

## **Multicriteria assessment of food system sustainability**

Editors: Hugo F. Alrøe<sup>1</sup>, Henrik Moller<sup>2</sup>

By 2050 human populations will reach 9 billion and 70% more food will be required. Increased agricultural production is already threatened by shortage of water, severe land degradation in existing agricultural landscapes, land-use intensification, invasive species, prospects of energy price hikes, loss of biodiversity and ecosystem services and climate change. This alignment of current and rapidly emerging problems represents a truly major set of coupled environmental, economic and social challenges for humanity<sup>3</sup>. In order to develop better and more sustainable food systems, we need to make overall assessments of their effects based on multiple and varied criteria. Furthermore, if such overall multicriteria assessments are actually going to be used to generate sustainable solutions, we also need to be able to effectively communicate the multidimensional assessments and how they are founded in knowledges and values in order to engender collaboration between stakeholders and actors at local, regional, national and global scales.

The focus of the proposed special issue is on these complex challenges of making and communicating overall assessments of food systems sustainability. The objective is to apply multiple perspectives to address two of the main challenges: 1) how to balance and integrate very different types of assessments of sustainability options and consequences with different kinds of knowledge bases, and 2) how to more effectively communicate complex overall assessments in such a way they are trusted and can be used in practice by different actors and stakeholders with very different perspectives, values and sites of action.

The proposal is based on a selection of papers that derive from a successful workshop with the title “Balancing and communicating overall assessments of food systems”, held at the IFSA conference<sup>4</sup> in Aarhus, Denmark, in July 2012. The workshop was organized by the transdisciplinary research project MultiTrust<sup>5</sup> in cooperation with four international partners from New Zealand, Norway, Austria and U.S.A. It was a well attended workshop with very good evaluations from the around 40 participants, who came from ecology, economics, agronomy, communication and media studies, and other fields. The participants wrote short conference papers that were put on the conference webpage<sup>6</sup>, and read each others papers before the workshop as a basis for around 15 hours of in-depth discussions (the workshop deliberately avoided the classic conference format and only allowed authors to seed the discussion with a 5 minute introduction to their main theses). The workshop contributions represented many important perspectives on sustainability assessments, communication, co-development and stakeholder involvement in overall assessments of food systems.

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<sup>3</sup> See Lindenmayer et al. (2012) *Landuse Intensification. Effects on agriculture, biodiversity and ecological processes* (CSIRO Publishing. ISBN: 978-1-4665-1714-1) for the preceding overview.

<sup>4</sup> 10th International Farming Systems Symposium “*Producing and reproducing farming systems: New modes of organisation for sustainable food systems of tomorrow*”, 1-4 July 2012, Aarhus University, Denmark

<sup>5</sup> The MultiTrust project, “Multicriteria assessment and communication of the effects of organic food systems” (<http://multitrust.org>), includes partners from different university faculties, advisory services, farmers associations and private companies. It runs 2011-2013, funded by the Danish Ministry of Food under the Green Growth RDD programme, which is coordinated by the International Centre for Research in Organic Food Systems (<http://www.icrofs.org>). Hugo Alrøe is the project leader of MultiTrust.

<sup>6</sup> See [http://ifsa2012.dk/?page\\_id=351](http://ifsa2012.dk/?page_id=351) for the overall workshop description; short conference papers can be found at [http://ifsa2012.dk/?page\\_id=792](http://ifsa2012.dk/?page_id=792).

We consider the papers and vigorous workshop discussions recorded at Aarhus a first step in addressing the two interrelated challenges of how to balance and integrate multicriteria assessments of food systems sustainability and how to communicate such complex overall assessments. Now we would like to take the next step by bringing these issues and discussions into a Special Feature in Ecology and Society, in order to develop and expose the ideas brought forward so far, and to generate further international debate to identify valid and effective solutions for making and communicating overall assessments of food system sustainability.

Apart from the contributions based on the IFSA workshop, we would also be very open to bringing in supplemental papers, depending on the recommendations of the Ecology & Society Editors on the focus and scope of the special feature. Furthermore we would be interested in incorporating transdisciplinary discussions of the contributed papers into one or more synthesis papers. This would allow for cross linkage and synthesis of the contributed papers. Another option that we have discussed, is to invite a discussion forum for short, sharp critiques from around the world and from the disciplines, if this is acceptable and wanted by the Ecology & Society Editors.

The special feature guest editors are recognized and have a large network in this research field, they have published a long range of journal papers on relevant and related issues which are well cited, and they have leading roles in major research projects within the special feature topic.<sup>3,7</sup> For profiles, publications and CV's of the editors, see footnote 1 and 2. Hugo Alrøe has editor experiences from an international book on the global development of organic agriculture as well as from three major Danish knowledge syntheses, one of which has formed the basis for a large research programme in organic agriculture and continues to influence the development of the Danish organic sector (Alrøe and Halberg 2008). He has also served on the board of editors for Studies in Pragmatism and Values (Rodopi). Henrik Moller is currently on the editorial Board of two electronic journals (*Animals* and *Agriculture*) and has been guest editor of four special issues of the *New Zealand Journal of Zoology* and convened and edited a forum on science and indigenous knowledge partnerships<sup>8</sup>. If the editorial work load requires it, depending on the decisions made on focus and scope together with Ecology & Society Editors, we can add another senior and experienced researcher from the MultiTrust project as editor.

Below is a list of proposed themes and contributed papers; a preliminary abstract for the editorial that indicates the logic of the proposed structure of the special feature; and abstracts for the 14 research papers that have been solicited from the IFSA workshop. Furthermore there are plans for a synthesis paper for the special feature, based on the continued work carried out in the MultiTrust project on these issues. If the proposal for a special feature is accepted by Ecology & Society, we will reduce or expand as needed in correspondence with your recommendations on the number of papers and the scope of the special feature.

Provided that the special feature is accepted, we suggest to set a final deadline for paper submissions at 15<sup>th</sup> February 2013, but we will promote and expect earlier submissions. This time schedule would allow us to solicit supplemental papers if needed.

The MultiTrust project will offer to pay article fees for the accepted papers for those who do not have institutional funding for such open access fees, out of the project's funds for international cooperation.

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<sup>7</sup> ARGOS, the Agriculture Research Group on Sustainability (<http://argos.org.nz>), carries out a succession of large transdisciplinary research projects in cooperation with industry partners. Henrik Moller leads the environmental sustainability objective of the present ARGOS project.

<sup>8</sup> Stephenson J, Moller H. (2009) Cross-cultural environmental research and management: challenges and progress. *Journal of the Royal Society of New Zealand* 39 (4):139-149.

## Overview of themes and contributed papers

The following papers provide a core structure, but extension of the scope and vigorous peer review may change the scope and detail to match your journal needs and maximise the global impact of the contribution.

### Guest Editorial

Alrøe, Moller et al, “Multicriteria assessment and communication of food systems: challenges and perspectives”

### Research papers

#### 1: Trade-offs in sustainability assessment of food systems

Schader & Meier, “The trade-off between scope and precision in sustainability assessment of food systems”

Marchand et al., “A comparison of complex expert-based assessment versus quickscan assessment”

Meul et al., “From evaluating sustainability performance to supporting agricultural management”

#### 2: Methods to assess different kinds of food systems

Lillywhite et al., “Assessing the economic, environmental and social characteristics of UK farming systems”

Pottiez et al., “AVIBIO: a method and assessment tool of the sustainability of the organic poultry industry”

Peano et al., “Slow Food Presidia: a sustainable agro-food system?”

Mikkola & Kurppa, “My food chain: intensification of sustainability orientations by virtual tools through anticipatory network dialogues”

#### 3: Perspectives on making and communicating overall assessments of food systems

Thorsøe et al., “Review of perspectives applied in the assessment of organic food networks”

Christensen et al., “Organic farming and multicriteria decisions: An economic survey”

Kastbjerg, “Knowledge Communication Theory Revisited – from ‘communicatio’ to ‘communis esse’”

Læssøe et al., “Theories on motivation and their implications for supporting communication, learning and decision making in relation to organic food systems”

#### 4: Challenges of overall assessment of food systems: trust, stakeholders and reflexivity

Poulsen & Rittenhofer, “Trust in and credibility of organics. A cross-disciplinary perspective”

Alrøe et al., “Stakeholders and the challenges of sustainability assessment”

Freyer & Bingen, “Reflexivity or assessment? The role of self-reflexivity in the assessment process”

### Synthesis papers

Alrøe et al. Suggested synthesis paper based on the continued work carried out in the MultiTrust project on the issues of balancing and communicating overall assessments of food systems.

## Preliminary abstract of Guest Editorial for the Special Feature

### Multicriteria assessment and communication of food systems: challenges and perspectives

*Hugo F. Alrøe<sup>1</sup>, Henrik Moller<sup>2</sup>, Egon Noe<sup>1</sup>, et al*

*1: Aarhus University, 2: University of Otago, ...*

Alternative, more sustainable food systems are developed in relation to a plurality of societal objectives and ethical guidelines, such as the organic principles. The success of these alternatives depends on whether they can continue to improve in relation to their goals, and thereby maintain credibility and trust; and to do this, there is a need for overall assessments of their effects on society, environment and

nature. Developing and using such overall, multicriteria assessments poses significant inter- and transdisciplinary challenges. This special feature focuses on two main challenges: balancing and communicating overall assessments.

Some of the effects of food systems can be measured in quantitative terms. For others, qualitative assessments are more suitable. Some are well known, others little known. Some are easy to measure, others difficult and costly to assess. Some are highly debated, others have not yet entered the public agenda. The first challenge in making overall assessments based on multiple criteria is therefore how to establish a balance between the different types of assessments and knowledges. This concerns both foundational, theoretical issues and more practical, methodological issues. Attempting to evaluate all aspects of organic farming in monetary terms, for instance, would be both empirically demanding and theoretically problematic.

Furthermore, such overall assessments will be of little use if they cannot be understood, accepted and utilized by the many different actors and stakeholders in food systems. The second challenge is thus how to communicate overall assessments so that they can be used in the development of alternative food systems - something which requires a mutual learning process between researchers and stakeholders. An important question here is how normative criteria are built into a multicriteria assessment framework, e.g. in the selections and condensations made and in the 'orientors' connected to the chosen indicators; and how these built-in values relate to ethical principles, societal goals, and the values and interests of different stakeholders. There is a need for normative transparency. A second important question is how to communicate very complex assessments in an effective and participatory way. The ability to handle complex information differs, there are multiple expert and stakeholder perspectives involved, and media play an important role when credibility and trust are constructed and negotiated. Reduction of complexity is necessary, but where and how is decisive.

In this special feature we explore four themes, methodological trade-offs, choice of 'system', theoretical perspectives, and broader reflections on overall assessments of food systems.

In the first theme focus is on the choice of method and the built-in methodological conflicts or trade-offs between different objectives, such as scope (area, level, comprehensiveness) versus precision and validity of the results, complex expert-based assessments versus participatory quickscan assessments, and measures of sustainability performance versus management and development of agricultural enterprises, which means that one-size-fits-all solutions are rarely feasible.

The second theme presents selected methods to assess different kinds of food systems, such as an expert-based framework to allow an overview of environmental, social and economic contributions of all UK farming systems, a highly participatory method to move towards sustainable production chains in the french organic poultry industry, a virtual tool to promote co-development toward overall sustainability in supply chains through anticipatory network dialogues, and a monitoring tool for the sustainability of Slow Food Presidia, an equivalent to organic agriculture as a food system.

The third theme investigates a range of theoretical perspectives and their implications for making, communicating and using overall assessments of organic food systems, including disciplinary perspectives on values from food science and economics to discourse analysis, economic approaches to overall assessments such as cost-benefit and different multicriteria analysis methods, three distinct approaches to communication and their strengths and weaknesses, and four theories on motivation engaged in an interdisciplinary discussion on agents and what makes them act.

Finally, the fourth theme takes a step back to give three different angles on the challenges of overall assessment of food systems, trust and credibility as a key issue in the development of organics, stakeholders and their role in relation to the challenges of balancing knowing, making values visible and reducing complexity of communication, and shifting focus from a variety of control mechanisms to reflexive ethical, systemic and governance issues.

## **Abstracts of research papers**

### **Theme 1: Trade-offs in sustainability assessment of food systems**

#### **The trade-off between scope and precision in sustainability assessments of food systems**

*Christian Schader and Matthias Meier*

*Research Institute of Organic Agriculture (FiBL), Switzerland*

With sustainability becoming an increasingly important issue, several tools have been developed, promising to assess sustainability of farms and farming systems. However, looking closer at the scope, the level of assessment and the precision of indicators used for impact assessment we discern considerable differences between the sustainability impact assessment tools at hand. The aim of this paper is therefore to classify and analyse six different sustainability impact assessment tools with respect to the assessment level, the scope and the precision. From our analysis we can conclude that there is a trade-off between scope and precision of these tools. Thus one-size-fits-all solutions with respect to tool selection are rarely feasible. Furthermore, as the indicator selection determines the assessment results, different and inconsistent indicators could lead to contradicting and not comparable assessment results. To overcome this shortcoming, sustainability impact assessments should disclose the methodological approach as well as the indicator sets use and aim for harmonisation of assumptions.

#### **A comparison of complex expert-based assessments versus quickscan assessments**

*Fleur Marchand, Lies Debruyne and Ludwig Lauwers*

*Institute for Agricultural and Fisheries Research, Belgium*

Past decades, various sustainability assessments emerged, ranging from very complex expert-based assessments to quick scan ones. The former type is based on expert information and an extensive data demand, the latter on information gathered instantly from the farmer. This research compares both types while using the following criteria: i) the design approach and characteristics, ii) the critical success factors for implementation put forward by De Mey et al. (2011), iii) results in the field and evaluation by the end-users. As an example for an expert-based assessment, we used MOTIFS (Meul et al. 2008) designed for dairy farming in Flanders. We applied this tool on Flemish dairy farms within the EU-Interreg project Dairyman. The OCIS Public Goods tool (Gerard et al. 2011), designed for organic dairy farms in Great Britain was used as example of a quickscan method. During the EU project SOLID, the tool was adjusted for the entire European region and applied on organic dairy farms. This research determines the strengths and weaknesses of both types of sustainability assessment systems. This will result in suggestions on which type of sustainability assessment is relevant depending on the case, related to the critical success factors such as attitude of model users, time and data availability, user friendliness, communication aid, etc. Researchers and practitioners can use this information when developing or selecting, and possibly modifying, an appropriate tool for their goals.

#### **From evaluating sustainability performance to supporting agricultural management**

*Marijke Meul<sup>1</sup>, Fleur Marchand<sup>2</sup>, Steven Van Passel<sup>1</sup>, Dirk Fremaut<sup>1</sup> and Geert Haesaert<sup>1</sup>*

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We performed an integrated evaluation of the sustainability performance of 10 intensive grazing and 10 zero-grazing specialised Flemish dairy farms, using a selection of sustainability indicators from MOTIFS (Monitoring Tool for Integrated Farm Sustainability; Meul et al. 2008). We put special effort in formulating useful management advice for farmers of both groups. Therefore, we used multiple regression to identify the most influential factors (independent variables) for each indicator value (dependent variable) and, through correlation analysis, related the selected factors to specific farm management indicators such as farm intensity or concentrate use; they were used to formulate general

management advice. More detailed site- and case specific advice was delivered to the 20 participating farmers through an extended feedback report including a detailed representation of the MOTIFS results and comparison of the farm results to the means of the grazing and zero-grazing group. Afterwards, all farmers were invited to participate in a discussion group with the researchers, farm advisors and an invited expert. Through this approach, we addressed the suggestions made in previous validation studies of MOTIFS (Meul et al. 2009; De Mey et al. 2011) (i) to combine a detailed analysis of the sustainability indicator values with an intensive interaction between researchers and farm advisors and (ii) to support social learning among farmers through a discussion meeting with an invited expert. This allowed us to focus on the essential farm management aspects with the highest potential to increase farm sustainability and to provide a better translation of the indicator results into practical advice for farmers.

## **Theme 2: Methods to assess different kinds of food systems**

### **Assessing the economic, environmental and social characteristics of UK farming systems**

*Rob Lillywhite, Matt Reed, Paul Courtney, Adrian Williams, Nic Lampkin, Bruce Pearce, Francis Rayns, Ulrich Schmutz and Christine Watson  
Warwick University, UK*

Agricultural land supports the production of food, fibre and fuel using multiple farming system; these range from small organic family farms to large conventional industrial units. These diverse systems provide an ever changing landscape in which researchers are attempting to find an optimum approach to balance production against other economic, environmental and social parameters.

The UK Government has commissioned a three year project to develop methodology to assess the economic, environmental and social characteristics of UK organic and conventional farming systems. In the first year, the project team described the complete range of current UK farming systems, from intensive arable production to extensive livestock, both organic and conventional, and described thirty-two systems to cover the majority of all UK farming systems. The project team also described forty indicators to cover the economic, environmental and social characteristics of those farming systems. The economic indicators are developed from the UK's Farm Business Study, the environmental indicators from the Cranfield University's LCA model and the social indicators from previous UK studies.

The second year was occupied data collection to support the chosen indicators. The project is now in its third year and is exploring approaches to bring these diverse indicator sets together to assess the benefits and dis-benefits that may accrue to different farming systems and how the results can be used to increase the sustainability of farming systems whilst reducing resource use and maintaining biodiversity.

The project is using different reporting and functional units to provide answers to different farming system scenarios. The approaches have already been presented to UK focus groups but we would like the opportunity to present to an international audience so that their feedback and analysis can be incorporated into the final methodology.

### **AVIBIO: a method and assessment tool of the sustainability of the organic poultry industry**

*Eve Pottiez, Philippe Lescoat and Isabelle Bouvarel  
Institu Technique de l'AViculture, France*

The French organic poultry sector is facing new challenges and issues for its development relating to aspects of global, European and national contexts and also to the specificities of each region of production. In order to evaluate what is required to meet the increasing demand for organic poultry, while moving towards sustainable production, a method to assess sustainability at the production line

scale was carried out. Four regions were studied: Brittany and Rhône-Alpes for eggs, Pays de la Loire and Aquitaine for chickens.

A participative approach was undertaken in order to promote exchange between the various players who are involved directly or indirectly in the production chain (production organizations, farmers, professional unions, researchers, local authorities, etc.). Different stakeholders (98) were questioned about their opinions on the conditions of sustainable production. In a second phase, the results of this first survey allowed a representative group (21) to draw up the main- and sub-objectives of sustainability (principles and criteria respectively).

Economic	Social	Environmental
Generate and safeguard income, and share added value between stakeholders	Meet citizens' expectations	Minimize the use of resources
Guarantee supply and market access	Ensure the sustainability of production tools	Reduce pollution
Enhance local employment	Strengthen the local network	Enhance biodiversity

For each sustainability component (economic, environmental and social), indicators were fixed based on criteria which refer to the principles corresponding to the stakeholders' representations of sustainable development. A scoring scale was attributed to each indicator: high scores corresponding to the objectives being met. Scores were added per criteria, objective and component. For the four regions, the final evaluation highlighted five ways of improvement and serves as a decision-making tool for the different stakeholders: develop access to organic raw materials for poultry feed, improve technical aspects and logistics in the production chain, improve communication within and outside production chain, increase organic poultry products in the collective restaurants and develop practices that enhance biodiversity.

## **My food chain: intensification of sustainability orientations by virtual tools through anticipatory network dialogues**

*Minna Mikkola and Sirpa Kurppa  
University of Helsinki, Finland*

Food is simultaneously both an extremely mundane and intricate matter for the actors within the food system. The confidential, 'silent' and unknown aspects of social and environmental reality around food suggest circumstances, under which changing food systems towards sustainability is extremely challenging in terms of communications mediating 'practice shaping' concepts. Because there is scarce evidence regarding existing food systems' balanced 'tripods' of sustainability, and because this illustration cannot be inserted as such into other food systems, it seems more productive to make use of the conceptual entity of sustainable food system as a generically disseminated frame and direction for co-development of running food systems by their actors and researchers.

This paper sets to outline the necessary conditions for systemic and creative co-development of sustainable food systems from the scratch. The outline starts from the functional unit of the system, identified as the economic relations between the food chain actors, branching off into networks. These relations are seen to entail additionally the social dimension as well as the environmental one. The conditions for advancement have been identified as anticipatory network dialogues, allowing sharing of knowledge and creating new modes of activities, increasing transparency of socio-economic relations and learning about contextual environmental impacts. The communicative challenge pertains to rendering these features intelligible for actors within the system by offering them modelled virtual knowledge about the reality for corrective and creative actions. The incremental and stabilized demand, allowing iterative 'loop' developments through economic, social and environmental relations is hypothesised to end up in over-all sustainability kernel within larger food systems.

## **Slow Food Presidia: a sustainable agro-food system?**

*Cristiana Peano, Paola Migliorini and Francesco Sottile  
University of Turin, Italy*

The aim of this study is to develop an indicator-based monitoring tool for sustainability of Slow Food Presidia, taking into account quality and economic, ecological, social, cultural aspects. The SF Presidia project is not simply promoting a "conservative" development model, where the local capital formed by the natural and cultural resources are preserved. It is a model of re-interpretation, redistribution and re-appropriation of use, value and resources inherent in the local area starting from the interactions of the latter with the local and global context, the specific dialogue between endogenous and external stimuli.

Methodological steps were considered: (i) translating the major SF principles of Good, Clean and Fair into concrete and relevant themes for sustainability issues; (ii) designing indicators to monitor progress towards sustainability for each of those themes; and (iii) applying the monitoring tool on three SF Presidia, as a first attempt attend-use validation. Stakeholder participation and expert consulting played an important part in each of these methodological steps. Results of the multi objective sustainability evaluation of three SF presidia are shown.

## **Theme 3: Perspectives on making and communicating overall assessments of food systems**

### **Review of perspectives applied in the assessment of organic food networks**

*Martin Thorsøe, Hugo F. Alrøe, Egon Noe  
Aarhus University, Denmark*

Value is a key concept for understanding how organic food networks function because values are the foundation of the organic production practice, thus value must be given a significant role in assessing and balancing the effects of organic food networks. At the same time value is a loose concept, widely used and with various meanings in different scientific perspectives, in which ontological difference produces different perceptions of what values are. Assessing organic food networks is thus a complicated process, since the perspective which is chosen has important implications for the analysis and for the outcome of the assessment. This paper reviews five perspectives which predominate in the assessment of food networks, 1) Food Science, 2) Discourse Analysis, 3) Phenomenology, 4) Neoclassical Welfare Economics and 5) ANT. The perspectives are compared with regards to how the food network is assessed, how value is measured and how organic is understood. It is concluded that the perspectives focus analytically on different aspects of the same phenomena and differ in terms of where value is found, but also in the degree of reductionism applied, which factors are included in the analysis and whether or not the analysis focuses on the individual actors or the network as a whole.

### **Organic farming and multicriteria decisions: An economic survey**

*Tove Christensen, Søren Bøye Olsen, Alex Dubgaard and Niels Kærgård  
University of Copenhagen, Denmark*

Organic food production is a sphere where decision making is multi-faceted and complex. This applies to producers, political decision makers and consumers alike. This paper provides an overview of the economic methods that can aid such multi criteria decision making. We first provide an outline of the many different Multi-Criteria Analysis (MCA) techniques available and their relative advantages and disadvantages. In addition, theoretical and practical problems related to the use of Cost-Benefit Analysis (CBA) and MCA respectively are briefly discussed. We then review the MCA literature on case studies on organic farming. Based on this review we provide directional markers for future research where MCA may possibly be applied and adapted in order to provide useful knowledge and support for decision makers in the context of organic farming.

## **Knowledge Communication Theory Revisited – from ‘communicatio’ to ‘communis esse’**

*Peter Kastberg*

*Aarhus University, Denmark*

This paper reflects on the challenge of “how to communicate complex overall assessments in such a way they can be used in practice by different actors and stakeholders with different perspectives and values.”

Going somewhat back to basics, as it were, philosopher Bertrand Russell stated that there are two kinds of people: those who produce scientific knowledge and those who consume it. Even if such a dichotomization is by no means unproblematic, it is – nevertheless – not altogether untrue. The very fact that this workshop is concerned with how complex assessments may be communicated in such a way that actors and stakeholders, other than the producers of said complex assessments, may be able to utilize it, substantiates that. From the point of view of sociology of knowledge this dichotomy may, in many ways, be seen as a byproduct of an ever increasing specialization of scientific disciplines, and – consequently – of the knowledge(s) they produce.

The research field which has this dichotomy, gap or asymmetry as its object of study is known under such names as Public Understanding of Science, Science Communication, Science and Technology Studies and the like. Different though they may be, the common denominator of these disciplines is an appreciation that the relationship between science and public, prototypically personified as the relationship between the expert and the lay person, is in many ways a conflictuous one. Even if what is deemed problematic may be seen from a myriad of perspectives (e.g. gender, culture, power, status, ‘capital’ etc. etc.) the ur-point of departure, so to speak, is the idea that between the expert and lay person – or in the sense of Russell: between the producer and the consumer of scientific knowledge – there a) exists a knowledge imbalance and that b) this state of social affairs is not advantageous to the lay person. I will address and discuss this problem as a knowledge communication problem.

In order to situate my discussions, I will apply a catalogue of three distinct approaches to communication to examples from the MultiTrust project. This, in turn, entails that the aim of my presentation is to add to the ongoing process of negotiating what questions we may ask – and what answers we may hope for – in order to be able to design an approach to communication which would allow the MultiTrust project to communicate “in such a way [that the findings and insights] can be used in practice by different actors and stakeholders with different perspectives and values.”

## **Theories on motivation and their implications for supporting communication, learning and decisionmaking in relation to organic food systems**

*Jeppe Læssøe<sup>1</sup>, Tove Christensen<sup>2</sup>, Alex Dubgaard<sup>2</sup>, Peter Kastberg<sup>1</sup>, Egon Noe<sup>1</sup> and Hugo F. Alrøe<sup>1</sup>*

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Efforts to promote communication, learning, decision making and change of individual and/or collective practices in relation to sustainability issues require more or less explicit theories on agents and what motivate them to act. The aim of this paper is to open for an interdisciplinary discussion on how different approaches to motivation make sense or not when focusing on how to develop tools aiming at supporting communication, learning and decision-making related to organic food systems. We present four quite different approaches to motivation – an economic, an approach challenging conventional understandings of motivational change, a psychosocial, and a relational – and open for a discussion on how these approaches relate to each other and whether it is possible to apply and distinguish between different ways of using the concept of motivation when we cross disciplinary borders in order to cooperate on developing tools for multi-criteria assessment and communication.

## **Theme 4: Challenges of overall assessment of food systems: trust, stakeholders and reflexivity**

### **Trust and credibility. A cross-disciplinary perspective on organics**

*Karen Klitgaard Povlsen and Iris Rittenhofer  
Aarhus University, Denmark*

Existing research in organics emphasize the importance of trust and credibility and the role they play for different parts of the organic supply chain (e.g. Nilsson et.al. 2004; Bergström et al. 2005; Kottila et al. 2008; Pivato et al. 2008; Hofstede et al. 2010). However, organic research hardly offers an answer to how trust and credibility in organic products are created and maintained.

The overall purpose of the proposed paper is to approach the complex relation between consumer and organic products from respectively a media and a management perspective. In the proposed paper, we want to introduce, compare and discuss how the creation and maintenance of trust and credibility is approached and conceptualized in the two fields? How can they be combined in order to enhance our understanding and improvement of the trusting relation between consumers and ecology in a complex environment?

The paper crosses disciplinary boundaries, as it is a collaboration of two independent tasks under the research project MultiTrust. Karen Klitgaard deals with examples of media research in credibility and trust. She discusses perceptions of organic food products in digital and other media. Iris Rittenhofer explores how management research deals with trust and credibility and in relation to stakeholders.

The discussion takes outset in three major questions: What are the tensions in the two disciplines conception of trust and credibility? Are trust and credibility related, and if so, how? And what does this tell us about consumer' perception of organics? In order to facilitate prolific exchange with the workshop participants, we will finally identify and frame three discussion themes.

### **Stakeholders and the challenges of sustainability assessment**

*Hugo F. Alrøpe<sup>1</sup>, Henrik Moller<sup>2</sup>, Egon Noe<sup>1</sup>, and Jeppe Læssøe<sup>1</sup>  
1: Aarhus University, Denmark, 2: University of Otago, New Zealand*

In order to develop better and more sustainable food systems, there is a need to make overall assessments of their effects, and to bring those assessments into practice. This paper will identify key challenges in developing and using overall assessments of the effects of food systems on the environment, nature, health and welfare, focusing on the role of actors and stakeholders in meeting these challenges. The case in question is organic food systems, but the analysis is also of broader relevance. The three pivotal challenges concern knowledge, values and communication. The first challenge is how to use and balance different types of knowledge. The effects of different developments can be assessed based on local knowledge of practices and histories, indicators on environmental pressures and states, scientific system models, etc. Different sciences and different actors can provide different kinds of knowledges. Some are quantitative and precisely measured, others qualitative and narrative, some easily accessible, others costly or difficult to obtain. The second challenge is how to render values visible and bring the relevant values into the assessments. Scientific perspectives are based on certain value-laden problems, questions and concepts, indicators have built-in orientors, assessment systems are based on value-laden selections and reductions, stakeholders have different values and interests, organic agriculture has explicit ethical principles, and society has a range of objectives of relevance for food systems. The third challenge is how to communicate complex overall assessments in an effective and participatory way. This is needed by researchers and stakeholders in the development of assessment tools, by producers and other actors in the development of better organic practices, and by public authorities in the development of appropriate policies for organic food systems. Reduction of complexity, visualisation, and media all play a critical role in this.

## **Reflexivity or assessment? The role of self-reflexivity in the assessment process**

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If ours is a “postmodern” world, then it is one in which safety and quality are managed by ubiquitous assessment tools, evaluation reports, controls, and continuous oversight. Our food is subject to seemingly countless protections and controls, all presumably designed to secure high safety and quality. Yet, recent and recurrent food scandals, including those in the organic food chain, should remind us of endemic failures or “normal accidents” which occur despite attempts to control for just such events. In this paper, we suggest that focusing on the ethical, systemic and governance issues may be more productive and broadly empowering than only increasing the range and variety of control mechanisms.

We suggest that reflexive processes could offer important alternatives to currently dominant control mechanisms. These processes are grounded on: ethics with respect to the IFOAM principles that offer an overall framework; system dynamics that focuses on the nature and extent of personal and organizational interrelationship between human, cultural, economic, technological and natural environments; and, governance that draws attention to participatory rather than a “top-down” approaches, and represents one means for thinking about “acting responsibly”.