

Sustainable Renovation in Danish social housing? - A case-study of the Taastrupgaard renovation

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Abstract

The paper analyses institutional barriers to sustainable transformation of the Danish social housing sector. The governance structure present in the sector implies that specific environmental renovation decisions are subject to negotiation and dialogue between housing professionals, tenants and building experts. In this process, (costly) environmental objectives conflict with the material interests of tenants and the existing democratic and administrative practices in the sector. The consequence is that environmental solutions are watered down. In effect, the democratic governance structure constitutes a barrier to substantial energy renovations.

To illustrate the point the paper presents a case study of Taastrupgaard, an estate with 1000 units that went through a major renovation from 1997 to 2007 with a particular focus on sustainable renovation. The renovation was a pilot-scheme in the European SUREURO project (Sustainable Refurbishment Europe), the purpose of which was to develop systems and methods to integrate sustainable development and tenants' involvement in the refurbishment process of post-war large-scale residential areas. The renovation does not give evidence to noticeable improvements in the environmental performance of the estate, and tenants and housing professionals conceptualised improved sustainability primarily in social terms. The last part of the article pursues a more speculative argument, in search of new organisational models that might transcend the institutional barriers to sustainable renovations of the Danish social housing sector.

Work-in-progress

- Do not quote –

Introduction

The housing sector can reduce green house gasses by improving its energy efficiency and reduce its energy demand from non-renewable energy sources. Because sustainable products, technologies and processes tend to be more costly and are likely to require some amount of resource consuming innovation activity in order to be implemented, the main barrier to using sustainable construction methods and materials is the often higher capital costs (Dewick & Miozzo 2004, p. 325). The CO₂ emissions from built environment in Denmark amounts to 11 million tonne and the housing sector accounts for 40 percent of national energy consumption. Studies of the Danish social housing sector show that improved isolation can reduce energy-consumption by up to 32 per cent (Wittchen 2004) but the studies also reveal that environmental sustainability measures are hard to implement in the sector (Nørregaard Larsen et al. 2002). Refurbishment costs are typically transferred to rents, and because tenants have a preference to keep rents down, short-term expenditures associated with the introduction of environmental sustainability measures potentially constitute a barrier despite long-term gains.

The social housing sector constitutes 20 percent of the Danish housing market, or 520.000 housing units, of which 56 percent or 290.000 units have been built before 1980. Based on a survey to 36 social housing associations that administer 40 percent of the Danish social housing stock, Vogt-Nielsen et.al (2008) conclude that there is a high potential for energy renovations in the social housing sector, especially in estates built before 1973 equal to half of all housing estates. Until recently, focus has been on sustainable solutions in new estates, not on renovation potentials in the existing housing stock. Housing associations have limited knowledge of existing energy consumption patterns, only in some estates 'green accounts' are used to benchmark resource consumption. The associations have knowledge of available technologies to increase energy efficiency, but typically question the overall efficacy of the various measures in terms of running costs, energy performance etc. Another barrier is tenants' resistance towards costly energy renovations. The most important energy renovation potential relates to energy efficient windows and insulation together with renewable energy sources.

A recent government commission has mapped the barriers to energy renovations in the social housing sector (Ministry of Welfare 2009). Because tenants' incomes in social housing are considerably below the national average it is not likely that tenants will invest in energy improvements if these are not immediately profitable (p. 37). The commission estimates that the greatest energy saving potential is in estates built between 1960 and 1980. Because a large proportion of these estates are subject to ghettoisation processes they are eligible for NBF-funding. Due to a growing number of NBF-funded renovation projects, and more favourable financial conditions for housing associations, the commission argues that a considerable reduction in energy consumption is to be expected in the future (p. 40).

The National Building Fund

Tenants residing in social housing estates built prior to 1970 pay an annual contribution to The National Building Fund as a part of their rent. The fund re-channels these economic resources back to the sector when it subsidises housing repairs and maintenance, shoddy construction work and environmental programmes. The fund also subsidises running expenses of less well-off housing sections. A finance reform in 1998 shifted the main burden of subsidising social housing from the state to the sector itself (Engberg 2004). The funding activity may not exceed a state induced cap of DKK 2.4 billion annually. National Housing Agreements in 2005 and 2009 have laid down specific requirements as to how the fund may dispose of its resources until 2020, and as a result of the large number of funding applications available subsidies have been prioritised until 2012.

In 2006 the Danish Building Regulation introduced the rule that all housing renovations of a certain size need to adopt the energy requirements applicable to new housing constructions if the energy renovation measures introduced are profitable. In practice, the implication is that existing renovation project that qualifies for NBF-funding potentially includes self-financing energy measures with a short-term return horizon. However, the fund does not subsidise energy investments as such, e.g. full-scale insulation, and because extra costs are transferred to rents such elements are typically left out. Housing associations generally report that few housing estates nationally opt for energy renovations; renovation projects that result in rent increases are not even discussed at tenants' general assemblies (Licitationen, 2008)

Though existing renovation projects result in some improvements of energy performance, typically they do not meet future housing regulation requirements, the existing practice parallels *"painting an old car without removing the corrosion first"* (ibid). NBF cannot subsidise new social housing constructions. The result is that housing associations carry on with renovation projects that only meet present requirements. Recent economic analyses show a better return on investments in demolishing many estates from the 60s and 70s and build new, low-energy housing, but this option is not available in the Danish system (Ingeniøren 2008).

In the following, the paper presents a case study of a large sustainable renovation project in the social housing estate 'Taastrupgaard', vest of Copenhagen. The case is chosen because it principally represents a frontrunner case in the Danish context; 1) the project was organised by the social housing association AKB which was part of the SUREURO¹ programme that promoted sustainable renovation in dialogue with users, and Taastrupgaard was the Danish pilot project in the programme. 2) The housing association AKB developed an explicit partnership strategy in Taastrupgaard aiming to build a negotiated consensus with respect to the content of the refurbishment process in co-operation with the tenants. As such, the case is likely to provide an insight into the motivations and preferences of tenants when confronted with the sustainability issue in a large scale renovation process.

First, the general decision-making context of large scale refurbishments in social housing estates is accounted for. Second, it is explained how the case-study of the Taastrupgaard renovation is analysed from a governance perspective that addresses how decision-making processes in networks can be analysed with reference to the 'games' and 'stories' in these networks. Third the case study is presented as a network analysis with a particular focus on management strategies and how the issue of 'sustainability' was interpreted differently by decision makers in the renovation process. To conclude, the general findings of the case are recapitulated and a number of points and further reflections are put forward.

Management and tenants' democracy in Danish social housing

In the Danish social housing sector there is a tradition of tenants' democracy at the level of individual housing sections, and at the level of housing associations. Tenants elect representatives for a section board formally responsible for management decisions regarding the individual housing section. Tenants exert influence on the policy of the section board at board meetings, and once or twice a year common issues are debated at the tenants' assembly for all tenants in the housing section. The prerogatives of the section board covers the section budget, decisions with respect to the physical renewal of the estate, and collective house rules regulating every-day behaviour in the

¹ The purpose of the European programme SUREURO (Sustainable Refurbishment Europe) 2000-2004 was to develop practical management tools for integrating sustainable development and tenant's participation in refurbishment processes in post-war large-scale residential areas in Europe.

estate. Because tenants decide upon the level of expenditures (in co-operation with the housing association) a policy of rent-stability is common.

The social housing association tends to the management of the association and the individual housing sections. The association administers the allocation of flats and initiates new building projects, which have to be approved by local government. The administrative organisation is subject to the authority of a governing body, a housing council composed by a majority of tenants' representatives and the members of the executive board of directors nominated by the council. The housing council adopts the annual budgets of the housing association, and it rules on all major administrative and financial issues of the association, e.g. whether to sell off real estate (non-housing units) or initiate major physical changes in the housing stock. The housing council can delegate specific prerogatives to the level of section boards. The executive board of directors is responsible for the implementation of policies decided upon by the housing council, and the committee appoints a housing director in charge of daily management. The chairman or deputy chairman has to be a tenant, and tenants constitute the majority in the board of directors.

The decision-making context of the refurbishment process

According to law, Danish social housing associations are required to formulate long-term maintenance plans for all housing estates. Within this strategic framework, housing professionals and tenants carry out annual on-site physical evaluations of buildings, and formulate maintenance policies for each housing section. Maintenance procedures are institutionalised in that they are a combination of centralised technical planning and budget systems (in which individual housing components are priced and systematised) and annual dialogues with tenants' representatives in all housing sections. When a housing association proposes a large-scale renovation of a housing estate, the proposal has to be approved by an absolute majority of tenants. In principle, tenants' co-operation is an integral part of all refurbishment activities. A majority of tenants have to sanction all refurbishment decisions and they should preferably be active in the various choices of specific solutions with respect to technical standards, design, sustainability, costs etc.

Housing sections are financially independent units and costs associated with improvements are directly transferred to rents. Thus tenants are tempted to adopt a short-term perspective keeping rents down while housing administrators emphasise a long-term perspective, but as a rule adequate appropriations for future improvements is accepted by all parties as a key element in the continuous modernisation of the housing stock.

A network perspective on renovation

It is a stable rule-configuration that structures housing management and maintenance in the Danish social housing sector. But local variations exist, and because of the democratic decision making structure in the sector, the specifics of individual refurbishment decisions are subject to governance processes of negotiation and dialogue between housing professionals, tenants and building experts. Thus, the institutionalised maintenance and renewal process is conceptualised as a governance process (Bogason 2000), (Jessop 1998a,b), (Sehested 2000), (Engberg 2003) structured by the legislative and institutional set-up in the sector. The process is semi-open in that it is rule and practice regulated, but at the same time it is susceptible to the incremental decision making practices of participants.

A housing administration cannot compel tenants to accept a given renovation plan. Plans have to be approved by a majority of tenants, and the democratic structure creates a mutual interdependence between participants in the process. Housing professionals are in a privileged position with respect to professional resources, knowledge and operational prerogatives, but they need to continuously pursue the democratic support of their administrative decisions. Tenants are "qualified amateurs",

who to a large extent depend on a forthcoming attitude amongst professionals, and access to information and other relational resources. But they can exert a veto and through the democratic system they enjoy rights to information, consultation and participation. It follows that a large renovation is a collaborative network management process (Kickert et.al 1999) in which tenants and professionals come together to discuss and develop the specifics of the initiative in an exchange of information about problems, means and preferences, and trade off goals and resources. This dialogue and negotiation process can be analysed in terms of process management strategies.

Process management strategies

To qualify large renovation initiatives housing professionals adopt various strategies that all centre around a balance between dialogue with tenants and administrative control with the process. A typical approach is to set up temporary organisational arrangements in order to facilitate exchange of ideas and cross-disciplinary dialogue. Ideas and preferences are articulated and balanced off against each other in working groups, committees etc., and specific plans are negotiated before they are put to the tenants' vote in the estate. It follows from the administrative and democratic structure, that none of the parties has the final upper hand in case of conflicts, housing professionals pursue a consensus-oriented strategy and mediate conflicts thorough network relations. They however exert various control strategies by for instance observing the limits to tenants' decision making power in various stages of the renovation process, pushing for administrative rulings or setting local agendas with reference to expert knowledge etc.

Figure 1. Strategies for process management

Dimension of strategy	Explanation	Types of strategy	Typical management control strategies
Interaction	Supervision and governance of interactions so that package deals, agreements and results between actors are possible	Interaction mediation Appoint process manager Link areas	Pull-back process to professional administration Define and restrict tenants' decision making powers
Perception	Identifying, changing and linking of perceptions so that differences, and blockages are reduced and ideas are linked	Create variety of ideas by directing and organising dialogue/research Change perceptions through reflection, confrontation, negotiation	Authoritative (expert) knowledge frames problem-definitions, ideas and understandings
Organisation	Creating temporary organisational arrangements so that interactions and the exchange of ideas are facilitated	Make agreements (covenants) Determine rules (for conflict management, access etc.) Create temporary organisational structures	Abolish co-operative ad hoc structures

Source: developed from Klijn, E.-H.: "Networks and Governance. A perspective on public policy and public administration", in McLaverty, Peter (ed.) *Public Participation and Innovations in Community Governance*, Aldershot: Ashgate, 2002.

Analytically, the dynamics of network interaction can be analysed as a dynamic relationship between the strategic 'games' played by participants and the conceptual 'stories' that inform patterns of collective behaviour in the network. Games are rule-regulated negotiation processes in which participants seek to optimise their preferences through strategic interactions. Stories are the narratives, metaphors and world-views that actors use to interpret their collective experiences. Because stories function as a means to interpret new situations in changing circumstances they influence strategies (Alexander 1987). When specific stories or narratives are agreed upon as representing a shared understanding they inform and direct the specific actions of participants in the network (Roe 1994), (Engberg 2000), (Koppenjan & Klijn 2004).

Acknowledging the narrative dimension of social interaction in networks, it follows that concepts like 'sustainable housing' or 'green buildings' are subject to discursive contestation. On the one hand the relevance of a classical understanding of green buildings in (quantifiable) terms of energy-efficiency and reduction of toxic and non-renewable materials cannot be ignored. However, the term is contested, there is no single objective definition of 'green buildings' but an array of competing understandings each embedded within a social context (Guy & Moore (ed.) 2005). With Guy and Moore we recognise “*how different discourses of green design are mobilised by different, often competing, actors and...framed by dynamic and technical contexts of building development and infrastructure provision*” (ibid. p. 9). The same argument applies to the concept of sustainability, the concept has many connotations (social, environmental, economic, cultural etc.) and when assessing the 'sustainability' of specific housing features, reference can be made to multiple criteria. To recapitulate, the network analysis focuses on how 'sustainable' renovation is subject to interpretations and negotiations when concretised and implemented in specific decision-making contexts.

Method

The case-study is based on a triangulation strategy combining various data-sources. The primary data source consists of 15 semi-structured interviews with tenants and housing professionals. To supplement these, an evaluation workshop with AKB housing professionals and consultants involved in SUREURO has been carried out. Further, a substantial body of written material on SUREURO and the renovation in Taastrupgaard informs the analysis, as well as participant observation in national and international meetings, seminars etc. Mapping the different phases of the renovation process, two analytical dimensions were in focus:

1. *Games and strategies*: What are the interests pursued by key actors, and to what extent do these actors employ interest-maximisation strategies? How are conflicts solved, and what are the basic rules of the decision-making arena?

2. *Stories*: To the extent that actors do articulate ideas and views on sustainability, how do they define it? How do local conceptual frameworks and understandings with respect to sustainability impact upon decisions that relate to the specific renovation practices? How do these frameworks or stories direct actors' strategic approaches to these decisions?

Taastrupgaard

The social housing association AKB administers approximately 16,000 rented homes in the Greater Copenhagen area. The association has 280 employees. One third is employed in the central administration and two-thirds work locally as managers and caretakers. AKB is also an administration company, providing management services to 10 local social housing associations with 80 autonomous estates. Each estate has a section board and the total number of tenants' representatives is about 300.

The Taastrupgaard estate is situated in the municipality of Høje-Taastrup 20 kilometres west of Copenhagen. The housing estate was designed in 1968-70 and built in 1970-72. It is composed of 8 blocks each 4 storeys high plus 31 detached blocks each 3 storeys high totalling 83.547 m². About 2,600 persons occupy little less than a thousand tenancies, and about 1000 of these residents are children. Half of all residents have an ethnic origin other than Danish, and the majority of this group originates from Turkey. Many tenants suffer from unemployment and low incomes, and problems like drug and alcohol abuse are not unusual. The main construction system consists of pre-produced concrete elements, and the architectural expression is monotonous. As required by law, Taastrupgaard has a long-term maintenance plan and annual onsite inspections of building conditions. From the outset, the housing section has been haunted with technical, social and

financial problems. Thus, the housing section underwent two comprehensive renovations in 1981-1983 and 1985-1991. In the early 90s, AKB initiated a third refurbishment process in the estate.

Figure 2 Highlights of the third refurbishment of Taastrupgaard.

1995	A first proposal for a comprehensive refurbishment plan for Taastrupgaard is put forward by the housing administration, discussed and accepted by the tenants in 1996. A design phase with tenants' involvement begins
1996	Architectural competition is held and the winning project is chosen
1998	The Building Committee with tenants' representatives is set up
1999	The Total Refurbishment Plan is put to a vote in Taastrupgaard, and is rejected by a majority of the tenants. Negotiations on a revised plan start
2000	The SUREURO project begins.
2000	Tenants agree to a revised plan
2001	The tenants' assembly rejects 4 new local tenants' committees The design phase of the planned refurbishment on Taastrupgaard ends
2002	The Building Committee is abolished
2002-04	Renovation project carried through
2006-	A new bathroom renovation project initiated

The renovation plan

In 1995 AKB, the local area management and the tenants' representatives in Taastrupgaard formulated a comprehensive renovation plan with a budget of DKK 240 million. In negotiations with the National Building Fund and the municipality of Høje-Taastrup the Fund agreed to finance the major part of the refurbishment on the basis of a comprehensive refurbishment plan, and the Municipality of Høje-Taastrup accepted to cover part of the costs. In 1996, the plan was presented at the Tenants' Assembly and the general outline of the plan was accepted. To AKB, the main objective with the plan was *"to change the image of Taastrupgaard and thereby make the area attractive to people strong in resources and to young families with children"* (AKB 2004, p. 11).

The plan focused on three areas: a comprehensive physical refurbishment, a renewed emphasis on preventive social measures in the estate, and a decentralisation initiative targeted at the tenants' board representing tenants living in the estate. In relation to the physical refurbishment, it was suggested to remove the parking cellars, to renovate the exterior of the buildings and to establish a 'main street' with smaller shops and a combination of tenant activities, institutions and clubs. It was also proposed to demolish the middle section of a long housing block that runs along the estate. The block constitutes the front or 'public face' of the area, and by making an open passage in the centre of the block the idea was to make the estate more accessible and friendly looking to the public, thus improving the image of the estate. In the social area, the objective was to deal with social problems of residents and improve the social life in the estate by employing social workers as tenants' advisors and intensify co-operation with local government and other relevant parties in the social domain.

Lastly, a decentralisation of the democratic structure of the estate was suggested. AKB and the local housing management proposed a decentralisation of the section boards prerogatives by setting up 4 local tenants' committees. The housing professionals argued that because Taastrupgaard is a large estate, residents would feel committed to the refurbishment in a more decentralised structure.

Network analysis of the renovation process

Initiation of dialogue

The housing professionals framed the discussion of the refurbishment plan in a dialogue with the section board, defining the key elements in the plan. When presented at tenants' meetings themes like access, infrastructure and parking dominated the discussion. The most debated issue was

whether cars should be allowed in the estate. The plan was accepted, and an architect competition was held in '96. The exchange of ideas and preferences in the ensuing design phase was organised in a Building Committee (1998-2002) in which contractors, advisors, housing professionals and the members of the tenants' section board met every second month (or more often) to discuss design details. Task-group experts presented and visualised design options and decisions, materials, surface treatments etc. allowing residents to see and discuss the various elements of the refurbishment project. Mock-ups were discussed, and participants went on study trips to relevant housing areas. From 1998 to 2002 the committee met on a monthly basis discussing the content of the renovation.

The plan is voted down

In 1999 a first Total Refurbishment Plan was put to the vote at the Tenants' Assembly in Taastrupgaard. Despite consensus in the Building Committee the majority of tenants present at the assembly said no to the plan. The primary reason was a heated resistance against the demolition of 89 apartments in the centre of the main building block in Taastrupgaard. The tenants wished to preserve the apartments, and they resisted the idea of reducing the number of apartments in the estate. The response came as surprise to AKB, and the project had to be redesigned. The City Council of Taastrup and the housing council of AKB could have overruled the decision, but both bodies opted for a support of the tenants' decision and a redesign of the project. In 2000 all parties agreed to a revised plan without the demolition element. The following quote from a tenant sheds light on the incident: *"I have many ideas with respect to the renovation, and sometimes this causes some conflicts. I do not have much of a dialogue with other tenants, they have voted for me, and I have some clear ideas about my participation in the section board. I opted for the demolition of a part of the long centre building, but apparently most people who showed up at the tenants assembly were against it... When friends visit me they think that the estate looks quite uninviting from the outside. But once they are through the gate they say: "Hey, its really green." And once inside the apartment they realise that its quite attractive, large, big windows and with a good light. I liked the idea of opening up the estate in order to change the image and make it more inviting. The tenants who voted no argued; " why demolish apartments in times of housing shortage?" But they miss the larger picture; to create an estate that does not attract negative publicity"*.

To the housing professionals in AKB the veto was perceived as a defeat, *"we had this feeling that we had not done our homework properly"*. To the private contractors, the housing professionals and tenants' representatives, a thorough modernisation of Taastrupgaard included a physical change that opened up the estate making it welcoming to visitors. To this group, this would improve the social image of the estate away from connotations of 'stigmatised' and 'problem-ridden' towards 'attractive' and 'welcoming'. To the tenants who showed up at the Tenants' Assembly, such an improved image was less important compared to the sentiment that it was wrong to demolish apartments in a situation of housing shortage. Opposition also came from tenants living in the apartments that were going to be demolished (these tenants were re-housed). The incident illustrates the underlying schism between two groups: 1. The active participants who agreed to the image of the estate as 'problematic', and who saw the renovation as a means to create a positive image and attract 'more resourceful tenants'. 2. And the Taastrupgaard-residents appearing at the Tenants Assembly who cared less about stigmatisation and more about keeping status quo.

Take-off and new problems

In 2000 a revised plan was adopted. Soon after, major problems with roofs and bathrooms were discovered. The roof tiling had to be changed and all bathrooms suffered from problems with mould fungus. AKB tried to renegotiate funding of the refurbishment with the National Building Fund and Taastrup Municipality in order to cover these added problems without success, and the project was reduced by DKK 70 million. This was a disappointment to the active tenants because a number of

agreed upon details were removed from the plans in the design phase. The roofs were fixed within estate budgets, but the bathroom renovation was postponed to a later, and in terms of costs, substantially larger renovation, to begin in 2006. In 2001, the proposal to decentralise the democratic structure in the estate was voted down. The proposal was motivated by the local housing managers' dissatisfaction with the section board members: *“When I as housing manager entered the scene, the section board was already discussing the problems in detail, without due consideration to the role division between administrative and democratic tasks. We, the administration, are the professionals, and the role of the tenants representatives is to decide upon general questions, adopt budgets etc., it is not to take on a management role, instruct employees and so on”* (local housing manager). Tenants rejected the idea, but disagreements were dealt with in the Building Committee where participants negotiated a mutual role-division and eventually developed a trust-based relationship. When the design phase ended the Building Committee was abolished and the dialogue between contractors, housing professionals and tenants relocated to the section board.

Difficulties in the construction phase

Throughout the construction phase (2002-2004) an Information Office distributed monthly information folders distributed to tenants about time schedules and key events in the refurbishment process. General information was communicated in Danish, English and Turkish, and existing social networks in the estate were targeted to channel information into the various ethnic communities. Also, tenants with low or none educational background were identified and explained about the project through personal contacts. To deal with problems of safety during the construction periods a safety-instructor with a Turkish background was employed. To AKB it proved difficult to make contractors comply with reasonable temporary solutions to problems with residents' access routes, safety etc. on construction sites. Contractors had very long response times when complaints were voiced, and to AKB it has been a challenge to avoid tenants' dissatisfaction during process. Minor conflicts between professionals and tenants regarding specific details in the renovation have occurred when design decisions appeared somewhat changed when implemented.

In 2005, the plan was implemented, resulting in a number of physical improvements in the estate. Building defects have been restored, meters for water consumption have been installed, and the outdoor environment has been improved. A central square and a main street with a water channel and ponds have been established. New parking lots are set up, there are more green areas, new playgrounds and a new outdoor lighting system. The sewers have been renovated as well as the systems of district heating and water supplies, gardening works have been done, there are better pavements and various new surfaces, new communal rooms for clubs, entry phones etc.

Energy efficiency and sustainability?

When asked, neither tenants nor housing professionals have emphasised environmental sustainability as a key objective in the renovation. AKB has - inspired by SUREURO – adopted an environmental policy and a green procurement scheme. But the green demands were made in the negotiations with contractors, and when the outdoor renovation began, AKB suggested a prioritised list of environmentally acceptable materials. However, contractors were not contractually obliged to consider the list. The tenants collaborating with AKB did not work to implement sustainable refurbishment measures in the process.

As an active tenant put it: *“We did not discuss a green refurbishment strategy in the Building Committee. We have emphasised durability, when it comes to choice of materials durability is the most important issue”*. Another tenant replies along the same lines: *“We have not spent many words on the issue of sustainability [grins]. I believe we think more in lines of social sustainability, we value that people take care of their surroundings, and pay more attention to how they influence the environment. We do have an environmental action plan that focuses on reductions in water*

consumption, and people tend to value the environment, but if it is going to cost they want the most value-for-money. We have focused on behaviour; we want residents to cut down on consumption [of energy, water] and to handle the garbage better. If we have discussed sustainability, it's social sustainability. Our social goal is to make Taastrupgaard a more attractive place to live. It's about changing the mentality of people. Many just move in without really unpacking because its a temporary residence. Take the garbage areas, Friday afternoon the service personnel have cleaned the area, but Saturday it looks crab. People do not take on enough responsibility, and we try to change this through dialogue and campaigns”.

To the tenants who take part in the renovation the overall goal is create a more attractive housing environment and a positive image of Taastrupgaard that attracts 'resourceful tenants'. Sustainability is social sustainability defined as 'unpacking' mentally and practically, residents should appreciate to live in the estate and feel responsible towards the physical appearance of the area. Tenants value appearance and positive identification, not environmental objectives and concerns, and they think in terms of social control, safety, 'responsible behaviour' and privacy in their understanding of sustainability in practice, installing entry phones, organising campaigns to stop littering etc.

Figure 3. Strategies for process management in Taastrupgaard

Dimension of strategy	Explanation	Types of strategy	Management control strategies
Interaction	Consensus-strategy because of tenants' veto right	Collaborative body as process manager Extensive use of examples, mockups etc	Attempt to pull-back process failed; decentralisation proposal to undermine sections vetoed Necessary to collaborate in Building Committee
Perception	Mismatch of perceptions (pro and against demolition proposal) Strategic intentions and analysis of necessary changes in Taastrupgaard not communicated by professionals and tenants' representatives to wider tenant group	Bottom-up dialogue, where local ideas were channelled into renovation programme	Authoritative (expert) knowledge influenced problem-definitions, ideas and understandings, but active tenants' essentially defined the content of the project
Organisation	Building committee	Formalised decision-making context of renovation projects in democratic model of social housing	Not possible to abolish co-operative ad hoc structures to centralise control

Assessing the renovation in terms of energy efficiency

The section board of Taastrupgaard has adopted an environmental policy that sets out environmental standards, e.g. specifications with respect to the technical equipment used in the daily running of the estate, and the objective is put forward to outface pesticides in the maintenance of green spaces of the estate. Also, various campaigns have been launched in order to promote a more sustainable behaviour with respect to water and energy consumption and the production and handling of household waste. There is a successful recycling station at the premises run by volunteers, who assist housing management in clearing apartments, handling waste etc. From the year 2000 Taastrupgaard has implemented an environmental accounting system for housing that examines all resource and waste streams that flow in and out of the housing environment (Jensen 1999). The system measures specific environmental improvements against changes in the overall annual environmental impact situation in the estate.

Figure 4: Energy, water and waste in Taastrupgaard, 2000-2008.

	2000	2002	2004	2006	2008
Energy					
Electricity	1.138.282 kWh	1.062.102 kWh	1.206.997 kWh	1.179.925 kWh	1.048.323 kWh
Heat	13.301 MWh	13.654 MWh	13.166 MWh	12.853 MWh	12.989 MWh
Water	177.712 m ³	159.320 m ³	156.666 m ³	152.951 m ³	151.876 m ³
Waste	126 litters per apartment pr week	144 litres per apartment pr week	No measure available	No measure available	No measure available

Source: Taastrupgaard Green Accounting System, Urban Ecology Project leader Jens Peter Skaarup, AKB.

Electricity consumption has gone up in the period, and the renovation has contributed to the increase (interview). Heating consumption has gone down, primarily because individual meters were introduced in 2000. Since 1998 continuous water saving campaigns have been issued in the estate. Water saving devices have been introduced in all apartments, and the rate of consumption has been somewhat lowered. Waste production has gone up but the 2004 figure is not available. The conclusion is that environmental performance indicators for the estate have not been significantly improved as a consequence of the renovation.

The SUREURO-impact

At the organisational level, the SUREURO programme has inspired AKB to adopt an environmental policy, and to formulate an environmental guideline with performance requirements in relation to the procurement of refurbishment projects. Based on the principles of environmentally sound design (BPS 1998), the environmental guideline sets out to describe how AKB as a construction client can integrate environmental concerns in its procurement of refurbishment projects. As a pilot scheme, the Taastrupgaard renovation has been the practical anchoring point for AKB's participation in the SUREURO programme. 7 innovation projects have been formulated to push forward environmental improvements in dialogue with tenants. In the first stages of the renovation, it was discovered that all bathrooms in Taastrupgaard have to be renovated (in total 1087). In environmental terms, the potentially most significant SUREURO projects concerned the development of a new bathroom prototype based on a sustainability assessment of materials in selected bathroom cubicles, and the introduction of natural ventilation systems in relation to the new bathrooms. However, when scrutinising the development projects it appears that they hardly have had any direct influence on the refurbishment of Taastrupgaard. The problem has been that AKB has not been able to match the timing of the renovation process with the participation in the SUREURO programme. R&D efforts in relation to the bathroom and natural ventilation issues have been carried out, but the analyses do not influence the choice of future bathroom module in the estate.

Negotiated sustainability

The analysis shows how different interpretations of 'sustainability' has directed actors' approach to the decision making process in the Taastrupgaard renovation. AKB employed a consensus-based process management strategy, using an ad hoc committee to organise exchange of ideas and promote the information, consultation and participation of tenants' representatives in the defining stages of the process. Two opposing actor-groups confronted each other in the decision-making process, each group articulating their preferences with reference to competing images or stories about Taastrupgaard. The first group, the 'professionals' (housing professionals, tenants' representatives, and contractors) shared an understanding that Taastrupgaard appeared less attractive and was in need of a 'facelift' to become a socially sustainable estate. To achieve this, a mid-section of the dominant building in the estate was to be demolished. However, the group did not play the decision-making game very well, and a majority of tenants at a Tenants' Assembly

vetoed the plan. This second group, 'the criticals' (tenants not directly involved in the renovation) basically disagreed with the negative diagnosis and argued that no apartments should be demolished in times of housing shortage. To this group, practical and functional issues of access, parking areas etc. were key issues, and they defended an image of Taastrupgaard "as we know it".

The study illustrates the point that sustainability is an open term subject to interpretations and negotiations in specific decision making contexts the outcome of which do not necessarily have much to do with a classical definition of environmental sustainability. Despite the existence of environmental policies at the level of housing association and housing estate, the renovation project did not result in noticeable improvements in terms of environmental performance (reduced energy- and water consumption and waste production). The study shows that tenants and housing professionals conceptualise sustainability primarily in *social terms*: A sustainable estate is one that residents really appreciate to live in. The estate is sustainable if it is an attractive living environment, and becomes attractive to the extent that the visual and functional qualities of the estate are improved. Thus, when the parties negotiate issues relating to sustainability they did not discuss environmental objectives but emphasised criteria like improved user satisfaction, a better public image of the estate, esthetical and functional improvements and long-term cost effectiveness in choice of materials.

Reflections and perspectives

In current Danish debates on the climate challenge the need for promoting energy renovations in social housing is often voiced. A single case-study does not permit generalisations about the institutional barriers to such an endeavour, yet it suggests the contours of the challenge ahead.

First of all, substantial improvements in the energy performance of social housing are less likely to be achieved if the challenge is approached as a bottom-up project in the normal decision-making context of large renovations in the sector. If energy renovation projects document clear profitability or if they are financed by external means they might not get vetoed. But as indicated above, tenants have more pressing concerns in terms of the long-term social sustainability of their estates, especially in areas subject to ghettoisation.

Second, in the Danish decision-making context it is unlikely that housing associations will seek to enforce major energy renovations against tenants' preferences. The casestudy illustrates how housing professionals confront steering dilemmas when pushing for renovation schemes that can only be realised with tenants' consent. At a general level, the sector suffers from a number of governance dilemmas that impede innovation- and change efforts when such impulses drown in deadlock relations between management-oriented representative political leadership and executive housing professionals (Engberg 2009).

Third, the case underlines the irony that a major refurbishment may take place without proper consideration to environmental sustainability in a discursive framework that highlights sustainability. The irony accentuates the general paradox that The National Building Fund finances renovation projects nationwide that do not adequately integrate substantial energy renovations. To be just somewhat profitable, energy renovations need to be integrated into existing physical refurbishment activities, and there is a need for new mechanisms to facilitate a long-term perspective in the existing renovation practices. The Danish Government proposes to introduce ESCOs to overcome the dilemma, and a current Danish reform debate might result in greater operational freedoms for housing associations to take on this task.

However, from a Danish perspective decision-makers regulating the institutional framework of social housing still need to come up with a clear strategy that targets the twin challenges of climate adaptation and ghettoisation, and they need to devise financially feasible and operational steps to energy modernisations that are supported by the residents who have to deal with these challenges in practice.

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