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**Sustainable from farm to fork  
Sustainable food as innovation and the role of local politics**

**Abstract**

*How does organic, seasonal and regional food foster sustainability? Sustainable food is a policy field that is referred to by different groups of actors, each with different aims: consumers, for example, look at health and costs; producer and distributor concerns lie with logistics, costs and sales.*

*Innovations link the fields of technology, politics and society, because they shape the contexts in which they are introduced, and innovations are shaped by the contexts. Sustainability as a political concept implicates changes of the structures in which political decisions are taken. Sustainability processes tend to be very complex if they meet the material and formal expenses that the idea of sustainable developments includes.*

*At local levels persons representing different groups and organizations get in contact with each other while working in the realm of food innovation projects. For example an initiative in Ferrara, Italy, to introduce sustainable food in school and day nursery cafeterias was begun by a group of parents concerned about health questions. Their idea was taken over by local authorities who brought together different regional actors, for example innovative enterprises and the canteens' management. A successful process was started.*

*The concept of innovation provides analytical instruments to show how contexts are shaped and how innovations themselves are shaped through complex sustainability processes.*

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## **Research questions**

Framing the Relation between Technology and the Public: Towards Sustainability

1. Analysis of political regulation concerning food in the frame of sustainable development in the European Union and in Germany and Italy (and possibly one other country)
2. How do local politics hinder or favour projects within which sustainable food innovations are developed?
3. How do conditions of such innovations vary between member states of the European Union?

## **Research design**

### **Definition of sustainable food**

Sustainable food here is defined as regional, seasonal and organic. These criteria are vague. The definition of organic food is derived from the EU directive on organic food, which provides a broadly accepted standard. There is evidence that organically produced food can be considered as conducive to sustainability (Köpke 2000). The criteria seasonal and regional are very weak. In addition, it has to be left open if all three criteria must be proven in order to consider food as sustainable. The consideration of food as sustainable has to be limited to a tendency; organic production of food will therefore be here - as in the extant literature - the focus of attention. The selection of case studies in the empirical part of the thesis then, pragmatically, refers to the producers, suppliers and consumers and their definition of certain kinds of food as beneficial to sustainability.

The democratic and procedural components of sustainability that can be described in the case studies, are more incremental changes and sometimes just tendencies rather than structural revolutions.

### **Sustainable food and risk avoidance**

Risks in the sustainable development of food can be found within sustainable food products and sustainable food production (1) and as risks that derive from political decisions influenced by the idea of sustainable development (2).

1.

Sustainable food is often chemically indistinguishable from conventionally produced food. Guaranties on production and the path food takes from farm to fork are not easy to give. Security measures are difficult to enforce, because organic and conventional as well as regional and global production are interrelated systems. This is what we see in the current example of the contamination of organically produced crops in Germany with the banned herbicide nitrofen. Similar things happen with contamination through pesticides from neighbouring fields and through genetically modified organisms. In January 2002, the Commission of the European Union proposed a directive to prohibit the contamination of seed with genetically modified organisms and sorts. The proposal suggests the toleration of contamination with GMO up to 0.3 or 0.7 percent. The food industry criticized this proposal

as being too severe; organic farmer associations and environmental NGOs have argued for a limit of 0.1 percent, as this is a technically verifiable limit. (AGÖL 2002b).

Organic food production yields are smaller. Sustainable products are available only at higher prices; so that there is a risk to the acceptance of sustainable products on the food market: Sustainability could become a choice for niche consumers or an alternative only for elites rather than making part of a common development.

2.

Sustainable development could hinder and exclude certain technological developments that seem to carry risks; but decisions against a technology could lead to missing developments, which, in the end, would have furthered sustainability. Structural ideas of political decision making in existing societies are discussed within sustainability. Challenges lie in material ideas and in procedural settings. These questions are discussed, because they could be incentives for democratization of the society and of markets, but they could also lead to de-democratization and insecurity.

### ***Concepts of innovation as a framework for the analysis of food politics***

There are different concepts of innovations that refer to observable technological, political and economic changes. Here a concept of innovation taken from the social sciences is chosen and developed as an analytic framework for food politics. I apply innovation theories to sustainability innovations in order to find political strategies that cope with risks and barriers to sustainability in the food sector.

I do not focus on the implementation of European and national food policies. European and national regulation on food is an important basis on which innovations in food occur. As I will develop further in the chapter on sustainability, my focus is not on success or failure of implementation, but it is on the development of sustainability ideas and practices in policy processes and networks at the local level. Hierarchy, competition, power and top-down processes do play an important role here. Cooperation, consensus and learning always depend on and are threatened by powerful actors and institutions (Dolata 2000; Hack 1999) Given the conditions of implementation processes, my argumentation centres on the question: how do innovative projects cope with barriers and how do sustainability ideas change?

To specify these questions now the concept of innovation is introduced. Central aspects of social scientific innovation concepts are now explored and then applied to sustainable food innovations.

The notion of innovation as a mainly economic concept is derived from the context of technological innovations: Nelson/Rosenberg define innovations as: ...”processes by which firms master and get into practice product designs and manufacturing processes that are new to them, if not to the universe or even to the nation” (Nelson 1993, 4)

Social sciences widen this notion and emphasize that innovations include technological know-how and its development, the targeted acting of actors to produce the output of a successful new product, a new method, structure or procedure. Innovations thus include new products, processes and also organizational changes (Hemmelskamp 1999, 13; Klemmer, Lehr & Löbbe 1999, 28). Discussions have been carried out about the role of the state and who else stimulates innovation processes. More recent studies consider the technology push to be dominating the demand pull. (Mayntz 2000, 11-13)

Most researchers distinguish between different phases of innovation, for example four: invention, development, production and diffusion (Klemmer, Lehr & Löbbe 1999). Others individualize only three main phases, for example 1. the emergence of an innovation outside established institutions, 2. the stabilization and 3. the assertion and standardization (Weyer et al. 1997, 35-53). These phases are interconnected and iterative, as practical experiences show.

## **Paradoxes**

The paradox lying within any innovation is that unknown aims are being aimed at. (Ortmann 1999) What at first sight seems to be a problem of time and space, is a question of logic. The concept of innovation deals with the logical basis of changes in technology and society. Changes are planned, but the outcome of an innovation is not a logical consequence of the plan.

Inventions are mostly developed in a sphere outside the users' context (for example in a laboratory); but they only become innovations when they turn out to be usable or applicable in a different context. Inventions thus have to prove their applicability, they have to be submitted to a reality-check. Innovations can only be defined ex-post facto as innovations.

Another characteristic of innovations lies in the paradox that innovations do reduce uncertainties and widen possibilities of action; on the other hand every innovation does exclude other potentialities and create uncertainties, too. (Simonis 1999, 149)

## **Contextualization**

Paradoxes of innovations point to fact that innovations can only be considered as successful when they have been introduced into a context where they do work. A successful innovation is the contextualization of an innovation in a sphere where it works. The process of innovation means that innovations leave the social context where they were invented and get introduced in another social sphere, the sphere of users, and becomes stable there. Innovation also includes social processes. Inventors have to act strategically and build alliances with users outside the social context of the innovators - with actors who use the innovation. Mostly innovations conduct changes in the social sphere into which they were introduced. And often innovations themselves are shaped during this process of leaving and entering social contexts. These dynamics are a decisive aspects of innovation processes. (Weyer et al. 1997, 58)

Technological possibilities and social structures contain limits to innovation. The kind of innovation or technique that is to be contextualized, the specific cultural and socio-economic conditions and also the dominating economic models and restrictions determine the process of contextualization. (Dolata 2000, 8)

## **Innovation systems**

The notion of an innovation system emphasizes the interdependencies between research and development in private enterprises, universities and other research institutes, and the support of research and technology by the state. (Nelson 1993, 519) Innovations depend on the distribution of power in a society and political system, for example the distribution of research funding. Structural aspects of innovation systems and research funding form an important basis for innovation processes.

## ***Sustainability as analytical frame for food politics***

The concept of sustainability tackles two dimensions of politics: First, there is a formal dimension. Participation of the public, diversification of political decision making processes and the shifting of responsibility towards the civil society are important aspects of the concept. Second, the more material dimension, aims at integrating policies that formerly were treated separately. As there are hundreds of definitions of sustainability, for practical reasons I focus on three key elements: the integration of economic, ecological and social aspects (with none of the three being privileged over the others).

This broad concept carries a lot of problems: Sustainability is used as a political catch- word. On the other hand, the ideas environmental NGOs have about sustainability differ strongly from those that are discussed in the European Council or in food industry enterprises. A common denominator will be difficult to find. Starting from the basic ideas of sustainability, the illustration of different concepts and varying intensities of sustainability interpretations leads at least to an understanding of the potentialities of the concept.

## **Sustainability and governance**

Sustainability is above all a political concept. It contains more procedures than material regulations. Since the principle of sustainability got on the international political agenda with the "Agenda 21" in 1992, it was meant to be discussed by the public and within well-defined processes. Public participation is required in order to define the idea in a continuing process. This process started ten years ago, but still large parts of the European population are not informed about sustainability ideas and processes. There is a lot of work to do if the concept is to be strengthened.

The roles of government and public administration are to be submitted to changes by sustainable development. "... Governments should..., where appropriate, improve the processes of decision-making so as to achieve the progressive integration of economic, social and environmental issues in the pursuit of development that is economically efficient, socially equitable and responsible and environmentally sound." (Agenda 21, Chapter 8) (UN 1992) For political practice this means: „The new concept of the government role could be appropriately described as the management of processes of bargaining, negotiating and social contracting between different relevant actors which behave according to their aims, power and available action parameters. Here is a need to study in depth the far-reaching issue of the structure of policy-making systems, i.e. the coherence and compatibility of political administration, the conditions of policy making as well as interaction and process management in view of the dynamics of innovation and sustainable development ...” (Meyer-Krahmer 1998, 29)

An important role is attributed to municipalities through the Local Agenda 21 (Agenda 21, Chapter 28): “Each local authority should enter into a dialogue with its citizens, local organizations and private enterprises and adopt ‘a local Agenda 21’. Through consultation and consensus-building, local authorities would learn from citizens and from local, civic, community, business and industrial organizations and acquire the information needed for formulating the best strategies. The process of consultation would increase household awareness of sustainable development issues. Local authority programmes, policies, laws and regulations to achieve Agenda 21 objectives would be assessed and modified, based on local programmes adopted.” (UN 1992)

Not only the regulatory state steers the food market. Changes in national and regional governance (Benz 1999) can be found: New agreements of different actors, labelling and information politics, too, influence food policies strongly. As an illustration I give two examples for unusual coalitions in Germany that were motivated by food scandals: In 2001 the environment ministry of the region North Rhine-Westphalia started a campaign for “nature on the plate” in cafeterias and canteens together with one of the biggest organic food producers association and the biggest German agriculture marketing organization (CMA), in order to foster organic agriculture. During the BSE- crisis the German umbrella organization of organic farming lost two of its biggest members. In June 2002, a new association was founded which includes not only all organic farming associations but also partners from food processors, manufacturers and traders. (AGÖL 2002a)

### **Integration of different policies in sustainable food politics**

Sustainable food covers a wide range of policy fields. A variety of actors, who have different interests and aims, deals with sustainable food.

- Consumers  
Consumers deal with food looking at availability, health and costs.
- Producers (agricultural actors, food industry, their organizations, including trade unions)  
Producers are mainly interested in costs and sales.
- Distributors, their organizations  
Distributors’ concerns lie within quantities, availability, logistics, sales
- Politicians and administrations (also political parties, as well as state, regional and local authorities)  
They work with the regulation of foodstuffs in a perspective of functionality and prestige for egoistic aims, and most of them, together with the NGOs mentioned below, deal with food as a subject of economy, ecology and health questions.
- Environmental and consumers NGOs  
They regard food as a field within environmental and sustainability politics.

As we see from this list, many policy fields are touched by food politics. The sustainability concept emphasizes that successful economic development depends on ecological and social standards, and that it needs to be rooted in cultural and political contexts. With changes in the prevailing systems, which separate economic, social and environmental factors at the policy, planning and management levels, the policies themselves have to change and integrate into one sustainability policy.

### **Consumption and reproduction as important aspects in the sustainability concept**

Policy of food is, on the one hand, a field like other environmentally crucial policies, for example mobility or chemicals. On the other hand, food is more directly linked to the sphere of private consumption than other policies are: Food is not just producing, selling, buying and using foodstuff, but also preparing, cooking, conserving, having meals alone or together in

households, restaurants, cafeterias, in front of the TV or on the street. Therefore, the potential sustainability of food has much to do with the organization of daily life.

Often only at the interface between the private and the public spheres the interconnectedness of different policy fields can be analysed. For example, the analysis of contextualization processes of innovations connected with the environment and health provides insights into private household organization and every-day economy. It is empirically very difficult to seize habits and actions in these contexts, because they are very complex and they are also strongly interconnected with the public spheres. (Schultz 1999)

The sustainability concept requires thus not only an integration of different policy fields but also an integration of the questions of production and reproduction. Consumption and reproductive habits normally are found only at margins of political scientists' researches. In the investigation of food policies, private consumption and the sphere of reproduction are - besides agriculture, industry and trade - important fields.

### **Innovative aspects of sustainable food**

Innovations of food can be found in all the phases of innovation, during invention and development, during production and diffusion.

The innovative aspects of sustainable food lie in technological and political developments. A protagonist of German organic agriculture describes innovations in food production like this: "The organic farming is not returning to what our fathers abolished because of its ineffectiveness. Especially with the use of modern techniques and the application of new knowledge this form of production becomes sustainable. Nevertheless it depends on recovering the professional skills in original production and foodstuff manufacturing, which were driven out through chemical-synthetic remedies and fell into oblivion."

(Löwenstein 2002, 49)

Besides production methods, innovations are developed for steering and control systems in food production and processing. Organic production often combines new technologies and methods with holistic approaches. Conservation, packaging and logistics of food are also subject to a variety of innovations. Therefore not only functional und convenience food can be regarded as food innovations.

Political innovations in sustainable food can be found in legal and institutional changes, especially in new forms of cooperation and participation and in information politics. The founding of a European Food Authority is one recent innovation.

### ***Integration of the concepts of innovation and sustainability***

For the purpose of analysing specific aspects of sustainable innovations in food, the concepts of innovation and sustainability have to be integrated. In both concepts material and formal questions can be distinguished.

Material and formal questions in the concepts of innovation and sustainability:

<i>Investigation of</i>	<b>Concept of innovation</b>	<b>Concept of sustainability</b>
<i>a) material questions</i>	Contextualization	Integration of different policies
<i>b) formal questions</i>	Paradoxes	Politics and democratisation

There are two levels of analysis included in both concepts. Each of the levels is now described and the integration of the two concepts on each level is developed in a few sentences:

#### a) Material questions

##### **Contextualization**

The invention and introduction of a new product, a new production process or social process is not just a question of supply and demand, but includes changes in the context and in the innovation itself and (re-)iterative processes.

##### **Integration of different policies**

The idea within sustainability to integrate economic, ecological, social and cultural aspects, to create a kind of interdisciplinarity between these fields, arises new conflicts and unpredictable alliances, disturbs actors' routines and leads to material changes in policy results.

##### *Integration of the two concepts*

The combination of both concepts allows the analysis of complex innovation processes and their outcomes. Observed changes could depend on all the aspects which the affected contexts and policies include. The decisive points are individualized through iterative reconstruction of changes; the focus of attention is on the interdependencies between different policy fields. The result lies in the individualization of reciprocal influences and real effects on sustainable development.

#### b) Formal questions

##### **Paradoxes**

An aim needs a context in which it can unfold and evolve. The aim itself is revealed only after a concluded process, which probably started with a different aim. The aim changes with the formulation of the aim, within the process of reaching the aim, and changes again when the aim is reached and new aims appear, or the former aim is not desirable any more. So aiming is iterative and unclear - but still the only chance to come to results. This is the logical core of innovation: there is no control about what is aimed at.

##### **Politics and democratisation**

Sustainability encourages supplemental forms of decision-making. New procedures bring forward new ideas and solutions to the problems of sustainability and at the same time foster commitment of individuals and groups normally not involved in taking up responsibility and

action. The complexity of society shall be mirrored by the complexity of their decision-making structures.

### *Integration of the two concepts*

The combination of these two formal instruments allows a look at all the changes an innovation is subject to. Hereby the dynamics and vitality which are parts of the intended aims are examined. The different ways to reach an aim as well as the range of the results and improvements are emphasized.

Processes and constellations described here are not primarily regarded as the outcomes of political regulation and implementation processes. These are not to be overlooked, as they form a framework for everything that happens in the processes analysed here. My focus is set on processes that are possible inside the given set of politics and material regulation in the analysed fields.

## **Methodology**

Extant literature is used for the analysis of

- policies, regulation and the public sustainability discourse in the European Union and in the chosen member states concerning sustainable food
- changes in innovation concepts with the appearance of sustainability.
- experiences of contextualization on national and regional levels, which can be adopted to contextualization processes at a local level.

## **Negotiation on innovation on a local level**

The above developed theoretical frame is filled with empirical findings of local investigations. There are two reasons for choosing local processes: First, because the local political level is very important for sustainability concepts on food. Sustainability brought ecological and social advantages of small economies back in the discussion. It is to show that ecological, regional and seasonal aspects of food production and consumption can be partially determined at a local level.

Second, because of its complexity, even in a municipality the whole process of contextualization cannot easily be reconstructed. But the most important processes can probably be individualized. This is why my research has to be limited to a few case studies in European municipalities.

On the basis of the above developed theoretical frame my research question for the empirical investigations is: Which constellations of local actors play important roles for contextualization processes of sustainable food innovations?

## **Case studies**

How do local actors deal with sustainable food? The empirical part consists of three case studies of contextualization processes.

## **Selection criteria**

Projects are chosen where community cooking and consumption in cafeterias were initialised with a focus on sustainability. Shared sustainable cooking and eating does not only include provision of organic, seasonal and regional food, but also the integration of sustainability aspects with cooking, offering and disposal of rests. Services are regarded as even important to sustainable food as the products. For contextualization, the social context (time, work, distances etc.) is regarded as complementary to the production of sustainable food.

Concrete selection criteria:

- Projects that focus on community cooking and eating, the initialising phase is concluded
- Protagonists define the projects as a contribution to sustainability
- Projects are linked to Local Agenda 21 processes
- The European Union builds the regulatory frame

## **Methodology**

Reconstruction of the processes by:

- a) written and virtual material (local authority decisions, meeting minutes, media coverage, public presentation (brochures, internet) ...)
- b) Interviews (with protagonists, „neutral“ persons, opponents, critics, concerned persons (users, employees)...) )

In addition to the concepts of innovation and sustainability, research methods from network theories and governance theories are used.

## **Cases (provisional)**

- Ferrara (Italy): day nurseries and schools
- Bremen (Germany): day care centres
- Kreis Mettmann (Germany): schools and municipality
- possibly a case from Austria or the Netherlands

## **Comparison**

National and regional conditions in the EU member states and their implications for the projects are considered as well as diverging interpretations of sustainability.

## **Expected outcomes and implications**

Outcomes are expected on three levels of investigation:

### **Conditions of innovation**

- Factors and constellations that favoured or hindered the projects in the case studies
- Importance of local and national set-ups for sustainable food

### **Sustainability concepts**

- Political constellations that in the case studies favoured or hindered certain ideas of sustainability
- The actors' changing ideas of sustainability that can be traced in the course of the projects

### **Innovations and constellations**

- Processes of sustainable food contextualization
- Favourable constellations for sustainable food innovations
- Transferability

### **(preliminary) findings**

Some results of the integration of sustainability and innovation concepts are illustrated with first findings of a project in Ferrara.

Ferrara committed itself to initiating a Local Agenda 21 process in 1996. The aim was to adapt municipal procurements to sustainability requirements. The first implementation of this aim was launching a "Programme of Green Purchasing Activities" (ICLEI 2000). A group of parents started activities for putting healthy food in their children's school. The municipality integrated this initiative in the Green Purchasing campaign.

#### a) Material questions

The idea of sustainability was in the starting time of the Local Agenda 21 considered as a mainly ecological question. Waste of resources, materials and energy were to be avoided in the fields the municipality could determine. Over the course of time, new projects developed and more policies got on the agenda.

#### **Contextualization**

Sustainable food comes from the context of organic and regional agriculture. With market introduction, distribution and consumption the contexts of industry, trade, services and individual nutrition behaviours are affected. These contexts interfere with each other on different levels; the production sector is affected by political and behavioural decisions etc.

#### **Integration of different policies**

At first the sustainable cafeteria project integrated only health questions with environmental issues, then solutions for the integration of economy and ecology were found. The global responsibility of local actions was underlined by several actors. Even educational and cultural questions were dealt with when regional economic development was discussed.

#### *Integration*

Contextualization made clear that several fields are interconnected and that they have to be dealt with at the same time. The local political organization in the initial phase blocked innovations because of their rigid organizational and administrative structures. Reciprocal influences of contexts and policies sharpened the material sustainability concept.

## b) Formal questions

**Paradoxes**

The innovation idea of Green Purchasing developed into a complex project with purchasing as only one of many elements. The logic of innovation is that time, space and resulting innovations can't be foreseen; but without the innovation things would have developed differently.

**Politics and democratisation**

Different actors, for example regional farmers and health authorities, were stimulated to work together on the issue of school cafeterias. Now local administration processes are vigorously changed. The Local Agenda 21 officials consult non-profit and for-profit actors in formal and informal processes. Participation of citizens in local processes increased. The open aimed idea of Green Purchasing developed into concrete democratic actions. Politics in Ferrara as well as administration structures changed.

*Integration*

The paradox of innovation lies in the dynamics and vitality that the innovation produces. Participation of different actors led to changes in the innovation idea and to more participation and democratisation of political structures in this sustainability process.

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