

Introduction to Panel 1

Policies and programmes

Panel leader: **Barbara Schlomann**
Fraunhofer ISI
Germany
barbara.schlomann@isi.fraunhofer.de

Panel leader: **Lea Gynther**
Motiva Oy
Finland
lea.gynther@motiva.fi

Note: this summary includes the presentation made at the final plenary by the panel leaders (attached)

In order to achieve the energy efficiency and energy savings targets, which have been set for the European Union and many countries inside and outside Europe, all energy consumption sectors have to make contributions, also the industrial sector. The energy saving potential in order to reach these targets is already there. But which policies and programmes are the most suitable to tap this potential? This is the central question which we raised in Panel 1 and seek to answer.

While many policies and measures in the European Union are implemented in the context of the Energy Efficiency Directive (EED), there was a strong focus on national initiatives in this panel. Many of the presentations also took us on a trip around the globe to countries like Australia, Taiwan, Turkey and the US. A wide range of different types of programmes was presented including their initial conditions, strategies, implementation and outcomes. We started with long-term views on energy efficiency policies and the role of market oriented instruments. One session was composed of papers and presentations which analyse international trends and propose solutions. We then continued with economic aspects, monitoring and evaluation, and tailoring of energy efficiency measures for target groups keeping in mind the variety of needs of industrial operators. One session was specifically dedicated to policies over the world.

Role of market-oriented instruments

The Swiss Competitive Tenders instrument has been running for six years. Peter Radgen et al. (1-036-16, paper) have analysed the results of the calls in regards to technologies, type of applicants, specific costs of energy savings as well as the differences between what has been stated in the application and what was actually achieved.

EED calls for introduction of energy efficiency obligations while leaving room for alternative measures. Two presentations discuss white certificates, however, going beyond mere technical description of the mechanism. Dario Di Santo et al. (1-141-16, paper) takes us through the changes in the Italian scheme where a progressive shift is observed from the civil sector – where savings are based on deemed savings – to the industrial sector where savings need to be demonstrated with tailored metering.

Mathieu Bordigoni et al. (1-006-16, paper) have conducted a study aiming to predict white certificate flows in industry and services by modelling the effects of their main drivers over time. The results confirm the significant role of marketing information but, counter-intuitively, put incentives in a secondary role.

The German Ministry of Economics and Energy has launched a pilot scheme for innovative IT-based solutions to save energy. It supports companies which want to test IT-based continuous energy monitoring at clients' premises to provide a new impetus for smart energy efficiency services (Michael Blohm, 1-073-16, extended abstract).

Long-term views on energy efficiency policies

Germany has set an ambitious long-term greenhouse gas mitigation target which is discussed in two presentations. Tobias Fleiter et al. (1-019-16, paper) provide a scenario analysis on energy efficiency policy gaps in reaching the greenhouse gas reduction targets of Germany, concluding that a step up in ambition level of policies will be needed. Oliver Lösch et al. (1-069-16, extended abstract) confirm the need for further efforts. In their presentation, they stress the fact that the im-

plementation of suitable measures in industry to achieve the long-term targets is the real challenge.

Alongside with international and national targets, it is important that individual operators establish targets as part of their energy management processes. Nate Aden (1-062-16, paper) discusses development of science-based targets that align companies with the global 2-degree pathway established in the 2015 Paris Agreement.

An example to address the policy gap is given by Jonathan Jutsen (1-010-16, extended abstract) who presents an Australian forthcoming initiative for a voluntary agreement encouraging leading companies to commit to doubling their energy productivity from 2010 to 2030. Emphasising productivity can be a way to overcome communication barriers when mere energy efficiency is not perceived a driver strong enough in the current political atmosphere.

Economics of energy efficiency

However, the achievement of long-term targets cannot be regarded without taking into account the economic efficiency. This is especially true for investment decisions in companies. For that reason, cost-efficiency analysis is a central element of policy evaluation. Alisa Yushchenko & Martin Patel (1-067-16, extended abstract) analyse cost-effectiveness of a Swiss programme and propose a new approach to better evaluate the cost-effectiveness from the perspective of various stakeholders.

Regional variation in price of GHG emissions raises concern on carbon leakage. Karsten Neuhoff et al. (1-075-16, extended abstract) discuss a novel approach, Inclusion of Consumption (IoC), in which the consumption of carbon-intensive commodities is included in emissions trading. A charge would be imposed on the consumption of these commodities within one territory irrespective of their origin.

In Europe, electricity prices of energy-intensive industries differ significantly across countries as well as across sectors, e.g., due to differences in tax levels. Based on a series of studies on electricity costs of the energy-intensive industry, Jean-Martin Rhiemeier et al. (1-071-16, extended abstract) show to what extent renewable energy policies and, in particular, energy efficiency policies and programmes affect industry's electricity prices in various countries.

Finally, Ruben Kubiak (1-077-016, paper) looks at the intertemporal decision making of economic actors with regard to energy efficiency investments. He gives a broad overview of empirical discount rates for individuals as well as companies and their implications for the effective design of energy efficiency policies. Organisations like individuals suffer of bounded rationality driving discount rates upwards and leading to non-investment. One solution is to turn communications the other way around compared to the normal: economic gains of energy efficiency investments should be presented as losses from not doing them and the expected returns should be presented before the required costs.

International overview

One paper highlights best practices and provides benchmarks by which the progress of individual countries toward improving their industrial energy efficiency can be compared. Meegan

Kelly (1-037-16, paper) provides a comparison of approaches to energy efficiency in the industrial sectors of the world's largest 23 economies.

The European Commission calls for fundamental rethinking of energy efficiency and treating it as an energy source in its own. Hans Nilsson (1-147-16, paper) discusses a number of approaches taking into account that change requires a break from the simplistic traditional view that the market automatically adjusts in response to prices. One of them is taking better into account the multiple benefits of energy efficiency. Eva Hoos et al. (1-166-16, extended abstract) discuss the same challenges concluding that integration of regulatory and market based mechanisms are imminent. Markets need to function well, there needs to be access to financing, innovation needs to be facilitated and industry should be better engaged in dialogue and sharing of best practises.

Back at the national level, Claire Range et al. (1-119-16, extended abstract) provide insights to the development of the market for energy efficiency services in Germany. Energy services or the 'energy efficiency sector' is not a sub-sector to be easily defined. Yet, it is gaining in size and significance driven by policies as well as user needs. The role of digitisation is significant aggravates the need for skilled labour.

Monitoring and evaluation

This subsection focuses on evaluation results of policies and programmes, new approaches to monitoring and evaluation and data issues.

Barbara Govaert et al. (1-016-16, paper) compare three different energy audit programmes implemented in Flanders, a region of Belgium. They show that the type of audit programme clearly influences how challenging the energy efficiency measures identified in the audit are. Afterwards, Marina Santoro et al. (1-112-16, extended abstract) evaluate the energy efficiency improvements in the Swiss industry as a result of the Swiss Federal policy on CO₂ emission reduction based on target agreements. They show that sector-specific characteristics can have a significant influence on the success of these policies.

Collecting data on energy efficiency improvements from individual operators can be a resource intensive exercise. Ethan Rogers (1-009-16, paper) shows how information and communications technologies can automate and improve the evaluation, measurement and verification of energy savings.

Energy statistics do not contain information on industrial energy use by end-uses and particularly not by temperature levels of thermal energy. Matthias Rehfeldt et al. (1-031-16, paper) approach the problem by providing a bottom-up estimation of heating and cooling demand in the European industry. More detailed data can contribute to policy design by providing a deeper insight in the requirements and particularities of industrial heat demand.

Tailoring energy efficiency policies to target groups

While some policies, such as minimum energy performance standards, effectively influence all operators, there is typically a need to tailor policies and measures to address the specific needs and barriers in various target groups. Industry is not a homogenous target group featuring various sub-sectors, differ-

ent sizes, various patterns of energy use and sometimes indigenous energy production.

To support the implementation of energy efficiency measures by policies, a deeper understanding of the barriers affecting different kinds of companies is necessary. Katharina Wohlfarth et al. (1-116-16, paper) focus on tailoring energy-efficiency options to specific target groups by considering their individual barriers and most appropriate measures.

While the relative energy savings potential is larger in SMEs, they do not implement measures as commonly as larger industries. Albin Carlén et al. (1-097-16, paper) explain how information barriers have been addressed in Sweden by establishing energy efficiency networks for SMEs to boost the exploitation of the energy efficiency potential by joining forces.

TIPCHECK, presented by Andreas Gürtler & Neus Barres-Badia (1-039-16, extended abstract), is an example of a system-specific energy audit. This is an audit model for improving insulation. It has proven very effective; with pay-back times typically at 1–2 years, over 60 % of the clients have embarked to implement all proposed measures shortly after the audit. The audit is operating well under market conditions with not much need for support from policy instruments.

International perspectives

Energy efficiency is a way to address energy security. Tze-Chin Pan & Chien-Ming Lee (1-035-16, paper) discuss the industry experience and the impact of the mandatory electricity saving target for large users which has been established in Taiwan to avoid risks of power shortage.

While industry networking is discussed in a parallel policy panel, in Turkey such an approach was taken a step further by introducing so-called “Organised Industrial Zones” (OIZs) to promote good energy management. Kubilay Kavut & Rod Janssen (1-026-16, paper) bring us closer to this interesting concept to find the appropriate solutions to energy management practices.

Conclusions

The panel covered practically all types of policies and measures except regulation as such. However, the need for a sound regulatory framework was confirmed along with well-functioning markets.

Various market barriers for energy efficiency are still high and the presentations proposed numerous ways to overcome them. The importance of taking into account multiple benefits, access to financing, energy services and sharing of information were mentioned by several speakers.

At the policy level, approaches were proposed for strengthening all steps of the policy cycle from target setting to monitoring and evaluation. To sum up, the following key elements for the design of a more effective energy efficiency policy for the industrial sector can be identified from panel 1:

- Setting of ambitious energy efficiency targets as an important prerequisite for effective policies.
- Regular monitoring of the progress toward the targets using suitable monitoring methods and based on precise definitions of energy efficiency measuring.
- Sufficient availability of necessary statistical and measure-related data, which can be improved by new type of analysis and information collection tools facilitated by digitalization.
- Design of suitable bundles of policy instruments, which simultaneously reduce major obstacles.
- Consideration of all relevant actors and targets groups in the product cycle of energy efficiency and making use of the specific motivations of these groups.
- Use of suitable ex-post and ex-ante evaluation methods both for individual instruments (mainly based on bottom-up or econometric methods) and bundles of policies (e.g. modelling approaches can be used to analyse future impact of policy packages).

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Panel 1: Policies and Measures

Wide range of topics throughout the policy cycle

- All the steps from target setting to monitoring and evaluation including view to cost-effectiveness
- Tailoring measures to target groups
- EU policy packages
- Data collection to support policy
- Modelling of policies and measures
- International comparisons and scoreboards

Numerous types of policies and measures

- Emissions trading
- Voluntary agreements
- Economic measures
- Competitive tenders
- Energy management
- Energy efficiency networks
- Energy audits along with a wider perspective to energy services / energy efficiency industry
- But not much on regulatory measures apart from those related to white certificates

Some conclusions (1/2)

- There is a need for a broader perspective on resource efficiency to reach ambitious targets: not energy efficiency alone but together with material efficiency, RES, etc.
- Tackling non-investment due to bounded rationality leading to high individual interest rates
 - Recognising multiple benefits (including productivity)
 - Energy services

Some conclusions (2/2)

- There is a lot of interest in international comparisons but it is important to use good metrics, thoroughly understand the results and factors behind, and to have good methods for data collection
 - In data collection we discussed several methods including direct measurement by IT, modelling, role of control groups etc.
- There was a degree of trust in good cost-effective measures/tools being adopted on market basis without need for much policy