A rose by any other name…? New contexts and players in European energy efficiency programmes

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Abstract

Until recent years, the promotion of energy efficiency has mainly been the mandate of national governments and energy utilities. As energy markets have been privatized and opened up to competition, utility-driven DSM programmes have run into increasing problems and thus often had to be re-configured and re-invented. New intermediary organisations are also called for to tackle the demand side, such as specialized energy service companies (ESCOs), energy agencies, or specific organizations that gain their funding from public benefit charges.

A closer look at who is promoting energy efficiency in Europe today, however, reveals an even more diverse picture. Energy efficiency is promoted under a variety of headings, including climate change mitigation, sustainability, eco-efficiency or energy self-sufficiency. Moreover, the intermediary organizations working on energy efficiency include a variety of non-governmental organizations, public-private partnerships and regional or sectoral networks.

After painting a synthesized picture of the general problems confronting energy efficiency, our paper discusses the diversity of ways in which new energy intermediaries in old and new member states of the EU are working to promote energy efficiency, and the opportunities and challenges encountered by different kinds of intermediaries. We then turn to analyse the merits of 'nesting' energy efficiency within a broader climate or sustainability agenda. This broader agenda provides some advantages for the promotion of energy efficiency, but also some special challenges. We discuss the pros and cons of hosting energy efficiency under a broader agenda on the basis of recent findings from an EC FP7 funded study called CHANGING BEHAVIOUR[1].

Introduction

Energy efficiency entered the energy policy agenda in the 1970s as a result of the energy crises. Most countries adopted RD&D policies, information and education, financial incentives and energy efficiency standards for buildings. By and large, these policies are viewed as having been successful (Geller et al. 2006). Government funding for research, development and deployment has promoted a number of energy efficiency measures such as heat pumps and new building designs. Grants or tax incentives have been used to promote energy efficiency upgrades, such as home retrofits and lighting equipment replacement. Efficiency standards have been very effective in reducing energy consumption per floor area in some countries. Market transformation programmes have been used to promote the market penetration of energy efficient appliances, and voluntary agreements and sectoral commitments have been adopted in a number of countries. All in all, it is estimated that 'negajoules', i.e. energy saved as compared to a 'no-policy scenario' have become the largest single energy source in Europe (Action Plan for Energy Efficiency 2006).

The energy crisis also provided the impetus for the first utility demand-side management programmes. They grew rapidly in the 1980s and 1990s due to government requirements and incentives for least-cost or integrated resource planning (Eto 1996), requiring energy utilities to consider investments in energy efficiency in the same way as they considered investments into new production capacity. As energy markets were privatized and opened up to competition, utility-driven DSM programmes have run into increasing problems and thus often had to be re-configured and re-invented. In Europe today, there is no direct financial incentive for utilities to reduce energy consumption, and motives for utility DSM programmes are today more related to customer retention (Vine 1996) or image-building (Didden and Halseleer 2003), or to be able to control peak load by means of demand management. Moreover, some of the early utility-driven DSM programmes were quite disappointing as business models. Today, however, the situation has changed once again, as energy efficiency and energy conservation have gained renewed interest. They are the cheapest and most feasible way to meet (part of the) climate change mitigation targets (Geller and Attali 2005). This has meant that traditional players in the energy efficiency market such as utility companies have had to adapt to the new challenge and attempt to find more successful business models to solve the problem of promoting energy efficiency and thus generating less profit due to falling demand. This they have done in different ways, for example through developing new services for their customers or selling products that help customers save energy (SURF et al. 2008).

[1] http://www.energychange.info/

At the same time, we see the emergence of new players in the field of energy demand side management, such as specialized energy service companies (ESCOs), government-funded energy agencies, or specific organizations that gain their funding from public benefit charges, like the UK Energy Saving Trust (Didden and d'Halseleer 2003). Kant (1995) argues that a shift in policy orientation from energy supply to energy demand implicates an even wider range of actors, including national and local government, energy auditing specialists, manufacturers of energy efficient products, financial specialists and non-governmental organizations. In the past decade, we have seen these different actors becoming more and more active in the field of energy conservation. They are launching projects and programmes to reduce energy demand, but often under new headings like 'climate action', 'carbon neutral', 'sustainable energy' or just 'green'.

This paper analyses some of the 'new' energy conservation programmes that are nested within a broader climate, 'green' or sustainability agenda. They present an interesting phenomenon because some of the early evidence suggests that such programmes are more successful in mobilising citizens than conventional energy conservation programmes (e.g. Lutzenhiser and Biggart 2006). On the other hand, concerns have been voiced that 'burying' energy conservation in a broader climate agenda may obscure the message of such programmes (Greer et al. 2001).

We examine the pros and cons of placing energy conservation within a broader climate agenda on the basis of evidence collected within an ongoing European research project called CHANGING BEHAVIOUR. This action research project aims to develop and test a conceptual model of change in energy behaviour that emphasises the role of actors, context and timing in energy change programmes. The model is developed and tested through a meta-analysis of previous cases, workshops and pilot projects. The focus is on energy change projects dealing with small-scale end-users such as households, offices, municipalities and schools. The project works through intensive co-operation between researchers and intermediary organisations, i.e., governmental or semi-governmental energy agencies, non-governmental organisations, consultancies and energy service companies working to promote energy efficiency and energy conservation.

The remainder of this paper is organised as follows. We first discuss some of the problems in energy efficiency and energy conservation, reviewing and to some extent rephrasing the conventional 'barriers' to energy efficiency. We then turn to examine some conventional and 'new' energy conservation programme types in Europe on the basis of datasets collected within our project. We then analyse the pros and cons exhibited by 'new' (climate or sustainability oriented) energy conservation programmes. The conclusions focus on implications for practitioners, policy makers and further research.

The general problems in energy efficiency

It has long been acknowledged that there is a large uncaptured potential for energy efficiency (e.g. Geller et al. 2006). Attempts to reduce energy demand and increase energy efficiency have become even more urgent as climate change has climbed to the top of the political agenda. Energy efficiency and energy conservation are today key tools for climate policy, and they are widely recognised as the most cost-effective and fastest way to reduce carbon dioxide emissions (IEA 2008).

In spite of this, changing energy-related behaviour is extremely difficult. There is a wide literature on the barriers to energy efficiency and energy conservation, which points to a number of economic, psychological, organisational and social 'barriers' to energy efficiency .

Economic research has proposed a number of reasons why even highly cost-efficient energy saving measures are not taken . Reasons include end-users' high discount rates, the risks and uncertainties of new technologies and the low liquidity of investments (Golove and Eto 1996). Moreover, it has been noted that the cost of capital may be high for small energy end-users, and they may be reluctant to incur additional debt. The sum of all this is that consumers and organisations mostly believe that they do not have any 'spare money' to spend on energy efficiency, and usually have other things on which they want to spend it.

Another set of barriers are often termed 'informational' or 'psychological'. Few energy end users are able to carefully track their own energy consumption, let alone understand what they could do about it. Energy information is complex, and end-users lack the capacity to make sense of it (e.g., Anderson and Claxton 1982) – or energy experts lack the capacity to speak to end-users in a way that is meaningful to them (Parnell and Larsen 2005; Devine-Wright and Devine-Wright 2005). In everyday life, energy is 'invisible' (Lutzenhiser 2002); people do not

consume it consciously, it is a side-effect of other activities (Wilhite et al. 2000). In sum: people usually have other things on their minds, and rarely want to trouble themselves with energy efficiency.[2]

There are also organisational and institutional barriers (Golove and Eto 1996; Praetorius and Bley 2006). Few organisations pay much attention to energy issues, and the employees who do deal with energy rarely have much power to influence how the organisation works. On a broader level of economic organisation, there is a lack of qualified service networks, for example for energy audits or energy retrofits (e.g. Rohracher 2001). Most of the economic players in the market work in a way that leads to increased energy consumption, rather than increased energy efficiency. In sum, there is a lack of functioning 'markets' or 'institutions' for energy efficiency[3].

Actually, a broader social or sociological context determines the economic, financial, organisational, institutional and psychological barriers described above and explains why it is difficult to promote energy efficiency. Firstly, as energy provision has historically become based on centralized systems, energy users have little involvement and little responsibility in how they consume energy (Hughes 1987; van Vliet et al. 2000). Much of our energy use is habitual; and many energy-use habits are further consolidated as social conventions (Shove 2003), i.e. socially shaped expectations about appropriate levels of cleanliness, comfort and convenience. Another reason is that not all institutions in society are aligned to the cause of reduced energy demand. Thus, policy makers and the institutional system are often sending ordinary energy users 'mixed messages' (e.g., Biggart and Lutzenhiser 2007), and energy experts are often not trusted for a variety of reasons (lack of consensus amongst the expert community or negative historical experiences). Thus, individual end-users – even if they are aware of the problems and potential solutions – may feel helpless and disempowered. Moreover, individual choice is limited by the way cities, energy supply systems, housing designs and products are configured (Wilhite et al. 2000).

Today, the motivation to promote energy efficiency and energy conservation is largely based on societal concerns such as climate change mitigation, other environmental impacts of energy production, and security of supply. The motivations of end-users to actually undertake the change to a more sustainable consumption pattern however are often of a different nature (cost savings, corporate identity, alleviating energy poverty, increasing comfort). Energy efficiency is propagated as a win-win solution that saves the environment and saves money. Yet many of the previous points suggest that private 'costs' (including effort and discomfort) of saving energy are often larger than the private 'benefits'. If we want people to save energy in order to reduce climate impacts, we are in fact asking them to make a sacrifice for the benefit of all. This raises a 'social dilemma': the unilateral actions of individuals are less effective if others continue the unlimited use of energy (e.g., Gardner and Stern 1996; Jackson 2005). In order to be assured that their actions are making a difference, people need to be assured that everyone else is participating and 'doing their bit' (Olli et al. 2001; Lucas et al. 2008).

We can thus conclude that even though energy efficiency is so logical and desirable from an environmental or energy expert perspective, those promoting energy efficiency to end-users encounter a great number of obstacles on many levels. In order to make a difference, energy efficiency and energy conservation programmes need to surmount at least some of these obstacles, preferably all of them. In the following, we turn to analyse a selection of energy efficiency programmes in Europe. These include both conventional ones, which focus only on energy efficiency, and 'new' kinds of programmes that place energy efficiency in a broader context of climate action or sustainability. We first describe a selection of such programmes, and then analyse their capability to surmount the persistent problems in promoting energy efficiency.

Conventional and 'new' energy efficiency programmes in Europe

In the CHANGING BEHAVIOUR project (see e.g., Heiskanen and Rask 2008; Rask et al. 2008, SURF et al. 2008), we have collected three databases: a large database of about 100 energy demand side management programmes, a more limited database including in-depth analyses of 24 cases of more and less successful programmes[4], and a detailed database and analysis on 25 intermediary organisations (see below in more detail). The 24 cases of more and less successful projects were selected to represent a selection focusing on different target groups, with at least three cases from different countries targeted at households, offices, schools and municipalities. More importantly, the cases were selected to represent a range of outcomes in terms of success and failure (which is discussed in more detail in the section "Hosting energy efficiency under a broader climate or sustainability agenda: pros and cons").

[2] Nevertheless, there are certain groups of people who do monitor their energy consumption quite closely and consistently. Individuals becoming more actively conscious about their consumption patterns do so for a variety of reasons ranging from the need to reduce the share of energy in their budget, or because they feel motivated to do so from a sustainability point of view.
[3] However, similar to the trend of more conscious individuals, there also is a growing movement that aims towards greening organisations. Again from a variety of reasons, customer retention being one of the most often mentioned.
[4] The full case studies are available online at: http://www.energychange.info/publications.

The cases were analysed using a six-step framework tracking the evolution of goals, design and process solutions and outcomes as well as the influence of context factors and stakeholder networks. Finally, a meta-analysis was conducted to identify core issues influencing success. We present our overall findings elsewhere (Mourik et al. *forthcoming*). Here, we focus on the influence of 'new' programme types and 'new' players.

Table 1 presents the in-depth case studies included in our meta-analysis. For the present paper, we have divided them into 'conventional' and 'new' energy efficiency programmes. 'Conventional' programmes deal with the 'rational use of energy' and their message, incentives and goals relate to improving energy efficiency or reducing energy consumption, even though they today draw strongly on environmental or social motives and arguments. 'New' programmes have a strong focus on energy efficiency, but energy efficiency is presented within these programmes *not as a goal but rather as a means* to achieve other ends, such as climate change mitigation, sustainable communities or greener organisations.

In our in-depth database (as well as in the broader database), we can see that the focus of energy efficiency and energy conservation programmes varies to some extent by country context. In the UK, for example, climate change issues are highly topical, and hence most of the programmes that we found are run under a 'climate' heading. In contrast, in the Baltic states, Kyoto commitments will be easily met, but on the other hand, there is a clear urgency to improve energy efficiency in buildings, programmes are operating more commonly under a straightforward 'energy' agenda.

Other titles under which energy efficiency programmes can feature include 'green', 'sustainable' and 'eco-innovation'. 'Green' or 'eco' are typical headings for programmes aimed at SMEs and building users, whereas 'sustainable' is often a descriptor for programmes run by local government.

Even when energy efficiency programmes adopt a straightforward focus on energy, there has been a marked tendency to expand the focus. This is exemplified by a number of programmes in Table 1. For example, issues like local employment and regional development are today often key motivators for programmes labelled 'energy', as in the case of the German SANIT programme focusing on promoting energy renovations. Improvement of living conditions and the quality of the building stock, as well as saving on heating expenses, are also important motivators for many of the programmes operated in the Baltic states. Moreover, some programmes are in the process of extending their focus, e.g., in Finland the energy efficiency agreements for municipalities have been recently retitled 'Energy and Climate Agreements', whereas the Energy Expert programme is today increasingly applied under the heading 'Environmental Expert'.

The fact that the choice of programme headings follows national and sectoral priorities is partly a reflection of rhetorics: energy practitioners know how to make their programmes 'relevant'. Yet there are also practical differences in the contents of the programmes. What does expanding the focus from energy efficiency to climate, green or sustainability mean in practice? The main differences are summarised in the following:

- **Climate programmes** commonly combine energy efficiency and low carbon-intensity with the promotion of renewable energy
- **Sustainable energy community programmes** also combine energy efficiency with the promotion of renewable energy, and often also aim to promote local employment and regional development.
- **'Green' programmes** commonly deal with a broader range of environmental issues, including climate change mitigation, natural resource use, waste management and sometimes even biodiversity issues.

While there are differences in the contents of the programmes, the inclusion of other foci than straightforward energy efficiency may still contribute to energy conservation in an indirect manner. For example, programmes focusing on resource conservation (e.g. reduction of paper use in offices) reduces the demand for energy 'embodied' in products. On the other hand, on-site production of renewable energy may contribute indirectly to energy efficiency by promoting more frugal patterns of energy use (Dobbyn and Thomas 2005).

Table 1: Cases used for in-depth meta-analysis

	Country	Programme	Aim of the programme	Type of intermediary promoting the programme
'Conventional programmes'	Estonia	Energy Saving Competence Centre	Promotion and knowledge networking on energy saving measures in apartment buildings	Public agency
	Finland	Energy Efficiency Agreements	Negotiated agreement to promote energy audits and investments in municipalities	Ministry/Public energy agency
	Finland	Energy expert programme	Training of volunteer residents promoting energy efficiency in housing associations	Public energy agency
	Germany	SANIT	On-site advice service for energy efficiency renovations provided by consumer NGO	NGO
	Germany	Standby	State-wide campaign to create awareness of standby energy among consumers and retailers	Public energy agency
	Germany	EcoTopTen initiative	Nation-wide information and rating service for energy efficient products	Research institute
	Germany	Contracting Rommerskirchen	Implementation of energy performance contracting for municipal buildings	Municipality/small for-profit company
	Hungary	Energy Trophy	Competition for saving energy in office buildings through change in employee behaviour.	Public agency / NGO established by individuals and companies
	Latvia	Building energy audits	Energy audits of apartment blocks	
	Latvia	EnERLIn - Efficient Residential Lighting Initiative	Increase the efficiency of residential lighting by 50% increase in CFL penetration via promotion campaign and quality charter	University / small for-profit company (consultancy)
	Lithuania	Taupukas residential awareness campaign	Communicate the benefits of energy and water consumption efficiency and stimulate energy and water saving	Public energy agency
	Lithuania	Multi-apartment buildings modernization programme	Promote energy modernisation of multiapartment buildings via demonstrations and subsidies	Ministry of environment
	Netherlands	Green Energy Train Leidsche Rij	Reduce the energy, heat and water use in apartment houses by 5% through a specific education and communication approach	NGO/ Small for-profit company (consultancy)
	Netherlands	Green Energy Train Leidsche Rijn	Reduce the energy, heat and water use in apartment houses by 5% through a specific education and communication approach	NGO Small for-profit company (consultancy)
	UK	Metropolitan Police Energy Efficiency Programme	Improve energy efficiency in existing buildings and practices of the Metropolitan Police Service	Public agency
'New' programmes	Denmark	Samsø Renewable Energy Island	Creation of a renewable, energy self-sufficient island municipality	Local municipality
	Finland	Green Office programme	Certification and management scheme to reduce CO_2 and resource consumption in offices	NGO established by individuals
	Finland	Climate Change Campaign for Schools	School climate change awareness campaign implemented by environmental and youth NGOs	NGOs
	Hungary	Carbonarium Association	Produce information on participants' personal climate change impacts and promote public awareness	NGO established by individuals
	Hungary	Global Environmental Social Business Mechanism	Implement energy renovations in apartment blocks	Small for-profit company
	Hungary	Climate Watch	Educational and award programme for school groups to reduce CO_2 emissions	NGO established by environmental NGOs
	UK	CIS Co-operative Insurance Society Solar Tower	Renovate a landmark building using solar panels	For-profit company (consumer cooperative)
	UK	Manchester is My Planet (MiMP) programme	Increase policy development/implementation on Climate Change among Greater Manchester local authorities	Small non-profit company (consultancy)
	UK	MiMP Climate Change Pledge	Attract citizens in Greater Manchester to sign up to a Climate Change Pledge and encourage a switch to less carbon-intensive lifestyles.	Small non-profit company (consultancy)

We can also see that the entry of 'new' programmes also coincides with the entry of 'new' players working to promote energy efficiency. Conventional energy efficiency programmes are usually operated by government agencies or energy utilities, even though our database includes a number of 'conventional' programmes operated by public-private partnerships and energy consultancies, and even one NGO. But the 'new' programmes also herald the entry of a much broader scope of players in the energy efficiency field, such as non-governmental organisations, energy end-users and local communities. These issues are discussed in the following section, in which we take a closer look at the range of intermediary organisations active on the energy scene today in Europe.

'New' energy intermediaries and their role in translating energy efficiency

Understanding why energy efficiency programmes are more or less successful additionally requires asking who it is that undertakes the 'implementation' of the programmes. In contemporary liberalised energy markets it is new energy 'intermediary' organisations that are being established to undertake the work of translating demand side management programmes and building energy efficiency through promoting low energy buildings, via replacement product programmes (e.g. energy efficient appliances), by raising public awareness, and through achieving the visibility of alternative ways of producing and consuming energy through, for example, pilot projects. In this section of the paper we reflect on 25 rich case studies with European energy intermediaries, undertaken as part of the CHANGING BEHAVIOUR project (SURF et al. 2008), to improve understanding of energy intermediaries, who they are and how they function in translating energy efficiency.

By energy intermediary organisations, in CHANGING BEHAVIOUR we refer to a wide variety of organisations that includes government or semi-government energy agencies working at different scales of governance, non-governmental organisations, agencies sponsored by utilities, ESCOs and so on who perform functions such as the provision of energy advice and advice centres, consultancy activities, energy audits, project initiation, management and coordination, hands-on demonstrations, technology procurement, installation, promotion, advocacy, lobbying, dissemination and awareness raising, organising campaigns, education, training and courses, and network-building. In doing this different intermediary organisations function over timescales that can vary from a short-term project or initiative (e.g. six months) to something that is much more long-term and programmatic (e.g. 10 years and upwards).

Though these organisations are frequently different in many respects, including the specificities of their function, they can be characterised in terms of three aspects of their mediating function:

1. Energy intermediaries mediate between production and consumption rather than focusing solely on production or consumption issues.
2. Energy intermediaries also mediate the different priorities (of different funders, 'stakeholders') across different levels (between householders and municipalities or between regional government and SMEs).
3. They also mediate not only between different priorities but also between the embodiment of these priorities in plans or policies and their 'application'.

It is possible to identify a fourth, partly emerging form of mediation, too. As people and communities become increasingly aware of the importance of conserving energy, and initiate voluntary energy awareness and efficiency programmes (e.g. Carbonarium in Hungary, carbon rationing action groups, low-carbon housing estates, etc.), new organisations are created that in a way mediate needs emerging from the bottom-up.

The vast majority of the energy intermediaries that we analysed were established within the last 20 years, although there were notable exceptions that had been established as long ago as 1972 and even 1958. The individuals and coalitions involved in the initial establishment of the energy intermediaries varied greatly. This included energy intermediaries that were established by entrepreneurial individuals, environmental NGOs, agencies working on behalf of national governments, partnerships of local groups working on consumer issues, as state-owned agencies, and particularly by partnerships of local authorities, regional agencies, local authorities and universities, and city authorities and municipal utilities. Where the energy intermediary had been established for a length of time there were views that these organisations adapted over time to incorporate 'energy efficiency issues' as a matter of either responding to a changing environmental agenda, the changing of consumption patterns and the need for a long-established organisation to recognise 'energy efficiency' as part of its corporate social responsibility.

Utility companies are a particularly interesting example of organisations that had to adapt over time and include energy efficiency issues in their agenda. Some of them have done this rather successfully based on our database of case studies on energy intermediaries, in which two of the cases are on utility companies acting now also as intermediaries in energy efficiency (Nuon in the Netherlands and ELMÜ in Hungary). Both of the companies have

recognized the importance of their social and environmental responsibilities for current and future generations, and have developed energy efficiency and saving problems for their various stakeholders (households, businesses, non-profit organizations and municipalities), in some cases working together with them also in the delivery. Some of the services they developed aim at generating income to cover for the loss incurred by selling less electricity due to increasing efficiency and savings. These include the selling of products that help increase energy efficiency (e.g. light bulbs, meters, shower heads, etc.), and providing services like conducting energy audits, preparing plans for retrofitting buildings, etc. This way they have managed to, at least partly, overcome the challenge of promoting efficiency and at the same time managing to stay profitable.

The funding of energy intermediaries was frequently derived from multiple sources (public, private), at different scales (EU, national, regional, local, consumer) and through grant funding and revenue generation. Frequently, funding relied on a mixture of public and private sources of funding from multiple scales of governance. Although many of the energy intermediaries were set-up to provide free or inexpensive advice, other intermediaries charged through consultancy work and for consultancy services and project management. Funding streams and schemes were not fixed and stable but constantly unfolding and needed to be worked at to maintain funding bases.

Three issues characterised the timeframes over which the energy intermediaries were established to operate. Many of the energy intermediaries adapted constantly over time, where they moved from a project-based view of the organisation to one in which there was no foreseen end point for the organisation but where the aims of the intermediary changed over time. They adapted, for example, from undertaking planning functions or narrowly dedicated energy projects to seeing their role within the much wider context of addressing climate change. In doing this the issues energy intermediaries dealt with changed over time, as did the roles of intermediaries and the types of networks they developed. In short, the intermediaries were ongoing or episodic, they were time limited or open-ended, but this changed over time.

The energy intermediaries were established to address a number of issues and perceived problems. In line with our conceptualisation of the priorities of energy intermediaries, intermediaries often functioned in support of different priorities. The variety of different priorities encapsulated by the 25 energy intermediaries we analysed can be summarised as energy intermediaries that:

- Functioned in support of national energy policy priorities, often especially energy efficiency and renewables in relation to buildings, wider uptake of renewables, new employment creation.
- Functioned in addressing national priorities on CO_2 reduction.
- Functioned to serve the interests of consumers through advocacy and lobbying of their interests to politicians.
- Functioned to assist city-regional level policy – particularly addressing energy efficient buildings, CO_2 emissions savings and energy costs for consumers.
- Functioned at a 'general societal level' to address climate protection, raising awareness about renewable energy and energy efficiency.
- Functioned in support of regional level priorities and local level projects, including retrofitting buildings and innovative energy concepts for new buildings.
- Functioned in support of regional and local energy efficiency, energy conservation and renewable energy services.
- Functioned as part of EU funded initiatives of national projects addressing buildings as contributors to CO_2 emissions.
- Functioned as a national conservation body concerned with sustainable lifestyles, nature conservation and saving forests with an emerging agenda around climate change and sustainable use of renewables and energy efficiency – not initially or even primarily set up for energy efficiency.
- Functioned as regional agencies passing down responsibilities to municipalities in respect of energy efficiency, energy conservation and renewables.
- Functioned to address climate protection at city level and CO_2 emissions reduction through retrofitting public buildings.
- Functioned at a national level and in terms of a need for more energy efficient buildings and relevant information on this.

These different prioritisations highlight four issues in particular. First, these prioritisations are frequently initiated at different scales of governance. Not only are priorities initiated at different scales but they may be implemented either at the same scale or at a number of different scales of action. Second, these priorities are produced from a variety of different positions and social interests at these different scales of governance. Third, the framing of priorities frequently emphasises climate change and CO_2 emissions reduction as the context for understanding these priorities rather than a more narrowly focused emphasis solely on energy efficiency, retrofitting buildings, energy conservation and so on. Fourth, this is part of a continual shifting of agendas where some intermediaries were not initially set up to deal with energy efficiency issues but have subsequently done so and where some intermediaries were established to deal with energy efficiency issues in a narrowly perceived sense but are now doing so within a wider context of contributing to climate change priorities at multiple scales of governance (EU, national, regional, city, local, developers, buildings, consumers). These priorities are both narrowly and broadly conceived and change over time.

In trying to achieve the priorities set out, the different intermediaries utilised various combinations of the following tasks, activities and services: advice and information provision; energy audits; installation; promotion; education; training and courses and stimulating companies/organisations; advocacy; lobbying; dissemination; project initiation, management and coordination between projects; technology procurement; exemplification through demonstration; network-building of 'relevant' social interests; funnelling and direction of enquiries; awareness raising; organising campaigns**.**

Although there were a number of well staffed and large energy intermediaries, in most energy intermediaries full-time staff and employees frequently numbered less than 10. Given limited capacity, networking and attempts to co-operate were seen as highly essential to being 'successful'. This was important both at a local level, where personal relationships were often seen to be important and at national (and sometimes European) level where limited capacities could potentially be addressed through national priorities and sources of funding.

The networks that energy intermediaries assembled varied as to whether they were broadly or narrowly constituted, and this was not unconnected to whose priorities underpinned the work of the intermediary. To take one example, where the central actor in setting-up an energy intermediary was a municipal authority the aim of the intermediary in meeting its goals was to engage all organisations with a concern with and stake in energy efficiency matters. Of course, the issue is one also of who becomes involved given that energy efficiency is a wide ranging area, involving multiple areas of policy, decision-makers and wide range of groups. There are many different ways of framing energy efficiency issues, ranging along a continuum from very specific and narrowly to very broadly and within the context of a whole range of issues related to, for example, transitions to low carbon futures. In this way there are potentially a wide range of social interests who can potentially have an involvement in 'energy efficiency' activities.

The framing of 'energy efficiency' by energy intermediaries thus may be informed by funding and priorities, the networks that are built around the intermediary and can be changeable over time. Furthermore, underpinning this is the core staff of the energy intermediary where the collective knowledge, dispositions and capabilities to act is fundamental to any framing. It is capacity and capability issues that are also fundamental to whether the energy intermediary is piecemeal and episodic in its orientation or whether it has an ongoing, long-term strategic orientation.

Hosting energy efficiency under a broader climate or sustainability agenda: pros and cons

The extent to which nesting energy efficiency under a broader 'umbrella' of climate or sustainability efforts makes sense for the aim of reducing energy demand depends on country and local context. Many of the new EU member states have already met or are well on the way of meeting their Kyoto targets and thus climate change mitigation is less urgent for them, whereas many of the EU-15 countries have a huge challenge in meeting their targets. In some countries, climate change is thus simply much more topical and programmes may not even gain funding unless they promise to provide some sort of 'climate action', whereas in other countries, governments recognise that much work remains to be done in 'conventional' energy efficiency.

Most countries, however, have both types of programmes running in parallel, and sometimes also overlapping. We found no consistent difference in the overall successfulness of 'conventional' vs. 'new' energy efficiency programmes. The relative successfulness of the 24 energy efficiency programmes is presented in Table 2. The programmes were rated on two dimensions: the effectiveness and efficiency of the programme, and the amount of

learning indicators the programme included[5]. As can seen in table 2, the conventional and "new" energy efficiency programmes were split quite evenly on the fourfold table.

Table 2: The relative successfulness of the 24 energy efficiency programmes. Programmes marked with an asterisk (*) are 'new' energy programmes

		Effectiveness and efficiency	
		Relatively high	Medium or low
Learning	Relatively many indicators	• Green Office Programme * • Energy expert programme • Standby- Metropolitan Police Energy Efficiency Programme • Climate Watch * • Samsø Renewable Energy Island * • Energy Efficiency Agreements	• Climate Change Campaign for Schools * • Energy Trophy
	Relatively few indicators	• Green Energy Train Den Haag • Global Environmental Social Business Mechanism * • Contracting Rommerskirchen • Multi-apartment buildings modernization programme • Taupukas residential awareness campaign • SANIT • MiMP Climate Change Pledge *	• Green Energy Train Leidsche Rijn • EnERLIn - Efficient Residential Lighting Initiative • CIS Co-operative Insurance Society Solar Tower * • Carbonarium Association * • Building energy audits

Both 'conventional' and 'new' energy efficiency programmes can thus be more or less successful in reaching their goals an influencing energy consumption, and the success of a programme is determined primarily by other factors (Mourik et al. *forthcoming*). Yet, in our case studies, we identified some characteristic benefits and drawbacks to hosting energy efficiency under a broader agenda.

Table 3 presents characteristic benefits (pros) and drawbacks (cons) of 'new' types of programmes *from the perspective of promoting energy efficiency* observed in our case studies. These aspects are still indicative and based on a limited number of observations, but serve to suggest some hypotheses for further exploration.

Table 3: Pros and cons of hosting energy efficiency under a broader climate or sustainability agenda

Pros	Cons
• Engagement of a wider range of players • Wider group of players learn about issues related to energy • Appeal to a more diverse range of motives • Higher visibility and stronger emotional appeal • Avoid negative legacy of energy crisis • Helps connect energy use to everyday activities and thus increase energy awareness • End-users are addressed in their multiple (often simultaneous) identities • Stronger focus on collective action and networking	• Energy issues may be sidetracked • Investments (of money or effort) in energy efficiency may need to compete with other investments • Invisibility of energy use not solved, but can be even aggravated

Firstly, we noticed that a 'climate' or 'sustainability' agenda can help to engage a broader range of players as operators of energy efficiency programmes, including NGOs and local communities. Such players are often – though not always – closer to the end-users than conventional energy experts are. The core lesson here is probably not necessarily that 'climate' or 'sustainability' should be the heading, but that programmes should draw on a broad range of interests and resources in society, beyond the 'traditional' group of energy experts.

[5] Effectiveness was rated on the basis of both 'project-internal' goals (i.e., goal achievement in general) and on overall impact on energy use. The programme should perform at least at a medium level on both criteria to be rated successful. Similarly, efficiency also included 'internal' criteria such as keeping the time and budget, as well as external criteria (cost-effectiveness). The other dimension for rating successfulness was 'learning', i.e., the extent to which the project promoted by the project manager, the energy end-users and society at large. Learning criteria included: participation by the target group and stakeholders, alignment of diverse expectations of stakeholders, explicit learning aims and efforts, enhanced capabilities, new networks and institutions and durable changes.

Even though there is a sound economic rationale for energy efficiency, it is well known that energy end-users do not always perceive an economic motive to invest in energy efficiency, due to agency problems and high perceived risks, inducing high discount rates. Broader climate or sustainability agendas seem to be better at capturing a broader range of motives, including direct economic savings, indirect benefits via enhanced legitimacy, or broader benefits for the regional economy. They also draw on altruistic motives such as concern for the environment and future generations. Because climate change is so topical and visible in the media, this gives climate programmes a higher visibility and stronger emotional appeal. At the same time, such programmes are likely able to avoid some of the negative connotations of energy conservation that are carried over from popular experiences dating to the energy crises of the 1970s.

The capacity to engage new bottom-up intermediaries such as NGOs and other local players helps to connect energy use more closely to local everyday patterns of energy use. This increases awareness of energy use and helps energy end-users to make sense of energy advice in their local context. Moreover, the capacity to engage local intermediaries also seems to make it easier for programmes to address end-users in their different roles and identitities (i.e., e.g., consumers, citizens, residents and employees).

Whereas energy use has conventionally been understood as primarily a private matter, climate change mitigation and sustainability are clearly collective challenges. This brings 'climate' and 'sustainability' programmes a different focus, which is often in practice evidenced in a stronger emphasis on collective action. The range of players involved is more diverse, and more attention is (often) given to networking on a local or sectoral level. These features help to combat social dilemmas and feelings of helplessness and ineffectiveness. This is partly because of the greater attention given to such issues in 'new' than in 'conventional' energy efficiency programmes.

Some examples from our cases serve to illustrate these advantages. For example, the *Manchester is My Planet* programme incorporates many traditional energy efficiency actions like energy renovations for households, improvements in local government offices and the promotion of ESCOs. However, it also involves many activities that aim to support a wider 'movement' of personal, social and organizational change toward a low-carbon society. One of the main mechanisms is a campaign to encourage a wide spectrum of citizens to make a personal commitment to reduce their own CO_2 emissions, enabling residents to see that others are also contributing, as well as the collection of metrics to show that the entire city-region is making progress toward sustainability. A similar, small-scale example from Hungary is *Carbonarium*, a citizen association in which committed individuals record their energy use, and use a dedicated online climate calculator to track progress in reduced CO_2 emissions, as well as to set a good example to a wider audience. This way of working helps to connect everyday activities to their broader climate implications, and to show that individuals can indeed make a difference through their actions.

Our cases, however, reveal that some of the problems plaguing energy efficiency are not solved by placing energy efficiency into a broader agenda (see Table 3). In fact, some of the strengths of such programmes may be their weaknesses. The ability of 'new ' programmes to engage a broad range of actors may also lead to a situation where there are few energy efficiency experts working in the programme, and thus energy issues (and cost-effective savings potentials) may be sidetracked and overlooked.

Some examples from our cases serve to illustrate these problems. The Finnish *Green Office* programme has been highly successful in reducing CO_2 emissions and in inspiring the participating offices to find new ways to reduce carbon emissions. Yet the programme has not been equally successful in reducing electricity use: while most of the offices have indeed decreased their electricity use by an average of 4% annually, a few large offices have actually increased their demand for electricity due to the expansion of operations and the purchase of new office equipment. It seems to be easier for some end-users to reduce CO_2 emissions by purchasing green electricity or by reducing paper use, whereas reducing electricity use requires a more fundamental reorganisation of operations. Similarly, the *Samsø* renewable energy island, which originally stressed the role of energy efficiency in becoming energy self-sufficient, has not achieved much success in actually reducing demand for energy, due to increased appliance ownership rates and rises in the general standard of living. These are thus examples of two programmes that have been highly successful in reaching their carbon reduction goals, yet have struggled to reduce overall demand for energy.

We can conclude that 'new' energy efficiency programmes do not solve all of the classical barriers to energy efficiency. Most notably, energy use rarely seems to become any less *invisible* when addressed under a climate or sustainability heading. For example, in regional sustainable energy programmes, investments in renewable energy bring about visible results in terms of new infrastructures such as wind turbines, solar panels or biomass-based combined heat and power plants. Energy efficiency investments, in contrast, are usually much less visible accomplishments, to say nothing of the curtailment of energy use through changes in user behaviour.

We also identified another psychological factor at play here: energy efficiency is never 'completed'; it is an never-ending task that thus provides much less sense of achievement than, e.g., investments in renewable energy. Gains in

energy efficiency are easily offset by increases in equipment ownership: thus, energy efficiency improvements can only be seen when comparing with a business-as-usual scenario, which is often not very convincing or inspiring. This observation stresses the importance of keeping in focus the secondary advantages of energy efficiency improvements such as improved comfort, more pleasant and cleaner environment or reducing the impact of the energy bill on one's income.

Conclusions and implications

Today's energy efficiency programmes are more diverse and wide-ranging than the early programmes from the 1970s and 1980s. They draw on a wider range of motivations than the economic and psychological factors evoked by early demand-side management programmes. The most prominent factor is that programmes are more socially embedded, and draw on social, collective and altruistic motives as well as on private and personal benefits. At their best, they are capable of building win-win situations in which private and collective interests on different scales (i.e., e.g., cost savings, regional development and national CO_2 reductions) are aligned.

A general conclusion that can be drawn from these 'new' developments is that energy efficiency and energy conservation can benefit from being framed in a broader context. This is because energy efficiency and energy conservation are *not an ultimate goal* for many people, but a 'means' for other goals and aims. Few people gain intrinsic motivation from improving energy efficiency; thus, the ultimate goal of such improvements (i.e., climate change mitigation or sustainable development) needs to be kept well in sight. However, as we all know, energy efficiency and energy conservation are by far the cheapest and most effective *means* to reduce CO_2 emissions and many other environmental problems. It is thus important to ensure that the 'new' programmes keep these effective means in sight, and make full use of the experiences in energy demand-side management gained during the past decades.

Another important conclusion is that energy efficiency programmes today need to engage a wide and heterogeneous group of energy end-users. It also seems to be clear that in order to engage diverse groups of people and organisations in energy efficiency initiatives, new types of intermediaries need to be created and encouraged, and novel ways of working and operating need to be found. This is necessary, on the one hand, to help people and organisations to become aware and conscious of the associated energy demand and CO_2 emissions of their everyday activities, and thus learn to control and reduce them. On the other, it is necessary in order to cater for an emerging need of individuals and communities to become active in energy resource and efficiency issues in novel ways.

We can conclude that 'a rose can smell as sweet under any other name': energy efficiency can well be hosted under a broader 'climate' or 'sustainability' agenda. This brings a number of advantages, most importantly the ability to summon a broader range of motives and collective interests to the cause of energy efficiency. It also helps to engage a broader range of players and new energy intermediaries, who in turn help to bring the cause of energy efficiency closer to the energy end-users everyday lives and needs. Yet it does not solve all the problems in promoting energy efficiency: for example, energy efficiency can remain just as 'invisible' as it has always been, and even be sidetracked from the core of the programme. This observation suggests that a good exchange of experiences between 'traditional' and 'new' energy efficiency programmes can help to enhance the effectiveness of both approaches to promoting energy efficiency.

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