

Title: Organic Agriculture in Social Entirety - Principles versus Practices

Acronym: OASE

Date: November 26, 2001

DARCOF project no.: VII.14

Summary in Danish

Det overordnede formål er at bringe den hidtidige diskussion om økologisk jordbrug og fødevarerproduktion som et helhedsorienteret koncept frem mod en nærmere afklaring. På det grundlag indeholder projektpakken et procesorienteret forløb, herunder etablering af en tværvideenskabelig og tværinstitutionel gruppe tilknyttet projektet. I projektet er tværvideenskabelig metodeudvikling samt dialog og formidling endvidere integreret.

Økologisk jordbrug er i sit værdimæssige grundlag *helhedsorienteret* og sigter mod bæredygtig udvikling. Dette er omsat i *principper* om recirkulation af stof og menneskets hensynsfulde omgang med natur og miljø. Det er ligeledes indeholdt i principperne, at det økologiske jordbrug baseres på nærhed, fordi man derved bedst kan recirkulere stof, udnytte lokal viden, bidrage til lokal kultur m.v. I forestillingen om det økologiske jordbrug er disse principper ikke blot ledetråd for driften af det *enkelte* landbrug, men også for hele landbrugserhvervets (og herved også fødevarerproduktionens) placering og funktion i den samfundsmæssige *helhed*.

Praksis tager sig ikke nødvendigvis ud, som principperne foreskriver. Især det seneste årtis ekspansive udvikling af økologisk jordbrug bærer præg af en vis sektorisering, specialisering og (lokal)samfundsmæssig afkobling, således økologisk jordbrug tendentielt udvikler sig som en kopi af det konventionelle (minus industrielle kemikalier), hvor de grundlæggende principper (især for så vidt de rækker ud over det enkelte landbrug) vanskeligt kan ses realiseret eller efterstræbt.

Uanset, at det seneste årtis ekspansion på mange felter må anses for positiv, så må den latente modsætning mellem principper og praksis – og dermed manglende helhedsorientering – forventes at fremstå som et tiltagende problem for økologisk jordbrug; dette være sig i forhold til det økologiske jordbrugs selvopfattelse og/eller dets bidrag til bæredygtig udvikling. Der er således behov for at opløse modsætningen, men forudsætningen er, at årsagerne er klarlagt.

Forestillingen om det økologiske jordbrug tager udgangspunkt i landbrug, men som følge af helhedsbetragtningen kan den logisk set ikke alene omhandle det enkelte landbrug og dets økologi, men må også vedrøre landbruget som ét produktivt element i en samfundsmæssig helhed og i denne helheds økologi. Realisering fordrer derfor placering af jordbrugsproduktionen i en natur-, miljø- og samfundsmæssig *helhed*, hvor jordbrugsproduktionen (inklusive forarbejdning) indgår som element i en samfundsmæssig enhed (herunder med byområder) med stoflig og værdimæssig cirkulation baseret på en gennemskuelig og åbenbar ansvarsfordeling blandt alle samfundets aktører. I denne forbindelse skal det erindres, at når der henvises til samfundsmæssig helhed, så indbefatter denne også økonomisk fordeling inden for politiske rammer. Dermed omfatter helheden både et *økologisk* og et *økonomisk/politisk* system samt disse to systemers samspil.

Begrebsliggørelse af samspillet mellem økologi og økonomi/politik og af det økologiske jordbrugs historiske og nuværende rolle i dette samspil kræver også helhedsorientering. Derfor er der til OASE knyttet en tværinstitutionel og tværvideenskabelig gruppe af i alt 20 forskere fra humaniora, samfundsvidenskab, naturvidenskab og jordbrugsvidenskab med det til fælles, at alle har beskæftiget sig med økologisk jordbrug, men ud fra forskellige, disciplinære tilgange. Denne gruppe skal i samspil med projektgruppen skabe et kommunikativt grundlag for en helhedsorienteret forståelse af forholdet mellem det økologiske jordbrugs principper og praksis for at kunne forklare de nuværende, tilsyneladende modsætninger og anviser løsninger på, hvorledes modsætningerne kan ophæves. Denne forståelse skal gennem workshops udvikles i dialog med centrale aktører i og omkring det økologiske jordbrug og gennem seminarer evalueres af internationale eksperter.

I hovedsagen tages udgangspunkt i økologisk jordbrug, men pakken indeholder også et delprojekt (WP1B og WP2B), der i særlig grad fokuserer på forarbejdning af økologiske fødevarer.

1. Summary

The basic principles and the actual evolution of organic agricultural practices in Denmark form the research field of this project. The point of departure stems from two provisionally established facts; (1) organic agriculture is stated as a comprehensive notion considering both man, society, and nature that is wholly juxtaposed to conventional/industrial segregated agriculture; (2) the trajectory of organic agriculture actually observed in the last decade indicates that, in many ways, organic agriculture has had a tendency to mimic conventional agriculture. Thus, the *first objective* is to explain the apparent mismatch between stated principles and the observed trajectory. This objective will basically be achieved by answering whether or not the causes can be traced to inadequate principles and/or to social constraints. The *second objective* is to suggest where and how solutions to dissolve the current mismatch can be found. The fulfilment of the latter objective depends upon the results of the first. *Further* it is our *third objective* to conduce to the evolution of comprehensive approaches enabling in-depth multidisciplinary analysis of complex problems.

The project will be accomplished by means of a research group in dialogue with key actors and informants, a multidisciplinary Delphi-panel, and international experts, while communication primarily will take place by means of publications and a closing seminar. The research group is responsible for descriptions, formulation of conceptual frameworks and analyses; in addition the group will function as administrator for the Delphi-panel. The latter will be involved both *ad hoc* to enlighten and inform the individual members of the research group in the ongoing processes and progress made and as a whole to ensure consistent and coherent descriptions, conceptions, and suggestions. The international seminars will be used to provide suggestions and assessments to ensure adequate quality in the process and deliverables.

The project is designed to facilitate a cognitive process where resolved questions and emergent issues deserved of further inquiry are interacting. The objectives and methodological frames are determined as indicated above while the descriptions of the two facts and the conceptual frameworks are the primary guidelines to be initially determined. They are initially *determined* because the project needs a conceptual basis for and descriptions of the problem to begin the process of inquiry. They are determined *initially* to enable an *open* search for a consistent and coherent recognition of the problem by means of the interplay between the research group, the Delphi-panel, informants, and international experts. Through this interplay the initial description and conceptual frameworks might turn up as inadequate and then be revised or supplemented according to current results.

The present description contains two interacting lines to the target. One as described above (WP1A, WP2A, and WP3) with organic agriculture as the starting point and another more focused on dialogue on the organic food industry (WP1B and WP2B). To facilitate the analysis of mismatches in the organic food-processing sector suitable methodological and substantial reflections will be a separate task in WP1B and WP2B.

2. Research group

Head of project

Jan Holm Ingemann, Ph.D.
Agricultural Economics
Department of Economics, Politics and Public Administration
Aalborg University (AAU)
Fibigerstraede 1,
DK 9220 Aalborg East
e-mail: ingeman@socsci.auc.dk
(CV in appendix B)

Research group (WP1A, WP2A, WP3)

Pia Johansen, project assistant
Saki Ichihara, research trainee

Chris Kjeldsen, PhD scholar (person-months await negotiations with DARCOF)
 NN, research assistant

Partners attached to the research group (WP1A, WP2A, WP3) ('Delphi-panel')

Hugo Alrøe, Postdoctoral Scientist, Danish Research Centre for Organic Farming
 Finn Arler, Associate Professor, Dept. of Planning and Development, Aalborg University
 Erik Christensen, Associate Professor, Dept. of Economics, Politics and Public Administration, Aalborg University
 Jens Christensen, Associate Professor, Dept. of Development and Planning, Aalborg University
 Carsten Daugbjerg, Associate Professor, Dept. of Political Science, Aarhus University
 Claus Heinberg, Associate Professor, Dept. of Environment, Technology and Social Studies, Roskilde University
 Bent Hindrup Andersen, Researcher, Danish Institute of Agricultural Science (DIAS), Research Centre Bygholm
 Jesper Holm, Associate professor, Dept. of Environment, Technology and Social Studies, Roskilde University
 Andrew Jamison, Professor, Dept. of Development and Planning, Aalborg University
 Pernille Kaltoft, Senior Scientist, Dept. of Systems Analysis, National Environmental Research Institute
 Jakob Magid, Associate Professor, Dept. of Agricultural Sciences, Laboratory of Plant Nutrition, Royal Veterinary and Agricultural University
 Mette Meldgaard, Policy analyst, The National Association for Organic Farming
 Niels Heine Kristensen, Associate Professor, Dept. of Technology and Society, Danish Technical University
 Jeppe Læssøe, Senior Scientist, Department of Policy Analysis, National Environmental Research Institute
 Eskild Holm Nielsen, Associate Professor, Dept. of Development and Planning, Aalborg University
 Egon Noe, Researcher, Dept. Agricultural Systems, Danish Institute of Agricultural Science (DIAS), Research Centre Foulum
 Jesper Rasmussen, Associate Professor, Dept. of Agricultural Science, The Royal Veterinary and Agricultural University
 Arne Remmen Associate Professor, Dept. of Development and Planning, Aalborg University
 Bodil Søgaard Associate Professor, Dept. of Agricultural Sciences, Organic Farming Unit, The Royal Veterinary and Agricultural University
 Hanne Tanvig, Head of Centre, Danish Centre for Rural Research and Development

Research group (WP1B, WP2B, Danish Technical University (DTU))

Niels Heine Kristensen, Associate Professor, PhD (responsible for WP1B & WP2B)
 Thorkild Nielsen, Assistant Professor
 Maria Bruselius, Research Assistant
 NN, Research Assistant

3. Introduction

The evolution of organic agriculture is largely based on values and principles¹ historically formulated to stand in opposition to the trajectory of conventional agriculture² in industrial countries, especially in the last part of the 20th century. Initially the notion of organic agriculture was partly based on inspiration gathered from earlier agricultural systems and bio-dynamic methods. A fundamental principle of organic agriculture is that the farm not be looked upon as a segregated unit where economic return must be maximised to the exclusion of other values, but instead seen as a part of both natural and social systems where long term considerations for human life in general should be foremost concerns. This inclusion concerns the farm and adjustment to the individual landscape, promotion of health and well being for farmers and consumers, consumer-producer links for securing transparency, innovation and re-circulation of organic waste, and the economic balance between town and countryside, etc. Thus, the notions commonly held about organic agriculture do not only comprise the farm but also structures and institutions where agriculture is one part; it is comprehensive and implies long-term considerations opposed to segregated and short-term values.

However, the actual evolution of organic agriculture in social practice has shown a tendency to mimic conventional agriculture. Although many positive implications of the current expansion of organic agriculture should be acknowledged, as currently practised it could be construed that organic agriculture is conventional agriculture but with less chemical inputs.

¹ Values are often conceived of in relation to the good, whereas principles are generalised norms related to the right. Accordingly, values are teleologically structured, whereas principles are of a deontological nature. Principles are obligatory, values only recommendable. (Rawls, 1972; Dworkin, 1978; Habermas, 1992). However, in the present initial presentation we will omit any clear-cut distinction between values and principles.

² The term 'conventional agriculture' in this presentation covers the mainstream, that is the agricultural systems that from 1950s/1960s till now have evolved with increasing industrialisation, concentration, specialisation, vertical integration, international integration and local detachment.

The apparent mismatch between principles and practices is the crucial point in the present project implying two major research questions, (i) how can the apparent mismatch be explained, and (ii) how can it be dissolved? As the questions and their context are comprehensive the answers will be as well and must be provided on a multidisciplinary basis.

4. State of the art

In this section we will sketch the state of the art and simultaneously indicate the interplay between the state of the art and the research process. Thus, we will briefly sketch the principles as formulated by organic agriculturists (*fact 1*) and then sketch the actual evolution of organic agriculture as social/societal³ practices (*fact 2*) and confront the two facts in search of congruence and discord. Subsequently we will search for frameworks able to comprehend principles and actual evolution of practices and finally we will present attached methodological considerations.

4.1.1 The principles

The pioneers among organic agriculturists have provided an alternative approach to food, agriculture, and natural life support systems on the basis of a reintroduction of the cyclic linkages of ecological systems into the ways in which agricultural systems are organised.

Organic farming can be defined negatively in terms of a technology that abandons the use of industrial chemicals such as chemical fertilisers, pesticides, and antibiotics. Defined positively, organic farming involves the reintroduction – and modernisation – of peasant technology and peasant virtues. Organic technology rests upon knowledge of ecological cycles combined with experience and knowledge about local soil and livestock. It reintroduces the notion of agricultural systems as part of natural life support systems and in that manner re-establishes the functional integrity (Thompson, 1997) between man and nature. Sustainability is an essential principle, which is related to an accompanying notion that we have a moral obligation to leave the earth to future generations just as fertile as we received it. Additionally, organic farming reintroduces the notion of agriculture as a part of local social systems (Ingemann, 2001b).

The reintroduction of agriculture to local social systems is related to process rather than product; thus strategies to ensure reliance between organic producers and consumers must be brought into focus. For this reason, the International Federation of Organic Agriculture Movements (IFOAM) was founded in 1972 to provide a platform for world-wide certification as well as mutual inspiration and support. The certification is based on the so-called Basic Standards. Today it is widely acknowledged that these standards provide the guiding principles of organic production methods and world-wide definition of organic agriculture. Those consist of a philosophy of ecologically sound production based on interaction between organism and systems, which is equated to a holistic approach. Furthermore IFOAM underlines socio-economic implications of organic farming that has lead it to support the development of local and regional self-reliant systems and social justice (IFOAM, 2000; FAO, 1998a; FAO, 1998b).

At present, at least one hundred regional/national organic standards have already been developed, as IFOAM encourages, establishing individual standards that can adapt to socio-cultural, economic and geo-climatic conditions of a place (FAO, 1998b).

In Denmark the national association for organic farmers have stated principles according to IFOAM Basic Standards, which employs a comprehensive perspective including social considerations. The comprehensive considerations are similarly underlined by The Danish Research Centre for Organic Farming (DARCOF). In a publication (DARCOF, 2000), based on discussions amongst researchers and organic farmers in the DARCOF user committee, the centre has presented an extraction of principles on which Danish organic agriculture should rest. The overall goal is stated so as to ensure sustainability⁴ and further, the principles are

³ In WP1A and WP2A (re section 6) we will state a more clear-cut distinction between social and societal constraints.

⁴ Sustainability is a principle (re note 1), because it is obligatory to consider the effects alternative rules and actions will have on posterity. The specific content of the obligation, however, depends on value judgements concerning the good (life).

based on two assumptions; (i) humans are an integrated part of natural systems, (ii) knowledge about consequences of human actions is imperfect. The three principles extracted then are:

(i) The *circulation* principle which rests on a conception of interaction between human production and reproduction on one side and natural life support systems on the other. According to the principle, establishment of circuits should ensure versatility, variety, and harmony, in addition to re-circulation of matter and the use of renewable resources in human production and reproduction.

(ii) The *precautionary* principle that rests on a conception of technology in which fighting symptoms should be avoided and damage to human systems prevented. Thus, reversible error-friendly technologies (re Weizsäcker, 1984) are preferred.

(iii) The *proximity* principle resting on the wish to promote transparency and co-operation from soil and stable to table. The principle further facilitates adequate use of local knowledge in addition to social and cultural development at local level. (DARCOF, 2000)

Although international extractions and interpretations of values and principles seem unequivocal (Lund, 2001), we will in the initial stage of this project use the three principles described above to characterise values and principles of organic agriculture in Denmark⁵ and then compare these to the actual evolution of organic agriculture.

During the research process the tentative sketch above will in WP 1 be substituted by means of further investigation (to establish fact 1) especially to trace evolution and to place principles in a hierarchy of aims and means.

4.1.2 Actual evolution of organic agriculture as practices

Following post materialistic beliefs (Inglehart, 1995), and encouraged by some intellectuals and experts from R&D institutes, a few Danish grassroots pioneers began experiments in the 1970s in an attempt to implement ideas of alternative energy production and organic farming. Through the 1970s these pioneers and movements succeeded in convincing the majority of Danes that it would be better to develop alternatives to nuclear power. The plans to implement nuclear power in Denmark were abandoned; instead Denmark in the 1980s became the world leader in wind power technology (Jørgensen and Karnøe, 1991).

Organic agriculture evolved in parallel but was not quite as successful in speed and magnitude. A turning point occurred when oxygen deficits in Danish waters and nitrogen in drinking water became obvious in the mid-1980s which created a basis for increasing consensus about the environmental impacts of industrial farming, although most farmers strongly disagreed. Simultaneously, an increased focus on the impacts on animal welfare evolved. The pioneering organic farmers and their association offered a holistic concept of environmental and animal-friendly farming. Besides, they reinvented co-operatives to handle manufacturing and distribution and founded in 1982 an agricultural school for organic farming. Through The Danish Association for Organic Farming (founded 1981), they started negotiations in the mid-1980s with the consumers' retail co-operative, the dominant retail distributor in Denmark. The co-operative began to distribute organic foods on a small scale, and simultaneously the association started negotiations with the government. These efforts led to an act passed in 1987 after which government assumed the certification scheme of organic farms, organic manufacturers, and distributors of organic foods. The act also ensured governmental subsidies to farmers who would convert to organic production methods according to the certification scheme; the subsidies should compensate for the costs of conversion. In addition, funds for research, development and advisory services in relation to organic farming and manufacturing were established (Andersen, 1995).

Organic farming was then institutionalised in Denmark and became an incremental solution (means) incorporated in governmental policies to reduce unintended emissions from the farming sector in general (Daugbjerg, 1998). Organic practices were especially highlighted as a means to reduce the effects of farming

⁵ It should be mentioned that organic agriculturists also put stress on values and principles related to animal welfare which will play a minor role in this project where primarily the function of organic agriculture in its social and natural entirety and interplay is in focus.

in Danish action plans, e.g., aquatic action plans and pesticide action plans. Thus the aim was not to alter Danish agricultural systems as such (Ingemann, 2001a). Along with favourable business opportunities related to parts of organic agriculture, this could partly explain an increasing interest among conventional farmers' organisations and cooperatives.

The institutionalisation was further underlined from 1987 by the Organic Agricultural Council established by the agricultural ministry with representatives from conventional farmers organisations, public administration, consumers, etc. The Council has supported expansion of organic agriculture and made for that purpose Action plans I in 1995 and II in 1999 (Ministry of Food, Agriculture and Fisheries, 1999).

The efforts to expand organic production have resulted in some success. Thus, from 1990 to 2000 the number of organic farms increased from just above 500 to near 3.500 and percentage of organic compared to total farmland increased from around 0.5 to above 6.0. Further, the average size (measured in farmland) of organic farms is above the average of conventional farms and the organic farms are typically as specialised as the conventional (Plantedirektoratet, 2000). A tendency to look upon organic agriculture as similar to conventional (but less industrial chemicals) is present among new converters. In 1992 the main reason for converting into organic farming was a concern for the environment, while in 1997 the main reason was the prospect for a higher income (DARCOF, 2000). On one side the resulting evolution has implied a scale and product differentiation of organic farming that has allowed more manufacturers, industries, and retailers to buy organic at competitive prices. On the other side it has implied a break with the self-sufficient integrated approach.

Also in the second part of the product chain a tendency to integrate organic products as a product-line quite similar to differentiated conventional products is indicated. In a recent case-study of Danish dairies with organic production it is suggested that the dairies can be divided in three groups (i) a multinational cooperative with conventional production as main business (but processes 77 per cent of the organic milk delivered in Denmark), (ii) small dairies with both conventional and organic production, (iii) small dairies established by organic farmers with organic production as their only business. It is concluded that the first two types tend to be engaged in organic production based on economic optimisation while the third type tends to find incentives in values and principles. The third type has functioned as entrepreneurial fire souls related to product innovation but are facing several challenges. Among these are the needs to develop more environmental friendly chains from soil and stable to table when organisational foundations for such innovations are lacking. In this context the study underlines that the associations and organisations around organic agriculture tend to narrow their perspective down only to comprise the farm-level. The result then is that the third group might be overtaken by more commercial corporations because they, to a large extent, engage modern methods to manage environmental effects and because the former appear incapable to manage environment in a conventional sense (environmental management) and have not managed to do so in an alternative sense (proximity) (Ingemann et al., 2000). Thus, instead of structural change of the agri-industrial complex we may face a more incremental process of ecological modernisation. This is further underlined by (Kristensen and Nielsen, 1997) who revealed that less than 10 per cent of the organic food processing companies in 1995 had introduced or planned to introduce environmental management systems.

Like processing, distribution mainly takes place through conventional channels, i.e., supermarkets etc. There is to date no detailed account of how large a quantity of the organic production is being distributed outside the conventional distribution networks. 230 farms were listed as retailers of their own produce in the year 2000, a rather limited share of the total number of organic farmers (Kjeldsen and Sall, 2000).

During the research process the tentative description above will in WP 1 be substituted by further investigation of actual evolution of Danish organic agriculture (to establish fact 2) and include international comparisons.

4.1.3 Interim conclusion

When notions and principles are compared to actual evolution of practices some contradictions seem to occur. At farm level practices seem, to a relatively high degree, to be in accordance with circulation (nutrients inside the farm) and precautionary (exclusion of industrial chemicals) principles although increasing specialisation somehow modifies that conclusion (minimise versatility and variety). However, contradictions especially occur as soon as the perspective is widened up to comprise farms and their

functions related to natural and social surroundings. Seen from that perspective, it is more difficult to distinguish organic agriculture from conventional (with stress put on the precautionary principle related to additives in organic food processing as a major exception). Obvious contradictions occur for instance in relation to circulation of nutrients between farms and consumers (Magid et al., 1999), environmental impact of manufacturing and distribution, relationship between producers and consumers (Ingemann et al., 2000), etc. In general, it seems that the proximity principle is abandoned both from a farm perspective and a farm and surroundings perspective. In brief, the Danish case indicates a co-optation of organic agriculture into conventional agri-industrial and agri-political complexes. Simultaneously, there seems to have evolved a tendency to assess success or failure of organic agriculture by magnitude (like number of certified farms and their market shares), more than substance according to principles.

Turning to international discussions, similar conclusions are indicated. It is pointed out that some of the irreversible principles of the IFOAM seem to be at stake under present conditions depicted as follows:

“As organic agriculture becomes more commercialised, more specialised, concentrated and segmented, and as it comes to focus relatively more on profits and market share, and relatively less on its philosophical roots, it will be increasingly difficult to create and sustain the level of communication, understanding, and trust sufficient to maintain organic agriculture’s social capital; and to create a collective vision for the future” (Youngberg, cited in DeLind, 2000:204).

The symbolic evidence for the dithering of organic philosophy was seen during the process of national organic standards building in the US that attempted to approve the use of controversial methods such as genetically engineered organisms. Although, as a result of global negative response, the draft was cancelled and the use of disputed substances and controversial methods was prohibited in the new programme, it aroused international criticism claiming that standards and certification systems often appear to seek the generation of profitable commodification of single solutions instead of holistic reforms and do not contribute to the change of conventional linear-homogeneous global marketisation (DeLind, 2000).

Similarly, there is claimed a tendency for standards and certification to exclude some crucial organic principles such as local self-reliance, consideration of whole production process (including energy consumption at farm, processing, transport and food floor), seasonality of products, grower’s scale and location, fair price for growers, etc. (DeLind, 2000; IFST, 2001; Scialabba, 2000). This encourages consumers to recognise organic as a healthier, tastier and GM free product rather than environmentally and ethically right. That notion is further underlined by frozen organic vegetables or South American organic fruits in Europe available all year around in the 24-hour supermarket. In addition, in many cases the present standardisation lacks socio-economic fairness particularly towards the South, since interests and concepts of the North reflected in their standards often dominate the South (Kotschi, 2001).

However, there have been some successful attempts to implement the fundamental organic philosophy into the standards more thoroughly. For example, the standards of Bio Suisse, private organic labelling agency under the Swiss organic farmers’ union, puts additional restriction on import – in terms of transport methods (limited to land or sea), and amount in case of sufficient supply inside Switzerland, etc. (Bio Suisse, 2001).

Based on the provisional contemplation above we have indicated some mismatch between principles and practices leading to the interim conclusion (analysed in WP 1) that there is some contradiction between what (some) organic agriculturists⁶ say they will do and what they actually are doing. This is not unique and does not necessarily imply any serious problems. In other words, we will ask (in WP 1 and WP 2) whether we are dealing with only an apparent problem - in principle easy to solve while organic agriculturists can “just frankly say what they are doing” - or also a real problem causing unsustainable or inappropriate development and then a problem much more complex and complicated to solve. The project is then based on two major research questions. The first is why the apparent mismatch exists, and the second is how to dissolve apparent mismatch.

⁶ “Some organic agriculturists” because new converters and the pioneers do not necessarily have the same notion of what they are doing and what they want to do.

4.2 Conceptual frameworks

Conceptual frameworks are needed for two main purposes in the present project. Related to research question 1, conceptual frameworks are necessary tools in the search for basic causes to the apparent mismatch between fact 1 and fact 2. Related to research question 2, the conceptual frameworks are necessary as a foundation enabling a sketch of basic solutions. Thus, we require conceptual frameworks able to contain the present research field, track causes of actual mismatch, and, on a certain normative basis, provide suggestions of how to eliminate the apparent mismatch.

The research field is organic agriculture as values and principles and as practices in its social entirety. Values and principles are dealing with organic agriculture as part of - and functioning in - social and natural entirety. However, organic agriculture as a social institution is also part of a social entirety and social history that have influenced the development of the values and principles. Further, organic agriculture is part of a social entirety that might delimit the possibilities to turn values and principles into practices when these imply an alternative entirety based on an alternative normative foundation. Thus, we need to conceptualise and comprehend both evolutions of values/principles and practices as a result of interaction between values/principles and practices inside organic agriculture and between organic agriculture and the surroundings.

In the project three frameworks will initially be used as elements in an eclectic adaptation and elaboration. *The first* is a systems approach, often used by natural scientists for instance related to ecology and widely used by agricultural scientists to analyse farms as parts of natural systems and as parts of social systems. *The second* is ecological economics used by a fragment of social scientists, in general to analyse interaction between human production and natural life support systems; further, ecological economics contains more explicit normative reflections concerning interaction between natural and societal systems. *The third* is institutional and evolutionary approaches used in several social branches of knowledge to analyse evolution as an interaction between human decisions and societal structures.

Below we will briefly sketch the *initial* reflections⁷ related to the three frameworks.

4.2.1 Systems Approaches

Historically, systems approaches have been used in a wide number of contexts. This diversity gives rise to a wide range of meanings attached to the central metaphor, namely the concept "system". A pragmatic definition, which should be valid in the present context, is that a system is an abstract description of a connective basket of elements bound together by processes of communication/exchange and control. A boundary for any system must be established, as a means to distinguish the system from the surrounding environment.

⁷ In this initial stage the frameworks (as presented here) do not meet the demands for consistency, coherence, and correspondence re our methodological reflections presented in next section. These demands shall be met in the project process where these approaches will be elaborated in mutual interaction and in interaction with elaborated descriptions of the research problem.

Figure 1 : *Ontology and epistemology in systems thinking and related approaches* (adapted from (Flood, 1990; Bawden, 1995))

Uses of the metaphor “systems” can be useful, both in a descriptive and in a normative mode of application. In the normative mode, it is a tool to structure reflections on complex issues involving several possible perceptions and viewpoints, and as such an appropriate guide in the development of methodologies. In the descriptive mode it provides tools to model and analyse complex, integrated biological and socio-economic structures. In the present context, focus is on the application in organic agriculture research. Using a theoretical framework which includes both ontology and epistemology (Flood, 1990; Jackson, 1991; Bawden, 1995), the activity within the field can be categorised into two different categories, depicted in figure 1 as the two quadrants in the top. The first category can be termed as a “hard” approach, which is based on realist epistemology, whereas the “soft” approach is based on a constructivist epistemology. The two approaches do share some of the same characteristics in terms of ontology, as they both tend to focus on relatively more complex, integrated phenomena as the object of study. Complexity is here understood as an hierarchical ordering of ontological levels, spanning from the “reduced” level of molecules, up to the more “integrated” levels of social systems and human communities or societies.

Hard systems approaches are mainly based in the natural sciences. Much of the research within this area stems from systems ecology (Odum, 1971), later developed as agroecology (Spedding, 1979; Altieri, 1995; Gliessman, 1998). The agroecological approach is now used in a wide variety of contexts in agriculture, among them organic farming (Høgh-Jensen, 1998). Among the more recent developments in hard systems approaches is the application of thermodynamics to determine the sustainability of agroecosystems (Dalsgaard, 1996), which in turn is based on recent theoretical developments in systems ecology (Allen and Hoekstra, 1992; Jørgensen, 1992). Thermodynamics have also found its use in analysis of the sustainability of socio-economic systems and in ecological economics (Georgescu-Roegen, 1971; Odum, 1996; Hediger, 1997; Söllner, 1997; Amir, 1998; Ayres, 1998; Köhn, 1998; Buenstorf, 2000; Kåberger and Månsson, 2001). Agroecological research is still the most common approach in organic farming research, at least when compared to a systems ecology/thermodynamical approach to the study of organic farming. But a systems based, agroecological approach is still not that common in agricultural research, partly because its interdisciplinary and holistic orientation is hard to integrate within disciplinary organised research institutions (Dalsgaard, 2001).

Soft systems approaches are largely based on the notion, that although the world is not systemic, inquiry into social reality can be (Checkland and Scholes, 1990; Bawden, 1995). This is the key to understanding the constructivist epistemology underlining much of soft systems thinking, and to understand why soft systems thinking primarily has been based within social sciences. An important motivation for developing soft systems thinking in agricultural research was the inadequacy of the conventional agroecological approach to

give a reasonable and comprehensive understanding of human actors in agricultural systems, both in terms of management, well-being of the farming community and socio-technological development processes. An important contribution to soft systems thinking in agricultural and rural development has been made at University of Western Sydney, Hawkesbury in Australia (Bawden, 1992). The Hawkesbury approach has since its initial formulation in the early 1980s developed into a coherent theory of systemic development, where systems thinking is used as one of the vehicles for development of learning systems for sustainable community development (Bawden, 2000). The Hawkesbury approach has for instance been used as a tool for planning a sustainable future for an Australian catchment (Martin, 1991), a project which carries some similarities with recent Danish suggestions concerning Ecological Experimental Areas (EEA) to produce knowledge and experience of how to design a sustainable community as a whole (Ingemann, 2001c). Further, there is a link to theoretical reflections that point to ruralisation of towns to ensure a more effective linkage between human activity and natural life support systems (Günther, 2001), where especially urban metabolism is in focus and reflected on basis of the circulation and the proximity principles (Magid et al., 1999).

4.2.2 Ecological Economics

Ecological economics have evolved during the last three decades and is now established as an original conceptual framework appearing more as a paradigm (Kuhn, 1962) than systems approaches. Ecological economics stems from social sciences, especially economics, and can be seen as a reaction to failure of mainstream economics endogenously to address the relationship between ecosystems and economic systems. Classical economics did not adopt any concept of absolute scarcity of natural resources and current mainstream economics look upon economies as closed systems where nature is exogenous (Daly, 1996). Ecological economists have in contrast adopted an endogenous perspective on the interaction between nature and human productive and reproductive activities. Ecological economics is then intended to provide a new approach to both ecology and economics (Constanza 1997) reflecting integrated economic-ecological systems based on a common set of conceptual analytical tools while adopting elements from thermodynamics, systems approaches, institutional approaches, and other approaches. Further, it should be noted, that ecological economists typically engage a macro-perspective in their analyses.

In ecological economics human productive and reproductive activities are conceptualised in a comprehensive framework where three main systems are distinguished. *First*, the global ecosystem containing the material assets and natural mechanisms, both being a precondition for humanity's life (production and reproduction) and with a limited carrying capacity (due to a finite stock of non-renewable resources and a certain sink capacity). *Second*, the economic system is where production is carried out and allocation takes place based on price-mechanisms. *Third*, the political system where social decisions concerning the common good are taken and carried out by means of social institutions (Constanza, 1997). It is then a key that inadequate boundaries or division of functions between the systems can cause imbalance and unsustainability.

The relationship between the ecosystem and the economy is considered to be central and analysed in terms of stocks and flows as a distinction between accumulated wealth and current income. In that connection 'throughput' is a crucial concept to describe the flow between the two. From the ecosystem basic raw materials (including energy) are inputs to the economic system that by means of labour and real capital transform inputs from nature to products and spill over (waste) returned as inputs to the ecosystem. The task is then to minimise throughput and avoid that economic activity use up the finite stocks of basic raw materials and exceed sink capacity. Thus, ecological economics prescribe a 'steady-state' economy with constant levels of stocks maintained by minimal throughput of flows (Daly and Cobb, 1994).

In present societies such as the Danish society, ecological economists reveal a conflict between the dominating principle of growth in the economy (implying quantitative increase in physical scale) and sustainable development (implying qualitative improvements or unfolding of potentialities resting on principles of circulation, precaution and proximity). This mismatch has evolved due to certain "imperialism" from the economic system based on a maxim of endless quantitative growth. The economic system then is expanded to encompass the entire ecosystem; and nature, including flows of energy and matter, are regulated through price mechanisms.

Sustainable development based on the three principles mentioned above, is a solution to the mismatch between the ecosystem and the economic system and then to mismatch between ecology and economy. In a steady state economy according to ecological economists, there is a clear separation between the three basic economic goals, (i) efficient allocation, (ii) equitable distribution, and (iii) sustainable scale (Daly, 1996).

The scale dimension, which has been ignored by mainstream economics, refers to the physical volume of throughput. A goal referring to sustainable scale is then to keep the economy within sustainable limits. That goal can not be determined by means of the market but by means of scientific and political decisions. The distributive (and re-distributive) goal, which refers to the relative distribution of the resource flow among segments and individuals, is also thrown on the political system. Only the last dimension, allocation, which refers to the relative distribution of the resource flow among alternative productive uses, is a genuine economic-market decision. Thus, the succession is that scale and distribution are decided, *then* allocation can take place (Daly, 1996).

One element in the process of creating a sustainable balance between the ecosystem and social systems pointed out by ecological economists is to create new local economic and political institutions with sustainability as the primary objective. In this connection several recent suggestions and experiments taking rural areas as the starting point are relevant. It is advocated that rural areas constitute the most obvious linkage between natural life support systems and human activity; it is added that several rural areas contain deliberative competence and traditions for collective actions on a bottom-up basis (Tanvig, 2001). On this basis, experiments in line with the prescriptions from ecological economists are suggested and carried out. Among the means are re-establishment of local user-producer relations (concerning foods, re-circulation of nutrients, production and distribution of renewable energy, etc.). The concept 'foodshed' is suggested as a promising metaphor to characterise such efforts (Hendrickson et al., 1996).

4.2.3 Institutional and Evolutionary Approaches

Institutional and evolutionary approaches can in various forms be traced back to classic works by such scholars as Adam Smith and Karl Marx. However, the term 'institutional approach' is attributed to Thorstein Veblen (his first book was entitled "The Theory of the Leisure Class – An Economic Study of Institutions", 1899) who more explicitly refined the inclusion of institutions in social science. Furthermore, John R. Commons is associated with the institutional approach by way of his concept 'collective action'. In the first part of the 20th century institutional approaches was incorporated in selected theories related to economics, political science, and sociology but it was a dominant characteristic that the point of view primarily was focussing on formal institutions.

In the latest three decades neo-institutionalist approaches have evolved in social sciences (Olsen and March, 1989; Knight, 1992; North 1990; Ostrom, 1986). Their common base is that both formal and informal institutions are investigated, that institutions are defined as relatively stable rules and patterns (Hodgson, 1999) and that the study of institutions enlighten social and societal evolution. However, like described related to systems approaches, differences also occur related to presumptions regarding rationality. One group regard social actors on a micro economic foundation and assume the actors to be rational maximisers of individual utility (e.g., North, 1990). Another group regards social actors as governed by norms reproduced by means of social institutions that provide meaning and foundation for social (collective) action (e.g., Olsen and March, 1989).

A special Scandinavian variety of neo-institutional approaches should be mentioned too. The Scandinavian approaches, especially developed in the 1970s and 1980s, aim at explanations of the development and evolution of "The Scandinavian Model" that might be explained as a political and economic system with a relatively large public sector to regulate and out balance negative side effects of capitalism and founded on broad political consensus about the welfare state and attached redistributive actions (Hernes, 1978; Nielsen, 1990; Pedersen, 2001; Jørgensen, 2001). Related to such approaches the concepts 'negotiated economy' and 'mixed administration' have been suggested to describe the integration between public and private sector including NGOs (Hernes, 1978).

Institutional approaches are useful in search for patterns and genetic origin in evolutionary processes. Thus, in the present project such approaches will initially be used as a supplement by providing concepts for search

of patterns (e.g., inclusion and exclusion of new principles and practices related to existing institutions) and to provide an evolutionary perspective in relation to our research questions.

Based on the three frameworks sketched above it is a crucial object through the present project to develop a common conceptual framework by means of eclectic adaptation. In that process we will also investigate supplementary theoretical contributions related to concepts like technology, innovation, social capital, and empowerment. Related to research question 1 the eclectic adaptation will be developed and related to research question 2 and then it will be tested.

4.3 Methodology

The problem in focus is complex both horizontally (across) and vertically (in depth). The horizontal complexity is caused by the fact that the problem involves elements that belong to several different fields normally associated with different scientific disciplines. The vertical complexity is caused by the fact that we need to make several steps to move from the present conception based on immediate observations and conceptualisations down to the core where basic explanations are found. Thus, we have to compose contributions from several disciplines into a consistent and coherent unity (cf. Fig 2), i.e., develop eclectic conceptualisation where we, besides consistency and coherence, demand correspondence (Popper, 1979). Further, we have to develop eclectic conceptualisations carefully from surface to core (cf. Fig 3), i.e., concentric conceptualisation. Combined we then have to develop cognitive steps across and gradually in depth to uncover the real problems by means of explanatory theories (Popper, 1979).

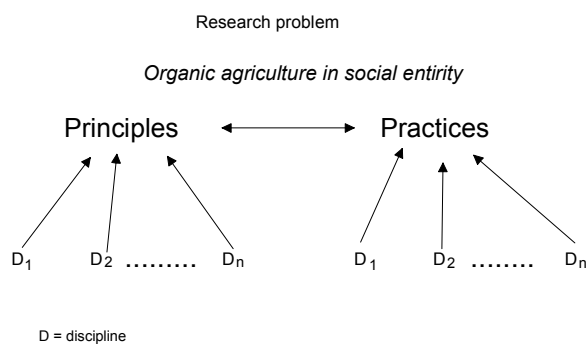


Figure 2: Eclectic conceptualisation

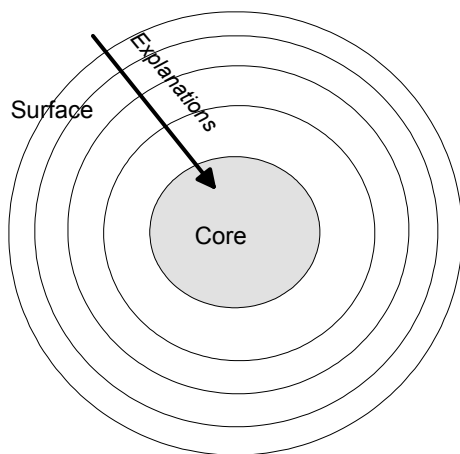


Figure 3: Concentric cognition

Individual scientists might be able to perform the concentric cognitive journey by means of their delimited disciplinary efforts. This is hardly the case when we are in search for complex interdisciplinary investigation

and for moving this investigation from surface to core. For that purpose we need a method to include several researchers representing several disciplines and enable an iterative in-depth process. That is why we have chosen a modified version of the Delphi-method based on the following description:

“Delphi may be characterised as a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole to deal with a complex problem.” (Linstone and Turff, 1975:3).

The method is in modern times primarily used to form scenarios on technical problems concerning the future. Further, the method is normally used in anonymous form. We will adapt it to a problem with past, present, and future dimensions and we will avoid the anonymous form. So the method will be used as a practical tool to provide, critically discuss, and comprehend, input to our cognitive search.

The modified method will be used as follows. The body in the process will consist of a research group that will function as a more conventional group (bibliographic studies, search for empirical evidence, both in interaction with theoretical frameworks and reflections) and simultaneously as the administrator or coordinator (Dunham, 1998) attached to a Delphi-panel providing input and cognition on *ad hoc* basis and as a whole in search for multidisciplinary consensus. This panel consists of 20 scientists who in their research have included organic agriculture but on the basis of different disciplines and different focus (re appendix B). As a whole the panel represents competencies founded in social, natural, and agricultural sciences as well as in humanities. The interaction between the research group and the Delphi-panel should then accomplish our efforts to move from segregated surface to coherent real problems.

Two crucial points related to success or failure in use of methods of Delphi-type should be mentioned. The first is closely linked to the role played by the administrator and the second to the communicative basis of the process.

The administrator should carefully describe the research field and the exact problems in focus to ensure that the panel is well aware of the contextual meaning of the questions framed. However, the description might be locked in and preconceived so that answers involving other enlightening dimensions and perspectives are excluded. In the planned use of the method in this project, the process is - opposite to the prevailing use - not anonymous but open and then also open to current criticism (re Popper, 1973). That is also the case in relation to the description where the research group will prepare the descriptions and frame the research problems in an iterative process involving the panel.

The communicative basis will be provided by means of the descriptions and the conceptual frameworks where the latter can be labelled as compilation. As mentioned above, the descriptions will be prepared in interaction with the panel partly to secure a common consensual delimitation and communicative basis. On the other hand, the description can not be prepared without concepts and thus not be prepared - nor reflected - independently of conceptual context. Here we must be prepared to face two major risks. *One* is clash of paradigms inside the same disciplines (Kuhn, 1962) which for one also imply the possibility that concepts are interpreted differently depending on paradigmatic basis; *another* is clash of disciplines because scientists from different disciplines implicitly tend to possess different contextual frames and epistemological traditions (Habermas, 1972). Clash of paradigms can be profitable and unavoidable. Our primary means to avoid unprofitable clashes and misunderstandings are - again - open dialogue and open presentation of premises. In this line reflexive objectivity and reflection on cognitive contexts has recently been proposed as the base of interdisciplinary research. If these heuristics are applied in interdisciplinary teamwork, then the risk of presupposing a uniform approach in terms of methodology, ontology and epistemology can be avoided, which otherwise poses a serious threat to the consistency of interdisciplinary teamwork (Alrøe, 2000a; Alrøe, 2000b).

As more practical steps in order to avoid locked-in discourses, the Delphi-panel will adapt different methodologies for discussions, idea development and scenario manufacturing. As one step the *Dialogue Conference* (Pålshaugen, 1998) is an appropriate means to establish a plurality of discussions for the benefit of mutual learning among the variety of experts and practitioners. For the purpose of developing a thorough exploration of the general premises and findings by the research group the latter will as another step organise *Research workshops* (Nielsen, 1996). Here the research group elaborates on their premises and findings in a very concrete matter (fulfilment of organic principles in practice). Members of the Delphi-panel are then

invited to take a specific position of being a spokesman for parts (farmer, food industry, nature, local community, etc.). The panel then becomes involved into the joint building of the comprehensive agriculture, and secondly they invite each other to give presentations of obstacles and options related to the new general common vision (Nielsen, Olsén and Nielsen, 1996)

Finally, the open discussion and criticism is underlined by the inclusion of international experts to assess the process and deliverables through international seminars and current dialogue. The latter will primarily be facilitated by access to the FAO network on organic agriculture and access to FAO homepage (re appendix A).

5. Objectives and expected achievements

The project have two focuses where the major objective will be obtained through the multidisciplinary part (WP1A, WP2A, WP3) using a modified Delphi-method (re 4.3) as a crucial methodological tool. But as the other part (WP1B, WP2B) will focus on the organic food processing sector – which till now have had minor research interest – that part will also make use of other dialogue methods as described in the end of the present section.

5.1 Organic agriculture – history, position, potentials, dialogue (WP1A, WP2A, WP3)

The *first objective* is to explain the apparent mismatch between principles and actual trajectory as indicated in section 4.1. This objective will basically be achieved by answering whether the causes should be traced in inadequate principles and/or in societal/social constraints. The *second objective* is then to suggest where and how solutions to dissolve the current mismatch can be found. The fulfilment of the latter objective depends upon the results of the first. Further it is our *third objective* to conduce to the development of comprehensive approaches enabling in-depth multidisciplinary analysis of complex problems

The achievements are related to the objectives and reflected in the research process by revealing *history*, *position*, and *potentials* facilitated and communicated by means of *dialogue* aiming at consensus. The start of the research process is to establish fact 1 (re paragraph 4.1.1) and fact 2 (re paragraph 4.1.2), i.e., *history* and *position*, and to compare the two to determine to what degree the interim conclusion (re 4.1.3) holds true. From the final conclusion we will raise the first research question related to the *first objective*. Based on the interim conclusion the research question is framed as below:

Initial research question 1

Is the apparent mismatch between principles and practices caused by inadequate principles or by societal/social constraints?

The question is based on two initial hypotheses:

Initial hypotheses

(i) The principles have been formulated as antithesis in a specific historical context no longer of topical relevance

(ii) Organic agriculture has during its evolution in the recent couple of decades been locked in and caught in a social trap by general structures and institutions in society

When the first question has been answered we will raise the second reflecting the *second objective* and revealing *potentials* based on history and position. Based on the initial research question 1 the second question is framed as below:

Initial research question 2

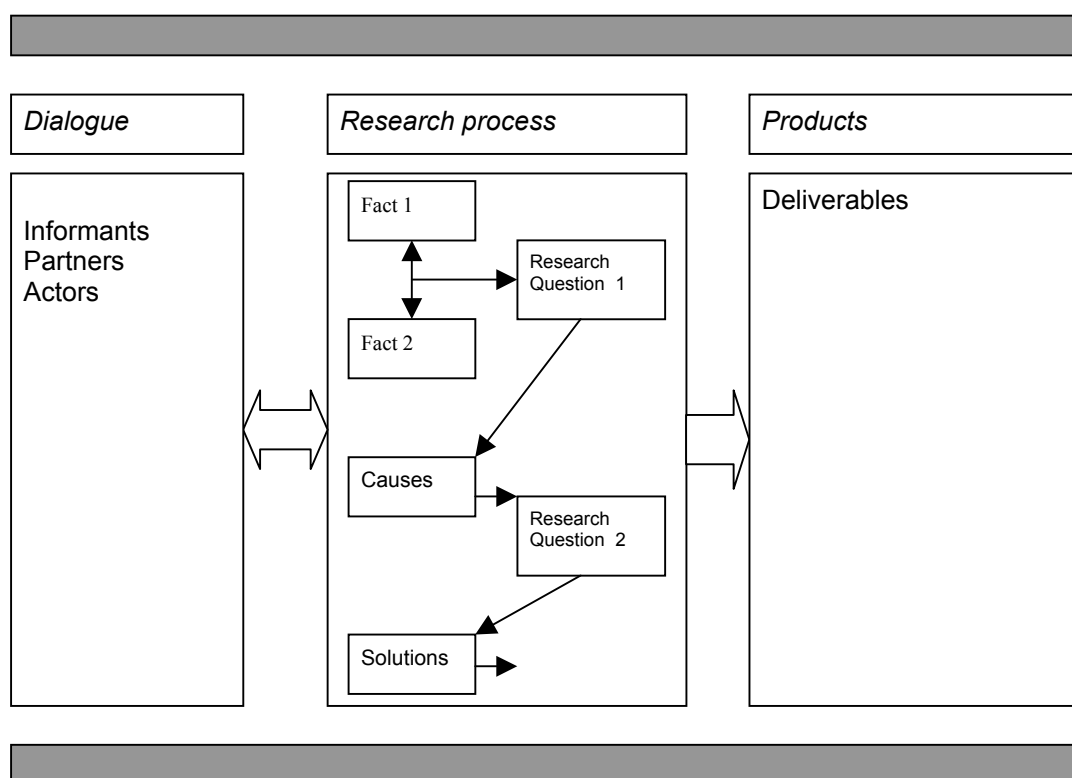
How can the apparent mismatch be dissolved; i.e., by revision of principles and/or by societal/social changes?

Both research questions will be answered in general and in abstraction in search for the basics.

The *third objective* will be achieved on two levels. (i) We will contribute to the development of conceptual frameworks to enable comprehensive understanding (re section 4.2) of the present research field involving social, natural-technical, agricultural sciences, and humanities. (ii) We will engage multidisciplinary competencies from the sciences mentioned in the current research process by means of a Delphi-panel (re section 4.3).

The design is made to facilitate dialogue and interaction between the research group, the Delphi-panel, workshops including central actors, and international workshops in the process from fact 1 and 2 to research questions, conclusions, and solutions illustrated below.

Main stages in the project



The process will be guided by means of the following scheduled major steps:

- 1) Description and documentation of fact 1 and 2. Comparison of the two. Preparation of final conception of research question 1. Accomplished by the research group, involving the Delphi-panel *ad hoc* and a workshop where central actors from the agri-complex and NGO's are represented. Published in 3 working papers plus a working paper with special emphasis on organic food sector.
- 2) Compilation of conceptual frameworks. Accomplished by the research group, involving the Delphi-panel *ad hoc*. Published in a working paper.
- 3) Delphi-panel and international experts called in to assess consistency and coherence of the results from step 1 and 2, besides opening discussion of step 5. Proceedings will be published.
- 4) Adjustments/revision of results from step 1 and 2 based on 3. Accomplished by the research group, involving the Delphi-panel *ad hoc*. Published in a report, an article for an international journal, and an article for a popular national journal.
- 5) Research to uncover basic causes based on 4 and on workshops involving a panel of central actors representing the agri-complex, consumers, administrators, and politicians. Accomplished by the research group, involving the Delphi-panel *ad hoc*. Published in a working paper.
- 6) Delphi-panel and international experts called in to assess consistency and coherence of results from step 5 compared to the steps 1 and 2, besides opening discussion of step 8. Proceedings will be published.

International seminar with special emphasis on organic food sector. Proceedings and an article will be published.

- 7) Adjustments/revision of results from step 5 based on step 6. Accomplished by the research group, involving the Delphi-panel *ad hoc*. Published in an article for an international journal and an article for a popular national journal.
- 8) Analysis of potentials based on the results from step 7. Accomplished by the research group, involving the Delphi-panel *ad hoc*. Published in a working paper.
- 9) Closing seminar (open to all interested experts and actors) involving the Delphi-panel. Proceedings will be published.

The steps are described in detail in the WP list.

5.2 The dialogue on the organic food industry (WP1B and WP2B)

Another part of the research project is specifically aiming at identifying mismatches in the organic food industry – and in the food chain from producer to consumer.

The issue of processing, distribution and handling organic products is becoming more important as market is growing. But as this is still a very new area there are only a few experts in this field. But because of this growing importance - when analysing mismatches in the organic sector - this food circle will be included in the study, by supplementary methods and by involving representatives from companies, consultancies, certifying bodies, authorities, etc.

By the engagement of competencies for this area (organic food industry), the design of the Delphi study will be ensured skilled input covering the organic food sector.

Organising separate dialogue workshops and seminars specifically aimed at the organic food sector will address the dialogue directly to this sector. The combination of this more sector oriented perspective with the Delphi studies more trajectorial perspective will offer a very strong analysis of the mismatches in the organic food chain. As the research group at DTU already have a well developed network with major actors in the organic food sector (authorities, companies, associations), this network will form the basis for the dialogue workshops and the subsequent seminars.

6. Description of workpackages

Table 1: Workpackage list

| WP No | WP title | Responsible participant | Budget | Start | End | Deliverable, No |
|-------------------|---|-------------------------|-----------|-----------|-----------|-----------------|
| 1 A | Principles versus practices – history, position, dialogue | AAU | 425,520 | Feb. 2002 | Mar. 2003 | 1,2,3,4,5,6 |
| 1 B | Principles versus practices – organic food sector | DTU | 90,000 | Feb. 2002 | Aug. 2002 | 7 |
| 2 A | Basic explanations – history, position, dialogue | AAU | 899,040 | Mar. 2002 | Jan. 2004 | 8,9,6,10, 11,12 |
| 2 B | Basic explanations – organic food sector | DTU | 360,000 | Mar. 2002 | Jan. 2004 | 13,14 |
| 3 | Basic solutions – history, position, potentials, dialogue | AAU | 224,400 | July 2003 | Aug. 2004 | 15,16 |
| Total DKr. | | | 1,998,960 | | | |

(Statement of budget without own share of expenses: WP1A, WP2A, and WP3: DKr. 958,000; WP1B and WP2B: DKr. 249,550)

Table 2: Description of workpackages

| |
|--|
| WP1A: Principles versus practices - history, position, dialogue |
|--|

| | |
|-------------------------------|--|
| Workpackage number: | 1 A |
| Start date or starting event: | February 2002 |
| Responsible person: | Jan Holm Ingemann (JHI) |
| Contributing persons: | Pia Johansen, Saki Ichihara, Chris Kjeldsen, Delphi-panel, JHI |
| Person-months: | 4 1 - 5 2 (=12) |

| |
|---|
| <p>Objectives: Establishment of fact 1: Values and principles on which organic agriculture is based Establishment of fact 2: Actual evolution of organic agriculture as social and societal practices Compare fact 1 and 2 in search for match and mismatch Determine to what degree mismatch is a real problem Final and detailed formulation of research question 1</p> |
|---|

Description of work:

Task 1: To give fact 1 and 2 a careful description and documentation by means of:

- Studies of existing literature, including case studies. Accomplished by the research group.
- Collection of empirical evidence from existing sources. Accomplished by the research group.
- Workshop I where central actors from the agri-industrial and agri-political complex, and NGOs are represented.
- Questions to and answers from the Delphi-panel on *ad hoc* basis.
(Presented in two working papers, available on the internet)

Task 2: Compare fact 1 and 2 to trace match and mismatch by means of:

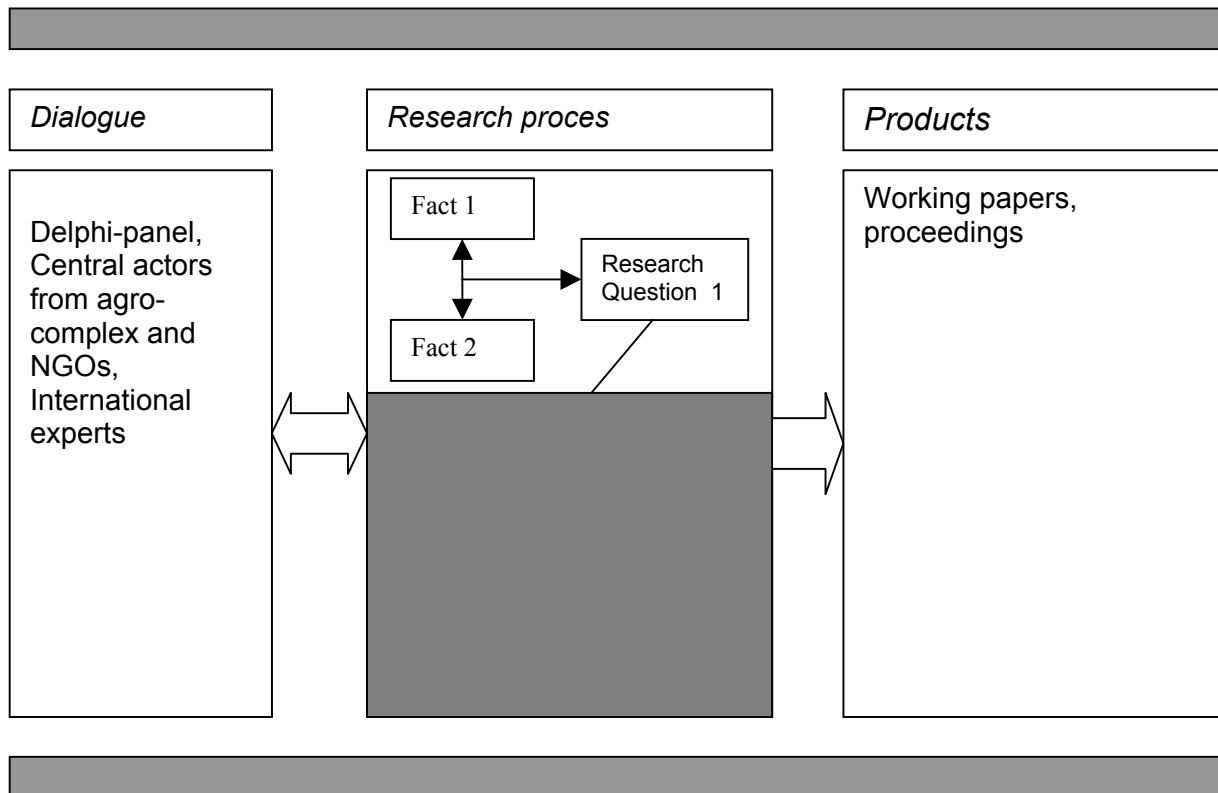
- Comparison of the two in search for consistency/inconsistency, identity/dichotomy, real problems, and evolution. Accomplished by the research group.
- Questions to and answers from the Delphi-panel on *ad hoc* basis.
(Presented in a working paper, available on the internet)

Task 3: Give research question 1 a preliminary formulation based on the comparison. Accomplished by the research group in co-operation with the Delphi-panel.

Task 4: Present the results of the WP at seminar I where the Delphi-panel and international experts participate and assess the results. This seminar includes an opening discussion of WP 2 including research question 1.

Task 5: Revision and adjustments of the results based on seminar. Simultaneously writing articles and finish proceedings.

The research process is illustrated in the figure below.



Deliverables:

- D1:** Working paper on fact 1
- D2:** Working paper on fact 2
- D3:** Working paper on comparison between fact 1 and 2
- D4:** Article for international journal
- D5:** Popular article for national journal
- D6:** Proceedings from seminar I

Milestones:

- M1:** Workshop I
- M2:** Preliminary formulation of research question 1
- M3:** Seminar I (shared with WP2)
- M4:** Revision and adjustments (including research question 1 and submission of proceedings) accomplished

WP1B: History, position, dialogue – organic food sector

| | | | | | |
|-------------------------------|---|---|---|---|------|
| Workpackage number: | 1B | | | | |
| Start date or starting event: | February 2002 | | | | |
| Responsible person: | Niels Heine Kristensen | | | | |
| Contributing persons: | Thorkild Nielsen, Maria Bruselius, NN, NHK | | | | |
| Person-months: | 2 | 2 | 1 | 2 | (=7) |

Objectives:

- Supplementary to WP1A - but here covering the organic food sector
- Select cases for the analysis of mismatch in the organic food sector

Description of work:

Task 6: To supply the research for task 1-5 in WP1A specific information concerning the organic food sector. The work specific oriented towards the organic food chain will be conducted in WP1B

Task 7: Designing interviews with supplementary key-informants in the organic food sector (companies, consultants, certifiers, authorities, etc) on mismatch.

Task 8: Assess most interesting mismatches as a basis for selecting cases for detailed studies in WP2B.

Task 9: Present the findings on a seminar with participation of the organic food sector (companies, consultants, certifiers, authorities, etc) and experts (DARCOF, universities, etc).
Presenting in a working paper

Deliverables:

- Co-ordinated and integrated with WP1A - as for food sector (WP1A: D1-D6)

Supplementary deliverable:

- D7:** Working paper on key-informants assessment of mismatch

Milestones:

- Co-ordinated and integrated with WP1A - as for food sector (WP1A: M1-M4)

Supplementary deliverable:

M5: Seminar with participation of the organic food sector

M6: Working paper accomplished

WP2A: Basic explanations – history, position, dialogue

| | | | | | | |
|-------------------------------|--|----------|----------|----------|------------|------------------|
| Workpackage number: | 2A | | | | | |
| Start date or starting event: | Marts 2002 | | | | | |
| Responsible person: | Jan Holm Ingemann | | | | | |
| Contributing persons: | Johansen, Kjeldsen, Ichihara, NN, Delphi-panel, JHI | | | | | |
| Person-months: | 3 | - | 2 | 7 | 7,5 | 8 (=27,5) |

Objectives:

Compilation and test of conceptual framework enabling search for answers to research question 1

Uncover causes to explain research question 1

Final formulation of research question 2

Description of work:

Task 10: Compile a multidisciplinary conceptual framework initially based on the descriptions in section 4.2 by means of:

- Literature studies in continuation of the presentation in section 4.2. Accomplished by the research group.
- Questions to and answers from the Delphi-panel on *ad hoc* basis.
(Includes working paper, available on the internet)

Task 11: Presentation and assessment of compilation on seminar I with Delphi-panel and international experts.

Task 12: Revision and adjustments of compilation. Include articles and proceedings.

Task 13: Uncover basic causes to explain research question 1 by means of:

- Test of compiled framework on the results from WP1 aiming at eclectic and concentric traits of basic causes and their evolution (re section 4.3). Accomplished by the research group.
- Workshop with representatives from agri-industrial and agri-political complex, consumers, politicians, administrators, and NGOs to provide knowledge of their views on the answers to research question 1.
- Questions to and answers from the Delphi-panel on *ad hoc* basis.
(Includes working paper, available on the internet)

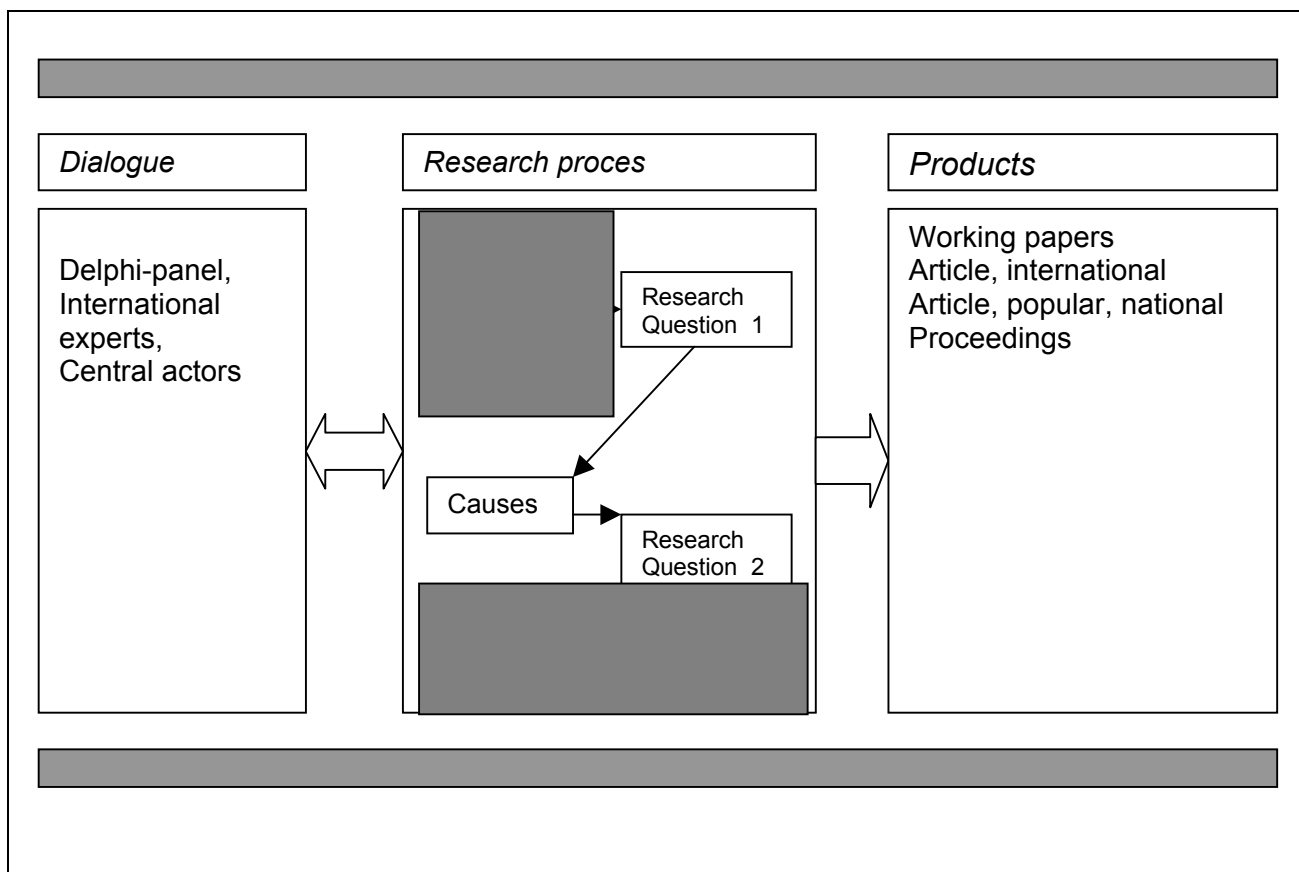
Task 14: Preliminary formulation of research question 2.

Task 15: Presentation and assessment of results from task 13 and 14 on seminar II with Delphi-panel and international experts including opening discussion of WP 3.

Task 16: Revision and adjustments of conceptual framework and answers to research question 1 based on seminar.

(Includes articles and proceedings)

The process in WP 2 is illustrated in the figure below



Deliverables:

- D8: Working paper on conceptual compilation
- D9: Working paper on uncovered causes
- D6: Proceedings from seminar I (shared with WP1)
- D10: Proceedings from seminar II
- D11: Article for international journal
- D12: Popular article for national journal

Milestones:

- M7: Presentation of compilation at seminar I (shared with WP1)
- M8: Workshop II on basic causes
- M9: Preliminary formulation of research question 2
- M10: Seminar II, including opening discussion on WP 3
- M11: Revision and adjustments (including research question 2 and submission of proceedings) accomplished

WP2B: Basic explanations – history, position, dialogue – organic food sector

| | | | | | |
|-------------------------------|---|----------|----------|----------|--------------|
| Workpackage number: | 2B | | | | |
| Start date or starting event: | March 2002 | | | | |
| Responsible person: | Niels Heine Kristensen | | | | |
| Contributing persons: | Thorkild Nielsen, Maria Bruselius, NN, NHK | | | | |
| Person-months: | 3 | 2 | 3 | 3 | (=11) |

Objectives:

- Supplementary to WP1A - but here covering the organic food sector
- Analysis of mismatch in the organic food sector for selected cases.

Description of work:

Task 17: To supply the research for task 10-14 in WP2A specific information concerning the organic food sector. The work specific oriented towards the organic food chain will be conducted in WP2B

Task 18: Supplementary literature studies (including selected case areas):

- Food chain technology (production, processing and distribution)
- Regulatory regimes for the organic food processing and distribution

Including working paper

Task 19: Analysis of theoretical and empirical evidence on mismatches. Both on structural barriers and on principles and practices.

Including working paper

Task 20: Dialogue workshop with actors in the organic food sector on the basis of task 18 and 19.

Including working paper

Task 21: Present the findings on an international seminar with participation of experts, policymakers and representatives from the organic food sector (companies, consultants, certifiers, authorities, etc).

Presenting in papers for the seminar

Article for international journal

Deliverables:

- Shared with WP2A as for the elements regarding the organic food sector

Supplementary deliverables:

D13: Proceedings from international seminar

D14: Article for international journal

Milestones:

Shared with WP2A as for the elements regarding the organic food sector

M12: Dialogue workshop

M13: International seminar - including proceedings

WP3: Basic solutions – history, position, potentials, dialogue

| | |
|-------------------------------|-------------------------------|
| Workpackage number: | 3 |
| Start date or starting event: | July 2003 |
| Responsible person: | Jan Holm Ingemann |
| Contributing persons: | NN, Delphi-panel, JHI |
| Person-months: | 2 2,5 2 (=6,5) |

Objectives:

Based on the results from WP 2 it is the objective to answer research question 2 and then to search for potentials suggesting solutions to abandon current mismatch between fact 1 and fact 2 (re section 4.1). Besides it is the objective to close OASE including communication and assessment of the results.

Description of work:

Task 22: Analyses of potentials based on the results of crucial causes from WP 2 and actual position from WP1 by means of:

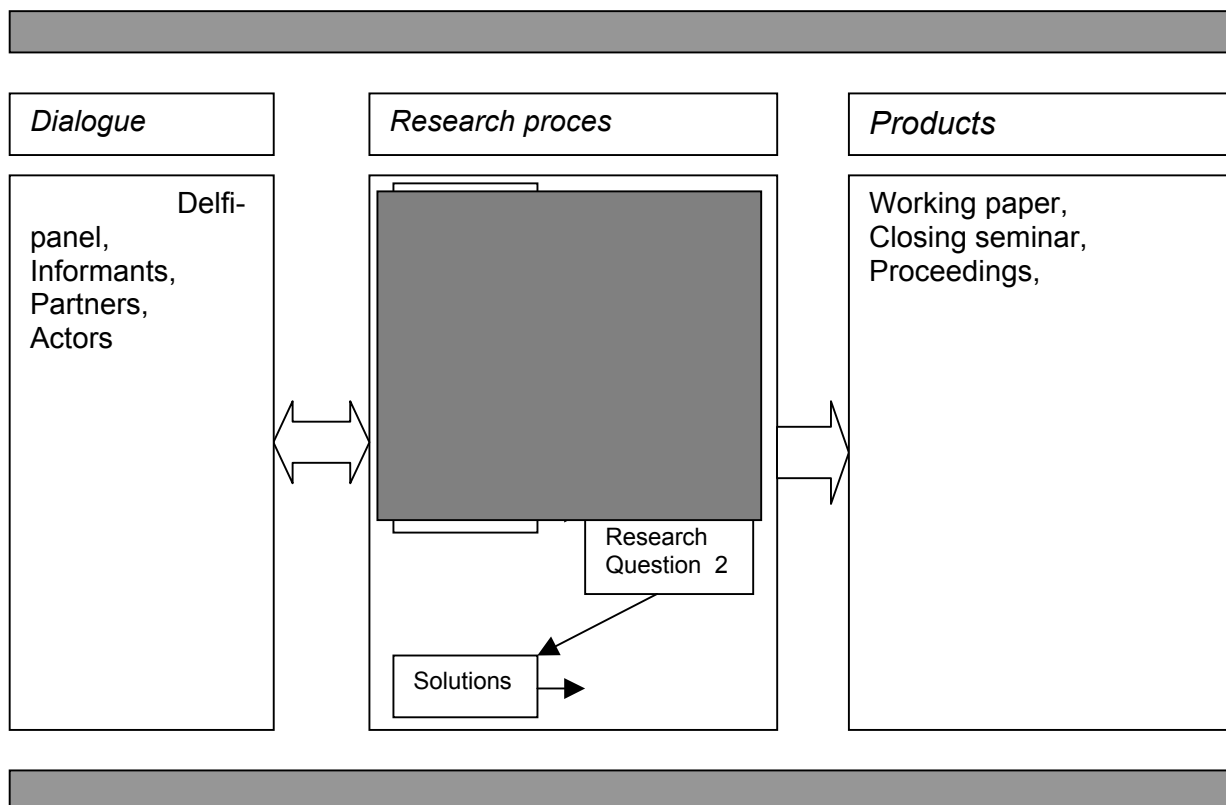
- Investigation of results from WP 1 and WP 2 in interaction with the conceptual framework in search for solutions. Accomplished by the research group.
- Question to and answers from the Delphi-panel on *ad hoc* basis.

(Includes a working paper, available on the internet)

Task 23: Presentation of the final results from OASE. Accomplished by the research group and the Delphi-panel at a closing seminar.

Task 24: Publication of final results of OASE in final proceedings including assessment of methods.

The process in WP3 is illustrated in the figure below



Deliverables:

D15: Working paper on potentials and solutions

D16: Proceedings from closing seminar, including assessment of methods

Milestones:

M14: Closing seminar

| |
|----------------------------|
| M15: Proceedings published |
|----------------------------|

Table 3: Deliverables list (publications)

| Deliverable , No | Deliverable title | Delivery date | Meeting | Nature |
|-------------------------|--|----------------------|----------------|---------------|
| 1 | Working paper on fact 1 | Aug. 2002 | | |
| 2 | Working paper on fact 2 | Aug. 2002 | | |
| 3 | Working paper on comparison between fact 1 and 2 | Sep. 2002 | | |
| 4 | Article for international journal | Feb. 2003 | | |
| 5 | Popular article for national journal | Feb. 2003 | | |
| 6 | Proceedings from seminar I | Jan. 2003 | | |
| 7 | Working paper on key-informants assessment | Aug. 2002 | | |
| 8 | Working paper on conceptual compilation | Oct. 2002 | | |
| 9 | Working paper on uncovered causes | Jul. 2003 | | |
| 10 | Proceedings from seminar II | Nov. 2003 | | |
| 11 | Article for international journal | Dec. 2003 | | |
| 12 | Popular article for national journal | Dec. 2003 | | |
| 13 | Proceedings from international seminar | Jan. 2004 | | |
| 14 | Article for international journal | Feb. 2004 | | |
| 15 | Working paper on potentials | Mar. 2004 | | |
| 16 | Proceedings from closing seminar | Aug. 2004 | | |

| TITLE | | 2001* | | | | 2002* | | | | 2003* | | | | 2004* | | | | 2005* | | | | | |
|-------|---|---------|---|---|---|-------|----|-----|-----|-------|-----|-----|-----|-------|-----|-----|-----|-------|---|---|---|---|--|
| Tasks | Co-ordination | Quarter | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | |
| | WP2A: Basic causes | | | | | | 3- | xxx | xxx | xxx | xxx | xxx | xxx | xxx | 1 | | | | | | | | |
| 10 | Compilation, including working paper | | | | | | 3- | | | | | | | | | | | | | | | | |
| 11 | Presentation and assessment of compilation | | | | | | | | | | | | | | | | | | | | | | |
| 12 | Revision and adjustments of compilation, including articles and proceeding | | | | | | | | | | 11- | 2 | | | | | | | | | | | |
| 13 | Uncover basic causes, including working paper | | | | | | | | | | | 3- | | 7 | | | | | | | | | |
| 14 | Research question 2, preliminary | | | | | | | | | | | | 6 | | | | | | | | | | |
| 15 | Presentation and assessment of basic causes | | | | | | | | | | | | | 8 | | | | | | | | | |
| 16 | Revision and adjustment of basic causes, including articles | | | | | | | | | | | | | 8- | 1 | | | | | | | | |
| M7 | Seminar I (shared with WP1) | | | | | | | | | | | | | | | | | | | | | | |
| M8 | Workshop II | | | | | | | | | | | | 4 | | | | | | | | | | |
| M9 | Research question 2 formulated, preliminary | | | | | | | | | | | | | 7 | | | | | | | | | |
| M10 | Seminar II | | | | | | | | | | | | | 8 | | | | | | | | | |
| M11 | Revision and adjustments accomplished | | | | | | | | | | | | | | 1 | | | | | | | | |
| | WP2B: Organic food sector - causes | | | | | | 3 | xxx | xxx | xxx | xxx | xxx | xxx | xxx | xxx | 4 | | | | | | | |
| 17 | Supply research for WP2A | | | | | | | | | | | | | | | | | | | | | | |
| 18 | Supplementary literature studies | | | | | | | | | | | | | 10- | | | | | | | | | |
| 19 | Analysis of mismatches | | | | | | | | | | | | | 10- | | | | | | | | | |
| 20 | Dialogue workshops | | | | | | | | | | | | | 11- | | | | | | | | | |
| 21 | International seminar, incl. proceedings | | | | | | | | | | | 1- | | | | | | | | | | | |
| M12 | Dialogue workshop | | | | | | | | | | | | | | | | | | | | | | |
| M13 | International seminar | | | | | | | | | | | | | | | | | | | | | | |
| | WP3: Solution | | | | | | | | | | | | | 7- | xxx | xxx | xxx | 8 | | | | | |
| 22 | Analyses, including working paper | | | | | | | | | | | | | 7- | | | | | | | | | |
| 23 | Presentation of final results from OASE | | | | | | | | | | | | | | 3 | | | | | | | | |
| 24 | Final proceedings | | | | | | | | | | | | | | | | | | | | | | |
| M14 | Closing seminar | | | | | | | | | | | | | | | | | | | | | | |
| M15 | Proceedings from closing seminar published | | | | | | | | | | | | | | | | | | | | | | |

* If convenient, indicate the actual month (can be done by numbers: January is 1 etc.)

7. Collaborative partners

By way of the Delphi-panel, national collaboration with relevant partners and networks is secured as described above. National collaboration with non-scientists will be provided by means of workshops (as described above), current contact with NGOs and other central actors, in addition the chairman of the DARCOF executive board and the chairman of the DARCOF user committee will be invited to participate in the Delphi-panel. International collaboration is agreed with FAO's network (SREN Working Group on Organic Farming Research). The network will be informed about current results of the project and invited to discuss and assess them. Further FAO have offered the opportunity to point to update discussions and results from FAO home page. International experts to assess results and deliverables will be selected from the SREN Working Group.

Collaboration will also be provided by means of the networks of the research group. Among these the following should be accentuated as being of special relevance: The European Inter-University Association on Society, Science and Technology (ESST), Nordic-Scottish University Network for Rural and Regional Development Nordic-Scottish, and Nordic Association of Agricultural Scientists. These networks will be informed of current results and invited to participate in current dialogue.

The research in the organic food sector (WP1B, WP2B) will especially benefit from the two European networks on 1) organic food processing (COCaPROF) and 2) the "Organic Marketing Initiatives and Rural Development" (OMIaRD). But also the two Nordic Networks on Consumer demands to Organic Production" and the network on the Organic Catering sector" will be of interest both for the research exchange and for the dissemination of the results of the project. On a national level the well-established network between researchers in organic principles (Forsker-praksis-netværket om økologiske principper og værdier [Researcher-practitioner network on organic principles and values]).

Finally, the project will have access to several international networks via the Delphi-panel (re appendix B).

The project will put stress on international collaboration underlined by the fact that the publications (except popular articles) will be in English with Danish summary.

8. Budget

| Institution 1 (AAU) (WP 1A, WP2A, WP3) | 2001 | 2002 | 2003 | 2004 | 2005 |
|--|-------------|----------------|----------------|----------------|-------------|
| Months (scientific) | | 18 | 21.5 | 6.5 | |
| Months (technical) | | 1.5 | 5.3 | 1.5 | |
| Salary (scientific) | | 451,800 | 410,000 | 130,000 | |
| Salary (technical) | | 20,000 | 49,000 | 20,000 | |
| Operation – equipment | | | | | |
| Operation - other | | 50,000 | 120,000 | 40,000 | |
| Overhead | | 104,360 | 115,800 | 38,000 | |
| Total DKr. | | 626,160 | 694,800 | 228,000 | |

(Statement of months includes own share of expenses (958,000 DKr.). Total budget including own share of expenses then amount to 2,506,960 DKr.)

| Institution 2 (DTU) (WP1B and WP2B) | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|-------------|-------------|-------------|-------------|-------------|
| | | | | | |

| | | | | | |
|-----------------------|--|----------------|----------------|---------------|--|
| Months (scientific) | | 8 | 7 | 2 | |
| Months (technical) | | 0.5 | 0.5 | 0.4 | |
| Salary (scientific) | | 134,500 | 108,000 | 23,300 | |
| Salary (technical) | | 7,000 | 7,000 | 5,000 | |
| Operation – equipment | | | | | |
| Operation - other | | 25,000 | 60,000 | 5,000 | |
| Overhead | | 33,500 | 35,000 | 6,700 | |
| Total | | 200,000 | 210,000 | 40,000 | |

(Statement of months includes own share of expenses (249,550 DKr.). Total budget including own share of expenses then amount to 699,550 DKr.)

9. References

- Allen, T. F. H. and Hoekstra, T. W. (1992): *Toward a unified ecology*. Columbia: Columbia University Press.
- Alrøe, H. F. (2000a): *Helhedsorienteret forskning i jordbruget - bidrag til systemisk metodik og etik*. Ph. D. afhandling thesis. Tjele: Forskningscenter for Økologisk Jordbrug
- Alrøe, H. F. (2000b): Science as systems learning: Some reflections on the cognitive and communicational aspects of science. *Cybernetics and Human Knowing* vol. 7, no. 4: 57-78.
- Altieri, M. A. (1995): *Agroecology: The science of sustainable agriculture*. Boulder, Westview Press.
- Amir, S. (1998): The role of thermodynamics for ecological economics. *Ecological Economics* vol. 27, no. 2: 213-214.
- Andersen, Kristian (1995): *Økologisk landbrugs tilblivelse, udvikling og organisering*. IN Rapport om økologisk jordbrugsreform. Copenhagen: SID.
- Ayres, R. U. (1998): Eco-thermodynamics: economics and the second law. *Ecological Economics* vol. 26 no. 2: 189-209.
- Bawden, R. (1992): Systems approaches to agricultural development: The Hawkesbury experience. *Agricultural Systems* vol. 40: 153-176.
- Bawden, R. (1995): *Systemic development - a learning approach to change*. Sydney, University of Western Sydney, Hawkesbury, Centre for systemic Development. Occasional Paper #1: 71.
- Bawden, R. (2000): Valuing the epistemic in the search for betterment - the nature and role of critical learning systems. *Cybernetics & Human Knowing* vol. 7 no. 4: 5-25.
- Bio Suisse (2001): *Standards for the production, processing and marketing of produce from organic farming*. Basel: Bio Suisse.
- Buenstorf, G. (2000): Self-organization and sustainability - energetics of evolution and implications for ecological economics. *Ecological Economics* vol. 33, no. 1: 119-134.
- Checkland, P. B. and Scholes, J. (1990): *Soft systems methodology in action*. Chichester: John Wiley & Sons.
- Constanza, Robert, J.; Cumerland, H. Daly; Goodland, R. and Norgaard, R. (ed.) (1997): *An Introduction to Ecological Economics*. Boca Raton, Florida: St. Lucie Press.
- Dalgaard, T. (2001): *Simulation and generalisation of agricultural resource use*. Ph.D. thesis. Tjele: Danish Institute of Agricultural Sciences
- Dalsgaard, J. P. T. (1996): *An ecological modelling approach towards the determination of sustainability in farming systems*. Ph.D. thesis. Copenhagen: Royal Veterinary and Agricultural University
- Daly, Herman E. and Cobb, J. B. (1994): *For the Common Good. Redirecting the Economy toward Community the Environment and a Sustainable Future*. Boston: Beacon Press.
- Daly, Herman E. (1996): *Beyond Growth. The Economy of Sustainable Development*. Boston: Beacon Press.
- DARCOF (2000): *Principper for økologisk jordbrug – Notat til FØJO's Brugerudvalg*. Tjele: DARCOF.
- Daugbjerg, Carsten (1998): *Policy Networks under Pressure: Pollution Control, Policy Reform, and the Power of Farmers*. Aldershot, UK: Ashgate Publishing.
- DeLind, B.L. (2000): Transforming organic agriculture into industrial organic products - Reconsidering national organic standards. *Human Organization (Summer)* vol.59, no.2: 198-208.
- Dunham, Randall B. (1998): *The Delphi Technique*. Wisconsin: University of Wisconsin. <http://instruction.bus.wisc.edu/obdemo/readings/delphi.htm>
- Dworkin, Ronald (1978): *Taking rights seriously*. London: Duckworth.
- FAO (1998a): *Evaluating the Potential Contribution of Organic Agriculture to Sustainability Goals*. Mar del Plata: FAO.
- FAO (1998b): *FAO/IFOAM Meeting on Organic Agriculture*. Rome: FAO.
- Flood, R. L. (1990): *Liberating systems theory*. New York: Plenum Press.

- Georgescu-Roegen, N. (1971): The entropy law and the economic process. Cambridge: Massachusetts, Harvard University Press.
- Gliessman, S. R., (ed.) (1998): Agroecology. Ecological processes in sustainable agriculture. Chelsea: Ann Arbor Press.
- Günther, Folke (2001): Fossil Energy and Food Security. IN Energy and Environment, vol. 12, no. 4.
- Habermas, Jürgen (1992): Faktizität und Geltung, Frankfurt am Main: Suhrkamp.
- Habermas, Jürgen (1972): Knowledge and Human Interest. London: Heinemann.
- Hediger, W. (1997): Towards an ecological economics of sustainable development. Sustainable Development vol. 5, no. 3: 101-109.
- Hendrickson, John; Kloppenburg, Jack, Jr., and Stevenson, G. W. (1996): Coming Into the Foodshed Agriculture and Human Values vol. 13, no. 3 (Summer): 33-42.
- Hernes, Gudmund (ed.) (1978): Forhandlingsøkonomi og blandingsadministrasjon. Oslo: Universitetsforlaget.
- Hodgson, Geoffrey M. (1999): Evolution and Institutions – On Evolutionary Economics and the Evolution of Economics. Cheltenham: Edward Elgar.
- House of Lords (1999): Select Committee on European Communities - Sixteenth Report. <http://www.publications.parliament.uk/pa/ld199899/ldselect/ldecom/93/9302.htm>
- Høgh-Jensen, H. (1998): Systems theory as a scientific approach towards organic farming. Biological Agriculture and Horticulture vol. 16, no. 1: 37-52.
- IFOAM. (2000). IFOAM Annual Report 2000. Tholey-Theley: IFOAM.
- IFST (2001): The Institute of Food Science and Technology - Organic Food. <http://www.ifst.org/hotspot24.htm>
- Ingemann, J.H. (2001a): Agricultural Policy. Chap. 10 IN H. Jørgensen: Consensus, Co-operation, and Conflict – The Policy Making Process in Denmark. London: Edward Elgar (in press).
- Ingemann, J.H. (2001b): Food and Agricultural Systems Development. IN Theme 1.46, Principles of Sustainable Development. Edited by Giancarlo Barbiroli, in Encyclopedia of Life Supporting Systems. Oxford: EOLSS Publishers (in press).
- Ingemann, J. H., (ed.) (2001c): Samfundets udviklingsafdeling - bæredygtig udvikling gennem eksperimenter. Aalborg: Aalborg Universitetsforlag.
- Ingemann, J.H.; Abrahamsen, B., and Holdgaard, J.E. (2000): Innovation, miljø og kvalitet i økologisk forarbejdning - caseanalyse af 7 økologiske mejerier. Aalborg: POET.
- Inglehart, Ronald (1995): Public Support for Environmental Protection - Objective Problems and Subjective Value in 43 Societies. Ann Arbor: University of Michigan Press.
- Institute for Agriculture and Trade Policy (1998). Making Sustainable Agriculture - Case Studies and Analysis from Europe. Minneapolis: IATP.
- Jackson, M. C. (1991): Systems methodology for the management sciences. New York: Plenum Press.
- Jørgensen, S. E. (1992): Integration of ecosystem theories - a pattern. Dordrecht: Kluwer Academic Publishers.
- Jørgensen, Henning (2001): Consensus, cooperation, and conflict - the Policy Making Process in Denmark. London: Edward Elgar (in press).
- Jørgensen, U. and Karnøe, P. (1991): The Danish Wind-turbine Story - Technical Solutions to Political Visions. Copenhagen: Danish Technical University.
- Kjeldsen, C. and Sall, K. (2000): Analyse af afsætningsituationen for økologiske fødevarer. Rådgivningsfirmaet Sall & Sall. <ftp://ftp.ecoweb.dk/dokumenter/afsaetningsanalyse.pdf>
- Knight, Jack (1992): Institutions and Social Conflict. Cambridge: Cambridge University Press.
- Kotschi, J. (2000). Poverty Alleviation in the South – Can Organic Farming help?. Marburg: AGRECOL.
- Kristensen, N.H. and Nielsen, T. (1997): From Agricultural Alternative to the Food Industry. Needs for Changes The Food Policy. Lyngby: Danish Technical University, IPTS-report no. 20.
- Kuhn, Thomas S. (1962): The Structure of Scientific Revolutions. Chicago: The University of Chicago Press.

- Köhn, J. (1998): Thinking in terms of system hierarchies and velocities - what makes development sustainable?. *Ecological Economics* vol. 26, no. 2: 173-187.
- Kåberger, T. and B. Månsson (2001): Entropy and economic processes - physics perspectives. *Ecological Economics* vol. 36, no. 1: 165-179.
- Lampkin, N. and Midmore, P. (1999): Organic Farming and the European Union: Memorandum of Evidence to the House of Lords Select Committee on the European Communities, Sub-Committee D (Agriculture, Fisheries and Food).
<http://www.organic.aber.ac.uk/Lordsevidence1.htm>
- Linstone, H.A. & Turff, M. (eds.) (1975): *The Delphi Method, Techniques and Applications*. London: Addison-Wesley Publishing Company.
- Lund, V. and Röcklinsberg, H. (2001): Outlining a conception of animal welfare for organic farming systems. *Journal of Agricultural and Environmental Ethics*, vol. 14, no. 4.
- Magid J., Dalsgaard, A., and Henze, M. (1999): Reinventing urban waste management – integration of health, recycling and environmental concerns. *In: Proceedings from FAO/IBSRAM's conference on 'Peri-Urban Agriculture', Accra, Ghana, 2-6 August, 1999.*
- Martin, P. (1991): Environmental Care in Agricultural Catchments - toward the communicative catchment. *Environmental Management* vol. 15, no. 6: 773-783.
- Midgley, G. (2000): *Systemic intervention: Philosophy, methodology and practice*. New York: Kluwer Academic/Plenum Publishers.
- Ministry of Food, Agriculture and Fisheries (1999): *Action Plan II - Developments in organic farming*. Copenhagen: Ministry of Food, Agriculture and Fisheries.
- Nielsen, K. (1990): From the mixed economy to the negotiated economy - the Scandinavian countries. Copenhagen : Center for Public Organisation and Management, Copenhagen Business School.
- Nielsen, K.Aa. (1996) : *Arbejdets sociale orientering*. Copenhagen: Forlaget Sociologi.
- Nielsen, K.Aa.; P. Olsén; B.S.Nielsen (1996): From silent to talkative participants: A Discussion of Technique as Social Construction, in *Economic and Industrial Democracy*, Vol.17, 359-386 1996. London: SAGE.
- NOAH (2001): Submission to the House of Commons; Agriculture Committee Enquiry Into Organic Farming. <http://www.noah.co.uk/noah/papers/organics.htm>
- North, Oliver (1990): *Institutions, Institutional Change, and Economic Performance*. Cambridge: Cambridge University Press.
- Odum, E. P. (1971): *Fundamentals of ecology*. Philadelphia: W. B. Saunders.
- Odum, H. T. (1996): *Environmental Accounting: Emery and Environmental Decision Making*. New York: John Wiley & Sons.
- Olsen, J.P. & March (1989): *Rediscovering Institutions*. New York: The Free Press.
- Ostrom, Elinor (1986): An Agenda for the Study of Institutions. *IN Public Choice*, 48:3-25.
- Pedersen, O. K (2001): *The rise of neoliberalism and institutional analysis* . Princeton, N.J. : Princeton University Press.
- Plantedirektoratet (2000): *Økologiske jordbrugsbedrifter 2000 - autorisation og produktion*. Lyngby: Plantedirektoratet.
- Popper, Karl R. (1973): *Kritisk Rationalisme - Udvalgte essays om videnskab og samfund*. Copenhagen: Nyt Nordisk Forlag Arnold Busck.
- Popper, Karl R. (1979): *Objective Knowledge - An Evolutionary Approach*. Oxford: Clarendon Press.
- Pålshaugen, Øyvind (1998): *The end of Organization Theory?* Amsterdam: Johns Benjamins Publishing.
- Rawls, John (1972): *A Theory of Justice*. Oxford: Oxford University Press.
- Scialabba, N. (2000). *Opportunities and Constraints of Organic Agriculture - A Socio-Ecological Analysis*. Rome: FAO
- Soil Association (2001): <http://www.soilassociation.org>
- Spedding, C. R. W. (1979): *An introduction to agricultural systems*. Essex: Applied Science Publishers.

- Söllner, F. (1997): A reexamination of the role of thermodynamics for environmental economics. *Ecological Economics* vol. 22 no, 3: 175-201.
- Tanvig, Hanne (2001): Økologiske eksperimentalzoner i landdistrikter? IN J.H. Ingemann (ed.): *Samfundets udviklingsafdeling- bæredygtig udvikling gennem eksperimenter*. Aalborg: Aalborg Universitetsforlag.
- Thompson, P.B. (1997): The varieties of sustainability in livestock farming. IN J.T. Sørensen (ed.): *Livestock farming systems - More than food production. Proceedings of the fourth international symposium on livestock farming systems*. EAAP Publ. No. 89.
- Weizsäcker, Christian von and Weizsäcker, Ernst Ulrich von (1984): Fehlerfreudlichkeit. IN K. Kornwachs (ed.): *Offenheit - Zeitlichkeit - Komplexität. Zur Theorie der offenen Systeme*. Frankfurt: Campus.

Appendix A: Description of the research groups

Description of the research group WP 1A, WP2A and WP3

The research group is based in Agricultural Economics, Aalborg University. The group have several years of experience in multidisciplinary research including co-operation with research groups from other faculties. In the past two years the group has been involved in several activities. We will here mention the POET- project (Product innovation, Organic foods, Environment and Technology) and the EEA-project (Ecological Experimental Areas). The POET-project (closed March 2001) included case studies of product chains related to organic farming and compared to sustainable fishery. Related to the EEA-project (still in progress) the following achievements deserve mentioning:

- (1) Establishment of a writing group consisting of a multidisciplinary and cross-institutional community of researchers (gathered from Aalborg University, University of Southern Denmark and Roskilde University)
- (2) Establishment of a research group at Aalborg University, aiming at application in selected case studies.
- (3) Establishment of co-operation with a group of citizens from Halkær Ådal with the aim of establishing an EEA in the area.
- (4) The publishing of the anthology (Ingemann, 2001c).
- (5) The publishing of the first report from the research group: Ingemann, J.H. (2001): Halkær Ådal som økologisk eksperimentalzone, Aalborg: Aalborg Universitet, Institut for Økonomi, Politik og Forvaltning 2001

The experience and achievements from the two projects mentioned above will be incorporated in OASE. A Ph.D.-project attached the research group (starting by December 2001) about new modes of co-operation between consumers and producers of organic foods, will also be associated (conditions and person-months await negotiations with DARCOF who have provided a part of the funding). We expect to be able to attach a second Ph.D. scholarship to OASE from autumn 2002. It should also be underlined that the research group will be strongly reinforced by the partners that have accepted to join the Delphi-panel. Backgrounds and selected achievements of partners are sketched in appendix B.

In relation to OASE, the acquired knowledge will be relevant for several of the educational activities, which the research group and partners, are involved in. At Aalborg University, the acquired knowledge will be particularly relevant in relation to the international master education in Science, Society and Technology, the International Master education and the Research School of Environmental Management, and the Open University education in Human Ecology. Finally we will offer courses to the national Research School for Organic Agriculture (SOAR) concerning current results from OASE.

Description of the research group WP 1B, WP2B

The research group is based in the Ecology Group, Division of Innovation and Sustainability, Department of Production and Management, Technical University of Denmark. The group have several years of experience in multidisciplinary research including co-operation with research groups from other faculties. In the past decade the group has been involved in several activities.

Since the end of the 1980s the research has focused on analysing potentials in organic oriented production principles. The organic oriented idea of (life- and production) cycles has been used as an approach for the studies of the agricultural and food sector, where organisation methods as well as more technical production methods has been subject to different studies. Currently occupied with the development of the research and education programmes at DTU in organic and sustainable production principles and methods. Since 1990 the group have conducted research and development projects, based on socio-technological and organisational theories on innovation processes and transitions processes in the supply chain

(agriculture, industry, distribution, etc.), as well as in the political institutions (farmer associations, consumer associations, national, regional and local institutions, authorities, etc.) and the networks between them. In connection to this, the group have been involved in studies of organic agriculture, organic food companies and institutions occupied with organic products and organic production methods. Different networks between producers and consumers, between knowledge based institutions and producers, distributors etc and between political institutions and actors in the market has been studied. The assessment of innovative potentials in the meeting of social movements and the production sector/market has been one of the dominating research interests.

The accumulated knowledge has been used in connection to the development of for example the Danish regulation on organic processing, National action plans for organic farming, supervision of master and Ph.D. students, training courses, consultancies to Ministries and other national and international institutions, and in organising the 11th International Scientific IFOAM Conference, in Copenhagen in 1996. A conference that counted more than 1.000 scientist from all over the world occupied with developing organic production methods.

Recent examples on projects are:

- Technological transition processes and sustainability in the food sector, distribution and retail sector; (Ministry of Food, Agriculture and Fisheries)
- Organisational and institutional relations, regulatory instruments and learning processes; (National Scientific Committee, DARCOF)
- Analysis of barriers for organic food production; (Ministry of Trade; Nordic Industrial Fund)
- Rural development initiatives, etc. (EU project)
- Initiated a research network currently working with theoretical and methodological issues of values and principles in organic agriculture and the organic food sector
- PhD project on Consumer demands and expectations in relation to organic production (started sept. 2001)
- Establishment of a writing group consisting of a multidisciplinary and cross-institutional community of researchers (gathered from Technical University of Denmark, Aalborg University, University of Southern Denmark and Roskilde University)
- Establishment of co-operation with actors in different regions (Viborg amt, Bornholm amt) on establishing development projects between producers and customers (and consumers/citizens)
- Establishing co-operation between actors in the organic food processing sector (authorities, companies, associations) concerned with the principles and standards for organic food processing.

Outcome of the OASE project will be relevant for several of the educational activities, which the research group and partners, are involved in. At the Technical University of Denmark, the acquired knowledge will be particularly relevant in relation to the international master education in Technology Development, the Master in Environmental Management, the Ph.D. school of Technological Management. Finally we will offer courses to The Research School for Organic Agriculture (SOAR).

Appendix B: CVs for the participants

Head of project

Name (age): Jan Holm Ingemann (46)

Education: M.Sc. (Economics); Ph.D. (Agricultural Economics and Policy)

Present occupation: Associate Professor, Department of Economics, Politics, and Public Administration, Aalborg University

Other current professional activities

Research Co-ordinator, Agricultural Economics, Aalborg University

Member of the Executive Board, National School of Organic Agriculture

Referee for the Swedish research council FORMAS

Member of the Executive Board, Centre for Environment and Development, Aalborg University

Research Co-ordinator, EEA Project, Center for Environment and Development, Aalborg University

Member of the Board, Natural Science Group, Open University

Member of The Strategic Forum for Industrial Development, Danish Center for Rural Research and Development

Member of the Board, Consumer-owned Cooperatives Project

Present activities as project manager

The associated research project for the Halkær Ådal Project

The auxiliary board for Halkær Ådal Project

Present activities as Ph.D. facilitator

Project "New relations between consumers and producers of organic foods" (Aalborg University, main facilitator)

Project "The Recent History of Organic Farming" (Aarhus University, associated facilitator)

Prior work experience

Head of Department (Department of Economics, Politics and Public Administration)

Educational Director (Economics, Aalborg University; Political Science, Roskilde University)

Member of the Study Board, Faculty of Social Sciences, Aalborg University

Member of the Bichel Committee (The Ministry of Environment and Energy)

Member of the Commission for Structural Development in Agriculture (The Ministry of Food, Agriculture and Fisheries)

Member of the Ecological Council of Denmark

Project leader, various research projects

Consultancy in 2001

National Agricultural Foundation and environmental objectives (The Ministry of Food, Agriculture and Fisheries)

Future Perspectives for the Cooperative Sector (Danish Food and Allied Workers Union)

Scenarios and Measures in Danish Agriculture (The Nature Council of Denmark)

Key notes at international conferences 2001

Rural - Urban Co-development (conference arranged by the Nordic Association of Agricultural Scientists)

New Paradigms for Rural Development (conference arranged by Nordic Scottish University Network for Rural and Regional Development)

The 'Efficiency' Myth of Modern Agriculture (conference arranged by the Nordic Organic Farmers Associations).

Other conferences in 2001

Paper delivered at the 5th Nordic Environmental Research Conference. Furthermore, several national keynotes, workshops, etc.

Publications 2001

1. Jan Holm Ingemann: Agricultural Policy. Chapter 10 in H.Jørgensen: Consensus, Co-operation and Conflict - The Policy Making Process in Denmark. Edward Elgar, London 2001 (in press).
2. Jan Holm Ingemann: Food and Agricultural Systems Development. In Theme 1.46, Principles of Sustainable Development, edited by Giancarlo Barbiroli in Encyclopedia of Life Supporting Systems, EOLSS Publishers, Oxford, 2001 (in press).
3. Jan Holm Ingemann: The Institutional and Structural Design of Sustainability. Paper presented at 5'th Nordic Environmental Research Conference. Working Paper 2001:2 Dept. of Economics, Politics and Public Administration. Aalborg University.
4. Jan Holm Ingemann: Jordbrugerfonde i relation til natur- og miljømæssige målsætninger samt landdistriktsinnovation. Direktoratet for Fødevarerhverv, København 2001.
5. Jan Holm Ingemann: Fremtidens forhold for den andelsejede del af det landbrugsindustrielle kompleks. Danish Food and Allied Workers Union, Frederiksberg 2001.
6. Jan Holm Ingemann: Samfundets udviklingsafdeling - en introduktion. I J.H. Ingemann (red.) Samfundets udviklingsafdeling - bæredygtig udvikling gennem eksperimenter. Aalborg Universitetsforlag, Aalborg 2001.
7. Jan Holm Ingemann: Institutionelt og strukturelt design - bidrag til en samfundsvidenskabelig teori om mismatch i det postindustrielle samfund. I J.H. Ingemann (red.) Samfundets udviklingsafdeling - bæredygtig udvikling gennem eksperimenter. Aalborg Universitetsforlag, Aalborg 2001.
8. Jan Holm Ingemann: Halkær Ådal som økologisk eksperimentalzone. Rapport nr. 1 fra følgeprojektet. Institut for Økonomi, Politik og Forvaltning, Aalborg Universitet 2001.

9. Jan Holm Ingemann (forthcoming): Rural - Urban Co-development - Challenges to Post-industrial Society. NJF Seminar no 327.
10. Jan Holm Ingemann (forthcoming): New Paradigms for Rural Development. Proceedings from 5th Annual Conference - Nordic Scottish University Network for Rural and Regional Development

Research group (WP 1A, 2A and 3)

Name (age): Chris Kjeldsen (33)

Education: M.Sc. (Agriculture)

Present occupation: Ph.D.-scholar, Agricultural Economics, Aalborg University

Selected publications: Dalgaard, T., Kjeldsen, C., Hutchings, N. and Hansen, J. F. (2001) : *N-Losses and Energy Use in a Scenario for Conversion to Organic Farming*. Optimizing Nitrogen Management in Food and Energy Production and Environmental Protection: Proceedings of the 2nd International Nitrogen Conference on Science and Policy. TheScientificWorld 1 (2001) (in press)

Kjeldsen, C. (2000) : *Predicting crop allocation on field scale*. Proceedings, GIS 2000 - 14th Annual Conference on eographical Information Systems, March 13-16, 2000, Metro Toronto Convention Centre, Toronto, Ontario, Canada

Name (age): Pia Johansen (41)

Education: Td Human Ecology, stud. MA (European master in Society, Science and Technology), Landscape gardener Engineer.

Present position: Project assistant, Department of Economics, Politics and Public Administration. Aalborg University and Project assistant, Danish Centre for Rural Research and Development

Former positions: Organic farmer, 2 years Grass-root Research on local food supply supported by Ministry of Food, Agriculture and Fisheries

Name (age): Saki Ichihara (29)

Education: M.A. (Society, Science & Technology in Europe); B.A. (International Relations)

Position: Research trainee

Network: Hyogo Research Centre for Quake Restoration (Japan).

Partners attached to the research group (WP1A, WP2A,WP3) ('Delphi-panel')

Name (age): Jens Christensen (57)

Education: Land surveyor, Ph.D., Dr. of science

Current main position: Associate Professor, Department of Development and Planning, Aalborg University

Other positions of relevance: Member of the Study Committee for the Studies in philosophy and theory of knowledge

Primary research interest: View of Nature. Philosophy of science and knowledge. Alternatives to the dominating cultural, technological, and social development (multidisciplinary and historical perspectives, as well as a philosophical approach)

Selected publications (max. 3): Jens Christensen (1998). *Alternativer - Natur - Landbrug (Alternatives - Nature - Agriculture)*. Akademisk Forlag, Denmark.

Name (age): Finn Arler (46)

Education: M.A. (Philosophy); Ph.D. (Philosophy)

Current main position: Associate Professor, Department of Planning and Development, Division of Technology and Society, Aalborg University

Other positions of relevance: Board of Representatives, Danish Nature Council.

Primary research interest: Environmental Ethics; Political Philosophy; Theory of Science

Selected publications (max. 3): F. Arler & I. Svennevig (eds.): *Cross-Cultural Protection of Nature and the Environment*, Odense: Odense University Press 1997

F. Arler: "Global Partnership, Climate Change and Complex Equality," in: *Environmental Values*, vol. 10 (2001): 301-29

F. Arler: "Distributive Justice and Sustainable Development," in: *Our Fragile World: Challenges and Opportunities for Sustainable Development*, Paris: UNESCO 2001.

Networking of relevance (max. 3): Society for Human Ecology; Society for Environmental Ethics

Name (age): Hugo Fjelsted Alrøe (37)

Education: M.Sc. (Horticulture), Ph.D. (Organic Agriculture and Philosophy)

Current main position: Postdoctoral Scientist, Danish Research Centre for Organic Farming

Other positions of relevance: Member of the Board of Editors for *Studies in Pragmatism and Values*, a special series of the Value Inquiry Book Series published by Editions Rodopi.

Primary research interest: Philosophy of science, research methodology (agriculture); ethics, value inquiry (environmental ethics, animal welfare); sustainable agriculture (organic farming).

Selected publications (max. 3): Alrøe, H.F. and Kristensen, E.S. *Towards a systemic ethic: In search of an ethical basis for sustainability and precaution*. Forthcoming in *Environmental Ethics*.

Alrøe, H.F. and Kristensen, E.S. *Towards a systemic research methodology in agriculture: Rethinking the role of values in science*. Forthcoming in *Agriculture and Human Values*.

Alrøe, H.F., Vaarst, M. and Kristensen, E.S. (2001) Does organic farming face distinctive livestock welfare issues? A conceptual analysis. *Journal of Agricultural and Environmental Ethics* 14(3): 275-99.

Networking of relevance (max. 3): The European Society for Agricultural and Food Ethics (EurSafe); The Science and Environmental Health Network (SEHN); Sustainable Rural Environment and Energy Network (SREN) – Working Group on Organic Farming Research.

Name (age): Jesper Holm (45)

Education: M.Sc. (Technological and Socio-Economic Planning)

Current main position: Associate professor, Dept. of Environment, Technology and Social Studies, Roskilde University

Other positions of relevance: Guest Associate Professor at Dept of Political Science, Copenhagen University 1997-2003.

Director of the development of a post graduate M.A. education in Environmental Studies, Communication and Transition, 2000-2002

Primary research interest: Relevant ongoing research, all transdisciplinary studies in social and technological applied science: **a)** Environmental Innovation in Industries, networks, institutions and the role of environmental and technological policy. **b)** Local democracy and the environment. **d)** Environmental communication, in service- and product chains, and among environmental stakeholders to companies.

Selected publications (max. 3): Jesper Holm, Inger Stauning and Kurt Aagaard Nielsen: Ecological modernisation and 'Our Daily Bread', Differentiations in the transformation of the food sector, Paper for The Nordic Environmental Research Conference "The Ecological Modernisation of Society" in Aarhus, May 2001

Hansen, O. E. Jesper Holm, Bent Søndergård Technological R&D in Organic Agriculture, Subvention for Markets and Normalisation through Environmental Policy and Eco-labeling The Retail Chain Kvickly - first mover on full organic transformation of bakeries, Working paper in The ENVINNO- project, February 2000 (unpublished). Roskilde University

Jesper Holm: LA 21 and Political Modernisation: Toward a New Environmental rationality in Denmark?, in Bill Lafferty (ed): Implementing Local Agenda 21 in Europe, ProSus, Oslo 1999

Networking of relevance (max. 3): Member of three international concerted action programs under EU: *Sustainable Communities in Europe*, co-ordinated by Prof. William B. Lafferty, ProSus, (ended); *International Environmental Regimes*, co-ordinated By Lasse Ringius, DMU, Roskilde; *European Network for Sustainable Urban and Regional Development Research*, (ENSURE)

Name (age): Carsten Daugbjerg (39)

Education: M.Sc (politics), Ph.D (politics)

Current main position: Associate Professor, Dept. of Political Science, Aarhus University

Other positions of relevance: Head of the Public Policy Division, and member of the Board of Studies, Dept. of Political Science, Aarhus University

Primary research interest: Agricultural policy, Environmental policy, Government-Interest Group relations

Selected publications (max. 3): Daugbjerg, Carsten og Gert Tinggaard Svendsen (2001), *Green Taxation in Question: Politics and Efficiency in Environmental Regulation*, Basingstoke: Palgrave. Daugbjerg, Carsten (1998), *Policy Networks under Pressure: Pollution Control, Policy Reform, and the Power of Farmers*, Aldershot, UK: Ashgate Publishing

Daugbjerg, Carsten (1999), "Reforming the CAP: Policy Networks and Broader Institutional Structures", *Journal of Common Market Studies*, vol. 37, no. 3, pp. 407-28.

Networking of relevance (max. 3): The Bond Scheme Research Project.

Name (age): Hanne Tanvig (49)

Education: M.Sc. (Regional planning); Ph.D. (Local industrial development and local industrial policy)

Current main position: Head of Centre, Danish Centre for Rural Research and Development

Asc. Professor, University of Southern Denmark

Other positions of relevance: Danish representative in 'Nordic-Scottish University Network for Rural and Regional Development', Member of the 'Think Tank for Danish Small Islands', Member of the Representative Assembly of 'The Danish Town Planning Institute'.

Primary research interest: Innovation, social capital, entrepreneurship, and industrial development in rural areas.

Selected publications (max. 3):

Hanne Wittorff Tanvig (1999): Rural Areas Between Agricultural Societies and Suburbs – Can't it be a bit better? I: Magnar Forbord & Tove Stavrum (eds.): Rural and regional development in Northern Periphery. Report 4/00. Centre for Rural Research, Trondheim

Hanne W. Tanvig (2000): Rural Innovative Strategies- a New Regional Paradigm. Paper presented at the conference: European Rural Policies at a Crossroad, June 2000, Arkleton Centre, Aberdeen University.

www.abdn.ac.uk/arkleton/conference2000

Hanne W. Tanvig (2001): Sustainable rural development as a tool for innovation in rural areas. I: Neil Chisholm (ed): Rural and Remote Regions: Strategies for Sustainable Development. Proceedings of the 1998 Nordic-Scottish Universities Network Conference. Whistles Publishing, Caithness.

Networking of relevance (max. 3): Nordic-Scottish University Network for Rural and Regional Development; Think Tank for Danish Small Islands; The Danish Town Planning Institute

Name (age): Erik Christensen (56)

Education: M.Sc (Political Science)

Current main position: Associate Professor, Department of Economics, Politics, and Public Administration, Aalborg University

Primary research interest: Ecological Economics (Economics), Political language and discourses (Political Science), Basic Income (Sociology)

Selected publications (max. 3): Christensen, Erik & Klaus Lindegaard (1997) An environmental contribution towards the environmental debt: A green tax reform. IN Report on the conference about green taxes and duties in international perspective:

Green taxes and Duties - a way towards a better environment and increased employment. SID. The General Workers Union in Denmark. May 1997. pp.46-59.

Christensen, Erik (1999) Citizen's income as a heretical political discourse: The Danish debat about citizen's income IN Jens Lind, Iver Hornemann Møller (ed.) Inclusion and Exclusion: Unemployment and Non-standard Employment in Europe. Aldershot: Ashgate. pp. 13-33.

Christensen, Erik & Jørn Loftager (2000), Ups and Downs of Basic Income in Denmark. IN Robert van der Veen and Loek Groot (eds.) Basic Income on the Agenda. Policy Objectives and Political Chances. Amsterdam: Amsterdam University Press pp.257-268.

Networking of relevance (max. 3): Basic Income European Network, NOAH.

Name (age): Mette Stjernholm Meldgaard (44)

Education: M.Sc. (economics), gardener.

Current main position: Policy analyst, The National Association for Organic Farming

Other positions of relevance: Coordinator of the Danish IFOAM work. Member of the BIOTIK network group under the Ministry of Trade. Board member of the IFOAM EU regional group. Chair of their policy subcommittee. Member of the rural development committee under the Ministry of Food and Fishery.

Primary research interest: Working areas; Policy issues including Eu-agricultural policy and biotechnology relations to organic agriculture. International affairs and certification.

Networking of relevance (max. 3): IFOAM; the EU regional group. The Nordic group for technical issues and the Nordic policy group.

Name (age): Arne Remmen (47)

Education: M.A. (Social science and Psychology); Ph.D. (Lic.techn., Technology Assessment)

Current main position: Associate Professor, Department of Development and Planning, Aalborg University

Other positions of relevance: The Council for Cleaner Products, appointed by the Minister of Environment; The work-group for developing a Green Industrial Policy, appointed by the Minister of Industry.

Primary research interest: Pollution Prevention, Environmental Management, Public participation, Environmental and Industrial Policy,

Selected publications (max. 3): *Pollution Prevention, Cleaner Technologies and Industry.* in: Arie Rip, Tom Misa, and Johan Scot (Eds): Managing Technology in Society. The Approach of Constructive Technology Assessment. Pinter Publishers. 1995. *Environmental Management and Employee Participation - Learning processes in environmental teams.* (with Børge Lorentzen) Journal of Cleaner Production, nr.8, vol. 2000.

Greening of Danish Industry. Changes in Concepts and Policies. Technology Analysis & Strategic Management. Vol. 13, Number 1, 2001.

Networking of relevance (max. 3): The Greening of Industry Network; European Roundtable on Cleaner Production,

Name (age): Egon Noe (40)

Education: M.Sc. (agronomy), Ph.D. (Rural sociology)

Current main position: Researcher, Dept. Agricultural Systems, Danish Institute of Agricultural Science (DIAS), Research Centre Foulum, Tjele

Primary research interest: Farm management and decision-making, (Sociology, agronomy economy). Development and evaluation of tools to include nature and landscape quality concerns in farm management and of tools to enrol local actors in the decision making concerning environmental problems and landscape management within organic and conventional farming (Action research, qualitative interviews and surveys). Dissemination of organic farming (Actor network theory).

Selected publications (max. 3): Noe, E. & Halberg, N. 2000. Research Experience with Tools to Involve Farmers and Local Institutions in Developing More Environmentally Friendly Practices. In press in Berlin Co-operative Studies. Proceedings of the 64th EAAE-Seminar: Co-operative Strategies to cope with Agri-Environmental problems" Berlin, October 27-29, 1999.

Noe, E. 1999. Værdier, Rationalitet og Landbrugsproduktion. Belyst ved en microsociologisk undersøgelse blandt danske økologiske og konventionelle kvægbrugere. (Values, Rationality and Farming – Examined in a micro sociological study of organic and conventional dairy farmers) Ph.D. thesis. Department of Economic and Natural Resources at the Royal Veterinary and Agricultural University. ([English abstract](#))

Noe, E. (2000) Strengths, Weaknesses and priorities of farmers' initiatives. Pp 89-145 in Assouline, G. and F. Just ed. Making Agriculture Sustainable – The role of farmers' networking and institutional strategies. Final report. European Research Project DGXII. Contract No. ENV 4-97-0443 and IC20 CT-97-0035. <http://esb.sdu.dk/~hkr/MAS/Reports/MASReport2.pdf>

Name (age): Jesper Rasmussen (47)

Education: M.Sc. (Agonomomist); Ph.D. (Crop Husbandry and Weed Science)

Current main position: Associate Professor, Department of Agricultural Science, The Royal Veterinary and Agricultural University

Other positions of relevance: Project leader of CARMINA (FØJOII project), Member of the project assessment panel "Organic farming" under The Sweish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS)

Primary research interest: Soil tillage, Weed management, Attitudes and learning styles

Selected publications (max. 3): Rasmussen, J. & T. Svenningsen (1995): Selective weed harrowing in cereals. Biological Agriculture and Horticulture 12: 29-46

Rasmussen, K. & J. Rasmussen (2000): Barley seed vigour and mechanical weed control. Weed Research 40 219-230

C.B. Henriksen, J. Rasmussen, C. Søgaard and E.S. Jensen (2000): Effect of ridges on soil nitrogen and growth of a subsequent barley crop. In J.E. Morrison (ed): Proceedings of the 15th International Conference of the International Soil Tillage Research Organization.

Networking of relevance (max. 3): The European Weed Research Society - Physical Weed Control

Name (age): Ane Bodil Søgaard (60)

Education: M.Sc. (biology); Ph.D. (genetics)

Current main position: Associate Professor, Department of Agricultural Sciences, Organic Farming Unit, The Royal Veterinary and Agricultural University

Other positions of relevance: member of the food policy committee. The ministry of foods agriculture and fisheries, member of The Plum ecology Foundation, member of The Gaia Foundation, member of The Center for Biotechnology and Risk.

Primary research interest: Secondary metabolites (chemistry), Food quality (agronomy) and health Value based research.

Selected publications (max. 3):

Networking of relevance (max. 3):

Name (age): Eskild Holm Nielsen (39)

Education: M.Sc. (science); Ph.D. (Environmental policy and environmental management systems)

Current main position: Associate Professor, Department Development and Planning, Aalborg University

Other positions of relevance: Appointed as National Member of Technical Working Group for "Food, Drink and Milk" under the IPPC directive, member of the study board for surveyors and planners Aalborg University.

Primary research interest: Environmental Policy and Management; Barriers and means for implementation of Pollution Prevention and macro); Multidisciplinary reseach methods.

Selected publications (max. 3): Christensen, Per og Nielsen, Eskild Holm: *The enviromental policies of firms certified according to BS 7750*. Eco-Auditing and Management vol. 4 number 2.1997.

Nielsen, Eskild Holm: *Experience of environmental management in the Danish fish-processing industry*. in : Hillary, Ruth : Environmental Management Systems and Cleaner Production, Wiley, 1997

Christensen, Per, Nielsen, Eskild Holm & Remmen, Arne : *Environmental Management Programmes. Promoting New Forms of Reflexive Governance in Danish Industry*. Paper presented at 1st European Dialogue Conference on Science for a Sustainable Society Integrating Natural and Social Sciences. Roskilde University. 26-29th of October, 1997.

Networking of relevance (max. 3): LUCED I&UA Linked University Consortium for Environment and Development – Industry and Urban Areas

Name (age): Bent Hindrup Andersen (58)

Education: M.Sc. (architecture)

Current main position: Researcher, Danish Institute of Agricultural Science (DIAS), Research Centre Bygholm

Primary research interest: Development of alternative systems for pig production based on comprehensive ecological principles and animal welfare

Selected publications (max. 3): Andersen, B. Hindrup, DJF, 2000. Concept for ecological pig production in one-unit pens in twelve-sided climate tents. Design and layout. In: Ecological Animal Husbandry in the Nordic Countries. DARCOF report 2, 63-75.

Andersen, B. Hindrup, Jensen, R & Frank, H., 2000. The one unit tent in organic pig production", 13th International IFOAM Scientific Conference, 28-31 August, 2000, Basel.

Møller, H.B., Sommer, S.G. & B.H..Andersen, 2000. Nitrogen mass balance in deep litter during the pig fattening cycle and during composting, Journal of Agricultural Science, Cambridge 135: 287-296.

Name (age): Jeppe Læssøe (48)

Education: M.Sc. (Psychology); Ph.D. (Communication and Educational Research)

Current main position: Senior Scientist, Department of Policy Analysis, National Environmental Research Institute.

Other positions of relevance: Research member of the Nordic Consumer Committee, Nordic Council of Ministers, member of the advising committee for consumer research, The Ministry of Trade and Industry

Primary research interest: Public participation in sustainable development. Changes in lifestyles and consumption. Environmentalism.

Selected publications (max. 3): The Making of the new Environmentalism in Denmark, pp. 66 – 120 in Jamison, A, R. Eyerman, J. Cramer with J. Læssøe: "The Making og the New Environmental Consciousness – A Comparative Study Of The Environmental Movements in Sweden, Denmark and the Netherlands", Edinburgh University Press, 1990

User-participation in the Shaping of New Technology, in Müller, W. & Senghaas-Knobloch, E. (edt): "Arbeitsgerechte Softwaregestaltung – Leitbilder, Methoden, Beispiele", LIT-Verlag, Münster; Hamburg, 1993

Networking of relevance (max. 3): The Environment and Society network affiliated to European Sociological Association; Consumption, Everydaylife and Sustainability, an European Research Network which has been supported by European Science Foundation.

Name (age): Claus Heinberg (56)

Education: M.Sc. (geology), PhD (geology)

Current main position: Associate Professor, Department of Environment, Technology and Social Sciences, Roskilde University Center.

Other positions of relevance: Member of the Executive Board, National Union for Organic Agriculture.

Primary research interest: Ecological Experimental Zones; System Ecology and bio-crises, democracy and technology; Theory of science.

Selected publications (max. 3): Aagaard Nielsen, K., Agger, P. & Heinberg, C. 2000. Democratic Challenges in Risk Society. The problematic role of experts in environmental regulation - and how to improve democratic dialogue among experts and laymen. 224-229. Proceedings of the International Transdisciplinarity 2000 Conference. Zürich.

Name (age): Andrew Jamison (53)

Education: BA (History and Science); Ph.D. (Theory of Science)

Current main position: Professor, Technology and Society, Department of Planning and Development, Aalborg University

Other positions of relevance: Board of Directors, Danish Center for Environmental Social Science, 1998-2001

Primary research interest: Environmental Politics, Science and Technology Policy

Selected publications (max. 3): Ron Eyerman and Andrew Jamison, Social Movements. A Cognitive Approach. Polity 1991

Andrew Jamison, Science, Technology and the Quest for Sustainable Development, in Technology Analysis and Strategic Management, no 1, 2001

Andrew Jamison, The Making of Green Knowledge. Environmental Politics and Cultural Transformation. Cambridge University Press, 2001

Networking of relevance (max. 3): the European Network for Environmental Higher Education (ESSENCE); the Danish network for Technology Assessment (Tekværk); Danish partner in the EU project, Analysing Public Accountability Procedures in Europe.

Name (age): Niels Heine Kristensen (43)

Education: M.Sc. (Env. Eng.); Ph.D. (Sociology of Technology)

Current main position: Associate Professor, Department of Production and Management, Division of Innovation and Sustainability, Technical University of Denmark

Other positions of relevance: Co-ordinator for Master of Environmental Management, TechU; Manager of EU research project

Primary research interest: Sustainable Technology Development; Theory of Science; Environmental Management; Actor-Network Theory; Institutional Theory

Selected publications (max. 3): Niels Heine Kristensen, T. Nielsen 1997: "From alternative Agriculture to the Food Industry - The Need for Changes in Food Policy. The IPTS Report 20/1997.

Niels Heine Kristensen 1999: "From Social Movement to Food Industry - The dichotomy of Organic Food Production". Paper presented at the XVIII Congress of the European Society for Rural Sociology, Lund, August 1999.

Niels Heine Kristensen (forthcoming): "New relations between organic producers, distributors and consumers". Proceeding from the NJF conference on 'Urban Areas - Rural areas and Recycling - the Organic Way Forward?' October 2001

Name (age): Jakob Magid (40)

Education: M.Sc. (Horticulture), Ph.D. (Plant Nutrition and Soil Fertility)

Current main position: Associate Professor at the Plant Nutrition and Soil Fertility Laboratory, and Managing Director (½ time) for the university consortium (KVL / KU / RUC) on Sustainable Land Use and Natural Resource Management (SLUSE)

Other positions of relevance: Referee for 8 international journals; Referee for selection and final evaluation of Scandinavian research programmes; Deputy Chairman of KVL's Board for Developing Countries

Primary research interest: Land based nutrient management. Nutrient cycling and balances in agricultural, set-aside and natural land. Development and testing of methods to elucidate these processes with special reference to organic farming systems. Integrated interdisciplinary efforts on 'Recirculation of nutrients from urban to rural areas' (agricultural, health, technical and social sciences).

Selected publications (max. 3): Magid J. and Kølster P. (1995) Modelling nitrogen cycling in an ecological crop rotation - an explorative trial. *Biological Agriculture and Horticulture* 11,77-87.

Færge, J., Magid, J. and de Vries, F. P. (2001) Urban Nutrient Balance Modelling for Bangkok. *Ecological Modelling*, 139, 63-74

Magid, J., Dalsgaard, A. and M. Henze. (2001) Optimizing nutrient recycling and urban waste management - new concepts from Northern Europe, p. 137-141. *In: Waste composting for urban and peri-urban agriculture: closing the rural-urban nutrient cycle in sub-Saharan Africa.* Eds: Drechsel, P. and Kunze, D., CABI Publishing, United Kingdom.

Name (age): Pernille Kaltoft (36)

Education: M.Sc. (Eng.), Ph.D. (Environmental ethics and organic farming)

Current main position: Senior Scientist, Dept. of Policy Analysis, National Environmental Research Institute

Other positions of relevance: Member of the scientific board of the Danish research school for organic farming

Selected publications (max. 3): Pernille Kaltoft (2001): Teaching ethics in agricultural university. Paper for the Third Congress of the European Society for Agricultural and Food Ethics (EurSafe 2001)

Pernille Kaltoft (2001): Organic farming in late modernity: at the frontier of modernity or opposing modernity?, *In Sociologia Ruralis*, p. 146-158, vol. 41, no 1

Pernille Kaltoft (1999): Values about Nature in Organic Farming Practice and Knowledge. *In Sociologia Ruralis*, p. 39-53, vol. 39, no 1.

Research group (WP 1B and 2B)

Name (age): Niels Heine Kristensen (43)

Education: M.Sc. (Environmental Engineering), Ph.D. (Sociology of Technology)

Current main position: Associate Professor, Department of Production and Management, Division of Innovation and Sustainability, Technical University of Denmark

Other positions of relevance: Program manager for Master of Environmental Management, TechU; Manager of EU research projects (OMlaRD, COCaPROF)

Primary research interest: Sustainable Technology Development; Theory of Science; Environmental Management; Actor-Network Theory; Institutional Theory, Rural development, Organic production principles.

Selected publications (max. 3): Niels Heine Kristensen, T. Nielsen 1997: "From alternative Agriculture to the Food Industry - The Need for Changes in Food Policy. The IPTS Report 20/1997.

Niels Heine Kristensen 1999: "From Social Movement to Food Industry - The dichotomy of Organic Food Production". Paper presented at the XVIII Congress of the European Society for Rural Sociology, Lund, August 1999.

Niels Heine Kristensen (forthcoming): "New relations between organic producers, distributors and consumers". Proceeding from the NJF conference on 'Urban Areas - Rural areas and Recycling - the Organic Way Forward?' October 2001

Name (age): Thorkild Nielsen (43)

Education: M.Sc. (Geography.)

Current main position: Assistant Professor, Department of Production and Management, Division of Innovation and Sustainability, Technical University of Denmark

Other positions of relevance: Partner in a EU project: Omiard; Member of the Steering Committee for "Regional development and organic farming"

Primary research interest: Branch studies, technology changes, sustainable foodproduction and regulation. Published in these subjects with foodproduction, especially the organic foodsector, as empirical case.

Selected publications (max. 3): Niels Heine Kristensen, T. Nielsen 1997: "From alternative Agriculture to the Food Industry - The IPTS Report 20/1997

Nielsen, T.: Knowledge network and innovation in a danish dairy, (forthcomming) in AI & Society, 2002

Name (age): Maria Bruselius-Jensen (30)

Education: M.Sc (Technological and Socio-Economic Planning)

Current main position: Research Assistant, Department of Production and Management, Division of Innovation and Sustainability, Technical University of Denmark

Other positions of relevance: European research project "Organic Marketing Initiatives and Rural Development" (OMIaRD).

Publications: Aagaard-Nielsen, Kurt and Bruselius-Jensen, Maria (2001): "The dogme bread – a sustainable bread production". SALT (in Press)