



Client Innovation Networks

Energy Savings in Housing Refurbishment

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Client innovation networks: Energy savings in housing refurbishment



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Summary

In recent years, the client has been called upon by policy makers, the construction industry as such and the clients themselves to become a change agent that can stimulate a reduction of CO₂ emissions. Despite these calls for action, little is known about *how* clients can make a difference as change agents. This study analyses how a group of Swedish clients and building owners has attempted to become a collective change agent by forming a strategic innovation network named BeBo in order to reduce energy consumption in housing refurbishment. Drawing on business strategy analysis and action research principles, the study critically assesses the impact and success of the various strategies deployed by the strategic innovation network of clients. The study illustrates that clients *can* act as change agents in order to reduce energy consumption in buildings, but not all strategies and tools are equally successful and appropriate. A number of observations lead to five lessons learned regarding *how* the client acts as change agent when it comes to making strategic choices on arenas, vehicles, differentiators, staging and economic logic. In conclusion, it is argued that a strategic innovation network like BeBo will be able to lift the task of contributing to the general development towards a more energy-efficient sector.

Keywords: Innovation, strategy, sustainability, public policy, client, network, energy

1. Introduction

In Europe, 40 % of the total energy consumption is related to buildings. A number of public policies have been implemented in the European countries to reduce the total energy consumption. Despite the impact of these public policies, it has also become clear that further actions from the construction industry itself are necessary to achieve the desired goal of reducing CO₂ emissions. However, it is widely recognized that the construction industry suffers from a low level of innovation. Thus, in recent years the client has been called upon by policy makers, the AEC (Architectural, Engineering and Construction) industry and the clients themselves to become a change agent that can stimulate the required reduction of CO₂ emissions.

These calls are now manifesting themselves in various forms like the governmental building policy 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). Despite these calls for action, little is known about *how* clients in practice can make a difference as change agents.

This study will analyze how a group of Swedish clients and building owners has attempted to become a collective change agent by forming a strategic innovation network named BeBo in order to reduce energy consumption in housing. Further, the study will critically assess the impact and success of the various strategies deployed by the strategic innovation network of clients.

2. Research design

According to [1] an abundance of frameworks for analysing strategic situation 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).

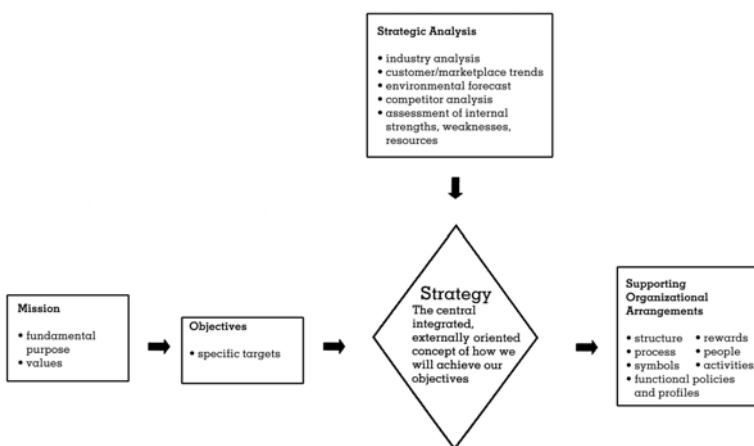


Fig. 1 Putting strategy in its place according to [1] (p. 53).

Rather, a 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 faces. Strategy addresses 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 seen as standing apart from and guiding the strategy. Thus putting strategy in its place, [1] provide the following illustration (see Figure 1), which we the use as basis for our evaluation of BeBo.

Arguing that a strategy has five basic elements, [1] provide a framework for strategic design that provides answers to five questions (see Figure 2):

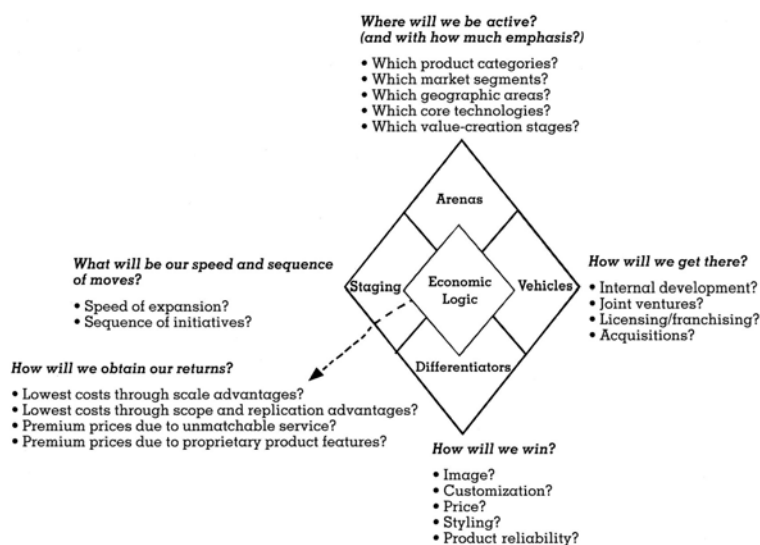


Fig. 2 The five major elements of strategy [1] (p. 54).

- 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 BeBo's strategy and presence in the Swedish market from outside a specific delimited theoretical or economical perspective and instead focus on BeBo's strategy as an integrated, mutually reinforcing set of choices that are to form a coherent whole.

The research design is based on the principles of action research. The study involves a case study of a strategic innovation network – BeBo. Three groups of methods have been employed using various forms of documentation. First, this study is based on an analysis of a range of documentary sources: Public policy documents, strategic policy documents of the organisation, minutes from member meetings and steering committee meetings 2001-2007, the internal and the external part of the website of the organisation as well as reports, articles and tools from various research and development projects initiated by BeBo. Second, this evaluation draws on empirical inputs from a group interview with the BeBo secretariat and board members. Third, the written documentary material along with the group interview has been further qualified by input from a future workshop [2] and [3] with the BeBo board, secretariat and stakeholders. Finally, the statements, analysis and conclusions were validated and verified on a subsequent meeting.

3. Results

In this chapter BeBo's strategy is described and analysed from the point of the strategy model [1]. Further, we observe BeBo as a so-called governance network, which according to [4] can be defined as (p. 307):

- a relatively stable horizontal articulation of interdependent, but operationally autonomous actors, who
- interact with one another through negotiations, which
- take place within a regulative, normative, cognitive and imaginary framework that is
- self-regulating within limits set by external forces, and which
- contributes to the production of public purpose, i.e. an expression of visions, values, plans, policies and regulations that are valid for, and directed towards the general public.

Introducing the notion of BeBo as a governance network is not done at random. In order to assess the strategic choices made by and about BeBo, it is important to understand the larger institutionalised environment within which the organisation operates. It is within this context that the following analysis and evaluation of BeBo's strategy is carried out.

3.1 About BeBo

BeBo (Beställargruppen Bostäder) is a procurement group for housing established in 1989 in collaboration between the Swedish Energy Agency (Energimyndigheten) and the largest Swedish residential property owners. As of May 2009, BeBo has 20 members ranging from social housing associations to public authorities and professional organisations. The secretariat of BeBo is located at the Swedish Construction Clients Forum.

The prime objective of BeBo is, through the exercise of volume, buying power and 'collective procurement competencies', to occasion that energy efficient system-deliveries and products enter the market at an earlier stage than would be realisable if relying on free market forces alone. The overall mission is to occasion a 50 % energy reduction in the housing sector by 2050. BeBo conducts development projects with focus on energy efficiency and environmental questions in close collaboration with experts. According to the BeBo website [5], milestones in this context are:

- Conduct investigations and measurements to identify potential.
- Test and demonstrate new solutions.
- Conduct feasibility studies as a basis for technology procurement.
- Implement technology procurement.
- Promote and introduce energy efficient technologies.
- Identify and disseminate experience.
- To function as sparring partner for the Swedish Energy Authority and other authorities within the group's competence.

3.2 The strategy of BeBo

3.2.1 Arenas

[1] argues that the most fundamental choices strategists make are those of where, or in what arenas, the business will be active and not least with how much emphasis (p.53). The following characteristic of BeBo's arenas can be given:

- BeBo uses technology procurement to develop and disseminate new system deliveries and products for reducing the energy consumption in the housing sector.
- BeBo relies on strong and close ties with authorities, research institutions and housing property owners in the development of new products.
- BeBo is entirely dependent on the input (intellectual as well as financial) provided by its group of voluntary members.
- BeBo targets the Swedish market alone as its geographic scope. The arenas are highly specific focussing predominantly on implementing new installation products and system deliveries in the refurbishment of multi-dwelling properties owned by its members.
- BeBo's information responsibilities are towards their members rather than the general public as such.

3.2.2 Vehicles

Beyond deciding on the arenas in which the business will be active, the strategist also needs to decide how to get there. The networked organisation of voluntary, inter-dependent yet operationally autonomous actors is the main vehicle for BeBo in reaching its chosen arenas. In a governance network perspective, questions of how to realise the overall mission of a 50 % energy reduction in the housing sector, thus poses BeBo with a dilemma. BeBo, as a governance network, is thus dependent on the voluntary participation of actors who are free to join and leave the network and are not subjected to hierarchical control. At the same time, however, an expansion of the member-base with organisations pivotal for the realisation of the mission could result in the compromisation of the public purpose aspect of the organisation and thus destabilise the very foundations of BeBo's operating principles.

3.2.3 Differentiators

Differentiators designate processes and tools concerning how a firm will 'win' in the market place, i.e. in BeBo's case how market penetration of new products and technologies can be accomplished. Within this institutional environment BeBo attempts to regulate a particular policy field on basis of their own ideas, resources and dynamic interaction. Most notably in this respect are the attempts to conduct what could be called evidence-based product development hereby promoting transparency. The scientific and highly methodical approach of establishing baseline measurements, conducting energy balance calculations and using a standardised checklist when assessing the quality of the specific buildings in order to prioritise own efforts are strong differentiators for BeBo.

3.2.4 Staging

Staging in essence entails the decisions on the speed and sequence of major moves to take in order to heighten the likelihood of success. In order to accomplish the overall objective of contributing to the reduction of the energy consumption in the housing sector, BeBo's activities are, at the most overall level of observation, staged in three as indicated in Figure 3 below.

Context) The point of departure for BeBo is that in order to realise the long-term goal of reducing the energy consumption by 50 %, efforts have to be directed towards reducing the energy consumption in the existing building stock – especially the multi-dwelling buildings completed in the 1960s and 1970s as part of the so-called 'Miljonprogrammet' (The Million Programme). As e.g. [6] documents, almost a fourth of the existing Swedish housing population were completed under this programme. Judging by today's standards these building are riddled with many inappropriate

solutions when observed from a point of energy consumption. As an example, $\frac{3}{4}$ of all buildings were fitted with high-energy consuming mechanical ventilation systems, and also energy inefficient facades, windows (two-layer glass) and roofs are still prevailing in 50-75 % of all dwellings from that period.

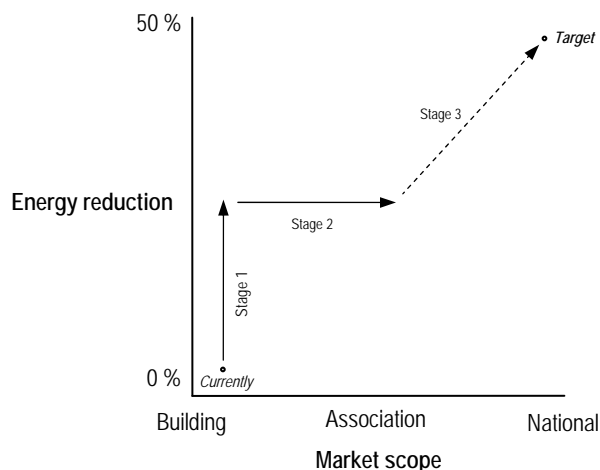


Fig. 3 Staging of BeBo. Note: Dotted line indicates a long-term perspective, full line is short to mid-term.

Stage 1) Thus, in order to realise the overall ambition of reducing the energy consumption to 50 % by 2050, BeBo's current focus is to upgrade the technical products and systems in specific buildings and housing associations put at disposal for inquiries by BeBo's own member associations. The specific objective for these local initiatives is *in first instance* to reduce energy consumption in the given housing association or building as much as it is financially feasible to do. Thus, the 50 % reduction is not a dogmatic absolute target, rather a beacon towards which efforts are directed.

market awareness in relation to methods used, products and systems developed and results obtained. According to the interview conducted with the BeBo board and management, this activity is first and foremost directed towards the remaining BeBo members and only in second instance towards the wider community.

Stage 2) The second stage of BeBo's overall strategic staging is the efforts directed towards creating a wider

Stage 3) As a consequence of the primary focus on BeBo members, the third stage in the efforts to realise the 50 % energy consumption target is somewhat out of the hands of BeBo and perhaps more a focus for BeBo *in collaboration with* the Swedish Energy Agency. This being said, BeBo however do strive towards contributing to the objective. Thus, in order to realise the overall strategy, the implementation of a new dissemination strategy as well as an incentives strategy is envisioned.

3.2.5 Economic logic

As for the topic of economic logic, the special character of BeBo's operation and activities are somewhat different from the company profit-oriented perspective of the strategy model. BeBo is not established with a profit generating purpose in mind. Rather, the basic objective of BeBo is aimed at contributing to *the production of public purpose* within energy policy. Thus, the different members of the network are engaged in policy negotiations about how to identify and solve emerging policy problems and exploit new opportunities.

BeBo's activities are financed partly by the Swedish Energy Agency partly by the associations holding membership to the BeBo group. New projects are typically launched on initiative of members (either from the industry or academia), who forward specific project proposals to the BeBo board. The BeBo board and management in turn assess the proposals, and in case of acceptance, contribute with a part of the total financing needed to execute the project.

Thus, while BeBo organisation *per se* at the most general level operates within an economic logic of non-profit and trade promotion support, the procurement group's operations also rest on a logic of economies of scale and the exercise of volume and buying power when it comes to actual procurement.

4. Analysis and discussion of BeBo's strategy

The overall criterion for the evaluation of BeBo's strategy is that of quality in the sense of consistency and appropriateness. Consequently, [1] 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 criteria 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 [1], 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 using the previous description of BeBo's strategy as input.

4.1 Does BeBo's strategy fit with what is going on in the environment?

BeBo's current predominant emphasis on the development and testing of new energy saving technologies are highly aligned with government intentions as formulated in the most recent energy bill as well as in the Swedish Energy Agency's report 'Swedish Energy Research 2009' [7]. However, at the same time it is also evident that an increasing amount of the household energy is consumed by domestic appliances and equipment – and that this consumption to large extent is predicated on consumer behavioural parameters (cf. [8] and [9]) that are not effectively addressed within the current BeBo projects.

4.2 Does BeBo's strategy exploit their key resources?

In summary, the analysis have given rise to the identification of two success factors as well as a single potential improvement measure that could be considered from implementation in BeBo.

First, BeBo's key resources are easily identifiable; it is the participating members, whether acting in the role of building owners or resource pool members.

Second, the analysis of the written material as well as the interviews conducted bears witness of a very close and strongly developed operationalised collaboration between BeBo and a number of academic institutions in Sweden. This organisational set-up is deemed highly instrumental and beneficial for BeBo's operation. The academic embedding permeates all levels of BeBo's operation. Most notably, it provides and ensures a degree of consistency across BeBo's projects that is an example for imitation. The key issue in this respect is that *the same methods are used in every project*. Whilst this might sound trivial, it by no means is so.

BeBo should however consider, whether to expand this institutional 'resource pool' with competencies from other scientific fields, not least pertaining behavioural topics, as this could act as a lever for the development of new projects and applications, that otherwise would not be considered as relevant (or at all) for BeBo. Along these lines, there is an unexploited potential within the group as such for utilising a wider range of voluntary regulatory instruments and member involvement procedures that true to the overall governance network structure can support the vision. An example hereof discussed could be a voluntary 'Kyoto Protocol' signed by all members keeping them morally obliged to work towards these national energy reduction requirements.

4.3 Will BeBo's envisioned differentiators be sustainable?

BeBo fulfils an important function as change agent due to their strong differentiators. BeBo focusing on systems rather than just isolated products is a highly relevant area to venture into. The

recent focus on system deliveries rather than just products is a differentiator and a focus which is highly specific for BeBo and is not maintained by other actors in the sector. This is thus a strong justification for BeBo's continued operation as this is a hitherto rather unexplored and problem-riddled area as no other single actor can or have the opportunity or competencies to lift alone. This particular area can be seen as hitherto 'abandoned' and taking responsibility for the development hereof positions BeBo in a role, where we can say that they take ownership for 'problems without owners.'

By utilising their buying power and purchasing volume, BeBo can effectively assume the role of proactive change agents – would they be willing to enforce or meet their own statement that the results have to be measured in a long-term perspective. This is in essence what differentiates BeBo, at the most general level, from other actors in the Swedish construction sector, and the reason why BeBo also in the long term can play an important role in the innovation and commercialisation processes as also [10] argues is the case with BeBo's 'sister-organisation' BELOK, being a procurement group for commercial facilities established in 2001 in collaboration between the Swedish Energy Agency and Sweden's most prominent commercial property owners.

4.4 Are the elements of BeBo's strategy internally consistent?

A further central key criterion to observe is the question of whether the elements of BeBo's strategy are internally consistent. That is, do choices relating to arenas, vehicles, differentiators, staging, and economic logic all fit and mutually reinforce each other?

From the preceding description and analysis of BeBo's strategy it is concluded that there is a good match between the different elements. The networked structure of the association provides a highly beneficial fit with the economic logic under which BeBo operates.

From a resource-based point of view, it could however be discussed whether a more formal relationship with BELOK under the auspices of e.g. Byggherrarna (The Swedish Construction Clients Forum) or Fastighetsägarna (The Swedish Property Federation) could help level the further dissemination of results and practices and thereby facilitate the accomplishment of the 50 % target by 2050. This could however compromise the cornerstone of BeBo's operation, namely the production of public purpose, so careful considerations have to be made on this subject on the assessment of the further development of BeBo's operations.

4.5 Do BeBo have enough resources to pursue this strategy?

Speaking of the coherence of BeBo's strategy from a resource-based perspective brings us to the next topic, namely whether or not BeBo has sufficient resources to pursue their strategy. With the 'costume and respirator' project (S: *Ny kostym och respirator*) an important shift in the direction and practice of BeBo was marked towards the procurement of 'system deliveries' rather than isolated products. This shift also had the side-effect that quite a few spin-off projects began to emerge as a consequence of the more holistic (or less delimited) perspective. This can be seen as an expansion of BeBo's arenas in comparison with previous practice, and a focus area that might very well require additional resources and funding to be dealt with. It might thus be anticipated that funding are earmarked for the establishment and completion of a remarked higher number of pre-projects that can shed additional light on the potential benefits of addressing these unexpectedly arising spin-off projects. Thus, in order to be able to capitalise on spin-off projects additional resources have to be present.

4.6 Is BeBo's strategy implementable?

Finally, on the topic of whether the strategy is implementable, it is concluded that BeBo is able to lift the task of, if not reducing the energy consumption in the housing sector by 50 % *per se* then contributing to the general development towards a more energy-efficient sector. Considerations as laid out above however have to be taken into account. Especially, concerns of how to penetrate the private property market have to be scrutinised the coming years.

It is concluded that if the 50 % target is to be taken at face value, BeBo might want to consider how to market their solution to a wider group of actors. A more formalised cooperation or coordination with e.g. BELOK, Byggherrarna or Fastighetsägarna could be considered especially on the topic of a more effective and concerted dissemination strategy. The establishment of a common Energy portal under the auspices the Swedish Energy Authority could constitute the lever in this transition.

Furthermore, it is argued that a strategic innovation network like BeBo will be able to lift the task of contributing to the general development towards a more energy-efficient sector. It requires, though, that BeBo, as a network of autonomous actors, can be empowered to act collectively as a change agent in the intersection of energy policy and housing. For this empowerment to happen, it is not sufficient just to have a number of individual actors participating closely in the various BeBo meetings and projects. As [11] (p. 8-14) argues, learning and innovation in changing environments based on inter-organisational negotiations and inter-systemic context steering involve self-organised guidance of multiple agencies each with a capacity for self-reflexivity based on the establishment of a common worldview for individual action and a system of meta-governance, being the organisation of conditions for governance in its broadest sense. Thus, the real challenge lies in the ability of BeBo to enrol not only the few; the frontrunners or change agents of the individual companies, but to extend the specific results, technologies, procedures etc. to the local project managers in the individual housing associations.

5. Conclusion

This study has analyzed how a group of clients have formed a strategic innovation network in order to act as change agent in the construction and real estate industry cluster with respect to improving energy performance of housing.

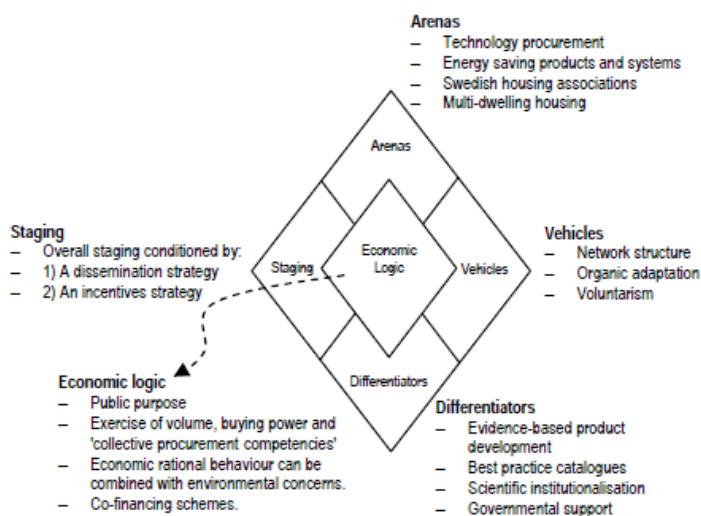


Fig. 4 Summary of the strategy of BeBo.

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

The study has shown that clients *can* act as a change agent in order to reduce energy consumption in housing, but not all strategies and tools are equally successful and appropriate. A number of observations lead to five lessons learned regarding *how* the client acts as change agent when it comes to making strategic choices on arenas, vehicles, differentiators, staging and economic logic.

The appropriateness of BeBo's strategy in relation to the overall mission and objectives of the procurement group can be judged along the following five observations:

- The strategy of BeBo is very well aligned with what is going on in the environment, but BeBo should consider including an additional focus on behavioural aspects of energy consumption.
- The close collaboration with academic institutions is highly instrumental in BeBo's operations; however BeBo should consider expanding this institutional 'resource pool' with competencies from other scientific fields related to behavioural studies.
- By utilising their buying power and purchasing volume, BeBo can be expected to assume the role of proactive change agent; however it is still too early to assess the empirical effects hereof.
- There is a good match between the different elements of BeBo's strategy. The networked structure of the association provides a highly beneficial fit with the economic logic under which BeBo operates.

- Increased focus on system deliveries can be seen as an expansion and increased complexity of BeBo's arenas in comparison with previous practice. This will potentially require additional resources and funding to be dealt with.

In conclusion, it is argued that a strategic innovation network like BeBo will be able to lift the task of contributing to the general development towards a more energy-efficient sector. Success of implementation is however highly dependent on BeBo's ability to handle a 'threefold' pressure that is placed on them due to the particular role they play. It is thus argued that BeBo assumes a function in the Swedish energy policy that potentially can be seen as invading or rather hollowing out the unicentric regulatory role of the state (i.e. the Swedish Energy Authority) and shift formal power towards the BeBo network. This is a situation that both BeBo and the Swedish Energy Authority have to be aware of and develop measures to be able to handle. From governmental side, considerations thus have to be made as to develop new regulatory governance structures that can cope with this loss of sovereign power without compromising the overall strategic objectives. A second source of potential pressure comes from the group of companies and housing associations not being members BeBo, who may feel sidelined and subjected to regulation based on special interests that only will be of favour to a few selected actors within the market. Third, the companies being members of BeBo also have to accept the common agenda and give up on some of their decision-making autonomy in order to empower the BeBo network as such to lift the task.

6. Acknowledgements

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