

Energy efficiency programmes in the spotlight - Analysis of governmental, institutional and entrepreneurial energy efficiency programmes: target groups, governance mechanisms and factors of success

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Abstract: To be sustainable, life styles will have to adapt to low energy use (European Commission 2009), an effort which needs to be supported by energy efficiency programmes as well. Energy efficiency means providing the same benefit (output) with less energy input. This can be achieved by adoption of existing, more efficient technologies and energy system solutions or by an optimized matching of energy supply and demand. To foster application of these technologies and behaviours in households, administrations and companies, it requires incentives such as taxes, grants or on-site advice by experts. The initiators of such energy efficiency programmes are diverse: national or regional administrations or institutions, but also energy service companies (ESCO) or financial service companies.

How do these programmes work, who is addressed by whom and what are innovative models of such programs? Our desk research about energy efficiency programs in selected OECD-countries analyses target groups, governance mechanisms, factors of success and shows innovative programmes of the different initiators mentioned above.

Working together with other institutions for the setup and operation of an energy efficiency programme is important. According to our findings, this could be done better, especially from the national initiator's side. Architects and construction companies are rarely appealed by any of the initiators and facility owners and maintenance staff only by ESCOs. In general ESCOs very often have programmes, which are a combination of governance mechanisms, which would probably be effective in programmes of national and regional institutions as well.

Introduction

Achieving a transition towards sustainable development is one of the most important challenges to modern society. Finding solutions requires not only a shift in technology, but also a shift in behaviour and business models. Long-term energy scenarios show that current life styles in industrialised countries are not sustainable on a worldwide scale. Existing technologies can in the short-run substantially reduce energy consumption and greenhouse gas emissions, but diffusion of technologies without corresponding practice cannot bring about the needed energy revolution. They have to be accompanied by policy measures, business initiatives and behavioural changes. To be sustainable, life styles will have to adapt to low energy use (European Commission 2009), an effort which needs to be supported by energy efficiency programmes as well.

Energy efficiency means providing the same benefit (output) with less energy input. This can be achieved by adoption and the right use of existing, more efficient technologies and energy system solutions or by an optimized matching of electricity supply and demand. Optimized matching will be more and more important as the share of renewable energies in the electricity grid increases.

Investments by households and companies will have to play a major role in this energy system transformation. Greater access to capital for households and SMEs and innovative business models are crucial. In general, energy efficiency has to be included in a wide range of economic activities from, for example, IT systems development to standards for consumer appliances. So there are many different types of actors, who can contribute with their behaviour or investments to a more efficient energy system: the house owner can install a more efficient fridge, a city can install more efficient street lights and a canteen operator can educate its staff about efficient cooking. To foster application of these technologies and behaviours in households, administrations and companies, it requires incentives such as taxes, grants or on-site advice by experts. The initiators of such energy efficiency programmes are diverse: national or regional administrations or institutions, but also energy service companies (ESCO) or financial service companies.

How do such energy efficiency programmes work, what are the governance mechanisms behind them and which ones are applied the most? Are there mechanisms, which are hardly ever applied? Which target group is addressed by which initiator of an efficiency programme and which target groups are maybe never addressed by such programmes? Furthermore, we want to show innovative programmes of national and regional initiators, as of these kinds of programmes already exist a lot, but many of them are very similar. At the end we develop ideas for successful and innovative efficiency programmes for regions.

The goal of this analysis is to show potentials in improving energy efficiency promotion. Therefore we will first have a look at the factors of success of such programmes to compare it with our analysis.

Factors of success of energy efficiency programmes

An important attempt that can improve effectiveness of these approaches seems to be to combine or bridge complementary programmes with a certain amount of overlapping (e.g. direct and indirect approaches to the same topic) (Jollands et al. 2009, p 38). Another potential to enhance success of the programmes is the interaction of different types of promoters of the same programme (e.g. EU-funded programmes are promoted also by national or local so-called Energy Info Centres or national programmes, which are supported also by commercial associations) (Rieder & Walker 2009, p. 39).

For the different programme mechanisms certain factors of success exist, which help programmes to be successful in their implementation. Rieder & Walker (2009) made a comprehensive overview about the reasonable design of different programme types (see table 1).

Table 1: Factors of success of different governance mechanisms of energy efficiency programmes (Rieder & Walker 2009, p. 5-6).

Governance mechanism	Concept: factors of success	Implementation: factors of success
<ul style="list-style-type: none"> Normative measures 	Reasonable level of set standard, possibility to adapt standard over time	Controls and sanctions
<ul style="list-style-type: none"> financial measures fiscal measures in regard to prices and tariffs 	Height of incentive is crucial, avoidance of lock-in phenomenon	Flexible adaption of fees, control and monitoring due to avoid lock-in phenomenon
<ul style="list-style-type: none"> informative measures information, education, training 	Specific for target group, targets must be formulated	Closeness to target group through audits, consulting, long-term application for high coverage
<ul style="list-style-type: none"> voluntary agreements social planning, organisational measures cooperative measures 	Seek Win-Win Situations through involvement of different structures	Permanent activation of target group, keeping critical distance to target group

Methodology

To gain an overview of energy efficiency efforts an inventory of energy efficiency programmes considering their operating contexts has been made. We considered programmes of electricity and heat efficiency.

As a starting point for our research we developed a model of understanding (see fig. 1) to gain insights in the field of energy efficiency and to visualize connections of the different stakeholders, means, framework conditions and targets of efficiency and demand side management. Within this model we examined possible initiators (green), regulation mechanisms (light orange, square) and infrastructures to be influenced (orange, round) with what objectives. Arrows define the flow from one compartment to the other. For example, a national administration decides about a change of legislation, which regulates electricity demanding infrastructure, such as prohibition of conventional light bulbs, which reduces energy demand, because the energy-saving lamp is more efficient. This framework helped us to perform a literature research about possible energy efficiency programmes, as we encountered all possibilities to promote energy efficiency.

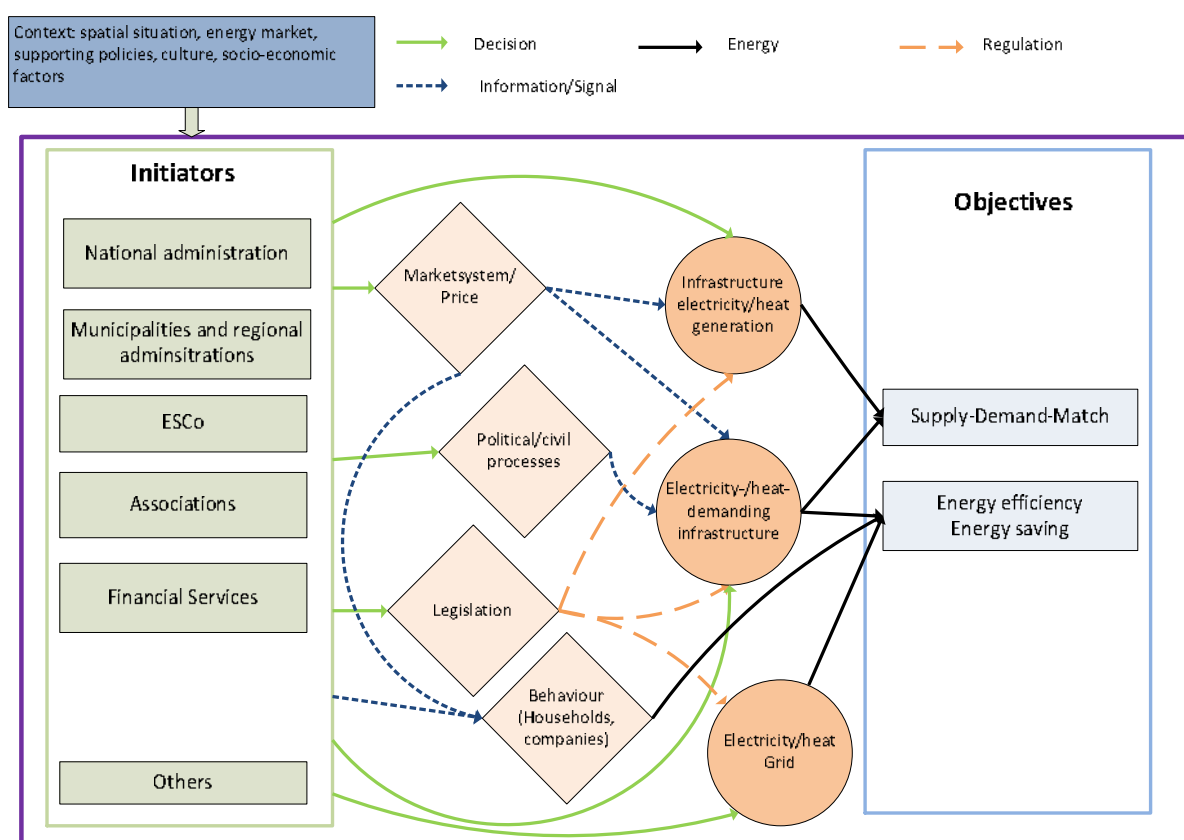


Figure 1 - Model of understanding of demand side management with connections of the different initiators (green), regulation mechanisms (light orange, square), and infrastructures to be influenced (orange, round) with what objectives (light-blue) and in which context (dark-blue).

Based on the framework we defined more concrete criteria to analyse the energy efficiency programmes (see table 2). The focus of our research is on different kinds of target groups and stakeholders of demand side management programmes: (a) consumers, (b) SME owners, managers, employees and suppliers (c) architects and construction companies, (d) facility owners, managers and maintenance staff, (e) financial services, (f) municipalities and regional administrations. The governance mechanisms of the programmes are categorized by the system of Peht (2010), replenished with one category out of our research experience during the project (voluntary agreements) and one category added because of our special focus on Energy Service Companies (ESCO) (Products and Services).

Table 2 - Categorisation of governance mechanisms by Pehnt (2010) complemented by the authors.

Governance Mechanism	Example
Normative measures	Energy efficiency directives for construction and refurbishments
Informative measures	Efficiency labelling systems for household appliances and light sources
Financial measures	Low-interest loans for energy efficiency measures
Fiscal measures and in regard to prices and tariffs	Environmental taxes and tariffs (eco-taxes, legal fees)
Information, education, training	Campaigns for awareness rising, education and information
Cooperative measures	Cooperative procurement for specific hardware or infrastructure
Measures regarding infrastructure	Implementation of an energy efficient heat distribution system in a community
Social planning, organisational measures	Citizen participation in the development of energy efficiency solutions
Products and Services	ESCO offering an energy service (e.g. 20 degrees in my flat during one year) at a given price and fulfilling it with greater efficiency, because of better long-term investment possibilities of an ESCO.
Voluntary agreements	Voluntary agreement on energy efficiency target as a motivation and obligation to fulfil it.
Others	i.e. trading of energy efficiency certificates, non-classified policy measures

To learn from the experiences of these existing programmes we analysed their outcomes and lessons learned to give recommendations for successful future energy efficiency programmes. Furthermore, it was also examined if a programme is organised not only by one main initiator but has a partner institution, which helps to promote and operate the programme.

Analysis of national and regional programmes

On this basis we started our research about energy efficiency programmes, where the initiator was the national administration in the following countries: Austria, Canada, Denmark, EU, Finland, France, Germany, Japan, Netherlands, New Zealand, Sweden, Switzerland, UK, USA. We conducted a desk research in governmental publications, academic publications, existing databases (e.g. EU-initiatives like MURE), meta-studies about programmes/instruments (e.g. IEA DSM Task publications), websites and actual magazines for evolving and innovative approaches. Moreover, DSM-programmes, where the initiator was a municipality or a regional stakeholder, were analysed in the following countries: Austria, Germany, New Zealand, Switzerland, UK.

Analysis of Programmes / Services of Energy Service Companies (ESCOs)

When speaking about energy services, it is of importance to agree on common definitions of the terminology used, let alone in view of the fact that the notion is understood differently depending in which context or literature used. First of all, what are "energy services"? Seefeldt et al. (2013) specify energy services as „activity offered through an external service provider based on the basis of a contract, which lead in general to verifiable and measurable efficiency improvements or primary energy savings" and furthermore "energy services can include different services such as information, advice, planning, financing, investment, implementation, operation and maintenance, energy procurement and measurement and invoicing." This detailed description is also in line with the definition made in Directive 2006/32/EC of the European Parliament and other found during literature research made. The latter refers to energy service companies (ESCO's) as "a natural or legal person that delivers energy services and / or other energy efficiency improvement measures in a user's facility or premises, and accepts some degree of financial risk in so doing. The payment for the services delivered is based (either wholly or in part) on the achievement of energy efficiency improvements and on the meeting of the other agreed performance criteria".



Figure 2 - Value chain from energy services (adapted from Renner 2012).

Fig. 2 shows the value chain from energy services and gives an overview of the different consecutive steps leading to a desired result or product. Usually, energy performance contracting includes most of the steps shown here, although there are contract and service providers who cover only parts or even single steps of the process chain (Renner 2012). For instance, some service providers may only offer consultancy and advice, others only the financing and so forth.

Three main categories of services are provided by ESCOs. By means of Energy performance contracting (EPC), savings in energy demand guaranteed by an ESCO are to be achieved. The financial savings generated by the implemented technology and on-going verification is used to cover the costs for the project and capital cost. Customers hence don't need to provide the investment capital upfront. Energy services provider companies (ESPC's) or Energy Supply Service Companies on the other hand "provide a service for a fixed fee or as added value to the supply of equipment or energy", such as heat or compressed air. Services include therefore the purchase of fuels and might be comparable with cogeneration and district heating.

At Delivery Contracting (DC) or Supply Contracting provided by ESCO's (or ESPC's), energy in form of electricity, heat (for example from cogeneration) or simply as primary fuel is provided. Electricity from renewable sources may also be included as a specific product.

Predominantly, the categorisations of the services in this study have been done according to a division proposed by Pehnt (2010) as shown in Tab. 2. In addition to the categorisation according to Pehnt (Tab. 2), we evaluate the position of energy services inside the value chain (cf. fig. 2).

When comparing both the categorisation system according to Pehnt (2010) with the value chain shown from Renner in fig. 2 one fact is particularly apparent: The policy categorisation system covers only certain, specific aspects and services, whereas the analysis performed shows that these services are rarely offered as a stand-alone product; rather they are included in a whole range of services. This conclusion is also conformed in a cross-country analysis performed by Labanca (2010).

Results of the analysis of national programmes

In total 73 programmes were collected and analysed according to the criteria mentioned above. Eleven of these programmes have a partner institution to help in the promotion and operation of the programme. We conducted an analysis about target groups and governance mechanisms of the programmes. Fig. 3 shows the percentage of the analysed programmes, which are designed for the respective target group.

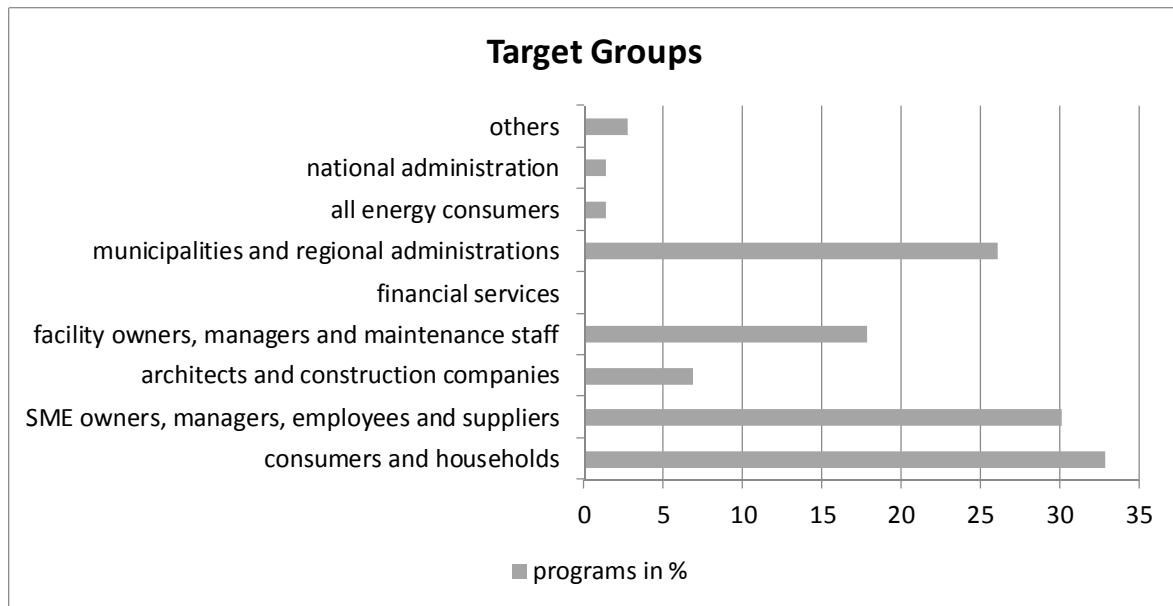


Figure 3 - Percentage of programmes of national administrations, which are designed for the different target groups (multiple target groups per programme are possible).

The main target groups of national programmes are consumer/households, SME owners and municipalities/regional administrations. Facility owners are also an important group to target on. Most programmes are tailored to a target group, there are only very few addressing all energy consumer. Architects and construction companies are not very often approached by national administration, although they have a quite big influence on the way buildings are constructed and how energy efficient they are.

Fig. 4 shows the percentage of the analysed programmes with the respective governance mechanisms (multiple mechanisms per programme are possible).

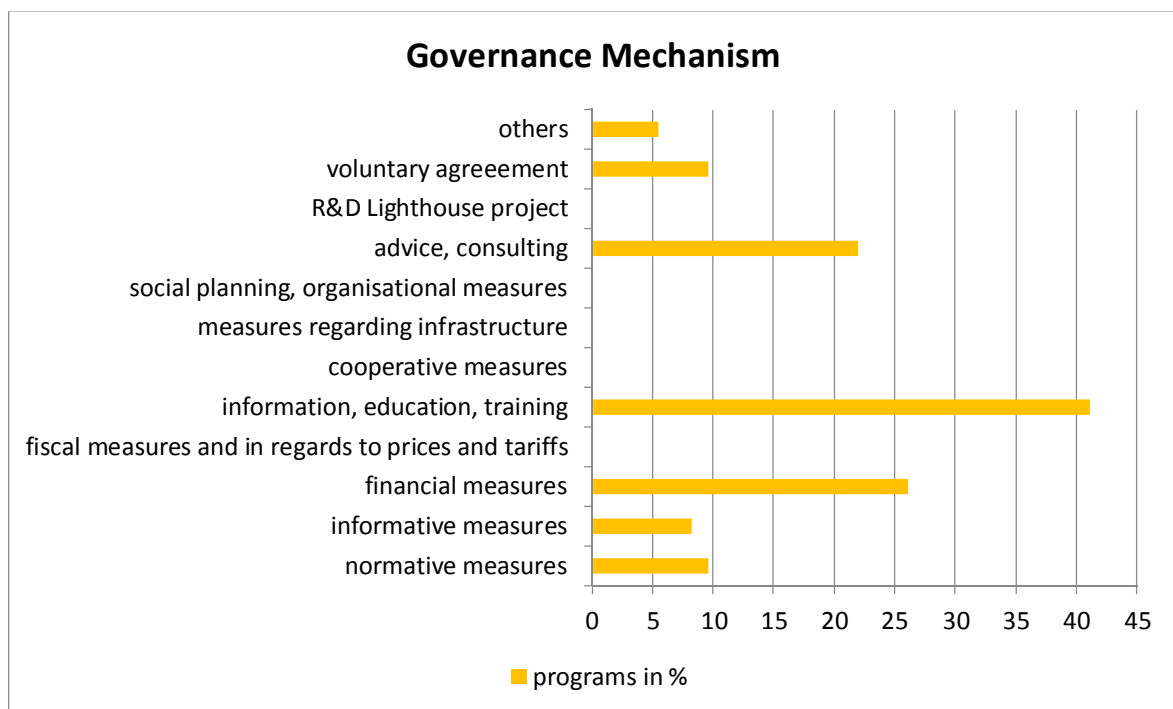


Figure 4 - Percentage of programmes of national administrations with the respective governance mechanism (multiple governance mechanisms per programme are possible).

Information/education/training, financial measures and advice/consulting are the most important mechanisms. Surprisingly normative and informative measures, such as labelling, are not very common, although if these measures should be established it usually had to be on the national level.

It was also examined if a programme is organised not only by one main initiator but has a partner institution, which helps to promote and operate the programme. We also identified programmes, which are innovative in some way. All these identified programmes have in our opinion an uncommon and promising approach. Table 3 shows these programmes with their respective innovative aspects.

Table 3: Innovative programmes of national initiators.

Name of Programme	Country	Target Group	Governance Mechanism	Description of the Mechanism	Innovative Aspects
Governmental Support for the Development of a 2000Watt-Society Concept (EnergieSchweiz für Gemeinden n.d.)	Switzerland	municipalities and regional administrations	advice, consulting	The Federal Department of Energy supports selected communities to develop a 2000-Watt-concept. Communities analyse their energy needs in the very different areas and their potential for local renewable energy production.	Long-term vision with a broad concept, which includes buildings food, transportation, lifestyles
Warm Front scheme (EEB 2011)	Great Britain	consumers and households	financial measures	This Government scheme is targeted at combating fuel poverty in the privately owned and rented property sector in England. It aims to make homes warmer, healthier and more energy efficient. The scheme consists of a grant and funds energy efficiency measures like more efficient heating systems, new insulation and draught proofing.	Specific target group of the programme are energy poors; health as an explicit motivation for action
GREEN FUND (Harvey 2014)	Great Britain	municipalities and regional administrations	financial measures	Government-backed green investment bank finances replacement of street lights with LED lights. Local authorities and other public bodies can receive the cash needed for the new lights upfront. They have to pay it back over time as they realise the efficiency savings from the new technology. The bank offers UK local authorities low-interest fixed-rate loans over a period of up to 20 years.	Cooperation between a bank and the national and in the end the local authorities
Federal Buildings Initiative (Natural Resources Canada n.d.)	Canada	national administration	advice, consulting	The Federal Buildings Initiative (FBI) is a voluntary programme that helps facilitate energy efficiency retrofit projects (in buildings owned or managed by the Government of Canada) that lead to reduced energy and water use, GHG emissions and operating costs. The FBI offers a set of services and products to help simplify and remove much of the risk of implementing a retrofit project.	National programme for national administrations; comprehensive information and training including industry contacts
Energy efficient schools guide (NZAEE n.d.)	New Zealand	facility owners, managers and maintenance staff	information, education, training	A guide with an energy-efficiency checklist that aims to motivate / encourage students, teachers and other actors in the school environment to take stock of the current energy situation in a school, to explore alternatives, to inspire change and to monitor the effects of this change (e.g. in behaviour). The aim is to involve the whole school in changing practices.	Target group is the school environment including teacher, students, facility managers, trustees

Name of Programme	Country	Target Group	Governance Mechanism	Description of the Mechanism	Innovative Aspects
Eco-Model Cities programme (Jollands et al. 2011)	Japan	municipalities and regional administrations	financial measures advice, consulting	One of the central goals of the programme is to create model sustainable cities that can be replicated across the country. EMC began with a competition open to every Japanese city, with selected cities receiving financial and advisory support from the national government in acknowledgement of their efforts. All cities participating are involved in a ceremony and receive a licence card, further adding to their public acknowledgment by the government	Creation of model cities, that can be replicated
Energy saving obligation for energy companies (Energy Efficiency Watch 2013)	Denmark	SME owners, managers, employees and suppliers	normative measures	Energy companies in Denmark have to contribute their share to the attainment of the energy efficiency goals, which is ensured by an energy saving obligation. The overall objective of the scheme is that utility companies are to help increase the overall savings efforts, focusing on achieving energy savings in final energy consumption, which would not have been realised without the involvement of the companies. The utility companies have freedom of methodology in order to deliver savings in the most cost effective way.	Energy saving obligation to energy companies freedom of how to accomplish the obliged savings
Grants for outperforming standards (building sector) (Energy Efficiency Watch 2013)	Germany	facility owners, managers and maintenance staff	financial measures	Financial support via grants and soft loans is available for the construction of buildings outperforming standards.	Reward for outperforming buildings and not only for meeting the normative standards
Video Competition (as part of the EnergyNeighbourhoods project) (EnergyNeighbourhoods n.d.)	European Union	consumers and households	others	Run as part of the wider, European Energy Neighbourhood project, there has been a film competition; an opportunity for all budding amateur film directors to produce a short 4 minute film on the topic of saving energy in the home.	Competition as an instrument to involve pupils self-made video clip as a mean of communication

Results of the analysis of regional programmes

In total 90 programmes were collected and analysed according to the criteria mentioned above. 64 of these programmes work together with a partner institution. We conducted an analysis about target groups and governance mechanisms of the programmes. Fig. 5 shows the percentage of the analysed programmes, which are designed for the respective target group.

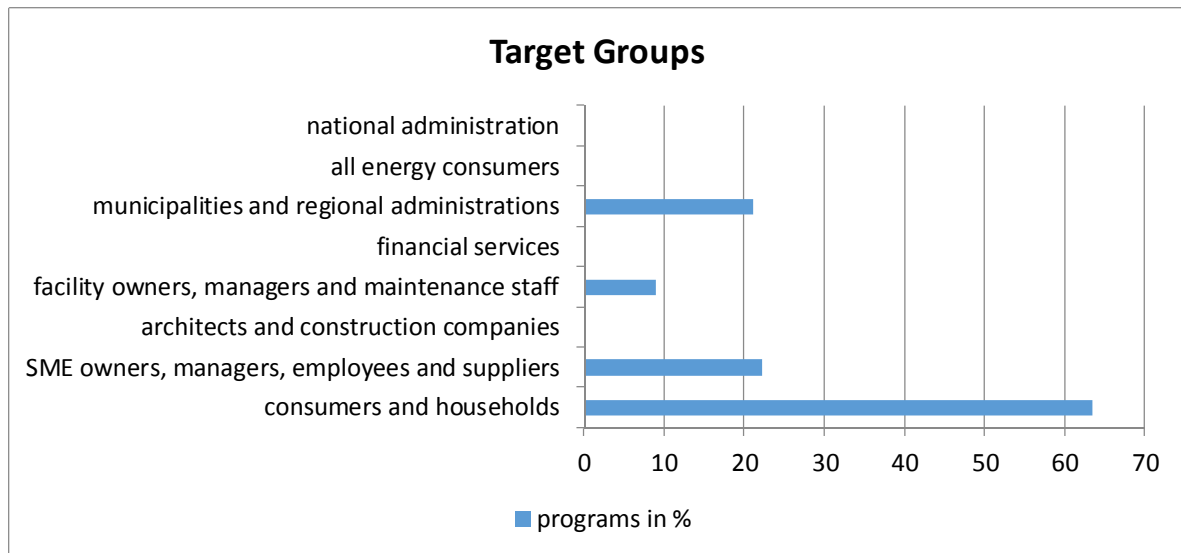


Figure 5 - Percentage of programmes of municipalities or a regional stakeholder, which are designed for the different target groups (multiple target groups per programme are possible).

The highest amount of programmes are targeting at consumers and households directly; a lower amount at municipalities/regional administrations and SME owners. The target groups are quite similar as of national programmes with the exception of the high amount of regional programmes tailored to consumer and households.

Fig. 6 shows the percentage of the analysed programmes with the respective governance mechanisms (multiple mechanisms per programme are possible).

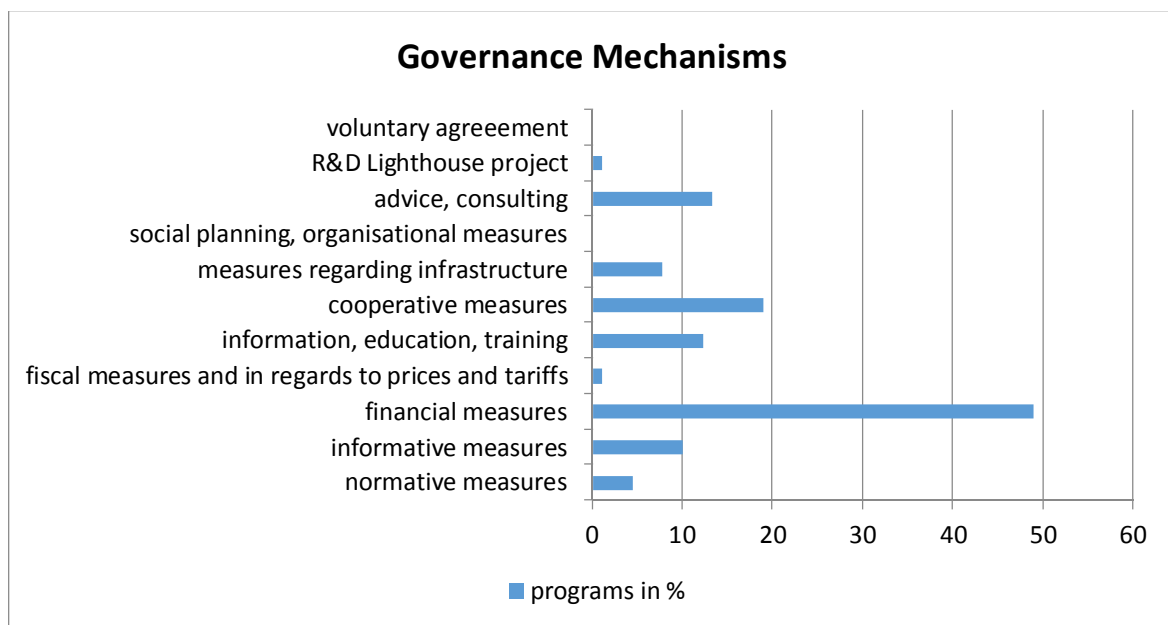


Figure 6 - Percentage of programmes of municipalities or a regional stakeholder with the respective governance mechanism (multiple governance mechanisms per programme are possible).

Financial measures are the most common mechanisms applied, followed by cooperative measures and advice/consulting. Cooperative measures are mostly collectives, who operate renewable energy infrastructure for regional consumption and have also pilot projects or advice or information regarding energy efficiency.

We also identified programmes, which are innovative in some way. All these identified programmes have in our opinion an uncommon and promising approach. Table 4 shows these programmes with their respective innovative aspects.

Table 4 - Innovative programmes of regional initiators.

Name of Programme	Country	Target Group	Description of the Mechanism	Innovative Aspects
Improvement of Utilization Ratio (AEV n.d.)	Switzerland	SME owners, managers, employees and suppliers	The canton of Grison gives financial support for optimisation of industrial and commercial processes regarding energy efficiency. The only requirement is a proof that the measures leads to a 25% optimisation of efficiency.	Optimisation of industrial and commercial process regarding energy efficiency
Mobicheck (BMUB n.d.)	Germany	consumers and households	The Mobicheck is a webbased tool with information about energy efficient ICT and mobile devices and their energy efficient usage	Target group are young and technically oriented people
Climate Protection Plus: General CO ₂ -Reduction Programme (Umweltministerium Baden-Württemberg n.d.)	Germany	SME owners, managers, employees and suppliers	Target of the programme is the energy-efficient rehabilitation of non-residential buildings through different measures. Despite other approaches so called energy efficiency roundtables were initiated. On these tables 10-15 companies try to find solutions for more energy efficient processes through sharing of experience and cooperation in some processes or infrastructures.	Energy efficiency roundtables to share and cooperate between companies
Smart Energy Challenge (Smart Energy Challenge n.d.)	New Zealand	consumers and households SME owners, managers, employees and suppliers	The Smart Energy Challenge supports projects that aim to reduce energy use and increase renewable energy in Wellington. It will help applicants by: >Introducing to mentors which are relevant to your project >Hosting workshops to develop the project conceptually, and to teach crowdfunding techniques >Introducing to corporate partners where appropriate >Boosting project's profile through a number of media releases and public events >Providing some match funding from Wellington City Council's Smart Energy Capital Fund for the amount the crowd raises	Combination of: > collaborative network > youth-led organisation, with the central purpose of providing solutions for New Zealand to cut carbon pollution through smarter transport, liveable cities & independence from fossil fuels > crowd funding
Waikato Regional Energy Strategy (Environment Waikato 2009)	New Zealand	municipalities and regional administrations	The overall purpose of the Waikato Regional Energy Strategy is to: > encourage and enable energy conservation and efficiency > promote the Waikato region's role in maintaining security of energy supply > facilitate the development and use of renewable energy sources and innovative energy technologies > acknowledge and promote the crucial role of energy in the regional and national economy.	Very detailed strategy for one region

Results of the analysis of programmes provided by Energy Service Companies

A total of 52 different programmes have been selected, described and categorised as specified. Ten of these programmes work together with a partner institution to promote and operate the programme. The distribution in percentage on target groups as shown in Fig. 7 clearly points out that the main focus of energy services providers' lies on facility owners, managers and maintenance staff (69%). Consumers and households (27%) and SME owners as target groups are currently of less interest for ESCOs. Other target groups such as financial services, architects and construction companies don't appear as relevant in this study. This is however surprising, since a general awareness for retrofitting and energy efficient construction in this sector is observable.

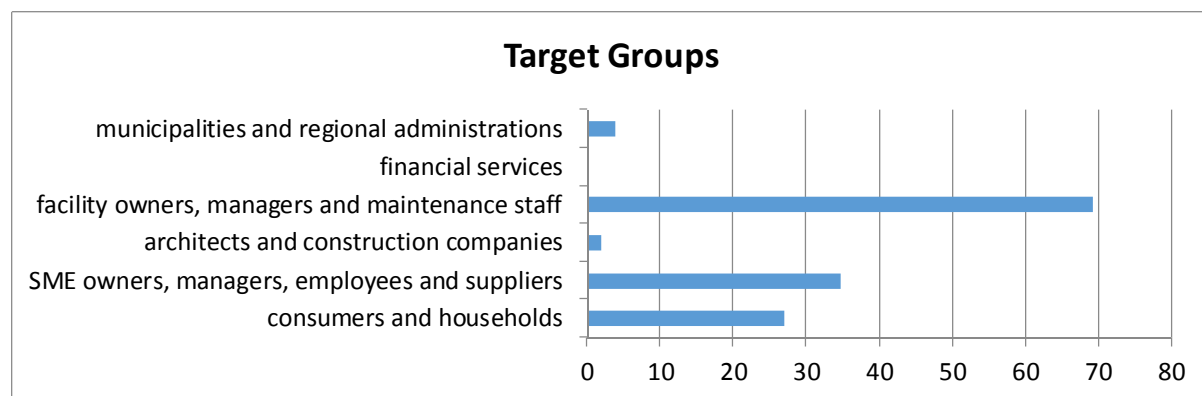


Figure 7 - Percentage of programmes of ESCOs with the respective target groups (multiple target groups per programme are possible).

Quite often it seems not to be very clear, which specific governance mechanism applies for the examples examined. For instance, a specific reference may cover different mechanisms such as advice, consultancy; information, education, training and social planning / organisational measures. We therefore resorted with the most obvious governance mechanism specified.

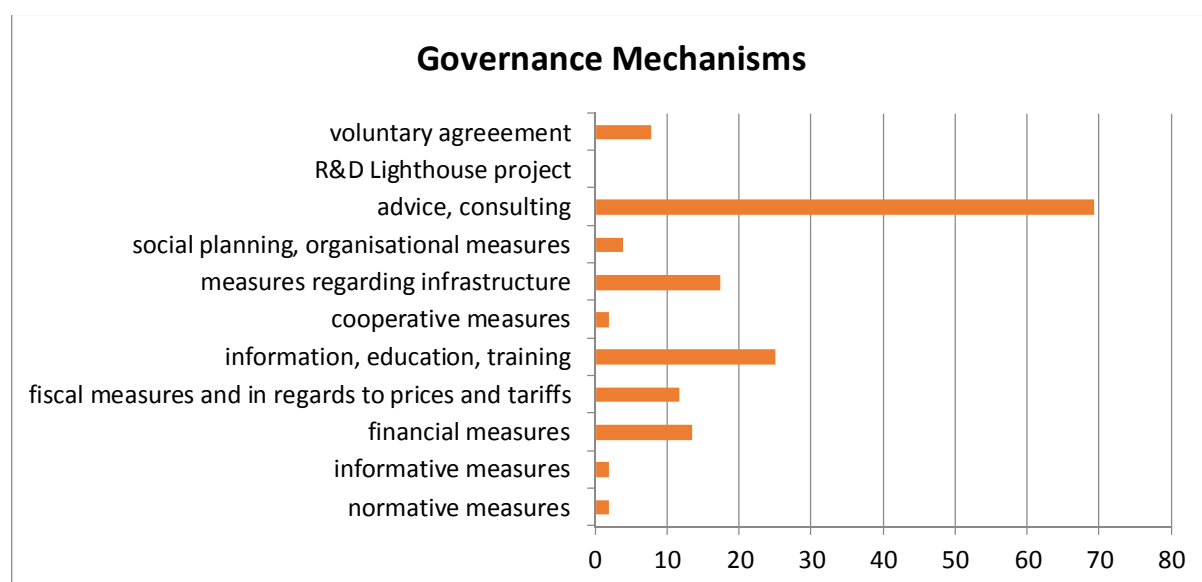


Figure 8 - Percentage of programmes of ESCOs with the respective governance mechanism.

When comparing the overall numbers distribution of governance mechanisms, it becomes clear that the majority of energy service companies offer in particular advice and consulting (Fig. 8). However, in some cases companies offer consulting only as part of an overall service which is provided along the value chain shown in Fig. 2. Therefore, these provided services, cannot be regarded as stand-alone services. Rather, and quite often, they are the initial step inside the whole value chain discussed by Renner (2012), leading up to a desired implementation of energy efficiency measures.

Outcomes and lessons learned

For the further development of future energy efficiency programmes, it is useful to know the experience from existing or already closed programmes. The outcome in saved kWh or CO₂-emissions is measured – and at least published, as we only used public available information – only in very few programmes (in 24 of the total 215 analysed programmes). In other 30 programmes we found at least some information about the success of the programmes in terms of participation or actions taken, such as number of participants or number of conducted insulations. Based on this information, we couldn't carry out an evaluation on the question, which programmes are the most successful ones,

because the data situation to perform that is too bad. Therefore we concentrate on the analysis of the stated lessons learned, as from these inputs we can at least give some recommendations for future programmes.

16 programmes published their experiences as lessons learned, unfortunately but understandable none of the ESCO-programmes did so. We found lessons learned in different areas: communication, programme mechanism, target groups and topics. The findings are structured in these areas and summed up in bullet points:

Communication:

- A trustworthy sender of the programme is a key factor for success;
- Use simple messages;
- A label for cities efforts is important;
- A label as a help for recognition for the population is important;
- One single contact person is for all target groups important (use even the same person for different programmes);
- For voluntary community activities, a funny and friendly accompanying campaign is useful.

Programme mechanism:

- Grants for infrastructure are a good possibility, but the grant programme has to be long lasting;
- Low loans for renovations combined with impartial advice is a good combination;
- Freedom to choose your favourite supplier (no regulations regarding suppliers as criteria for participation);
- No upfront-costs for households;
- Simple realisation for households;
- Immediate visible success for households (e.g. on energy bill).

Target groups:

- Energy poor as target groups are good to reach with free exchange of appliances;
- Addressing the broad population is difficult (even with mass media campaigns).

Topic:

- Voluntary measures work well, especially if there exists a possibly upcoming regulation on the respective topic;
- To tackle energy poverty, a programme should also look at the renovation of the target groups' houses even if they live mostly in rented apartments.

This summary represents only a selected share of knowledge and experience from the programme providers, based on the publicly available information. Nonetheless, policy makers can profit from these recommendations, although the list is not exhaustive at all.

In general, we found only few critical statements on the programmes and overall – as already mentioned – very few programmes publishing any outcome evaluation. Probably a lot of them are not evaluated at all, which is unfortunately often the case in energy efficiency instruments (Harmelink et al., 2008).

Discussion

Following the recommendations regarding the factors of success (see above), it would be important to run a programme with one or several partner institutions. On the regional level, we already found a high share of programmes with partner initiators, but on the national level lots of programmes are not linked to another institution, which might increase the effect of a programme. Maybe for a region it might also be useful to look at the national programmes or at programmes of regional ESCOs and cooperate with them, instead of setting up an entirely new programme. Especially two different types of promoters are an efficient setup for a programme, therefore working together with an ESCO is certainly a good opportunity.

Another factor of success is to tackle one topic with different approaches that is governance mechanisms. We have seen in our analysis that different governance mechanisms are in use. We saw, on the regional level financial measures are the favourite ones, whereas information and consulting are not that important. Information campaigns are mostly run by national initiators and advice and training are often offered by ESCOs, whereupon advice from ESCO is often linked with other approaches like fiscal or financial measures or measures regarding infrastructure. Maybe it would be wise to coordinate the programmes of national, regional and ESCOs in a region to set up an efficient bunch of approaches on the same topic.

In general ESCOs very often have programmes, which are a combination of governance mechanisms, which would probably be effective in programmes of national and regional institutions as well.

There are a few target groups which are mainly addressed only from one side (regional, national or ESCO). For example facility owners and managers/maintenance staff are addressed by the ESCOs primarily. It would be reasonable that they would be approached also by other actors. Architects and construction companies in contrast are rarely appealed by any of the initiators. Although their knowledge and attitude are very important for the implementation of energy efficiency measures. This strong stakeholder should be kept in mind, when designing efficiency programmes.

A coordination and integration of the energy efficiency programmes offered at national and regional levels together with those provided by Energy Service Companies is highly recommended and encouraged to involve all stakeholders aiming at the same benefit (output) with less energy inputs.

Regarding approaches and motivational aspects the programmes work with, there are also some interesting similarities. Many programmes assume quite high interest in energy efficiency from their target audience and work with lots of information about what you could optimise. Especially for the target group of households this cannot be assumed for lots of them. Such programmes will result in the fact that always the same people engage and always the same people don't participate. But exactly these households have probably a higher potential for energy efficiency than already sensitised households.

Looking at the very few public information on outcomes and lessons learned, we came to the same conclusion as Vine et al. (2012) that there is a need for more critical and scientific evaluation of energy efficiency programmes in order to learn from past experiences.

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