

The rise of and contrasts between the eco- and bio-economy in agrifood networks and regional development



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The food & sustainability challenge



- Population increase: 11 billion in 2050
- The food production has to increase with 50%; more than a billion people suffer from hunger
- Globalizing agri-food networks & large regional differences. International competition (land, biofuels, animal feed)
- Climate change, environmental problems and depletion of resources.
- Pleads for intensive productivism (The Royal Society).
- There is a need for 'a real green revolution' (Evans, 2009)

Ecological Modernization



- Origin: Combine ecological and economic goals with innovative technologies, science and strong state-influence (Huber, Jänicke, Toffler)
- We see a politico-institutional framing favouring the bio-economy, based on a narrow interpretation of EM in agri-food networks
- Narrow EM has some missing links: 1) social 2) cultural 2) political 3) spatial
- The results of EM as policy program are bureaucratisation, standardisation and a hygienic mode of regulation which excludes small-scale farmers
- Eco-economy as the expression of 'real' EM

Dimensions of the bio- and eco-economy in agri-food networks I

Dimensions	Bio-economy	Eco-economy
Economical	Corporatization Productivity (yield) oriented	Agri-food networks Integral approach of food security
Technological	Technology development economically driven	Technological generation as a demand-driven process
Ecological	Ecological and genetic engineering (industrial ecology)	Based on agro-ecological principles

Dimensions of the bio- and eco-economy in agri-food networks II

Social-cultural	Dependency, scientification, rational man-nature relation, loss of farmers freedom and agricultural employment	Sovereignty, Autonomy Synergy between man-nature Demand-driven research Labor-intensive
Spatial	Globalized Export-oriented Use of external resources	Locally embedded Endogeneity Use of local resources
Political	Top-down steering One-direction communication by extension services Power of multinationals and large retailers	Enabling policy Participatory approaches Influence of communities in agri-food networks

Expressions of the bio-economy

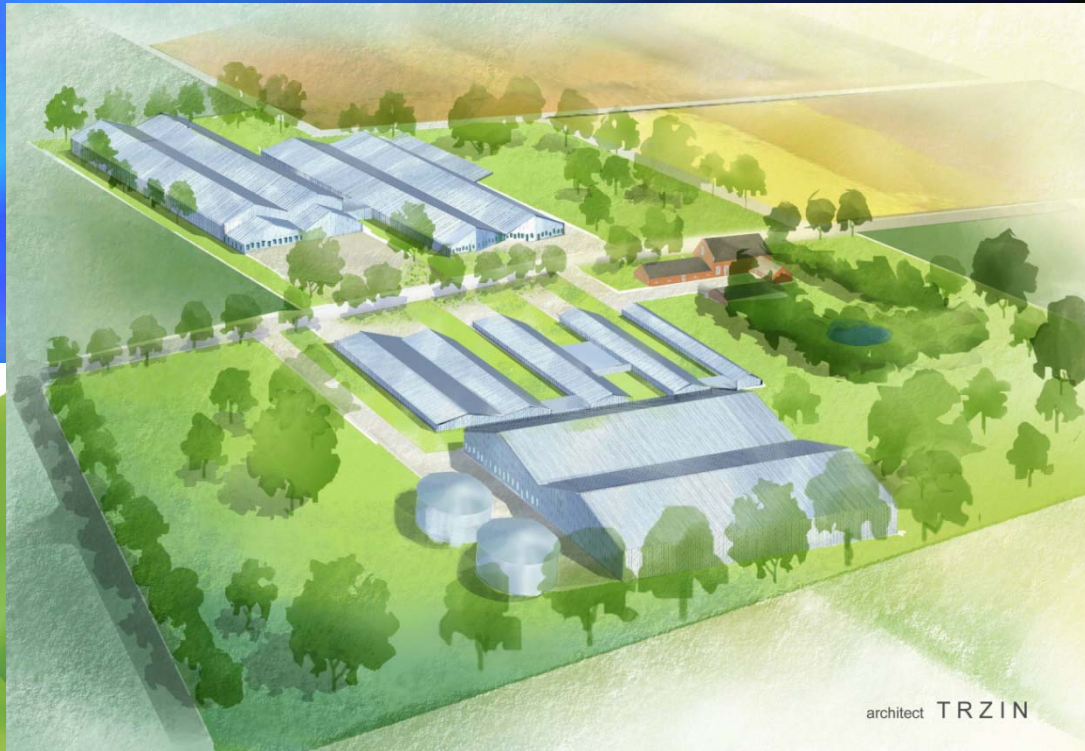
- Principles: eco-efficiency; industrial ecology, innovation, competitiveness and decoupling
- Competing land-use: bio-based products and biofuels
- Biological engineering (GM, synthetic biology, nanotechnology, stem cells)
- Regional clustering in agroparks



Agropark in Sjanghai (Smeets, 2007)



The New Mixed Business in the Netherlands



architect TRZIN



architect TRZIN

Clustering of 1,3 million chicken, 35.000 pigs and a bio-energy installation

Expressions of eco-economy in agri-food networks

- Multifunctional agriculture producing services
- Sustainable agriculture: Organic agriculture; (Peri-) Urban; Low-input agriculture, Zero-tillage & Agro-forestry
- Alliances between different sectors
- Resilience and local embeddedness



Empirical 'evidence'

- Organic agriculture can produce enough food per capita (FAO, 2007), yield ratios $>1,0$ in developing countries, compared to non-organic (Badgley et al 2007)
- Organic agriculture is more profitable due to higher yields and price premiums (Nemes 2009)
- Agro-ecological projects lead to higher productivity (Pretty and Hine 2001)
- Local-scale food systems are more sustainable because they have 'tight feedback loops' (Sunkvist et al 2005)



Examples: I. Zero-tillage in Brasil

- 15 million hectare under 'plantio direto'
- No mechanical soil disturbance
- Permanent soil cover
- Judicious choice of crop rotations



V. State-led organic agriculture in China



- Green Food Development Centre
- Fushan village experiment: economical development, biogas production, better soil structure, reductions in fertiliser applications and increases in crop yields.



VI. The 'ENSETE' system in Ethiopia

- 5000 year old agro-forestry system of the Gedeo people (Kippie, 2002)
- Perennial cropping, large variety of products + annual vegetables
- Resilience against drought
- Ensete as 'pacemaker, spacemaker and placemaker'
- Productivity: Six mature Ensete plants per adult per year, a household of seven persons needs 0,2 hectare (yearly supply)



Outline of a new eco-economical regional paradigm

	Bio-economical regional paradigm	Eco-economical regional paradigm	Empirical examples based on Etude projects
Direction of development	Vertical oriented agricultural development	Vertically and horizontally oriented regional development	Regional (product and destiny) branding
Sector	Mono-sector oriented	Multi-sector oriented	Energy production from biomass
Functions (nature, agriculture, tourism)	Mono-functional, spatially divided Increased mobility,	Multifunctional/integrated Decrease of food miles	Rural services (education, tourism) and multifunctional agriculture (agri-tourism, nature/landscape management, city farms, care farms)
Products & Markets	Agricultural mass production Global markets 'McDonaldization'	Endogenous development, Regional (niche) products and services Adding of local value based on regional assests	Marketing of new breeds/varieties/products; Organic production Culturally embedded products Shortening of food supply chains
Business-relations	Business-to-business	Business to consumer, links to new actors	Direct selling, rural estates, local food for specific groups like schools
Policy	Centralisation Hierarchical levels (state-region-local)	Decentralisation and European influence Fluide regions New temporary policy arrangements and 'soft spaces' of planning	Leader-programmes International partnerships Regional cooperation (public-public, public-private, 'triple helix',)

Eco-economical strategies in regional development (Overview 62 projects, ETUDE)

1. (niche-) Innovation
2. New interfaces
3. Re-orientation on rural resources
4. Integral regional development



I. (Niche)-Innovation; Dimensions of product-market innovation

Current	Markets
Improvement or marketing of existing products (e.g. marketing organic beef)	New products (e.g. specific breeds, varieties, non-food)
Current products	New products
New Markets (e.g. local food for schools)	New products for new markets (health, housing & farming)
New	Markets

Example New product-market combination: BIO-energy from wood chips and agricultural waste



II. New interfaces

Individual	Actors
Direct selling of beef in Umbria	Farm care/city farms / rural estates in the Netherlands
Market goods	Public goods
Community owned wind turbine in Wales	Landschaftspflege Verbände in Germany
Collective	Actors

III. Re-orientation on Rural Resources

Agricultural Regional specific farm practices and products (breeds, guidelines) Product-based	Products Brands of products rooted in cultural identity (eg West County cheese makers) Culture-based
New product-market combinations based on regional resources (e.g. bio-energy from forests) Regional products	Regional branding, eg de Eiffel and services

IV. Integral regional development and branding

- Example: Regionen Aktiv in East- Germany, from waste-land to recreational and housing landscape



New Rural-urban linkages: a lubricant for regional development (based on the rural web model and 12 European regional cases, ETUDE)



Rural-urban linkages as driving force and outcome; 6 dimensions

- Remoteness or closeness
- Development based on the primary sector or diversified
- Degree of endogeneity
- Linked to cultural/symbolic capital or disconnected
- Based on agri-ruralism or post-productivism
- Institutionalised and/or informal networks

I. Remoteness and closeness



- Smiltene: Sportscentre near by the towns Cesis and Valmiera
- Kittila: ski-centre for tourists from Helsinki (1,5 hour by plane)



II. Development based on the primary sector or other sectors



- Giessen: knowledge region, bio-energy cluster and region with a high quality of life.
- Laag Holland: quality food production, agri-tourism and landscape protection



III. Degree of endogeneity



- Tyrnävä, high-grade location, suitable for potato seed production

- Shetland: oil as rural resource



IV. Linked to cultural/symbolic capital or disconnected

- 72 local-agro food products products in Lunigiana
- Oberland: no strong links with cultural identity



V. Based on agri-ruralism or post-productivism



- Agri-ruralism (Devon)
- Post-productivism (Kittila)



V. Institutionalised and/or informal networks

- Administrative-driven (Kittilä municipality, Giessen district, Odenwald district and Shetland Islands)
- Civil participation and voluntary actions (Shetlands, Odenwald, Kittila, Smiltene, Lunigiana, Laag Holland, High Tiber valley and Devon)



Conclusions:

- We see a politico-institutional framing favouring the bio-economy
- Agroecological approaches could feed the world and contribute to a 'real green revolution' this requires re-thinking market mechanisms, innovative institutional flexibility on a regional scale, farmers and consumers participation and a re-direction of science investments
- The four eco-economical strategies can be a counterforce challenging the dominant bio-economic ecological modernization paradigm in many European regions
- New urban-rural interfaces can function as a lubricant for this counterforce, leading to a more multifunctional form of land-use.
- Regions compete internationally on the markets of food, leisure and housing, they can distinguish themselves by utilising their countryside capitals, re-orientating themselves on regional resources, and developing products and services linked to cultural and symbolic capital.

