

Network between actors working in a Danish grant scheme for demonstration of plant genetic resources for food and agriculture

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This paper analyses how actors in a grant-scheme from the Danish Ministry of Food, Agriculture and Fisheries worked together. Three different kinds of teamwork were found: a governance network of all grantees and the Ministry, smaller formal teams, and informal partnerships. The formal teams had the closest links, characteristic of coordinative networks, which fits their purpose: to help each other to fulfil a shared application. The informal partnerships were found to be both cooperative and coordinative, which also suits their purpose: sharing various resources. The governance network had the most unstable connections, hardly a cooperative network, which does not meet the intentions: networking, inspiration and connecting the Danish government with the Danish plant genetic environment. It is discussed, whether this network can be improved to be a collaborative network, and the framework Collective Impact is used to analyse, what could be done to make it work. The principles of the collaborative governance network that could be established to govern the grant could also be used when elaborating a new program for plant genetic resources in Denmark. Looking to Norway and Sweden recommendations for the new program are given, which can also develop a more effective and resilient plant genetic environment in Denmark.

INTRODUCTION

This paper analyses a grant given out by The Danish Ministry of Foods, Agriculture and Fisheries (the Ministry of Food) to 28 institutions in 2008-14. Each made demonstration-projects for the public on Nordic agricultural crops and fruit types worthy of conservation. These are plant genetic resources for food and agriculture (PGR), and Denmark has an international obligation to conserve them and give knowledge about them to the public (FAO, 2009). As a part of the obligation demonstration projects were carried out by very diverse institutions, including museums, research institutions, pomotums, private companies, municipalities, communities and NGOs. Teamwork between these grantees was one of the purposes of the grant (The Danish Ministry of Food, Agriculture and Fisheries [the Danish Ministry of Food], 2008, 2011 and 2013), which was part of the first Danish PGR-Program and was initiated by the Danish Plant Directorate, the Department of Food, and the Directorate for Food, Fisheries and AgriBusiness (the Danish Ministry of Food, 2007a).

In a previous study the institutions in the demonstration-projects were found to have a potential to promote public education about PGR, because the demonstration projects:

- had relevant activities for dissemination of knowledge about PGR
- had activities which could help giving concrete expression to the abstract 'PGR'
- were well integrated in the institutions

The network of institutions was furthermore seen to have increased this potential, since all facilitated the same core message with the same overall purpose in many different places at the same time (Windfeldt & Madsen, manuscript in revue, 2016).

In addition to this the institutions worked together in different ways. As most of them are part of the plant genetic environment in Denmark, they still do so to a greater or lesser extent, though this particular grant scheme has expired. Therefore it is relevant to analyze how the institutions worked together in the 'Grant for demonstration projects about conservation and sustainable use of plant genetic resources' (Grant PGR) and give suggestions for improvement in order to make the teamwork more effective for future projects. Finally recommendations for elaborating a new Danish PGR-Program are given, which can also develop a more resilient plant genetic environment in Denmark. This is the focus of the present paper.

At first I define three different kinds of teamwork involving the institutions, then I analyse to which network-type (cooperative, coordinative, or collaborative) they belong. In 'Discussion' and 'Conclusion and Implications' I give recommendations of improvement that could make the teamwork function more effectively, using the framework Collective Impact. Finally a new Danish PGR-Program is described using the above analysis and looking to the programs in Norway and Sweden.

WHY UNITE IN A NETWORK?

First I will reflect on, why institutions working on grants should work together. Institutions working isolated might compete with each other, especially when asking for the same grants. When funders give out money to individual institutions, the outcome, at the same time, might be a duplication of some of the same results. By uniting the institutions will often be able to maximise the resources and reduce duplication and overlap (Mandell & Keast, 2009). This is also described by Hanleybrown, Kania, & Kramer (2012), discussing isolated versus collective impact: When funders select individual grantees, they want to choose the ones, which offer the most promising solutions. But more complex problems are often solved better in interaction of many institutions working together. This also overcomes competition, unite the efforts, and help working towards the same goal. This can – in the longer term – lead to better results, also giving cross-sector alignment and learning among many organisations (Hanleybrown, Kania, & Kramer, 2012).

THEORY

To analyse how the institutions work together, I use theory about *communities of practice*, which are subdivided into *cooperative* and *coordinative* networks. This gives the opportunity to distinguish between different ways to work together. A more sophisticated network is also described: the *collaborative* network (Mandell, Keast, & Brown, 2009).

In both *cooperative* and *coordinative* network-types participants are independent organizations and/or individuals coming together for a specific purpose. In cooperative networks it is to share information and expertise, while in coordinative networks the purpose is to better coordinate existing services. In both types of networks the status quo is maintained, meaning that working together does not make the institutions change the way they work, resources remains their own, and power remains with the organization (Mandell et al., 2009; Mandell & Keast, 2009).

According to Mandell et al. (2009) a network also exists, where participants are interdependent: a collaborative network. The definition of the collaborative network builds on the work of Innes &

Boher, which state that “the stakeholders must have full diversity of interests and at the same time interdependence, so that they cannot get their interests met independently” (Innes & Booher, 2010, p. 35). “This goes beyond just being dependent of the same resources, data needs, common clients or geographic issues, although these may be part of it.” (Mandell & Keast, 2009, p. 6).

Collaborative networks are only formed when there is a need to solve a complex problem. This means that “all participants must first recognize their interdependence on each other and their need to make major changes in their operations” (Mandell & Keast, 2009, p. 7).

In the work of Cordero-Guzman, 2001; Edwards & Stern, 1998; Huxham, 2000; Huxham, & Vangen, 1996; Keast et al, 2004; Walker, 2002 (as cited in Mandell & Keast, 2009) collaborative networks may be a mechanism to facilitate shared information and make use of new knowledge sets and resources. Through increased interactions and synergies, new and innovative outcomes that are not possible by working alone may be the result (Mandell & Keast, 2009). Collaborative networks are more resilient than the other two, but they demand more time – and often training of the institutions involved (Mandell et al., 2009). In table 1 the three different network-types and their characteristics can be seen.

Network Types		
COOPERATIVE	COORDINATIVE	COLLABORATIVE
Low trust — unstable relations	Medium trust — based on prior relations	High trust — stable relations
Infrequent communication flows	Structured communication flows	Thick communication flows
Known information sharing	'Project' related and directed information sharing	Tactic information sharing
Adjusting actions	Joint projects, joint funding, joint policy	Systems change
Independent/autonomous goals	Semi-independent goals	Dense interdependent relations and goals
Power remains with organisation	Power remains with organisations	Shared power
Resources — remain own	Shared resources around project	Pooled, collective resources
Commitment and accountability to own agency	Commitment and accountability to own agency and project	Commitment and accountability to the network first
Relational time frame requirement — short term	Relational time frame medium term — often based on prior projects	Relational time frame requirement — long term 3-5 years
Learning Mode: Learning Networks/ Community of Practice: Self-Interest: Securing information	Learning Mode: Learning Networks/ Community of Practice :Self-Interest: Learning more efficient means of coordination	Learning Mode: Emphasis on: Network Learning/ Transformational: Collective Learning: Building a New Whole

Table 1 Characteristics of the three network types (Mandell et al, 2009).

Mandell & Keast (2009) analyse cases from teamwork at multiple levels of government- and community operation in Australia and the United States.

The institutions I work with in this paper also belong to many organizational levels and worked together in different combinations. They were small restaurants, farmers and big companies as well as non-profit communities and NGOs, private, semi-public and public institutions. They shared interest in the same subject, and they were connected in the demonstration projects, they carried out, initiated and paid by the Grant PGR in the Ministry of Food. This made them first of all part of a network of all grantees, active at the same time, and representatives from the Ministry

(Windfeldt & Madsen, manuscript in revue, 2016).

The Ministry of Food has formulated the purpose and approved the content of the communication activities in the applications from the institutions. Furthermore the Ministry controls that the work is carried out, before it decides, whether the grant can be paid out to the institution (the Danish Ministry of Food, 2009). The Danish Government (in practice: the Ministry of Food) is responsible for informing the public about PGR (FAO, 2009), and this task was i.a. carried out by the

institutions through the Grant PGR (the Danish Ministry of Food, 2009), which can therefore be seen as a ‘tool’ for the Government. The Government, on the other hand, was dependent on the institutions to carry out a task for which it was responsible.

A network that operates in political or economic environments and bridges the strong government and the strong civil society can be characterised as a governance network (Sørensen and Torfing, 2005). The governance network connects the government that issues the Grant PGR with researchers, municipalities, and NGOs, as well as the civil society. These are all part of the plant genetic environment in Denmark, which is not a well-defined entity. The ‘plant genetic environment in Denmark’ is mentioned for the first time in the Danish action-plan for PGR 2011-13, which describes the environment as remarkable by gathering an unusually broad group of stakeholders: researchers, farmers, local "enthusiasts", chefs, museum staff, plant breeders, officials, etc. The group is “committed and has a high level of initiative and drive”, and there is a good teamwork between these very different users and the Ministry as well. “The diverse approach to the field is seen as a force that stimulates the activities and development” (the Danish Ministry of Food, 2011, p. 39).

An official from the former Danish Plant Directorate in the Ministry of Food argued that the Grant PGR has largely contributed to the formation of the plant genetic environment in Denmark, also by encouraging teamwork between the grantees (pers. com. 8. Oct. 2014).

The governance network operates in political and economic environments, which at the same time facilitate and limit its ability to self-regulate (Sørensen and Torfing, 2005).

METHODOLOGY

The empirical data consist of applications from all receivers of the ‘Grant for demonstration projects about conservation and sustainable use of plant genetic resources’ (Grant PGR) in the period 2008-2013. To study the teamwork, qualitative interviews (Kvale, 1997) were carried out with 9 receivers of the grant (with the leader of the institution or the leader of the demonstration project in the institution). Selection of the 9 informants for qualitative interviews was done in the following steps: first all 28 grant receivers were divided into eight categories, based on document analysis of their original grant proposals. Secondly, 10 receivers representing all 8 categories were selected for qualitative interviews. Two institutions were chosen from the categories ‘Companies and producers’ and ‘Museums’ as they were expected to be very different. In the selection, receivers using different media and having many collaboration partners were preferred, if possible, to establish the broadest potential effect of the dissemination and collaboration. Also the broadest geographically spread was chosen. *All grant receivers can be seen in app. 1.*

At the policy level a qualitative interview was made with an official from the former Danish Plant Directorate in the Ministry of Food, which was the secretariat for the taking part in the design and implementation of the Grant PGR. Focus in this qualitative interview was to unfold the history and present status of both the specific Grant PGR and the political background concerning the communication of PGR in Denmark.

All interviews lasted 1-2 hours, were subsequently transcribed, and quotes made in the text are translated choosing verbatim translations rather than linguistically correct ones.

E-mails, notes on meetings and evaluation reports were included to estimate the number of meetings in the network of grantees and their recommendations for future teamwork.

Thematic analysis (Braun & Clarke, 2006) was used to differentiate forms of teamwork and outline the characteristics from the network-theory.

RESULTS

From the thematic analysis of applications and interviews I distinguish three different forms of teamwork involving grant-receivers from the demonstration-projects: a governance network, formal teams, and informal partnerships. First I present the teamwork, then I analyse the network-type most characteristic of each (cooperative or coordinative). No characteristics from a collaborative network-type were found.

The teamwork

The nine interviewed institutions were found to work together with other grant-receivers in three different forms of teamwork, which were all active at the time, the interviews were made (2013-14):

- **The governance network**
Who: all institutions working with the demonstration-projects at the present time and representatives from the Ministry of Food.
Purpose: Networking, inspiration, and connecting the government with the PGR-environment.
Example: The governance network was governed by the Ministry of Food, which invited those in charge for the demonstration-projects to network-meetings. They could present their projects, exchange experiences and give their feed-back to the Ministry of Food.
- **9 formal teams**
Who: two or more of the grant-receivers, connected through one or more demonstration-projects with shared applications.
Purpose: Helping each other to fulfil the activities described in each application.
Example: The Research Institution worked together with Producer 15 on a shared application concerning wild varieties of blackberries. The producer grew the berries and produced marmalade, while the research institution evaluated growing properties. Demonstration and tasting of berries and marmalade for the public was a joint activity, while the Research Institution wrote articles, flyers etc.
- **17 informal partnerships**
Who: grant-receivers helping each other in an informal way.
Purpose: Sharing of resources (i.a. seeds and produce), information and expertise.
Example: Company B had a partnership with Pometum 5 and Museum 17, which both grew produce for their fermentation-experiments. Company B returned the favour by demonstrating their experiments at fairs by the two other institutions: ‘Open House Day’ at Pometum 5 and ‘Old Varieties’ Days’ at Museum 17.

Characteristics of the teamwork

Teamwork	Cooperative Network Characteristics	Coordinative Network Characteristics	Collaborative Network Characteristics
The governance network	<ul style="list-style-type: none"> • Low trust – unstable relations • Infrequent communication flows • Power remains with organization • Resources – remain own • Commitment and accountability to own agency 	<ul style="list-style-type: none"> • ‘Project’ related and directed information sharing • Semi-independent goals 	
Formal teams		<ul style="list-style-type: none"> • Structured communication flows • ‘Project’ related and directed information sharing • Joint projects, joint funding, joint policy • Semi-independent goals 	

		<ul style="list-style-type: none"> • Power remains with organizations • Shared resources around project • Commitment and accountability to own agency and project 	
Informal partnerships	<ul style="list-style-type: none"> • Infrequent communication flows • Known information sharing • Adjusting actions • Power remains with organization • Resources – remain own • Commitment and accountability to own agency 	<ul style="list-style-type: none"> • Medium trust – based on prior relations • Semi-independent goals 	

Table 1: Overview of characteristics of the governance network, the formal teams and the informal partnerships.
Source: Network-types in Table 1 (Mandell et al., 2009)

Characteristics of the governance network

The governance network (Sørensen and Torfing, 2005) has most characteristics of a *cooperative network*.

It has met 5-6 times from 2006-2008 (before this grant), and one time between 2008 and 2014 (during the grant: in 2009). In this period smaller or bigger versions of the network have met at least three times (Bavnshøj, 2014; pers. com. Dec. 20, 2010; pers. com. Feb. 25, 2016; The Danish Plant Directorate, 2009; Windfeldt, 2014).

The official from the former Danish Plant Directorate explained:

We did one thing, which I consider unusual for grant schemes. We held meetings, where we invited those in charge for the demonstration-projects. They could present their projects and exchange experiences. Gathering everybody also gave them opportunities to talk during the lunch. There was, indeed, a good energy at those meetings, and something concrete coming from it was that the grant scheme was changed. For instance new crops were taken in (Pers. com., Oct. 8, 2014).

A part of the pre-project in 2006-7 was a webpage, where information and activities concerning PGR and the demonstration-projects were placed. The webpage has not been active since 2008 (Landbrugsarven.dk).

There has been no other communication between the Ministry of Food and the grantees as a group or network, which makes the communication-flows infrequent in the governance network in the studied period of time. Furthermore the institutions seem to have been randomly invited for meetings in this period, except for the first one in 2009 (Bavnshøj, 2014; Windfeldt, 2014), characteristic of an unstable relation (Mandell et al., 2009). Status quo is maintained in the institutions, resources remains their own, and power remains with the institutions. Learning mode is primarily securing information for own benefit, especially the Ministry of Food was interested in getting ideas from the grantees (Mandell & Keast, 2009).

Some characteristics of a *coordinative network* are also present. All were very diverse independent institutions. They shared the same overall goal for the demonstration-projects: they wanted their target groups to get knowledge about PGR and the importance of their protection, though all had different angles to the subject reflecting their identities (Windfeldt & Madsen, manuscript in revue, 2016). This must be characterized as semi-independent goals. Furthermore the institutions met to share information and expertise related to the grant. A network with the same overall goal and project-related information sharing are characteristic to a coordinative network.

Smaller formal teams and informal partnerships

The official from the Danish Plant Directorate explained that the intention of bringing different people together in projects was seen as benefitting the work with PGR. The reason was that the very diverse institutions were expected to be interested in different aspects of PGR. At the same time Denmark is a small country with relatively small professional environments. He argued:

It would be an advantage, if the projects did not get too nerdy – but that they worked together in a crisscrossed manner. This is also why we decided to support teamwork in preference to single projects. (Pers. com., Oct. 8. 2014).

This ‘crisscrossed manner’ has led to 9 formal teams and 17 informal partnerships involving the interviewed institutions at the time they were interviewed in 2013-14.

Institution	Formal teams	Informal partnerships
Research Institution	<ul style="list-style-type: none"> • Producer 15 • Company A, Research Institution, Research Institution 22, Museum B¹ • Company A, Research Institution 22² 	<ul style="list-style-type: none"> • Museum A • Municipality • Pometum 5
Company A	<ul style="list-style-type: none"> • Research Institution, Research Institution 22, Museum B • Research Institution, Research Institution 22 	
Company B	<ul style="list-style-type: none"> • NGO 	<ul style="list-style-type: none"> • Pometum 5 • Museum 17
Community w. Public Access		<ul style="list-style-type: none"> • Pometum 5
Municipality	<ul style="list-style-type: none"> • Museum A 	<ul style="list-style-type: none"> • Research Institution • Pometum
Pometum	<ul style="list-style-type: none"> • Community with Public Access 6 • Pometum 5, Museum B • Community with Public Access 4 	<ul style="list-style-type: none"> • Museum B
NGO	<ul style="list-style-type: none"> • Museum 17 • Company B 	
Museum A	<ul style="list-style-type: none"> • Municipality 	<ul style="list-style-type: none"> • Pometum • Research Institution • Company 28 • Museum B • Pometum 5 • Company 10
Museum B	<ul style="list-style-type: none"> • Research Institution, Research Institution 22, Company A 	<ul style="list-style-type: none"> • Pometum • Pometum 5

Table 2 The institutions working together in formal teams and informal partnerships.

Characteristics of formal teams

The 9 formal teams have characteristics of *coordinative networks*.

First of all the proposal and the funding were joint, and the resources around the project were shared. The communication flows were structured, and information was shared around the joint project. Goals were still semi-independent as all projects belonged to the governance network, and commitment and accountability would be to own agency as well as to the joint project.

In the biggest of the formal teams, for instance, Company A, Museum B, the Research Institution and Research Institution 22 had 4 shared applications for projects demonstrating different old Danish varieties of root vegetables, onions, leeks and herbs. Company A and the research institutions tested and selected varieties to evaluate the commercial potential, while Museum B was working with the history of the varieties. This reflected their different identities and angles to the subject: Company A (test and growing of varieties of PGR to evaluate the commercial potential), Museum B (conservation and demonstration of living cultural heritage), Research Institution/Research Institution 22 (Selecting varieties and developing a broader assortment of food-products with PGR). Research Institution 22 was not part of the interviews. They all participated in different parts of the scientific work, selecting and describing the varieties, their history and their use. The seeds, produce and knowledge gained were used by all team-partners, and all took part in fairs and activity-days by the other partners (i.a. historical kitchen, and harvest-days) (Windfeldt & Madsen, manuscript in revue, 2016). The leader of the projects at Company A says:

¹ The Research Institution was not interviewed about this formal team, because another part of the department was involved.

² See above

We developed a tradition during the three years, where Museum B came here at our harvest-market and explained the history of the varieties, while we came to some of their market-days, where we showed the produce with tastings and told about differences in growing-properties and taste. (pers. com. 22.3.2016)

Power still remained with the organisations, as no higher organisational level was present, and status quo was maintained in the institutions (Mandell & Keast, 2009).

Characteristics of informal partnerships

The 17 informal partnerships have characteristics of both *cooperative* and *coordinative networks*.

Cooperative network: Institutions shared knowledge and activities, but also tangible things as seeds, plants and dissemination materials were shared. These are adjusting actions. Communication was infrequent, and power remained with the organisations, as no higher organisational level was present. Resources remained with the institutions, which only had commitment and accountability to own agency.

Goals were still semi-independent as all projects belonged to the governance network, and the relations were quite stable, because they were often based on prior relations. These are both characteristics of *coordinative networks*.

Examples of informal partnerships: Pometum 5 and the Research Institution shared their knowledge, because they knew each other and both worked with cherries. The Pometum helped Museum B on their ‘Apple-day’ by identifying apple-varieties for their visitors, and at Museum A many of the other institutions demonstrated results from their demonstration-projects.

DISCUSSION

The institutions in the demonstration-projects worked together in three different ways: All were part of the governance network, 8 of the 9 interviewed institutions were part of one or more formal teams, and 7 of them were part of one or more informal partnerships. I will now discuss how all kinds of teamwork can become more effective in relation to the Grant PGR.

The governance network was the one with the vaguest connections. The purpose was networking, inspiration, and connecting the governmental layer with the PGR-environment in Denmark. But communication was almost not present from 2008 to 14, and the relation was unstable, though the official from the Danish Plant Directorate told that meetings were successful for the grantees as well as for the Ministry.

It can be discussed whether the governance network functioned like a network at all from 2008, since they hardly communicated, though they had a mutual purpose.

But there was a request to meet and coordinate, which was confirmed by the institutions. The Pometum, for instance, said that meeting every second year “is not enough to learn from each other and know what the others are doing”. Museum B asked for a collective dissemination of knowledge in the network. “It would have been fine, if the effort had been coordinated”, they stated, “if there was a meeting every year, where the projects were presented, and progress and obstacles could be discussed.”

Some of the grantees³ were invited for two meetings in Oct. 2014 to make a ‘Vision-paper’ for future activities communicating PGR. The paper recommends a yearly seminar, where grantees gather to exchange experiences and have the possibility to develop new teamwork and projects. Furthermore the paper recommends an electronic information portal, where information and results from active and finished projects could be gathered. What was learned? What could be required from new projects? And where could they get plants, seeds etc.? This led to a suggestion to establish a PGR-secretariat, which could function as a sparring opponent and secure a coordinated effort (Bavnshøj, 2014).

Some of the central qualities in demand belong to a collaborative network: stable relations, tactic information sharing and thick communication flows (see table 1). Collaborative networks are only formed when the participants recognize their interdependence on each other “and their need to make major changes in their operations” (Mandell & Keast, 2009, p. 7). This need might have come, because the communication from the Ministry of Food to the governance network was almost missing since 2009, making it difficult to work as a plant genetic environment in Denmark. The **formal teams** were of course diverse, but they seem to have worked quite efficient as coordinative networks with the purpose to help each other to fulfil the activities described in each application. Institutions contributed to the joint projects with their special skills and knowledge and coordinated their work to heighten the quality of the product and the effectivity. The projects sometimes lacked coordination and balancing of expectations, but they developed to be more efficient as they went along, and some of the institutions are now working together in new projects (pers.com. 22.3.2016).

There were many **informal partnerships**, and they also seem to have functioned well in-between the cooperative and coordinative characteristics to fulfil the purpose: Sharing of resources, i.a. seeds and produce, information and expertise.

The effectivity of the formal teams and informal partnerships could be increased, if the governance network had a secretariat that secured a coordinated effort. Overlap between projects could i.a. be reduced. The Pometum explained: “I am working right now with collection of bullace (a small plum with many local varieties) in Denmark. I know that another demonstration-project worked on this in 2006, but I cannot find information about it anywhere.” Another example is the Community with Public Access, the Pometum, Pometum 5, and Museum 17, which all made descriptions of some of the same apple-varieties for their homepages. If the secretariat had an electronic information portal, like the one initiated in 2006, joint descriptions could be made and placed here together with other relevant information and results from the demonstration-projects. Furthermore new projects and teamwork could emerge, when people meet and talk at joint meetings and a yearly seminar. A collaborative network with a central secretariat and pooled, collective resources may develop more stable long-term relations, building on high trust (Mandell et al., 2009). Museum B expresses its interest in focussing on a continued work with PGR as opposed to projects with a fixed time-frame. Company A has a similar conclusion and elaborates: “to be able to implement the demonstration-projects, it is important to keep a strong knowledge of growing plants, and to do this

³ Museum A and B, NGO, Pometum, Company A, Community with Public Access, Municipality 3, Museum 17, Museum 18, Pometum 5, Community with Public Access 14, Company 10

we must engage in a long-term program. This would be enhanced by a strong management making an overall plan of which plants to work with and why.” (pers.com. 22.3.2016).

This might also increase interactions and synergies, and new and innovative outcomes that are not possible by working alone in short time-frames may be the result (Mandell & Keast, 2009). This will make a more resilient network but demand more time, and maybe training of the institutions involved will be necessary (Mandell et al., 2009).

CONCLUSION AND IMPLICATIONS

The institutions worked together in formal teams and informal partnerships, but scaffolding in the form of a uniting governance network was almost lacking. A governance network could make the teamwork more effective, and it is requested by some of the grantees.

The recommendations for the Grant PGR will be a collaborative governance network with a central secretariat, seminars/meetings for all grantees every year - or more - and an electronic information portal. The long-term objective will be stable relations with high trust working towards an overall plan, which might also help the birth of new teamwork and joint projects with wider timeframes, and can thus give better results. This can also facilitate a more well-defined, effective and resilient plant genetic environment in Denmark. The recommendations are elaborated in the following.

The process of developing a collaborative governance network for the Grant PGR

Developing a more resilient network with high trust among the participants requires time and effort. To support this process, the framework Collective Impact (CI) is explored as scaffolding, as CI involves some of the key structures recommended: a centralized infrastructure, and a structured process leading to a common agenda (Kania & Kramer, 2011). CI was introduced at Stanford University in 2011 as a “systemic approach to social impact that focusses on the relationships

The Five Conditions of Collective Impact	
Common Agenda	All participants have a shared vision for change including a common understanding of the problem and a joint approach to solving it through agreed upon actions.
Shared Measurement	Collecting data and measuring results consistently across all participants ensures efforts remain aligned and participants hold each other accountable.
Mutually Reinforcing Activities	Participant activities must be differentiated while still being coordinated through a mutually reinforcing plan of action.
Continuous Communication	Consistent and open communication is needed across the many players to build trust, assure mutual objectives, and create common motivation.
Backbone Support	Creating and managing collective impact requires a separate organization(s) with staff and a specific set of skills to serve as the backbone for the entire initiative and coordinate participating organizations and agencies.

between organisations and the progress toward shared objectives” (Kania & Kramer, 2011, p. 39).

When using CI a group of important actors from different sectors unite to solve a specific social problem (Kania & Kramer, 2011). ‘Social problems’ have a broad definition as this could be a citywide effort to reduce childhood obesity, a joint project to clean up a river or uniting cross sectors for better farming

practices (Kania & Kramer, 2011).

In the following I will explain the connection

between the five conditions of CI and the collaborative network described by Mandell et al (2009) to show how CI can be used as scaffolding to reach the characteristics of a collaborative network.

Common Agenda: All institutions in the network must have a shared vision for change, which means that they have the same understanding of the problem they want to solve and the same approach of how to solve it. So the goals must be the same - at least the central goals - which often requires many meetings and discussions (Kania & Kramer, 2011). This is similar to ‘dense

Table 3 The five conditions of Collective Impact. Hanleybrown, Kania, & Kramer, 2012.

interdependent relations and goals' and 'commitment and accountability to the network first' in the description of the collaborative network by Mandell et al. (2009). The collaborative network must here be seen as the ideal result of a process, where institutions have the same goal and a shared vision for change. Interdependency where "stakeholders must have full diversity of interests and at the same time interdependence, so that they cannot get their interests met independently" (Innes & Booher, 2010, p. 35) is also seen as a result of a process, starting with the definition of shared central goals.

Shared measurement: When agreeing on a common agenda, the institutions must at the same time agree on the way they want to measure and support success. This is a way to ensure that the efforts remain aligned. All institutions can be held responsible of how they fulfil the common goals, and successes and failures can be shared in order to learn from them. Furthermore the progress of the field as a whole can be documented (Kania & Kramer, 2011).

Mutually Reinforcing Activities: As CI involves a group of stakeholders, which are often very diverse, the most efficient way to join forces will be that all participants do the things they are best at in a way that is aligned with the others and supports their work. This makes coordination a central concept, and a mutual plan of action must be made in which each undertake different types of activities (Kania & Kramer, 2011). This is what Mandell et al. (2009) call 'pooled, collective resources' in the collective network.

Continuous Communication: Many meetings are required to build up the trust needed to join forces. Here a common vocabulary can be created among the diverse institutions, and the shared measurement system can be agreed upon. Kania & Kramer (2011) suggests weekly or even biweekly in-person meetings, preferably supported by external facilitators and a structured agenda. Between the meetings web-based tools (e.g. Google Groups) can be used to keep the communication flowing. Mandell et al. (2009) mentions 'tactic information sharing' and 'thick communication flows' to build 'high trust' and 'stable relations' in collaborative networks.

Backbone Support: A separate support-organisation is needed to create and manage the common agenda, the shared measurement and the communication required to reinforce mutual activities. The backbone support-organisation is to take care of coordination and internal communication, which requires dedicated staff able to manage, plan and support the institutions equally and collect data and report (Kania & Kramer, 2011). The Strive Partnership (as cited by Kania & Kramer, 2011) pinpoints three roles of the support-organisation: project manager, data manager, and facilitator. Kania & Kramer (2011) argues that expecting that "collaboration can occur without a supporting infrastructure is one of the most frequent reasons why it fails" (Kania & Kramer, 2011, p. 40).

Examples of Collective Impact in Denmark

Projects using CI as a framework to manage networks have also been started in Denmark. Realdania, being among the first, is a private philanthropic organization based on investment activities. It works for broad cross-sector collaboration to find shared solutions, and started three development-projects in 2014 using CI: 'Building Heritage in Rural Areas', 'Inclusivity for All', and 'Open Country as Double Resource' (Realdania.dk). The three groups are working independently of each other, and each group is headed by an independent chairman and a leader of the secretariat (*backbone support*) (Grønnegaard & Johansen, 2016). In the following I will describe some of the experiences gained so far in 'Open Country as Double Resource'.

The Danish landscape is rapidly changing, and different interests from e.g. agriculture, outdoor recreation, and nature conservation put the use of areas under pressure. Therefore 12 parties, from as well farming, forestry, municipalities, NGOs and other users of open land representing different interests have gathered in a group. The intention is to create new initiatives, which can demonstrate local solutions to integration and multi-functionality, i.a. by land re-parcelling, and at the same time document the societal gains for as well the farmers' economy, nature quality, the aquatic environment, and recreational possibilities. The group's ambition is to inspire to a national land re-parcelling from a multifunctional perspective: positive development of agriculture, richer nature, cleaner aquatic environments, better recreational possibilities, and attractive rural areas – all at the same time (*common agenda*) (Grønnegaard & Johansen, 2016).

The group has met every three months since fall 2014 (*continuous communication*), and three pilot-projects with multifunctional land re-parcelling have been initiated in fall 2015 in three different municipalities, followed by a research team to document the societal advantages in the project's four years. Development of a new, interdisciplinary paradigm is one of the outcomes the research team hopes to get out of the process (*shared measurement*) (Grønnegaard, 2016; Grønnegaard & Johansen, 2016).

The experiences so far are positive. The participants focus on potentials, tasks, and joint solutions more than conflicts and oppositions, and there is a solid interest in developing trust and mutual results. Difficulties have been collaboration between different parts of the administration inside each municipality and the lack of interdisciplinary methods of analysis. The CI-framework has helped to legitimate the breaking-down of existing conventions, i.a. in the way researchers and municipalities take part in the work (Grønnegaard & Johansen, 2016; Grønnegaard, 2016).

Collective Impact as a tool to manage the Grant PGR

The parties in the Open Country project all have different interests, while most of the institutions in the Grant PGR had more aligned goals, which would make it easier to agree on a *common agenda* (Kania & Kramer, 2011).

A separate support-organisation (a secretariat) was requested by the institutions in the network. Importantly the secretariat would be the centre of the network (*backbone support*), and all institutions would meet equally and face to face (Kania & Kramer, 2011) as also described by Innes and Boher (2010). A difficulty might be the role of the Ministry of Food in the collaborative governance network, since they administrated the governmental grant. If the Ministry of Food is an equal part of the network, their controlling role could be taken over by the network's *shared measurement*, agreed on by all institutions (Kania & Kramer, 2011). The prioritizing of means might require many meetings and discussions (*continuous communication*) but can result in a better disposition of money and resources. Instead of selecting the single grantees, which offer the most promising solutions, interaction of many institutions working together can be chosen. Grants would be distributed with the greatest advantage possible for the network. This can overcome competition, unite the efforts, and help working towards the same goal (Hanleybrown, Kania, & Kramer, 2012). This will also help building up trust, which is important on the way to success for the network (Kania & Kramer, 2011; Innes and Boher, 2010; Mandell et al., 2009; Sørensen and Torfing, 2005). The secretariat-staff must plan, manage, and support the institutions (Kania & Kramer, 2011). They could arrange seminars and meetings for all grantees and take care of coordination and internal communication (*continuous communication*) (Kania & Kramer, 2011). This means that for instance

knowledge, seeds and plants can be coordinated and exchanged between the institutions, and information can be gathered and centrally distributed – both internally and externally to the public - by the electronic information portal. This will join efforts and reduce overlap.

All institutions could undertake different tasks like they did in the formal teams, but this can be further developed to support the governance network (*mutually reinforcing activities*). This makes coordination a central concept, and a mutual plan of action must be made (Kania & Kramer, 2011). It is recommended that all institutions disseminate knowledge about PGR to the public as the diversity of the institutions was found to enhance the mutual potential of reaching many different people in many different ways and geographical places with multiple angles to the same central message (Windfeldt & Madsen, manuscript in revue, 2016).

It is crucial to agree on a way to measure and support success so that all institutions balance expectations and work in the same direction. All can be held responsible of how they fulfil the common goals, and successes and failures can be shared in order to learn from them (*Shared measurement*). Furthermore the progress of the field as a whole can be documented (Kania & Kramer, 2011) as also Grønnegaard & Johansen (2016 a) do with a following research-team, which analyses and documents the interdisciplinary goals. Like in the Open Country project the results of the Grant PGR were also interdisciplinary (for instance demonstrating the development of high quality food products based on PGR to enhance rural development) and a scientific documentation would help explaining their *raison d'être* and give possibilities of longer term funding of the field as a whole (Kania & Kramer, 2011). This could also result in cross-sector alignment and learning among many organisations as mentioned by Hanleybrown, Kania, & Kramer (2012). A joint vision would further boost the field and enhance the possibility for the governance network to get national or international funding.

As also stated by Mandell et al. (2009) the collaborative network will typically meet during some years to develop shared performance indicators, discuss their progress, learn from each other and align their efforts to support each other (Kania & Kramer, 2011; Mandell et al., 2009)

A National Danish PGR-Program

The Grant PGR was part of Denmark's first National PGR-Program. National programs are the foundation of regional and global efforts for conservation and sustainable utilization of PGR and are highly prioritized by FAO (Commission on Genetic Resources for Food and Agriculture, 2012). Principles from the collaborative governance network that could be developed to govern the Grant PGR are in the following used in recommendations for elaboration of a new National Danish PGR-Program. Experiences from programs in Sweden and Norway and from the first National Danish Program will be included as well.

History of the Danish PGR-Program

A strategy and the first Danish action-plan for 2005-2007 formed the first National Danish PGR-Program in 2004 (The Danish Plant Directorate and the Danish Institute of Agricultural Sciences, 2004). A status-report and a new action-plan for 2008-2010 followed in 2007 (the Danish Ministry of Food, 2007b, and 2008). The action-plan 2011-13 (the Danish Ministry of Food, 2011) was prolonged till end of 2014 (Windfeldt, 2014). For the time being (spring 2016) Denmark does not have a program, an up-to-date status-report, a strategy or an action-plan in function, but a new strategy is being planned in 2016 (pers. comm. the AgriFish Agency in the Danish Ministry of

Food, 5. and 6. Apr. 2016). The new National Danish Strategy will be made by the PGR-secretariat in the Danish Ministry of Food's AgriFish Agency (unit for Environment and Biodiversity), and the Danish Committee on PGR will be consultants in the process. The Committee, established in 1999, has a coordinative role of the Danish work with PGR (Ministry of Food, 2011) and consists of representatives from research, breeding, universities, ministries, organisations, museums, and NGOs (The Danish Plant Directorate and the Danish Institute of Agricultural Sciences, 2004). A seminar in December 2014 between the Danish Ministry of Food, NordGen, and stakeholders from the plant genetic environment was to create ideas for a new strategy (Windfeldt, 2014; pers. com. the AgriFish Agency in the Ministry of Food, Apr. 5. and 6. 2016).

Recommendations

1. The strategy should outline long-term goals and be followed by an action-plan to make a new National Danish PGR-Program.

A strategy outlines long-term goals, while an action-plan defines a series of short-term goals to reach these, preferably including actors, time-frames and a specific budget (Norwegian Genetic Resource Centre, 2011 and 2013).

The first Danish Program from 2004 consisted of a strategy and a series of three three-year action-plans, and the Norwegian National Program for conservation and use of PGR (Nasjonalt Program for Bevaring og Bruk av Plantegenetiske Ressurser for Mat og Landbruk) from 2001 consists of a strategy and four-year action-plans. The action-plans follow the goals for the global action-plan for PGR with four prioritized action areas, which are divided into more specific activity-fields with a concrete goal and a time frame, which makes it easier to measure the success (Norwegian Genetic Resource Centre, 2013). The Swedish National Program for Diversity of Cultivated Plants (Programmet för Odlad Mångfald (POM)) was initiated in 2000 (Swedish Board of Agriculture, 2009), and the work from 2010 to 2015 had 'Conservation of PGR for future utilization' as an overall goal and four milestones to fulfil this. Each of the fields had a concrete goal with a time frame, which made it easier to measure the success (Swedish Board of Agriculture, 2015).

At the seminar to create ideas for a new PGR-strategy in December 2014 the representative from NordGen concluded: "I hope that we will get an action-plan that is operable – not just an insubstantial strategy without commitments." He further recommended that Denmark gets a program like Norway and Sweden, because it will give better long-term-results (Windfeldt, 2014). Working on longer terms can build up stable relations and high trust and has been demanded by the institutions from the Grant PGR to be able to plan their work with PGR. This was also recommended on the seminar in December 2014. David Collinge from University of Copenhagen was for instance wondering why conservation of genetic diversity in Denmark was made in three-year projects without any durable subsidy. The representative from Pometum 5 underlined the importance of making long-term planning (more than five years), when establishing PGR-plantings and argued: "The plantings and activities made in the Grant PGR have contributed with a lot of good things, but as genetical back-up collections this is not the best model."

Like the Swedish and Norwegian programs a Danish program must have a Common Agenda with central goals and Shared Measurement of the results to ensure that efforts remain aligned. This can be ensured if the action-plan sets out precise targets from the strategy's agenda, which makes the work operational. Furthermore this will make it possible to document the progress of the field as a whole (Kania & Kramer, 2011).

2. A program should build on a governance network of the Ministry of Food and the plant genetic environment in Denmark

Network has been a key-word for the work with PGR and development of a plant genetic environment in Denmark. The first National Danish PGR-Program was made by the Ministry of Food together with few other stakeholders (The Danish Plant Directorate and the Danish Institute of Agricultural Sciences, 2004; Ministry of Food, 2004). But there was awareness of the many different actors, which were relevant for the Danish conservation and sustainable use of PGR. Universities, plant-breeders, and local clone-collections, for instance, were well-known to be interested and valuable for the field. But also the work of museums, garden-owners, and NGOs was to be encouraged to play a bigger role, e.g. by including the museum-collections of PGR as back-ups to the clone-collections and seeing them as an important 'window' to the public. The strategy also recommended establishing a partnership between all stakeholders, i.a. through involvement in a professional reference forum (The Danish Plant Directorate and the Danish Institute of Agricultural Sciences, 2004). These are Mutually Reinforcing Activities, where the institutions undertake different tasks according to their expertise and objectives, and if coordinated it supports the governance network and the program with its Common Agenda (Kania & Kramer, 2011).

The Norwegian and Swedish programs are both built on a network of activities between central stakeholders involved in the field of PGR in different ways. In Sweden the stakeholders include i.a. national authorities, the Swedish University of Agricultural Sciences (SLU), NordGen, the plant breeding sector, some NGOs, botanical gardens, grower's associations, and open-air museums. There is a high attention to the synergies coming from joint forces and the importance of coordinating activities (Swedish Board of Agriculture, 2008).

In 2011 the Danish Ministry of Food defined the 'plant genetic environment in Denmark' as a broad group of stakeholders: researchers, farmers, local "enthusiasts", chefs, museum staff, plant breeders, officials, etc. These very different users were committed, and because there was a good teamwork between this environment and the Ministry they developed the Danish action-plan for PGR from 2011-13 in a dialogue (the Danish Ministry of Food, 2011). The new National Danish Strategy is to be made by the PGR-secretariat in the Danish Ministry of Food's AgriFish Agency with the Danish Committee on PGR as consultants in the process. It is recommended to include a broader network – the plant genetic environment – in the process, and to include them in the elaboration of the action-plan as well. Meeting equally and face to face is important to build up high trust in a network (Mandell et al., 2009; Kania & Kramer, 2011)

3. A secretariat can support the governance network

Coordination of Mutually Reinforcing Activities and Continuous Communication are central to a program based on a network, and a secretariat with these functions would be the heart of this. The secretariat-staff plan, manage, and support the institutions. It could arrange seminars and meetings and take care of internal communication, i.a. a common web-page. This will help to align goals, measure results, build trust and create common motivation (Kania & Kramer, 2011).

A secretariat in the Danish unit for Environment and Biodiversity in the Ministry of Food's AgriFish Agency is Denmark's national point of contact for the FAO-treaty, serves the Danish Committee on PGR and administrates the new 'Grant for the work with conservation of old Danish farm-animal- and plant genetic resources' (Grant GR) together with the secretariat for the

Conservation Committee for Farm-Animal Resources (pers. comm. the AgriFish Agency in the Ministry of Food, 5. and 6. Apr. 2016).

The secretariat could give Backbone Support for the governance network as well. This means being the place that supports the network, where the institutions would meet to exchange experiences and develop their cooperation. Information can be gathered and centrally distributed – both internally and externally to the public - by an electronic information portal. This will join efforts and reduce overlap.

The plant- and farm-animal secretariats could join to form a centre like in Norway. The Norwegian Genetic Resource Centre was established in 2006 as secretariat for the three genetic resource committees: farm animals, crops and forest trees (Norwegian Genetic Resource Centre, 2013). The Genetic Resource Centre sees itself as a hub, coordinating activities in a network that consists of i.a. agricultural authorities, research institutions, private breeders, Universities, local clone-archives, farmers' organizations, museums, schools, NGOs and international organisations. The centre is very aware that most of the Norwegian agricultural production is based on national genetic resources, which makes their work central to breeding and production of food (Norwegian Genetic Resource Centre, 2011 and 2013).

CONCLUSIVE REMARKS

It is quite unusual for the Danish Ministry of Food to make teamwork between grantees a purpose of a grant scheme. In 2016 only two out of approximately 110 grant schemes were found to favor teamwork between grantees (Restoration of Streams: teamwork between municipalities; Promotion of Organic Farming: teamwork between stakeholders). But though teamwork has been a key-word for the Grant PGR, it is not a purpose of the new 'Grant for the work with conservation of old Danish farm-animal- and plant genetic resources' (Grant GR), set up in 2015.

As uniting in a network will often lead to better longer-term results and a more resilient organisation with high trust, it is recommended to build as well the new Grant GR as a new National Danish PGR-Program on a network. A new National Danish PGR-Program building on a governance network of the Ministry of Food and the plant genetic environment in Denmark and supported by a secretariat can substantially improve the work with plant genetic resources in Denmark.

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Institutions with demonstration-projects in ‘Grant for demonstration projects about conservation and sustainable use of plant genetic resources’ in the period 2008-2014

1. **Research Institutions:**

Research Institution (interviewed)
Research Institution 22.

2. **Companies and producers:**

Company A (interviewed)
Company B (interviewed)
Company 8
Company 10
Company 12
Company 13
Company 15
Company 21
Company 23
Company 28

3. **Communities with Public Access:**

Community with Public Access (interviewed)
Community with Public Access 4
Community with Public Access 6
Community with Public Access 14

4. **Municipalities:**

Municipality (interviewed)
Municipality 3

5. **Open farms:**

Open farm ⁴

6. **Pometums:**

Pometum (interviewed)
Pometum 5

7. **NGOs:**

NGO (interviewed)
NGO 9

8. **Museums:**

Museum A (interviewed),
Museum B (interviewed),
Museum 16
Museum 17
Museum 18

Total: 28 grant receivers

⁴ No interview was made in this category, as it contained only one receiver, which moved their activities to a producer due to illness