

Prerequisites for Successful Strategic Partnerships for Sustainable Building Renovation

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Abstract

The purpose of this paper is to identify the prerequisites for establishing successful strategic partnerships in relation to renovating buildings sustainably.

Establishing strategic partnerships is in the paper seen as a potential way to make building renovation more sustainable in Denmark particularly in terms of reducing energy consumption and use of resources and increase productivity. However, until now we have only had a limited number of such partnerships implemented and the few examples that do exist, mostly concern the construction of new buildings.

The paper is based on an investigation and analysis of strategic partnerships models as well as typical processes used in building renovation. Experiences from development of new strategic partnerships have particularly been found in the UK and Sweden. Based on two workshops with practitioners representing the whole value chain in the construction industry and analyses of two exemplary cases the paper suggests prerequisites for establishing successful strategic partnerships for sustainable building renovation.

The results show that strategic partnerships are collaborations set up between two or more organizations that remain independent with the purpose of obtaining a goal of mutual and high priority based on a binding commitment and a long term perspective by a consecutive number of projects. An essential prerequisite for most of the identified challenges in building renovation processes is stable project partners. Framework agreements is a way to legally establish collaboration with more stable project partners, but it is also in itself an important prerequisite to target challenges related to tender, competition and an extreme focus on lowest price.

Keywords: Strategic partnerships, Building renovation, Sustainability, Framework agreements, Renovation process.

1. Introduction

The need for building renovation has in recent years received increased attention in many European countries. One reason for this is an ageing and outdated building stock resulting in a need for more refurbishments and maintenance. Another reason is the need for more environmental sustainable buildings with reductions in energy consumption and CO₂-emissions to limit the harmful impact on climate change (Jensen and Maslesa, 2015). There is at the same time a need to upgrade many buildings to improve the quality of life – social sustainability, for instance in relation to indoor climate, and increase productivity in the building process and considerations for life cycle cost to ensure affordable housing – economic sustainability.

Low productivity and frequent conflicts in the construction sector have over the last decades led to an increasing interest in new forms of collaboration between the different stakeholders involved in construction projects. This has resulted in concepts like Partnering, Lean Construction and Integrated Project Delivery (Haugseth et al., 2014). Such concepts focus on the individual projects, but there has also in recent years been an increasing interest in more continuous collaboration across projects, e.g. strategic partnerships. However, at the present we still have a limited number of such partnerships implemented in Denmark and the few examples that do exist, mostly concern the construction of new buildings. There have over the years been several initiatives to increase productivity and innovation in renovation projects in Denmark, both from government, trade organisation and private foundations. However, the main focus has been on developing the technical solutions of the built product rather than the construction process and there has been limited scientific research into this specific domain.

This paper is based on research made as part of a societal partnership in Denmark called REBUS, which is an acronym for Renovating Buildings Sustainably (<http://rebus.nu/>). The purpose of the partnership is to create innovation and new solutions to improve building renovation of social housing with a focus on three areas: reduce energy consumption of building by 50%, reduce use of resources by 30%, and increase productivity 20%. Several initiatives are taken to meet these requirements, including improvements in processes, methods and products. REBUS is supported by the Danish Innovation Foundation and includes partners from the whole value chain in the construction industry as well as universities and knowledge institutions. This paper is an initial result of a work package concerning ‘Strategic partnership and business models’. It has been written by the university researchers involved in this work package and is partly based on workshops with the industry parties in REBUS.

The research question for the paper is: What are the prerequisites for establishing successful strategic partnerships in relation to renovating buildings sustainably? This is done by investigating recent examples of strategic partnerships between partners in the construction industry. Experiences from development of new strategic partnerships have particularly been found in the UK and Sweden. Based on workshops with practitioners and analyses of two exemplary cases, the paper suggests possible prerequisites for establishing successful strategic partnerships for sustainable building renovation.

2. Theory

2.1 Sustainable Building Renovation

Sustainable building renovation is understood as renovation of existing buildings that results in buildings that are more sustainable after the renovation than before.

The meaning of sustainability used in this paper is associated with the consideration of the interdependence of society, environment and economy in complex sustainability thinking based on the definitions from the United Nations with the three sustainability dimensions: social, economic, and environment (UN, 2012). In relation to assessing sustainability of investment projects Haavaldsen et al. (2014) recommends differentiating between the three levels: operational, tactical and strategic, where operational relates to the project output, the tactical relates to target groups and the strategic relates to greater society.

There is no general definition to describe building changes according to Thuvander et al. (2012), who present a large list of commonly used terms. We will like them use the term 'renovation' and we will particular focus on comprehensive renovation projects, which involve a major improvement in energy performance – also called 'deep renovation', for instance in EU's Horizon 2020 programme for research and innovation (EU, 2016).

In the construction industry it is often assumed, that renovation projects merely are a special type of new construction projects. They are often organised in the same way even though mostly with a more traditional division of labour and contract forms, and less standardisation. However, there are a number of differences between the process of new building projects and renovation projects. We have identified the following 7 characteristics, which distinguish building renovation compared to new building projects:

1. In renovation projects there is an existing building and it is possible and necessary to make a pre-evaluation of the building's design, condition and performance in the planning of renovation. However, a full diagnosis is often very costly, why some design solution might not be optimal when production starts (Thuvander et al., 2012).
2. In renovation projects there are also usually existing users and most of them will remain users after the renovation, so it is possible and relevant to collect their experiences and views on the buildings in a pre-evaluation and their needs and preferences in the briefing process during the planning of renovation (Værdibyg, 2013).
3. In renovation projects it is possible to set performance target for the building after renovation related to the performance before renovation and calculate the expected performance improvement. In new buildings the expected performance has to be related to more general benchmarks like requirements in building codes or benchmarks for other more or less similar buildings (Jensen and Maslesa, 2015).
4. In renovation project there is an existing building design and architectural expression, which has to be taking into consideration and limits the freedom for possible new design solutions. This is of particular importance if the building is listed or in other ways have been categorized as worthy of preserving by authorities (Værdibyg, 2013).

5. In renovation projects it is usually necessary to open up some of the existing building surfaces, which very often leads to surprises compared to drawings and other documents from the original building design and in relation to condition of building materials and installations (Værdibyg, 2013).
6. In renovation projects it is usually much more important to involve and inform the users during the construction process than in new building projects; both because it is their building before, during and after renovation and because they will experience disturbances and perhaps even relocation during the renovation project (Værdibyg, 2013).
7. In renovation projects it is possible in a post-evaluation after the renovation is finished to measure and make a direct calculation of how the building performance and user satisfaction has been improved compared to the situation before renovation, if a proper pre-evaluation was made (Jensen and Maslesa, 2015).

Renovation processes have in general more or less the same phases as new construction processes: pre-design /preliminary investigation or programming, design, construction, commissioning, and occupancy or use (Thuvander et al., 2012). In literature, there are a number of different models of renovation processes, for instance Thuvander et al. (2012) and Nielsen et al. (2016).

2.2 Strategic Partnerships

The literature on strategic partnerships often takes a starting point in the fundamental business dilemma between “make” or “buy”, which also forms the basis for theory of Transaction Cost Economics (Williamson, 2008; Thomassen and Jørgensen, 2013). The alternative of making is equivalent to in-house production and coordination by corporate hierarchy, while buying is equivalent to transactions between independent legal identities with coordination by a market. Williamson (2008) argues that for complex contracts it is beneficial with hybrids between pure market based transactions and pure in-house production. Thomassen and Jørgensen (2013) illustrate the continuum of coordination between market and hierarchy as shown in Figure 1.

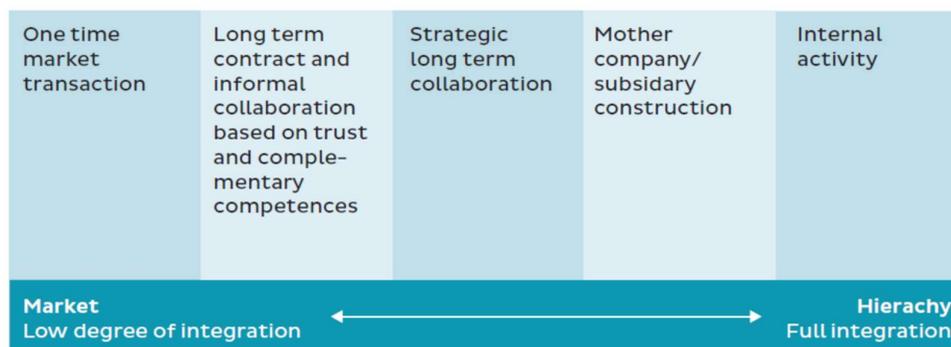


Figure 1: Coordinating inter-organizational activities (Thomassen and Jørgensen, 2013)

The main hybrid forms in Figure 1 are ‘long term contract and informal collaboration and complementary competences’ and ‘strategic long term collaboration’. These are similar to what other authors label on one side operational partnering or partnerships and on the other side strategic partnering or partnerships (Mentzer et al., 2000; Ventovuori, 2006).

Thomassen and Jørgensen (2013) attempts to give a more precise definition of the core elements of strategic long term collaboration and come up with the following primary conditions:

- The collaboration is set up between two or more organizations that remain **independent**.
- The collaboration is formed with the purpose of **obtaining a goal** of mutual and high priority to the companies involved.
- The cooperation is based on a **binding commitment**.
- The goal of the collaboration has a **long term perspective** either expressed in long term collaboration on a single project or by repetition (or expectation of repetition) of projects.

A characteristic of Transaction Cost Economics (TCE) is that it is based on the common precondition of “economical man” pursuing self-interest and opportunism as in other mainstream economic theory without leaving room for more soft aspects like trust. As Williamson (2008, p. 15) writes in a comparison of TCE with theory of Supply Chain Management: “TCE eschews appeal to user-friendly concepts, such as the illusive concept of trust”.

Thomassen and Jørgensen (2013) also identify other theoretical perspectives, which offer explanatory models for the rationality behind forming strategic long term collaborations. They suggest that Network Theory, Cluster Theory and Organizational Learning Theory might be more promising to understand strategic long term collaboration that supports a relational approach with a proactive strategy aiming for development and innovation.

For public building clients in the EU, procurement of building projects over a certain budget limit must follow the regulation in the EU procurement directive (EU, 2014). For procurement of a portfolio of projects, which are not specified in details at the tendering stage as it is typically the case for strategic partnerships, the most suitable contract form is framework agreements. Such agreements can normally only last for a period of 4 years, but projects started within this period can be finished after the period.

3. Methodology

This paper is based on literature studies of scientific publications, reports from authorities and trade organisations, websites and conference presentations of cases from public client organisations. The methodology of the review can be characterized as a scoping study, which aim to rapidly map the key concepts and main evidence in a research area from the perspective of key stakeholders (Arksey and O’Malley, 2005). The empirical research has included workshops with partners in the REBUS project involved in the work package concerning Strategic Partnership and business models and studies of 2 exemplary cases of long term collaboration in the construction industry.

Results from 2 workshops form the basis for this paper and they took place in September and October 2017. In each workshop participated 12-14 people. The participants included the following parties in the REBUS project: A contractor company (leader of the work package), an architect company, a consulting engineering company, a building material producing corporation, 2 social housing associations, and a university. The 2 social housing associations are representing building clients with a large portfolio of residential buildings and are expected to provide demonstration projects for building renovation in REBUS.

The workshops were facilitated by the university researchers, who made presentations with overview of the current situation in collaboration in construction and building renovation projects according to literature and cases from practice as basis for the workshop discussions. The first workshop focused on common problem areas in the construction and renovation process and the second focused on experiences from exemplary cases of long term collaboration projects in Sweden and the UK.

The 2 cases were selected as some of the most well documented and most relevant for strategic partnerships in relation to building renovation and because they have found interest as good examples by professionals in Denmark. Therefore, the cases have a fairly long history. The case studies are based on information from existing documentation. The cases include one from the UK and one from Sweden. They involved public clients and both concerned local administrations/municipalities.

4. Workshop Methods and Results

4.1 Workshop 1 - Challenges

As part of the introduction to this workshop on challenges in renovation processes the university workshop facilitators presented ten themes or challenges which were identified by literature as important in building renovation, see left column in Table 1 (based on Evbuomwan and Anumba, 1998; Hauser et al., 1998; Kadefors et al., 2013; Reason, 2000). These ten themes were identified by a wide variety of literature and were discussed by the workshop participants. As part of the discussions the participants were invited to suggest themes, which they saw as important to the renovation process. In the following round table discussions four more themes were identified, see right column in Table 1.

<i>Challenges identified from literature</i>	<i>Additional challenges added during workshop</i>
1. <i>Mistakes and defects in renovated buildings</i>	11. <i>Lack of focus on building operation</i>
2. <i>Stumbling blocks in renovation</i>	12. <i>Lack of holistic risk management</i>
3. <i>Phase transitions</i>	13. <i>Communication</i>
4. <i>Tender and competitions</i>	14. <i>Extreme focus on lowest price</i>
5. <i>The lack of common goals</i>	
6. <i>The lack of reuse of teams</i>	
7. <i>The lack of repetition in renovation projects</i>	
8. <i>The productivity of the building industry</i>	
9. <i>The state of the building prior to renovation</i>	
10. <i>Understanding the project partners</i>	

Table 1: Challenges in the building renovation process

After the discussion each participants was asked to select the three topics, which they found to be the most important for a strategic collaboration to address. Four topics out of the 14 were the most voted for and subsequently the participants were split up into three groups and all groups were asked to discuss the four topics: 4. Tender and competitions, 6. The lack of reuse of teams, 8. The productivity of the building industry, and 13. Communication. In the groups the participants were asked to substantiate the reasons they thought were causing these challenges, and their responses were collected by the workshop facilitators. The responses were then discussed in a final round table session.

4.2 Workshop 2 – Strategic collaboration

The goal of the workshop was to present and discuss cases and experiences from previous building and renovation projects which had employed some form of strategic collaboration. To do this a practitioner who had participated in strategic collaboration through framework tender for a Swedish municipality, and representing the building owner perspective, was invited to make a presentation (see section 4.4).

As part of the presentation by the workshop facilitators, cases from Sweden and the UK were presented to exemplify a top down strategic partnership approach adopted by the UK government and a bottom up strategic partnership approach used in the Swedish building industry instigated by several members of the construction supply chain. After the presentations the workshop participants were invited to share their thoughts on strategic partnership and which aspects they found insightful and useful resulting in the following:

- Alternative selection and allocation of partners in framework tenders.
- The transferability of funds from one project to another.
- Insights into the use of one or several strategic collaboration partners.
- Not only looking at strategic partners as a model when considering design-build projects.
- The use of open books not only to gain discounts.
- Strategic partnerships as a way to promote certification of sustainable construction
- Improved recruitment of talent to the construction industry by improving the building process.
- The many positive experiences with strategic partnerships were encouraging.
- The understanding that it is people in companies who collaborate and not companies themselves.
- The strategic partnership can be a way to focus on the building process and not so much on the design process.
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5. Case studies

5.1 Case - Salford City Council

The case study of the Salford City Council on their experiences with strategic partnerships was presented by Paul Mallinder, director of Urban Vision, in September 2006 at an event in Denmark. Outlining a number of challenges in construction projects which the city council sought to elevate through strategic partnerships, Mallinder (2006) listed:

- Tender every scheme irrespective of value.
- Traditional tendering is slow, costly and bureaucratic and waste of valuable resources.
- Select on lowest price - risk created by the use of fixed tendered rates does not encourage quality workmanship or good relationships.
- A slow process for getting projects on site and hence completed.
- Little incentive to perform well as the next project will still be tendered.
- Insufficient resource planning.
- Unable to involve the constructor at the planning and design stage.
- Different designer/ constructor teams on each project.
- Does not encourage flexibility or innovation.

- Little incentive to develop new ways of working which reduce costs/improve systems/processes etc.
- No collaborative working on local employment / environmental issues.

The result of the traditional approach to construction lead to poor customer satisfaction, delays and cost over runs, variable construction quality and a high number of defects in the finished buildings. Mallinder (2006) identified the main driver behind the change in approach as being; the UK government, the UK audit commission and strong leaders and innovators in the construction industry.

Mallinder (2006) outlined the key changes in the Salford City Council's approach as being: Removal of project by project tendering and select lists to create more certainty with a guarantee of many years work (without having to tender) providing performance standards and value for money remain high, removal of the risks created by fixed/lowest price tendering, creation of long term partnerships with a more robust selection process, greater use of payment linked to performance, more emphasis on quality, increased use of target cost/open-book payment systems, and appreciation that savings potential was wider than just construction costs.

At the time of the presentation the council had appointed 13 contractors for framework agreements of 5 plus two years or four years. These contracts spanned new buildings and refurbishments, highway civil engineering to demolition. Some of the early results of the new partnership schemes was projects completed on time and budget, no defects on handover, use of local supply chain, projects started and completed many months earlier than when using the traditional method and a construction process which is robust when faced with unforeseen delays or disruptions. Mallinder (2006) also described how the strategic partnerships not only helped the Salford City Council keep to their construction budgets but also the contractors which had a guarantee of future work and the users who experienced higher quality of work and a more integrated construction process.

5.2 Case – Telge Fastigheter and NCC

This case description is based on Kadefors (2013) and a presentation by Taina Sunnarborg (2015), Telge Fastigheter, in January 2015 at an event in Denmark. According to Sunnarborg (2015) there are 20 ongoing strategic partnerships in Sweden. In 2007 a new law concerning guaranteed access to municipal childcare was passed in Sweden. In the municipality of Södertälje this meant that the demand for new childcare facilities increased sharply. Traditional tender models were deemed too costly and time consuming and so a partnership model based on framework tender was initiated.

The first framework tender agreement was made between Telge Fastigheter, the company owned by the Södertälje municipality which owns and manages municipal property, and the contractor NCC after the municipality received six tenders. The framework was signed in 2008 and NCC was to construct six nursery schools and two larger schools with the framework terminating in 2012.

The second framework was made to include all major construction projects in Telge Fastigheter and Telge Bostäder with a construction cost of more than 10 million SEK. Three companies was

chosen to be part of the framework; Skanska (1st), NCC (2nd) and Arcona (3rd). The framework covered 2010 to 2014 with the possibility to prolong 1+1 year. Skanska was chosen to carry out a few projects within elder care, residential construction and commercial properties. All construction projects concerning schools and nursery schools were allocated to NCC, while Arcona did not do any work within the framework.

All projects were awarded as design-build contracts with NCC involved at a very early stage and participated in feasibility studies, project groups and workshops before the go/no go decision was made by the client. The projects followed three predetermined phases: 1. Feasibility study and brief, 2. Design development, and 3. Detailed design and construction

The organization setup to handle the framework consisted of a steering group responsible for all projects, project steering groups responsible for each separate project and collaboration groups responsible for carrying out the work in the individual projects. As part of the framework contract bonuses were allocated based on performance in; quality and economy, collaboration ability and attitude, user satisfaction, project control, and accident rates and work environment. On top of these organizational structures and monetary incentives all project managers from Telge Fastigheter participated in a partnering course and NCC utilized their internal partnering training program for all employees working in the framework. This was done to ensure that the necessary trust and emphasis on collaboration was present in the projects.

In material presented from Telge Fastigheter to politicians in Södertälje municipality the following advantages was found when using framework tendering:

- Quicker project start-up: saves time when contractors do not have to be procured for each project.
- More efficient process saves both time and money.
- Better use of project competences – all parties engage in identifying opportunities to save costs.
- Knowledge of which aspects drive costs provides a better basis for decisions in early phases and reduced budget uncertainty.
- May benefit from contractor's discounts on materials.
- More satisfied employees.

An analysis made by Telge Fastigheter found that the construction cost of the buildings made within the framework was comparable with similar projects carried out by other municipalities using traditional tender models. The main difference found was that the construction quality of the buildings made for Telge Fastigheter was significantly higher and that the operation costs of the buildings was significantly lower.

Entering into the framework enabled NCC to get a substantially larger volume of work from one contract, more predictable profit and lower risk. This makes this kind of agreement very attractive and the NCC building division in Stockholm has 90% of their turnover from partnership projects.

6. Analysis

Both cases include the core elements of strategic long term collaboration identified by Thomassen and Jørgensen (2013) and presented in section 2.2. A comparison of the 2 cases is shown in Table 2. Besides general characteristics, it includes the 3 dimension in the 'iron triangle' or 'value triangle' of project management: Value, cost and process (Jensen, 2013). The comparison shows

that even though that case 1 is top down and policy driven and case 2 is bottom up and needs driven, the cases for most aspects are very similar.

		<i>Case 1 – Salford City Council</i>	<i>Case 2 – Telge Fastigheter</i>
<i>General</i>	<i>Initiation</i>	<i>Top down – national initiative</i>	<i>Bottom up – local initiative</i>
	<i>Driver</i>	<i>Policy</i>	<i>Local needs</i>
	<i>Client</i>	<i>Local administration/municipality</i>	<i>Local administration/municipality</i>
	<i>Partners</i>	<i>Several contractors</i>	<i>Several contractors</i>
	<i>Legal basis</i>	<i>Framework contract</i>	<i>Framework contract</i>
	<i>Benefit for client</i>	<i>Removal of risk from fixed/lowest price tendering</i>	<i>Reduced budget uncertainty</i>
	<i>Benefit for contractor</i>	<i>Guaranteed further work</i>	<i>High volume, more predictable profit and reduced risk</i>
<i>Value</i>	<i>Quality</i>	<i>More emphasis</i>	<i>Significantly higher</i>
	<i>User satisfaction</i>	<i>Drastically increased</i>	<i>Drastically increased</i>
	<i>Defects</i>	<i>Reduced to almost none</i>	<i>(Not available)</i>
<i>Cost</i>	<i>Construction</i>	<i>Reduced</i>	<i>Comparable</i>
	<i>Operation</i>	<i>Reduced</i>	<i>Significantly reduced</i>
	<i>Incentives</i>	<i>Bonus scheme</i>	<i>Bonus scheme</i>
<i>Time</i>	<i>Project schedule</i>	<i>Quicker start up</i>	<i>Quicker start up – shorter projects</i>

Table 2: Comparison of the 2 cases

In Table 3 the researchers have evaluated, how the 14 challenges in Table 1 have been targeted in the cases. It shows that having more stable project partners is an essential prerequisite in relation to most of the challenges. Framework agreements is a way to legally establish collaboration with more stable project partners, but it is also in itself an important prerequisite to target the challenges related to tender and competition (challenge 4) and an extreme focus on lowest price (challenge 14). For the challenges related to lack focus on building operation (challenge 11) and lack of holistic risk management (challenge 12), we do not have sufficient information to make an evaluation, but a strategic partnership should not as such prohibit a stronger focus on both of these areas. That is probably more a question of changing the general mindset and management processes among the project partners on both client and provider side.

<i>Challenges in the building renovation process</i>	<i>Targeted in the cases</i>
<i>4. Tender and competitions</i> <i>14. Extreme focus on lowest price</i>	<i>Problem reduced by framework agreements</i>
<i>1. Mistakes and defects in renovated buildings</i> <i>2. Stumbling blocks in renovation</i> <i>3. Phase transitions</i> <i>5. The lack of common goals</i> <i>6. The lack of reuse of teams</i> <i>7. The lack of repetition in renovation projects</i> <i>8. The productivity of the building industry</i> <i>9. The state of the building prior to renovation</i> <i>10. Understanding the project partners</i> <i>13. Communication</i>	<i>Problem reduced by more stable project partners</i>
<i>11. Lack of focus on building operation</i> <i>12. Lack of holistic risk management</i>	<i>Not known</i>

Table 3: Challenges and how they are targeted in the cases

The cases were selected as exemplary because they are well documented and seen as successful but they are both some years old. More recent cases have shown an increased focus on sustainability and use of sustainability certification as documentation of the quality of the building projects are beginning to become more common and starting to be used also for renovation projects.

7. Conclusions

Strategic partnership is a collaboration set up between two or more organizations that remain independent with the purpose of obtaining a goal of mutual and high priority based on a binding commitment and the goal has a long term perspective by a consecutive number of projects. An essential prerequisite for most of the identified challenges in building renovation processes is stable project partners. Framework agreements is a way to legally establish collaboration with more stable project partners, but it is also in itself an important prerequisite to target challenges related to tender, competition and an extreme focus on lowest price.

However, framework agreements are not a sufficient condition for successful strategic partnerships. It is also necessary that the involved parties have the right mindset and a maturity to manage the partnership. This is in focus of our further research.

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