

Introduction to Panel 3

Local action and national examples

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Introduction

In the last years, the engagement of local governments as well as the role model they play in terms of energy efficiency policies and actions has been confirmed by an increasing number of local programmes and actions which have been planned and implemented. These actions might be fostered by international or national targets and policies or initiated locally following the impulse of active and visionary stakeholder groups. They might concern organisational and legal frameworks, technical and communication aspects, be applied at neighbourhood, city or regional scale and be supported by different types of incentives.

Panel 3 is dedicated to all types of actions initiated and implemented by (or for) local authorities, utilities, local housing companies and citizen groups, focusing on recent developments and pioneering approaches. Papers in this panel report on concrete actions that have been planned, implemented and monitored at local level. In particular, the focus is on the planning and implementation processes, the role and contribution of the local stakeholders and the investment and financing models for these actions. Barriers and success factors at the different planning and implementation phases are analysed in many papers.

As local action takes place in cities we chose to open this panel with a contribution on how cities might look like in 2050. What are the objectives currently followed by city governments? What are the development paths on which city governments engage? Which targets are best adapted to which city? Visions for sustainable urban development and possible development paths and targets are presented in this introductory section “Visions for sustainable urban development paths”.

In the last years local actions and projects have already been implemented in many cities so it is worth having a look at these activities to understand their impact and deduce policy recommendations. What has been successful in these projects and

why? Are there clear success factors for local action? This is discussed in the section “Examples of sustainable urban development and policies”.

When it comes to energy efficiency in cities, building retrofit is definitely a primary source of energy savings and is therefore a measure that is often included in local action plans. But the complexity of implementing retrofit measures increases when going for large-scale programmes covering entire neighbourhoods. How to address the so-called “behavioural risks” that might compromise the success of such programmes and how can decision makers and project managers handle this complexity? New approaches are presented in the section “Managing large-scale sustainable retrofit processes”.

Talking more generally about all types of measures that might fall under the category “local action”, it is clear that their implementation success often rely on new models of governance. Analysis results from field experiences with these models are presented in the section “New local energy governance and participation models”.

If these local actions legitimate the phrase “think globally, act locally”, how do they then relate to national policies, their instruments and the impact that these policies might have as well at local level? The section “Bridging the gap between local actions and national policies” presents three examples for the three main types of situations that might occur in practice. Local actions do not exclude looking to what neighbours are doing. The section “Instead of reinventing the wheel: learning from others” is dedicated to examples of how home-owners or city administrations can learn from their peers.

In addition to the availability of sound governance schemes, the success of a measure is often depending on how this measure is received by the group it is addressed to. Triggering the

“right” behaviour is a main success factor for a measure to be implemented. Example of such types of measures are handled in the dedicated section “Triggering the right behaviour”.

Even if all implementation models discussed so far rely on the aptitude of stakeholders to engage in participation, to gather, to motivate, to share information etc., the question of financing always has to be addressed soon or later. ESCo is the key word, but there are ESCos and ESCos. Different typologies, nomenclatures and implementation models used across the world are discussed in the section “How to make business with energy efficiency: financing models for local action”.

But how to facilitate the implementation of such financing models? Some authors call for the professionalisation of the function of project facilitators, who should guide the potential client through the decision labyrinth. Others rather look on the other side of the coin and analyse the expectations of energy service sector. A last group shows how local authorities themselves can support these mechanisms. This is discussed in the section “Facilitating the implementation of energy service contracting models”.

Last but not least, given the complexity of planning and implementation mechanisms, how to best advise decision makers and planners? A number of tools has emerged with the aim to reduce the degree of complexity of the questions to be answered. But how much simplification is acceptable? This is discussed in the last section “The contribution of computational models and assessment tools”.

Visions for sustainable urban development paths

The development towards energy efficient cities is without any doubt motivating all contributors in this panel. With their paper 3-310-13 “Towards post carbon cities: Why? How?” Eric Vidalenc and Jacques Theys propose an introductory vision of energy efficient cities and report on the results of a foresight process which involved different experts in France and which lead to a set of possible pathways towards sustainable urban development. The main result is a qualitative description of these pathways, which all depend on the context, the governance choices, the economy, investment preferences etc. Reading these descriptions helps anticipating the changes that might occur as a consequence of a given policy in a given context.

If visions are necessary, they are not sufficient to guarantee the success of urban energy policies. The key is often in the definition of well defined and tailored targets. Looking at the case of a shrinking city, Steven März et al. argue in their paper 3-201-13 “Rethink the target: drivers, barriers and path dependencies for a low-carbon-transition in shrinking cities – the case of Oberhausen” that it is necessary to “understand the socio-economic, geophysical, spatial, infrastructural and political framework of a city” before defining appropriate targets for a city.

Examples of sustainable urban development and policies

Sustainable urban development has many faces, and Agneta Persson et al. do not need to look beyond the borders of Sweden to be able to discuss the broad variety of approaches and incarnations of this concept in their paper 3-071-13 “37 sustainable urban development areas and their approaches to sustainabil-

ity and energy efficiency”. Their study addresses new district developments and the retrofit of existing neighbourhoods and presents the results from a questionnaire sent to representatives of these projects. They conclude on the satisfying representation and fulfilment of energy criteria in these projects but also on the insufficient consideration of other criteria like economical aspects.

Rudy Rooth et al. also consider new neighbourhood developments in their paper 3-060-13 “Energy-efficient neighbourhood development in Apeldoorn (NL) and Hillerød (DK), implementation and results”. The paper mainly presents some ex-post assessment results of two low-carbon neighbourhood projects in Denmark and in The Netherlands, with a focus on energy consumption data and a survey of tenants’ satisfaction. The authors highlight the fact that the district dimension provides new energy optimization opportunities.

Going beyond the scale of single neighbourhoods and districts, Adam Hinge et al. look at building energy efficiency policies applied at city scale in paper 3-195-13 “Building efficiency policies in world leading cities: what are the impacts?”. The authors present an overview on recent building energy efficiency policies applied by the city governments of London, New York and Tokyo and report on first evidence of the impact of these policies, even if available statistical data does not always allow for quantitative impact assessment. The policies all include measures in the four fields of building labelling, local building codes, public buildings initiatives and thermal retrofit programmes but the instruments applied are all different, depending mainly on the local governments’ capacity to act, which is discussed in the paper.

Managing large-scale sustainable retrofit processes

One very important part of sustainable urban development consists of improving the energy efficiency of the existing building stock in cities. This includes implementing both individual energy efficiency improvements and large scale refurbishments projects. Two papers study the details of managing these kinds of processes. Even if methodology and technologies for achieving sustainable urban development are available, several types of challenges may arise during the planning and implementation process.

As Will Swan et al. write in paper 3-058-13, “Managing behavioural risks in large-scale social housing sustainable retrofit projects in the UK”, the construction companies are used to managing different projects risks including financial, safety and health risks, but do they know how to manage behavioural risks? Efficient technologies are sometimes not appropriately used or even completely unused. “Project failings are often driven by behavioural factors that mean social housing residents either do not adopt sustainable retrofit, or if they do, they do not use the improvements effectively.” In this paper a methodology is presented for managing this kind of risk. Josefin Thoresson discuss in paper 3-321-13, “Transition towards low energy housing: Implementing energy efficiency in a large-scale refurbishment project”, that “despite several policy recommendations directed towards energy-efficient buildings and initiatives for refurbishing post-war dwellings to become more energy-efficient, only a few real projects without governmental financial support are actually put into practice on the

local level". The paper presents a case-study of a project in Östra Sättra district, where a housing company decided to combine energy efficiency improvements, involving citizens in the area and reducing social problems during a large-scale refurbishment project.

New local energy governance and participation models

The implementation success of "local action" often relies on new models of governance, which go far beyond the implementation of top-down programmes driven by city governments. The observation and analysis of recent activities is a testimony of a complex multiple stakeholder and multi-level governance situation. This involves in particular the use of participation models as well as the creation of local community groups.

In paper 3-031-13, "Local energy governance: communities and energy efficiency policy", Joanne Wade et al. describe the traditional roles of local authority action on energy, the options for new roles and the challenges the transformation process is likely to meet. The comforting conclusion in the paper is that "recent trends point to a potentially more important role of local authorities in assisting community activity to develop, deliver its own goals and contribute to a real 'bottom up' transformation of the energy system".

Albane Gaspard et al. discuss the impact participation processes have on local climate planning and on stakeholders' own actions in paper 3-234-13, "A Strong Process for a Weak Policy? An analysis of stakeholder participation processes in French local climate plans". The paper raises the issue of non-stringency of local climate action plans in France and concludes that "participatory settings remain a weak element of policy-process if they are not provided with legal and official powers". Another viewpoint to participation processes is presented in paper 3-108-13, "Scaling up local energy action: the role of partnerships, networks and policy", in which Ruth Mayne et al. describe in detail how Low Carbon Community Groups operate in UK and how they can have a key role in local energy governance. One of the conclusions in the paper is "how the creation of a local 'transition arena', aided by grant funding, can facilitate the development of a shared vision between a range of local actors and a more strategic overarching approach to carbon reduction."

Bridging the gap between local actions and national policies

Even if there is always a point where top-down and bottom-up approaches somehow meet, bridging the gap between national policies and local actions remains challenging. The three papers in this section perfectly illustrate these challenges and try to provide some answers at different levels. Seamus Hoyne and Paul Kenny report in paper 3-157-13 "SERVING the Nation – applying lessons from SERVE CONCERTO project to Ireland" on how the lessons learned from an advanced demonstration project could contribute in shaping new national policy schemes in Ireland. A condition for such upscaling was not only the degree of innovation of the demonstration project compared to current practices in the considered country, but also the motivation of the project team and the interest shown by central governments.

The second paper presents the result of a completely top-down process, where the local action is mainly a consequence of a powerful and highly centralised national government structure. Nina Zheng Khanna et al., in paper 3-046-13 "Evaluating China's pilot low-carbon city initiative: national goals and local plans" show how local plans have been developed as a consequence of a national programme in China. The authors include a critical discussion on the complexity of related administrative procedures and on the unclarity of some aspects of the plans, in particular regarding the definition of responsibilities, which might compromise the implementation success.

The third example illustrates maybe the most common situation, where a locally observed effect can be explained by the combination of both local and national policies (and other external effects), which does not ease the impact analysis. Based on a series of assumptions, Jan Kaselofsky et al. show in paper 3-223-13 "Shifting baselines: the interdependency of local and national policies to reduce GHG emissions" that the quantitative impact of national policies is significantly higher than assumed ex-ante. "Nevertheless, cities remain crucial actors [...] mainly because of their possibilities for defining additional measures and complementary supporting structures."

Instead of reinventing the wheel: learning from others

The domestic sector has a significant potential for energy efficiency improvements. Catherine Bale et al. state in paper 3-158-13, "An evaluation of local authority social network interventions for the promotion of energy-efficiency measures in the domestic sector", that "energy-efficiency strategies overlook the important role that local authorities play in encouraging the households under their remit to adopt energy-efficiency measures, as well as the significant social network influences on uptake between households". The paper presents survey results showing that local authorities and friends appear to be trusted sources of information with regard to energy.

Learning from others is a combining theme in the other two papers in this session. In paper 3-435-13, "Home energy makeover contests – who are the winners and losers in motivating existing homeowners to make 'whole house' energy saving improvements", Ed Thomas and Tiger Adolf present results and key lessons learned from more than 20 home energy makeover contests supported with public funds. "Each contest resulted in a very satisfied homeowner providing positive public feedback through open houses, case study documentation, and extensive media coverage." As an alternative to competitions, open-house events are another tool for social learning. Stephen Berry and Anne Sharp discuss whether open house events succeed in delivering useful information for new visitors in paper 3-074-13, "The role of open house events to improve energy efficiency: reaching the new or preaching to the converted?". The results of the surveys indicate that "Eco open house events reach a majority of new audiences each year" and "follow-up studies of visitors show that a half of the respondents are planning to build or renovate within a timeframe of one year".

Also cities can learn from each other. Ralf Schüle et al. present in paper 3-245-13, "Overcoming the implementation gap in urban climate policies: The CASCADE experiment", the results of a project where 19 experts from cities identified challenges in their climate work and tried to find solutions in

collaboration. “Within the peer-learning visit, the benchmarking approach helps the participating cities (hosts and visitors) to understand general structures of local climate policies and hence offers the opportunity to exchange and learn from each other.”

Triggering the right behaviour

The importance of motivating building users is essential in achieving energy savings in all kinds of buildings. As Graeme Stuart writes, “Very often simple, low-cost or zero-cost changes to occupant behaviour can have a significant effect on building energy consumption”. Three papers present concrete tools developed for the domestic sector, professional kitchens and public buildings. Rose Maria Laden Holdt presents in paper 3-123-13 “Achieving behaviour based energy efficiency in professional kitchens” a Danish example of a pilot concept of behaviour-based energy efficiency in professional kitchens via a motivation and information campaign. The project succeeded in committing the participants in taking action and making it enjoyable in all participating kitchens. Graeme Stuart et al. present a new live energy performance feedback system for motivating users of public buildings in paper 3-257-13, “Designing live energy performance feedback for public buildings in Leicester”. In their system “Buildings are competing, not to be the most efficient building but to be the most improved building”. Ian H. Rowlands and Julia Hawthornthwaite present results of several residential electricity audits in paper 3-083-13, “Residential electricity audit impact study: an Ontario (Canada) case-study”. They conclude that “residential electricity audit catalysed participants to make changes to the ways in which they manage electricity in their homes and contributed to reductions of 14 % in average in total electricity end-use”.

How to make business with energy efficiency: financing models for local action

Energy Service Companies (ESCO) are evidences of the fact that it is possible to make business with energy efficiency. The different forms of ESCO as well as some success factors for their implementation are discussed in this section.

Christopher C. Seeley and Milton Bevington report from concrete building efficiency projects in different parts of the world where such financing models have been applied more or less successfully. Their paper 3-005-13 “Making energy efficiency bankable: Lessons learned from a global market transformation effort” show that such models, being rather market-based, do not require specially designed policy frameworks and can therefore be applicable in very different energy policy contexts. The authors also point out that there is a need for “an engaged global banking industry” and that upgraded building services and low operating costs are a guarantee for low-risk investment from third parties.

Adrien Bullier and Christophe Milin start referring to similar models in paper 3-221-13, “Alternative financing schemes for energy efficiency in buildings”. The authors highlight the fact that buildings would need to be aggregated in order to reach a bankable size for third-party investors. There is so far a need for market facilitators and adjusting regulation.

Last, Charlie Morris-Marsham and Steven K. Firth focuses on energy service contracting in the residential sector in their

paper 3-182-13 “The domestic energy supply business model: why it should sell services rather than commodities”. The authors address the main challenges in the energy service sector and discuss its applicability to the sector of individual homes.

Facilitating the implementation of energy service contracting models

Even if the market for energy efficiency services is growing, its penetration could be increased in most countries. Barriers still exist in procurement processes for energy efficient products and services. Louiza Papamikrouli et al. present results of a survey for 94 companies in paper 3-360-13 “Barriers for energy efficient public procurement in south-east Europe – a market perspective”. The authors conclude that public tendering processes are a challenge for small and medium-sized companies but also suggest that the expertise of public procurers needs to be improved, “not only the technical expertise regarding the products and services to be procured but also the expertise to apply new ways of financing energy efficient solutions”. Two papers propose solutions to this. Jan W. Bleyl et al. present concrete steps in the project development and outsourcing process from the viewpoint of clients together with some insights to the potential changes needed in the client organisation. Paper 3-472-13, “ESCO market development: A role for Facilitators to play” also presents a comparison of facilitator service costs of real implemented projects. In a case-study, paper 3-436-13 “Energy efficiency in public buildings – local transition strategies”, Pia Laborgne and Henning Wilts discuss the role that local authorities can take establishing market facilitator organisations. The focus in this paper is the role a local authority can take functioning as surroundings for niches for new business models and services.

At the end, this is all about providing the most appropriate type of information. This is the topic of the paper 3-282-13 by Kilian Seitz et al., “Information needs for community-level energy investments: some insights from a CONCERTO questionnaire”, where the authors analyse the expectations of all involved stakeholders when it comes to the information required to perform an investment.

The contribution of computational models and assessment tools

In line with the final recommendation of Persson et al., many authors present computational and assessment tools aiming at supporting decision makers and planners in the different phases of planning energy efficient districts or designing local action plans. Even if the tools presented in this section are all designed to answer different questions and can therefore not really be compared, they share one common point, which is the ambition to handle the complexity of urban energy issues in simple and easy-to-use tools.

Heike Erhorn-Kluttig et al. present a software tool providing urban and energy planners with the appropriate energy and environmental information for drafting an energy supply scheme for a district. In paper 3-115-13 “The district energy concept adviser: a software tool to support urban decision makers in planning district energy supply schemes”, they present the structure of the tool and show how it can be easily applied to compare different energy supply strategies for a given district.

The simple usability of the tool is guaranteed by a number of default values that streamline the decision-making process towards the most important questions that are to be answered in early design phases.

Going beyond a simple energy balance approach, Mark Jennings et al. apply a spatially and temporally dynamic non-linear program in paper 3-480-13 “Energy modelling to support local authorities in the transition towards greater energy efficiency of building stock: a case study in North London” in order to provide recommendations on the neighbourhoods to be thermally renovated. The added value of applying optimization models is discussed in the paper.

On the basis of a simple model, Rajat Gupta and Rohini Cheriaan use a comprehensive database of building energy per-

formance data in combination with a mapping interface in paper 3-476-13 “Mapping communities and neighbourhoods for local carbon reductions”. The authors present how the tool developed can support decision makers in selecting the most appropriate renovation package for a given neighbourhood.

At a more strategic level, Gang He et al. have developed an easy-to-use sustainability assessment tool for Chinese cities. In paper 3-399-13 “ELITE Cities: A low-carbon eco-city evaluation tool for China”, they describe the set of assessment criteria used and the basis on which the related indicators can be calculated, considering the local framework in Chinese cities. This tool is to be used for benchmarking purposes and for helping local authorities assessing their progress in the implementation of local action plans.