

Trends and lessons learned in industrial energy and climate policies

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Addressing barriers through policies

Energy efficiency is widely considered to be an important, and often low-cost, option to reduce greenhouse gas (GHG) emissions. It also offers many other advantages, such as reducing energy costs and improving competitiveness, improving access to energy and security of supply, reducing reliance on imported energy sources and reducing other, more local, air pollutants. This makes improving energy efficiency in many cases a no regret strategy, especially in developing countries, where such issues can hinder development. Industry accounts for about a third of the world's final energy consumption and substantial energy efficiency improvement potentials still exist within industry. However, various barriers to energy efficiency improvements exist, preventing companies from changing their practice and making the necessary investments. Therefore, industrial energy efficiency policies have an important role to play to address the various issues mentioned above and to remove or reduce barriers to energy efficiency improvements.

In this context, it is important to realize that a multitude of barriers to (industrial) energy efficiency improvement (or GHG emission reductions) exists. This means an effective policy approach requires multiple policies that address the different barriers effectively and are mutually reinforcing. This requires a complete and consistent policy framework, with a balance across different types of policy levels, distinguishing between policies that define the required effort (e.g. a quantitative target), supporting policies that help deliver that effort (e.g. subsidies) and technical guidance that helps define and establish the implementation framework (see also the Text Box below for an illustration of this categorisation as championed by IIP).

The supporting policies increase the effectiveness of the effort-defining policies by alleviating specific fundamental barriers to the implementation of energy efficiency measures, including financial, technical, information and/or research and development barriers. These supporting policies must be consistent with the direction of the effort-defining policies.

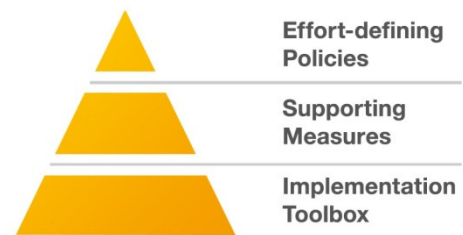
Launch of the Industrial Efficiency Policy Database

The Institute for Industrial Productivity (IIP) has just released an interactive and easily accessible database of industrial energy efficiency and greenhouse gas mitigation policies. SQ Consult worked with IIP to design and populate the database with six countries and is working on six more.

The [Industrial Efficiency Policy Database](#) goes beyond just listing policies and instead, offers a layered analysis according to a “Policy Pyramid” that connects various policies, measures and implementation tools together so that policymakers and others can best understand the total policy package in and across various countries.

The IIP Policy Pyramid distinguishes among three levels of policy making: **Effort-defining policies**; **Supporting measures** (or complementary policies, either carrots or sticks) that help deliver that effort and address specific barriers identified; and tools, guidelines or mechanisms that help define and establish the policy **implementation toolbox**.

The IIP Policy Pyramid



By clicking on each policy in a country’s pyramid, you can access key policy information such as whether it is mandatory or voluntary, its objectives and date of introduction, how it is linked to other policies, and useful external literature on the policy.

The Database includes both developed and developing countries. The database currently includes the policies of China, India, Japan, the Netherlands, the UK and the US so far, and more are coming soon.

The Ten Key Messages Report

A research report based on the [Industrial Efficiency Policy Database](#) analyses the policy packages of the initial six countries in the Database and provides [Ten Key Messages for Effective Policy Packages](#) in industrial energy efficiency and GHG mitigation. To explore whether policy packages have provided the necessary impetus to achieve ambitious improvements in energy savings and emissions reductions in industry, the Institute for Industrial Productivity uses the “policy pyramid” concept to explore policy interrelations, consistency of policy objectives and approaches, and completeness of the package in terms of whether all barriers have been addressed and encourage action.

You can download the report *Ten Key Messages for Effective Policy Packages* [here](#) and browse the database at <http://iepd.iipnetwork.org/>

About the Institute for Industrial Productivity

The [Institute for Industrial Productivity](#) is a non-profit organization based in China, India, the United States and the European Union. It provides companies and governments with the best practices and expertise needed to reduce energy costs by advancing energy efficiency. Its global team of staff and independent experts brings decades of experience in technology, policy and financing, offering our partners the most integrated service package available anywhere in the world.

Countries use strongly different policy mixes

An analysis of industrial energy and climate policies in 6 countries shows large differences in both the emphasis of effort-defining policies versus supporting measures and technical guidance and the mix of policy instruments used. The US has a strong emphasis on supporting policies, with very few effort-defining policies at the federal level.¹ China on the other hand has a relatively strong focus on central command-and-control strategies, but with various financial support mechanisms. India

¹ State governments and utilities in the U.S. can have strong industry energy efficiency programmes, but these are not covered here.

currently has a very limited effort-defining central policy in place, but a new large policy is being introduced (the Perform, Achieve and Trade – PAT – scheme). Japan relies on facilitating voluntary action as central policy supported by complementary policies, but also new types of policies with a stronger government role are under development. In the Netherlands and the UK, a relatively balanced package of effort-defining and supporting policies exists, with a relatively strong emphasis on negotiated agreements (at least until the European Union Emissions Trading Scheme was implemented).

The reasons for these differences are diverse. They include various cultural aspects, such as the degree of individuality in society, the view on the role of government, the inclination to solve problems jointly, how uncertainty is dealt with, and whether society has a long-term orientation. In addition, political views and power positions in the area of energy and climate change play a role, as well as the strength of industry as a political force. These aspects can be especially relevant when looking at the balance between effort-defining and supporting policies.

When looking at the selection of the type of policy instruments and the ratio of incentives to penalties used, a number of additional explaining factors can be identified. These include:

- The stage of development of a country in terms of the knowledge levels and data infrastructure regarding energy efficiency levels and improvement potentials, the maturity of and growth rates in industry, the acceptability of cap-and-trade systems and exposure to market mechanisms;
- Economic structure, i.e. the importance of industry in general and heavy industry in particular and the degree of international competition that exists.
- The position in the “policy process”: how long has there already been structured attention for energy efficiency improvement and emission reduction? How much more potential for improvements exist?

Trends and lessons learned from a 6-country analysis

In terms of individual policy instruments, the following observations can be made:

- Complex policy instruments are in development in China (ESCO-based financing) and India (white certificates in the PAT scheme), emphasising a general trend towards more market-based instruments.
- The concept of benchmarking, where a target is defined relative to the performance of competitors (either nationally or internationally) – as introduced in the Dutch Benchmarking agreement - is increasingly used in policy making, including in India and Japan.
- Regulations are only used to a very limited extent to stimulate energy efficiency and emission reductions in industry, with the exception of efficiency standards for cross-cutting equipment (pumps, motors & drives, etc) and obligations related to the monitoring of energy use and/or emissions or the implementation of energy management systems. China is the exception among the countries analysed, also using minimum efficiency standards for industrial processes.
- The value of negotiated agreements depends on where in the policy process a country/sector is (how much policy attention/past effort and if a significant amount of “low hanging fruit” still exists), suggesting stronger policies are needed to drive further changes in countries where much action has already been taken in the past.

- The amount of penalties and incentives used can vary strongly between countries, even if the same policy instrument is used. An example is the use of voluntary/negotiated agreements in the UK and the Netherlands, where the former uses more sticks to stimulate participants to meet the agreement targets than the latter.
- Some policy instruments in China could be of interest to other countries as well, such as the minimum efficiency standards for industry and differentiated electricity pricing on the basis of energy intensity.

The six countries analysed here show a significant difference in policy culture, which is one of the determinants of the preference for a specific policy instrument, as well as a determinant of whether a policy can be successful. These differences need to be considered in identifying best practices for adoption in other countries. It is also important to take the cultural dimension into account in ex-ante policy evaluation. This does not mean that certain types of instruments cannot be used in a specific culture, however, certain characteristics provisions may need to be adjusted to improve the chances of success in that culture.

A system to monitor the progress of energy efficiency is in place in most countries, but the provisions for independent oversight and the role of governments vary strongly. In Japan reporting is mostly done unilaterally. Independent verification is not required in many countries, making it hard to provide a solid assessment of the actual energy efficiency improvements achieved. Enforcement is an issue in some countries and consequences of non-compliance can be limited. Results are mostly published at a sectoral level, not a company level (with the exception of the EU ETS) and in about half of the countries analysed the results are not used to adjust policy objectives or instruments.

Conclusion: finding the right balance is key for an effective policy mix

In general, it can be said that it is important to have a mix of effort-defining policies and supporting policies for effective policy-making. Equally, a balance across penalties and incentives contributes to an effective and efficient policy mix. Countries that predominantly focus on supporting policies and incentives often do not establish sufficient drive among industry to deliver substantial energy efficiency improvements and emission reductions. Countries that employ effort-defining policies, but lack sufficient supporting policies or implementation tool boxes, have a high risk that the established targets will not be met.

In general, more attention to monitoring, reporting, verification, compliance and enforcement, and the role of independent and/or government oversight is needed to make sure set policy targets are met and that policy efforts (and funding) are spent effectively and efficiently. Here, also the use of monitoring results (at sector level) in the evaluation and adjustment of the policy objective and policy instrument needs more attention.