

Energy and food transitions, in what sense a regional problem?

March 8th 2023 "Energi och cirkulär ekonomi, vad är nästa steg och kan det finansieras genom JTF (fonden för rättvis omställning)?"

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UNIVERSITY OF COPENHAGEN



Why regional transitions?

- *“the intellectual and policy legacies of our focus on regional competitiveness leaves our discipline out of step with the most pressing regional environmental and economic issues of our time”* (Donald and Gray, 2019, 300)
- How do we deal with climate change *at the regional level?*
- How do we deal with social inequality *at the regional level?*

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Editorial

Regional foundations of energy transitions

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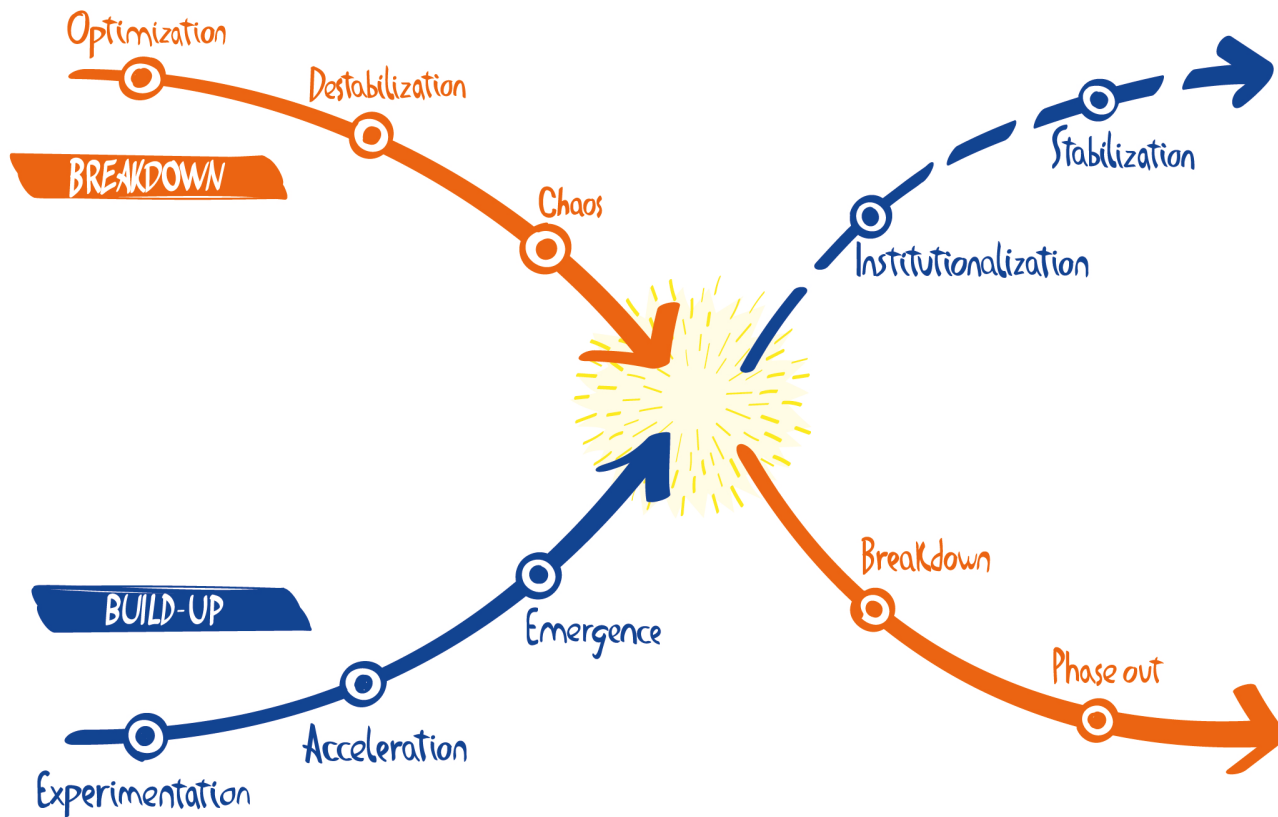
Due to a spatial turn in the socio-technical transition literature, the geography of energy transitions has recently been taken increasingly seriously, leading to burgeoning research output on regional energy transitions since early 2010. Amidst this wealth of publications, however, it can be difficult to keep track of its diverse and constantly evolving landscape. This editorial therefore aims at developing a framework that allows for bringing multiple approaches to regional energy transitions into conversation with each other and that helps to understand and explain the complexity of these interdependencies in ways that go beyond observing regional variety in energy transitions.

Keywords: regional energy transitions, energy transition, sustainability transition, framework
JEL Classifications: O18, P18, Q42, Q48

Energy transitions, in what sense a regional problem?

Across the world, we are witnessing a plethora of actions, policies and innovations that are expediting energy transitions away from fossil fuels towards zero-carbon energy production. The global energy landscape is diversifying, and yet only recently is this development becoming

the subject of regional studies and cognate fields of research. As recently as 2019, Donald and Gray observed, ‘the intellectual and policy legacies of our focus on regional competitiveness leaves our discipline out of step with the most pressing regional environmental and economic issues of our time’ (Donald and Gray, 2019, 300). Increasingly, the twin crisis



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“

Phrases like 'the need for urgent and accelerated mitigation actions at all scales...' should be eliminated from the report."

Adviser
Saudi Oil Ministry

“

Coal is likely to remain the mainstay of energy production in the next few decades for sustainable economic growth of the country."

Senior scientist
India Central Institute of Mining and Fuel Research

Different perspectives on regional transitions?

Transitions in, of and by regions (extending Hölscher and Frantzeskaki 2021)

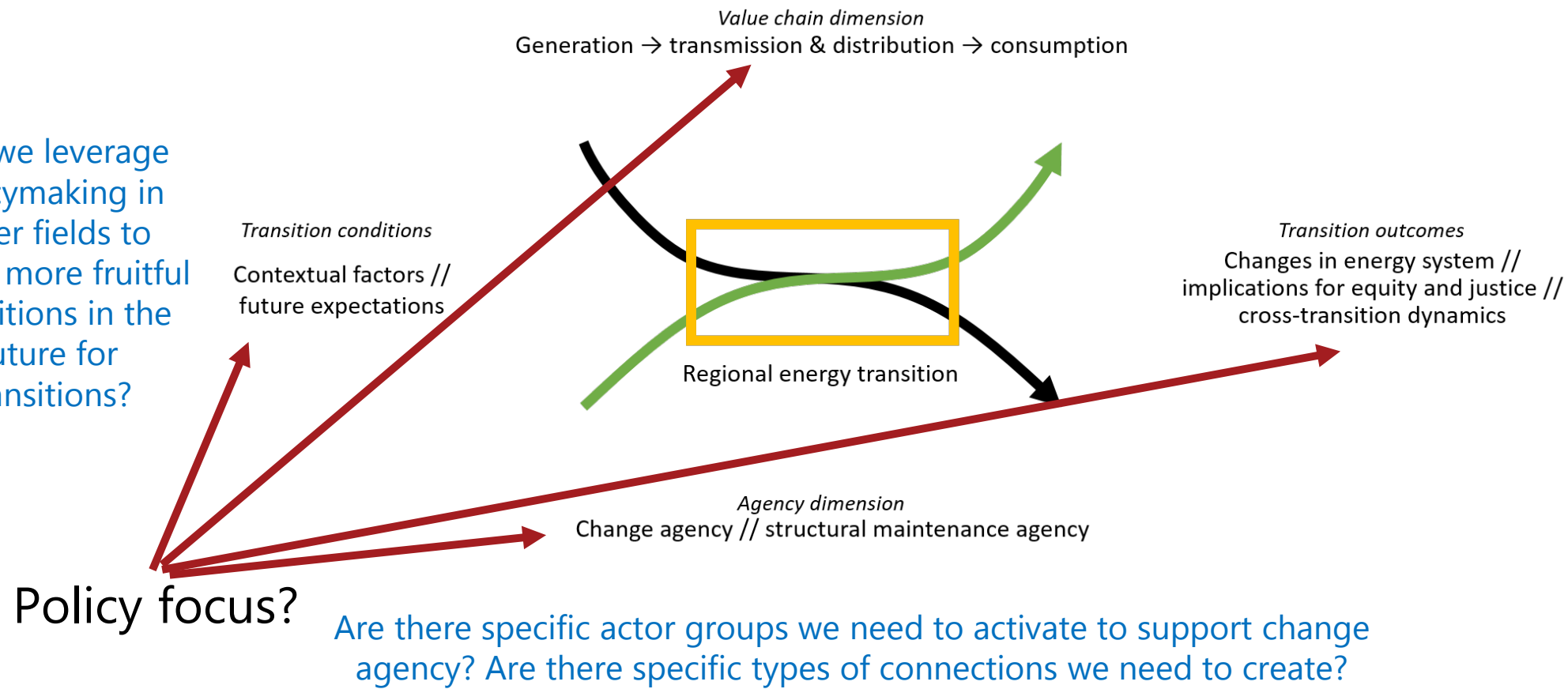
- Transitions in regions
 - Regions as constitutive contexts of (energy) transitions (Hansen and Coenen, 2015; Rohe & Chlebna, 2021)
- Transitions of regions
 - Outcomes and impacts of (energy) transitions on regions (Trippel et al., 2020)
- Transitions by regions
 - Regions as agents of change in (energy) transitions (Späth & Rohrer, 2010)

Different perspectives on regional transitions?

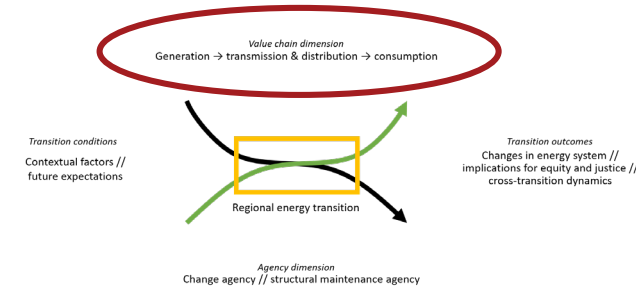
Are we focused on growing new industries? Or changing consumption patterns? And if both, how can we connect the two?

Can we leverage policymaking in other fields to create more fruitful conditions in the future for transitions?

What are our key priorities? Which ones are further down the list?



Value chain dimension



- Multiple forms of green industry development
 - Growing existing green industries (industrial path development)
 - Major qualitative changes to existing industries (industrial path upgrading)
 - Development from existing industries into new industries (industrial path diversification)
 - Emergence of new green industries, unrelated to existing regional industries (industrial path emergence)
- Varying policy approaches needed
- Regions differ in their opportunities for green industry path development

Value chain dimension

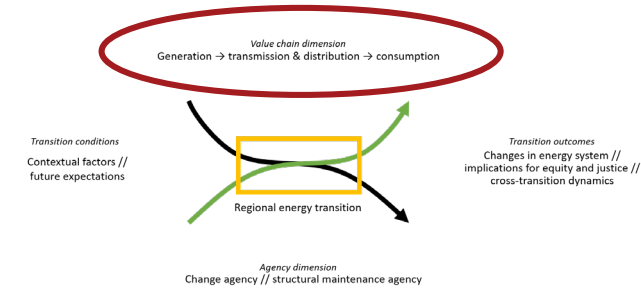


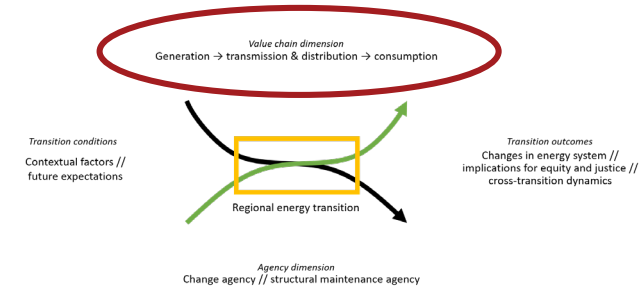
Table 1. Regional typology for green industry development.

	Peripheral region	Specialized region	Metropolitan region
Support system for innovation and entrepreneurship	Weak and limited	Strong in supporting sector-specific innovation, but weak in provision of generic resources	Strong and comprehensive
Regional industrial specialization	No specialization	Specialization in a green industry	Mix of industrial specializations
Forms of green path development	<ul style="list-style-type: none"> Regional emergence of a green industrial specialization Upgrading of existing embryonic green industries 	<ul style="list-style-type: none"> Growing existing green industrial specializations Diversification into other green industries based on accumulated knowledge and resources 	<ul style="list-style-type: none"> Developing new technologies for green industries Forms of path development for green and dirty industries apply also in this context Shift resources from dirty to green industries

Value chain dimension

- Transform dirty into clean

- Example: Ruhr
 - Coal mining and heavy industry!
 - Technical knowledge about pollution and waste helped to establish environmental technology businesses
 - Facilitated by increasingly strict environmental regulation
 - ≈ 100,000 jobs

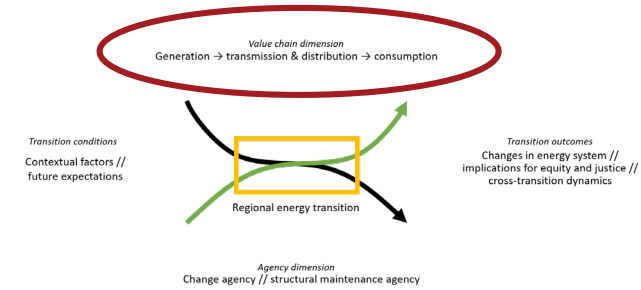


Value chain dimension

- Transform dirty into clean

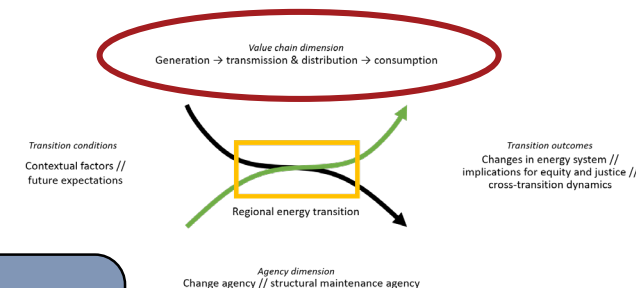
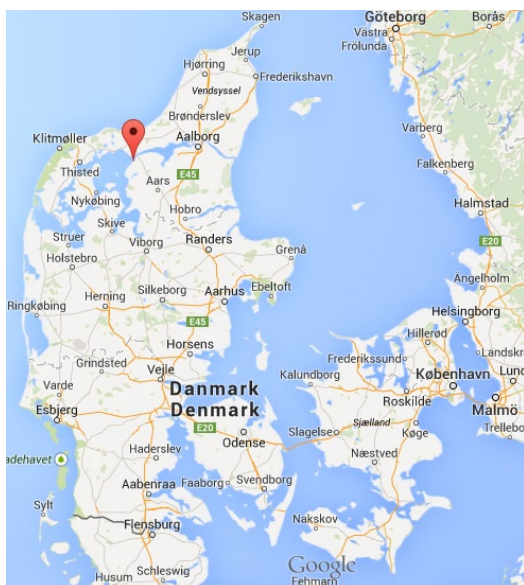
- Policy priorities

- Encourage collaboration between incumbents, start-ups and civil society
- Fund significant research efforts into new technologies
- Support pilot plants to test new technologies
- Promote green institutional entrepreneurs
- Break-up alliances that hinder green restructuring



Value chain dimension

- Develop specialization in a clean industry through path emergence
- Key challenge:
 - Avoid status of “resource periphery” where natural resources are extracted with little value creation locally
 - Upgrading possible beyond basic activities?



Energimastodont rydder landsbyer for at opføre vindmøller

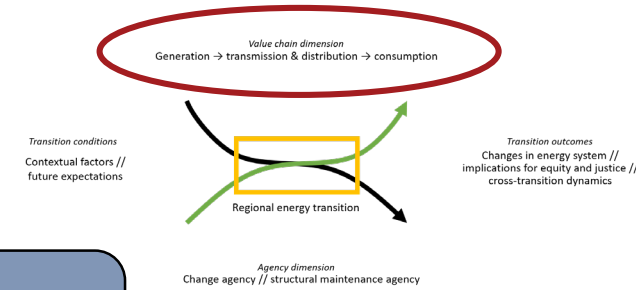


Emmy og Johannes Christiansen har solgt deres hus til Vattenfall, så der kan bygges vindmøller i stedet. Udsigten fra køkkenvinduet byder allerede på vindmøller en masse. Foto: Cathrine Ertmann

■ AVISEN Af Jakob Skouboe

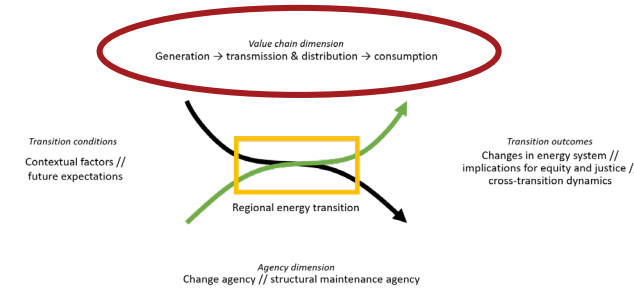
Value chain dimension

- Develop specialization in a clean industry through path emergence
- Policy priorities
 - Provide institutionalized access to extra-regional resources
 - Establish networks to learn from extra-regional policymakers
 - Coordinate between actors involved in technology diffusion
 - Attract external actors in a green industry



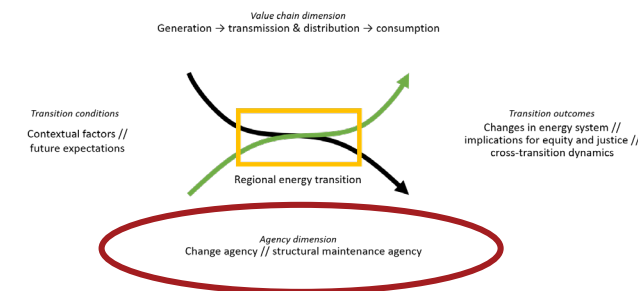
Value chain dimension

- How can we simultaneously support regional transitions in the production AND consumption parts of the value chain?
- Living labs as a potential answer?
 - Sites used to design, test and learn from social and technical innovation in real time
 - Experimentation with development of new products and processes...
 - ...but equally important: experimentation with more sustainable lifestyles
 - How well do solutions scale? What is needed to achieve broader impact?



Agency dimension

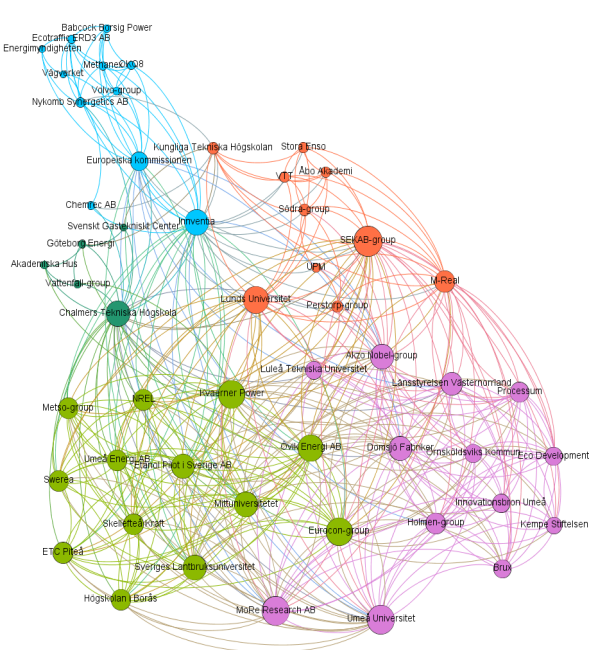
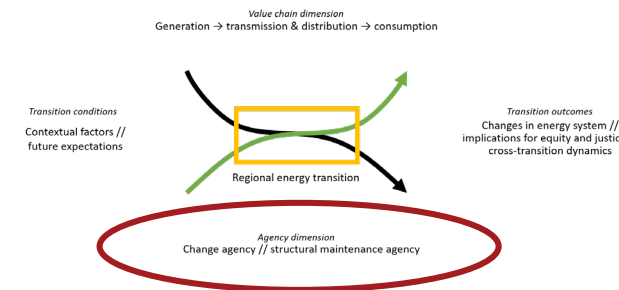
- To orchestrate or not to orchestrate?
- There are limits to how detailed policymakers can manage collaborative relations...
- ...but the trend is moving towards more hands-on, less hands-off



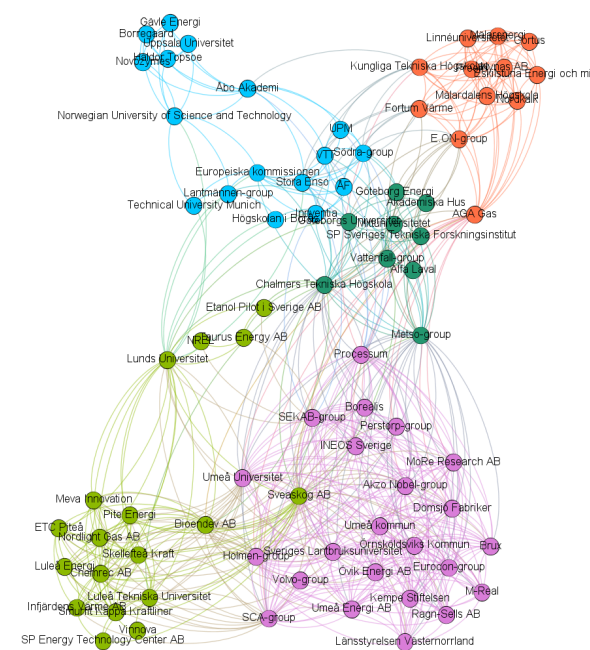
<https://innovair.org/en/about-innovair/about-strategic-innovation-programmes/>



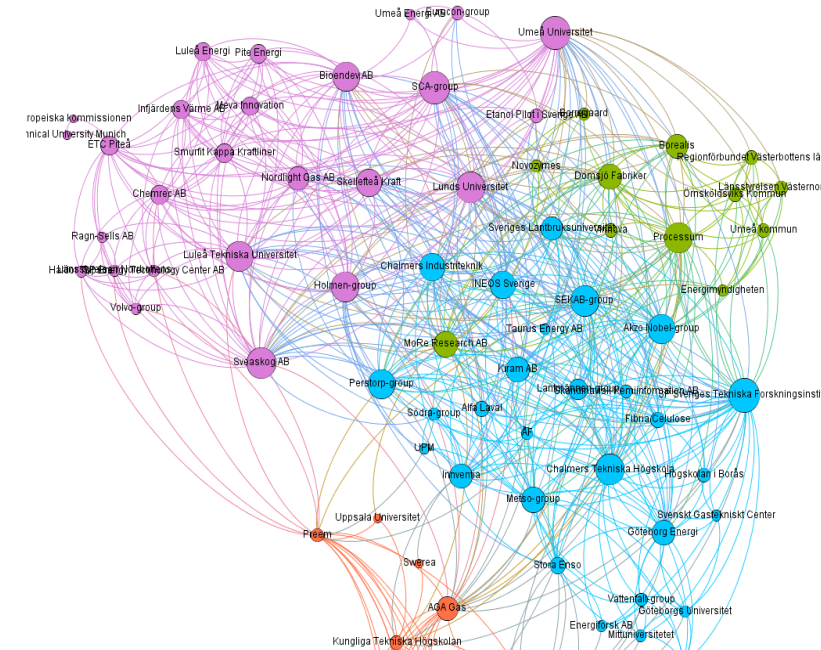
Agency dimension



Phase 1 (-> 2007)



Phase 2 (2008-2011)



Phase 3 (2012 ->)

Transition outcomes

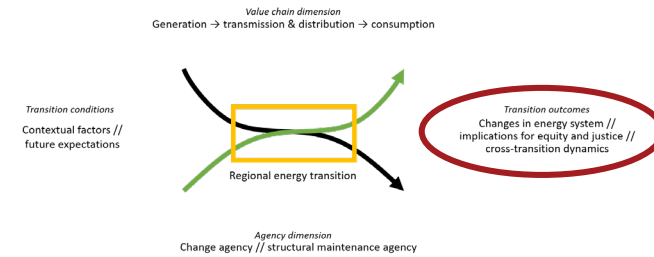
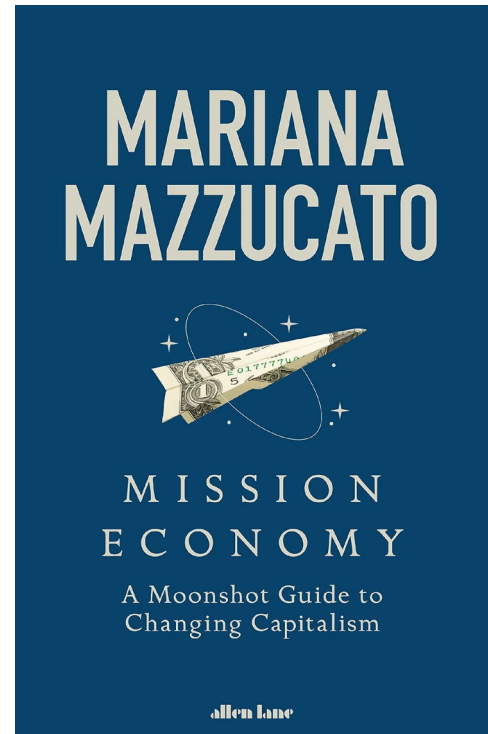
Rathenau Instituut

Research programmes with a mission

Lessons for challenge-driven innovation policy

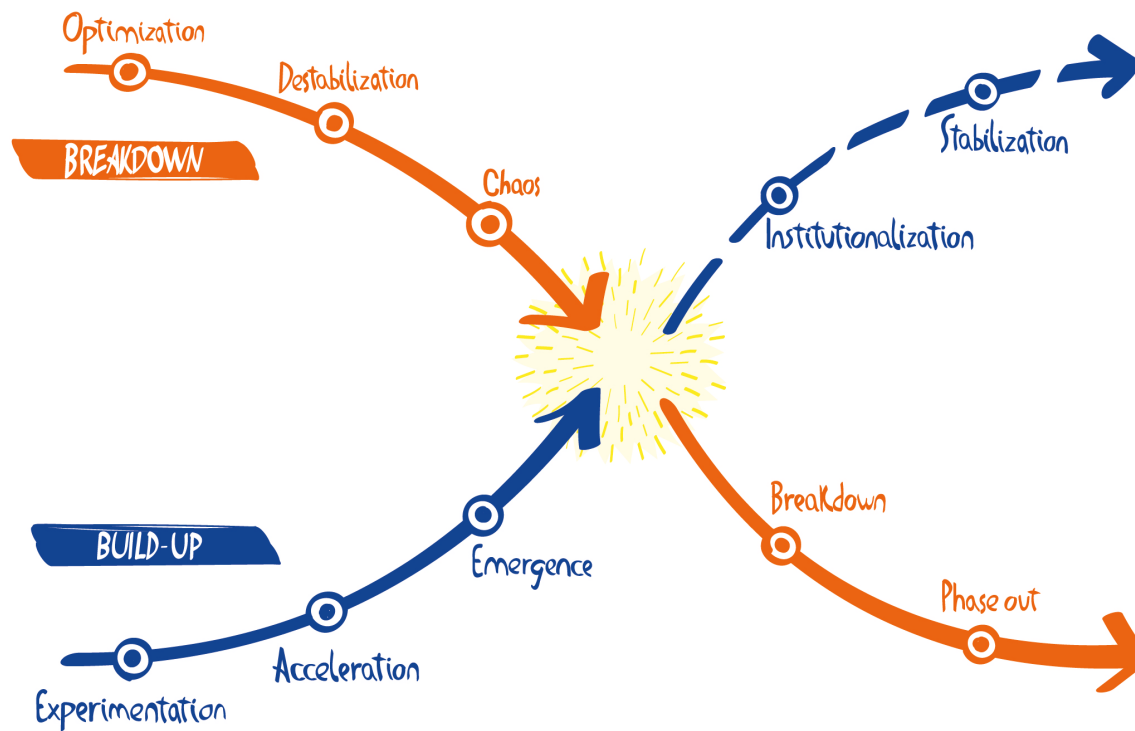
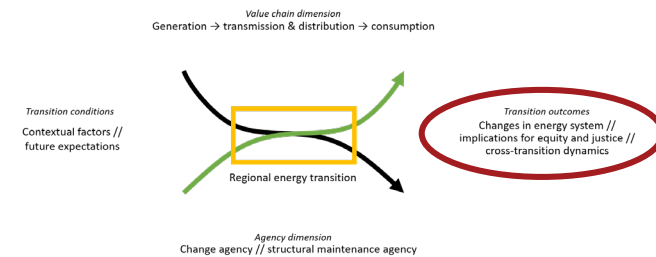


Report

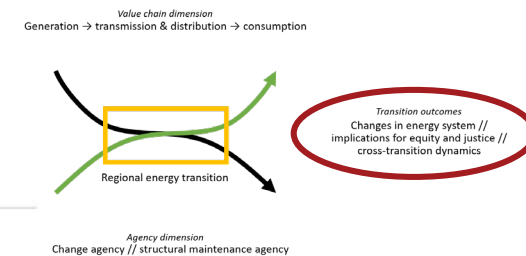


We need a direction!

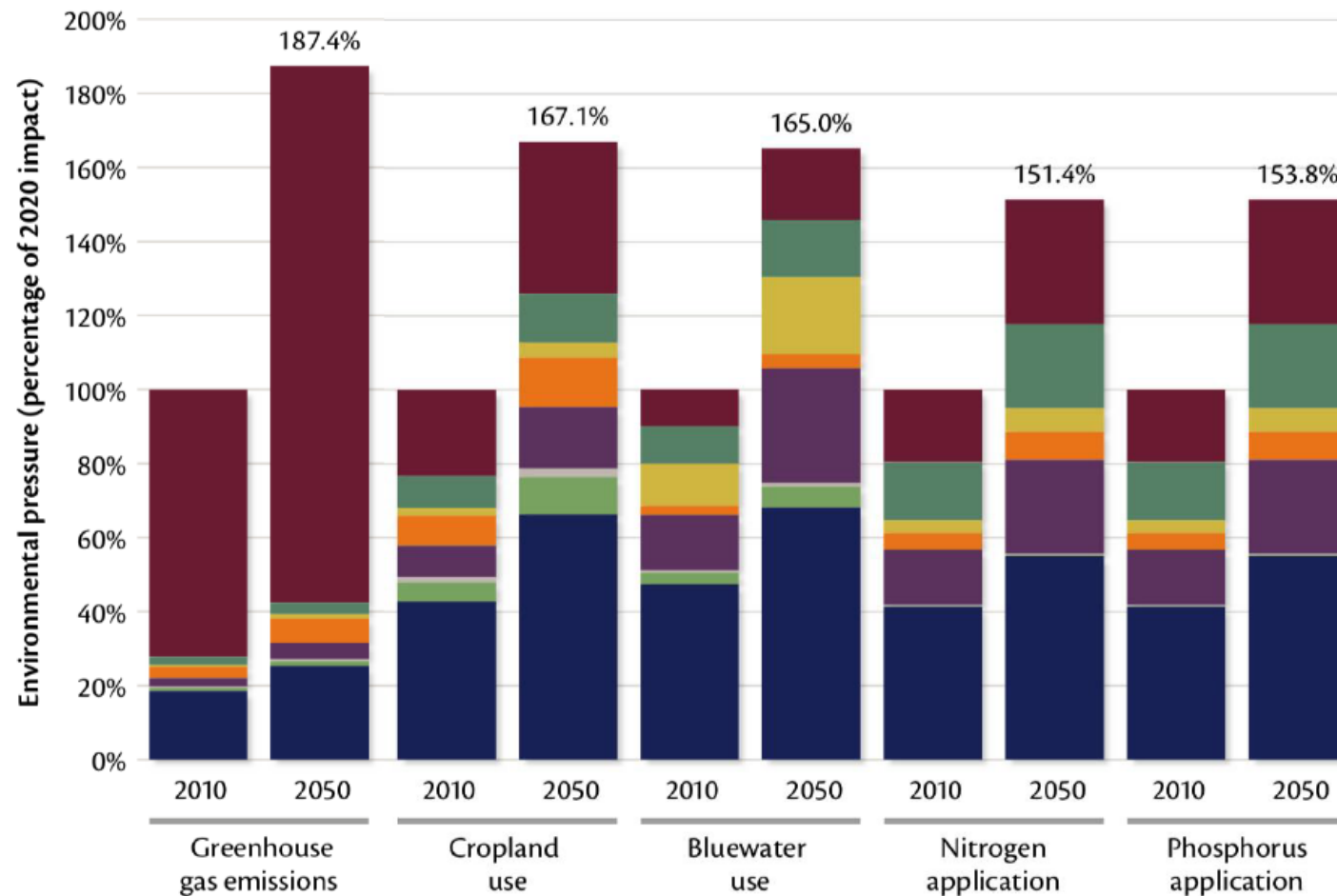
Transition outcomes



Transition outcomes



- Food group**
- Animal products
 - Other crops
 - Sugar
 - Vegetable oils
 - Fruits and vegetables
 - Nuts and seeds
 - Legumes
 - Staples

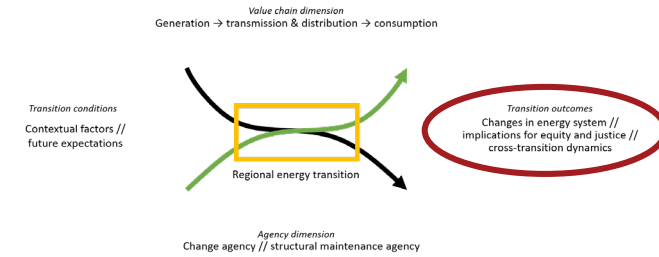


Note: Bluewater is fresh water in streams, rivers, lakes and aquifers.

Source: Global Nutrition Report (2020)⁵

https://www.glopan.org/wp-content/uploads/2020/09/Foresight-2.0_Future-Food-Systems_For-people-our-planet-and-prosperity.pdf

Transition outcomes



		Animal-Source Foods					
		Dairy	Eggs	Fish and Seafood	Meat		
					Unprocessed red	Processed red	White
Health outcomes	Iron-deficiency Anaemia	Neutral	Slightly reduces	Slightly reduces	Strongly reduces	??	Slightly reduces
	Micronutrient deficiencies	Reduces	Reduces	Reduces	Reduces	??	Reduces
	Stunting	Reduces	Reduces	Reduces	Reduces	??	Reduces
	Diabetes, cancer, heart disease	Likely reduces or neutral, but contested	Likely reduces or neutral, but contested	Reduces	Likely increases, but contested	Increases	Likely neutral
Environmental outcomes	GHG emissions	Moderate	Moderate	Moderate (with wide range)	High, but highly variant by setting/system	High, but highly variant by setting/system	Moderate
	Other environmental factors	Moderate to high	Moderate	?? (highly variant)	High, but highly variant by setting/system	High, but highly variant by setting/system	Moderate to high
Livelihoods	Poverty reduction, economic development	Important	Less important (production more industrialised)	Important but geographically concentrated	Important	??	Less important (production more industrialised)

Figure 6. Summary of the health, environmental, and livelihood dimensions of ASF production and consumption. Source: authors' interpretation of the literature cited in this paper.

Conclusion – implications for regional development policy

- Be realistic about what regional policy can do
- Be willing to set requirements to the consortia you support
- Be clear on the regional preconditions and the (im)possibilities that they offer
- Be ready to prioritise between outcomes
- Be attentive to possible synergies and trade-offs between outcomes

Good luck with the rest of the day!

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