From theory to practice: the development of the 'Competitive Efficiency Tender' in Germany

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Abstract

With respect to implementing Article 7 (Art. 7) of the Energy Efficiency Directive (EED), the discussion amongst German stakeholders has taken on an interesting amount of momentum. In the beginning of this discussion, there were many skeptical voices against the introduction of a pure 'Energy Efficiency Obligation' (EEO).These skeptics expressed doubts about the heterogeneous German market for energy services, which already has a high number of active players, with more than 3,000 energy suppliers and nearly 500 ESCOs. It was not clear who amongst these many players should be obliged to take action, nor was it clear as to what action would need to be taken. In particular, the fear of 'market distortion' seemed to be bigger than the courage for energy efficiency. There was no legally viable solution for an 'Energy Efficiency Fund' (EEF), because of the remaining risks with respect to the financial constitution and, most of all, because there was no political solution to the issues of increasing energy prices and the loss of acceptance for another fee. At this time, the discussion had nearly come to stand still.

In the beginning of 2012, however, the idea of an 'Energy Efficiency Tender' (EET), was re-introduced into the discussion by the newly founded German industrial association for energy efficiency (DENEFF). Key in breaking up the stand still, was a shift from a motivating by sticks to a motivating by carrots approach, based on a competition of the best ideas and economic approaches.. Subsequently, the initiative was adopted by several other stakeholders, such as those from the large association of energy suppliers (VKU). The 'Competitive Energy Efficiency Tender' (CET) has now become a prominent part of the 'National Action Plan on Energy Efficiency' (NAPE).

This paper describes the process of the evolution of the Competitive Efficiency Tender, with respect to the battle between governmental change along with that of stakeholder interests in EED implementation. It also addresses crucial design features. As the authors are involved both in the actual design process and the debate, this paper directly leads into the most current state of affairs on this topic.

Background & Key Question

During the last decade, Energy Efficiency Schemes (EES)[1] have climbed higher up onto politicians political agendas, being mostly driven by EU legislation *[ESD 2006/32/EC], [EED 2012/27/EU]*. The basic idea is to foster energy efficiency by handing over responsibility to a defined party, which is responsible to achieve an annual savings target.

Compared with classical instruments for energy efficiency (i.e., information, subsidy, and regulation schemes) the new EES possesses the following four new elements:

1. the new EES defines a **savings target;**
2. the **responsible party** is to take over **responsibility to achieve the target;**

1. In this paper we talk about 'Energy Efficiency Schemes' (EES) as a class of political meta-instruments, which comprise "Energy Efficiency Obligations" (EEO), "Energy Efficiency Funds" (EEF) and "Energy Efficiency Tenders" (EET).

3. the new EES establishes a **search mechanism** to identify suitable objects and energy efficiency measures;
4. the new instrument establishes an implicit (hidden) or an explicit (open & transparent) way to provide the **financial base** for energy efficiency measures.

Clear targets, responsibilities, search mechanisms and a solid financial base, have often been referred to as the missing or weak parts in energy efficiency policies. In the past, targets and responsibilities had only been allocated at a state level, and led to the state level often being criticised for ineffectively delivering a market orientated implementation of efficiency measures. Thus, begging the question, how can these missing parts be defined and implemented with view to traditional regulation and existing markets? And so the following questions remain:

- What are the missing elements in existing policies?
- Who should be the responsible party (if not the state level)?
- Which elements render additional effects for energy efficiency at a high benefit/cost ratio by avoiding high social costs and causing distortion of existing markets?

The EU approach: Energy efficiency obligation

THE IDEA OF AN ENERGY EFFICIENCY OBLIGATION

The idea of an *Energy Efficiency Obligation* (EEO) was developed in the 1980s within several federal states of The U.S.A. Based on the idea of 'Demand Side Management' (DSM) and 'Least Cost Planning' (LCP). The basic idea was to place energy companies into the middle of the scene. For example, this was especially suited to the regulated monopolies of the electricity grid, where it was comparatively easy to impose an obligation to save energy, due to the fact that the energy companies (especially distribution system operators (DSOs)) and the underlying tariff system, were already under regulation by state authorities. Inspired by good practices in the U.S., European researchers brought this idea into the discussion for EU policies *[cp. among others: Thomas et. al. 2003]*. EU legislation adopted the idea of an *Energy Efficiency Obligation (EEO)* in Art. 6 ESD and later in Art. 7 EED *[ESD 2006/32/EC]*, *[EED 2012/27/EU]*.

Energy Efficiency Obligation Schemes (EEO), (as provided for in Art. 7 EED) essentially oblige energy suppliers or grid operators to implement saving systems. An EEO is based on the obligation to save a certain percentage of primary/end use/retailed energy, either at an annual, or at a cumulative basis. For the administration of these schemes, there is usually a list of potential and eligible measures, which are to be implemented for and directed at a certain segment of customers (households, building owners, industry, trade, commerce, etc.).

In earlier literature, EEOs are often referred to as 'White Certificate Schemes'. This expression, however, appears to be misleading, as it only refers to a single element of the instrument. That is, 'White certificates' can be introduced to allow trading the achieved savings between obligated parties.

A few other European countries have implemented savings obligation schemes.[2] Although there were some promising examples in neighbouring countries (especially Denmark), the German discussion still remained controversial amongst the different stakeholders.

CRITICAL DISCUSSION OF AN EEO

There is an ongoing discussion about the fundamental advantages and challenges of EEO systems *[cp. among others IEA Task XIV 2006, Bertoldi et. al. 2010]*. From a scientific point of view, the pros & cons of a political instrument should be discussed with respect to a defined target and a defined political context. From a more abstract perspective, the following major advantages of an EEO system include:

- The obligation being assigned to a selected group provides a clear responsibility for saving energy.
- The obligation initiates a competition between what is the cheapest option to save energy.
- The obliged parties not only look for the cheapest option, but are also motivated to overcome the specific barriers within the target group (customized solutions).
- Subsequently energy efficiency is attributed with a market value (price).
- Last but not least: the funding scheme for energy efficiency can be based on a state independent basis, without the uncertainties of a state budget based program.[3]

However, despite the advantages, there are also numerous challenges to be considered when implementing an EEO:

- An obligation neither means, that the obliged party is motivated, nor that the obliged party is the best potential agent for energy efficiency (*obligation* is not equal to *motivation*).
- There are different motivations among obliged parties and different relations concerning the end consumer. Some may have grid access to the end consumer, while others may only have limited contact.
- There are different ideas about business models, causing variation according to the value creating level of the obliged party.
- The strategic steering and proper administration of an EEO is complex: the competition around the cheapest option does not necessarily mean, that the sum of all the cheapest options will be the best pathway forward when viewed from a macroeconomic perspective. In Germany, for example, the discussion about the ambitious 'Energiewende' scenarios has shown that among the options with the highest priority is the *deep* retrofit of the building stock. A *cheap* (or cost-efficient) retrofit, however, would lead to non-optimal solutions.

2. DG ENER 2015: Presentation of Lelde Kiela Villumsone on 'State of Play' of Art. 7 of the Energy Efficiency Directive (cp. Workshop of 5 February 2015 on www.enspol.eu).

3. Due to budgetary restrictions and revolving discussions in parliament, some state funded programs have experienced a stop-and-go-funding situation, which caused serious uncertainties in the market (e.g. "Marktanreizprogramm" for renewables in the heat market). These experiences have led to an intensified search for "state-independent funding schemes" [cp. Steinbach, J., Seefeldt, F., Brandt, E. et. al. 2013].

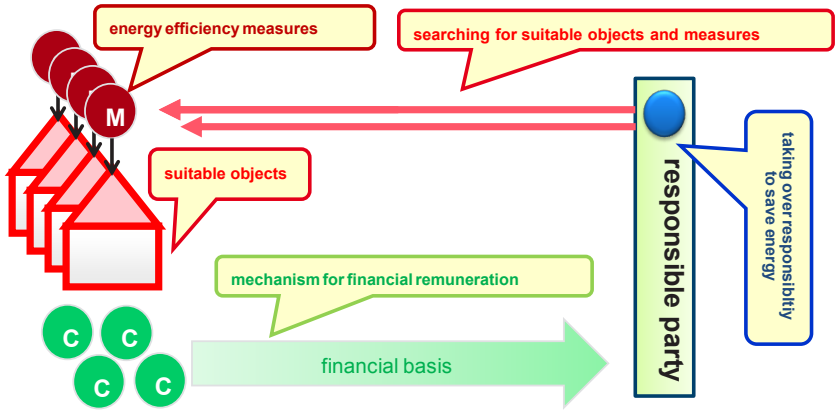

Figure 1. Typical scheme of an EES. [M=measures, C=final consumers.]

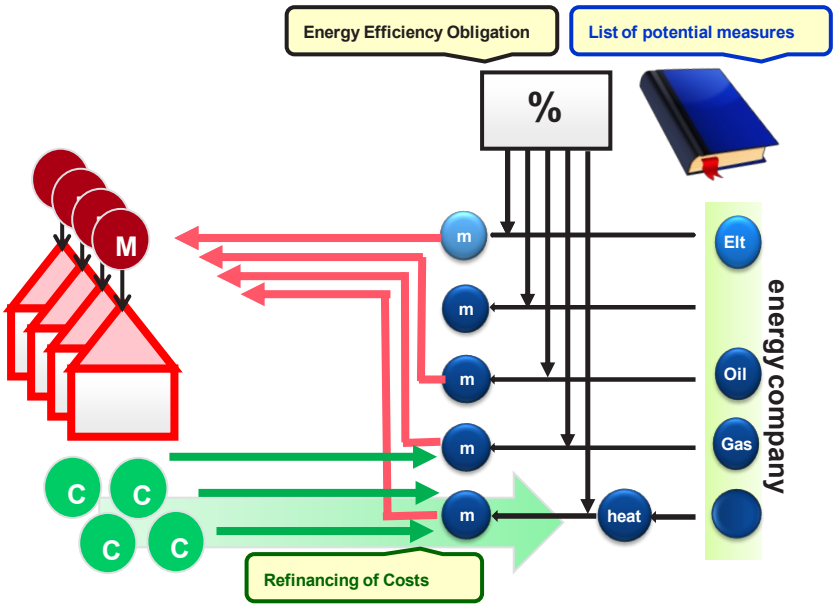

Figure 2. Typical Scheme of an EEO. [M=measures, C=final consumers, m=meter & point of sale.]

- Costs occur in any case: whoever is carrying out an energy efficient measure has to assume the potential costs for administration, transaction, planning, measurement & verification. There will be a more or less explicit way to remunerate the cost of an EEO: remuneration will either happen implicitly, by increasing energy retail prices, or explicitly, by introducing a defined energy efficiency levy, which can be included in the grid tariffs.

Focusing on the German market, there are the following potential challenges:

- In Germany, there is already an existing and traditional architecture of funding schemes. Additional action will therefore need be tailored in to fill the gaps and provide a minimum overlap to already existing programs.
- In Germany, there already is an existing and competitive market for energy services. There is a risk of market distortion, especially if a new group of obliged parties enters the market and has other or better pathways for remunerating the energy efficiency services.

The latter aspect leads again to the question, 'who should be the most suitable, obliged party?'. The title of Art. 6 ESD *('energy distributors, distribution system operators or retail energy sales companies')* reveals the subsequent challenge: there are no *'energy companies as such'*, but rather a wide range of companies (cp. chapt. 'Stakeholders/Energy Companies). In Germany, this question was not even resolved when Art. 7 EED was negotiated in the European Parliament and the European Council in 2012. Art. 7 was still mentioning the 'energy distributors & retail energy sales companies', and had just added that member states should apply 'non-discriminating and objective criteria', when including energy companies in the EEO.

Energy efficiency policy in Germany

Germany has a long tradition of Energy Efficiency Policy. The first policies targeting energy savings in buildings were adopted in the early 1980s as a reaction of the first oil crisis of the 1970s. In the last decade however, energy policy was dominated by the implementation of the European Emissions Trading System (ETS), the large scale implementation of renewable energies in

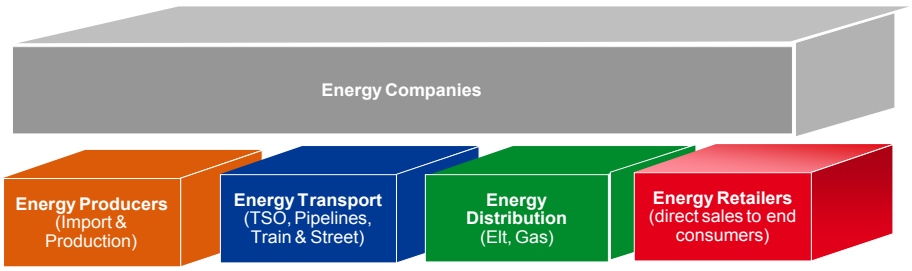

Figure 3. Energy companies on different value creating levels [Prognos/ESPM 2012].

the electricity sector, and followed by the debate about the phase out of nuclear energy. This discussion was concluded by the 'Energiewende' decisions taken in the summer of 2011, when the nuclear phase out was decided along with the reconfirming of the long term carbon reduction targets from 2010. There were also energy efficiency targets introduced (expressed as a reduction of primary energy as well as several sector specific targets). However, despite these ambitious targets, renewables remained the favourite child of the German 'Energiewende', while energy efficiency appeared to yet again be the step child.

ENERGY COMPANIES IN GERMANY

According to Art. 6 ESD and Art. 7 EED 'Energy Companies' are supposed to be the obliged parties. However, as already mentioned, there is a subsequent problem: in Germany the market separation of integrated energy companies, especially large companies, was almost completed during the first decade of this century. Only smaller utilities *('Stadtwerke')* remained integrated. Meaning, production, distribution and retail were left under the same legal entity. After completion of the liberalisation process, a wide range of companies were now active at all the different value creating levels, from upstream exploration & production, over import, to transport & distribution, down to the downstream retailing of energy, and on to final consumers.

ESD targeted a market of nearly 30,000 to 40,000 energy companies in a wider sense in Germany[4]. When applying the minimum thresholds of the directives (>10 employees, >€2 M commercial sales or >75 GWh energy sales), there is still a remaining number of more than 3,000 companies (according to the official available statistics)[5]. Beside this heterogeneous market, their came an uptaking market of nearly 500 *energy service companies* (ESCo's, cp. chapter *'ESCO industry in Germany'*). Therefore, the question remained the same: Who of the above mentioned energy companies should be obliged to what action?

ESCO INDUSTRY IN GERMANY

The German market development of the Energy Service Companies (ESCOs) started in the early 1990s. Early market development activities were mainly driven by two groups of stakeholders. On the one hand, a few utilities (still "bundled") started to implement Least-Cost-Planning and Demand-Side Management strategies. While, \on the other hand, a variety of manufacturers of building technologies, automation and control equipment companies, as well as a number of plant engineering and construction companies, had started to extend their value creating chains and scope of services.

The first large state-wide EPC program was called the 'Energy Saving Partnership (Energiesparpartnerschaft)'. It was initiated by the state of Berlin with the help of the Berlin Energy Agency, grouping together more than 100 public buildings and placing them into two building pools. This program was successful and during the subsequent 15 years, more than 20 large EPC tenders were launched. *[Seefeldt & Bleyl 2009]*.

Energy Supply Contracting (ESC) – the performance-based supply of useful energy – developed even faster than EPC programs and succeeded within different end-use sectors. Predominantly, these included the residential sector, industrial premises, and public facilities. Featured technologies range from standard boilers to CHP solutions (sometimes including distribution networks). The majority of projects run on natural gas but a variety of renewable heating systems and solar systems have been installed as well. *[Bleyl & Seefeldt 2012]*.

According to the most recent market figures of the Federal Agency for Energy Efficiency (based on *[Prognos/IFEU/HRW 2013]*), there are 500 companies active in the ESCO market. Between 66 % to 75 % of the ESCOs are derived from classical Energy Companies (producers, distributors, retailers of fuel oil, gas & electricity) while between 25 % to 33 % are independent from Energy Companies, and are coming from other industrial branches, including Technical Building Equipment, Measuring & Control Technologies, Metering Services, Facility Management, Planning & Engineering and Craftsmen for Heating & Buildings. The annual sales sum up to the amount of €3–4 Bn. per year *[Prognos/IFEU/HRW 2013]*.

DENEFF – A NEW INSTITUTION FOR THE ENERGY EFFICIENCY INDUSTRY

The statement "There is no lobby for energy efficiency" was the conclusion of an article written in the German newspaper 'taz' back in 2008 *[taz 2008]*. The author had observed at the time, that there was a very active lobby for renewable energies, which, from an early stage, organized themselves into newly founded associations, such as the BSW (solar energy), BWE (wind energy) or BEE (umbrella for renewable energies). The members of these associations then experienced huge success, as the introduction of feed-in-tariffs for renewable energies created a tremendous market for these new technologies. At the same time, traditional trade and

4. Not only the EC Directives on the Internal Market have led to an increasing number of 'energy companies'. Due to the 'renewable-feed-in-act' (EEG) there is an increasing number of private households, who acquire the tax status of an 'energy company', merely by operating a PV module.

5. The statistics seems to be well in line with the figures of the large energy company associations in Germany, which may give a more conservative estimate of the relevant energy companies: 4 TSOs, more than 700 DSOs, nearly 900 municipal electricity & gas utilities (Stadtwerke), more than 1,000 mineral oil retailing & distributing companies (not counting the more than 10,000 filling stations of the transport sector).

Table 1. Available statistics on energy companies in Germany. [Source: Statistisches Bundesamt, after Prognos/ESPM 2012.]

Available Statistics: / Typical Branches	Trade Register Total number	Trade Register Energy Comp. ≥ 10 employ.	Tax Statistics Total number	Tax Statistics Energy Comp. ≥ 2 Mio. €
35.11 Electricity Production	24,605	431	27,654	1,298
35.13 Electricity Distribution	1,010	332	736	396
35.22 Gas Transport/Distrib.	189	79	175	131
35.23 Gas Traders	137	74	59	48
35.30 District/Object heating	933	124	968	182
46.71 Mineral Oil Traders			1,640	797
47.30 Fuels for Transport	9,877	951	10,017	1,184
Total Number	**ca. 38,000**	**ca. 2'000**	**ca. 40,000**	**ca. 3,500**

industry associations (that were responsible with organizing the common interests of companies with similar products or services) which included the likes of VDMA (machinery), ZVEI (electronic industry), BDH (heating systems) or GDI (insulation), formed no lobby for energy efficiency.. These associations were generally interested in promoting energy efficiency, but they could only advocate for policy instruments that were fostering the offers of their members, and which they communicated as being the "silver bullet" for achieving the Energiewende targets. In addition, 'energy efficiency' was often one out of several topics to be dealt with by these associations. At the time, here was no institution advocating for the single issue of saving energy via integrating companies across industries and civic organizations with science. Three years later DENEFF, a German business initiative for energy efficiency, was founded by ten companies from different sectors (insulation, ESCO, engineering offices, etc.) and bundled MPs, MEPs, scientists and opinion leaders for energy efficiency into its advisory board. By the end of 2014, more than 100 companies and 30 experts and politicians were members or associates of DENEFF *[DENEFF 2015]*. The main objective of DENEFF is to lobby for ambitious and effective regulatory frameworks for energy efficiency at the national and EU level and to build and strengthen better business and societal networks around the whole topic. Since 2013, DENEFF, in cooperation with PricewaterhouseCoopers, has been issuing an annual "sector monitor energy efficiency" report to provide a comprehensive overview on the state of the energy efficiency industry in Germany *[DENEFF 2014]*.

THE GERMAN GOVERNANCE ON ENERGY EFFICIENCY: FROM 'CAT-AND-DOG' TO THE SECOND PILLAR OF THE 'ENERGIEWENDE'?

The heterogeneous picture of the German Energy Industry is to be completed via the constant struggle over policy competences between the Ministry of Economy (BMWi) and the Ministry of Environment (BMU). Between 2005 and 2013, there was nearly no common line between these two ministries, thus meaning that Germany had failed to underline its position and to ask the right questions during the stakeholder process which took place at the European Commission and the European Parliament. This was especially true for when the consultations for the 'ESD recast' and the newly designed 'EED' took place. The major questions about the implementation of ESD and EED remained unanswered, and the major conflicts about the energy efficiency policy in Germany remained unresolved.

However, despite this, after the federal elections of autumn 2013, the new 'grand coalition' between the conservative and social democrat parties decided to bundle most competences for energy policy and the 'Energiewende' in Germany into the Ministry for Economy & Energy. During the reorganisation, all energy units were bundled into two large departments: one for 'electricity market and grids', keeping the strategic supervision and the monitoring for the 'Energiewende' process, and the other for 'heat market & energy efficiency (and international energy policy)'. With two sub-departments and eleven units, energy efficiency has significantly gained more political weight in the new government.

Subsequently, the new representatives have called on energy efficiency as the 'second pillar of the 'Energiewende'. To underline this claim, BMWi started the work on the 'National Action Plan for Energy Efficiency (NAPE)' with all stakeholders early in the summer of 2014. The first NAPE package contains more than 20 measures for energy efficiency and was officially adopted by the Federal Cabinet in December 2014. One of the most prominent and major 'instant measures' is the 'Competitive Efficiency Tender' (CET). However, upon taking a closer look (cp. chapter Competitive Energy Efficiency Tender (CET) as part of the NAPE), it becomes evident that the CET is the end of a long and winding journey, which initially started with the idea of an Energy Efficiency Obligation (EEO).

Alternative approach: Energy Efficiency Fund (EEF)

THE IDEA OF AN ENERGY EFFICIENCY FUND (EEF)

Whereas some studies and stakeholders, such as *[ASEW 2012]*, *[Geode 2012]* and *[Fraunhofer ISI et al. 2012]*, were still in favor of an EEO, others have expressed the above mentioned concerns *[among others: Seefeldt 2012]*. The political discussion and the political search for Alternatives continued on. Article 7, paragraph 9 of the EED allows **'other policy measures'** as an alternative to an EEO, provided that they lead to an equivalent result.

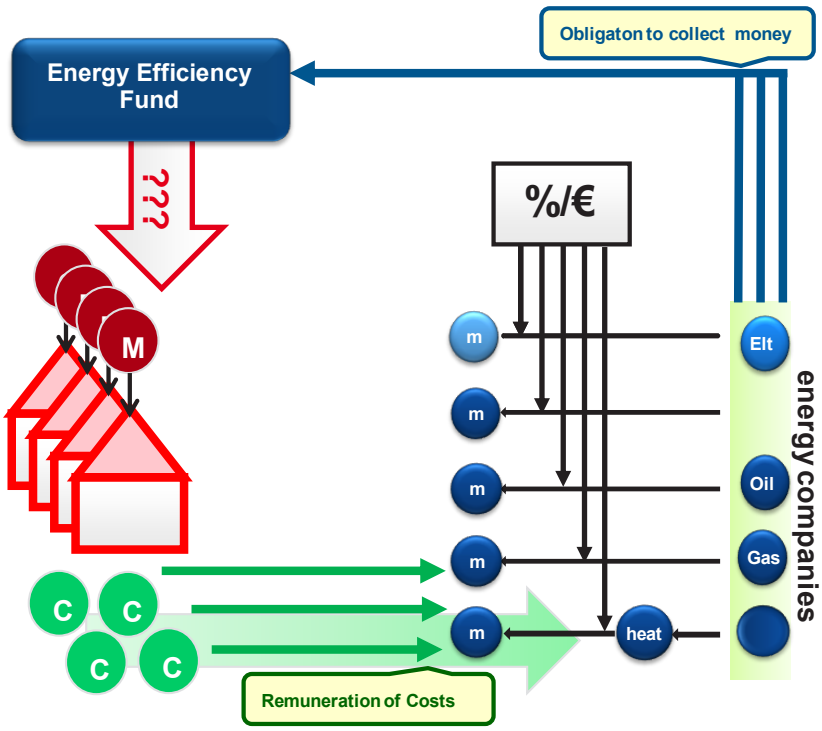

Figure 4. Typical Scheme of an EEF. [M=measures, C=final consumers, m=meter & point of sale.]

One possible option that has been intensively discussed, is the introduction of an **Energy Savings Fund** ('Energiesparfonds' EEF). Instead of an obligation to save energy, selected parties will be obliged to collect money, which will then be used for subsidising specific energy efficiency measures in selected customer segments (households, building owners, industry, trade, commerce, etc.). Instead of asking the obliged parties to achieve a savings target (x kWh per unit of their energy sales), they would be obliged to pay an 'efficiency levy' (y ct€ per unit of their energy sales) towards the Energy Efficiency Fund. The responsibility of achieving the energy savings will be handed over to the EEF. The Energy Efficiency Fund can be either organised by the State level or by the private level (for instance, the association of obliged parties). At this point, it can be left to the EEF, as to how the savings will be achieved: The money can be spent; on a classical subsidy scheme, to activate markets (by information, motivation, implementation, etc.) and on new innovative measures. The obliged parties would have to include the costs in their products. The costs can be – again – included either implicitly or explicitly in the energy prices, which would result in an increase of energy prices (z ct€ per unit of their energy price[6]).

The 'Energiesparfonds' for Germany was discussed as being a central institution with an administrative organizational structure. It is responsible for the development, testing, documentation and quality assurance of effective efficiency programs, along with the tendering and financing of such efficiency programs and the nationwide coordination of different efficiency programs. The basic idea of saving funds has already been elaborated in two previous studies conducted around ten years ago *[Irrek et al. 2004]*, *[IFEU 2004]*.

CRITICAL DISCUSSION OF AN EEF

There are the following major advantages associated with an EEF, when compared to the introduction of an EEO:

- Collecting a defined sum of money per unit of energy is comparatively cheap and can be administrated comparatively easily. For example, by either state representatives (by existing state regulatory administration) or by private associations (for instance the association of energy companies, as already implemented by the renewable feed-in tariff).
- With regard to the heterogeneous group of energy companies, there is no risk of market distortion: all energy companies are treated the same, if all end energy prices are attributed with the same levy., Not regarding some, however, remains a problem to be solved.[7]
- More ambitious or more complex efficiency measures, such as deep retrofits, can be addressed under an EEF scheme.
- Although, on the other hand, the search function of a competitive scheme may get lost.

Another serious concern, which remains so far unsolved, is the compliance of an EEF with the financial constitution law in Germany. This sets a comparatively strict framework for additional fees, levies and funds, especially if these are raised on a state independent basis. If an additional fee or levy is intro-

6. The resulting increase of the energy price (z ct€ per unit of their energy sales) will be the same as the required obligation levy (y ct€ per unit of their energy sales) in case of explicit cost remuneration or nearly the same in case of implicit cost remuneration (depending on the relation of market forces).

7. In informal political discussions, a levy of about 0.1–0.2 ct€/kWh on electricity, gas, fuel oil was discussed.

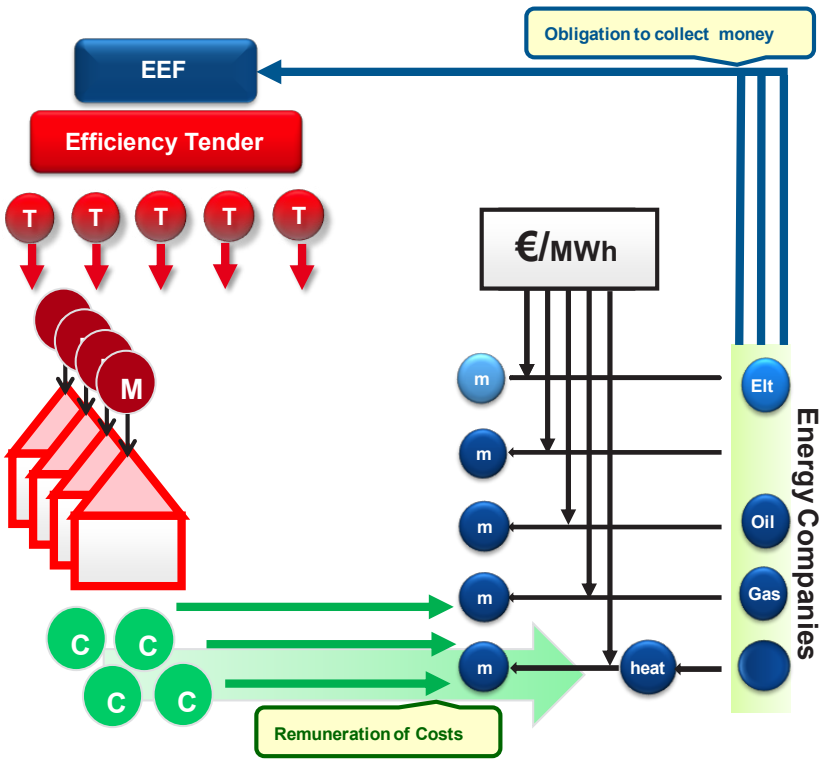

Figure 5. Typical scheme of an EET (in combination with a private funded budget). [M=measures, C=final consumers, m=meter & point of sale.]

duced, it has to be made sure that the same group who is paying for it, is the beneficiary and that the money will be used for a well-defined and meaningful purpose *[cp. Steinbach, Seefeldt, Brandt et. al. 2013]*.

Without considering the mechanism for collecting the money, there are other questions that remain concerning the mechanism of spending the money. These include:

- Who is the owner of the funds?
- Who is to decide what happens with the money?
- How can free rider effects be avoided, and in addition how can this be organised?
- What is the most efficient mechanism to spend and allocate the money?

Alternative approach: Energy Efficiency Tender (EET)

THE IDEA OF AN ENERGY EFFICIENCY TENDER (EET)

The latter question especially (about the most efficient allocation of the money) has led to many discussions and a series of studies to be carried out by NGOs and industrial associations. A discussion initiated by DENEFF had brought national and international experts (especially U.S. experts from the Regulatory Assistance Project (RAP)) together to identify the most promising ways for running an EES in general. The idea was to couple the most interesting elements of an EES. Thus, the combination of an EEF with a **Competitive Tendering Scheme** was proposed. This was first done in two studies carried out by DENEFF *[DENEFF/CO Firm 2012]* as well as BUND (Friends of the Earth Germany) *[BUND / IFEU 2012/2013]*. The so called 'Energy Efficiency Tender' (EET) was born.

After some hesitation, the mere notion of a competitive market-creating instrument, started to convince politicians to support such an EET system. With these studies preparing the ground, two further publications by the association of local public utilities *[VKU/Ecofys 2013]* as well as Agora Energiewende *[Agora/IFEU 2014,]* re-inforced the pathway towards a tendering scheme – embedding it into other efficiency measures[8].

BASIC DESIGN ELEMENTS

A range of different actors, who are able to plan and implement complex projects, could submit bids under such calls for tender. For example, these may include energy service companies, contractors, technology providers, energy agencies, engineering firms and municipal utility companies. The winner of the bidding process would essentially be the cheapest bidder, although various conditions, aside from price alone, would play a role in the decision. A tender has several advantages:

The basic (theoretical) design is simple: in each periodic tender, there is a fixed budget, which has to be spent to achieve the highest possible energy savings. The instrument is controlled by the quantity of money available. Interested parties submit offers for an energy savings amount and ask for the amount of required budget, which usually should be a share of about 20 % to 40 % of the total costs (costs for information, planning, conceptual design, transaction, investment, and measurement

8. Without going into detail in this paper: many of the above mentioned studies have been -among others- inspired by the Swiss "prokilowatt" scheme ("Wettbewerbliche Ausschreibungen", cp. BfE 2012).

and verification). The ratio between requested budget and the energy savings offered is the 'specific price' of the offer. All offers will be sorted starting from the minimum price and will be assigned money from the budget until the fixed budget is over.

In this respect, the EET is very similar to an EEO: The obliged parties have to find the cheapest possible solution for their assigned quantity of the energy savings.

CRITICAL DISCUSSION OF AN EET

There are several pros and cons which should be discussed when analysing an EEO system. The most significant difference of an EEO is that there is no predetermination of what is the 'best agent', meaning it has to be found by an EET! This has been the most convincing argument, with respect to the heterogeneity and quantity of the German 'energy companies'.

Added Value of EET (vs. EEO)

- *All* motivated & professional market participants (such as 'Energy Efficiency Agents' (EEA)- energy companies, dependent and independent ESCOs) are allowed to participate in the tendering scheme.
- Successful EEAs will receive the best results, and will be motivated to do more.
- Successful EEAs will establish a successful business case on energy efficiency.
- No party will be obliged to establish a business case in which they are not interested.
- Parties who do not feel inclined or who are not motivated will not participate.
- An instrument that is well designed results in a cost-effective level of support and keeps the amount of support needed to a minimum.
- Even though 'energy companies' are responsible for 'collecting the money', it does not necessarily mean that they own the money or are the best agent to save energy: the best agent for the most efficient solution is still to be identified in the EET.[9]

Disadvantages of EET (vs. EEO)

- There is no guaranteed level of activity.
- There is no guarantee that there are enough motivated and professional agents in the market.
- There is a certain guarantee that all the money which was collected, will be spent (speaking ironically).
- There is no guarantee that the needed quantity of energy savings will be achieved. This really depends on the availability of cheap savings potential. Once the sum of money to be collected is defined, it depends on the price of energy which is saved.
- The potential challenge is the risk that there may not be enough proposals for the tender. In that case, the budget will also be used for comparatively expensive efficiency projects, and the price for energy efficiency increases.[10]

Competitive Energy Efficiency Tender (CET) in Germany

CET IN NAPE GERMANY: CURRENT DESIGN ELEMENTS

After a discussion spanning more than 10 years, Germany has finally found a politically viable solution. The 'Competitive Tender' (CET) as prepared by the BMWi has passed the federal cabinet as part of the National Action Plan for Energy Efficiency (NAPE). Among others, the CET has become a prominent part of the NAPE. However, compared to the earlier proposals by DENEFF, IFEU, VKU, etc., a financial remuneration by way of an efficiency levy (cp. chapt. on EET) on the energy price, is missing.

A direct cost allocation based on the unit of energy consumption being passed on to the final customer was deemed to be politically not viable. Therefore, the government decided to skip the private financing mechanism mainly for the following reasons:

- **social question:** for energy efficiency, it may appear better to raise the needed budget by increasing energy prices (to increase the price per unit). However, the tax system is still regarded as the most democratic and social way to raise money for common welfare (as well as for energy efficiency). This is as households with low incomes would have to pay a significantly higher share of their income than households with higher incomes would. For this reason, the German (and most other) income tax systems allocate the largest part of the taxes according to the economic capability of individuals.
- **allocation question**: the uncertainty of whether state independent remuneration of EEF is compliant with the financial constitution law of Germany, especially in terms of if the fund is raised from private households and spent for industrial clients (risk of there not being a specific group raising and spending funds).
- **political acceptance:** the increasing public discussion around energy prices for end consumers, especially with view to the rising feed-in tariffs for renewables (at that time, the electricity price at a rate of 6 ct€/kWh, would result in an average price for electricity for German households of 25 to 27 ct€/kWh).

SELECTED DESIGN ELEMENTS OF CET

The family of EES (EEO, EEF, EET) are comparatively complex and require a careful design. There is a number of practical questions which have to be considered: effectiveness, program efficiency, benefit/cost- ratio, ability to keep administrative and

9. In practice of the EEOs, however, the obliged parties follow exactly the same idea: in a 'limited' and 'private tender' they are procuring/tendering out for agents/subcontractors, who offer them a high amount of savings for the cheapest price.

10. In practice of the EEOs, however, the same risk is implicitly shifted to the 'energy company'. If they do not find enough quantities in the market, the price for the savings increases as well. They would have to either increase energy prices or to lower their margin.

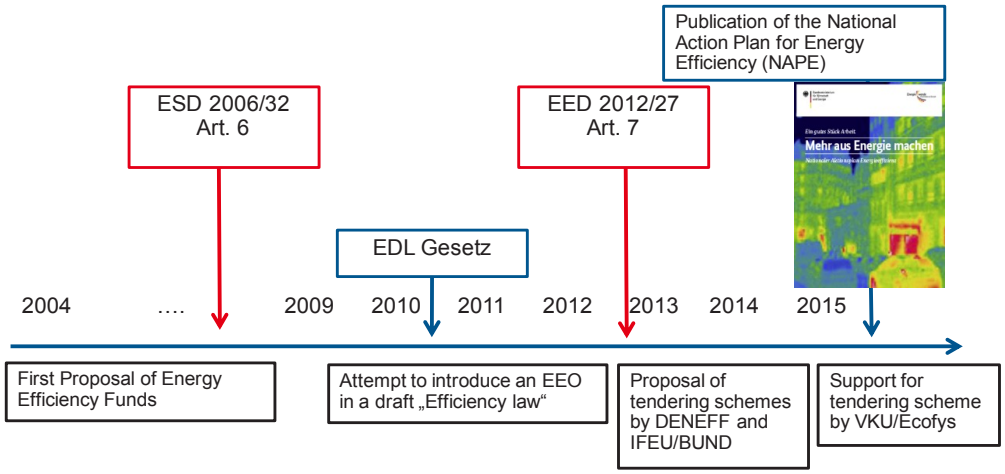

Figure 6. Time line of model discussion in Germany.

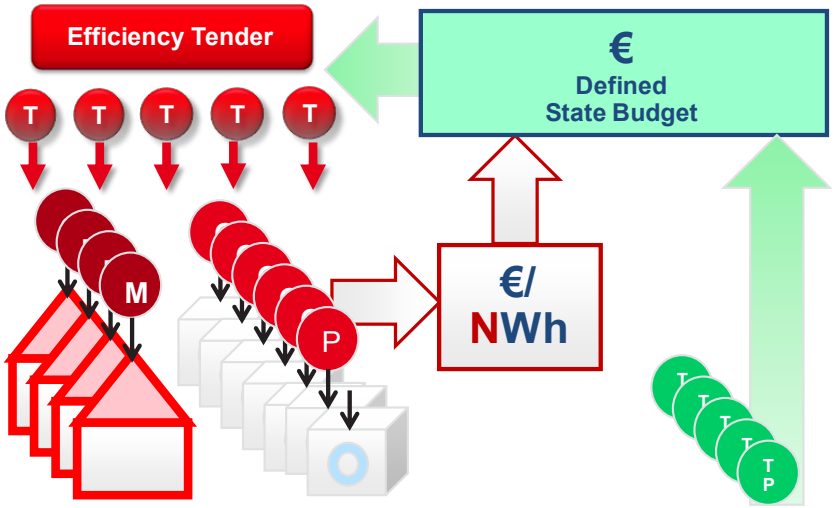

Figure 7. Elements of the CET in Germany (in combination with state budget funding). [T=Tenders, M=Measures, P=Program Measures, €/NWh= resulting price for energy savings, TP=tax payer.]

formal requirements simple, to motivate additionality and to avoid free rider issues, to increase transparency, and to allow for social balance and social acceptance. From the perspective of the program owner, it is important to ensure monitoring and control, measurement and verification and compliance. In the case of efficiency tenders, there are some specific challenges. For example, what is crucial is a sufficiently strong competition for funding and low administrative costs for the instrument. In addition, strategic bidding must be prevented. It is also necessary that tender rules and evaluation criteria are understandable and clearly formulated, the realization ensured wherever possible and, if appropriate, that different solutions, such as various technologies, are brought into the competition. The authors of this paper want to concentrate on the following aspects, which are currently under discussion in Germany.

CET vs. Classical Support Schemes (CSS)

Even with special consideration of its simple design (which was the result of the political process after nearly ten years), the most common reproach against the CET is that there is no real added value of a CET when comparing it to a 'classical support scheme' (CSS). There are some crucial as well as some minor advantages:

- CET tendering is a triggering a search process (i.e., search for projects),
- CET tenders are open for proposals and ideas, so CET incentivises a creative search for solutions,
- CET identifies the cheapest option to save energy (in a given framework/segment),
- CET covers even the search and transaction costs of a given measure, especially when the money is spent for multi-project/programme schemes[11],
- CSS subsidises only a defined share of the investment costs (20 to 30 %), and while the share of the subsidy in a CET is in

11. This may be the most underestimated advantage compared to a CSS.

the same range, it can be even lower in a CET. Classical Soft Loans (CSL) require the addition of banking credit (cp. KfW programme for energy efficient buildings) which in many cases may appear as an additional barrier for customers.

Open vs. closed tender

Two different options of a tendering system are discussed: An **open tendering scheme –** which basically auctions savings regardless of the concrete measures applied, and a **closed tendering scheme –** which specifies to varying degrees technological or regional solutions (for instance 'replacing 10,000 inefficient circulating pumps").

Closed tenders may also address similar fields of action as that of existing support schemes, but should be implemented in market segments where the level of activity is not yet sufficient. Examples may include: replacement of pumps in public swimming pools or selected industries, replacement of night storage electric heaters, energy optimization in laundries, optimization of elevators, and waste heat power generation in industry, to give just some examples.

However, closed tenders depend on the top-down knowledge of the persons designing the programs, whereas open tenders, call for increased flexibility and search for untapped potential for efficiency from 'inside the market". Innovative efficiency measures, as well as new groups of actors, can contribute their own suggestions, which are then taken into account considering the cost and degree of innovation. Toward that end, transparent calculation procedures (for the calculation of the kWh saved) are vital, especially for larger programs because that determines which of the saving potentials can be economically addressed and which cannot.

In the German design, the main focus in the first period will be on open tenders. The overall annual budget will increase from 15 Mio. Euro in 2015 to 50 and 150 Mio. in 2016 and 2018, respectively. A simultaneous monitoring process will evaluate whether important market segments are missing and whether/where closed tenders should be implemented complementarily.

Additionality vs. free rider

From a macroeconomics point of view, new state funded support schemes (including the CET) should be designed for a maximum additional impact, with respect to new energy efficiency activities being implemented. As this is a rather theoretical requirement, this is to be discussed with respect to already existing instruments, especially with minimum efficiency performance standards for appliances, technical equipment and buildings. Various approaches are possible within a CET to achieve a certain degree of additionality and avoid free rider effects as much as possible. For instance:

- Certain design restrictions can limit the scope of the program to certain market segments, where additionality is clearer and where there are no other political instruments. For instance, simple replacement of lighting by LED lighting could be excluded because it takes place anyway with a high profitability or may be subject to future Ecodesign requirements. In contrast, a more complex lighting optimization, including optimised control or daylight use could be admitted to the program. Other regulations could require the use of only the most efficient appliances, for instance A+++ fridges, etc.
- Further conditions could lead to an exclusion of very cost efficient measures. For instance, in the project funding of Prokilowatt, projects that have a payback time of less than 5 years are excluded. This is because they are assumed to be attractive anyways, despite the project.. The maximum allowed financial support also depends on the Pay Back Time (PBT) of the efficiency measure, with a maximum of 20 % for projects with a 5 year PBT and 40 % for projects with a PBT > 9 years. It is obvious that such conditions on the one hand due lead to more additionality, however, they also demonstrate one inherent contradiction: The search for the cheapest saving measures also leads to the most free rider effects (Prokilowatt 2013). A balanced approach is therefore necessary.
- In addition, parallel to the Clean Development Mechanism, a 'proof of additionality' could be demanded. This would be to prove that a structural additionality program would not have been implemented otherwise without the financial support. In Prokilowatt, for instance, the applicant must prove that the program has not been started, that no legal obligations exist which would mandate the efficiency requirement anyway, and that the program would not be realised without financial support due to other barriers. *[BfE 2013]*

The German pathway, with respect to additionality, will have to be defined in more detail in the coming months (status: February 2015). The above approaches each have their respective advantages and disadvantages. Depending on the calculation procedure, for instance, the PBT can be 'tuned" such that it fits into the CET.

A staged procedure might be adequate: In the initial phase, requirements should not be too strict to allow for adequate activity in the program. At this stage, a combination of the requirements above may be useful. After a first year evaluation, the additionality should be a major evaluation criterion for the further development of the program.

Conclusion

During the last ten years, Art. 6 ESD and Art. 7 EED have increased the pressure on Member States (MS) to establish an effective EES. Some MS chose to impose an EEO on energy companies, which was partly connected to a 'White Certificate' trading scheme. For a long time, there was no (politically) viable and visible solution for an EEO in Germany. Largely, this was because of the quantity and heterogenity of the 'energy companies'. There was either no legally viable solution for an EEF, in part because of the remaining issues with respect to the financial constitution. Most of all, there was no political solution to deal with increasing energy prices and the loss of acceptance for another fee.

A period of political restraint ensued, due to the constant struggle over policy competences between the BMWi and the BMU. The debate would not have come to a solution at the governmental level, if there would have not been an ongoing debate about the best viable system. This debate having been mostly pushed by NGOs and the newly founded Industrial As-

sociation for Energy Efficiency (DENEFF). DENEFF and some others raised the idea of an EET, and placed the idea on the table that a tender could solve the problem of the missing agent. After the elections and reorganisation of the German government in 2013, the reorganised BMWi took on the idea of an EET and transformed it into a CET, leaving out the element of an energy efficiency levy as remuneration of the system.

CET has become a prominent part of the National Action Plan for Energy Efficiency (NAPE) having been adopted by the German cabinet on the 3 December 2014. The main element will be a competitive tender, without raising another levy on energy tariffs. There still remain basic design elements which have to be discussed:

- open vs. closed tender
- free rider vs. additionality
- activating the market.

The German government has indicated that the CET will be the object of further design. Further decisions on the design can be expected until June 2015. The authors of this paper and their institutions are part of the ongoing debate and will report more on the most recent outcomes.

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