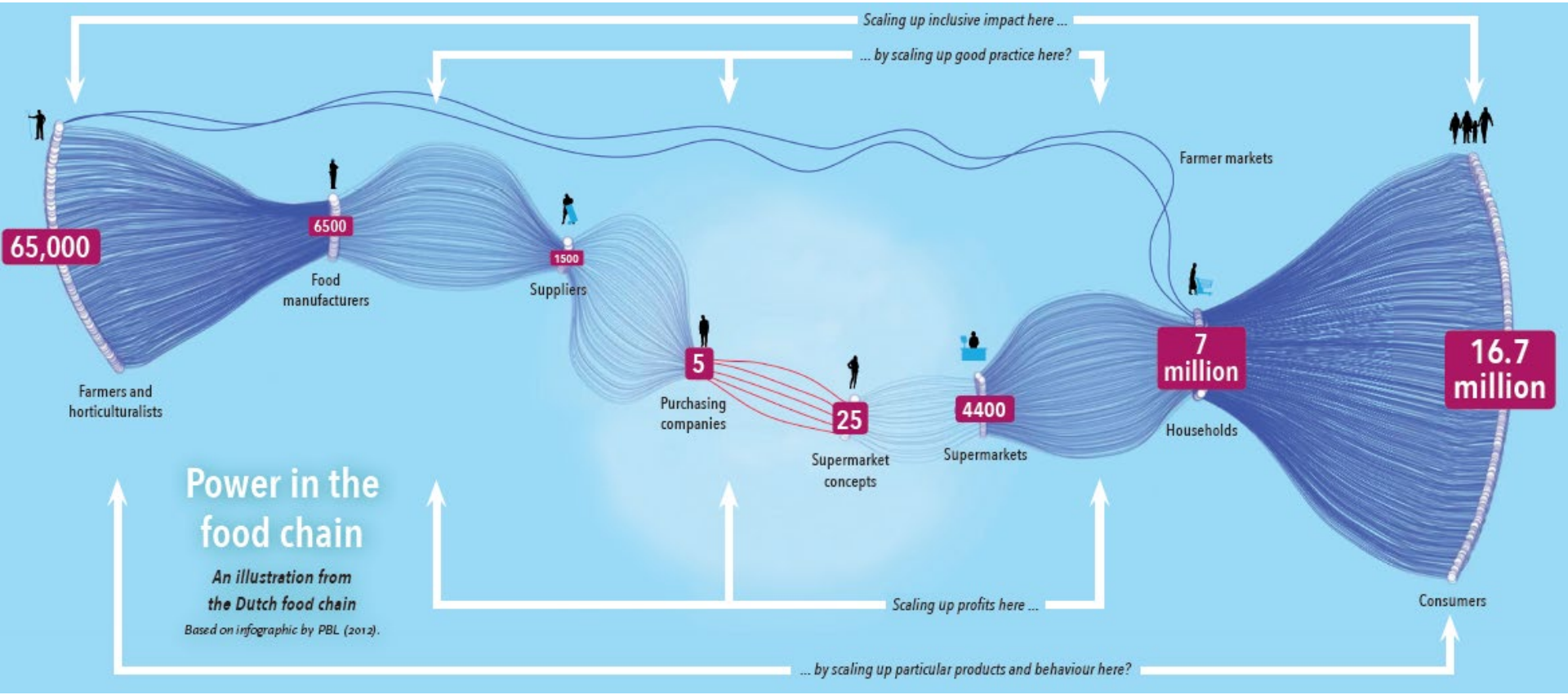
Directionality: it matters who and what drives innovation and to where



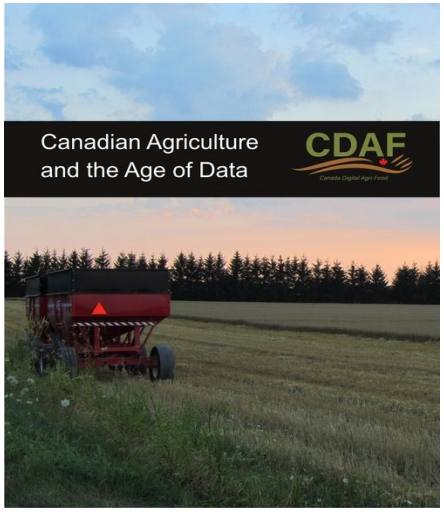
Source: Wigboldus and Brouwers, 2016

Who decides what is innovated and goes to scale in food systems?

E.g. industrial agriculture? Or agro-ecology?

How do policy frameworks contemplate diversity of directionalities in agriculture and food system futures?

FRANCE STRATÉGIE
ÉVALUER. ANTICIPER. DÉBATTRE. PROPOSER.



Contemplating diversity in AIS/AKIS

- How agriculture is done and seen is changing and sector boundaries are blurring – multi-sector, country and technology interaction
- Contemplating diversity of agricultural and food system futures, power and ethics

Can disrupting AIS offer some insights?
Towards Innovation 3.0

…or towards innovation 4.0?

Innovation 3.0

- ✓ Based on the dynamics of complex social, economic and natural systems (cf. food systems: 'complex adaptive systems')
- ✓ Integrates and builds on Innovation 1.0 and 2.0
- ✓ Recognizes ethical dilemmas
- ✓ Combines technological and institutional innovation
- ✓ Deals explicitly with power and politics

Adapted from John Ingram, 2016 based on Woodhill, 2012


Agricultural Systems 164 (2018) 116–121

Contents lists available at ScienceDirect

Agricultural Systems

journal homepage: www.elsevier.com/locate/agsy

Beyond agricultural innovation systems? Exploring an agricultural innovation ecosystems approach for niche design and development in sustainability transitions

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Three frames for innovation policy: R&D, systems of innovation and transformative change

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Trends in Food Science & Technology 107 (2021) 150–156

Contents lists available at ScienceDirect

Trends in Food Science & Technology

journal homepage: www.elsevier.com/locate/tifs

Viewpoint

Research and innovation as a catalyst for food system transformation

A.C.L. den Boer[a,**], K.P.W. Kok[a], M. Gill[b], J. Breda[c], J. Cahill[d], C. Callenius[e], P. Caron[f], Z. Damianova[g], M. Gurinovic[h], L. Lähteenmäki[i], T. Lang[j], R. Sonnino[k], G. Verburg[l], H. Westhoek[m], T. Cesuroglu[a], B.J. Regeer[a], J.E.W. Broerse[a,*]

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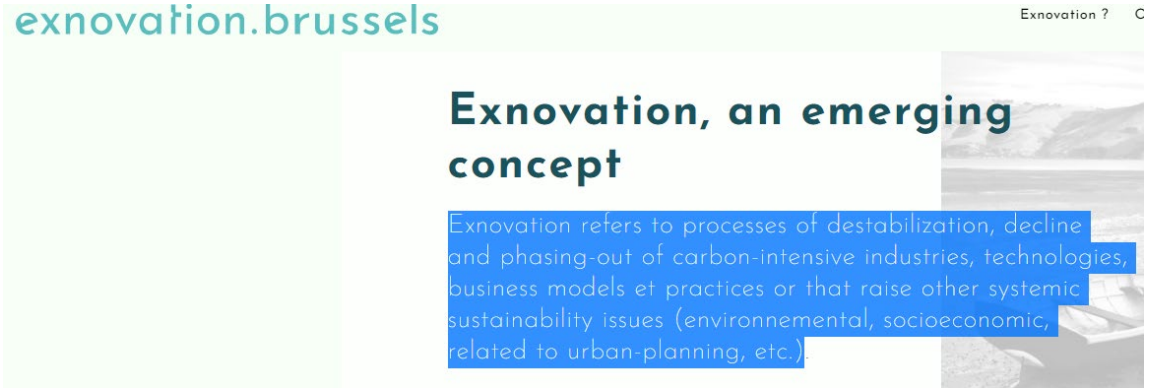
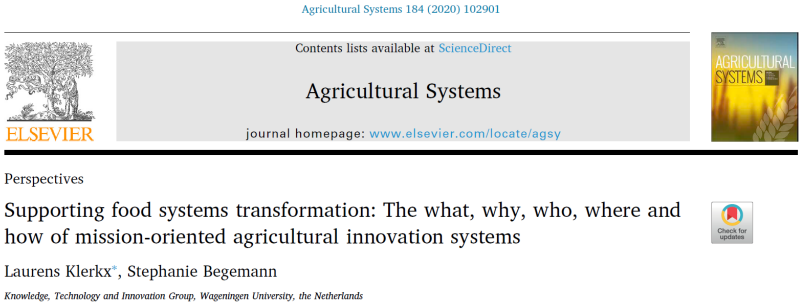
Mission-oriented AIS/AKIS

- "The network of agents and set of institutions that contribute to the development and diffusion of innovative solutions with the aim to define, pursue and complete a societal mission" (Hekkert et al., 2020:77)
    1. Clear direction-setting from the start.
    2. A portfolio of innovation projects to embrace risks, failures and uncertainties.
    3. Investments across different sectors by different types of actors (public, private and third sector actors across the innovation chain).
    4. Joined up policymaking and reflexivity to avoid lock-in scenarios.
- Both *in*novation and *ex*novation (phase-out/destabilization of non-sustainable systems)



Mission-oriented AIS/AKIS

- For example:
  - Protein transition (cellular, plant based, ..)
  - Urban farming (vertical, rooftop, ...)
  - Circular bio-economy
  - Digital agriculture
  - Agroecology
  - Etc.
- Several implicit and explicit food systems transformation missions/sub-missions (directionalities)
- We do not yet have a clear 'mission map' and how AIS/AKIS contemplate and support these


Agricultural Systems 184 (2020) 102901
Contents lists available at ScienceDirect
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journal homepage: www.elsevier.com/locate/agsy
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Perspectives

Supporting food systems transformation: The what, why, who, where and how of mission-oriented agricultural innovation systems

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Analytical questions

- What are the (explicit and implicit) missions? Relative size, importance, attention?
- Why have they emerged? Technology focus, problem-oriented, vision oriented?
- Who drives them (e.g. policy, AgTech, grassroots orgs), what is the composition of the multi-actor networks? Who's included and excluded? Innovation or also exnovation?
- Where? Global, EU, in/across countries?

Moschitz et al. on F2F and AKIS:

The strategy's call for a 'shift to healthy, sustainable diets' needs a comprehensive approach, involving all relevant stakeholders, such as processors, retailers and consumers to identify the most suitable leverage points and support changes in consumption patterns and habits. The Member States need to equip their AKIS accordingly and educate advisors, researchers, knowledge brokers and others for the required change in attitudes and practice. With a view to the necessary comprehensive transformation, the AKIS should be extended to a *Food and* Agricultural Knowledge and Innovation System.

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Reflection for researchers & funders

- What sorts of transformations do I support, e.g. how techno-optimistic am I?
- Who does that include or exclude, e.g. what farmer of the future do I work for?
- How do I engage with power and incumbent structures?
- How do I deal with phase out, alternatives for 'losers'?
- What roles do I take (trans-disciplinarity, facilitator, etc.)?
- How do I work for the long term?


Global Food Security 24 (2020) 100347

Contents lists available at ScienceDirect

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Dealing with the game-changing technologies of Agriculture 4.0: How do we manage diversity and responsibility in food system transition pathways?

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Article

Research funding programmes aiming for societal transformations: Ten key stages

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