



Social and Technological Transformation of Farming Systems: Diverging and Converging Pathways

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Workshop 1.8: Cooperation as a key issue for innovation and learning processes in sustainable land management

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Approaches of regional economy, rural sociology and industrial sociology as well as of innovation management stress the need for cooperation between different partners to generate innovations and position them successfully on the market. This workshop wanted to reflect theoretical approaches and empirical findings on innovation management and entrepreneurial cooperation from different fields of research with regard to sustainable land management innovations. The workshop discussed the following arguments:

1. Innovation for sustainable land management requires the integration of heterogeneous knowledge a) along the value added chain and of stakeholders from civil society and b) to be able to consider the different sustainability perspectives (ecological, economic and social). This is a prerequisite to generate specific sustainability qualities based on systemic innovations. These may be characterised as a bundle of products and services which can be traded on the market as well as of public goods like environmental benefits and biodiversity. The involved partners acknowledge these societal benefits.
2. Such sustainability innovations are confronted with competitive disadvantages in comparison to ways of production that externalise costs. The exchange in corporate innovation networks may compensate such disadvantages because cooperation is supposed to allow an efficient use of resources by each partner (focus on core competences), to facilitate risk sharing and to get access to new groups of consumers.
3. Cooperation for sustainability innovations is confronted with a dilemma. On the one hand, building social capital (trust) and developing comprehensive solutions for sustainable land management takes time. On the other hand, cooperation is supposed to foster rapid innovation cycles for economic purposes in order to compete in a dynamic competition. How can cooperative innovation networks cope with this dilemma?
4. The management of such cooperation is complex because a) not only the involved actors but society in general benefits from its additional value and b) it is difficult to build trust and common values in heterogeneous networks.

There is some empirical evidence that the relevance of cooperation for sustainable land use innovation is increasing during the last decade. Organisational forms like community supported agriculture, citizens' shareholder corporations, crowd funding, association of farmers and domestic fair trade initiatives show the broad variety of actors that get involved and the different purposes linked to cooperation in this field. However, many initiatives also do not succeed in establishing themselves on the market for a longer time. Papers for the workshop were asked to reflect the benefits and risks of cooperation for sustainable land use innovation based on empirical data/ case studies or theoretical approaches. Guiding questions were: Which forms of cooperation can be differentiated (heterogeneity of actors and fields of activities) and how are they linked to certain types of land use innovations? How is it assured that innovation processes in land use contribute towards sustainability? How are risks and benefits distributed in different forms of cooperation of sustainable land use? Is this distribution formalised or managed in informal ways? Which role do trust and personal relations play in cooperation for sustainable land use innovation? How can innovation networks be managed and which learning processes are taking place?

Cooperation management as a distinct function in innovation processes for alternative food production and consumption – potentials and limitations

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Abstract: Cooperation is an important function in innovation processes for sustainable land management. Thus, cooperation management may determine – as one key element – the success or failure of such innovations processes. One goal of the transdisciplinary research project ginkoo is the development of a tool “cooperation management” that supports practitioners to plan and to improve their cooperation. In this paper we develop the specificity of cooperation for sustainable land management conceptually. Against this background, we sketch a first prototype of this tool “cooperation management” that consists of three levels with a different degree of abstraction. The first level provides general questions for orientation about cooperation for sustainable land management. The second level displays key functions of cooperation in specific phases in a matrix. The third level will supply a set of instruments that supports the users in solving concrete problems of cooperation management addressing key functions of cooperation. Further, we present empirical findings of a pre-test of the prototype with practitioners in two case studies.

Keywords: Cooperation, sustainable land management, innovation, alternative food production, preservation of cultural landscapes

Introduction

Market oriented specialisation, division of labour and economies of scale in the food production system have led to enormous increases in efficiency – and often to unintended environmental and social side-effects that are not sustainable. We think, however, that there are many excellent ideas for sustainable land management but they do not succeed under the dominant conditions such as food markets, regulations, subsidies and consumer preferences. Hence, alternative forms of land management and niche innovations do not evolve automatically to replace the incumbent agri-food regime (Grin et al., 2010).

The transdisciplinary research project ginkoo¹ addresses this problem by adopting an innovation research perspective. It asks how the management of sustainability innovation processes can be better organised by coordinating actors, such as network managers, regional managers etc. The research project covers mainly socio-economic aspects that are relevant for the success of such innovation processes for sustainable land management but are often lacking due to a technology driven approach. Therefore, the ginkoo project strives for a management model of innovation processes which fosters systemic innovations (institutional,

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organisational, social innovations) and holistic systems solutions for sustainable land management.

The ginkoo-project chose a transdisciplinary research design in order to contextualise the research in a real world setting. We collaborate intensely with two organisations which develop innovations for sustainable land management. These project partners are the organic farmers' association "Naturland Marktgesellschaft" (trading branch of the organic farmers' association Naturland) and the Biosphere Reserve Spreewald. In the first case, small scale organic farmers seek to establish ethical organic poultry production. Partners cooperate along the value added chain trying to improve their technical knowledge and their joint economic performance. In the second case, the Biosphere Reserve Spreewald in the South-East of Berlin strives for alternative forms of land use and a value creation concept for marginal wetlands through regional cooperation in order to conserve valuable, typical cultural landscapes.

One crucial element in such innovation processes is cooperation.² Our goal is to develop, test and improve a tool "cooperation management" for sustainable land management which is one element of a broader approach for the management of innovations in sustainable land management. This tool aims to support small and medium sized organisations to plan and to improve their cooperation. It enables them to balance diverse goals and requirements, to estimate costs and benefits, strengths and weaknesses of their cooperation as well as to manage it more efficiently. Possible users of this tool are change agents like pioneers of sustainable land management in enterprises or NGOs and intermediary organisations that manage interrelations between diverse actor groups and sectors along the value added chain. The paper describes the process of developing the tool "cooperation management" and presents first results such as a prototype of the tool.

The paper has the following structure: in the next section we outline our approach and methods; we then present hypothesis about specific requirements of cooperation for sustainable land management that were derived from a literature review; in the following section we present preliminary findings - a first prototype of a tool "cooperation management" and empirical findings of a pre-test of the prototype in two case studies; we then discuss these first findings and, finally, draw conclusions for further research.

Approach and methods

One goal of the project is the development of a tool "cooperation management" that will be implemented, tested and refined in both ginkoo cases (ethical poultry production and *mise-en-valeur* of cultural landscapes) together with the practitioners. In line with a transdisciplinary approach we develop tools and solutions for cooperation according to the needs of the practitioners, implement, test them, and analyse and evaluate the results for refining and validating the tool. We follow an iterative research process where we combine a deductive with an inductive mode and reflect empirical results and practical outputs in several loops to obtain a robust tool which is transferable to other initiators of sustainable land management innovations.

² Other important aspects are acceptance, marketing, knowledge management etc. that are addressed in further work packages of the ginkoo-project.

Based on a literature review including various disciplines and research strands we developed a framework for analysing cooperation for sustainable land management. As a result, we formulated four hypotheses about the character of this type of cooperation. These hypotheses hint, on the one hand, at key challenges and characteristics for successful cooperation management for sustainable land management and are taken up in the structure of the prototype of the “cooperation management” tool. On the other hand, these hypotheses guide our empirical research about cooperation in the two cases with the ginkoo-practitioners and in further small comparative empirical case studies. Empirically we analyse the specificity of cooperation in innovation processes for sustainable land management, test tools and implement model solutions for the two case studies involved. A joint transdisciplinary situation analysis and an intense exchange with practitioners provide deep and detailed insights in both cases providing e.g. access to implicit knowledge about the specific cooperation.

In order to develop the tool “cooperation management” we proceed in the following way. We formulated hypotheses about specific requirements for cooperation for sustainable land management and corresponding challenges. These “guiding” hypotheses set the frame for a first prototype of the tool “cooperation management” for practitioners. In workshops with practitioners we tested the applicability and use of an early version of the prototype. These empirical results were used to refine the prototype of the tool which is presented here. Hence, this prototype is inspired by scientific *and* practitioners’ perspectives.

For the empirical research the following methods were applied: about 30 expert interview; document analysis; workshops with practitioners; and field excursions.

Conceptual approach and hypotheses

A thorough understanding of cooperation and its specificity with regard to sustainable land management is a prerequisite for cooperation management. A literature review provided insights into strengths and limitations of cooperation.

The perspective of *business administration* is a starting point to understand cooperation of enterprises. From this perspective the main motivation for cooperation is to achieve economic benefits through an improved market position (Swoboda, 2003). The underlying principle is that innovations can be introduced more efficiently to the market if each partner concentrates on its core competences. Via cooperation the enterprises get access to resources of other partners such as knowledge or market access and may accelerate innovation (Stein, 2003).

Additionally, *network sociology* and *industrial sociology* point out that cooperation goes beyond a purely economic optimisation strategy of single firms. Strategic cooperation is embedded in a network that relies on social relationships, communication and mutual trust. Consequently, social capital is a crucial element of cooperation and has to be developed in order to attain economic benefits (Sydow, 2010). Only a vivid social network may bring about innovation as an attribute of regional economic clusters (Porter, 1998).

Institutional economics emphasises the influence of a broader institutional context for cooperation. Rules and norms are crucial for the exchange between firms and other partners (North, 1992). Moreover, Ostrom points out that collective action and mutual dependency are important for designing the use of common pool resources which is linked with the natural environment through feedback loops (Ostrom, 1999, 2007). This is especially relevant for cooperation for sustainable land management. The more empirically oriented research of *rural*

sociology on (alternative) forms of land use reveal the importance of shared values and a similar entrepreneurial culture of the enterprises and organisations. Social relations and communication embed cooperation into social practices (Brunori et al., 2010; Holloway et al., 2007; Schermer et al., 2011).

From this review we derived crucial aspects for a cooperation management that aims to exploit the specific synergies of working together without overburdening the partners. Based on conceptual reflections we formulated four hypotheses on cooperation for sustainable land management:

a) Cooperation is a prerequisite for the provision of social, ecological and economic goods and services for sustainable land management.

Sustainable land management requires cooperation of heterogeneous actors along the value added chain, in regional settings and with actors from civil society, thus bringing together knowledge, expertise, resources and valuations from diverse perspectives in order to create sustainability qualities and avoid unintended negative effects. This form of cooperation for systemic innovation results in products and services for the market or public goods like ecosystem services which provide specific sustainability qualities. Coupling market goods and public goods as well as market actors and civil society is a main characteristic of innovations for sustainable land management.

b) Cooperation may stabilise the market position of sustainability actors with respect to the funding of the provision of sustainability qualities.

Innovations of sustainable land use management so far have disadvantages in the market compared to their conventional competitors since they externalise negative social and ecological effects to a lower extent. The project assumes that this structural disadvantage can be compensated for at least partly by cooperation. According to literature the exchange in corporate innovation networks is understood as “complementary cooperation” that allows the resources of each partner to be used more efficiently (focus on core competences), facilitates risk sharing and enables better market access (Sydow, 2010; Stein, 2003). Through “additive cooperation” the partners can also benefit from economies of scale. The other possible benefit of cooperation is to find partners who appreciate the created sustainability qualities (as e.g. organic production, fair wages, animal welfare) and are willing to acknowledge them by paying higher prices or providing other forms of financial compensation. These can be realised in producer-consumer cooperation or partnerships with public or private organisations (e.g. local communities, NGOs, foundations) and mostly result in niche markets. We assume that innovations in sustainable land management only succeed in the market and are able to overcome niche markets when they manage to optimise their alternative ways of production and, at the same time, generate additional forms of financial compensation – through cooperation.

c) Cooperation management for sustainable land management is a demanding task because it has to balance the competing goals of generating sustainability qualities and of stabilising the market position.

Cooperation for sustainability innovations is confronted with a dilemma. On the one hand, building social capital (trust) and developing comprehensive solutions for sustainable land management takes time. On the other hand, cooperation is supposed to foster rapid innovation

cycles for economic purposes in order to compete in a dynamic environment (Hirsch-Kreinsen, 2002). As a consequence, the balance between economic optimisation and providing holistic sustainability qualities is a specific challenge for the management of this type of cooperation and requires specific competences. A tool “cooperation management” therefore has to address a complex process with such diverse functions as allocating scarce resources, identifying an adequate range and number of partners and building trust between them

These hypotheses guide the conceptual development of the tool. They emphasise the twofold function of cooperation for sustainable land management. On the one hand, it helps to integrate diverse actors along the value chain as well as different types of knowledge, interests and capabilities in order to generate specific sustainability benefits (common goods etc.) and to internalise negative effects (synergetic cooperation). On the other hand, sustainability innovations are confronted with competitive disadvantages in comparison to conventional ways of food production that externalise costs. Cooperation may compensate these disadvantages and, thus, stabilise the economic position of the partners. This might be achieved either by economies of scale (additive cooperation) or by including partners who accept higher prices or provide additional compensation. This is considered as a crucial step towards a sustainable food economy where producers and consumers share responsibilities and accept higher prices for a better sustainability performance, at least in a niche market. However, cooperation of this kind is confronted with challenges, e.g. because of the heterogeneity of the partners, the direct competition with the conventional market, and the limited resources of the actors. These challenges need to be addressed by the tool “cooperation management”.

Results

In this section we present preliminary results with regard to cooperation management. First, we describe a prototype of the tool cooperation management, then empirical findings about testing the prototype are presented for both case studies, thus reflecting the deductive as well as inductive procedure.

Prototype of the tool “cooperation management” for sustainable land management

The tool is developed in order to support users:

- To consider if cooperation is useful to realise their ideas or not;
- To plan and initiate cooperation;
- To analyse a specific cooperation;
- To structure and manage it systematically;
- To reflect on its usefulness and effectivity in attaining the goals; and
- To finalise the cooperation if necessary.

The tool is planned as a comprehensive approach for cooperation management in sustainable land management that covers all relevant aspects without overstraining the actors. The tool thus has three different levels, each becoming more detailed and specific.

The prototype also consists of three levels that correspond with different degrees of abstraction. While the more general level provides orientation, the more detailed level gives (precise) instructions for specific actions or interventions. So the users can choose which degree of differentiation is appropriate for their purposes. Thus, the levels describe the ways

of using the tool and guide users during the implementation process which requires decisions about how to proceed with cooperation management. This implies valuations, identification of pressing problems and decisions for specific instruments. The three levels are:

- General questions for orientation about cooperation for sustainable land management;
- A matrix (respectively a table) that gives an overview about crucial functions of cooperation in specific phases;
- A set of instruments that support the users in solving concrete problems of cooperation management.

Following that idea of different levels, the first level of the tool should provide an overview to users of the characteristics of planned or current forms of cooperation. However, not all of these aspects are necessary for each user and every implementation. Hence the second level of the tool displays several key functions and elements of cooperation for sustainable land management. This helps to identify starting points for structuring and managing a specific cooperation. On the third level, the key elements of cooperation are linked with instruments that support the users in solving specific problems of cooperation management or inspire specific tasks of cooperation management. This level provides a tool kit for specific tasks.

Level 1: Guiding questions for orientation about the status of the cooperation

The following set of questions (Table 1) is organised around six central functions of cooperation management which we identified via literature reviews and our first empirical findings. The objective of this part of the tool “cooperation management” is to provide a systematic and comprehensive orientation about the current status of (intended) cooperation.

Table 1. Questions for orientation

1) Objectives of the innovation for sustainable land management and requirements for cooperation
<p>The questions distinguish between the objectives of the innovation for sustainable land management on the one hand and the requirements for cooperation that can be derived from that because cooperation is seen as a means to an end:</p> <ul style="list-style-type: none"> • Which qualities of sustainable land management does the <i>innovation</i> strive for? In which form, quality and degree? Which goals are excluded? • Are there principals or a mission statement for the innovation? • Can <i>cooperation</i> help to reach the aspired sustainability qualities in a better way? • How will provision of the sustainability qualities be financed – through the market or through other forms such as public money from subsidies, taxes, fees or private money from donations, funds, sponsoring etc.? Which kind of cooperation is suitable? • Does a (written) agreement about the goals of the cooperation exist? • How will you evaluate the success of the cooperation? <p>Milestone: Objectives for the cooperation are formulated.</p>

2) Actors and their resources

- Which actors are needed to reach the goals of the cooperation?
 - What types of organisations and actors are needed for the cooperation (enterprises, non-profit-organisations such as non-governmental-organisations, public entities, administration, associations etc.)?
 - With which resources (financial means, work force, time, land, knowledge, ideas, power, social networks, market access, reputation etc.) should they contribute to the cooperation?
 - What roles will they play in the cooperation (pioneer, expert, networker, promoter, mediator etc.)?
- Do the involved actors (individuals and groups) represent a broad range?
- Are actors lacking? Are there too many partners?
- Are the partners motivated, do they identify with the goals of the cooperation?
- Are the organisational cultures of the involved partners compatible (e.g. hierarchical vs. cooperative, formal vs. informal)?

Milestones:

- ✓ Partners for the cooperation are identified.
- ✓ Suitable partners are integrated in the cooperation.
- ✓ The “right” number of partners is involved.

3) Distribution of costs and benefits (input and output)

The questions distinguish between the overall cooperation and the level of the individual partners such as enterprises of the value added chain:

- Does the *overall cooperation* provide (or contribute to) the intended sustainability qualities? Is the cooperation effective?
- Which input (time, workforce, expertise etc.) does *each partner* bring into the cooperation?
- What is the benefit, what is the output for each partner? Does each partner consider the cooperation as worthwhile or profitable?
- How are “prices” made for the exchange of (sustainability) qualities of each partner in the cooperation?
- Are there rules and procedures to evaluate and redistribute costs for goods and services exchanged in the cooperation? Are they considered to be fair by all partners?

Milestones:

- ✓ The cooperation provides the aspired sustainability qualities.
- ✓ The partners consider prices and distribution of costs and benefits within the cooperation as being fair.
- ✓ Costs and benefits are balanced for each partner.

4) Structure of the cooperation: institutionalisation and (formal) agreement

- Are structures and tasks for the management of the cooperation clear?
- Is there a transparent distribution of responsibilities and accountability?
- Is it clear how decisions are taken in the cooperation?

- Is a network management established?
- Does a formal (legal) agreement about the cooperation exist? Or is there an informal agreement on the cooperation?
- How are the relations of power distributed within the cooperation? Is there a hierarchy?
- Do the partners consider the rules of the cooperation as fair?
- Are there rules for the exit of partners?

Milestones:

- ✓ Structure and rules for the cooperation are clear and accepted by all partners.
- ✓ A network management is established.
- ✓ A written agreement on the key points of the cooperation exists.

5) Operative steering of the cooperation and network management

The questions distinguish between the overall cooperation and the level of the individual partners such as enterprises of the value added chain.

- Is the cooperation effective?
- Does the (network) management enable efficient collaboration?
- How is the cooperation management financed?
- Is the management of the cooperation provided with a budget of its own?
- Does the network management monitor if the partners provide the (sustainability) qualities they agreed on (controlling)?
- Are moderation and conflict management established?
- Is there a regular evaluation of the goals and the performance of the cooperation?
- Do the partners consider the cooperation as efficient?

Milestones:

- ✓ The operative management of the cooperation works.
- ✓ Financing of the cooperation management is established.
- ✓ Conflict management exists.
- ✓ The partners consider the cooperation as being efficient.

6) Communication, knowledge management and cooperation culture

- How is the internal and external communication organised? How transparent is the communication?
- Do the partners provide their knowledge and expertise for the cooperation?
- How is the knowledge management organised? Can knowledge gaps be identified?
- How were/are lacking competences addressed (e.g. training, qualification, consultancy)?
- Do partners trust each other? Are measures implemented to improve mutual trust?
- How is the mutual perception of the partners (esteem, rivalry)?
- Is there a common moral concept? Does a team spirit exist?

Milestones:

- ✓ There is a communication concept.
- ✓ A knowledge management exists.
- ✓ The partners trust each other.

These questions sensitise users for crucial aspects and critical problems of their (intended) cooperation. Users can apply this part of the tool either by answering the questions on their own or by discussing them with colleagues and partners. This can be done in a “quick and dirty” way or in workshops. The questions implicitly refer to scientific knowledge (theories and empirical findings) but are formulated in a way that is close to the everyday experience of cooperation and, consequently, can be understood by users without previous scientific knowledge. The questions and “milestones” help users to evaluate the strengths and weaknesses of their cooperation, thus providing a comprehensive picture. These questions for orientation build a starting point when using the tool. Further, they can be discussed regularly in order to reflect about the status of the cooperation and its development.

Level 2: A matrix of central functions and phases of cooperation for in-depth analysis

The matrix combines six central functions of cooperation with four phases of cooperation that are: i) initiation and planning phase; ii) development phase (setting up the cooperation) iii) realisation of the cooperation; and iv) transformation of the cooperation including respectively the end of cooperation (Koller et al., 2006; Wodja et al., 2006). Central functions are allocated to those phases of cooperation in which they play a key role (see Table 2). After a quick orientation about the status of the cooperation by answering the guiding questions, the matrix provides a systemic overview over cooperation as a process. The matrix guides an in depth analysis of a specific cooperation and reveals links and interfaces between the different functions. Thus, main challenges for the cooperation can be identified and where to start improving cooperation management prioritised.

The **third level** of the prototype will be a **set of instruments** that exists only in a rudimentary form so far. In the next project phase we will search for suitable instruments and adopt or develop them for the specific requirements of practitioners from the two case studies. Step by step we will assemble a tool kit of various instruments that have different formats to facilitate cooperation management.

Table 2: Integrative matrix of phases as well as elements and functions of cooperation management for sustainable land management. (For each function/element the most relevant phase is highlighted with a grey background).						
	Objectives of innovation + requirements for cooperation	Actors and their resources	Distribution of costs and benefits (input and output)	Structure of the cooperation: institutionalisation and (formal) agreements	Operative steering of the cooperation and network management	Communication, knowledge management and cooperation culture
1. Initiation and planning phase	Clarify objectives of the innovation and need for cooperation; formulate guiding principle/ mission of cooperation	Identify suitable partners and attract them for cooperation; watch out for good mixture of partners	Level of cooperation: describe costs and benefits Level of individual organisation: distribution fuzzy/ relational, but perceived as being fair	First ideas regarding structure of the cooperation	Efforts for initiating the cooperation (contacting partners, moderating discussion about objectives, initiate measures for generating trust); conflict management if necessary	Informal (internal) approaching of potential partners (high level) Measures for trust building Development of a cooperation culture
2. Development phase			Level of cooperation: determine distribution of input and output/ costs and benefits; Level of individual organisation: describe costs and benefits, draft of distributional rules, perceived as being fair.	Concept for the structure of the cooperation. Distribution of tasks: decisional rules, cooperation, management. Power relations are clear → first contractual agreements	Efforts for the development of the cooperation: accompanying the structuration process, suggestions for managing the cooperation. Conflict management if necessary	Stabilise communication transparent design; Integration on the functional and experts level; Building trust and motivation; Develop appropriate way of management and communication

3. Realisation phase			<p>Level of individual organization; Determine costs and benefits; Controlling of a) Qualities of the cooperation, b) Costs and benefits of the partners.</p>	<p>Cooperation contract is signed; Gradual adjustment of the structure</p>	<p>Design of operational procedures: provision of sustainability qualities; Control compensation of efforts; Moderation and conflict management; Mode of financing the cooperation is established.</p>	<p>Establish internal and external systems of communication; Measures of establishing a cooperation culture; Establishment of a knowledge management.</p>
4. Transformation phase	<p>Check objectives, vision and adjustment</p>	<p>Check if there is a lack or abundance of partners</p>	<p>Check the distributional rules: are they perceived as being fair? Do the partners benefit from the cooperation?</p>	<p>Check the cooperation structure: is it appropriate, effective and efficient?</p>	<p>Evaluation of the operational processes; Continuous moderation and conflict management.</p>	<p>Check communication flows; Check cooperation culture; Develop knowledge management further.</p>

First empirical test of the prototype in two case studies in Germany

The levels 1 and 2 of the prototype of the tool “cooperation management” were pre-tested in a first step as follows: The authors conducted a workshop with the practical project partners for each case study. The practitioners received a description of the prototype (level 1 and 2) for preparing the workshop. During the workshop researchers and practitioners discussed the questions for orientation (level 1) and analysed key elements and crucial functions of cooperation (level 2) for each case. Researchers and practitioners deliberated about strengths and weaknesses of the cooperation in the two cases, sketched elements of a preliminary strategy for cooperation management, and identified a starting point.

After the workshop the researchers formulated an analysis of the status of the cooperation for each case that serves as a baseline for further research and transdisciplinary intervention from the project. Moreover, the researchers formulated first suggestions for the practitioners on how to proceed with their cooperation management.

The hypotheses allow comparison of cooperation in the two cases, identification of best practice and learning from mistakes. They guided the reflection about the transdisciplinary exchange. In the following sections the analysis of the cooperation is presented for both cases.

As a second strand the practitioners gave recommendations regarding further development of the tool prototype which will be considered in developing the tool further.

Ethical organic poultry production – “ei care”

The background of the innovation “ei care” by the organic farmers’ association Naturland Marktgesellschaft are negative externalities resulting from an increase of large scale animal production entities based on economies of scale in organic farming. Highly efficient chicken production has led to ethical societal discourses – leaving room for innovative solutions besides a value chain with monopolistic structures in the breeding of either egg laying hens or hens for meat production. The regional initiative “ei care” for an ethical organic poultry production started in 2011 and provides a holistic alternative to large-scale poultry production based on hybrid breeds. It is based on a dual purpose breed that allows for integrated egg and meat production at small mixed farms in the Berlin-Brandenburg region. The challenge is to link limited production levels with established value chain infrastructures and routines. This includes new forms of cooperation along the value added chain as well as between farmers and consumers.

Status of the cooperation: The ei care-cooperation is in the *realisation phase*. The cooperation along the value added chain started several years ago and produces eggs and meat which are marketed by a regional organic wholesaler for regional consumption.

Whereas the objectives of the general innovation are quite clear and explicitly formulated on the website of the ei care-project (<http://www.aktion-ei-care.de>), the *goals for the cooperation* of the partners are still fuzzy. Fundamental issues have to be clarified again and again because the goals are not explicit and not written down, which affects the transparency of the cooperation and its management. The cooperation involves strong *actors* especially the organic farmers’ association and an organic wholesaler as well as about eight rather small poultry keeping mixed farms. Still missing are hen breeding and meat processors who are

willing to deal with comparatively very small quantities as well as a stronger involvement of organic food retailers and consumers.

The *distribution of costs and benefits* along the value added chain is not transparent for all partners. The prices for the eggs and the meat are negotiated orally and are strongly oriented at market prices for organic poultry. They hardly correspond with the costs of the farmers. As a consequence, several farmers do not get a satisfying compensation for their costs, time and effort. The fuzziness of the goals is reflected also in the *structure of the cooperation*. Important responsibilities, tasks and functions are not explicitly described, a written agreement for the cooperation is lacking. Furthermore, the partners are under market pressure as pricing is dominated by the logic and channels of the food market. Some of them perceive the wholesaler as powerful within the cooperation whereas the wholesaler sees himself as exposed to fierce competition within the food commerce.

An effective *network management* and operative steering of the cooperation is hampered by the fuzzy goals and structure of the cooperation which especially lacks long-term planning and priority setting. The internal *communication* does not reach organic retailers who might promote the “difficult” (ie expensive and complex) ei care-products.

Identification of critical functions of the cooperation management and first recommendations: The analysis revealed cooperation problems with regard to the goals and structure of the cooperation as well as with the current configuration of the partners. Both main partners of the cooperation – the organic farmers’ association (also representing the farmers of ei care) and the organic wholesaler taking care of marketing a “difficult” product – are responsible for clarifying the goals, structure and “rules” of the cooperation. A shift towards a more formal cooperation management could make the cooperation more transparent for all other partners. Thus, a formal agreement about the cooperation would be a milestone in its development. In addition, new partners (especially for a more specific marketing of the alternative ei care-products) could stabilise the cooperation.

Selection of an instrument: During the pre-test workshop practitioners and researchers agreed on an instrument that facilitates formulation of a written agreement. The instrument to be developed (or adopted) will include blue prints and examples of legal cooperation agreements and suggestions for how to negotiate such an agreement between partners.

New forms of site specific land use and value creation for marginal wetlands for the conservation of typical cultural landscapes – Biosphere Reserve Spreewald

The Biosphere Reserve Spreewald, South-East of Berlin, is confronted with a phase out of site adopted grassland management practices on marginal wetlands because traditional forms of land use are at the margin of profitability. The maintenance of the typical cultural landscape of high natural value demands new forms of land management. The innovation in the Spreewald consists of a combination of new forms of land use such as landscape preservation funded by compensation payment schemes and the use of biomass for small scale thermal production as well as cooperation between land owners, land users, natural conservation and the tourist sector for financing the preservation of the typical cultural landscape that is demanded by tourists.

Status of the cooperation: A first empirical analysis of the cooperation focused on the establishment of a so called “environmental pool” which allows the concentration of measures

for natural and landscape preservation on a specific site. These measures are financed by the Regulations on Intervention under the Federal Nature Conservation Act which obliges an individual or organisation to compensate for environmentally harmful interventions. The cooperation for this environmental pool is in the *initiation and planning phase*.

The *objective* of this pool in a narrow sense is financing landscape preservation measures by funds from the Regulations on Intervention. In order to be entitled to use this money, the objectives have to be in line with the regulation. Cooperation is needed to establish this pool and to meet legal requirements. In a broader sense the cooperation strives to combine these measures with other activities for landscape preservation and to develop a comprehensive strategy for cultural landscape development in the biosphere reserve. Central *actors* for the pool are the agency responsible for the pool - in this case a citizens' foundation - land owners, land users, the environmental administration and the management of the biosphere reserve. For a broader strategy additional actors like environmental associations and tourism are needed but they are not yet involved.

The *distribution of costs and benefits* is mainly organised by legal standards and full-cost pricing for the measures over 20 years. Additional measures have to be financed by other funds like sponsoring from tourism, which is so far not the case. The *structure of the cooperation* is also shaped by legal regulation. Measures have to be approved by the environmental administration. Moreover, a broad strategy for developing the typical cultural landscape needs a wider and more flexible cooperation structure to be able to involve and motivate heterogeneous partners. This calls for a very active network management. Because of the early phase of the cooperation, *operative steering* of the cooperation (network management) and a *communication* concept are not yet well developed.

Identification of critical functions of the cooperation management and first recommendations. The central cooperation partners should strive for a broad strategy for developing the typical cultural landscape using the environmental pool and funds from the Regulations on Intervention as a cornerstone. The latter should not become the structure and the purpose of the broad strategy but serve as a means to this end. This implies the involvement of heterogeneous actors who all have stakes in the cultural landscape like agriculture, nature conservation or tourism. These potential partners need to be addressed from the beginning so they can develop ownership in this strategy. This requires them to have resources for cooperation and network management in order to motivate and bring together actors despite rival interests in cultural landscape.

Selection of an instrument: During the pre-test workshop a checklist for identifying suitable actors with adequate resources was identified as a useful instrument that could be developed for practitioners during the following week.

Discussion and reflection

The first test of the prototype (level 1 and 2) was considered useful by the practitioners in order to reflect their cooperation systematically. The questions for orientation (level 1) were assessed as easily applicable and could be discussed intuitively without profound previous knowledge about cooperation (theory). However, analysing the cooperation in detail using the matrix (level 2) required some knowledge about and experience with cooperation. The weighing of arguments and assessment of risks and opportunities for cooperation management was assisted by the researchers who gained deeper insights into the

cooperation at question. In both cases, trust and engagement are important assets. Challenges for cooperation are a clear definition of its goals, transparent internal and external communication and a fair distribution of costs and benefits between the partners as well as dealing with pressure from 'the market'.

The cases differ in the following way. The cooperation for the ethical organic poultry (ei care) is organised along the value added chain. Its products compete in the food market. Therefore they are exposed to market pressure that demands an optimisation of the production and marketing processes. In contrast the cooperation for alternative value creation to preserve typical cultural landscape in the Biosphere Reserve Spreewald, is organised following legal requirements and administrative procedures as a prerequisite to using finances from the Regulation on Intervention. There is hardly any market pressure with regard to funding through the Regulations on Intervention. When aiming for a broad strategy for preserving cultural landscape, however, a broad range of actors has to be involved and the goals of cooperation become even fuzzier than in the first case. This requires proactive network management.

The researchers got valuable feedback from the practitioners through the pre-test of the prototype. The formulation of the orientation questions was simplified at several points to foster a better understanding. Additionally the pre-test with the Spreewald case showed that an early check of the legal requirements and restrictions in the course of developing an innovation plays an important role.

Conclusion

In a next step, the prototype has to be developed further. The tool kit of specific instruments (level 3) has to be assembled step by step and tested with the practitioners. Further research on cooperation and on the tool "cooperation management" has to deal with the following questions:

- How far can "cooperation management" be decontextualised and developed as a generic tool for sustainable land management that is characterised by site specific and context sensitive solutions?
- What is specific to cooperation for **sustainable** land management? What are the particular challenges for this kind of cooperation management?
- Is cooperation for sustainable land management able to compete with conventional production in the market? What does this mean for the design of cooperation? Are new framework conditions needed?

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Collaboration for a more sustainable agriculture – when does it work?

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Abstract: Finding and implementing innovative solutions to sustainability problems in agriculture makes collaboration among farmers and other stakeholders indispensable. There has already been much work on conditions influencing success or failure of joint action in different contexts. However, aside from not providing insights specifically for collaboration in the context of sustainable agriculture, much of this research has been based on the investigation of one or a few case studies. Other works have investigated more specifically collaboration in the context of sustainable agriculture. Yet there is a lack of research on collaboration for sustainable agriculture that integrates insights into both internal and external factors for success and that assesses these factors against explicit and comprehensive success criteria. To fill these gaps, this research provides first results of a case survey of case studies of local or regional collaborative interventions in EU-countries that attempt to improve the sustainability of agriculture. The aim of this case survey is to identify which conditions contribute to or hamper general success of such interventions. Specifically, the first eight coded case studies were analysed to explore existence and type of causal relations between the (long-lasting) success of an intervention and factors related to group composition and social capital among involved actors on the one hand and factors of organisation and management of these interventions on the other hand. Apart from indicating a range of factors that potentially have an effect on the success of collaborative interventions for a more sustainable agriculture, for a selection of these factors mechanisms were identified through which this influence on success may occur.

Keywords: Sustainable agriculture, collaboration, case survey, success, social capital, shared norms, existing relations, management, capacity building, dialogue

Introduction

Finding and implementing innovative solutions to sustainability problems in agriculture makes collaboration among farmers and other stakeholders indispensable. On the one hand, cooperation has been identified as an important element of sustainable agriculture (Pretty, 1995; Bowler, 2002; Velten et al., 2015). On the other hand, addressing sustainability problems in agriculture often goes beyond technical fixes and requires systemic change, which includes for example changes in organisations, behaviour, and kinds of relations among stakeholders. For fostering such systemic innovations cooperation is also a key factor (Cooke et al., 1997). But under which conditions does cooperation lead to successful and long-lasting innovative solutions for sustainability problems in agriculture?

There has already been much research on why and under which circumstances joint action of different actors aiming at the achievement of a set of common goals is successful. Among these is literature on community-based natural resource management (CBNRM) (e.g. Measham & Lumbasi, 2013), collective action (e.g. Agrawal, 2001; Mills et al., 2011; Ramdwar et al., 2013), social networks (e.g. Newman & Dale, 2007), advocacy coalitions (Schlager, 1995), partnerships (Dyer et al., 2013), and cooperatives (e.g. Azadi et al., 2010). However,

aside from not providing insights specifically for collaboration in the context of sustainable agriculture, much of this research has been based on the investigation of one or a few case studies. Although small-N case study research allows deep insights into causal mechanisms, it does not allow identifying overall patterns and generalisability of the results remains critical.

Other works have investigated more specifically collaboration in the context of sustainable agriculture. For instance, the SOLINSA project studied 17 Learning and Innovation Networks for Sustainable Agriculture (LINSAs) in Europe and explored how successful LINSAs can be supported effectively and efficiently (Moschitz et al., 2014). Another example is a study of the Sustainable Winegrowing Programme (SWP) in Lodi, California, which assessed how effectiveness of this programme depended on different social processes (Shaw et al., 2009). While SOLINSA mainly focusses on how success of LINSAs can be supported from the outside, the study of the SWP concentrates on the influence of internal social processes on the effectiveness of this sustainable partnership. Furthermore, in the SOLINSA project, it remains rather unclear what is considered a successful LINSA, whereas in the study of the SWP success/effectiveness of a sustainable partnership is rather narrowly understood as a positive influence of the partnership on wine growers' attitudes towards and adoption of sustainable practices. Thus, there is a lack of research on collaboration for sustainable agriculture that integrates insights into both internal and external factors for success and that assesses these factors against explicit and comprehensive success criteria.

To fill these gaps, a case survey of a larger number of case studies of local or regional collaborative interventions that attempt to improve the sustainability of agriculture may provide answers as to which internal and external conditions contribute to or hamper general success of such interventions. This paper presents first and very preliminary results of such a case survey which compares cases from EU countries. These results are based on the first eight case studies that were analysed for the case survey. They provide insights about the effect of certain factors related to social capital, learning processes and management of innovation networks for sustainable agriculture on the long-lasting success of such networks.

In the following section, the methods used for the analysis are described in more detail followed by the presentation of the results. The subsequent discussion of these results is structured around, first, the question about which role social capital plays in cooperation for innovation for sustainable agriculture and, second, the question of how innovation networks for sustainable agriculture can be managed and which learning process take place within them. In the end, summarising conclusions are drawn.

Methods

This work is part of a larger research project that aims at evaluating which conditions contribute to or hamper the success of collaborative interventions on the local and regional level which attempt to improve the sustainability of agriculture in their municipality, region, landscape etc. For the purpose of this project, a case survey is conducted. Case surveys integrate a relatively large number of qualitative case studies by transforming the qualitative into quantitative data and in this way make them accessible to methods of quantitative analysis. This transformation is realised through the use of a predefined coding scheme and the expert judgement of coders. *“Thus, case surveys draw on the richness of the case material, on different researchers and research designs, and allow for a much wider generalisation than from single cases”* (Newig & Fritsch, 2009, pp. 4–5).

In following the recommendations of Bullock & Tubbs (1987), Larsson (1993) and Newig & Fritsch (2009) for conducting a case survey, as a first step a definition of what would be considered a case was established in order to define criteria for selecting appropriate cases:

A case is defined as an intervention (initiative, project, putting a legislation into practice etc.) which is realised on the local or regional level (i.e. any level above farm-level and below national level) and which aims at improving the sustainability of agriculture in the concerned locality or region and is carried out in any EU-country in collaboration with several actors.

An intervention is considered to aim at the improvement of the sustainability of agriculture if it seeks simultaneous improvements or maintenance of an already good status quo in each of the sustainability areas (environmental, economic and social). This does not imply that such interventions have to place equal weight on each of these areas but that they must not neglect any of these areas. In other words: interventions that aim at the improvement of the sustainability of agriculture may focus on only part of the areas but still need to pursue their objectives in these areas in a way that also benefits the remaining, non-focal areas.

This definition is designed in a rather broad way and thus also allows cases to be included in the analysis that only seek incremental innovations to improve the sustainability of agriculture rather than trying to fully realise sustainable agriculture (which in itself is a highly contested concept). The main reason for keeping such a broad definition is that “[i]ncremental innovation can be as successful as radical innovation as it is more likely to be adopted more widely at regime level.” (Moschitz et al., 2014, p. 20) As both incremental and radical change can advance the transition to sustainable agriculture, both are considered in this analysis.

Based on this definition, a comprehensive internet-based search for appropriate case studies was conducted using different search strategies, including for example searches of databases and snowballing. In a next step, all found publications were screened for usability in more detail. This procedure led to a final sample of 51 cases that met the case definition and that were described in sufficient detail in the available documents.

For the cross-analysis of these cases a coding scheme was developed which allows the translation of the qualitative case descriptions into quantitative and statistically analysable data. For this coding scheme related literature e.g. publications on farmer cooperatives, community based natural resource management, and collective action with relation to agriculture, rural development, or environmental and sustainability issues (see Table A1 in the annex) was reviewed for factors possibly influencing the success of an intervention. All factors found through this review were included in the coding scheme. They were transformed into variables, which ask to what extent a factor was present in a specific case. The answers to these questions are expressed in the form of a numeric code, mostly on an ordinal scale from 0 to 4. Additionally, the degree of reliability of information on which the judgement was based is coded for all variables, ranging from 0 meaning ‘insufficient information available’ to 3 meaning ‘explicit, detailed and reliable information available’.

In order to be able to evaluate if a factor has an effect on the success of a collaborative intervention for a more sustainable agriculture (CIMSA), the concept of success needed to be defined and decomposed and its elements needed to be integrated into the coding scheme (for more detail, see Velten, 2014). In this work, only three of these elements of success are

considered. These are (i) the ambitiousness of the objectives of the intervention, (ii) the degree of the achievement of the different objectives, and (iii) the durability of the achievement of the objectives (which does not only consider for how much time an intervention has *de facto* existed but also includes an estimation of the probability that the intervention and/or its achievements will continue for a long time). However, ambitiousness of the objectives is not analysed separately but rather feeds into the evaluation of the degree of goal achievement in the form of a weighted mean of the goal achievement, i.e. the more ambitious a goal, the more its degree of achievement influences the score of total goal achievement. Thus, here two success indicators, total degree of goal achievement $G(i)$ and durability of the achievement of the goals D_i , are applied.

After a pre-test of the coding scheme, the 51 usable case studies were coded in a pre-defined random order. Coding was done by the author and one additional researcher. The case studies were mainly coded by only one of the two coders. Some case studies were coded by both coders to keep understanding of the coding scheme aligned. In these cases the coding results were compared and codes that strongly deviated from each other (i.e. usually a difference of 2 or more between the codes) were discussed and adjusted where appropriate. The final coding values were integrated by taking the mean values.

In this work, very preliminary and tentative results are presented. For this purpose, only the coding results of the first eight coded cases were explored (Table 1). Furthermore only a subset of 80 variables of the coding scheme was analysed. These were variables related to characteristics of the group of involved actors on the one hand and factors of organisation and management of these interventions on the other hand. In a first step, correlation between each of these variables and 1) the degree of achievement of the goals $G(i)$ and 2) the durability of the achievement of the objectives D_i was calculated using Spearman's rho. The results of this quantitative analysis were used to indicate which variables possibly have a causal relation with the success of an intervention. Thus, for a selection of those variables that showed a significant correlation with either of the success indicators the existence and nature of the relation was determined in a qualitative way through within-case analysis and counterfactual thinking.

Table 1. Overview over the analysed cases (in the order of decreasing success if both success indicators are combined).

Case name	References	Country	Type of intervention	Level of the intervention	G(i)	D _i
Gailtal Alp Cheese	Rytkönen & Gratzner, 2010; Borg & Gratzner, 2013; Gratzner, 2013	Austria	Establishment of a PDO	County	4	4
Graig Farm Network	Kirwan, Slee, & Vorley, 2002; Marsden & Smith, 2005	United Kingdom	Farmer network for organic meat	Cross-county	3.17	4
Tradice Bílých Karpat	Kučerová, Lošťák, & Zagata, 2007; Tisenkopfs, Kovách, Lošťák, & Šūmane, 2011	Czech Republic	Cooperation to support small-scale fruit growers	Landscape	3.03	4
Upländer Farmer Dairy	Knickel, Schaer, & Sprenger, 2003; Staub, 2008; Strauch, Schaer, Peter, Gountaras, & Knickel (2002)	Germany	Organic dairy farmer cooperative	Cross-county	3.39	3.5
Tablehurst and Plaw Hatch Community Farms	Pilley; Ravenscroft & Hanney, 2011; Ravenscroft, Moore, Welch, & Hanney, 2013	United Kingdom	CSA – two biodynamic farms owned by a citizen cooperative	Municipality	3.44	3
BioPlus Berlin-Brandenburg	Segert & Zierke, 2004a, 2004b	Germany	Regional organic farming association	Subnational (federal state)	1.57	4
Zeeuwse Vlegel	Boef, de, 2000; Jongerden & Ruivenkamp, 2008; Oerlemans & Assouline, 2004; Wiskerke, 1995, 2003; Wiskerke & Oerlemans, 2004	The Netherlands	Initiative for sustainable production and marketing of baking wheat	Subnational (province)	1.84	2.5
Allmende Kontor Tempelhof	Münnich, 2014; Wunder, 2013	Germany	Community garden	Sub-municipality	3.25	1

Results

Results of the correlation analysis

Table 1 Table 2 shows the correlation coefficients for those variables/factors that have a significant correlation ($p < 0.1$) with either of the two success indicators as well as the kind of relation that literature suggests for these factors with the success of collaborative interventions (see Table A1 in the annex for references for the suggested relations).

Table 2. Influencing factors with significant correlations with degree of goal achievement $G(i)$ or durability of goal achievement D_i

Independent variables / influencing factors	Spearman's rho		Relation suggested in the literature between a factor and the success of an intervention
	Achievement of the goals <i>G(i)</i>	Durability of goal achievement <i>D_i</i>	
Characteristics of the group of involved actors			
<i>Composition of the group</i>			
Group heterogeneity (change)	-0.8332**	-0.0328	+/-
Group heterogeneity (end)	0.0123	-0.7847**	
Group size (beginning)	0.2857	-0.7042*	+/-
Independent variables / influencing factors	Spearman's rho		Relation suggested in the literature between a factor and the success of an intervention
	Achievement of the goals <i>G(i)</i>	Durability of goal achievement <i>D_i</i>	
<i>Social Capital</i>			
Pre-existing relations	0.7619**	0.2156	+/-
Shared norms (beginning)	-0.2561	0.7565**	+
Factors related to the management of the intervention			
<i>Rules and objectives</i>			
Explicit and defined objectives	-0.0137	-0.6298*	+
Compatibility of the objectives with the livelihoods and/or usual activities of the involved actors	0.0275	0.8202**	+
Complexity of the objectives	-0.1788	-0.7415**	-

Incentive for the involved actors to pursue the objectives of the intervention	0.2156	0.6351*	+
Incentive for the involved actors to collaborate	0.6274*	0.0145	+
Internal rules of the intervention can be changed by the involved actors	-0.6547*	0.1598	+
<i>Communication and decision-making</i>			
Dialogue (two-way information exchange) in the process of reaching decisions	0.6923*	-0.8738**	+
Mode of participation in decision-making allows the involved actors to contribute all of their relevant skills and expertise	0.1455	-0.7171*	+
Influence of the involved actors on decisions	0.2648	-0.8442**	+
<i>Other management factors</i>			
Clear criteria for eligibility to become a member of the intervention	0.2061	0.6394*	+
Inclusiveness of the intervention	0.7350**	-0.5007	+/-
Monitoring	0.2245	0.7573*	+
Intervention includes efforts to enhance capacities of involved actors	-0.4122	-0.7039*	+
Existence of a core group	-0.1690	-0.7204**	+
Achievement of self-sustenance of the intervention	0.2171	0.7075**	+

*p < 0.1, **p<0.05

Some of these results suggest relations between influencing factor and success of an intervention that are in line with the relations proposed in the literature, some results sharply contradict the literature. As these correlations are based on a rather low number of cases, it is questionable whether they are mere artefacts or are indeed backed-up by causal relations. Therefore, their primary use is to indicate the factors for which a more detailed qualitative analysis for causal relations is probably worthwhile. The following section presents such qualitative insights for four of these factors that have a significant correlation with one of the two success indicators: level or norms shared at the outset of an intervention, level of pre-

existing relations among the involved actors, level of capacity-building during the intervention, and the level of dialogue in decision-making.

Results of the qualitative analysis of causal relations

Relation between initial shared norms and the durability of achievements of an intervention

Correlation analysis indicates a positive relationship between the level of norms shared among the actively involved actors at the outset of a CIMSA and the durability of its achievements (Figure 1). In the cases included in this analysis, two types of mechanisms through which a high level of shared norms at the outset of an intervention may contribute to long-lasting achievements could be identified. First, by being present at the outset of an initiative, the common norms of the involved actors shaped structures and other features of the intervention. Through this process of the intervention epitomising the norms important to a great part of the involved actors, the intervention itself became important to the actors, which incited their commitment and adherence to the intervention. Second, a high degree of shared norms generated a sense of mutual dependence among the involved actors. Thus, initially shared norms tied the actors both to the intervention and to each other.

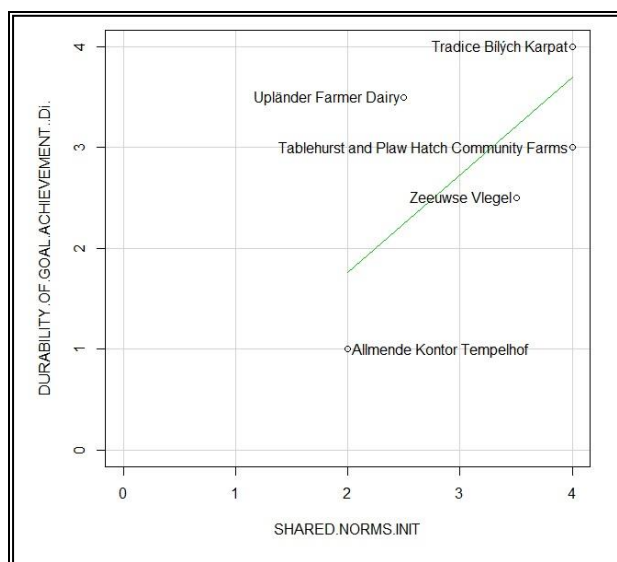


Figure 1. Scatterplot showing the relation of initial shared values and the durability of achievements. (The data points of *Graig Farm Network* and *BioPlus Berlin-Brandenburg* are in the same place as the data point of *Tradice Bílých Karpat*. There was no data available for initial level of shared norms for *Gailtal Alp Cheese*).

Both of these mechanisms are present in the cases of *Tradice Bílých Karpat* and *BioPlus Berlin-Brandenburg*. The intervention of *Tradice Bílých Karpat* (TBK) started in the early 1990s in the region of the White Carpathians in the Czech Republic with old local fruit growers and environmental NGOs. Their idea was to protect old local apple varieties and sustain local traditions. In the first years, the intervention was rather informal and was then formalised in 1998 in order to be able to receive a grant from a foundation. However, the old orchard owners did not join this new, formal TBK. Apart from this moment, a later value conflict between the idealistic world view of the members of the environmental NGOs and the more realistic stance of the (new) involved organic farmers threatened the continuance of the intervention. Yet, despite a high proportion of the original, founding members having dropped out of the initiative,

and the later emerging value conflict, the original shared norms still formed the heart of the intervention as “[t]he structure of the TBK o.s. collective [was] rooted in the special worldview: living in harmony with nature” (Kučerová et al., 2007, p. 10). Not only had the intervention come to mirror the norms that were still important to many of the involved actors, the common initial value basis also led to a feeling of mutual dependence, which held the involved actors together: “I feel we need each other because we make common things” (Kučerová et al., 2007, p. 12).

In the case of *BioPlus Berlin-Brandenburg*, a regional branch of an organic farming association in the States of Berlin and Brandenburg, Germany, the main shared norm in the beginning and also later on was one of mutual support in order to be able to farm organically. The norm of mutual support *per se* created a mutual dependence of the involved actors, which generated cohesion among them. The embodiment of the norm of mutual support in the intervention happened because mutual help in the form of a non-market exchange of resources and services came to be the central form of collaboration of *BioPlus Berlin-Brandenburg* (Segert & Zierke, 2004b).

Relation between pre-existing relations and the level of achievement of the goals of an intervention

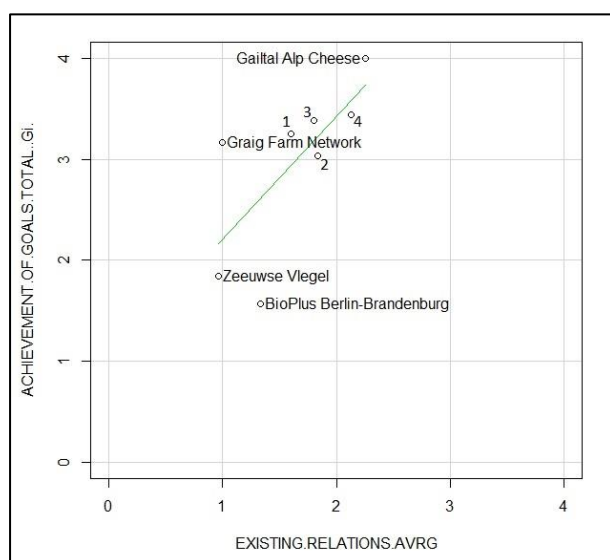


Figure 2. Scatterplot showing the relation of pre-existing relations and the level of goal achievement (the numbers in the graphic stand for the following cases: 1 *Allmende Kontor Tempelhof*, 2 *Tradice Bílých Karpát*, 3 *Upländer Farmer Dairy*, 4 *Tablehurst and Plaw Hatch Community Farms*).

The results of the correlation analysis suggest that a high level of pre-existing relations among the involved actors makes it more likely that a CIMSA achieves its goals (Figure 2). In the analysed cases this was the case, especially if the pre-existing relationships among involved actors included relations to actors in crucial positions. This was most apparent in the cases of the *Allmende Kontor Tempelhof* and *Gailtal Alp Cheese*.

In the case of the *Allmende Kontor Tempelhof*, a community garden established on the area of the former airport Tempelhof in Berlin, a couple of the founding members were especially well-connected to a diversity of actors in Berlin. Through their relations they were able to get

local authorities and an NGO involved in the intervention. Only through these actors did the intervention get access to resources that were necessary to fulfil its goals. For example, these existing relations allowed the *Allmende Kontor Tempelhof* to formally become part of the registered association “Workstation Ideenwerkstatt e.V.”. This step was necessary as one requirement for proposals for pioneer projects on the former Tempelhof airport area was that they be organised in registered associations. Becoming a registered association itself would have been too time-intensive, which is why the “Workstation Ideenwerkstatt” became the project executing organisation. Only in this way was the *Allmende Kontor Tempelhof* able to get access to an area for the establishment of a community garden (Wunder, 2013).

The case of *Gailtal Alp Cheese* was a state-led initiative in the Gailtal valley in Austria to apply for a Protected Denomination of Origin (PDO) for the local traditional cheese. Here, an already existing network among national government and regional authorities and organisations allowed the bringing together of necessary skills and resources and was “among the reasons why the project is often cited as an example of best practice at the national and international levels” (Borg & Gratzner, 2013, p. 31).

Relation between presence of capacity-building efforts in an intervention and the durability of its achievements

Surprisingly, correlation analysis suggests that including efforts to increase the capacities of the involved actors of a CIMSA makes the achievements of the intervention less long lasting (Figure 3).

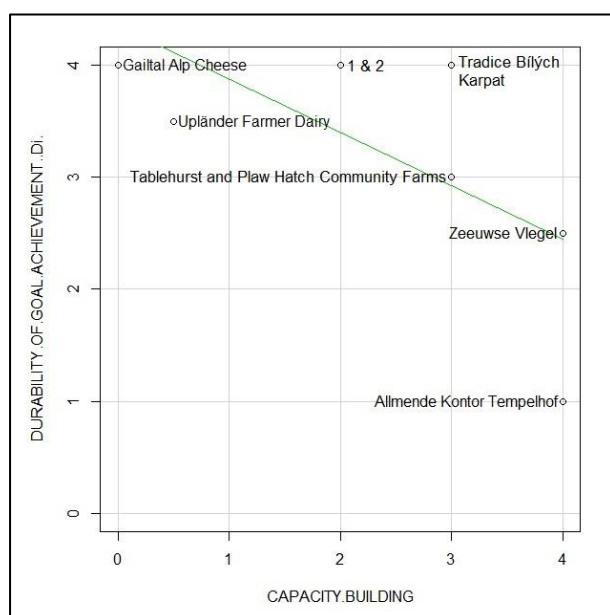


Figure 3. Scatterplot showing the relation of presence of capacity-building efforts in an intervention and the durability of achievements of the intervention (the numbers in the graphic stand for the following cases: 1 *BioPlus Berlin-Brandenburg*, 2 *Graig Farm Network*).

In the investigated cases, two types of relevant capacities were apparent: technical capacities, such as knowledge and skills for agricultural production; and networking skills, which allowed the involved actors to hold involved as well as associated actors together and keep the intervention going. Furthermore, there were two ways through which the necessary capacities

were made available to the intervention: either the intervention included efforts to increase the capacities of the involved actors (*Zeeuwse Vlegel*, *Graig Farm*, *Tradice Bílých Karpat*); or actors that already possessed the necessary capacities became part of the intervention (*Gailtal Alp Cheese*, *Upländer Farmer Dairy*).

A general mechanism through which capacity-building may impair the durability of the achievements of a CIMSA could not be detected in the investigated case studies. Only the case of the *Zeeuwse Vlegel* provided one example of conditions under which capacity-building efforts can impair the durability of an intervention or its achievements. This case received a medium score for capacity building because the involved actors focused on the enhancement of one capacity type (technical capacities) while the other capacity type (networking capacities) was neglected. Technical capacity building played a central role by enabling the involved actors to grow high quality baking wheat in an environmentally friendly way. Therefore, technical capacity building was indispensable to achieve some of the goals of the intervention. However, “*the learning process was focused too much on the technical aspects of sustainable baking-wheat cultivation. Learning about the management of network relations and network building was largely neglected.*” (Wiskerke, 2003, p. 445) Together with sales lagging behind expectations, this neglect of network building led to a deterioration of the commitment and sense of collectivity among members, which made many members think that the *Zeeuwse Vlegel* had “*had its day and [was] bound to fade away*” (Wiskerke & Oerlemans, 2004, p. 248)

However, it seems that an emphasis on technical capacity building is not necessarily detrimental to the durability of the achievements of a CIMSA as long as networking capacities are not neglected. Also in the other cases that included capacity building efforts, the focus was on technical capacity building. Yet, in these cases also networking capacities were developed. A very good example for this is the case of the *Allmende Kontor Tempelhof*. Here, the two types of capacities were enhanced jointly. Members were encouraged to form working groups dedicated to specific topics and motivate people to take over responsibility for these working groups (Wunder, 2013). Consequently, members involved in these sub-projects simultaneously obtained technical knowledge and skills related to the topic of the working group and at the same time learned how to manage a group or network of different actors working towards a common goal. (Note: The very low durability score of the *Allmende Kontor Tempelhof* (Figure 3) is mainly attributable to the limited time the area on the Tempelhof site was made available to pioneer projects such as the *Allmende Kontor*.) Thus, when it comes to capacity building efforts, what may impair the durability of a CIMSA and with that also the durability of its achievements is not so much an emphasis on but the neglect of one capacity type.

As for the effect the way in which capacities are brought into an intervention has - whether through actors with the necessary capacities or through capacity building efforts for the involved actors - it is hard to see clear patterns. Nevertheless, the case of *Gailtal Alp Cheese* shows that the model of making the necessary capacities available does not unavoidably leave the broad range of involved actors incapable and dependent on the actors who have important capacities. In the case of *Gailtal Alp Cheese*, the contrary happened. This intervention was initiated and led by state actors who had the necessary networking and management capacities. However, after some years, state actors were able to withdraw and hand over all responsibilities to the local actors (Rytkönen & Gratzner, 2010). Thus, the local actors had obtained the ability to manage and continue the activities of the intervention.

Relation between the level of dialogue in decision-making and both the degree of goal achievement and durability of the achievements

For the level of dialogue in decision-making, in the sense of two-way exchange among the involved actors, correlation analysis indicates a relation with both success indicators, yet with opposite directions: CIMSA where decision-making includes a high level of dialogue supposedly achieve their goals better (Figure 4a), but are less long-lasting (Figure 4b).

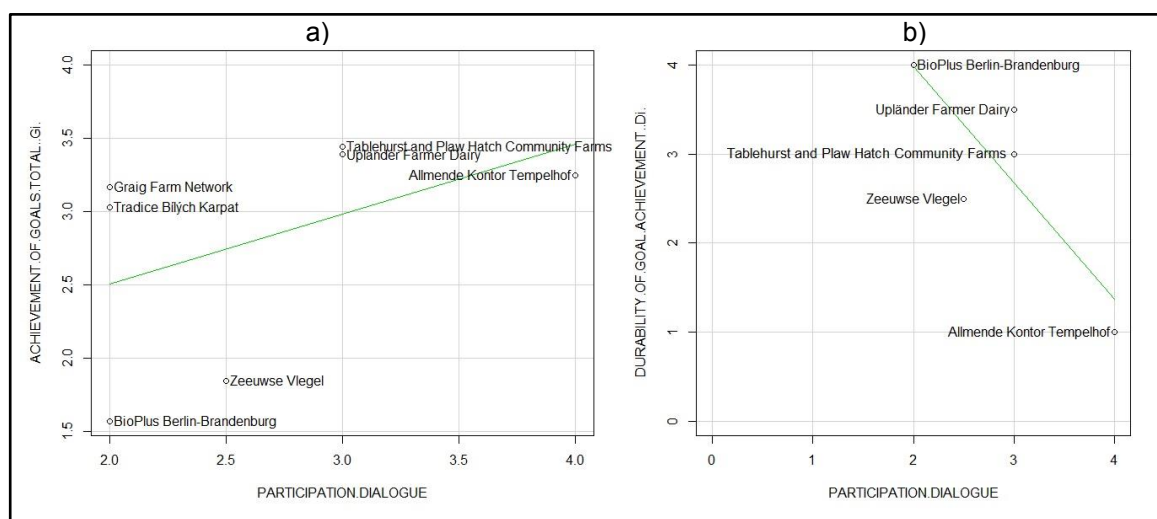


Figure 4. Scatterplots showing the relation of the degree of dialogue among involved actors in decision-making with a) the degree of the achievement of the goals of an intervention and b) the durability of the achievements (the data points of the cases *Tradice Bilych Karpat* and *Graig Farm Network* are in the same place as the data point of *BioPlus Berlin-Brandenburg*; no data was available for *Gailtal Alp Cheese*).

In the investigated cases, two ways were found in which dialogic decision-making may contribute to a higher degree of goal achievement. One type was identified in the case of the *Allmende Kontor Tempelhof*. This intervention saw involvement, engagement and communication not only as a means but as an end in itself. Therefore, making decisions in a dialogic way already fulfilled a part of the objectives of the initiative.

The other type of relationship was found in the case of the *Zeeuwse Vlegel*. This intervention mainly fell short on the achievement of its economic goals because it was not able to sell as much *Zeeuwse Vlegel* bread as the involved actors would have liked. More dialogue between the board and the remaining involved actors could possibly have led to decisions that could have increased sales. In the beginning of the intervention, there was a rather high degree of dialogue: “*In the design phase of the Zeeuwse Vlegel the bakers were actively involved in the design of the project, in particular in the construction of the bread concept. The product that emerged was the outcome of negotiations between farmers, bakers and environmentalists.*” (Wiskerke & Oerlemans, 2004, p. 258) However, in later stages the management board became less open towards suggestions from the actors who were not part of the board. Thus, the bread concept remained the same although changes to the concept could have boosted its sales as there were good ideas of how the bread could have been better sold, especially on the part of the bakers. Furthermore, the lack of openness of the board also impaired the

commitment and satisfaction of the involved actors. On another occasion the closed decision-making of the board resulted in both an impairment of the sales and an increasing resentment of the actors: by ignoring the voices of the broad range of involved actors, the board decided to sell the *Zeeuwse Vlegel* bread not only through bakeries but also through supermarkets; this in turn led to a refusal of the bakers in two large cities to sell the bread, which meant a great setback for the sales (Wiskerke & Oerlemans, 2004). The continuance of a two-way exchange between the board and the remaining involved actors could, on the one hand, have allowed the initiative to build on a broader set of insights to further develop and improve its products. On the other hand, more dialogue could have made sure that all interests were considered in major decisions so that they would have been acceptable to all involved actors.

While there is some evidence as to how dialogue in decision-making helps CIMSAs to achieve their goals, no mechanisms underlying a negative causal relationship between dialogue in decision-making and the durability of the achievements could be found.

Discussion

The discussion of the results is structured around the following two questions:

- What role does social capital play in cooperation for innovation for sustainable agriculture?
- How can innovation networks for sustainable agriculture be managed and which learning processes are taking place?

The role of social capital in cooperation for innovation for sustainable agriculture

It has been stated that cooperation for sustainability innovations in land management is confronted with a dilemma: on the one hand there is the need to build social capital - especially trust - which takes time; on the other hand such initiatives are supposed to foster rapid innovation cycles for economic purposes in order to compete in a dynamic competition. The question then is how to cope with this dilemma (Schäfer & Nölting, 2015).

Trust is the first thing one thinks of when hearing 'social capital'. Yet social capital also includes other kinds of relational resources. The analysis conducted in this work identified two other kinds of social capital to support the success of CIMSAs: pre-existing relations; and norms shared by the involved actors. A high degree of shared norms contributed to success by increasing the durability of an intervention and therefore of its achievements, especially if it occurred in the early phases of the intervention.

To avoid the above described dilemma, one possibility could thus be to build on these two types of social capital. This would of course require bringing together the 'right' actors, meaning that the intervention would have to involve from the start actors whose norms show a great overlap and among whom some relations exist already. Under these preconditions, which are not easily met in practice, these types of social capital would already be available from the beginning of an intervention and would not have to be built first. Additionally, if actors share the same norms and values, they trust each other more easily (Siegrist et al., 2000). Thus, apart from directly supporting the success of an intervention, shared norms and pre-existing relations also have the potential to catalyse the formation of trust among the involved actors.

Management of and learning processes in innovation networks for sustainable agriculture

The correlation analysis indicates that there is a range of different management-related factors that may have an influence on the success of a CIMSAs. For two of these factors - capacity-building efforts and dialogue in decision-making - it was assessed in more detail in which ways they might affect the success of such interventions.

Especially in CIMSAs, technical capacities for agricultural production often play an important role. However, our findings show that while no harm seems to come from focussing on technical capacities, it can be detrimental if there are efforts to enhance technical capacities alone while networking capacities are completely neglected. A good way to ensure that both capacities are enhanced is to develop them in an integrated way, as happened in the case of the *Allmende Kontor Tempelhof* where the involved actors formed self-organising working groups on specific, often technical topics. These working groups resembled what are called "communities of practice". Communities of practice share three characteristics: they have a shared domain of interest; they engage in joint activities and discussions; and they develop a shared repertoire of resources such as experiences, tools, way of addressing problems etc. (Wenger, 2006). Thus, encouraging self-organising communities of practice within CIMSAs can help to increase both technical and networking capacities at the same time.

Two further ways in which necessary capacities can be brought into a collaborative intervention were also identified: either the intervention included efforts to increase the capacities of the involved actors; or actors that already possess the necessary capacities become part of the intervention. Here, no clear pattern could be detected as to which of these two ways would be more beneficial. However, one case showed that bringing in actors that already have important capacities may lead to a transfer of these capacities to other involved actors. This may happen through peer-to-peer learning in practical situations that are relevant to the actors involved in a CIMSAs. Thus, engaging 'capable actors' in the intervention and having them use their capacities in the context of the intervention can be a way of capacity-building that is an alternative or supplementary to the usual capacity-building efforts such as training.

A high level of dialogue in internal decision-making processes can support CIMSAs to achieve their goals and therefore be more successful. On the one hand dialogue can be a means of obtaining important insights and information from the involved actors. With such an improved information base more appropriate decisions can be taken (Newig, 2007). On the other hand a dialogic way of taking decisions in a collaborative intervention can help to first get to know and then consider all interests in major decisions: in this way decisions are likely to be more acceptable to the involved actors. It is suggested that involvement in decision-making processes that are fair and based on mutual communication increases acceptance even if the final decision does not correspond to actors' expectations (Newig, 2007). A greater acceptance of decisions taken within CIMSAs will likely keep those involved more satisfied and motivated to continue to contribute to the intervention.

Conclusions

This work provides very preliminary results based on an analysis of the first eight investigated cases studies of a larger case survey. Through statistical analysis of data generated by coding eight case studies, this work identified a range of factors related to characteristics of the group of involved actors and factors of organisation and management of CIMSAs that possibly have

an influence on the success of these interventions in terms of the degree to which the interventions achieved their goals and the durability of these achievements. For some of these factors (shared norms, pre-existing relations, capacity-building and dialogue in decision-making), qualitative analysis revealed a range of mechanisms through which these factors may influence the success of such interventions. This helped shed some light firstly on the role of social capital in cooperation for sustainable agriculture and secondly on the management of and learning processes in innovation networks for sustainable agriculture. Despite the preliminary nature of these results they call attention to issues that should be considered in initiating and managing future co-operations seeking innovative and sustainable solutions to challenges in agriculture in order to help these efforts to lead to long-lasting success.

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