

Regional Climate Change Adaptation Project - Innovative municipal partnerships in the Capital Region of Denmark

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Abstract

This paper describes the partnership process and the preliminary results of a untraditional joint innovation project between municipalities, public utility companies, and regional authorities in the Capital Region of Denmark. The ongoing project named KLIKOVAND, which is organised as a cross municipal partnership, aims at finding innovative climate adaptation solutions in response to increasing and more intense rain events in Denmark. The new approach was presented at the IKT12 Conference in Bournemouth in April 2012: Next Practise in University Research Based Open Innovation – from push to pull: case studies from Denmark. Based on a comprehensive partnership approach the project addresses legal issues, internal as well as external communication, decision support systems, and training and competence development. It has just started its third and final implementation year. Based on the promising results of the ongoing project preparations for its continuation is presently underway. The preliminary results, which concern partnership, cooperation and technical results are presented here.

Key Words: Climate Change Adaptation, Storm Water, Partnership Processes, Team Innovation, Loosely Coupled Network.

1. Background and Introduction

Like other countries worldwide, Denmark has felt the consequences of climate change. Denmark's greatest adaptation challenge is increased precipitation, especially in the intensity of heavy rainfalls and the frequency of these extreme events. Annual precipitation in Denmark is currently about 750 mm. This has increased by about 15% - or 100 mm since records began in 1874 (Danish Meteorological Institute). The capital region of Denmark has suffered recurrent heavy summer rainfalls that are unequalled to any other historical data on rainfall in Denmark. The consequences have been extremely costly due to flooding resulting

from inadequate flow and storage capacity in the sewer systems, as well as lack of adequate coastal protection measures. Denmark's municipalities are the public authorities responsible for addressing flooding and climate change.

As a result, Denmark's 98 municipalities have been exchanging experiences for some time. 29 of these (roughly 30%) are in the Copenhagen Region, where the financial impact of climate change have been greatest. The majority of municipalities in the Copenhagen Region formed the KLIKOVAND association (an abbreviation of the Danish for climate, municipalities, water: klima, kommuner, vand) to jointly face these challenges in January of 2012.¹ KLIKOVAND currently comprises 12 public utility companies and 22 municipalities from the Copenhagen Region, who work in close coordination with Regional and central government authorities, as well as local universities and other knowledge centres, to jointly address climate adaptation challenges.

The idea for forming this association was launched in 2008. Formalising this broad scope for collaboration between so many local authorities required a significant change process. Had it not been for severe flooding and damage from individual storm events – notably the July 2011 storm that led to extensive flooding and damage across the city - this process would have taken longer. More recently the storm in Denmark named *Bodil* (in Germany named *Xaver*, and in Sweden named *Sven*), which swept over the North Western Europe during 4th to 7th of December 2013, created heavy coastal damages on Danish coastlines as well as in Danish fjords.

The KLIKOVAND partnership recognizes that given the inadequacy of public financing of renewed sewer systems, public authorities, business and civil society must join forces to develop alternative smart institutional and practical measures to respond to climate changes in relation to water.

Therefore KLIKOVAND aims to improve the regional and municipal decision and policy making process in relation to the planning and development of new and existing urban areas in the Capital Region of Denmark. The uniqueness of KLIKOVAND also stems from the fact that it is the only Danish project within this area which is completely *demand driven* in relation to the needs, wishes and preconditions of the municipalities. This makes it rather innovative in its approach. Figure 1 overleaf illustrates the KLIKOVAND concept including its four main development tracks.

The main aim of the project is to help develop and adjust individual municipal climate change adaptation plans through a structured and co-ordinated process between the participating municipalities and public utilities, taking the specific

¹ <http://www.klikovand.dk/english>

needs of each participating municipality and public utility into consideration, sharing insights and supporting this with research based knowledge transfer.



Figure 1: The KLIKOVAND Concept.

The project context, preliminary results and lessons learned were presented at the INKT 12 Conference in Bournemouth in April 2012 as part of a case paper: *Next-Practise in University Research Based Open Innovation -from push to pull: case studies from Denmark*. Corresponding Author Jens Rønnow Lønholdt. These preliminary lessons are summarised below:

- Multi-stakeholder coordination: Comprehensive and multifaceted project management capacity is needed, with well-developed skills for multi-interest projects to plan and implement this kind of *demand driven* project.
- Time: The time needed to promote the project idea and concept, and to mature the project environment should never be underestimated.
- Incentives: It is also crucial to nurture the motivation of the partners constantly during project implementation since it is a very diverse multi-stakeholder project environment with diverging interests.
- Change process: The challenges facing the municipalities demand new approaches to urban spatial planning and the handling of wastewater and rainwater because it is necessary to change behaviour, and get citizens and private companies to be actively involved in meeting the challenges.

- From vision to results: A visionary project description, qualified lobbying, and a dedicated team is not enough. It is of crucial importance to provide tangible results very early in the project.

Based on the above an extensive process was needed to mature and formulate the project from 2008 to 2011. Based on this KLIKOVAND as a project started in January 2012 and will run to the end of 2014, and is consequently in its last phase.

Below we document how the project, despite problems, challenges, pitfalls, and setbacks, has generally succeeded in building fruitful political as well as administrative municipal partnerships across the Capital Region of Denmark. The formulation of KLIKOVAND2 is underway, so as to allow seamless continuity for the next period. The need for KLIKOVAND is supported by the legal and regulatory framework for climate change adaptation, adopted by the Danish Parliament over recent years. Of particular note is the requirement that all Danish Municipalities should have developed and politically approve comprehensive local Climate Change Adaptation Plans by the end of 2013. Most, but not all, municipalities in the Capital Region of Denmark have done this, often with support from the KLIKOVAND Project.

KLIKOVAND has a 50/50 funding by respectively the Capital Region of Denmark on one side and the participating municipalities and public utility companies on the other side. The Region and the utility companies pay in cash, while the municipalities can pay in cash or in-kind in terms of working hours, or a combination. A regional strategy for climate change adaptation for the Capital Region of Denmark was prepared jointly by regional and municipal authorities and published in April 2012. An indicator of KLIKOVAND's influence is that the Plan identifies it as an important implementation platform, and recommends all 29 municipalities of the Capital Region to join KLIKOVAND. Presently 22 of the 29 municipalities and 12 out of 15 of the public utility companies of the Capital Region of Denmark are partners in the KLIKOVAND Project.

A summary of the main results and lessons learned this far is presented below, under the following headings, in line with the figure above:

- **The Legal and Regulatory Track** dealing with all legal issues in relation to climate change adaptation including a proactive approach in relation to where there is a need to change or amend the legal and regulatory framework.
- **The Communication Track** dealing with internal as well as external communication in relation to citizens as well as private companies.
- **The Decision Support Track** dealing with all aspects in relation to decision support including technical modelling as well as improving planning and administrative procedures and the political process.

- **The Competence Development Track** dealing with all aspects of competence development and targeting technical, planning, and administrative groups as well as the political level. Further the important knowledge transfer within municipalities as well as between municipalities.

In addition to these technical tracks, the following cross-cutting issues are also addressed:

- **The Partnership Process** including tough challenges and hard lessons learned for the formulation of KLIKOVAND2.
- **The Project Management Capacity** is crucial to these kinds of projects, and important lessons have been learned for the formulation of KLIKOVAND2, and generally for other kind of multi-stakeholder, and multi-disciplinary projects.

2. The Legal and Regulatory Track

The aim of this track is to ensure a broad understanding of the importance and the consequences of the legal and regulatory framework in relation to climate change adaptation. The group working with this track consists of public servants from the municipalities as well as employees from the public utility companies, with hands-on competence and expertise, supported by a professional consultant within the area. An important part of the work is, based on a needs assessment, to interact with the relevant national authorities so that, by understanding local concerns and needs, they make legal and regulatory frameworks implementable in the local context.

The results of this proactive interaction are then shared in KLIKOVAND through meetings and workshops thereby generating feedback for the continued interaction with the relevant national authorities. Frequently representatives from the national authorities participate in and make presentations at these events. The work is highly appreciated by the national authorities as it ensures a qualified reality check of the legal and regulatory framework voiced by representations from 30 % of the Danish Municipalities.

The results of the above proactive and interactive work are continuously fed into a digital Legal and Regulatory White Book, publically available on the KLIKOVAND website. This White Book, which includes decisions and accepted interpretation concerning the legal and regulatory framework, supports the local planning and implementation of climate adaptation measures and in this way ensures that they are in line with the legal and regulatory framework. It is appreciated by the municipalities and the public utility companies as an important tool.

3. The Communication Track

The group working with this track consists of public servants from the municipalities and employees from the water companies, with hands-on competence and expertise, supported by a professional communication consultant. This group is responsible for internal as well as external communication. Major focus in the first two implementation years of the project has, based on a needs assessment, been on the external communication with the dual aim of marketing the project as well as increase understanding of the importance of the problem, and what can be done at the local level by citizens as well as private companies. In this context, of focusing on tools for meetings with citizens, 2012 saw the development of a poster showing a wall of a private house with a green roof and a rain water collection barrel. This poster presented information on how to establish this and the costs. Further two roll-ups with pictures and general information on climate change adaptation have been produced and presented at various meetings and events. Finally a joint workshop concerning the co-operation between municipalities, as the local authority, and the public utility companies as the implementing entity, was conducted.

In 2013 the digitised interactive KLIKOMAND (in Danish “mand” means man) module was introduced on the KLIKOVAND website. This Man, which is sort of an app, explains in a lay man text how you in your own garden can establish rain water harvesting facility for the benefit of your flowers and the environment. Further, in a pedagogical way, the difference between a traditional management of the rain water, which falls on the roofs and paved streets in towns and a greener version, is explained. Finally a workshop was conducted concerning the important co-operation between the municipality and its public water company. In addition relevant links and material has been collected and presented at the home page. 2014 will focus on the important internal communication and knowledge transfer within the KLIKOVAND Project. Further a university co-operation is on its way with the aim of activating students and their innovative potential in relation to the communication issues. A workshop is under way concerning international experience in relation to citizen activation, and a study tour will be conducted to other parts of Denmark.

4. The Decision Support Track

The group working with this track consists of public servants from the municipalities and employees from the utility companies, with hands-on competence and expertise, supported by a professional topic and process consultant. This group is responsible for all elements of decision support from mathematical modelling to political processes. Consequently the work of this group is closely related to the work in the communication track and in the competence development track.

During its first part this track has, based on a needs assessment, focused on providing a commented overview of the large amount of modelling tools for climate

adaptation measures. First step was the development of a decision support matrix given commented overview of which models could be used for which purpose and the data requirements. It was divided into models for streams, areas with sewerage systems, and areas without. A description of preconditions for using the different models, and the costs in terms of economy and resources needed, is also given. It was presented and discussed with the users on workshops and amended in accordance with the discussions. Presently a comprehensive user survey is being conducted as background for the development of the 2nd generation of the matrix. The 1st generation is appreciated by local as well as national authorities and users both inside and outside the KLIKOVAND Family.

In parallel a so called *Green Spot Sub-project* is conducted which aims at using rain water as an attractive resource for recreational functions within each municipality, as well as across municipal and regional borders. This introduces blue-green tracks in the Capital Region of Denmark which transform a climate adaptation problem associated with water into a resource and a value.

Concerning the previously mentioned Municipal Climate Change Adaptation Plans, due by the end of 2013, support is presently given to the municipalities that missed the deadline. This allows a regional overview of these plans, thereby also facilitating technical as well as political action needed for trans-boundary municipal hot spots. Water does not respect municipal borders and this regional overview helps reveal opportunities for integrated, holistic solutions, as well as mitigate potential conflicts.

5. The Competence Development Track

The group working with this track consists of public servants from the municipalities and employees from the utility companies, with hands-on competence and expertise, supported by a professional topic and process consultant. This group is responsible for all elements of competence development from technical, planning and management competences of the municipal administration and the organisation of the public utility companies, to competences of the politicians to make informed decisions. In this context the group co-operates with professional training and educational organisation in order to ensure that courses given reflects the practical needs and special circumstances of the ones working in day-to-day professional life with hands-on climate change adaptation strategies, projects, and not least construction, and daily operation.

The work in this group, which started one year into project implementation, was based on a needs assessment by a web-based survey. This revealed that focus should be put on the political process including risk- and value estimation and economy, the formal hearing process, prioritisation of risk areas, level of ambition and modelling. The results of this survey were discussed at a workshop in December 2013, which confirmed the survey's prioritisation as follows: 1. Value estimation, 2. Level of Ambition, 3. Co-operation and Activation of the Politicians. The workshop further elaborated implementation aspects.

The political level was successfully addressed at a workshop in May 2013 targeting politicians and top executive public servants from the municipalities and the utility companies. A new follow-up workshop is planned for May 2014 addressing the role of the politicians in relation to implementing the municipal climate change adaptation plans. In addition to this a couple of workshops were conducted in 2013 concerning the technical, planning and administrative development and implementation of the municipal climate change adaptation plans.

The track has been quite successful in applying the multidisciplinary approach, which is a cornerstone of the KLIKOVAND Project. A workshop is planned for 2014 concerning support to the municipalities which are behind the schedule concerning the plans. In addition, a workshop addressing cost-benefit assessment of traditional winter road maintenance measures, including the use of salt, versus alternative and green measures, is under preparation. Finally a workshop is planned addressing the co-operation between municipalities and the utility companies to promote a holistic and cross functional approach locally.

Another tangible output of this track is the development and publication of a *Course Catalogue*. It will mainly consist of an overview of external courses offered considered relevant for KLIKOVAND Partners.

6. The Partnership Process

As mentioned previously it took three years of hard work to mature and formulate the project after the project idea was conceptualised. It was not technically complicated to formulate the project based on the original conceptual framework. However, building the partnerships around the project with 22 municipalities, 12 utility companies, and a regional authority, was very time and resource demanding. Not least because cross functional and multidisciplinary collaboration, central to the project, is not widely used in Danish Municipalities. In this way the project has been ground breaking and might stimulate similar initiatives to improve municipal project management in the future.

In hindsight, the three year pre-project maturing process was more demanding and at times more frustrating than the project period itself. It was an intensive period based on personal and professional lobby work, lots of meetings and many workshops, the aim of which was mainly to activate people more than get into technical discussions. At times this could prove very tiring for the core people managing the pre-project period as it required a lot of repetition to convince different stakeholder groups of the soundness of the idea - sometimes *once more* for the same people. It is safe to say that without the combination of a few enthusiastic core people, and some convinced executives who provided the necessary funds, resources and backing, the KLIKOVAND Project would not have come to life. First and foremost in this connection is the Municipality of Gladsaxe,

who provided the preliminary secretariat and provides the permanent secretary as well, and who is also the front runner in formulating KLIKOVAND2.

However, despite all the energy and resources committed there is still some miles to cover for KLIKOVAND in relation to the full benefit of the partnership process in relation to anchoring in the daily professional life of the municipalities and the utility companies as well as providing resource persons from the said for the project. Consequently the partnership process, which is sort of the *raison d'être* for the project also tends to be the *Achilles Heel* at the same time. The considerable achievements of the project are due to a very limited number of highly skilled and especially highly dedicated people from a few of the participating municipalities and utility companies. It is thanks to them that the KLIKOVAND vision has been implemented. This is a known feature of ground breaking, untraditional projects in Denmark (and elsewhere), and must be resolved before the completion of and before the launching of the KLIKOVAND2 in 2015. Consequently, great emphasis from project management is being put into this issue in this last implementation year of the project.

A major challenge in connection with this kind of partnership projects is that municipalities and utility companies are not used to work in this kind of loosely coupled networks that the KLIKOVAND Project represent. It is a combination of lack of experience and competence in relation to this combined with lack of time and lack of mandate from management. In addition to this KLIKOVAND have to compete for the time and resources with other networks in relation to the issue as well as in relation to other issues. In connection with the formulation of KLIKOVAND2 a lot of emphasis will be put on the capacity part as well as the network co-ordination. In relation to the co-ordination part the process in relation to KLIKOVAND2 has already started.

7. The Project Management Capacity

It is widely known that cross functional and multidisciplinary projects require not only substantial project management capacity but also special competences. It basically requires seasoned project managers with a well-equipped and not least field tested tools and methodology box. This should be supplemented with well-developed social and diplomatic skills, and not least team building and team management capacity. Finally there should be capacity for persistency as well as resilience as these kinds of projects frequently are challenged internally and externally from both friends and foes. One should be very lucky finding all this capacity and skills in one person. Normally a project management team has to be set up jointly covering all the necessary skills and capacity.

In the case of the KLIKOVAND Project the setting of the project management team took its point of departure in the above, and especially from the lessons learned from similar projects in the past. Based on this a Project Management Group was

formed consisting of a daily overall responsible project manager, project managers for each of the four tracks, and a supporting project management specialist. In setting of the team focus for the project manager chosen was on driving force, persistence, and resilience and daily project management capacity. Focus on the track managers was more on technical competences within the area in question but also on the above issues mentioned for the project manager. As for the supporting specialist a long track record with similar projects was prioritised and capacity for the supporting role. It is not always possible to get the *Dream Team* from the start but in terms of the KLIKOVAND Project the Dream Team has developed over time based on internal capacity development. However, there is still a need for more structured capacity development of the present management team, which is under consideration.

There have been external induced changes in the staffing of the project management team, but these have been absorbed. A major change was the change of the project manager in September 2013, due to that the project manager, who has managed the project since inception days, found occupation elsewhere. In a way this was beneficial for the project as the former was strong on innovation and networking, which was highly needed in the early partnership process. The present project manager is strong on day-to-day project management, which is highly needed in this tough operational period of the project up to completion at the end of 2014. In order to build the capacity of the two project managers they have/are participating in an advanced project management course on the Technical University of Denmark, which focus on the issues mentioned above. It will be considered if this, or other capacity building activities, is also relevant for the managers responsible for the individual tracks.

8. Discussion and Conclusion

KLIKOVAND was originally conceptualised as a regional municipal partnership project jointly addressing the political, planning, technical, administrative and organisational challenges caused by climate change in relation to increased and more intensive rain. There was a dual rationale underlying the relevance of this partnership building. Firstly that because water does not respect municipal borders trans-municipal co-operation is needed. Secondly that each municipality faces more or less the same challenges and that it is therefore cost-effective to co-operate and divide and distribute the necessary development projects and costs, and then facilitate trans-municipal knowledge transfer. This has been the basic strategic platform for the KLIKOVAND Project from the conceptualisation phase, over the project formulation and inception phase, and through the implementation phase.

It is not easy to build partnerships spanning municipalities of different size and with different geographic and demographic features, and not least different political priorities and different organisational and management cultures. The founders of the KLIKOVAND Project were aware of this, and consequently planned and

implemented a comprehensive pre-project formulation and maturing process. However, the time and effort needed for this pre-project phase was grossly underestimated as it took three years and lots of meetings, workshops and notes and Power Point Presentations before KLIKOVAND was born at the end of 2011. Despite recognizing this, and planning a comprehensive process, hindsight shows that it was not robust enough to accommodate the changing circumstances and especially the time needed. The long and winding road to a project that the founders recognized the need for resulted in fatigue amongst them. The approach became more ad hoc and less strategic as a result. In conclusion, partnership based projects require a lot of time and effort. Personnel must supplement professional capacity with persistence, resilience and not least a burning desire to see the idea materialise in practice.

The same qualities are needed in the project management group, since partnerships don't get easier once the project is formulated, funded and underway. A continuous effort is needed to drive the partnership process and ensure that not least project implementation but also project results is firmly anchored in the participating municipalities and utility companies. Trans-municipal knowledge transfer is also vital. The present project management group of the KLIKOVAND project is striving to adequately resolve this issue before the planned start of KLIKOVAND2 at the beginning of 2015. In this connection the previously mentioned course in advanced project management at the Technical University of Denmark is considered an important training initiative.

As for technical results the KLIKOVAND Project has been quite successful in addressing the legal and regulatory issues, providing overview of modelling tools, initiating awareness building, ensuring cross-municipal communication and knowledge transfer, and planning and initiating competence development activities. However, as mentioned previously the major part of the work has been done by relatively few people from the participating municipalities and utility companies, and fairly substantial consultancy support.