



AALBORG UNIVERSITY
DENMARK

Aalborg Universitet

Five Years Later

Revisiting the Construction Client as Change Agent

Haugbølle, Kim; Olsen, Ib Steen; Vogelius, Peter

Published in:
CIB Proceedings

Publication date:
2011

Document Version
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

Citation for published version (APA):
Haugbølle, K., Olsen, I. S., & Vogelius, P. (2011). Five Years Later: Revisiting the Construction Client as Change Agent. *CIB Proceedings*, 214-224. <http://www.sb11.org>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

Take down policy

If you believe that this document breaches copyright please contact us at vbn@aub.aau.dk providing details, and we will remove access to the work immediately and investigate your claim.

Five years later: revisiting the construction client as change agent



Kim Haugbølle
Senior Researcher,
PhD
SBi/AAU – Danish
Building Research
Institute, Aalborg
University
Denmark
khh@sbi.dk

Researcher Ib Steen Olsen, SBi/AAU – Danish Building Research Institute/Aalborg University, Denmark, *iso@sbi.dk*

Senior Researcher Peter Vogelius, SBi/AAU – Danish Building Research Institute/Aalborg University, Denmark, *pev@sbi.dk*

Summary

This study will analyse how the lessons learned from participation in a sustainable development project some five years ago is implemented and sustained over time in a social housing company. Sustainable refurbishment of the existing building stock requires the implementation of new procurement strategies and methods in order to succeed. The issue of developing sustainable procurement strategies and methods were addressed by a group of social housing companies within the European project SUREURO (Sustainable Refurbishment Europe). But what became of the results? This study draws on business strategy analysis and is based on the combination of three sets of methods: A re-analysis of existing documentary material from the SUREURO project along with qualitative research interviews with previous project participants in one of the national pilot projects. This article will report on the preliminary conclusions of the study that will be finalised in spring 2011. Thus a revised version will be provided for the final paper submission. In conclusion, this paper has illustrated the problems of embedding new sustainable procurement policies and practices in a construction client organisation. First, although the social housing company has aligned itself with its environment on sustainability, other political agendas on e.g. privatisation may be more important to align with. Second, the absence of a concerted and comprehensive strategy hampers the process. Third, the autonomous internal decision-making processes may crumble the ability of a construction client to act as a change agent in construction.

Keywords: Innovation, Procurement, Strategy, Client, Organisation, Housing

1. Introduction

The construction and real estate cluster has significant environmental impacts for example with respect to energy consumption, use of raw materials, waste generation and health issues. A number of public policies have been implemented in the European countries to reduce the environmental impact for example with respect to energy consumption (see e.g. [1] and [2]). Despite the importance of these public policies, it has also become clear that further actions from the construction and real estate cluster itself are necessary to achieve the desired goal of sustainability. However, the construction industry is often accused of showing a low level of innovation (see e.g. [3]). In response, policy makers, the AEC (Architectural, Engineering and Construction) industry, clients and researchers have called for the construction client to become a change agent that can stimulate a sustainable transformation of the construction industry for example by using procurement as the driver of innovation (see e.g. [4]).

These calls have manifested themselves in various forms like governmental building policies for public clients in e.g. Denmark and the Netherlands, the revaluing construction initiative of CIB and the establishment of the International Construction Clients Forum (ICCF) as well as a similar network for public real estate owners (PURE-net). Along with these calls for action the research interest on the role of construction clients as change agents have increased (see e.g. [5] and [6]). But little is still known about **how** clients in practice can make a difference as change agents.

If clients are to act as change agents towards a sustainable built environment, they will need to rest their policies and actions on firm ground rather than loose sand. Thus, sustainable refurbishment of the existing building stock requires new procurement strategies and methods in order to succeed. More specifically, two challenges need to be addressed (see e.g. [7] and [8]):

- From traditional refurbishment to sustainable procurement strategies – making a sustainable difference.
- From business-as-usual to change management – implementing new ideas and sustaining change etc.

In the major European research and development project SUREURO (Sustainable Refurbishment Europe), the issue of developing sustainable procurement methods and strategies were addressed by a group of social housing companies. The SUREURO project was concluded more than 5 years ago, but what became of the results? The purpose and scope of the actual case study is to analyse how a social housing company has implemented their experiences and knowledge gained from participating in a research and development project and sustained these over time.

2. Methodological framework

According to [9] an abundance of frameworks for analysing strategy processes have been provided the last 30 years; however, what has been missing in the debate is guidance as to what the product of these frameworks should be – and more fundamental, what actually constitutes a strategy. The main point of critique is that the use of specific strategic tools tends to draw the strategist toward:

"...narrow, piecemeal conceptions of strategy that match the narrow scope of the tools themselves. For example, strategists who are drawn to Porter's five-forces analysis tend to think of strategy as a matter of selecting industries and segments within them. Executives who dwell on "co-opetition" or other game-theoretic frameworks see their world as a set of choices about dealing with adversaries and allies." (p. 51).

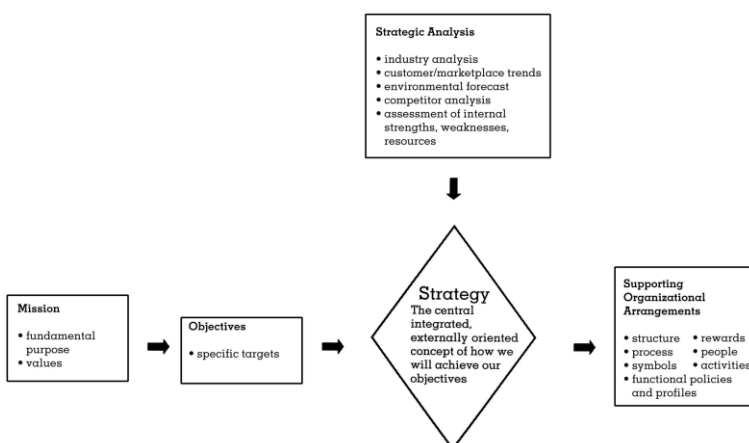
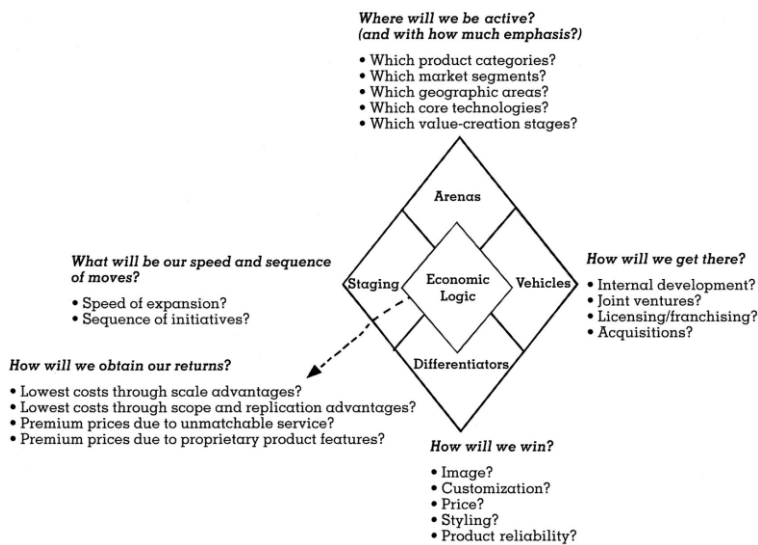


Fig. 1 Putting strategy in its place according to [3] (p. 53).

Rather, strategy should be seen as an integrated set of choices that stand apart from a catch-all conception of strategy as every important choice an executive officer faces in his work. Strategy is concerned with how a business intends to engage its environment, so choices about internal organisational arrangements are not part of strategy and neither are well-known concepts such as *mission* and *objectives*. These should rather be viewed as standing apart from and guiding the strategy. Thus, [9] provide us with the following illustration to put strategy in place (see Figure 1), which we will use as basis for our analysis of the housing company.

Arguing that a strategy has five basic elements, [9] provide a framework for strategic processes that provides answers to the following five core questions (see Figure 2):



- Arenas: Where will we be active?
- Vehicles: How will we get there?
- Differentiators: How will we win in the marketplace?
- Staging: What will be our speed and sequence of moves?
- Economic logic: How will we obtain our returns?

Thus, the model will enable us to discuss and assess the strategy of the social housing company from outside a specific delimited theoretical or economical perspective and instead focus on the strategy of the social housing company as an integrated, mutually reinforcing set of choices that forms a coherent whole.

Fig. 2 The five major elements of strategy [3] (p. 54).

In the Discussion chapter we will return to this framework in order to address six criteria for assessing the coherence and adequateness of the strategy.

This case study is based on the combination of three sets of methods: First, the extensive documentary material from the SUREURO project will be re-analysed. Second, a number of qualitative research interviews have been conducted with previous project participants in the Danish national pilot project. Third, we will draw on the experiences gained by one of authors of this article, who was also involved in the SUREURO project. This article will report on the preliminary conclusions of the study that will be finalised in spring 2011. Thus a revised version will be provided for the final paper submission.

3. Setting the scene

3.1 About SUREURO – Sustainable Refurbishment Europe

In Europe, more than 170 million people are living in some 80 000 post-WWII residential areas with about 56 million flats, which have been built from 1950 onwards. The need for refurbishment was and is enormous. Following a successful sustainable refurbishment project in the mid-1990s, the Swedish social housing company Kalmarhem took the lead on initiating SUREURO. The interest among other European social housing companies was compelling. With a total budget of close to 10 Million Euro, the four-year research and development project SUREURO was launched in 2000 partly funded by the European 5th Framework Programme within the action of City of Tomorrow [10].

The objectives of the SUREURO project were:

- To provide housing organisations with practical management tools for integrating sustainable development and tenant participation in their refurbishment management process without exceeding the normal costs for the tenants.
- To develop systems and methods for construction companies, designers, architects and engineers; models for better planning, design and technical specifications of refurbishment projects.
- To test and implement new, flexible technical concepts for sustainable transformation of existing housing areas. The result is a unique and innovative system for the total process, tested and implemented in twelve projects in nine different countries.

The SUREURO project included twelve housing organisations from nine countries: Sweden, Denmark, Finland, the Netherlands, United Kingdom, France, Germany, the Czech Republic and Italy. The consortium also included fourteen research organisations, one sub-national authority, two consultancy companies and two construction firms, who collaboratively worked on the twelve national pilot projects.

3.2 About the social housing company AKB

Boligselskabet AKB s.m.b.a. (Limited Liability Company) was a Danish non-profit social housing association with some 17,000 rented homes in the metropolitan area of Copenhagen. AKB was established in 1913. Around 2000 AKB had some 280 employees, of which 90 worked in the central administration and 190 worked locally as managers and caretakers in the individual residential areas. AKB provided management services to 10 local social housing associations consisting of about 80 autonomous estates. By 1 January 2007 AKB merged with another social housing company KAB – Bygge- og Boligadministration s.m.b.a. to form the new social housing company KAB [11]. The newly formed housing company rents out some 50,000 homes in the metropolitan area of Copenhagen. The information below is generally applicable to all social housing company, since they all have to comply with the same national regulation of their activities.

Each estate in a social housing company has its own tenants' board. Each board of tenants has at least 3 members, elected at annual meetings. The local associations elect members to the board of the housing company (the administration company). This board draws up the policy framework for overall company management.

The tenant representatives and staff from the housing company collaborate to decide on objectives, overall strategy and policies for information to the tenants, employees' etc. Social housing companies also develop training programmes for tenants and employees. At the local offices, the employees work with the management of the local estate and prepare the budgets and accounts for the estates. A social housing company include several functions like management, financing, administration, information systems and so on.

3.3 About the pilot project Taastrupgaard

The Danish pilot project of SUREURO was the residential area Taastrupgaard [12]. Taastrupgaard is situated 20 km west of the city of Copenhagen, and it was built in 1970-1972. The area consists of 8 blocks 4 storeys high, which are built together to form a 700 m long main building. Further, the area houses 31 detached blocks each 3 storeys high. All in all, the residential area comprises some 1,000 tenancies plus 53 garages and 3 tenancies for commercial use. The total floor area is 83,547 m² with an outdoor area of about 150,000 m². 40 employees are taking care of the residential area.



Fig. 3 View of Taastrupgaard. Photo: Kim Haugbølle

Some 2,500 people live in Taastrupgaard of which about 45 % is under 25 years. Half of the tenants hold Danish citizenship, and more than two-thirds of the tenants are immigrants or descendants of immigrants from non-Western countries. The area is marked by a number of social problems linked to the mixed composition of the tenants: people on low incomes or social benefits, unemployment, mental illness, drug and alcohol abuse etc.

The main construction system consists of prefabricated concrete elements. The architectural expression is very monotonous. The buildings are worn down. Due to the heavy wear and building defects dating back to the original design of the buildings, the residential area underwent comprehensive refurbishments in 1981-1983 and again in 1985-1991. The pilot project became part of the third comprehensive refurbishment to start in 2002.

At the outset, nine development projects were defined in the Danish pilot study Taastrupgaard as part of SUREURO. Due to practical circumstances and financial constraints, the number of projects was later reduced to seven sustainable development projects. The seven development projects included:

- Declaration of building materials – sustainable owner demands to building process, construction and materials.
- Development of new bathrooms.
- Development of low energy outdoor light systems.
- Natural ventilation system.
- Sorting and treatment of waste.
- Information strategies and direct influence by the tenants.
- Establishment of green jobs on the estate.

4. Revisiting a social housing company as change agent

4.1 At which fields will the client be active?

Judged by the social, cultural, economic and environmental dimensions of sustainability, the social housing company AKB had years of experience with sustainable development before entering SUREURO. For a number of years, affordable housing, tenants' democracy, energy and water savings in buildings etc. had been an integral part of the daily and political practice of housing companies in Denmark. Even before entering SUREURO, the housing company AKB had an environmental policy as part of its vision, mission and action plans. However, the environmental policy was not considered to be comprehensive. Thus, the housing company decided to develop a new environmental policy for the period 2003-2005.

During 2001 the housing company developed a proposal for a new environmental policy. In early 2002, the proposal was presented at the annual assembly of the housing company and adopted as new policy. The environmental policy covered 7 areas that were not only addressing the physical environment but also development of new attitudes, tenants' involvement, environmental accounting, partnerships etc. The 7 goals of the environmental policy were broken further down to another 16 concrete measures to be taken by the social housing company. The seven goals of AKB were [13]:

- To work for an increased focus on sustainable planning and development of urban and residential areas.
- To inspire tenants and employees to be environmentally conscious in the everyday life.
- To include sustainability in building and refurbishment activities.
- To continue to work for a resource efficient organisation.
- To further develop environmental accountancy.
- To develop local partnerships to ensure sustainable development and profiling of residential areas.
- To emphasize the use of new technology in the housing sections in order to create new services.

Along with the development of the new environmental policy, the top management decided to initiate a development project in relation to the national pilot project Taastrupgaard with the purpose of developing a new environmental guideline to be used in future refurbishment projects. Thus the housing company hired a consultant company to develop the environmental guideline. During an intensive period of less than 3 months in the late summer and beginning of autumn 2001, the development of the guideline took place. The work was undertaken in close cooperation with a group of employees from the housing company and participants from the other Danish partners in the SUREURO project along with researchers and consultants working on associated development

projects in Taastrupgaard.

Based on the principles of environmentally sound design [14], the environmental guideline set out to describe how AKB as a construction client could integrate environmental concerns in its procurement of refurbishment projects. First, the environmental guideline contained a survey of information sources and a general survey of existing initiatives, tools, procedures and barriers to the inclusion of environmental concerns in refurbishment projects. Second, the environmental guideline described the environmental targets, procedures for choosing measures to be taken, and requirements to the process of planning, designing and executing the refurbishment project. Four prioritized targets were set and for each of the four targets, a detailed list of specific measures was suggested. The four targets were:

- Indoor climate.
- (Hazardous) waste.
- Energy consumption.
- Resource consumption including consumption of materials during refurbishment, water consumption during operation, and noise and vibration during refurbishment.

4.2 How will the client get there?

With the new environmental policy and guideline, the housing company had strengthened its strategic and tactical orientation. Legitimacy for an improved sustainable effort had been granted from the general assembly, targets had been set for a new course of the housing company, and some of the elements of the environmental policy and guideline had been turned into practice. They were used as an environmental brief in relation to procurement of products and services from consultants and contractors. Moreover, the environmental policy and guideline was expected to provide the housing company with a competitive advantage, when the housing company entered into tenders for the role as client on new social housing projects.

4.3 How will the client win?

The feasibility tool developed within the frame of SUREURO was praised as a critical tool that would make it possible for the housing company to identify problematic trends in a residential housing area well in advance in order to take the necessary steps to counteract an unwanted development. With the analysis conducted by using the feasibility tool, the housing company would be able to address problematic trends before they actualised as problems. This in turn was believed to improve the image of the individual residential housing areas and more overall the image of the housing company as such.

4.4 At what speed will the client proceed?

At the closure of the SUREURO project, the social housing company formulated its ambition on the implementation of the results from the project. In sum, these included [7]:

- To convert the SUREURO specific tools in to a Danish, operational and practical version.
- To train staff due to implementation of knowledge and tools obtained during the last 4-5 project years.
- To further develop some of the tools. AKB will create a prioritised list of relevant tools.
- To continue contact and project relations with some of the contacts and partners.
- To write down our experiences during these years, in order to investigate the experiences into depth, and for the purpose of implementing new working methods in the organisation.
- To study some of the concrete inspirational examples (e.g. 3-liter house from Germany) in more details in order to learn from these and implement lessons learned in new cases in AKB.
- To share some of the experiences and lessons learned with other housing companies in Denmark through existing networks in Denmark.

At what speed the client wanted to proceed with the implementation and further development of SUREURO tools and methods is very difficult to assess, since there was not a very explicit action plan in place at the end of the development project besides the above formulated ambitions. What actually did happen after the closure of SUREURO is under investigation.

4.5 How will the client obtain returns?

Since AKB/KAB is a non-profit housing company, the issue of obtaining returns on investment is somewhat different from a pure market-oriented firm for which the analytical framework by [9] was originally developed. Still, the housing company is facing two main challenges when it comes to economic return on investments. First, the social housing company is competing not only with other social housing companies but also private property owners on attracting tenants as well as private property market of home-owners. Second, the social housing company has to finance all of its activities in the individual residential areas on a balance-of-cost basis, which means that the social housing company is not generating a profit for investors but still needs to generate an income to finance its activities. The same principle of balance-of-cost also applies to the individual residential areas, where the tenants' representative in the tenants' board and at the annual meeting will have to sanction rent increases or not. Thus, the social housing company can on its own not initiate costly refurbishments without the explicit consent of the tenants.

5. Discussion

The overall criteria for the evaluation of the strategy of the housing company are consistency and adequateness. Consequently, [9] proposes that it is insufficient to simply make five sets of choices regarding arenas, vehicles, differentiators, staging and economic logic. Thus, some strategies are clearly better than others, and to test the quality of the strategy the following key evaluation questions can be applied:

1. Does your strategy fit with what's going on in the environment?
2. Does your strategy exploit your key resources?
3. Will your envisioned differentiators be sustainable?
4. Are the elements of your strategy internally consistent?
5. Do you have enough resources to pursue this strategy?
6. Is your strategy implementable?

According to [9], the six key evaluation criteria are an extraction of the most powerful messages of a wealth of strategy-analysis tools that have been developed in the past 30 years, being such tools as industry analysis, technology cycles, value chains and core competencies (p. 61). We will consider each of these in turn below. As for the moment, the points made below are still to be considered as preliminary conclusions that require further substantiation as the study is finalised in the coming months.

5.1 Does AKB's strategy fit with what is going on in the environment?

The sustainable strategic orientation of the social housing company is well in line with both national and international policies on sustainability as well as with policies on the construction client as a change agent.

5.2 Does AKB's strategy exploit their key resources?

Whether the strategy of the social housing company exploited its key resources over time may be judged along two dimensions. First, knowledge is in general personified and carried by individuals. At the end of the SUREURO project, the project manager lost her heart to another participant in the SUREURO project and decided to move to United Kingdom. Thus, the social housing company lost one of its key personnel resources and with her also the intimate knowledge and insights gained in the development project. Further, the close working relation with the research and consultancy group evaporated after the project closure. To the benefit of the housing company, this loss of key resources was partly counteracted by the institutionalisation processes of lessons learned in SUREURO most notably through the environmental policy.

The other dimension is related to the acquisition of *new* key resources. Partly by chance, partly by design the social housing company got access to a range of new key resources through the merger with another social housing company KAB Bygge- og Boligadministration s.m.b.a., which

was effectively put in place by 1 January 2007. KAB had for years been highly active and visible in the sustainable arena through participation in a number of predominantly Danish research and development projects. Through this participation, KAB Bygge- og Boligadministration had developed extensive knowledge and experience on sustainability.

5.3 Will AKB's envisioned differentiators be sustainable?

One of the core differentiators of social housing companies in Denmark is their professionalism obtained and maintained through their very persistence in the market. Social housing companies have been around for decades and they have been executing refurbishment activities on a recurrent basis. Despite changes over time like outsourcing of consultancy tasks etc. they still hold considerably higher professionalism and competence-building on a general scale than most private clients on sustainable building and refurbishment (see e.g. [15]). The main question is whether social housing companies will stay in place as we know them. There has been a strong political pressure by the government to privatise social housing through selling off the flats. This political and ideological ambition of privatisation may turn out to be a serious threat towards the professionalism and the very existence of the social housing companies.

5.4 Are the elements of AKB's strategy internally consistent?

The question implies that a strategy is in place. This assumption may be questionable in the case of AKB. A very overall plan or rather catalogue of ideas was presented at the closing of the SUREURO project (see Chapter 4.4 above). But there did not exist a fully formed strategy and action plan to be implemented in the housing company after the closure of the development project. Some of these ideas have been carried out, others not. However, the subsequent merger between the two social housing companies has potentially strengthened the policies and practices of sustainability (this is to be investigated in further detail).

5.5 Do AKB have enough resources to pursue this strategy?

The issue of having enough resources to pursue the strategy touches on three dimensions: 1) access to resources, 2) linking business and project processes, and 3) agency or structural constraints.

First, having or gaining access to resources, in particular finances, is crucial. The funding model of social housing is basically based on a balance-of-cost principle, which implies that refurbishment costs will usually be directly reflected in the rent level of the tenants. Each residential area is in principle a self-governed and self-contained financial entity. In certain cases like Taastrupgaard additional funding can though be achieved from the common savings fund (Landsbyggefonden) for extraordinary refurbishment, but the pressure on these funds is high. The housing company is not allowed to generate a profit, and the social housing company do not have any funds to distribute between different residential areas. Consequently, the social housing company will usually not have the opportunity to make increased or even aggressive investments in sustainable refurbishment due to their very sparse financial resources as a limited company.

The second dimension relates to the mobilisation and use of knowledge on a continuous and recurrent basis. On one hand the professionalism and recurrent refurbishment activities of the housing company ideally provide the opportunity for continuous improvement of policies and practices. On the other hand, the project-based nature of construction often makes it difficult to link the business processes of the housing company with the project processes of the individual refurbishment project as pointed out by among others [16]. This is a problem that is further accentuated when it comes to linking development projects to specific refurbishment projects as pointed out by [17]. Thus, the development activities have a tendency to become drowned in the day-to-day project-oriented practices, which challenges the embedding of new procedures and practices internally.

The third dimension relates to agency or structural constraints, or in other words, what is the open negotiation space for the social housing company to navigate within. Current regulation of the

social housing sector in general is very tight and with limited degrees of freedom to navigate within. This regulation provides the tenants with certainty, transparency and influence through the legal rights on decision-making power, notably the extensive tenants' democracy. The drawback is that the social housing company is left with rather limited degrees of freedom to act.

5.6 Is AKB's strategy implementable?

Judging whether the social housing company is or can become a change agent for sustainable construction, will to a large extent rest on the ability for a social housing company to implement its sustainable strategies in the shape of environmental policies, supporting tools and procedures etc. For the clients to make a difference in construction they will need to turn their potential purchasing volume into buying power. Due to the dispersed and autonomous decision-making process of the tenants' democracy of social housing in the individual residential areas, it may be difficult to align the various purchasing wishes into buying power.

The social housing company itself is fully aware of the constraints (and benefits) imposed by the tenants' democracy as well as the financing model of social housing. Thus, consultations, negotiations, information etc. or in short attempts to persuade the individual boards and annual meetings of the individual residential areas are constantly being practiced by the housing companies to ensure a sustainable direction of refurbishment projects. The outcome of this shaping process is not given in advance, since the sustainable ambitions of the individual autonomous residential area may be set high or low. Consequently, the double-edged sword of the tenants' democracy is both supporting and hindering the turn of sustainable policies into sustainable practices.

6. Conclusion

This study has analysed how a social housing company as construction client can act as a change agent in the construction and real estate industry cluster with respect to improving sustainability of housing provision.

In Figure 4, we have illustrated AKB's strategy according to the strategy model. Here the main findings from the preceding analysis are summarised in bullet points according to the five elements of the strategy model.

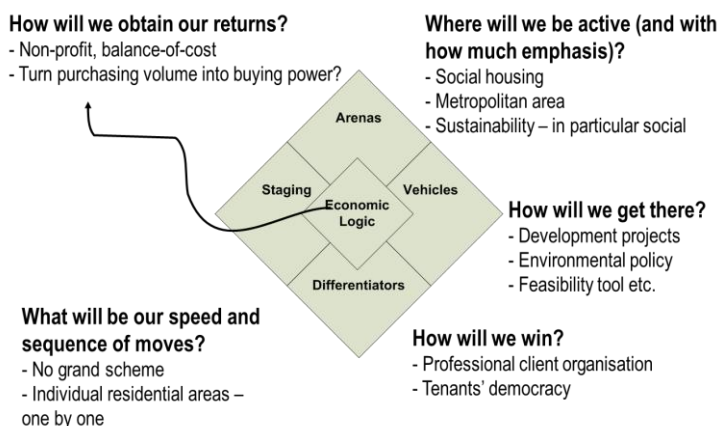


Fig. 4 Summary of the strategy of AKB.

The study has shown that a social housing company as construction client *may* act as a change agent in order to improve sustainability in housing, but not all strategies and tools are equally successful and appropriate. A number of observations lead to five observations regarding *how* the construction client may act as change agent when it comes to making strategic choices on arenas, vehicles, differentiators, staging and economic logic.

The appropriateness of the strategy of the social housing company in relation

to the overall mission and objectives can be judged along the following six criteria:

- The strategy of AKB is well aligned with what is going on in the environment, but the broad conception of sustainability is likely to be more narrowly focused on energy.
- Despite the resignation of key personnel, some institutionalisation of environmental policy has taken place and new resources have become available through the merger with another housing company.
- The political and ideological ambition of privatisation of social housing may turn out to be a

serious threat towards the professionalism of the social housing companies.

- A catalogue of development ideas has been provided, but we do not see a coherent strategy and action plan unfold to ensure sustainability in the housing company.
- Pursuing the strategy depends on the ability of the housing company to 1) gain access to resources, 2) linking business and project processes, and 3) expand agency to circumvent structural constraints.
- The dispersed and autonomous decision-making process of the tenants' democracy in the individual residential areas makes it less likely that a social housing company can turn their purchasing volume into buying power, which may transform the construction industry.

In conclusion, this paper has illustrated the problems of embedding new sustainable procurement policies and practices in a construction client organisation. First, although the social housing company has aligned itself with its environment on sustainability, other political agendas on e.g. privatisation may be more important to align with. Second, the absence of a concerted and comprehensive strategy hampers the process. Third, the autonomous internal decision-making processes may crumble the ability of a construction client to act as a change agent in construction.

7. Acknowledgements

The paper has been written within the framework of the Nordic research project "SURE: Sustainable Refurbishment – lifecycle procurement and management by public clients" (2009-2011). The project is carried out in collaboration between the Danish Building Research Institute/Aalborg University (Denmark), Multiconsult AS and NTNU (Norway), VTT (Finland) and the Innovation Center Iceland (Iceland). The authors gratefully acknowledge the financial support given by NICE (Nordic Innovation Centre), TEKES and the Danish Enterprise and Construction Authority. The authors would also like to thank all clients for valuable discussions and inputs as well as making case material available for investigation.

8. References

- [1] AID-EE EU-project (2006b). *Success and Failure in Energy Efficiency Policies – Ex-post Evaluation of 20 Instruments to Improve Energy Efficiency Across Europe*. Active Implementation of the European Directive on Energy Efficiency (AID-EE). www.aid-ee.org. March 2006.
- [2] AID-EE EU-project (2006c). *Guidelines for monitoring, evaluation and design of energy efficiency policies – How policy theory can guide monitoring & evaluation efforts and support the design of SMART policies*. Active Implementation of the European Directive on Energy Efficiency (AID-EE). www.aid-ee.org. October 2006 at the address www.lga.gov.uk
- [3] MANSEAU, A. & SEADEN, G. (eds. 2001). *Innovation in Construction. An International Review of Public Policies*. London & New York: Spon Press.
- [4] EDLER, J. & GEORGHIOU, L. (2007). Public procurement and innovation – Resurrecting the demand side. *Research Policy*, Vol. 36, 949-963.
- [5] BROWN, K., HAMPSON, K. & BRANDON, P. (2005). *Clients Driving Construction Innovation: Mapping the Terrain*. Australia: Icon.Net Pty Ltd.
- [6] BROWN, K., HAMPSON, K. & BRANDON, P. (2006). *Clients Driving Construction Innovation: Moving Ideas Into Practice*. Australia: Icon.Net Pty Ltd.
- [7] HAUGBØLLE, K. & ENGBERG, L. A. (2005). "Sustainable procurement in Danish social housing." SB05 Tokyo National Conference Board: Action for Sustainability: *The 2005 World Sustainable Building Conference in Tokyo*. SB05Tokyo. Tokyo: SB05 Tokyo National Conference Board. pp. 4055-4062.
- [8] ENGBERG, L. A. & HAUGBØLLE, K. (2005). "Sustainable management in Danish social housing? SB05 Tokyo National Conference Board: Action for Sustainability: *The 2005 World Sustainable Building Conference in Tokyo*. SB05Tokyo. Tokyo: SB05 Tokyo National Conference Board. pp. 3206-3213.
- [9] HAMBRICK D. C. and FREDRICKSON J. W., "Are you sure you have a strategy?", *Academy of Management Executive*, Vol. 19, No. 4, 2005, pp. 51-62.
- [10] <http://www.sureuro.com>.

- [11] <http://www.kab-bolig.dk>.
- [12] <http://www.taastrupgaard.com>.
- [13] Final report of Danish pilot project (internal document).
- [14] BPS (1998). *Miljørigtig projektering. BPS 121 & 122*. Hørsholm: BPS-centret.
- [15] JENSEN, J. O.; JENSEN, P. A.; ELLE, M.; HOFFMANN, B.; NIELSEN, S. B. & QUITZAU, M-B. (2008). Miljøstyret bygningsdrift i danske boligejendomme – under forskellige ejerformer. Hørsholm: SBI 2008:15.
- [16] GANN, D. M. & SALTER, A. J. (2000). "Innovation in project-based, service-enhanced firms: The construction of complex products and systems", *Research Policy*, 29 (7-8), pp 955-972.
- [17] CLAUSEN, L. (2002). Innovationsprocessen i byggeriet – fra idé til implementering i praksis. Lyngby: BYG-DTU. R-031.