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# Towards a research agenda for the AgriFood Transition Thematic Group of STRN

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## NEST 2021 Webinars

*Marc Barbier & Boelie Elzen*

Towards a research agenda  
for the AgriFood Transition Thematic Group of STRN

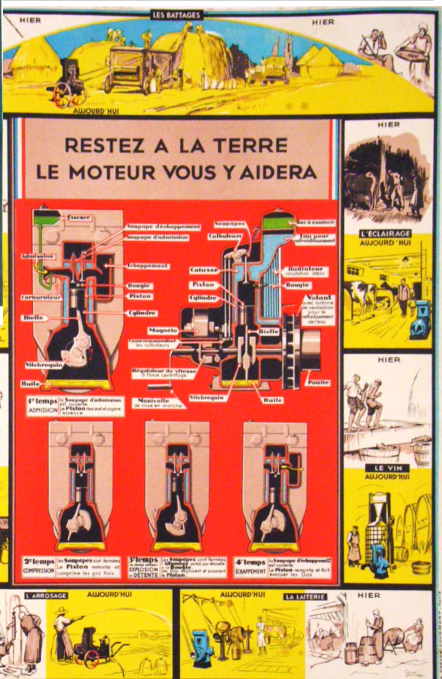
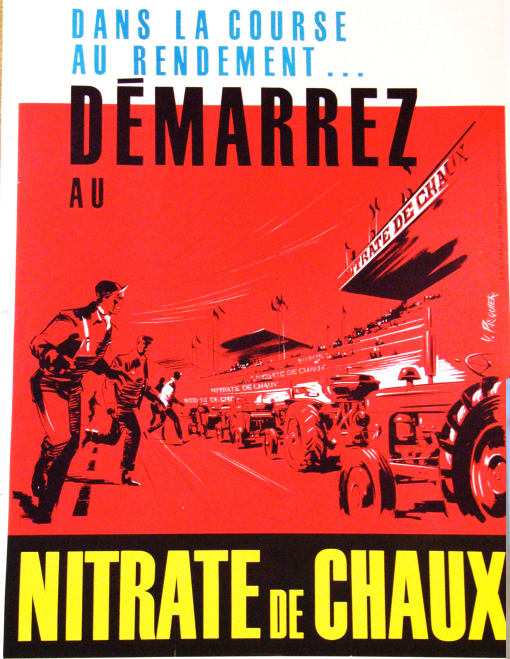
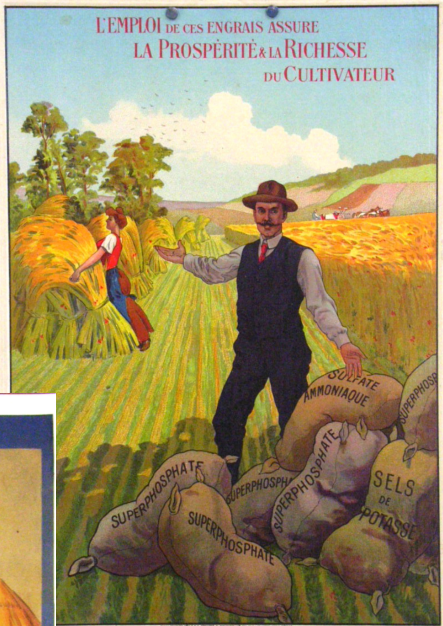
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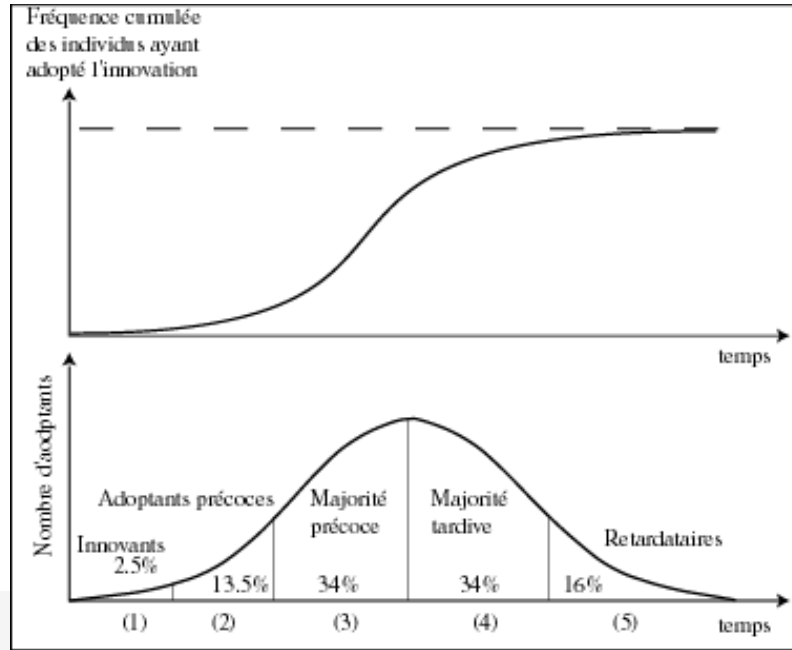
"Les bons moteurs français", édité par BERNARD-MOTEURS et CL'CONORD

# Innovation processes in agriculture: The Past (?)

Technology Push



Market Pull



D'après Rogers, 1995

Market Incentives and Value creation in long food chain

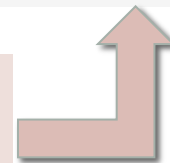
Life Sciences and Agronomics



Agricultural Applied Research



**Production Oriented and Market Oriented System of Subsidies**



Research and Innovation Policy/ Politics/Polities

**The Knowledge Alliance between Agronomist-Economist-Public Officer**

Sectorial Policies (Nat/&EU) and Intern. Agreements





Chicago "World's Fair" 1933  
 Slogan: "Science Finds, Industry Applies, Man Adapts"



USA



USRR



American Society of Agronomy | Crop Science Society of America | Soil Science Society of America  
 677 South Segoe Road • Madison, WI 53711-1086 • Tel. 608-273-6080 • Fax 608-273-2021  
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Food, Feed, Fuel, and Fiber  
 Productivity for the United States:  
 Sustainability with  
 Agronomic, Crop, and Soil Sciences



# The Label of de ISEAL Alliance



# Estimation of the proportion of different FoodSystem Models (Value of food consumption in %)

	France	Sub-saharian Africa	World
<b>Gardenning Food System</b>	2%	40 %	25%
<b>Local Food System</b>	6%	15%	10%
<b>Traditional Food System</b>	5%	25%	10%
<b>AgroIndustrial Food System</b>	75%	20%	50%
<b>Patrimonial FS</b>	8%	2%	4 %
<b>BioOrganic FS</b>	2%	<1%	1%
<b>Ethical/Religious FS</b>	1%	2%	1%

**Differenciation**

## The 1990's



- \* Controversies-based and Evidences-based reframing of the Landscape
- \* Food and Feed at odds from Farm to Fork and Firms to State
- \* BSE, GMOs, Pesticides as templates of a Risk Society

## The 2000's

**PESTICIDE RISKS AT THE BAR**  
Civic mobilization; Institutionnal Changes;  
Ecologization of Politics; Greening of  
Corporate Strategies

- **2005:** ESCo Pesticides
- **2005-2006 :** FNE (consortium of environmental NGOs) claim for pesticide reduction of 50% in 5 years, and call for alternatives to chemical crop protection
- **2006 :** inter-ministerial plan for the reduction of pesticides risks (echoing European guidelines)
- **2007 (Jul-Oct) :** “Grenelle de l’environnement”
- **Octobre 2007 :** decision to launch a national action plan
- **2008 (May to Sept):** structuring Ecophyto 2018 and making it official
- **2009 (oct.):** adoption of the EU “Pesticide Package”
- **2009:** Ecophyto R&D

## The 2010's

**Pesticides Use Directive**  
Directive 2009/128/CE

- **2009:** Decision of Ecophyto 2018
- **Feb 2010:** *Monsanto on Trial for pesticide poisoning Pesticide (P.François' trial)*
- **2010 :** Creation of “PhytoVictims” NGO
- **From 2011 :** Implementation of ECOPHYTO 2018
- **2011:** DEPHY Ferme: Selection
- **2012:** PAE reinforce Ecophyto 2018 (agricchain focus; biocontrol)
- **2012:** PSPE Call for tender
- **2012-2013:** EcophytoPic
- **From 2012:** *In Itinere* Evaluation of the Key Actions of ECOPHYTO 2018
- **2014:** Pottier Report
- **2015:** *Ecophyto Plan 2*
- **2016:** *Glyphosate and neocot. at the Bar*



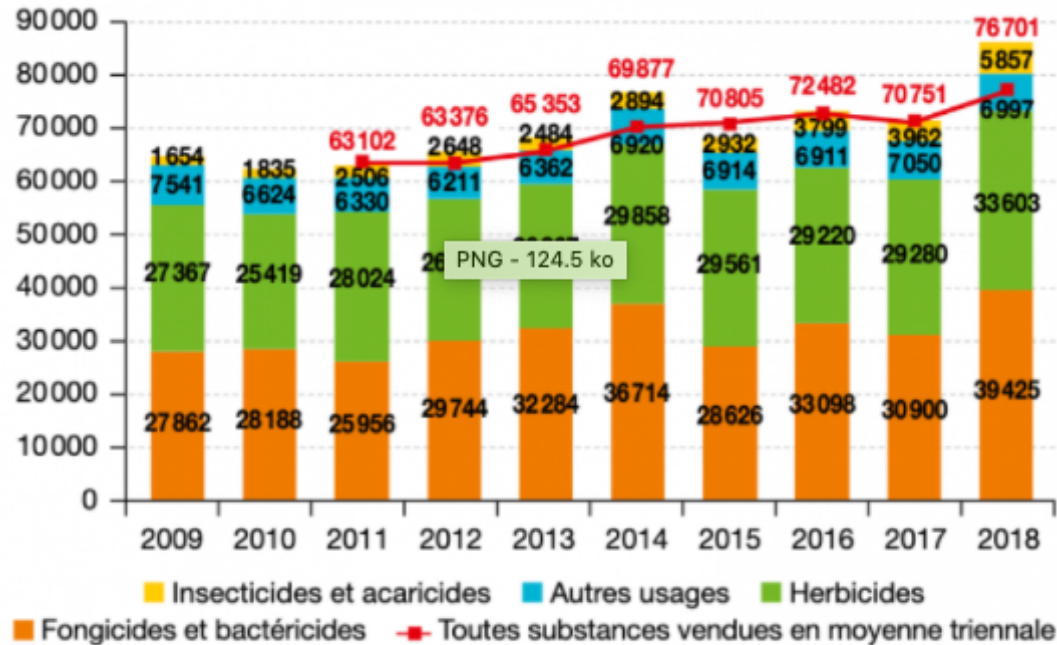
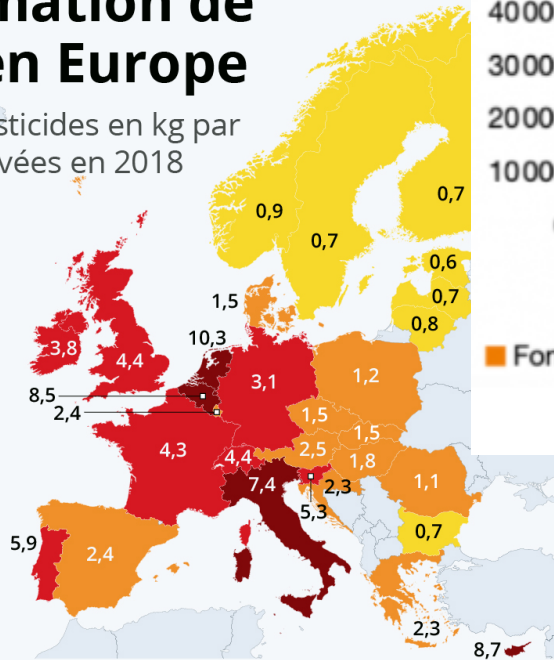
# The evolution of NODU index in France

The Green Deal 2020 : target -50% in Europe

## La consommation de pesticides en Europe

Consommation de pesticides en kg par hectare de terres cultivées en 2018

- >6 kg/ha
- 3-6 kg/ha
- 1-3 kg/ha
- <1 kg/ha



En 2018, la quantité totale de substances actives vendues en France s'élève à 85 900 tonnes (t), contre 71 200 t en 2017. Source : BNV-D

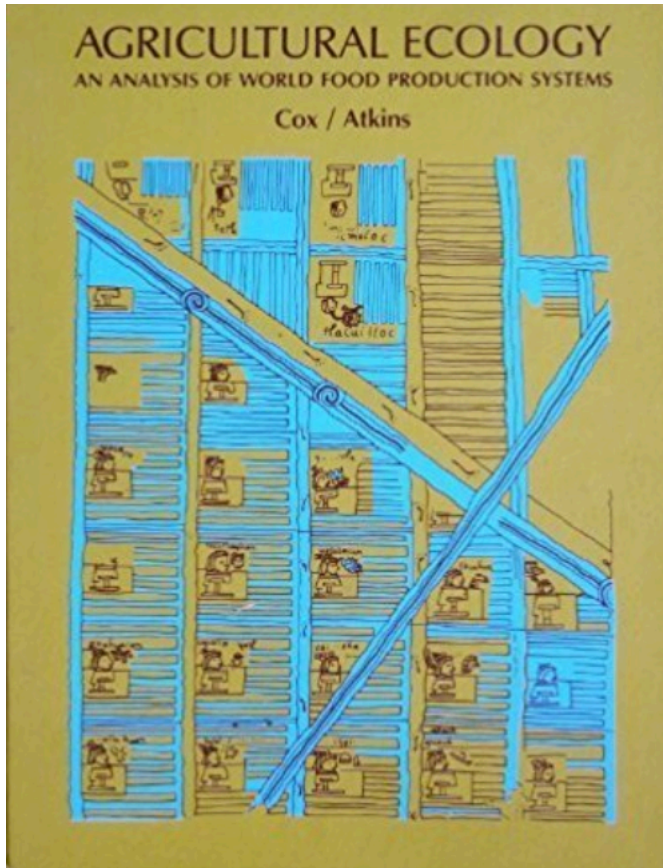
Sélection des pays de l'UE avec la Suisse, la Norvège et le Royaume-Uni.

Données arrondies.

Source : FAO



# The joining of Ecology and Agronomy : the transformation of *Denkstil* and *Denk-Kollektiv* in the 1970's



**Title:** Agricultural ecology. An analysis of world food production systems.

**Author(s) :** Cox, G. W.; Atkins, M. D.

**Author Affiliation :** San Diego State Univ., San Diego, CA 92120, USA.

**Book :** Agricultural ecology. An analysis of world food production systems. 1979

**Abstract :** The aim of this book is to stimulate interest in agricultural ecology and in an **interdisciplinary approach to agricultural science** as well as to show the **ecological fitness of past and present agricultural systems** as a basis for developing an **ecologically sound approach to agriculture in the future.**

# Deviant Agronomic Trial



lots with varying degrees of weed control at the University of California, Santa Cruz.

Gliessman, S. R., M. A. Altieri. 1982. Polyculture cropping has advantages. *Calif. Agric.* 36(7): 14-16.

## From Miguel Altieri's CV (on line)

Altieri, M. A., K. S. Hagen, J. Trujillo and L. E. Caltagirone. 1982. Biological control of *Limax maximus* and *Helix aspersa* by indigenous predators in a daisy field in central coastal California. *Oecologia Applicata* 3(4): 387-390.

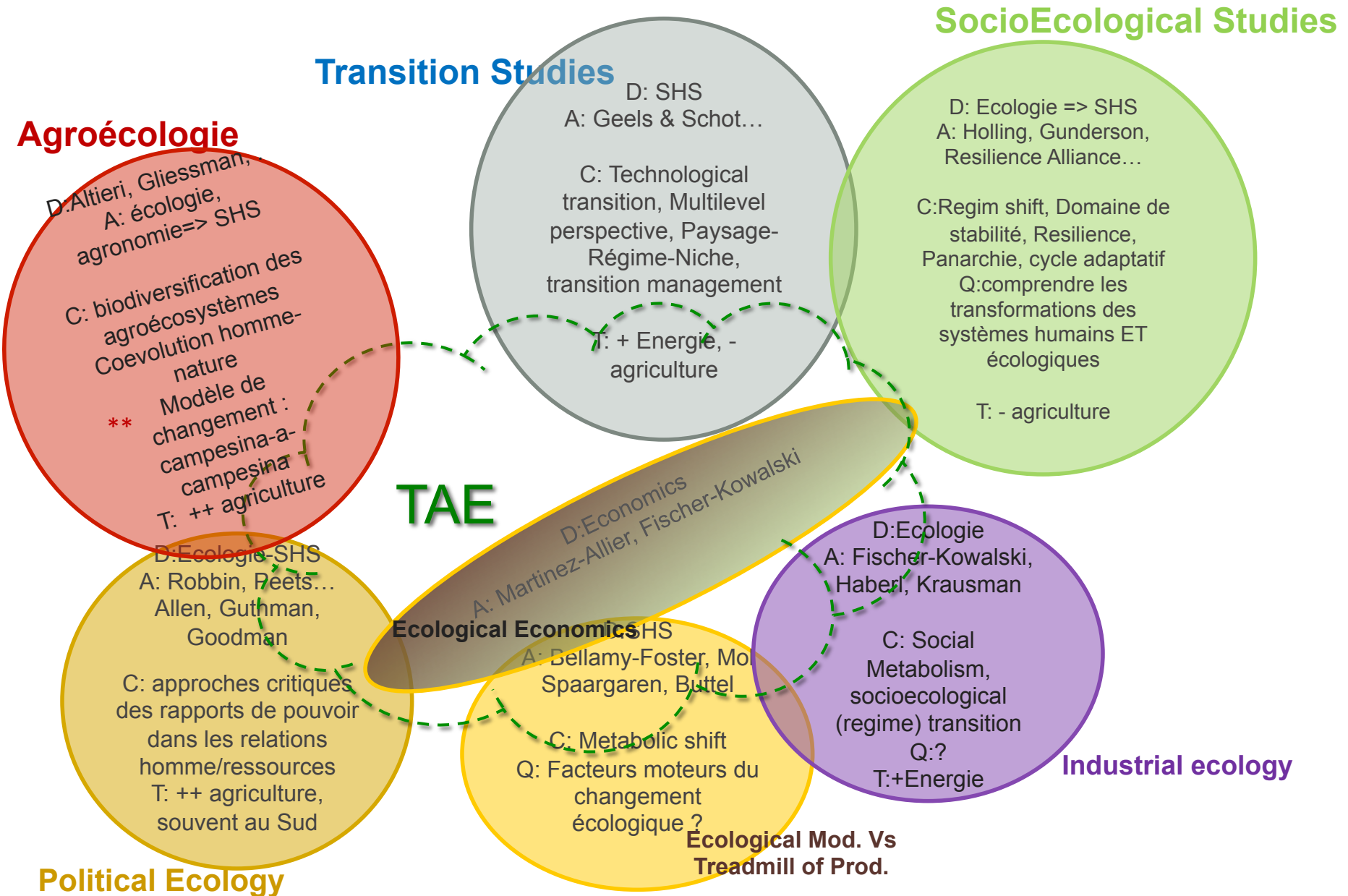
Gliessman, S. R., M. A. Altieri. 1982. Polyculture cropping has advantages. *Calif. Agric.* 36(7): 14-16.

Altieri, M. A., D. K. Letourneau and J. R. Davis. 1983. Developing sustainable agroecosystems. *BioScience* 33(1): 45-49.

**Altieri, M. A. 1983. Agroecology, the Scientific Basis of Alternative Agriculture. Div. of Biol. Control, U.C. Berkeley, Cleo's Duplication Services. 173 pp. (out of print).**

Altieri, M. A. 1983. The question of small farm development: Who teaches whom? *Agriculture, Ecosystems and Environment*, 9: 401-405.

# AgroEcological Transition Nexus (from Ollivier, 2015)



The UN Food Systems Summit seeks to alter food systems to be healthier, safer, more sustainable, more efficient, and more equitable.

Scientific Group Reports are shared to provide information and facilitate discussion for transparent and evidence-based Summit preparations.

- **Food Systems – Definition, Concept and Application for the UN Food Systems Summit**

by Joachim von Braun, Kaosar Afsana, Louise O. Fresco, Mohamed Hassan, Maximo Torero (March 2021)

- **Healthy diet – A definition for the UN Food Systems Summit 2021**

by Lynnette M Neufeld, Sheryl Hendriks, Marta Hugas (March 2021)

**Action Track 1 – Ensuring Access to Safe and Nutritious Food for All Through**

by Sheryl Hendriks, Jean-François Soussana, Martin Cole, Andrew Kambugu, David Zilberman (March 2021)

**Action Track 2 – Shift to Healthy and Sustainable Consumption Patterns**

by Mario Herrero, Marta Hugas, Uma Lele, Aman Wira, Maximo Torero (April 2021)

**Action Track 3 – Boost Nature Positive Production**

by Elizabeth Hodson, Urs Niggli, Kaoru Kitajima, Rattan Lal, Claudia Sadoff (April 2021)

**Action Track 4 – Advance Equitable Livelihoods**

by Lynnette M. Neufeld, Jikun Huang, Ousmane Badiane, Patrick Caron, Lisa Sennerby Forsse (March 2021)

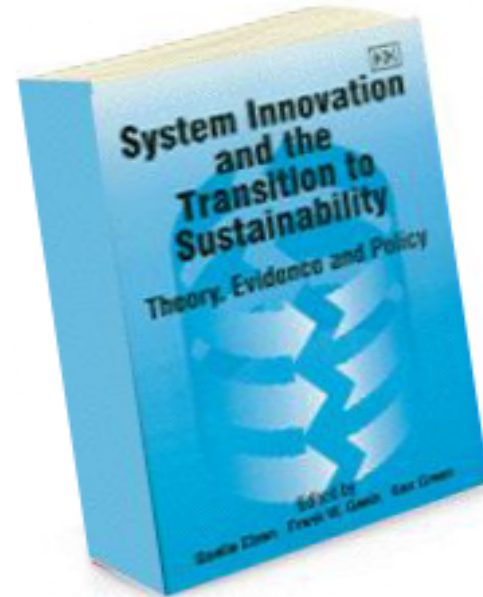
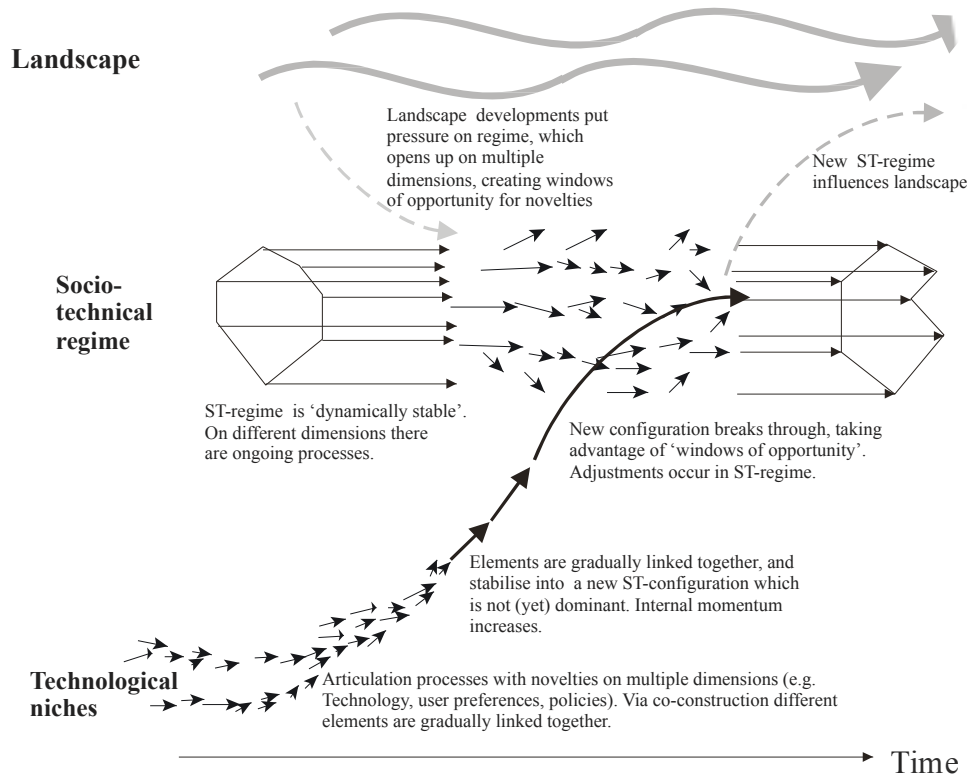
**Action Track 5 – Building Resilience to Vulnerabilities, Shocks and Stresses**

by Thomas W. Hertel, Ismahane Elouafi, Frank Ewert and Morakot Tanticharoen (March 2021)

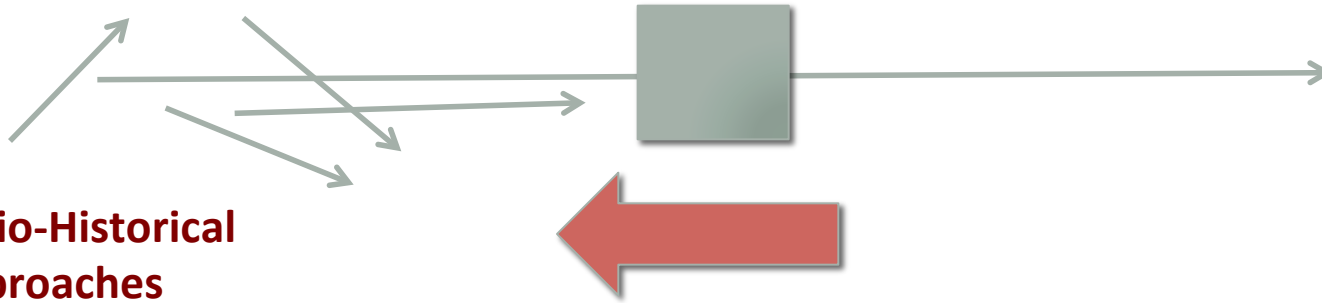
## **2. Specificity of Agrifood ST-Regime Studies for STRN companioning**

# Area of enquiry and studies

- Theorizing and empirically affording discontinuity, changes and learning in Agro-Food Socio-Technical Regime
- Questioning the operationalization of changes at various level of System Innovation and local
- Entering dialogues with practitioners, issue leaders and policy makers during the Research Process



# 1. Thinking Backward and Forward: epistemic challenge



**Socio-Historical Approaches**

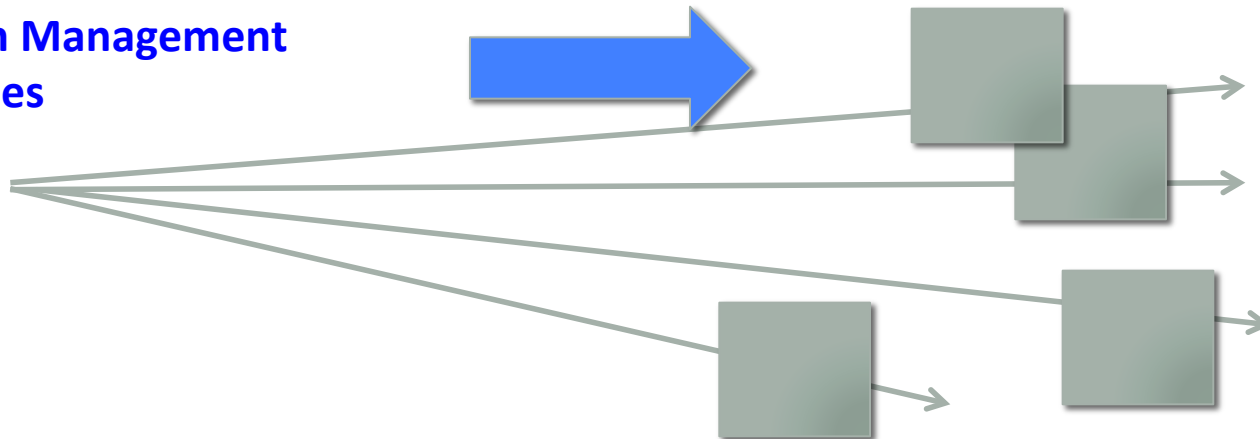
A retrospective account of black-boxing hybridity in innovation and the selection of pathways

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***Epistemic divide (?)***

A prospective account of possible/desirable futures and pathways to achieve changes

**Transition Management Approaches**





## *2. Thinking in the middle of Two extreme types of envisioned transition pathways*

Sociotechnical regime in agri-food systems (Barbier et Elzen 2012; Levidow et al., 2013; Levidow 2015; Lamine, 2015)

(i) an **optimization pathway**, relying on an improvement in the efficiency of inputs and maintaining an objective of increasing production for food security reasons, which could be aligned with the current organization of the greening of industrial agro-food regime,

**vs.**

(ii) a **deeper transformation pathway**, aiming at reducing the dependence on inputs and leading to more radical and systemic changes based on sustainable criteria and societal values of reconnection.

# 3. Characteristic and Specificity of Agrifood ST-Regime Studies (1)

- Agricultural production represents the physiocratic idea of nourishing Nations and to be considered as a distributed Industry to be managed by sectorial policy and agrochain profitability to “nourish the world”; this Sociotechnical regime is having historicity
  - **Field of Collective Enquiry: Variety of country or regional profiles towards the critique and the reconsidering of this fallacy**
- Agricultural production shows more atomised socio-economic structures and policy-making levels (small/big farmers, cooperative, vertical/horizontal organization at food chain level) than a classical industrial sector; it is rather a highly complex sociotechnical regime in terms of Private/Public - Civic/State – Network/Institution
  - **Field of Collective Enquiry: : variety of profile towards farming and foodchain structures and it represents a laboratory of sociotechnical transitions**
- A mix of formal and Informal institutions at the level of farms, rural space, food provision systems and of existing in site-specific contexts (idiosyncratic) to face political, economical and societal pressures
  - **Field of Collective Enquiry: an assemblage of cultural norms, values, beliefs and of technical knowledge about agro-climatic conditions and contribution to climatic change.**

# 3. Characteristic and Specificity of Agrifood ST-Regime Studies (2)

- Agricultural production is classically muddled through many innovation processes (high of low tech) and technological rationalization pathways that are expressed in niches, sustained by brokers, in specific areas or in agrochain, and more and more invested by the digital turn and knowledge infrastructures
  - **Field of Collective Enquiry: an assemblage of scientific-technical knowledge and infrastructure about agro-climatic conditions and contribution to sustainability challenges (climate, biodiv, land uses, diet) how does it work?**
- Agricultural production represents a nexus of many sustainability challenges and a common vector of sociotechnical controversies (environmental crisis, food scares, biodiversity loss, climatic) with a stake of phasing-out agro-industrial lockin
  - **Field of Collective Enquiry: how transitions are operated as complex question to be managed (or not) in policy, in dispositives and social movements?**
- Agricultural production represents a nexus of tensions, solutions and problems for the manufacture of futures and the design of new system innovation
  - **Field of Collective Enquiry: how futures agroecological knowledge, policy mix, intermediation, shortening food provision can be designed together and operate changes in the governance of transformative changes?**

## 4. *Claim to be discussed*

- If novelty, innovation and breakthroughs are profoundly positively attached to the promises that ground transitions, the critique of **existing sociotechnical regime is usually understood as coming from the “outside” of the regime** (from political landscape regulation or innovative niches).
  - Our interpretation is that **politics of the futures** that are back-casted in the present **induce policies of the present**,
  - But these policies have to go through a **critique** if not a **de-structuration** of the **pillars of “agri-food modernity of the past”**
  - Hence for actors inside the regime to **re-open the black boxes of previous rationalisation processes outcomes**, supposes many politics/subpolitics at play **inside a given sociotechnical regime**

**Our objective is to enlighten a constructive critique of past-modernity and to favour the governance of agrifood transitions**

# Engaging in AF-TN Studies

- Pluralizing entry-points, perspective and theoretical backgrounds in analysis with multi-level and process oriented approaches
- Multiplying cases and specially non-standard cases and inter-sectorial cases
- Entering systematic comparisons within AgroFood Transitions portfolio but also with other filed and sectors of sustainability transitions
- Conceptualizing scientific problems and situation of action for researchers together