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LEARNING OUR WAY TOWARDS A SUSTAINABLE AGRI-FOOD SYSTEM

**Three cases from Sweden:
Stockholm Farmers Market,
Ramsjö Community Supported
Agriculture and Järna Initiative
for Local Production**

*Steffen Adler, Stephanie Fung,
Gwendolyn Huber and Lee Young*

Centrum för uthålligt lantbruk



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PREFACE

This research project has gone through two major development phases. A preliminary draft was completed by four international students, Steffen Adler, Stephanie Fung, Gwen Huber and Lee Young, as part of a 10-week project course in Adaptive Management and Sustainability Assessment Methods, at the Swedish University of Agricultural Sciences (SLU). The project course was based on a theory course in adaptive management that preceded it. This final report has been developed from the draft by two of the four students (Steffen Adler and Stephanie Fung) during the summer of 2002. The report was supervised by Lennart Salomonsson, Department of Rural Development Studies and Centre for Sustainable Agriculture (CUL), and Ulrika Geber, Deputy Director of the Centre for Sustainable Agriculture (CUL).

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Without the kind support of Johanna Björklund and Torbjörn Rydberg, we would not have been able to make systems diagrams, which helped us to deepen our understanding of the cases. We are also indebted to Cecilia Waldenström and Magnus Ljung for their inspiring work on communication. Our efforts would have remained as “diamonds in the mud”, were it not for the wise guidance from our supervisors, Ulrika Geber and Lennart Salomonsson. Finally thank you to all the people who have supported us through our learning process.

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ABSTRACT

This research is based on case studies of the Stockholm Farmers Market, Ramsjö Community Supported Agriculture, and Järna Initiative for Local Production. These cases are examples of alternative consumer-producer links in the Swedish agri-food system. An adapted SWOT analysis highlights key strengths, weaknesses, opportunities and constraints in each case from the multiple perspectives of producers, consumers, the organization, as well as the environment and society. Diagrams show where learning opportunities exist in the three systems, and how the structure of the consumer-producer link influences learning processes. Implication assessments consider how each link may affect surrounding ecosystems and social aspects of the agri-food system. A framework for assessing a process of development identifies six components that contribute to agri-food system development. Four key issues are discussed in terms of their potential to significantly affect the development of the agri-food system: the length of the food chain linking producers and consumers, the definition of "local", learning in the system, and what is really being sold – is it food, or values? Critical research questions are highlighted and recommended for future research.

INTRODUCTION AND BACKGROUND

The Swedish agri-food system at present is characterised by a trend towards fewer and larger farms, with a small number of companies dominating the distribution and sale of agricultural products. The food chain linking producers and consumers is long. There are many middlemen, and few opportunities for direct interaction and feedback between producers and consumers. However, consumers are simultaneously becoming wary about the safety of their food. Recent food scares, new technologies, and a growing awareness about the environmental implications of modern farming have led consumers to search for reliable sources of information, and more environmentally sensitive alternatives to the conventional food distribution system. The transport and distribution infrastructure is dependent upon the use of non-renewable resources. Thus, from a resource use perspective, this agri-food system is unsustainable. From a social perspective, this system is also unsustainable. Lack of communication and trust in the system has led to the emergence of new, alternative consumer-producer relations, within a more local context.

Local food systems have a potential to reduce fossil fuel use, and to meet the demand for trust in food safety. By providing shorter and faster feedback loops between consumers and producers than national or global food systems, local systems offer access to information and the opportunity for close communication. Trust is more easily built in such a context. The relations between producer and consumers can be formalised into consumer-producer links. These links have implications for ecological and social aspects of agri-food systems.

This project work contributes to the efforts of the Centre for Sustainable Agriculture (CUL) to develop a better understanding of the Swedish agri-food system and explore ongoing experiments with alternatives. The project explores three cases representing alternative consumer-producer links. It characterises and assesses these cases using a theoretical framework developed from complex systems theory, adaptive management, and collaborative learning, in order to highlight key issues and questions relevant to the development of the agri-food system. The research process included a presentation of findings to case clients that resulted in feedback on the work, and a discussion about future collaborations between the clients and CUL. The objective of this report is to provide a foundation for further research into how consumer-producer links can impact the sustainability of the agri-food system in Sweden.

“Road map”

We explore three cases of alternative consumer-producer links in this report. The section 'Materials and Methods' gives an overview of theoretical concepts that are relevant to our work, and introduces the cases. It discusses our assessment methods including why and how we use them. The section 'Findings' presents our findings which include: a description of the agri-food system with a SWOT analysis, diagrams of learning opportunities, an assessment of the implications of different consumer-producer links, and a framework for assessing the process of development. The 'Discussion' highlights issues and develops questions that emerged during our research process. The concludes of our key findings and questions that we recommend for future research are presented in the last section of this report: 'Conclusion'.

MATERIALS AND METHODS

Our research is based on theory that accounts for the dynamic aspect of complex systems. In the following section a brief introduction is given to different concepts used in our work. Some of these concepts are based on literature, while some are developed by the group. Following the theoretical framework, we introduce our three cases: the Stockholm Farmers Market (SFM), the Ramsjö Community Supported Agriculture (RCSA), and Järna Initiative for Local Production (JILP). We then outline our methods for describing and assessing our cases.

Theoretical framework

Consumer-producer links

The relations between consumers and producers can be formalised into specific consumer-producer links. These links are comprised of the following aspects: motivation, agreement, exchange, and the attainment of needs. Motivation can be based on personal values and goals. For example, the motivation for a consumer to participate in a community supported agriculture model could emerge from his/her values regarding the importance of knowing where your food comes from. This motivation could lead to an agreement, such as the one at Ramsjö, where consumers buy shares into the farm's production. An agreement establishes the roles and relations between producers and consumers. The exchange of goods, services, monies and meanings emerges from this agreement. The attainment of needs is the positive outcome of this exchange, and can be equated with satisfaction. This satisfaction subsequently creates a positive feedback loop in the link by generating more motivation, which can lead to new agreements. A consumer-producer link necessarily affects both social and ecological systems, which are complex and dynamic. For this reason, we base our research on systems theory and adaptive management.

Systems theory and adaptive management

Systems theory organizes information in a way that shows inter-relationships rather than linear, cause and effect chains. A systems approach emphasises emergent properties that only become apparent at the system level, and argues that thinking about situations at any less than a system level is incomplete and can lead to limited understanding (Jiggins & Röling 1999). This theoretical foundation has led to the emergence of a new paradigm, adaptive management.

Adaptive management is an integrated and multi-disciplinary approach to the management of complex systems based on incremental and experiential learning. This concept emphasises the importance of monitoring and feedback from the effects and outcomes of decisions within the management approach. Furthermore it seeks to integrate theory, research and practice from multiple disciplines (Jiggins & Röling 1999). Adaptive management is founded upon ecosystems and systems ecology, disciplines that recognise system-level properties in nature that

cannot be predicted from the knowledge of component parts and their interactions (Jiggins & Röling 1999). Uncertainty is regarded as an inherent property of complex systems, and active learning is considered to be a way to deal with this uncertainty (Gunderson et al. 1995).

Communication

Communication is an important component of the consumer-producer relation and creates opportunities for feedback loops in the learning process essential to an adaptive management approach. Communication is the exchange of meanings between individuals through a common system of symbols (Encyclopaedia Britannica 2002). However, meaning is not simply transmitted from one individual to another (Stacey 2001). Interaction between people is thus the fundamental basis for communication.

In the context of Sweden's modern and industrialised agri-food system, consumers are overloaded with information about what to buy. Food scandals like BSE have led to increasingly wary consumers in search of reliable information and safe food. This search is evidenced in the growing demand for organic products and information regarding food production. Local food systems have a potential to meet this demand for reliable information and safe food. By providing shorter and faster feedback loops between consumers and producers than global food systems, local systems can offer access to information, as well as an opportunity for tighter communication links. Trust is more easily built in the context of tight communication links. In this project, we explore the interactions between consumers and producers in local food systems to assess the contribution of communication to the sustainable development of agri-food systems.

Collaborative learning

Collaborative learning (CL) is a set of design principles and techniques that integrates systems thinking, learning theory and conflict management to address complexity and controversy (Daniels & Walker 2001). Collaborative learning seeks to help stakeholders improve a decision situation involving multiple parties through a process of social learning and working through. CL is premised upon the need to make competent decisions through processes that involve an informed citizenry. Furthermore, it asserts that a good decision is characterised by the amount and nature of learning that both precedes and follows it. Such an approach provides citizens with meaningful opportunities to participate in decisions that affect their lives. We feel that CL has much to offer to the development of agri-food systems through its emphasis on participation and learning. We therefore integrate elements of CL theory into this project.

Three cases

Socio-economic context

Sweden is approximately 450,000 km², with a population of 8.9 million.

Traditionally, Sweden is divided into three parts, Götaland in the south, Svealand in the middle, and Norrland in the north. The project's three cases are located in the eastern part of Svealand, which consists of lowland plains (figure 1).

Agriculture is a significant land use, comprising approximately 20% of this area. On a national scale, agricultural land is a mere 8% of the total area. Forest coverage is consistent with the national average, comprising 50% of the area.

Average farm sizes are approximately 54 ha in the region, compared with a national average of 35 ha. Farming along with forestry, hunting, and fishing, provides employment for about 90,000 people on a national scale, which amounts to less than 3% of the population. Forty percent of the arable land in the region is sown to grains (barley, oats and wheat) and 35% is under ley or green fodder. In 2000 ecological production as certified by KRAV took place on 5.7% of farmed land (Swedish Board of Agriculture 2002). The total area receiving subsidies for organic farming is 11.4%. The national goal is to increase this percentage to 20% by the year 2005 (Swedish Board of Agriculture 2002).

In addition to agriculture, Sweden is also highly industrialised in wood processing, machinery, cars, electronics, iron and steel. Electricity is produced mainly in hydroelectric plants and four nuclear power plants. The eastern part of Svealand has a relatively high population density, and includes the national capital Stockholm. A large portion of the population is employed outside the agricultural sector, mainly in the service sector.

This project focuses on three cases representing different kinds of consumer-producer links. These three cases were chosen on account of the potential for learning that they offered, and on account of their close proximity to the Swedish University of Agricultural Sciences, Ultuna campus. In addition, they are sufficiently different from one another, which makes them interesting to compare in various assessments. The three cases are the Stockholm Farmers Market (SFM), Ramsjö Farm Community Supported Agriculture (RCSA), and the Järna Initiative for Local Production (Initiativ Närodlat: JILP), see figure 2.

Stockholm Farmers Market

We explore this case through qualitative interviews with John Higson, one of the founders and key organisers of the Farmers Market; Hans Nilsson, a tomato grower who sells on the market, and a consumer that shops at the market (figure 2). Additional information is gathered from the internet and a short email questionnaire of 11 participating farmers (figure 1 and 2).

Stockholm Farmers Market brings consumers and producers together at a weekly market that runs from mid-July to December, in two locations in Stockholm. It is the pilot market of the "Bondens Egen Marknad" (Farmer's Own Market) initiative, which includes seven markets throughout Sweden, and had its first season in 1999. A key objective associated with this market is the creation of a direct link

between consumers and producers, where consumers have access to information about the production process, and producers get direct feedback from consumers. The “Bondens Egen Marknad” concept is carefully branded with the values of “fresh, local & quality”, to distinguish it from other markets.

In 2001, approximately 76 farms were involved in the two markets, of which 29 were organic, KRAV-certified (Bondensegen 2002). Most of the farms were much smaller than the Swedish average of 35 ha, and for this reason had an interest in alternative marketing strategies. In general the farms only sold a portion of their total production on the market. Since its inception, the “Bondens Egen Marknad” concept has grown at a fast rate, and it appears that it will continue to grow into the future.

Hans Nilsson, an organic grower at Tibble Sörgården (approx. 40 km west of Uppsala, see figure 1), sells tomatoes at the SFM. His farm consists of 40 ha of forest, 22 ha of arable land, and a 540 m² greenhouse for his tomatoes. His main motivation for selling on the market is to have an opportunity to get direct feedback from his consumers. Most of the time this involves genuine satisfaction with the exceptional taste of his tomatoes. This element of consumer feedback is lacking in his other distribution channel of direct marketing to supermarkets. He transports about 300 kg of tomatoes to the market, which is open between 10:00 and 16:00, and usually sells out by approximately 14:00 hours. The drive to Stockholm is 80 km, one-way. The price that he gets for his tomatoes on the market is significantly higher than through conventional marketing methods, but he claims that it is the interaction with his consumers, and not the higher prices that keeps him at the market.

The market gets a good review from a loyal consumer who has been shopping weekly at the market since its inception. In an interview she tells us that she enjoys both the atmosphere of the market, and talking with the farmers about the quality and production of their goods. She values quality in the produce, and prefers things that are organically grown. She recognizes that farmers face higher costs associated with their production and marketing methods, and is willing to pay higher prices to support them.

Ramsjö Community Supported Agriculture

Ramsjö is the only Swedish example of the Community Supported Agriculture (CSA) model that we know of. Under the Community Supported Agriculture farm model (UMass 2001), consumers buy shares into a farm’s production for one season, and receive a box of farm products for a given number of weeks during that season. The concept was originally introduced in Japan and has become well established in the United States. A close link exists between consumers and producers, where consumers and producers share a commitment to the production process through a signed contract. In this way consumers share some of the risks involved with farming. Consumers are in direct contact with the producers and have an opportunity to give input into

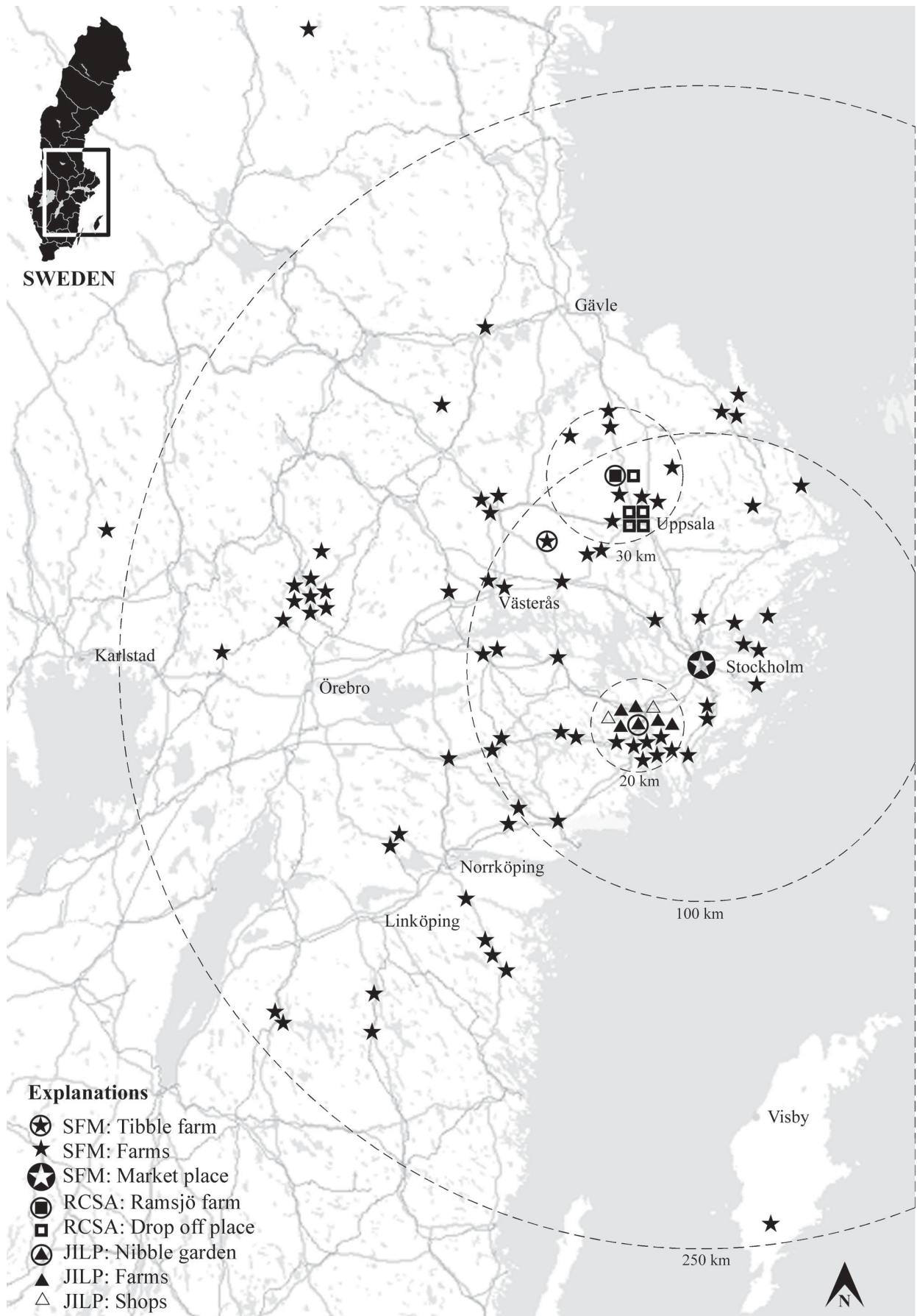


Figure 1. Localisation of producers and exchange places in the three cases, SFM: Stockholm Farmers Market, RCSA: Ramsjö Community Supported Agriculture, JILP: Järna Initiative for Local Production. The dashed circles show distances from case centres.

the production process, while producers receive feedback on their products. The extent to which consumers are involved in the decision-making process of the farm depends on the particular farm.

Ramsjö farm is an organic farm in Björklinge (20 km north of Uppsala, see figure 1) that has recently adopted a community supported agriculture model for their vegetable production. The farm has 70 ha of arable land, of which 3 ha is used for the RCSA vegetable production. The farmers Anders and Karin Berlin are strongly motivated by their ideals of healthy people and a healthy environment, and feel that the only way to be ecological is to sell locally, where producers sell directly to consumers. They are concerned about the future of farming, and believe that the way to ensure the continuity of farming is to build up local systems. Last season was their first RCSA season, with 30 participating families. Produce is available for about 9 months of the year, with designated summer and winter boxes. The farmers envision a RCSA that is the main income for the farm, with approximately 100 families, and where the RCSA box is only one of several links bringing consumers to the farm.

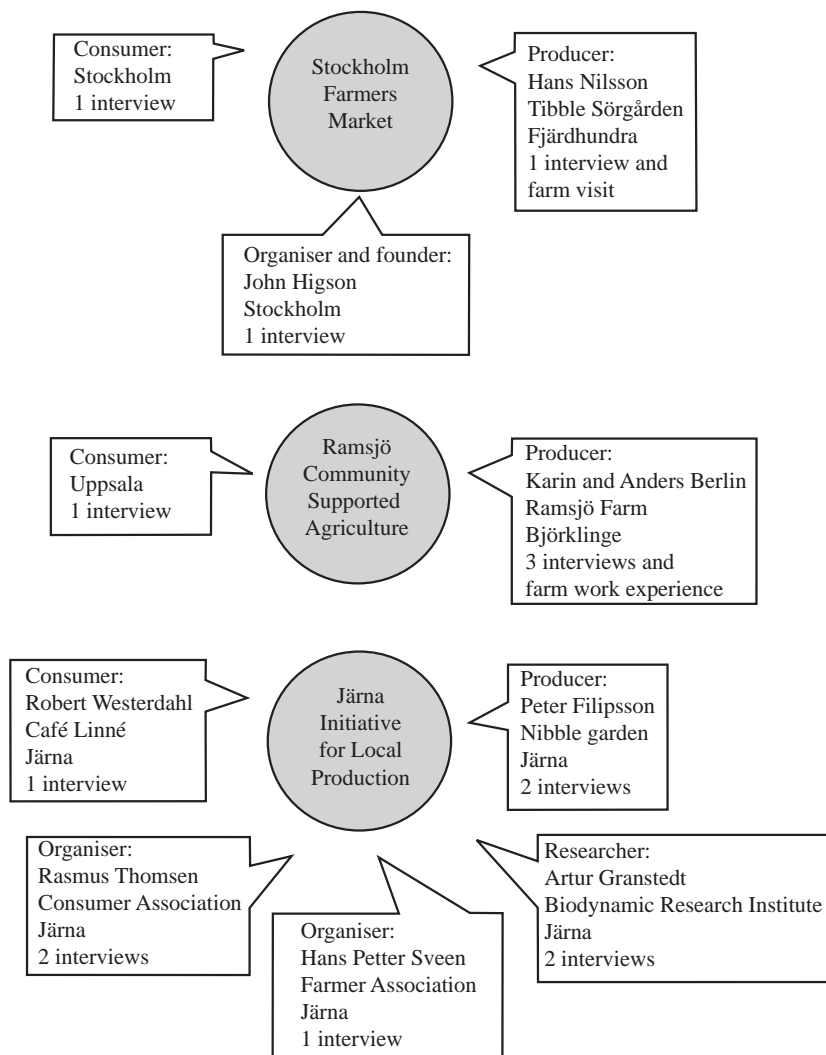


Figure 2. Overview of interviews.

We explore this case through qualitative interviews and follow-up by emailing with Karin and Anders Berlin (see figure 2). A preliminary study visit to the farm is followed by a two-day visit, during which time we interview the Berlins while we work on their farm. We also accompany Karin Berlin when she collects the delivery boxes from her clients, so we can meet them and observe the interaction between the producer and her consumers. In addition, we interview a consumer who has supported RCSA since it began last year. Product freshness and reasonable prices are important factors influencing her participation. The advance payment system and the weekly boxes fit well to her life style, but so far she has not had time to develop other relations with the farm. She feels that the main barrier for consumers joining RCSA might be the need for changes in consumption habits and life styles.

Initiative for Local Production in the anthroposophic community of Järna
Anthroposophy, founded by Rudolf Steiner (1861-1925) is a shared source of inspiration for the Järna community. Biodynamic farming is based on anthroposophy. Järna Initiative for Local Production (JILP) is a consumers association that seeks to bridge the gap between consumers and producers in the community of Järna. JILP began two years ago, and has a membership of about 100, of which 20-30 are active members. JILP works with biodynamic farmers, concerned consumers, and people from the local processing sector to increase the accessibility and visibility of local biodynamic products. JILP promotes consumer awareness of local biodynamic production through workshops, short courses, and brochures. It has also developed a “Järna” label that is used for both products and activities.

Nibble garden is one of the eight biodynamic producers affected by the efforts of JILP (figure 1). The garden is 2.5 ha and about 85% of the produce is sold in the farm shop. The remaining 15% is sold through the biodynamic farmer organisation in Järna, “Odlarringen” which cooperates with JILP.

Café Linné is located in the anthroposophic centre in Järna, and has been in operation since 1995 (see figure 1). It has a capacity to serve 150 lunches per day. The manager and head chef Robert Westerdahl strives to purchase local biodynamic products for the café. This requires more planning, creativity and higher costs than if he did not, but it makes his work more interesting and meaningful. The history and local character of the products have high values for Robert Westerdahl. At present, local production does not meet the Café’s demands year round. Increased production of root crops that can be stored over the winter, as well as more coordination of farmers by JILP would make Robert Westerdahl’s job easier.

This case is explored through interviews with Artur Granstedt, the director of the Biodynamic Research Institute; Rasmus Thomsen, the key organiser of JILP; Peter Filipsson of Nibble garden, one of the biodynamic farmers affected by JILP, and Robert Westerdahl, the manager of Café Linné who supports the work of JILP (see figure 2). We

also spoke with Hans Petter Sveen from the farmer organisation, "Odlaringen", and visited the supermarket selling "Järna" label products.

Systemic descriptions and assessments of the cases

We use four methods for describing and assessing our three case systems. The classic SWOT (Goodstein et al. 1993) is adapted to our multi-perspective approach in order to gain a rough overview of the cases. Diagrams of the structure of the different consumer-producer relations identify where learning opportunities exist. A framework assesses the social and environmental implications of consumer-producer links. A second framework focuses on the process of development and considers how six elements contribute to the sustainable development to the system.

SWOT analysis

A SWOT analysis is a method used for identifying key strengths and weakness, opportunities and threats of a system. Our SWOT is based on material collected from interviews and other information sources. The SWOT analysis has been checked by our contacts to ensure accurate representation. We organise the aspects according to the different perspectives of consumer, producer, organization and society & environment, to show where differences may arise.

Diagrams of learning opportunities

By diagramming information from interviews, literature, and maps, we present our understanding of the structure of relations between consumers and producer. We explore how the structures of different consumer-producer relations affect learning processes in the 3 case systems. Producers and consumers are the main actors in the system, and we arrange them in a way that represents their interactions. The straight lines symbolise the transport of food products, and travel by producers and consumers. An interaction symbol marks places of exchange for food, ideas and information. We discuss learning as it pertains to producers and consumers in the system, as it pertains to the organisation, as well as potential learning opportunities to be considered in future developments.

Implications of consumer-producer links on sustainability

This framework allows us to identify key implications that a consumer-producer relation has on the ecosystem, and on social aspects of the agri-food system. By applying this framework to our cases, we assess the potential impacts of the cases on the sustainability of ecosystem functions and society. We develop tables that list key activities and show the areas affected by these activities and highlight our findings in a discussion.

Framework of development process

This framework allows us to assess the development process of a sys-

tem, by focusing on its temporal dynamics. We identify and discuss six important elements and phases in the development process: preconditions, goals, catalysts, process of change, emerging issues, and inputs/outputs. We apply the framework to our cases to see how different elements contribute to the sustainable development of the agri-food system.

FINDINGS

The following is a collection of our research findings, together with a brief discussion of their relevance. Through the SWOT analyses, we found some key strengths, weaknesses, etc., that highlight where some similarities and differences exist between the cases. The diagrams enabled us to see where learning opportunities exist. The implications assessment helped us to make the connection between activities and sustainability of ecosystems and social aspects of agri-food systems. The application of the process of development framework to the cases gave us insight into specific elements that play important roles in the sustainable development of each consumer-producer link. Together these assessments enable us to formulate key issues and questions to recommend for future research. These recommendations are presented in section 4 of the report.

SWOT analysis

These SWOT analyses present the strengths, weaknesses, opportunities and threats of the three cases. However, informed by systems theory, we feel that it is important to acknowledge multiple perspectives within a system. We thus organise each analysis according to the different points of view of consumers, producers, and organisations (tables 1, 2 and 3). Through this framework we try to identify where there is potential for goal conflicts. We also consider the strengths, weaknesses, etc., of the link in terms of its general implications for the surrounding ecosystem and society. Strengths are elements that contribute positively to the function of the case system. Weaknesses are aspects of the link in need of improvement. Opportunities are areas of potential, and threats are situations or events that can affect the survival of the link. Different elements become apparent depending on the perspective taken. It is important to recognize that a SWOT analysis is only a coarse method that gives an overview of a system. Findings in the SWOT analysis may be in conflict with findings from other analyses. Thus the following sections require critical assessment and discussion.

Working with multiple perspectives has been a challenging exercise whereby we must constantly switch “glasses” without losing focus of our subject, the consumer-producer link. With the SWOT analysis we gain an overview of key aspects in the case systems, which we consider and compare using different perspectives.

From a consumer’s point of view, the main differences among the three cases are the degree of participation in the consumer-producer link organisation, and the accessibility to products throughout the year. The RCSA offers the most opportunities for consumer participation through planning meetings, informal feedback to the farmers, as well as options for volunteering with RCSA operations (i.e. packing boxes), in exchange for produce. Within a CSA (Community Supported Agriculture) model, it is possible for consumers to share in the risks of production, whereby they buy shares into the CSA’s production, but

are not guaranteed a good harvest. However, in the specific case of RCSA, low yields are compensated for by other production on the Ramsjö farm. RCSA also provides boxes for approximately nine months of the year. In the case of JILP, workshops and short courses are offered to consumers several times a year. However, the focus of the courses is on consumer awareness about biodynamic production, rather than on consumer-producer relations. Meat products with the "Järna" label are generally available year round, while produce is limited by seasonal availability. At present SFM does not provide opportunities for consumer involvement and only runs for a few months of the year.

From a producer's point of view, the three types of consumer-producer links offer similar strengths, weaknesses, opportunities and threats. Both RCSA and SFM offer producers opportunities for direct feedback from their consumers. JILP provides a forum for less direct feedback through JILP's organised activities. Producers also benefit from higher local profiles provided by the links. However the degree of advertising and branding associated with each link differs across the three cases. SFM advertises its concept through many forms of media and a well-developed PR strategy. In comparison, RCSA advertises with leaflets distributed through local channels, and a logo that appears on its products. These differences in methods of advertising may be related to scale, where SFM operates on a much larger scale than the RCSA. SFM is part of a national organisation of farmers markets, and involves 76 farmers, whereas RCSA is the only CSA in Sweden, and involves only 2 farmers and 30 families. JILP's advertising efforts are limited to the Järna community, and include "Järna" labels, posters in the local Konsum store profiling Järna biodynamic farmers, and an informational booklet outlining JILP's activities.

We identify different opportunities for the consumer-producer links at the organisational level. All three consumer-producer links have been developed within the last three years, but their rates of development have differed significantly. The historical contexts in which the consumer-producer links are embedded also vary. SFM has been running for three years, during which time it has undergone a rapid rate of development. The number of farmers selling on the market totalled 76 in 2001 and the concept has spread to six other locations in Sweden. There are opportunities for further expansion in the near future. RCSA is now into its second year, and hopes to expand slightly this season. They would like to expand from the current 30 families to 100, but face both labour and time constraints. It is time consuming to farm, pack boxes, organise deliveries, and advertise their concept, and they do not benefit from the support of other CSA's. There exists an opportunity for the development of a Swedish CSA association that could provide RCSA with institutional support, as well as links to other CSA farmers. JILP as an organisation is only 2 years old. However, ideas to integrate producers and consumers within the Järna community have existed for many years, consistent with the anthroposophic view that society should support farmers in their biodynamic production efforts.

Table 1. SWOT Stockholm Farmers Market.

<p>Strengths</p> <p><i>Consumers</i></p> <ul style="list-style-type: none"> • Fresh and locally grown products of high quality • High diversity of products and access to otherwise unavailable products • Direct access to reliable information <p><i>Producers</i></p> <ul style="list-style-type: none"> • Direct feedback from consumer, i.e. satisfaction • Higher prices – direct marketing • Supplement to conventional marketing strategies <p><i>Organisation</i></p> <ul style="list-style-type: none"> • Clear branding of market concept, quick development • Advertising through a variety of media • Low maintenance costs • Local steering committee responsible for each market <p><i>Society & environment</i></p> <p>–</p>	<p>Weaknesses</p> <p><i>Consumers</i></p> <ul style="list-style-type: none"> • Once a week (Saturday) – affects freshness, convenience • Short season (a few months) – discontinuous supply through the year • Speciality products – high prices restrict consumer access <p><i>Producers</i></p> <ul style="list-style-type: none"> • Short season – need for additional marketing strategies • Unstable demand (summer holiday) <p><i>Organisation</i></p> <ul style="list-style-type: none"> • Consumers are not involved in the organisation • Transition phase – not yet fully established <p><i>Society & environment</i></p> <ul style="list-style-type: none"> • Loss of control for: long transportation per product “on table”
<p>Opportunities</p> <p><i>Consumers</i></p> <ul style="list-style-type: none"> • Increase understanding of production and processing • Develop awareness, i.e. consumption patterns • Develop relationship with farmers – access to farms <p><i>Producers</i></p> <ul style="list-style-type: none"> • Increase understanding of consumer needs and values • Communicate experiences and discuss opportunities and constraints <p><i>Organisation</i></p> <ul style="list-style-type: none"> • Continue successfully for a long time • Expand to other locations • Provide a forum for discussion e.g. organic and conventional farming • Involve consumers in the organisation <p><i>Society & environment</i></p> <ul style="list-style-type: none"> • Decrease transport • Localise the food system • Increase community interaction • Develop awareness and reassess values re: consumption patterns 	<p>Threats</p> <p><i>Consumers</i></p> <ul style="list-style-type: none"> • Insufficient supply of local production <p><i>Producers</i></p> <ul style="list-style-type: none"> • Loss of credibility to brand – in case of questionable integrity of products or information <p><i>Organisation</i></p> <ul style="list-style-type: none"> • Adoption of strategy by national food chains • Shift in trends <p><i>Society & environment</i></p> <p>–</p>

Table 2. SWOT Ramsjö Community Supported Agriculture.

<p>Strengths</p> <p><i>Consumers</i></p> <ul style="list-style-type: none"> • Affordable fresh, local, and organic produce • Direct access to reliable information • Direct feedback to producer, i.e. satisfaction <p><i>Producers</i></p> <ul style="list-style-type: none"> • Financial commitment from consumers – shared risk • Direct feedback about consumers’ satisfaction • Reasonable prices – direct marketing <p><i>Organisation</i></p> <ul style="list-style-type: none"> • Opportunities for shared decision making between producers and consumers • Relatively small scale – manageable system <p><i>Society & environment</i></p> <p>–</p>	<p>Weaknesses</p> <p><i>Consumers</i></p> <ul style="list-style-type: none"> • Consumers cannot select the box contents • Limited to vegetables and grain products • Once a week (every second week for winter boxes) – affects freshness and convenience <p><i>Producers</i></p> <ul style="list-style-type: none"> • Must engage in marketing in addition to farming • Packing and delivery is labour intensive • Organising and maintaining client base is time consuming <p><i>Organisation</i></p> <ul style="list-style-type: none"> • No Swedish CSA association – no supporting infrastructure <p><i>Society & environment</i></p> <ul style="list-style-type: none"> • Potential food wastage • Loss of control of food quality and safety • Risk of loss of tax income (if working in exchange for food)
<p>Opportunities</p> <p><i>Consumers</i></p> <ul style="list-style-type: none"> • Increase understanding of production • Participate in production • Develop awareness, i.e. consumption patterns • Work in exchange for food <p><i>Producers</i></p> <ul style="list-style-type: none"> • Share an increased amount of risk with consumer • Adopt production patterns to meet consumer preferences <p><i>Organisation</i></p> <ul style="list-style-type: none"> • Building trust between consumers and producers • Establish a Swedish CSA association – expansion, cooperation <p><i>Society & environment</i></p> <ul style="list-style-type: none"> • Increase social interaction and communication • Decrease transport • Localise the food system • Reassess values 	<p>Threats</p> <p><i>Consumers</i></p> <ul style="list-style-type: none"> • Non-specific production is a risk for insufficiency <p><i>Producers</i></p> <ul style="list-style-type: none"> • Insufficient labour • Loss of consumer trust if quality or quantity of produce is consistently low <p><i>Organisation</i></p> <ul style="list-style-type: none"> • Consumers might not be willing to share the farmer’s risk • Shift in values <p><i>Society & environment</i></p> <ul style="list-style-type: none"> • Risk of inconsistency with tax law (working in exchange for food)

Table 3. SWOT Järna Initiative for Local Production.

<p>Strengths</p> <p><i>Consumers</i></p> <ul style="list-style-type: none"> • High diversity of local and biodynamic products • Labelling of products – easy identification <p><i>Producers</i></p> <ul style="list-style-type: none"> • Cooperation among producers • Higher profile for products achieved through “Järna” labels • Consumers value biodynamic quality – willingness to pay <p><i>Organisation</i></p> <ul style="list-style-type: none"> • Embedded in a strong anthroposophic community • Framework that facilitates consumer-producer relations <p><i>Society & environment</i></p> <p>–</p>	<p>Weaknesses</p> <p><i>Consumers</i></p> <ul style="list-style-type: none"> • Biodynamic products are more expensive than organic products • Unrealised production potential due to lack of coordination of soil types on limited land <p><i>Producers</i></p> <p><i>Organisation</i></p> <ul style="list-style-type: none"> • Limited impact on consumption patterns – many anthroposophic institutions do not demand local biodynamic productions • Dependent on 2-3 key resource persons <p><i>Society & environment</i></p> <ul style="list-style-type: none"> • Limited sphere of influence-experiences remain largely within Järna community
<p>Opportunities</p> <p><i>Consumers</i></p> <ul style="list-style-type: none"> • Influence on local production • Increase awareness about local biodynamic products <p><i>Producers</i></p> <ul style="list-style-type: none"> • Increase cooperation • Develop new products • Advertise the “Järna” label <p><i>Organisation</i></p> <ul style="list-style-type: none"> • Consolidate interest groups into one organisation <p><i>Society & environment</i></p> <ul style="list-style-type: none"> • Integrate into education system – schools • Introduce the model to other areas • Show benefits of biodynamic approach through scientific research 	<p>Threats</p> <p><i>Consumers</i></p> <p><i>Producers</i></p> <ul style="list-style-type: none"> • Uncertain market demand for biodynamic products • Consumer preference to buy from wholesalers <p><i>Organisation</i></p> <ul style="list-style-type: none"> • Decreased interest in anthroposophy <p><i>Society & environment</i></p> <p>–</p>

Currently there are several types of consumer-producer links in Järna including farmer associations (Odlarringen), farm shops, Café Linné, biodynamic institutions, and the biodynamic wholesaler "Biodynamiska Produkter". JILP intends to integrate these relations into a more coherent consumer-producer link that will enable farmers to cooperate in selling their products, and provide consumers with increased access to local biodynamic products.

From the perspective of society and environment, we found that all three cases have lower transportation requirements than the conventional food distribution system. Less transportation results in less pollution, which has positive implications for the surrounding ecosystem. It also decreases fossil fuel dependency. The cases also offer potential for closer social interactions between key actors in the food system. These interactions have positive implications for community wellbeing, and in this way contribute to social sustainability. The connection between community wellbeing and social sustainability consistent will be discussed under "Implications of consumer-producer links on sustainability", page 21-26. The experiences of JILP could contribute to the development of other consumer associations that encourage closer consumer-producer links. However, JILP is situated in a unique cultural context that involves a very special worldview and operates within a very supportive institutional framework. It is closely connected to the Biodynamic Research Institute that disseminates knowledge about the environmental effects of biodynamic farming methods and researches the effects of alternative consumer-producer links on resource use and society. It is thus relevant to consider how experiences of JILP may be generalised or adapted to other, non-anthroposopic communities.

Moreover, through their emphasis on closer consumer-producer relations, the cases encourage society to re-assess current value frameworks regarding consumption. Through interaction with producers, people shopping at the farmers market may reflect upon the effects that their consumption habits. Similarly, consumers buying "Järna" products may recognise the implications associated with the consumption of local, biodynamic foods instead of imported biodynamic products. RCSA consumers may deepen their understanding of the production process and be more willing to share in the risks associated with farming, thus providing local farmers with more support. Furthermore, through communicating the values associated with organic and biodynamic production, these links may encourage society to reflect upon the environmental impacts of modern farming.

Thus the SWOT analysis provides us with a basis for understanding different aspects and perspectives of the three types of consumer-producer links. With this background, we are able to develop an assessment method to consider the implications that these links have on surrounding ecosystem, and social aspects of the agri-food system (see Implications of consumer-producer links on sustainability", page 21-26).

Diagrams of learning opportunities

We created the following diagrams to explore how the structures of different consumer-producer relations affect learning processes in the 3 case systems. Each diagram is followed by a discussion, which considers learning as it pertains to producers and consumers in the system, learning as it pertains to the organisation, as well as learning potential that could be considered in future developments.

Stockholm Farmers Market

The learning diagram (figure 3) shows a number of producers arranged around the central farmers where exchange and learning takes place, when consumers and producers come together on market Saturdays. Here there exist possibilities for consumers to learn about production processes, and for producers to learn about consumer needs and values. Producers also have the opportunity to meet and exchange information with other producers selling at the market. It is also possible that consumers interact with each other and learn from each other while shopping, although we have no empirical evidence to support this claim.

Some of the producers are clustered in the diagram, representing cooperation among producers. Some farmers may transport their goods to the market together, or sell products on behalf of neighbouring farms to cut down on the costs of fuel and time expenditure. Learning amongst producers must take place if there is to be such farm-farm cooperation, since SFM rules require that the person selling at the market is familiar with the production process of everything being sold. At the organisational level, SFM learns through the travels and exchanges undertaken by its members. John Higson has travelled abroad extensively with the aim of learning from other farmers markets, their keys to success, as well as their cautions for failure. These experiences influence the development of SFM.

We identify a potential for learning within this case system at the organisational level. Currently consumers are not represented on the local steering committees, which manage the markets. Perhaps there could be increased learning opportunities between consumers, producers and organisers, should consumers participate in the management and decision-making aspects of SFM.

Ramsjö Community Supported Agriculture

The learning diagram in figure 4 shows one producer in interaction with consumers who use the drop-off/pick-up sites. This interaction provides an opportunity for learning exchange. Learning can result from the producer-consumer interaction, as well as from consumer-consumer interactions. Although it is not depicted in the figures, learning opportunities also exist for consumers who participate in on-farm activities such as packing boxes. In addition to these person-person exchanges, producer and consumers have the opportunity to learn from each other through telephone contact, which is an important method of communication at RCSA. At the organisational level, RCSA learns

through the annual planning meeting that occurs at the farm, which involves both the producer and the consumers. This opportunity for learning is represented by the interaction symbol embedded inside the producer symbol.

We identify a potential for learning between this CSA and other CSA systems. An opportunity to share ideas and experiences could promote learning amongst different CSA's, and lead to more exchange between them. However at present, we are unaware of any other CSA farms in Sweden.

Järna Initiative for Local Production

The learning diagram in figure 5 shows a very complex and interconnected consumer-producer system with several different types of interactions and exchanges between consumers and producers. These exchanges occur in farm shops, institutions, Café Linné and the local supermarket. The contact points have different qualities, whereas the farm shop may be supplied by one producer and visited by many consumers, other exchange locations involve several producers and consumers. In order to promote this close-knit system with its wider range of interactions, JILP works to increase consumer awareness about biodynamic production processes, and to develop more relationships with producers and consumers.

At the organisational level, JILP benefits from its place within the anthroposophic community at Järna. The community is a centre for exchange and receives many visitors from both Sweden and abroad. In this way there are many opportunities for learning within JILP and within Järna.

Implications of consumer-producer links on sustainability

Consumer-producer relations are important components of the agri-food system, which is in turn part of the surrounding ecosystem. The following framework allows us to identify implications that a consumer-producer link may have on the sustainability of ecosystem functions, as well as social aspects of the agri-food system. We apply the framework to our cases and discuss key implications. Our assessments are informed by both the work of Levin (1999), and Max-Neef (1991). Levin addresses the topic of environmental management in the context of sustainable development of ecosystems and social systems by postulating eight commandments. Max-Neef proposes that participation, meaning, and a sense of community are fundamental human needs necessary for sustainable social systems. We also identify some challenges that emerge out of this research process.

Activities at different stages in the food chain have implications for the ecosystem in which they operate. We highlight the activities of production, packaging, and transport and discuss how different consumer-producer links can affect these activities and consequently affect the surrounding ecosystem (see table 4).

Local food chains provide opportunities for consumers and producers to interact with each other in the food system. Fulfilment of basic food

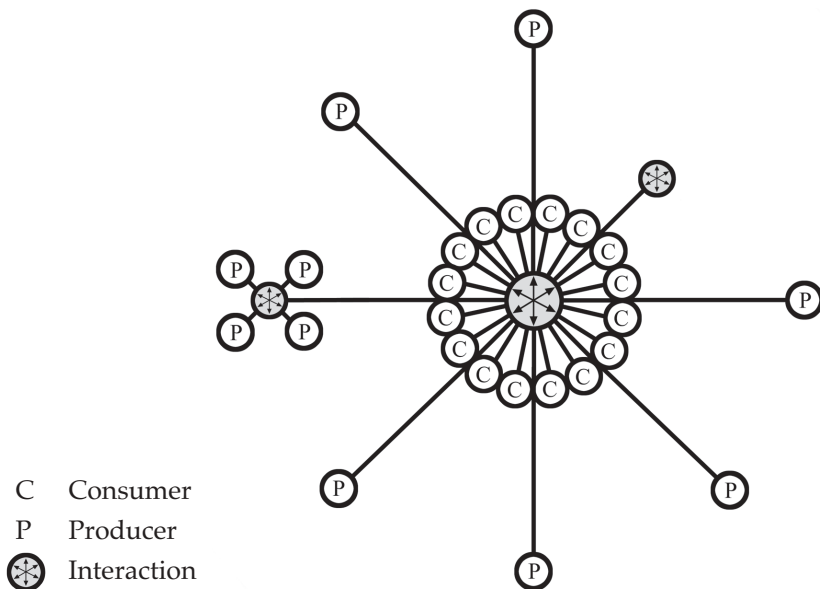


Figure 3. Learning diagram of Stockholm Farmers Market. The diagram shows a number of producers arranged around the central farmers market. A number of consumers are also arranged around the marketplace, but at closer proximity. The interaction symbol in the market represents the exchange and learning that takes place when consumers and producers come together on market Saturdays.

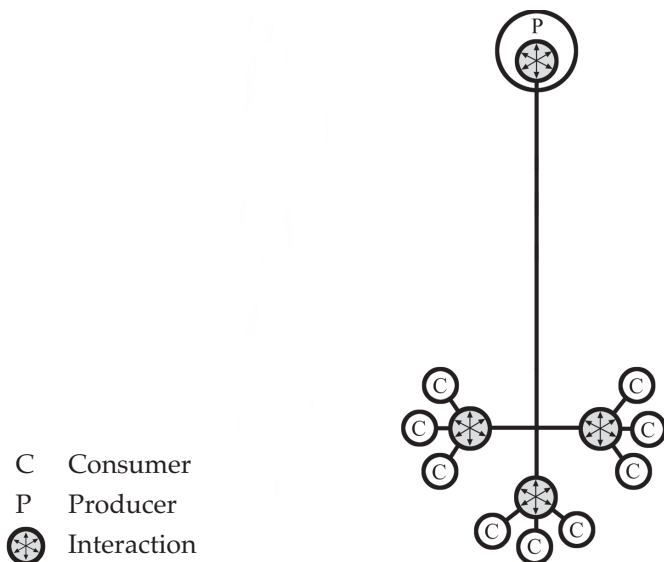


Figure 4. Learning diagram of Ramsjö Community Supported Agriculture (RCSA). The diagram shows one producer that provides for and manages RCSA. This producer travels to several locations, which are drop-off/pick-up sites for the food boxes. Here s/he may meet and interact with consumers who use that drop-off/pick-up site. This learning exchange opportunity is represented by the interaction symbol.

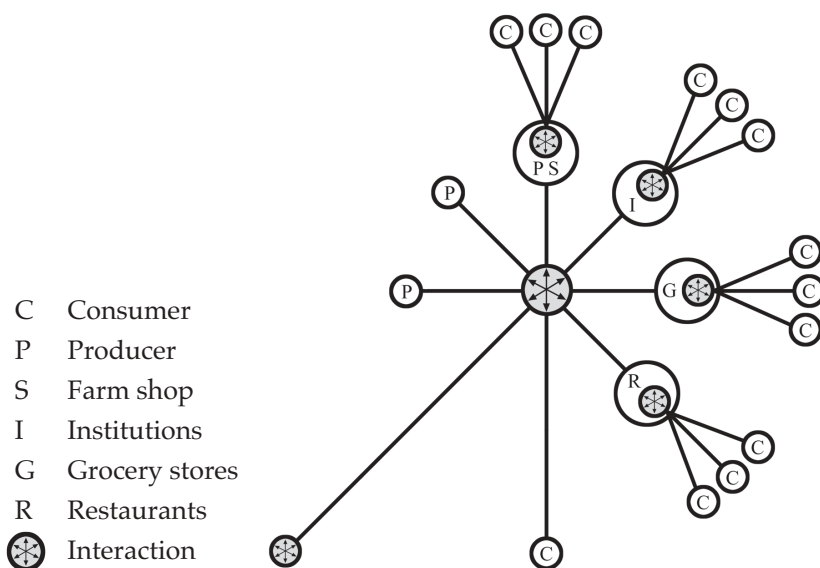


Figure 5. Learning diagram of Järna Initiative for Local Production. The diagram shows a very complex and interconnected consumer-producer system, which represents our understanding of what JILP is trying to achieve in Järna. There are several different types of contact between consumers and producers, which are represented by interaction symbols.

needs, learning, participation, and decision-making are important activities affecting the social sustainability of an agri-food system. We identify potential implications that these activities have on social aspects through a consideration of affected areas (see table 5).

Production – affects on the ecosystem

Different kinds of consumer-producer links can affect farming practices through the communication of concerns and interests by the consumers. For example, if consumers demand organic or low-input farm products, producers may alter their methods accordingly, which could have implications on pesticide and fertilizer applications, machinery use, and crop management. These changes would affect the potential for nutrient leaching, pesticide contamination, fossil fuel use, and biodiversity, which have important implications for the surrounding ecosystem. A consumer-producer link such as the RCSA also affects farm biodiversity through its requirements for a large variety of crops. Such changes in farm practices and diversity can affect ecosystem functions, and have an impact on ecosystem sustainability.

There are several challenges associated with assessing the environmental implications of agricultural production. The interactions occurring within an agro-ecosystem are many and varied, which ma-

Table 4. Affects of consumer-producer links on ecosystems.

Activity	Area of affect
Production	<ul style="list-style-type: none"> • Nutrient leaching • Pesticide contamination • Fossil fuel use • Biodiversity
Packaging	<ul style="list-style-type: none"> • Material use • Fossil fuel and electricity use • Waste generation • Pollution • Market environment
Transportation	<ul style="list-style-type: none"> • Fossil fuel use • Transportation infrastructure • Pollution

Table 5. Affects of C-P links on social aspects of agri-food systems.

Activity	Area of affect
Learning	<ul style="list-style-type: none"> • Shared values of consumer and producer • Understanding • Consumption habits and demands
Participation	<ul style="list-style-type: none"> • Awareness of farming methods • Ownership
Decision making	<ul style="list-style-type: none"> • Democracy • Accountability

kes it difficult to find simple cause and effect explanations to aid the assessment process. Furthermore, any assessment attempt must simultaneously deal with both positive and negative implications associated with a given consumer-producer link. For example, the RCSA consumer-producer link may offer positive implications for the agro-ecosystem through a high diversity of crops and varieties. A variety of crops positively affects biodiversity on the farm, and maintains genetic heterogeneity, resulting in crops that are less susceptible to pests and diseases. However, this may simultaneously decrease the efficiency of planting or harvest, which could increase the need for manual and/or tractor work, resulting in more labour and/or fossil fuel need.

Packaging – affects on the ecosystem

Producers in local food systems may also be involved in the packaging of products. The packaging used in a consumer-producer link may affect the ecosystem depending on material use, fossil fuel and energy use, waste generation, pollution, and market environment. In RCSA, packaging materials are minimised through the use of reusable plastic boxes, in place of disposable alternatives. In the RCSA, a full box is dropped off and an empty one picked up each week. This practice is assumed to cause less negative impacts on the surrounding ecosystem on account of the low amounts of resources required for the production of materials. However, a critical examination of the resources needed for different packaging materials might reveal the opposite to be true. The market environment also plays an important role in determining the packaging of foods. Consumer expectations and values are driving forces for demand, where consumers may prefer to have less packaged products which has implications for resource use and waste generation. The degree of communication of values between consumers and producers is relevant with regards to this point. Thus there is a social aspect to packaging that has an impact on the sustainability of ecosystem functions.

Transport – affects on the ecosystem

The transportation requirements associated with a consumer-producer link affect both the surrounding ecosystem and more distant ecosystems through the use of fossil fuels, the need for transportation infrastructure, and the generation of air pollution. Ecosystems have a buffering capacity to maintain important ecosystem services, such as the cleaning of water and air. These abilities might be reduced by e.g. pollution or building activities. An ecosystem with decreased buffering capacity is also less able to adapt to uncertainty and changes. Thus, transport activities with high levels of ecosystem impacts can be obstacles for sustaining our present ecosystems with all its functions.

Fossil fuels are the main energy sources that bridge the distance between consumers and producers. The distance between consumers and producers, their distribution in the area, and the frequency and efficiency of the mode of transport all affect the amount of fossil fuel

required. On a long time scale, it is important to consider how adaptable a consumer-producer link is to changes in transportation options. When the fossil fuels run out, will the consumer-producer link be able to adapt its transport activities and continue to function?

Transportation infrastructure such as roads, railroads, and airports are a part of the landscapes of this part of Sweden, and impact ecosystems. The distance between producers and the meeting point with consumers, as well as the distance between the consumer and the meeting point, determines how far the different actors must travel to participate in a particular link, and how much fossil fuel is needed for transportation. The character of the consumer-producer link also affects the feasibility of certain types of transportation. For example, the location and “market” character of the Stockholm Farmers Market encourages pedestrian and/or bicycle access for consumers, while the large distances between farms and market encourages car transport by producers.

It is a challenge to measure each consumer-producer link’s need for fossil fuel, as there is no obvious unit of measurement to use. For easy comparison with other consumer-producer links the calculations should have a common basis, e.g. km per kg of product, L fuel per kJ of product or kJ for transportation per percentage of total food need. The unit of measurement should also provide a meaningful means for comparison that can result in a relevant interpretation.

Learning – affects on social aspects

Learning processes have significant implications for the social sustainability of agri-food systems, and consumer-producer links can provide opportunities for learning. It is relevant to explore consumer-producer links in terms of the values shared between consumers and producers, the understanding between them, and the relationships between consumption habits and demands.

Learning that supports a given system will encourage its continuity, while learning that results in the formulation of alternatives can change a system. In either case, learning that takes place within a system makes that system more adaptable to changing circumstances, and thus increases its probability of survival in the face of uncertainty. Consumer-producer links can provide opportunities for learning through possibilities for interactions between consumers and producers. Opportunities for feedback and communication can affect producer awareness of consumer interests and needs, as well as consumer awareness about farming methods. Awareness can lead to an understanding of the implications of consumer-producer links on farmers, society, and the environment. This learning process can give rise to a sense of shared environment between consumers and producers where shared meanings are negotiated, and shared values acknowledged. This emergence of a shared environment can affect the sustainability of the agri-food system by increasing a sense of community, and increasing social satisfaction with the current system. Furthermore, learning and awareness can lead to changes in consumption habits, which may in

turn support different farming philosophies. For example, more demand for organic products increases the social sustainability of organic farming.

Participation – affects on social aspects

Participation takes on many forms and occurs to varying degrees in different consumer-producer links. Participation occurs through the expression and discussion of ideas, the facilitation and implementation of plans, the evaluation of actions, and the important task of decision-making. Our cases provide examples of different ways that consumers and producers can participate in a consumer-producer link. The character of participation can have implications on the social sustainability of the agri-food system by affecting ownership and responsibility of different actors within the system. A consumer who takes an active role in the design and management of an alternative consumer-producer initiative may feel a stronger sense of ownership than if s/he bought food from a supermarket. Such an increased sense of ownership and responsibility can have positive effects on the feeling of community, and enhance the social fabric, thus contributing to social sustainability.

Decision making – affects on social aspects

The decision making process in a consumer-producer link is a sensitive topic because it may require people to negotiate new boundaries that separate their private lives from society. Different links have different requirements and possibilities to develop new ways for decision-making. For example, RCSA invites the participation of consumers in decisions affecting the management of the farm, which traditionally falls in the domain of private home life. We highlight the areas of democracy and accountability to consider for their implications on social sustainability.

We believe that decision-making in a local food system can contribute to social sustainability if it is democratic and accountable. In order to be democratic, it should allow for the active participation of different stakeholders affected by the decision. It should be accountable in that the people who make a decision are responsible to the people affected by the decision. If people are satisfied with a decision-making process and its results, then this satisfaction will contribute to social sustainability.

Framework of development process

The previous three sub-sections provide us with findings that identify strengths and weaknesses of systems from different perspectives, and highlight important implications relevant to the sustainability of ecosystems and the social aspects of agri-food systems. This section integrates these findings into a framework for assessing the development process. Figure 6 is a schematic representation of this framework. We identify and discuss six important elements and phases in the

development process: preconditions, goals, catalysts, process of change, emerging issues, and inputs/outputs. We then apply this framework to our cases to discuss elements of each case that contribute to the sustainable development of the agri-food system.

A **goal** is an objective towards which a process of development is oriented. It is important to recognize that there are probably multiple goals within a system as complex as an agri-food system. What are these goals, and who is expressing them? Do all actors explicitly express their goals? If no, why might this be so? Do goal conflicts exist? How are they managed and resolved? Are different actors in a system aware of the goals of other actors in the same system? Through the SWOT analysis, we try to show the importance of recognising multiple perspectives when assessing a system, and the potential for goal conflicts arising from multiple perspectives. It may be necessary to create forums for the discussion of goals between different actors of a system so that multiple perspectives are integrated into the development process. Such an inclusive process can contribute the social sustainability of the development process. Sensitivity to social context is further discussed in relation to preconditions.

Preconditions are conditions that exist in a system that provide potential for the development of a concept. In what social, political, economic, and environmental conditions is the development initiative embedded? What implications do these conditions have for opportunities and constraints for the initiative?

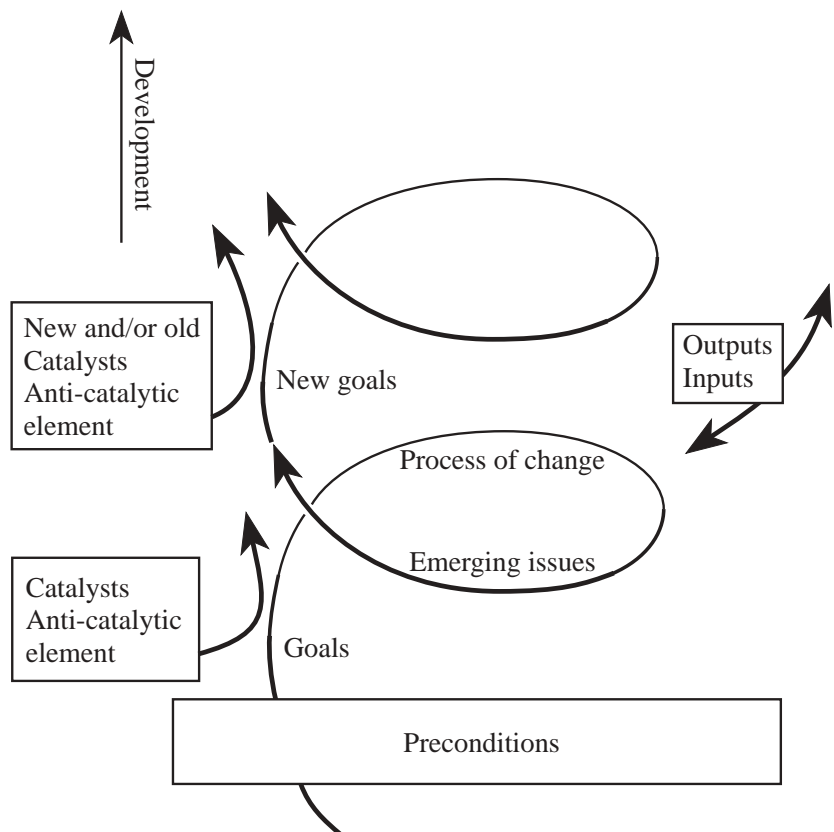


Figure 6. Process of development.

A **catalyst** is an input (i.e. actor) into a system that speeds up the initial stage of a development process. Catalysts can play important roles in facilitating the development of alternative consumer-producer systems. What catalysts play a role at different stages of development? How does the catalyst stimulate a process of change? It is further relevant to consider the time scale over which a catalyst acts. How long is a catalyst needed in the system? Is there risk for the system to become dependent on a catalyst? Furthermore, are there opportunities for the existence of multiple catalysts, and consequently the potential for conflict? Does the catalyst affect the decision-making mechanisms within the organisation? Anti-catalytic elements have the opposite effect of catalysts, and hinder or halt the development process.

The **process of change** phase implements conditions to realize goals. This phase includes active observation and reflective thought, which leads to actions that change the present conditions. What supports a process of change in a system undergoing development? What are the steering mechanisms that manage the direction of the process of change within a system? Who has a voice in the decision making process?

The **emerging issues** phase involves conscious reflection and evaluation of the process of change phase. This can lead to the identification of important issues and questions that need to be considered for the further development of the system. This phase includes revisiting goals and reformulating them in light of new perspectives and experiences, and possibly planning for the next phase of change. What are the driving forces behind this process of reflection and evaluation, and who bears the cost associated with the time and energy spent in this process? Do farmers have sufficient time to reflect on their goals and processes of change? The process of reflection and evaluation can be prompted by influences from outside the system, through the exchange of ideas.

The important **inputs and outputs** that we focus on in our discussion are ideas and initiatives. Ideas enter the system as inputs, and exit as outputs, while initiatives only exit as outputs. Inputs in the form of ideas are extremely important to the development of a system by providing the foundation upon which actions are taken. Outputs in the form of new ideas and initiatives are evidence of a process of development. What opportunities exist in a system for the input of ideas, and what factors affect these opportunities? Structural factors both within and outside the system can have implications for the exchange of ideas. Finally, what is the context for the generated outputs? Is the context a supportive one?

By considering these six elements in the development processes, we are able to consider the dynamic aspect of the development process in each of our cases in a way that we could not have done using our previous assessments. This framework allows us to identify elements in the development process that contribute to the sustainability of the system (mainly social sustainability), and to develop relevant questions

to ask regarding future developments. The key questions and issues that emerge from our research process are discussed in section 4.

Stockholm Farmers Market

The main goal of SFM is to create a strong, branded concept that represents the values of “fresh”, “local”, and “quality”. SFM also has the goal of bringing consumers and producers closer together by providing them with a meeting place for the exchange of information and ideas. The main actors expressing these goals are the founders and members of the national committee. However, as the development process progresses, the local steering committee may play a larger role in developing goals for the market. At present, consumers are not represented on the steering committee, and thus consumer goals are not explicitly expressed in SFM. However, consumers may express their interests to producers and the market manager by participating in SFM’s annual consumer survey.

Close proximity to potential consumers, a diversity of farmers, and grant monies are all important preconditions for SFM. The market is situated in a densely populated, middle-class neighbourhood, where people have the means to afford specialty and non-essential food items such as culinary herbs and rare vegetables. Farmers specialising in different products from a large area surrounding Stockholm create a vibrant and diverse market environment. The market was initiated as a pilot project with the aid of grant monies, but is currently financing its own operating costs.

An important catalyst who has played a tremendous role in the development of SFM is John Higson. Before initiating SFM as a pilot project, he surveyed many different farm markets in several countries to gain insight into elements that can be appropriately adapted and applied to Sweden. As the market continues to develop, and John Higson gradually decreases his involvement in the system, there is the potential that SFM will suffer a difficult transition period. At the same time, opportunities emerge for other catalysts to play a role in advancing the system into a process of change phase.

SFM has a local steering committee that makes decisions regarding the management of the market, in line with the mission of the national Farmers Market organisation. However, while producers are represented on the local committee, consumers do not have direct representation. Could consumers be more involved in the process of change phase of development of the market for a more participatory and collaborative system? What implications could this have for the social sustainability aspect of the agri-food system?

Economic feasibility combined with feedback from producers and consumers about the market are important driving forces for an emerging issues phase of development. The degree of economic success may lead the local steering committee to re-evaluate management strategies, while producer feedback and results from the consumer survey may initiate a process of reflection about the goals of SFM.

Important inputs enter into SFM through its organisers, and may come as ideas and initiatives arising from their experiences. There exists a potential for increased inputs into the system should the local committee create forums that welcome public input. The marketplace is an output from SFM, along with consumer-producer relations, and the public relations campaign.

Ramsjö Community Supported Agriculture

The goals of RCSA are to farm in a truly ecological way by minimising negative impacts on the ecosystem, and to bridge the gap between people and their food. Another goal is to promote health through providing local, organic food. The farmers Karin and Anders Berlin express these goals. Their consumers often share the values associated with these goals, and express themselves when they meet or talk on the telephone with the producers.

Preconditions for the development of RCSA include location, potential consumers, supportive community context, and EU subsidies for organic production. RCSA is within close proximity to Uppsala (20 km north of the city), where most of their consumers live. The Berlins have developed relations with several consumers who donate space on their premises to be used as pick-up/drop-off sites for RCSA. This friendly social context is of primary importance to RCSA's success, as it provides opportunities for contact between the consumers and producers, as well as minimises time and transport requirements.

The farmers can be considered to be the catalysts for the development of RCSA. They are the ones who initiated the CSA program on the farm, and the ones to advertise it to potential consumers. Since they remain in the system after the initial phase of development, there is no risk associated with dependency as RCSA continues into the future. The decision-making mechanisms that they create can also remain until they see fit to change them. Anti-catalytic elements could come in the form of changes to the EU subsidy program, which might negatively affect the farm economy, making it difficult for the Berlins to maintain the RCSA.

In RCSA, consumers' trust in the farmers plays a key role in supporting the process of change. With the support of their consumers, the farmers make decisions, which drive the process of change. However, they try to involve consumers in the decision-making process through an annual planning meeting before the start of the season.

An emerging issues phase might be prompted by consumer dissatisfaction with RCSA, or economic difficulties that cause the farmers to re-evaluate the process. A reformulation of goals and strategies takes time and energy that may be costly in the context of long and hard days on the farm. Regular communication with their consumers may provide early indication of a need to re-evaluate.

An important input that entered RCSA was the idea of the CSA model that originated in Japan, and was then further developed in the USA. There is a potential for more inputs of ideas should the farmers at

RCSA connect with other CSA farmers to share experiences. The activities of RCSA along with ideas for new initiatives are direct outputs of its development process.

Järna Initiative for Local Production

The goals of JILP are to promote the local production and consumption of biodynamic foods in Järna, and to bring consumers and producers closer together. The organizers, consumers, and producers who work with JILP express these goals.

Preconditions for the development of JILP include the anthroposophic community in Järna, EU subsidies for organic production, and private donations that help fund the initiative's activities. The anthroposophic worldview encompasses values that promote consumer support of biodynamic producers, and encourage learning exchanges in the community. These values are driving forces for JILP's development, and provide it with a supportive context.

Currently there are several catalysts within JILP working to consolidate the initiative and advance its development. However, the case system is a challenge to explore due to its complexity and the fact that it is still in its initial stages of development. Rasmus Thomsen and Robert Westerdahl are main catalysts providing a great deal of impetus for JILP's development. There are also other catalysts, including both producers and consumers, and the number of active actors contributes to the resilience of the system against change. However, the existence of so many actors makes it difficult to coordinate activities, but their initiatives need to be integrated to be most effective. If this coordination and integration does not occur, the abundance of catalysts could have anti-catalytic effects.

The anthroposophic worldview will undoubtedly play a key role in driving the process of change phase for JILP. Other factors supporting and directing this phase may include actions taken by both consumers and producers involved in the organisation.

An emerging issues phase will be supported by the anthroposophic worldview, which encourages reflection and re-evaluation. The success of JILP as measured through consumer and producer satisfaction and the economic feasibility of continuing the work will also influence the re-evaluation process. Reflections on the process by the people participating in JILP, and the results of the sharing of these reflections will be important driving forces in this phase.

Järna is a unique community with many opportunities for learning exchanges due to its reputation as a cultural centre. Thus JILP is surrounded by a context that provides many inputs in the form of ideas. JILP also benefits from the large population of anthroposophists, who are potential members of the organisation. The outputs of JILP are evidenced in the ideas generated and initiatives taken.

DISCUSSION

In this section we present and discuss four key issues that have potential to significantly affect the development of agri-food systems. We develop critical research questions associated with these issues, and recommend that CUL propose that these questions are considered in future research.

Food chains - short or long?

The conventional agri-food system in Sweden has long chains consisting of several links in the processing, transportation and distribution of food, from the primary producer to the final consumer. Many of the food chains have their origin in other countries and on other continents. The investigated alternative food chains involve direct marketing and have very few links. The length of a food chain has implications for the level of resource use, degree of communication, and opportunities for learning within the system. The length of the chain may also affect the vulnerability of the system to risks. A better understanding of the implications associated with food chains of differing lengths can lead to the development of more ecologically and socially sustainable agri-food systems.

Food systems with few links in their chain provide consumers with products that are grown and processed in the vicinity. This means that food is only transported over short distances, requiring less fossil fuel than if they are transported over long distances. The amount of time for transport is also decreased, resulting in relatively fresher food. Short food chains are thus characterised by fresh and local production and consumption, and a relatively low level of resource use associated with transport. Longer food chains consisting of many links are characteristic of industrialised countries, where the food and agriculture sectors are highly efficient economies of scale. More transport is required in these systems in order to move products through the many links in the chain. This can have negative implications for food quality (e.g. freshness).

The length of the chain in a food system also has implications for feedback and learning among different actors in that system. From a purely physical perspective, the possibility for communication and feedback between consumers and producers is higher where the distance and number of links separating them is small. A consumer who buys directly from a farmer can give feedback on the product easily, and has access to information about the production process. In contrast, a consumer who buys from a supermarket, which buys from a national wholesaler, who buys from a local wholesaler, etc., is less likely to give feedback to the farmer who grows the food, or learn about the process of production. Thus food chains with fewer links provide more opportunities for learning between consumers and producers than long food chains.

However, systems with few links in its chain may be more vulnerable to risks associated with food security, than systems with

many links that depend on large support areas for its food supply. Perhaps a food system can benefit from a variety of food chains, both long and short. The diversity in chain lengths might act as insurance against risks. A critical research question that arises is “What advantageous properties can be learned from short-chain food systems, and be developed in long-chain systems?” Furthermore, to address the learning and development process, “How can such properties be learned and transferred?” A consideration of these questions may benefit from a discussion of what the term “local” means, as it applies to some short-chain food systems.

What is local?

The concept of “local” concerns the ideas of “local production”, and “local consumption”. When farmers market their products in venues close to their farms, their activity is considered to be “local marketing”, and their consumers engage in “local consumption”. However, it may be interesting to consider the “local production” definition further, where the means of production play a role in determining just how local the production process really is. Does the farm purchase seeds, fertilisers, machinery, or fuels? Where do these inputs come from? How local are they?

The term “local” can mean different things for different people, and indeed, differs across our three cases. SFM ranges over a large area where the maximum distance between a farm and the market is 250 km. In contrast, RCSA operates over an area with a boundary that is only 30 km from the farm. Yet both systems identify themselves with the concept, “local production”. For our analysis of alternative consumer-producer relations, it is thus important to consider the question “How local is local?” One must decide what spatial scale is appropriate for a discussion about “local” food systems. Furthermore, for a given consumer-producer relation, is there an optimal scale for it to operate on? Does the demand of the population in an area match the scale of an alternative consumer-producer initiative? Does this result in positive or negative effects arising from competition between farms in the same system? Different consumer-producer links meet different demands in society. A diversity of consumer-producer links could be desirable, where different links match consumer and producer preferences within the system.

Diversity can be considered as it applies to different aspects of a system, and for the protection it may offer against risks. In the above discussion about short and long chains in food systems, we acknowledge that vulnerability can be built into a system through the exclusive development of short food chains with few links, and a small support area. At the farm level, farmers plant a diversity of crops as insurance against the negative effects of pests and climate. Beyond the farm, farmers may sell products to more than one buyer to have market options, should one buyer not come through. Farm families may also rely on diverse sources of income, rather than be solely dependent on farm

yields. Similarly, at the level of the agri-food system, perhaps it is important to have a diversity of consumer-producer relations that result in food chains of differing lengths. Such an approach could diversify risks associated with food security, while meeting the changing needs of a diverse population most effectively.

A key factor in this discussion about vulnerability is balance. What is the optimal balance between localisation and diversification of a non-local character? It is important to acknowledge the many different aspects of an agri-food system. Should all aspects of the system be localised? Or could some aspects such as food production be localised, while information networks that extend beyond local boundaries are simultaneously created? Local production and consumption could take place under normal circumstances, with opportunities for national or international trade in the case of a natural disaster in the area. A key research question that emerges from this discussion is "What is the optimal balance of localising an agri-food system without building vulnerability into the system?" This balance will change over time as participants and conditions in the system change. Thus other questions are, "How can this process of continuously finding an optimal balance be facilitated?", and "How can different stakeholders participate in the decision-making process?"

Learning

Throughout this report, the concept of learning has arisen several times. Learning contributes to the sustainable development of a social system. It is therefore relevant to consider opportunities for learning in an assessment of the sustainability of the agri-food system. Conditions that promote open exchange between actors in the system provide grounds for learning. This exchange can occur among actors (producers with producers), and between different actors (producers with consumers). Learning may initiate a process of reflection and evaluation that leads to the reformulation of ideas and the generation of new ideas, described as the phase of emerging issues in the process of development. In this way the system adapts to changing circumstances, and is resilient against uncertainties that may arise. From an adaptive management perspective, uncertainties and surprise are inherent in all systems, and learning is a key means through which one can deal with this uncertainty. Key questions include "What learning opportunities can be created in the system to ensure social sustainability?", "How can these opportunities be developed?", and "Who should direct this development?" For the process to be socially sustainable, it must be inclusive and encourage participation from all stakeholders.

What is really being sold - food or values?

One final issue that we feel is important to discuss with regards to the sustainable development of the agri-food system is the issue of what is being bought and sold through these alternative consumer-producer relations. While the material aspects of the agri-food system are organi-

sed around the production and distribution of food, the social aspects of the system are shaped by values. Through our exploration of the three cases, we realise that both food and values are being exchanged through the alternative consumer-producer links. Key questions that emerge include, “How much of what is being sold is really food?”, and “What implications does this situation have for the sustainable development of the agri-food system?”. In the case of SFM, consumers are drawn to the market for the experience that it offers, not only the food that they can buy. They may only purchase specialty products that are not available elsewhere. If the market is only supplementing the consumer’s food shopping, what other consumer-producer links are the consumer participating in, and what implications do those links have for the ecosystem and social aspects of the agri-food system?

Moreover, what are some of the values being “sold” at the market? While the values are not literally being sold, they are driving forces behind the market’s character. These values include “fresh”, “locally produced” and “quality”, and are associated with values about environmental stewardship and a sense of community. How do these values influence consumer attitudes and behaviour? Is there a ripple effect that spreads to other aspects of society and the environment?

CONCLUSION

The length of a food chain linking producers and consumers has implications on the sustainability of an agri-food system, from ecosystem effects due to resource consumption, to effects on learning in society through communication and feedback. While short chains may offer more advantages for the sustainability of ecosystem functions and social relations, long chains offer more protection from risks associated with food security. Critical research questions that emerge from the discussion on these issues include: "What advantageous properties can be learned from short-chain systems, and be developed in long-chain systems?" and "How can such properties be learned and transferred?"

Short food chains are often associated with the concept of the "local" food system. The term "local" is found to be both versatile and ambiguous especially since it can be applied to different aspects within the agri-food system. Discussion of diversity and vulnerability results in the question: "What is the optimal balance of localising an agri-food system without building vulnerability into the system?". This question is accompanied by a concern for process, "How can this process of continuously finding an optimal balance be facilitated?". Furthermore, "What is being called local?", "On what basis is the degree of 'local' assessed?", and "How can different stakeholders participate in the decision-making process?".

Learning is a fundamental process in the development of a socially sustainable agri-food system. Through opportunities for communication and feedback, a system builds resilience against unavoidable uncertainties and change through a constant process of learning. Thus it is of critical importance to ask "What learning opportunities can be created in the system to ensure social sustainability?", "How can these opportunities be developed", and "Who should direct this development?".

Finally it is relevant to ask "What is really being sold in the agri-food system? Is it food, or values?" We conclude that both food and values are being exchanged in the system, and the three consumer-producer link cases have different ways of dealing in food and values. Critical questions include: "How much of what is being sold is food?", and "What implications does this situation have for the sustainable development of the agri-food system?" Values play an enormous role in shaping human behaviour, and thus have the potential to significantly affect both the social and environmental sustainability of our agri-food system. Values affect producer actions, consumer decisions, as well as the choices made by all the middle actors in the system. The subject of values and their role in affecting behaviour within the agri-food system is only touched upon in this report. Much remains to be explored, and we recommend that CUL proposes that the subject of values will be considered in future research on the sustainable development of the agri-food system.

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