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Role of municipal steering in sustainable building and refurbishment

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Abstract

The objective of the research was to assess the roles of municipal building authorities and their potential to act when a rapid change is needed towards energy-efficient and sustainable building and refurbishment. Our premise was that local authorities will have an essential role in improving the awareness and commitment of stakeholders and in supporting them to understand potentials of sustainable building. However, this may require the development of current roles. According to the results, consultation and negotiating steering is useful and needed especially towards non-professional builders. Change to consulting steering requires changes in building control processes. The strengths of guidance by building control authorities would be neutrality, good coverage (all builders must anyway be involved with building control), personal contacts, and responding to acute need of the client. To increase the consulting role of the building control authorities, more resources are needed. Establishment of electronic services in building control is believed to be a means to release resources from routine work for guidance.Municipal actors are also showing increasing interest in preparing city-level sustainability strategies. The municipal strategies should be closely linked to the local administration to ensure the realization of the strategy and also the allocation of adequate resources.

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Keywords: Energy-efficient building; energy-efficient refurbishment; municipal building authorities; consultation and negotiating steering

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1. Introduction

In order to achieve a rapid change towards energy-efficient and sustainable building and refurbishment, a variety of steering instruments is needed. Due to limitations of normative control and regulatory instruments, the stakeholders' voluntary commitment to sustainable building is essential and the role of municipal steering may increase. Different steering instruments are used to improve the energy-performance and overall sustainability of buildings. The effectiveness of different policy steering instruments has been studied by several researchers [1], [5], [47], [14-15], [26], [27], [34], [36], [43], [49-50]. The focus of the past research has been mainly on normative and fiscal instruments.

This research focuses on the role of municipal steering in promoting sustainable building. We define municipal steering here as the variety of actions by which cities and municipalities can state obligations or encourage voluntary actions at local level. This area of steering has gained only limited attention in the past, although significant advantages may exist.

Several instruments are available at municipal level, which may be effective in steering for sustainable building on a city level [30], [18]. Municipalities may, for example, regulate sustainable building in planning and land use by setting energy requirements. The role of municipal building control authorities may also be important regarding building-level energy-efficiency and sustainability goals. If the tasks of municipal building control authorities were directed to include guidance in addition to control, this might have an important positive influence on the progress of energy-efficient and sustainable building. An advantage of local steering is that the local authorities are typically in close contact with the most important decision-makers of both new building projects and notable refurbishment projects. They also possess extensive knowledge of building plans, and may be able to steer the choices of owners, users and all stakeholders towards more sustainable building. In the role of owners and developers of public buildings, the local authorities also have the opportunity to implement sustainability in their own building development and showexample for others.

We here define that Sustainable building aims at the required building performance with minimum adverse environmental impact, while encouraging improvements in economic, social, and cultural circumstances [16]. The sustainable building process is defined as the overall quality of the process that enables the delivery of sustainable buildings.

2. Background

2.1. The structure and process of building steering by local authorities

In most European countries, the construction regulations are set on a national level, and complemented with regional or local regulation [37]. The Finnish regulatory system follows this general setting. Ministry of Environment is the central government authority steering building activities in Finland: it is in charge for the general steering of construction by issuing legislation on construction and maintaining the National Building Code. On local level, each municipality is responsible for the steering and monitoring of construction in its area. The municipalities have a significant role in planning and setting local building ordinances, which lay the instructions and regulations relating to local conditions [36].

2.2. Role of municipal building control

The Finnish building regulation system is based on regulation and enforcement by public-sector actors. This setting is commonly used and it is the traditional way of regulation in European countries [51]. Typically, a building permit is required before the start of construction work [37]. These permits are processed by local building control authorities, who check the compliance with building regulations and other requirements, and grant the permits. The construction work itself typically is subject to supervision by the local building inspection authority. Upon completion, a final inspection is carried out. If the construction fulfils all the requirements, an occupancy permit is issued and the building may be occupied. In Finland, each municipality has a designated board for building control,

which acts as a separate entity from the local government. The municipalities have their own building control agencies and the control process takes place in the municipality where the building site is located at.

The Finnish enforcement system has a specific feature, as it obligates the local building authorities to give advice and guidance for the builders with respect to matters considered in the Finnish building act [29]. The process of giving advice and guidance aims to improve the efficiency of the building process, and to guide the builders towards good quality buildings [20].

2.3. Outline of different steering instruments

The building regulatory system relies typically on 'top-down' approach, where the steering is done at high government level. The issues of sustainability, and increasing complexity and interdependence of the society and the building sector will call for more 'bottom-up' approaches in the future [12]. Figure 1 presents how the steering activities can be grouped starting from the top-down instruments of normative and fiscal steering, and going to more consulting and negotiating mechanisms at the bottom [31].

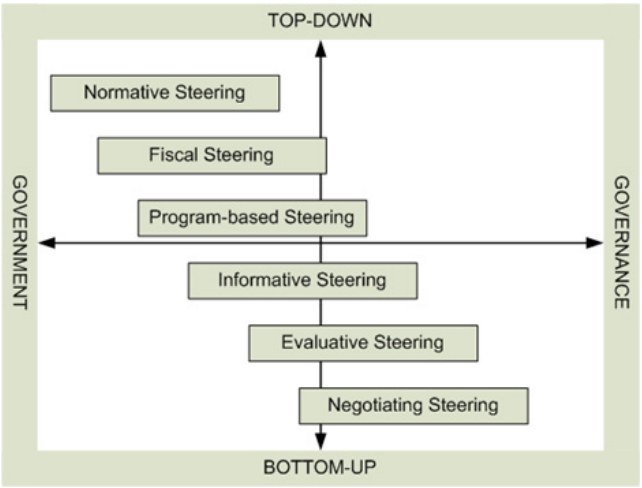

Fig. 1. Conceptual framework of steering activities [31]

At the national level, normative steering aims to guide individual actors through specific regulations and mandatory practices [21]. Fiscal steering, on its part, aims to promote certain behaviour over others with incentives such as taxation and subsidies [21], [38]. Programme-based steering is set at a higher (EU or national) level, but initiated on municipal level through strategies and action plans [31]. An example of such programme is the Finnish action plan for an energy smart built environment [7] in which the participating municipalities can set their own strategies and action plans, based on national goals.

Informative steering is commonly used in steering building activities in municipalities. It aims to alter the behaviour of steered parties by providing them with useful information on specific issues with mainly one-way information provision [46]. Evaluative steering is positioned below informative steering. It is based on evaluative studies – for example within urban planning - which assess the advantages and disadvantages, or the development needs of a certain plan, project, program or process [31].

Negotiating steering can be considered to be the most open, bottom-up approach in building steering. In negotiating steering, all the parties actively discuss and argue current design problems. Negotiating steering recognizes that the society needs to be viewed from the multiple viewpoints of its actors (people, government, companies) and that a general consensus among them may not be reached [31]. Consultation and negotiations during the building permit process between the building control authority and the builder are one form of negotiating steering.

3. Premise and methods

3.1. Hypotheses

The premise of this research is that in order to achieve a rapid change towards energy-efficient and sustainable building and refurbishment, a variety of steering instruments is needed. Instruments implemented on the national level are not enough but steering is also required on municipal level. Due to limitations of normative control and regulatory instruments, the stakeholders' voluntary commitment to sustainable building is essential. The position of municipal building control authorities is important as they have a good understanding of technical solutions and individual new building and renovation projects inside the municipality.

Based on the above-mentioned reasons, we hypothesize that local authorities hold an essential role in promoting sustainable building. The municipal actors have the potential to encourage stakeholders to commit on voluntary sustainability goals by raising the awareness of stakeholders on the benefits, potentials and requirements of sustainable building, and by offering them support and guidance in the process. However, this may require that in addition to traditional working methods – using methods of control and inspection – new methods are developed and a more active role is adopted. We assume that the essential elements in successful local steering towards sustainable built environment include the following: 1) well-defined action plan for sustainable and energy-efficient built environment, which forms a background for guidance, 2) adopting working models of consultation and negotiating steering, 3) adequate allocation of resources for guidance for local authorities, 4) implementation of distinct methods of guidance for different kinds of building projects.

3.2. Approach and objective

Our approach was to find evidence for the stated hypotheses by studying literature and interviewing municipal building authorities. The objective of the research was to assess municipal building authorities´ role and potential to act when a rapid change is needed in energy-efficient and sustainable building and refurbishment and to study and make conclusions of the possibilities and obstacles of building control authorities to widen their role and adopt methods of consultation and negotiating steering.

3.3. Methods

The methods used in this research are the study of literature and interviews.

The study of literature aimed at finding results that would show and explain the role and potential of municipal building authorities in sustainable building. The focus of this study is on consultation and negotiating steering processes related to municipal building control but not purely limited to them, due to lack of research in this field..

The interviews, on their part, aimed at investigating the local authorities' view about 1) the potential of consultation steering and active guidance for sustainable building, 2) the share of consultation and negotiating steering at their current work as building control authorities, 3) barriers to adopt new ways of working, 4) preconditions to adopt new ways of working. We interviewed representatives of building control authorities in ten Finnish municipalities. In addition, we interviewed a building authority at the Finnish Ministry of Environment.

As a limitation of this article, this study comprises of interviews conducted in Finland. However, it will benefit a larger audience as the building control practices around the world have overlapping processes.

4. Study of literature - potential of local authorities to steer sustainable building

4.1. Role of action plans and local strategies

The municipalities not only execute national policies, but also complement the national-level regulations and strategies to fit local conditions. Drafting such local initiatives together with the relevant stakeholders by using bottom-up processes can be highly beneficial. Stakeholder engagement can assist in choosing the most effective and relevant strategies in the local context and lead to a more widespread support for such initiatives [37].

In addition to executing and complementing national policies on local, level, the municipalities may also draft their own strategies and action plans on sustainability. Currently, there is a growing interest among municipalities for preparing their own sustainability strategies [45]. One reason for this is that municipal climate strategies are seen as a faster and more effective way to tackle global climate challenges than global climate agreements [13]. For example in Finland, all of the big municipalities with more than 50000 inhabitants (and 43% of the Finnish municipalities in total) have drafted a climate strategy, defined emission reduction goals, and assessed their greenhouse gas emissions [25]. In general, the most ambitious climate policies are found from the biggest municipalities, which have their policies closely integrated to municipal governance [13].

Local action plans for energy performance improvement are one tool for municipalities to drive the building sector towards sustainable building. Some cities actively enforce building owners to track energy performance of buildings, in order to ensure that cities' own climate goals can be met [24]. Such schemes can offer common definitions and goals for the local energy-saving actions [34], [23] but their execution requires a team effort from the different municipal actors and private-sector stakeholders [51], [24]. These programs are not effective for all the different builders, but should be targeted especially towards large owners and developers and design/build contractors [6].

As an example, city of Maastricht works actively for reducing the environmental footprint of the city and aims at carbon neutrality by 2030 [11]. The current steering system in Maastricht is based on performance based contracts and verifiable targets between the city and the private stakeholders. A communication and calculation tool for sustainability of Dutch buildings [10] is used by national government and municipalities on policy level [52]. The key issue in the working model is the commitment of different stakeholders. The aim is to raise awareness and make stakeholders demand for better than minimum quality from the buildings [52].

4.2. Information provision, active collaboration and consultation and negotiating steering

As explained in Section 3.3, guidance is defined as a task of building control authorities in the Finnish land use and building act [29], but the content or means of the guidance are not clearly defined. The nature and extent of guidance varies a lot from one municipality to another, based on available resources [2].

The guidance is often given by pointing out external sources of information or providing information, for example through maintaining web pages with relevant information [22]. Sustainable building could be advanced to some extent by improving the availability of information, as the lack of information is still a problem for energy-efficient building, especially in the residential sector [49].

At present, the building control process in most of the Finnish municipalities already includes some interaction between the stakeholders. The local building control authorities typically discuss the design choices and risks with the designers during the building permit process. Also, special informative events are held in most municipalities with varied themes (for example on renovation and energy efficiency) for different interest groups prior the start of building projects [22]. The building control authorities can also apply "anticipated quality control". The purpose is to support the selection of the best choices during design and building [22]. There are also some other European examples of preceding guidance. For example, in Austria, preceding guidance is given by an association founded by the local government [32].

The participation of the municipality in all the phases of building projects is seen necessary in order to ensure success sustainable building and low energy development projects. For example, energy-efficiency ambitions should be propagated to local citizens during the planning stages and prospective customers should be involved in all the project phases [18].

Moving towards dialogue-based communication and more effective information management could further enhance the effects of steering [30]. In addition to single building projects, also larger development projects offer a natural setting for negotiations between the developer and a municipality, and hold a significant potential for improving sustainability of building projects [53].

A good example of a successful change in the working models of local authorities is from the city of Oulu in Finland. The local authorities within building control and inspection have adopted a proactive role guiding small scale housing projects successfully for improved energy performance. In the beginning, Oulu building control created an assessment framework for assessing the quality of design for small scale housing projects. A web tool

[35] was created to help home builders to set design targets to their projects and to assess the design [19]. The case of Oulu will be discussed in more detail in Section 5.2 through an interview.

However, there are currently not many experiences or examples of consultation and negotiating steering. This may be due to the fact that in many European countries building control focuses on the inspection of technical details [17]. Even though energy efficiency and sustainable building are often in the focus of local building authorities, they are typically dealt with by only controlling fulfilment of specific requirements (such as energy use and water use) [8].

There are also barriers for active collaboration and consultation and negotiating steering. The topics of sustainability have a complex and cross-cutting nature and finding the right solutions is not straightforward tasks [13]. To tackle the issues of sustainability, new knowledge and working processes are needed, but the resources may be scarce. Municipalities aiming at performance levels better than set in national regulations, often face problems with financing such actions and more support would be needed [48].Use of private-sector service providers can ease this problem to some extent and increase effectiveness of regulatory process in some cases [51].

Old working models and industry practices may also be barriers for sustainable building. The plan of work for municipal building control authorities published by the Association of Finnish Local and Regional Authorities [3] emphasizes the importance of cooperation between all parties in building projects and the role of building control authority as a more active actor that gives guidance. However, the plans of work (non-regulative guidance) for different stakeholders of building projects [39-41], state that collaboration between the municipal authorities and other stakeholders takes place at the intermediate and final inspections, and describe no collaborative methods. The plans of work characterize the role of building control authorities as a controller and provider of one-way information about regulations, rules, guidelines and such.

5. Interview

5.1. Interview method and selection of the interviewees

The interviews used a semi-structured template, focusing on questions about current building control tasks, potentials and barriers for changes and improvements and approaches for different customer groups. The interviewees were given a set of questions in beforehand, and the interviews followed the topics of this pre-given list in an indicative way. The aim was not to get a detailed answer for each question, but to get open answers and broader information and arguments about the topics.

The interviews were pre-planned to represent different sizes of municipalities (from 40 000 inhabitants to 620 000 inhabitants) in different geographical locations in Finland. The interviews were targeted to the representatives of selected building control authorities from nine Finnish municipalities, giving sufficient coverage of municipalities of different size and geographical location. The municipalities were as follows: Vantaa, Espoo, Järvenpää, Tampere, Helsinki, Kuopio, Jyväskylä, Seinäjoki, and Rovaniemi. The representative of the building control authorities of the city of Oulu was also interviewed. These results are summarised in Section 5.2 as background information, because they already show an interesting example in applying methods of consultation and negotiating steering. In addition, a representative at the Finnish ministry of environment was interviewed (chief architect, eco-efficient building).

5.2. Pre-information for the interviews – case Oulu

According to the representative of Oulu building control the phase of applying for building permit is too late for the control authorities to try to impact the design decisions of builders. Oulu building control started to develop a proactive system of consultation and negotiating steering for home builders. Building control officers arrange education for home builders. The process is voluntary, but recommended, and it is included in the fee of the building permit. It is recommended that the architect participates in the seminars with the client. The seminars support clients in understanding different issues that should be considered when aiming at technical, functional and architectonic quality of a house. Hereby the clients are also invited to the very building control process earlier than before. This is beneficial for both the builder and the control authorities. Early involvement of authorities to the project and longer negotiation time allow critical issues to be observed and solved in time, without causing delays. The clients have a

chance for specialist comments and guidance during the design. The permit approving is a quick step in the end of the process when the control officer already is familiar to the project and its aims. Proactive quality guidance shows significant results especially with regard to reduction of moisture related building problems and improved energy-efficiency [44], [42]. Building control has saved time and effort as the seminars enable informing masses instead of separate phone calls and meetings about repetitive issues. This in turn gives resources for private guidance of each client in complicated situations.

5.3. Results of interviews

5.3.1. Importance and use of the elements of consultation and negotiating steering

Many of the interviewees welcome in principle the elements of consultation and negotiation within building control processes. The building authorities agree that guidance gives value to the customer and meaning for their own work. In current state the guidance mostly focuses on fulfilling legislative requirements and happens by delivering information to be used by the clients and designers on their own. The guidance covers multiple points of views and the aim is to assure the overall quality of building. Also negotiation during the control process happens and informative events are organised for different client groups. Informative events have been directed to private home builders, deputy landlords and property owners planning to start renovation. Building control officers agree that energy efficiency and sustainability are especially impoissues that should be covered by their guidance.

5.3.2. Identified changes needed for building control practices

Many interviewees said that in order to be able to affect to the most essential design decisions in the consultation, the building control process should be changed so that more interaction with the clients would happen earlier. Effective consultation is not possible in current control-oriented process. The client himself is less involved in the control process. Instead, the building permit and interaction with building control is taken care of by the principal designer (the architect). To affect the target setting of the builders, the involvement of the client himself in the building control should be increased. It is considered beneficial for both, client and building control, that the interaction would start as early as possible.

5.3.3. Steering different client groups

Many interviewees also said that the consultation steering is effective and particularly important with layman builders, for example private families who want to build a house for themselves. A lot of information is available about energy-efficient and sustainable building, but the ability and motivation of a layman may not be sufficient to evaluate all the material and consider what part is essential in his project.

The interviewees addressed that the encouragement of housing associations to sustainable building and renovation is a challenge. It was considered that neutral, authoritative information (directed to private owners of apartments) might help the persuasion for retrofitting in private owned housing associations. That was, however, not seen as a role for building control authority but some other public body since that is not yet consultation and guidance in a building project.

Many building control units, however, already keep in touch with the deputy land lords to update their knowledge regarding building control processes, requirements, possibilities for consultation etc.

Interviewees pointed out that the professional builders usually have knowledge and they are able to seek and perceive needed additional information. Some professional builders are not interested in sustainable building; in those cases their behaviour is not necessarily due to lack of knowledge but lack of will. Thus the information or consultation steering is not very effective towards them. On the other hand, consultation steering might add pressure to build more sustainably.

Steering of large professional property owners would have large impact compared to effort used for steering. However, the interviewees were in mind that these institutions already are rather conscious about sustainability. As professionals they know where to get information and how to consider different information sources. Some interviewees said that with regard to commercial and office buildings the emergence of environmental certifications such as [4] has brought also buildings with performance above the regulation level into the market.

5.3.4. Barriers for consultation steering and means to overcome them

The interviewees said that they welcome in principle the increase of the elements of guidance. In practise, however, the willingness to change seems low. Many interviewees said that the change of practices towards more interactive guiding would add tasks to already heavy burden. The lack of resources is named as the main barrier to change, and it was repeatedly stated in the interviews. However, bigger building control units typically have more resources for consultation and negotiation.

To save resources the specialisation of different persons for different sectors was seen positive or even necessary; different sectors might be such as renovation, new building, energy efficiency, building physics, etc. However, the specialisation would be possible only in control units big enough. In current situation in Finland there are several municipalities with only 2-5 persons working in building control. Either bigger units should be formed by moving building control from municipal level to regional level, or flexible utilisation of control officers and experts across municipalities should be made possible. To do so, there is also a need for aligning practices and appliance of regulations across control units in different municipalities.

Some interviewees said that the establishment of electronic services in building control is also believed to be a means to release resources from routine work for consultation and guidance. In Finland the development for electronic interaction and document submission is under way. Long-term effects are not known yet. Central online systems would ease also the flexible division of work between municipalities discussed earlier.

5.3.5. Strengths of consultation and negotiating steering in building control

The strengths of consultation and negotiating steering by building control authorities would be neutrality, good coverage (all builders are anyway involved with building control), possibility to personal guidance, easy access in local control units and answering to acute needs when various design solutions are being considered. The last one is probably the most important insight that makes consultation steering effective. The clients who are planning and starting a building project are acutely searching answers to various questions. The consultation thus has much higher potential impact than general information directed to all public. By consultation the information can be also portioned into perceivable chunks and the issues can be prioritized considering which issues are critical and which are minor. This is beneficial especially for layman builders.

5.3.6. Preconditions and liabilities

The ability to give reliable and correct guidance and the related liability and responsibility issues were also emphasized by many of the interviewees. The availability of objective and correct information and model solutions for energy-efficient buildings was seen important.

The interviewees addressed that authorities should stay completely neutral. From this point of view any preference to specific technologies/solutions/products was seen unjustifiable. The steering should focus on supporting demanding but realistic target setting not directly on giving solutions to fulfil targets. It can be left to the role of industry to show how different products/approaches fulfil the targets and to the designers to help the client to choose the most suitable solutions.

Some interviewees said that another issue regarded as pre-requisite for effective guiding is continuous training for the control officers. The requirements and technologies for energy efficiency and sustainability, for example, change rapidly. Recently also cost and financial issues about renovations must be considered in building control. That is also likely to be a matter in which clients will need guidance.

The interviewees think that in order to make changes to building control practise, strong support is needed from the central building authority and the development should be coordinated and allocated across local level in order to make the new practise consistent.

6. Discussion

6.1. Local strategies for energy-efficiency and sustainability

The results of the study of literature address the role of local authorities in steering for sustainable building. The local authorities are the government organization closest to the citizens, and partly because of that, the local

governments have a significant role in executing climate initiatives, and bringing policies into action. Also the slow development in international climate negotiations has shifted the interest towards city-level actors. Municipal actors are also showing increasing interest in preparing city-level sustainability strategies. On the basis of the study of literature, there are indications that traditional role of municipalities as a passive enforcer of national building regulations is changing. However, the municipal strategies should be closely linked to the local administration to ensure the realization of the strategy and also the allocation of adequate resources.

6.2. Strengths of consultation and negotiating steering

The study of literature also emphasizes the role of consultation and negotiating steering in promoting sustainable building. Consultation and negotiating steering can be seen as the most bottom-up and governance type of steering activity. It is defined as informative steering with communicative nature in such a way that the recipients – actors of building projects – are active parties in the steering process. The study of literature supports the usefulness of consultation and negotiating steering in promoting sustainable building because of the complex nature of sustainable building. Interactive, dialogue-based communication enhances the effects of steering and it may become even more effective, when systematic knowledge management is applied simultaneously.

The Finnish enforcement system already obligates the local building authorities to give guidance for the builders. At present, however, this guidance is given mostly in the form of one-way delivery of information. The interviewees addressed the delivery of information but also supported the importance of consultation and negotiating steering. The most important strengths of guidance by building control authorities include neutrality, good coverage, possibility for personal guidance, good accessibility, and answering to acute needs of the client. However, the interviewees also emphasized the importance of liability and correct information. It is more important to support in setting demanding targets than in addressing specific solutions.

Guidance for sustainable building is especially effective in early phases of small building projects where the owner of the project is a private person building or refurbishing a house. However, the methods of communicative negotiating steering might also be effective for bigger projects carried out by bigger owners and bigger professional building companies. Mere informative instruments are not effective, because often there is no lack of information but lack of motivation for more ambitious sustainable building. Voluntary district level programmes and city infill projects may be very effective and suitable to municipal level negotiating guidance in sustainable building for professional builders. However, quite little experience about negotiating steering exists so far; specific methods and tasks should be developed and tested.

The strength of local level guidance for energy-efficient and sustainable steering was also shown on the basis of the Oulu case. Significant improvement in the energy-performance and building physical performance of new small houses was achieved with the help of proactive guidance.

6.3. Sufficiency of resources

Both the study of literature and the interview results support the assumed importance of allocating adequate resources for negotiating steering for sustainable building. The resources can be improved, not only by allocating bigger financial resources, but also with the help of cooperation between municipalities and new organisation of tasks and responsibilities. In addition, the better use of digital services might be an effective way to move resources from routine work to consultation and guidance.

6.4. Use of different kinds of methods in different kinds of projects

According to the interviews, the consultation and negotiating steering is particularly effective with regard to building and refurbishment of detached houses owned by a single private owner. The awareness of such builders on potential for improved energy-efficiency and sustainability is often low and communication already in early phases of projects can be very effective in promoting energy-efficiency. The encouragement of housing associations for sustainable building and refurbishment is important but not suitable for the role of building authorities but some other public body.

Professional builders usually have knowledge and they are able to seek and perceive needed additional information. Effective methods of negotiating steering should be further developed to really encourage and support professional builders in searching and optimising alternatives of sustainable building.

Effective steering of large professional property owners would have big impact. Many of these institutions – especially public building owners - already are rather conscious about energy efficiency and sustainability.

6.5. Concluding recommendations for further research

The study of literature and the interview results indicate that there are different kinds of guiding roles in terms of the level of interaction and proactivity. On the basis of that we recommend that the research will be continued by studying the effectiveness of the negotiating role of building control authorities for sustainable building by outlining roles for example into 1) traditional Controller that controls and inspects the received proposal, 2) Adviser that gives information and guidance in finding information about solutions and tools that help to design for sustainable building, and 3) Promoter that actively contributes to process by promoting sustainable building programmes and collaboration, arranging workshops, and supporting target setting and finding alternatives. The effectiveness of the different roles should be studied and the suitability of advising and promoting roles in different kinds of projects should be further investigated. To support the adoption of new methods by local authorities, the description of methods and tasks of consultation and negotiating guidance would be important.

7. Conclusions and policy implications

The traditional role of municipalities as an enforcer of national building regulations is changing. According to the interviews, consultation and negotiating steering is important, useful and needed especially towards non-professional builders. Applying methods of consultation and negotiating steering towards professional builders and owners is more challenging and more knowledge of suitable methods should be developed.

Change to consultation and negotiating steering requires changes in building control processes. Sustainability cannot be much promoted anymore in that phase of building where building control is involved today. The builders should be reached earlier in the process. The strengths of guidance by building control authorities would be neutrality, good coverage (all builders must anyway be involved with building control), personal contacts, and responding to acute needs.

Building control authorities need more and continuous training in order to maintain the ability to give guidance in a situation where new demanding requirements are constantly stated for sustainable building. To increase the consulting role of the building control authorities, more resources are needed. Establishment and utilisation of electronic services in building control is believed to be an effective way to release resources from routine work to consultation and negotiating steering.

Municipal actors show increasing interest in preparing city-level sustainability strategies and action plans. These should be closely linked to the local administration to ensure the realization of the strategy and also the allocation of adequate resources.

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