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THE POWER OF LOCAL

– sustainable food systems around the Baltic sea

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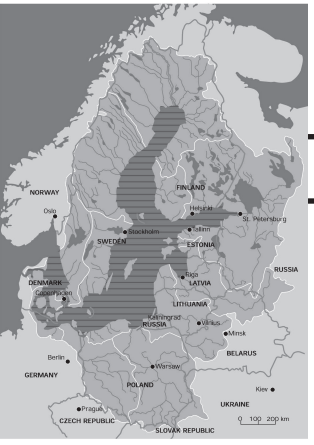
Interdisciplinary Synthesis of the BERAS project



Baltic Ecological Recycling Agriculture and Society (BERAS) No. 7

Baltic Sea Region
INTERREG III B

Centrum för uthålligt lantbruk

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The Power of Local
- sustainable food systems around the Baltic sea
Interdisciplinary Synthesis Report of the BERAS project

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Cover photo by Hans Månsson, Bild & Mening.
The photo is taken at a Farmers Market at Katarina Bangata in Stockholm in the autumn 2005.

ISBN: 91-576-7160-5
Antal sidor: 67
67 pages

Ämnesord/Key words: Organic farming, Organic food, Local food, Sustainability, Resource management, Food systems, Rural development

Conceptual framework

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This chapter introduces the concepts of the interdisciplinary work of the BERAS study - food system, sustainability, localisation, recycling, interdisciplinarity and case study approach - and shows how they relate to one another.

Food system

The term *food system* is increasingly used to describe the complex interactions among processes and actors in the provision and consumption of food in human society. A food system embraces not only the different stages of *food chains* (the flow of products in the food system) but also the production of inputs and waste management involved in each stage. In addition, the support, control and value systems associated with food are included with their respective actors (Dahlberg, 1993; Tansey and Worsley, 1995; Johansson et al., 2000). Several proposals for relevant subsystems have been presented to illustrate the different dimensions of a food system, e.g., the natural, social and technological (Dahlberg, 1993), the socio-economic, learning and biophysical (Helenius et al., 2005), and food (including the food chain and recycling) and actors (including values, attitudes and perspectives) connected by decisions and actions (Vittersø et al., 2004). The food systems approach has also been criticised for being based on a narrow, productionist paradigm, which reduces our relationship with land and food to the production and consumption of commodities (Campbell, 1998).

In this interdisciplinary part of the BERAS study, food system is used as the conceptual framework integrating production of inputs, agriculture, food processing, transportation, trade and marketing, consumption and waste management, including all actors within the chain and in interaction with it (Figure 2). It includes the ecological (biophysical), economic, socio-cultural and value dimensions linked to food.

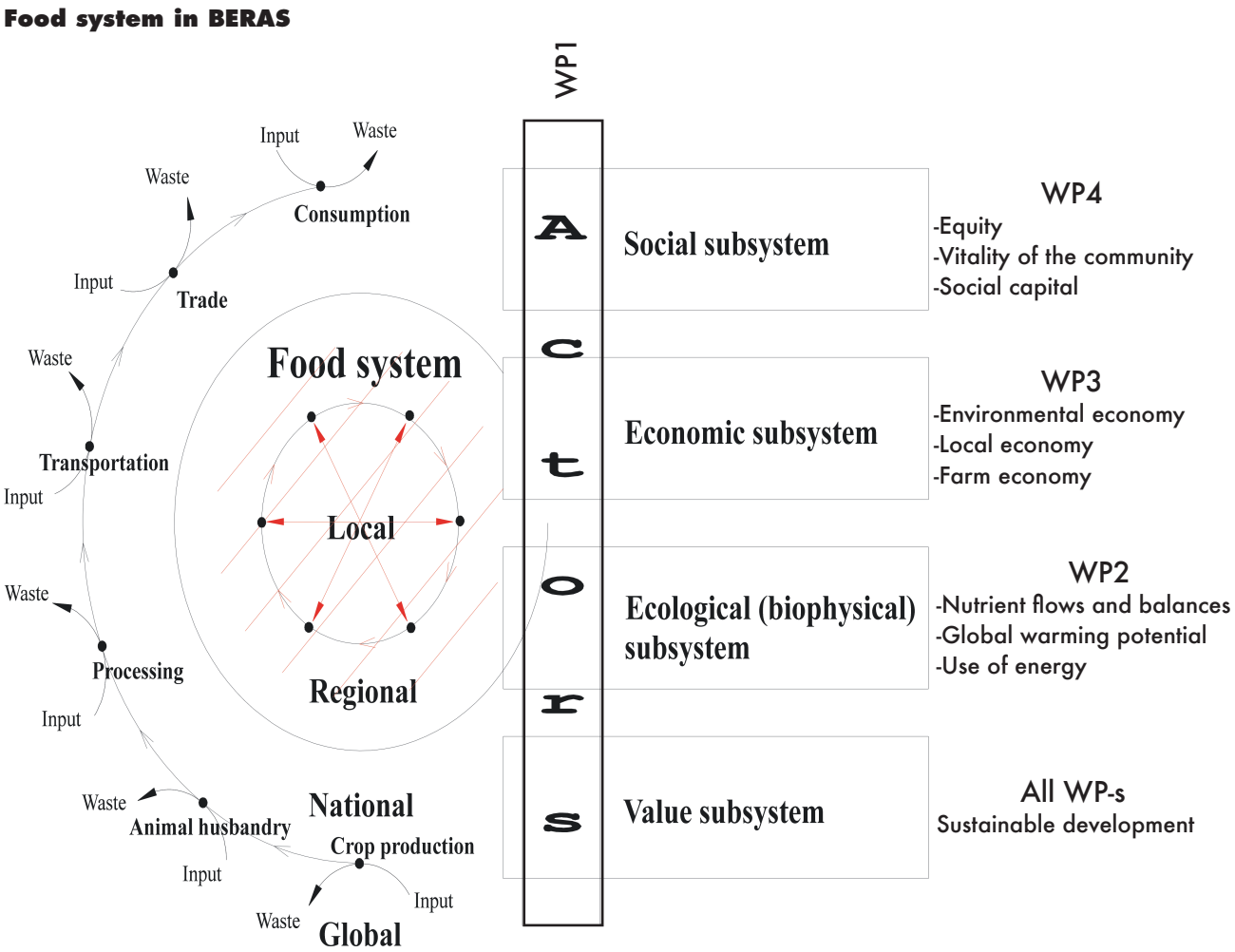
Within the rapidly expanding research on food systems, mainly characterised by theoretical, political economic and consumer-oriented approaches, this study represents a rare and ambitious effort to empirically identify the impact of and obstacles to changes in some characteristics of the systems - here *locality* and *recycling* (i.e., increased share of local, organic food in food systems). The study utilises a case study approach, common in development-oriented food systems research.

Sustainability

The concept of *sustainable development*, first introduced to the common awareness by the Brundtland Committee in 1987 (WCED), has been interpreted in numerous ways. *Sustainability* embraces both a normative vision of desirable characteristics of a target system to be sustained, and the requirement that it can be sustained. The former aspect is the primary one (Thompson, 1992). Disagreements tend not to be about the broad concept but about the desirable characteristics (Clark, 2005). An

interpretation of sustainable development as a learning process with repeated feedback has been increasingly emphasised (O'Riordan and Voisey, 1997). It follows that the concept is continuously being redefined and interpreted either with more eco- or human-centred approaches. An example of the latter ones relevant to this study is the Habitat Agenda (1996), which includes physical, psychological, economic, social, organisational and cultural aspects emphasising lifestyles and personal choices.

Sustainable agriculture and *food systems* have been approached from different perspectives, (1) food sufficiency, (2) conservation of resources and (3) in addition to the first two, encouragement of certain virtues and vitality of local communities (Douglass, 1984). The difference in the first two perspectives is in means not ends, while the third perspective extends the concept beyond ecological and economic sustainability to include goals such as democracy, community and care. In other words, social and cultural aspects are included (Burkhardt, 1989). The third



Figur 2. *Food system was the conceptual framework for the interdisciplinary work of the BERAS project. The impact of localisation and enhanced recycling on sustainability was investigated.*

perspective thus sets constraints on the means employed for the goals of the first and second perspective, preferring means that are governed by the local community and thus empower it. The three perspectives further imply different views on the relationship between man and nature, and lead to different management strategies (Figure 3). In the third, man is part of nature, adapting the human economy to be an integrated part of the ecosystem by conserving and relying on ecosystem services (Daily, 1997). In accordance with this, Thompson (1997) emphasises the need for *functional integrity*, i.e. the interaction of agricultural practices with processes of renewal, avoidance of vulnerability and conservation of capacity for *resilience*, all including both ecological and social dimensions. This approach is in coincidence with the *ecosystem approach* adopted for diversity conservation in Johannesburg (Plan of Implementation of the World Summit on Sustainable Development, 2002). And it is in accordance with the view of sustainability implicit in the principles of organic agriculture (Burkhardt, 1989; Thompson, 1997; Alrø and Kristensen; 1998; IFOAM, 2005) and in the alternative food chain and local food movements. The third perspective also provides the framework for the discussion of sustainability in this study.

Sustainability strategies

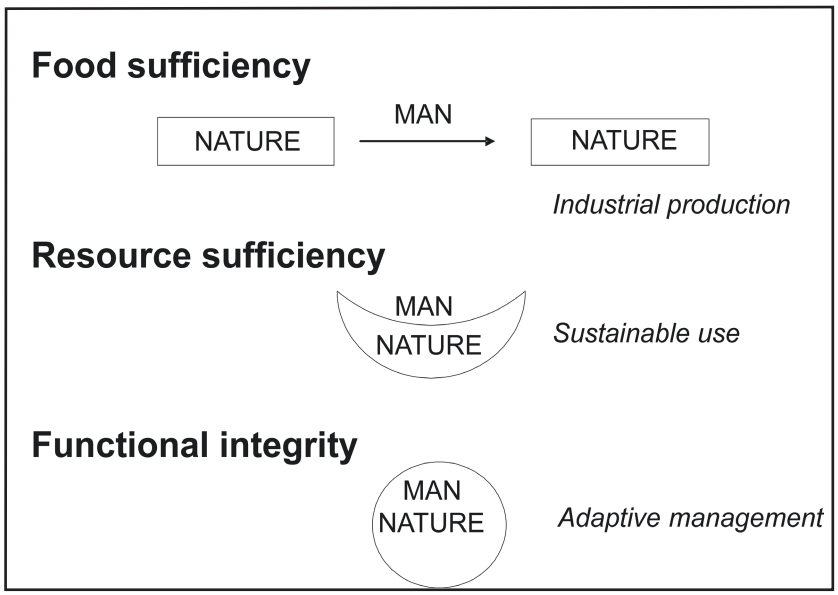


Figure 3. *Alternative perspectives of sustainable agriculture and food systems, views on the relationship between man and nature behind them, and the consequent management strategies. The interdisciplinary work of the BERAS project relied on the perspective of functional integrity.*

Sustainability, according to the third perspective above, is taken as the main objective for food system development in this study. In its three dimensions of ecological, economic and social sustainability, it provides the conceptual framework integrating the various indicators of performance of a food system and agriculture as well as the disciplines evaluating the indicators. The aim with this systemic view of sustainability is to promote the development of food systems in all three dimensions of sustainability simultaneously. Thus, instead of accepting simple trade-off relations it seeks for synergisms (win-win relations) between the different dimensions (Figure 1) in this study through different ways to promote localisation and recycling. Hence, while social sustainability for example, is important as such, it is also a precondition for ecological and economic sustainability (Castella et al., 1999; Nordström Källström and Ljung, 2005).

The indicators used for ecological sustainability were nutrient balances, nitrogen (N) and phosphorus (P) load to waters, gaseous emissions and use of non-renewable energy. The economic sustainability was studied on the basis of environmental economy at a societal level, local economy and farm economy. Social sustainability was investigated as viability of the local communities, as quality of interactions contributing to social capital and as equity (or fairness) among the actors. Equity was studied from the perspective of distribution of power and control and distribution of benefits. Within the vast and diverse research tradition around sustainability issues, the aim of this study is not in studying, problematising or developing the concept, but rather in using an explicit sustainability discourse for setting the goal for sustainability, and choosing indicators for the performance of the studied system and the impacts on the performance.

Localisation

Local food as a concept addresses the spatial dimension of the food chain and food system, yet stressing the proximity (Kloppenburg et al., 1996), space-based communication (Winter, 2003) and personalisation (Hendrickson and Heffernan, 2002) rather than a certain size of the area. *Localisation* (i.e., increased degree of locality) is a supplementing and counteracting force to the globalisation of food systems (e.g., Dahlberg, 1999; Pretty, 2000; Helenius et al., 2005). The concepts of local food and short supply chain are related, but the concept of local food system is broader than the concept of food chain (see *Food system* above). The discourse on localisation of food systems is rooted in approaches like *bioregionalism* (Donald, 1990), *food shed* (Getz, 1991; Kloppenburg et al., 1996), *community food security* (CFS, e.g., Allen, 1999; Biehler et al., 1999), *community-supported agriculture* (CSA, e.g., Feenstra, 1997; DeLind and Ferguson, 1999; Staggl, 2002) and *urban agriculture* (e.g., Rosset, 1996; Jolly, 1999), all with their socio-cultural and ecological dimensions.

Local food is an issue raised by the effort to achieve functional integrity (Thompson, 1997) – the sustainability perspective of this in-

terdisciplinary study (see *Sustainability* above). It emphasises linkages between the local ecosystem and the local community and tight social bonds within the local community – in a word, *local embeddedness* (for a critical discussion and review, see Krippner, 2001; Goodman, 2003). Some critics have warned against simplifying the *quality consumerism* and reducing it to embeddedness, and also see *defensive localism* as a dangerous motivation in the argument for local food (Allen, 1999; Holloway and Kneafsey, 2000; Winter, 2003). Locality is one of the central principles of organic agriculture in the sense of relying on local resources, adapting to local conditions and promoting interaction between producers and consumers (DARCOF, 2000; IFOAM, 2005). Unfortunately, the EU has included only a few requirements for locality in its regulation for organic production (EC Regulation 2091/91, 1804/99), the replacement of commercial N fertilizers by biological N fixation in situ in plant production or by recycling within agriculture being the most notable example.

Local food has been defined as food produced close to the consumer and based on local resources (Packalen, ed., 2001). This concept of local food was adopted in the interdisciplinary work of the BERAS study. The geographic dimension of locality is seen as relative, varying from national or county level to municipal or even village level. Localisation is understood as an increased share of the rural local demand being met by local production based on local resources. The starting point of the BERAS study was the rural development with focus on rural food systems. Since urbanised society is taken for granted the rural food systems necessarily are exporters of food to urban food systems. Thus, localisation is not interpreted as decreased export of food from the system. This is in accordance with the conclusions of Hamm and Baron (1999) that 1) an exclusively local food supply would be isolating, necessitate cultural denial and be potentially unsustainable and 2) sustainable food systems will develop within the current general framework of our society.

Behind the present study is the general hypothesis that localisation will promote sustainability of rural food systems, as assessed by the sustainability indicators mentioned above (see *Sustainability*). This general hypothesis is tested through asking and answering specific research questions. Research on local food systems has mostly been theoretical, with localisation considered as a counteraction to globalisation, vertical and horizontal integration and standardization, with tendency to focus on urban food systems and food security. As interpreted by DuPuis and Goodman (2005), the US academic literature on food systems echoes alternative social norms, where "local" becomes the context in which these norms can be realized. In contrast, again according to Dupuis and Goodman (2005), in the European literature dealing with alternative food networks, localism is seen as a way to maintain rural livelihood. The BERAS study mostly belongs to this latter tradition. Most of the growing body of applied research on local food focuses on consumer perceptions and on the various tools for realising local food systems, especially marketing channels such as CSA, farmers' markets and food

box delivery schemes. Empirical efforts to identify the impacts of localisation of food systems such as in the present study are rare, however.

Recycling

Recycling of organic matter and nutrients is an intrinsic function of all natural ecosystems. In sustainable agriculture and food systems characterised by functional integrity (see *Sustainability* above), there is an attempt to simulate this natural function (Figure 4). Recycling processes are examples of ecosystem services and represent the feedback function of all self-organized systems. Along with locality, recycling is one of the principles of organic farming (DARCOF 2000, IFOAM 2005). Most attention has been addressed to recycling within a single farm, which in effect means mixed farms carrying out both crop and animal production.

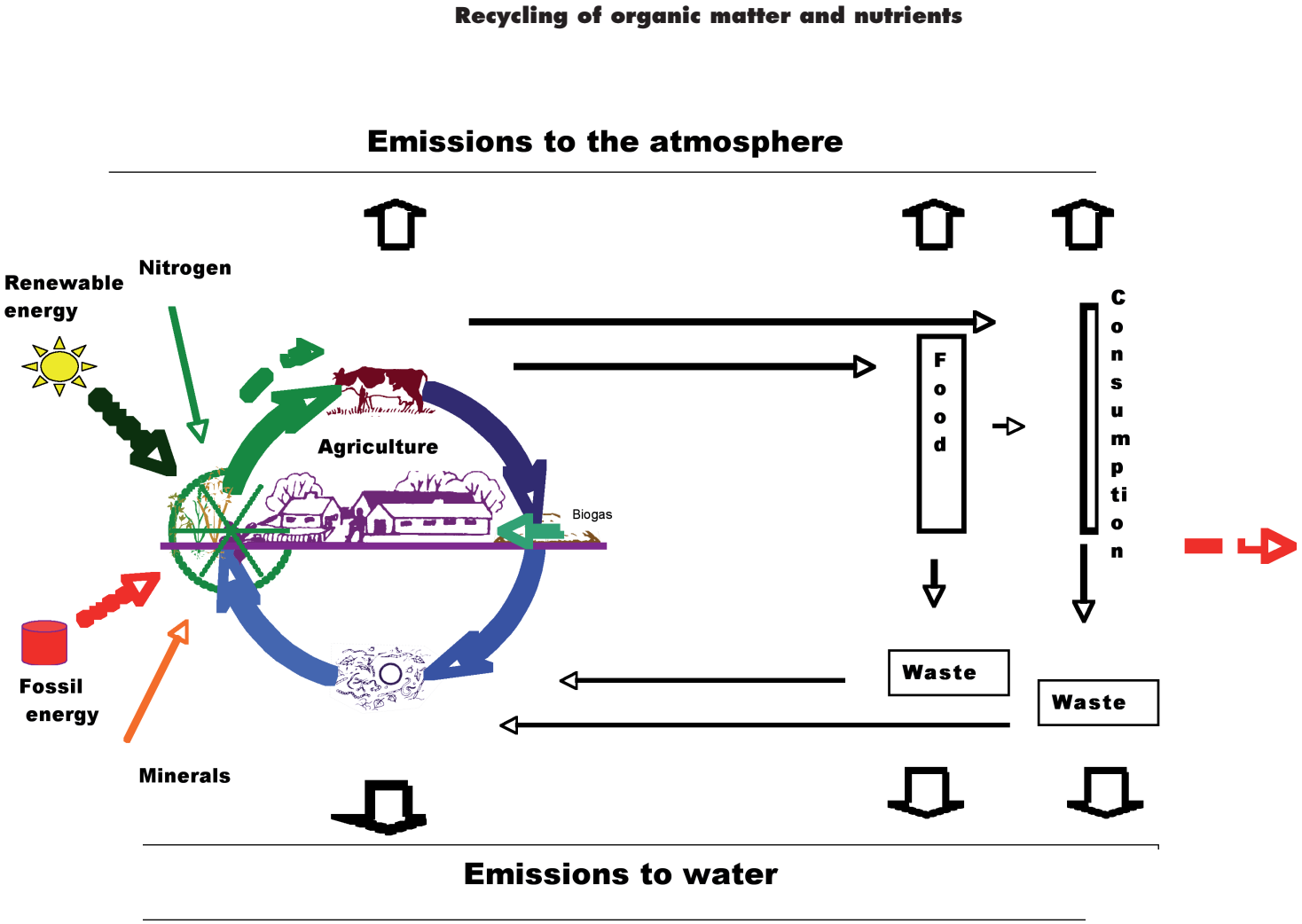


Figure 4. *Recycling of organic matter and nutrients within agriculture and food systems represents reliance on ecosystem services rather than external inputs, thus reducing nutrient surplus and use of energy. (Picture from Granstedt, 1992.)*

Recycling from the demand chain back to agriculture has received less consideration since the quantitative significance is much less and because, in the form of the present waste management system, it carries with it serious health and environmental risks. Recycling organized among nearby farms instead of within a farm has not received significant attention in traditional organic farming. In fact, the organic mode of production regulated by EU (EC Regulation 2091/91, 1804/99) makes few, if any demands on recycling. Thus, the concepts ecological recycling, ecological recycling agriculture (ERA) and ecological recycling agriculture and society (ERAS), as used in the BERAS study, refer to a farming and food system based on organic agriculture, and, in addition, honouring the organic principle of recycling. Note that, in this report, we follow international practice and use the term "organic" rather than "ecological" which has sometimes been preferred by Swedish and Norwegian researchers.

This study began with the general hypothesis that enhanced recycling would promote sustainability of food systems, and this was tested with specific research questions. Recycling of organic matter from the demand chain back to agriculture and from animal husbandry back to crop production is here seen as a mean of localising inputs. Recycling is also a natural consequence of localisation of food systems because the diversified local production, implied in a local food system facilitates recycling between animal husbandry and crop production. A local food system will also make recycling within the food system more effective through the shorter distances for transportation of organic matter and, especially in rural areas, through the reduced environmental and health risks. Helenius (2000) has also used recycling as a metaphor for a local food system with tight inherent ecological, economic and social interaction.

Research on recycling of nutrients and organic matter in food systems and agriculture has mostly dealt with issues of the usability of urban wastes in agriculture, and of the usefulness, handling and application of manure. Contrary to that, the BERAS study belongs to the slowly increasing body of research with a systems approach that attempts to analyse the flows and efficiencies of nutrients and identify options to improve the management system.

Case study approach

In a case study, one or more cases are studied with the purpose of defining, analysing and developing the cases. The case can be individual, a group, a programme, a process, or a phenomenon, and defining the case may be carried out either before or after the collection of data. The starting point for any case study is the research question, which may either be derived from previous theory or emerge from the data (Eriksson and Koistinen, 2005).

The case study approach may involve different science philosophical starting points, theoretical and methodological views, and procedural

choices, according to the field of research and discipline. Triangulation is inherent in case study methodology. Triangulation is a means to combine 1) different data sources, 2) the observations of several investigators, 3) several theoretical frameworks, 4) several methods (even qualitative and quantitative approaches and data) in research on the same phenomenon in the same study (Denzin, 1989; Olsen, 2004). In this study, triangulation was used 1) to overcome the inherent weaknesses of using a single approach to validate results obtained with one approach and method, and thereby achieve less biased results, 2) to gain fuller perspective and broader understanding of the issue and 3) to achieve innovation of conceptual frameworks. Case studies are mostly used in the social sciences, but quantitative field experiments in agricultural research in some sense are case studies as well.

Case studies have been classified in several ways, on the basis of target and character. *Intrinsic case studies* seek for understanding of a single case, while *instrumental* and *collective case studies* use cases as tools for understanding beyond the case, the latter through coordination of several cases. *Illustrative case studies* illustrate existing practices, explanatory ones are interested in causal relations and mechanisms, and exploratory case studies produce new theoretical ideas and hypotheses. In an *intensive case study*, the objective is to provide a thick description, interpretation and understanding of a unique, theoretically interesting case (Dyer and Wilkins, 1991; Stake, 1995). An extensive case study rather endeavours to find common characteristics, common models and new theoretical ideas and concepts by comparing several cases (Eisenhardt, 1989). An *extensive case study* uses cases as a mean of researching different phenomena.

Case studies produce detailed information about the topic, but theoretical generalisation from one case to another may also be possible (Stake, 1995). Case studies that develop theory are usually based on several cases and their systematic comparison, i.e. replication. Testing the produced theoretical concepts or models in the explanation of other cases, especially in similar contexts, is called *analytic generalisation*, which may strengthen or weaken the theory (Eisenhardt, 1989; Yin, 2002).
The present interdisciplinary synthesis is based on an instrumental and collective case study approach falling mainly within the extensive case study type and with the emphasis on an explanatory approach. Illustrative case studies were also a part of the BERAS study, but were only sporadically utilised in the interdisciplinary synthesis.

Interdisciplinarity

Interdisciplinarity is methodologically located between *multidisciplinarity* and *transdisciplinarity*. In *multidisciplinary* research a single problem field is analysed simultaneously from the point of view of several disciplines, possibly with no common question, and producing as well as interpreting the results separately. *Interdisciplinary* research integrates knowledge and modes of thinking of several disciplines, utilising their

different concepts and methods to address a common question. It involves a systematic process of interaction among and between the separate disciplines and researchers (Klein, 1990). *Transdisciplinarity*, in turn, requires and seeks a common theoretical framework and conceptualisation, which differs from that of any existing discipline (Hukkinen et al., 2005). A transdisciplinary approach may well result in the emergence of a new discipline.

On the basis of an empirical study interviewing experienced researchers at major interdisciplinary research institutes, Mansilla and Gardner (2003) suggested the following fundamental grounds for the assessment of the quality of interdisciplinary research:

1. Consistency with multiple separate disciplinary antecedents, i.e. the way in which the work stands vis á vis what researchers know and find tenable in the disciplines involved.
2. Balance in weaving together perspectives, i.e. the way in which the work stands together as a generative and coherent whole.
3. Effectiveness in advancing understanding, i.e. the way in which the integration of the different disciplines advances the goals that researchers set for their pursuits and the methods they use (compared with a situation in which they work separately).

The interdisciplinary work presented in this report was based on the disciplinary theoretical frameworks (see Material and methods), which were integrated through application of the general conceptual framework presented in this chapter. Within interdisciplinary research, this study represents an effort to intensify the integration of disciplinary work over that of a multidisciplinary approach and to learn about and develop interdisciplinary research processes in the field relevant to sustainable food systems. A full systematic interdisciplinary process was not sought, since the study was not initially planned or organised with a view to interdisciplinary research.