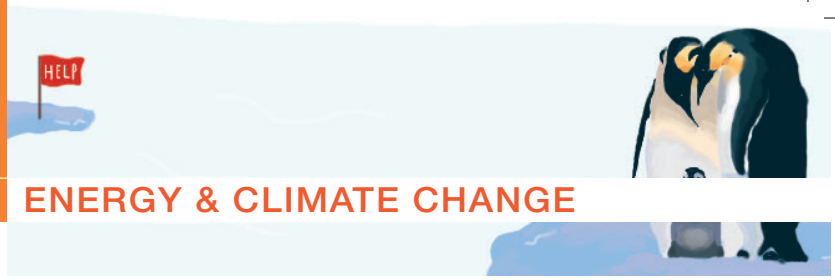

Governance and communication for energy efficiency

Energy efficiency has multiple benefits. It usually is a win-win option for all aspects of sustainability – environment, social objectives, and economy. We need to evaluate and communicate these multiple benefits – to citizens, companies, and policy-makers. Due to strong market barriers, effective governance and policy packages for energy efficiency are needed. Evaluation shows effective policy can achieve around 2% per year of additional energy savings.

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Introduction

Energy efficiency provides multiple benefits. However, most citizens, managers, and policy-makers are unaware of these. This is just one of the many barriers, which are the rationale for policy support to markets in order to harness the benefits. This article therefore presents some evidence on the multiple benefits; provides a methodology to develop appropriate policy packages and governance to overcome the barriers; highlights a few policy packages but also research needs; and draws a number of conclusions.

Communicating the multiple benefits of energy efficiency

Energy efficiency does not only save energy and costs for citizens, companies, and nations. It is also the fastest, largest, and usually profitable way to reduce greenhouse emissions, and therefore is crucial for achieving a low-carbon society. But it also has many more benefits.

Analysis for the Global Energy Assessment [1] found that worldwide energy consumption for space heating and cooling may grow by 33% from 2005 to 2050 under current, suboptimal policies. Harnessing the full potential, in contrast, could outperform growth in floor space and reduce that consumption by 46% in 2050 compared to 2005 consumption.

IEA [2] finds that for large-scale energy efficiency programmes:

- the GDP growth rate can be + 0.25 to 1.1% per year higher;
- employment will grow by 8 to 27 job years per EUR 1 million invested;
- energy efficiency in buildings in the EU could bring revenues and savings of EUR 67 to 128 billion to public budgets;
- health and well-being impacts may quadruple economic savings compared to energy cost savings alone;

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- productivity improvements may be worth to companies 2.5 times the energy cost savings alone.

Analysis by the Wuppertal Institute found that Thailand could limit the share of energy import costs in GDP to 20% through energy efficiency (baseline projection: almost 30%) [3].

Communicating these and other benefits in a targeted way to citizens, companies, and policy-makers could significantly boost awareness, interest, and action towards energy efficiency. However, while the literature and tools for calculating energy savings, greenhouse gas reductions, and net economic benefits is abundant, much less is known about the other benefits. There is, therefore, a pressing need for more research on benefits, such as employment, health, and productivity in all sectors.

Overcoming the barriers to energy efficiency through governance and policy packages

Lack of awareness on the multiple benefits of energy efficiency is just one reason why it all too often will not be harnessed. There are many other market barriers and failures. First of all, energy efficiency is not just a handful of technologies like for conventional or renewable power plants. It is embedded in hundreds of types of systems, equipment, and components, and virtually in all our decisions for investment and use of equipment. Oversight is thus easily lost, financial gains may often be small, and lack of priority the consequence. In many cases, funds for the often higher up-front investment in cost-effective energy efficiency may lack. And developers and buyers, or landlords and tenants have split incentives over the costs and benefits of energy efficiency.

Policy and governance are therefore needed to overcome these and other barriers. The goal is to make energy efficiency easy, attractive, and eventually the default for all market actors. Because of the many barriers, this will require policy packages with more information, practical guidance, regulation, and financing support ("the sticks, the carrots, and the tambourines"). For developing such sector- and technology-specific policy packages for buildings and appliances, the Wuppertal Institute has used a four-step analysis in the bigEE project.

It combines (1) a three-step analysis of the policy instruments needed to tackle the barriers, but also to strengthen market-inherent incentives for each of the actors in a sector needed to make an energy efficiency action (such as insulation of an existing building or the purchase of an energy-efficient appliance) happen with (2) an assessment of the policy instruments that countries with an advanced and effective energy efficiency policy have combined in their policy packages [4].

Figure 1 presents the overview of the types of policy instruments in the package. While the lower part is sector-specific, the upper part is the overarching governance framework for energy efficiency. It includes (1) the energy saving and greenhouse gas reduction targets and policy roadmaps, (2) the infrastructure and funding for the sector-specific policies, such as energy agencies, energy efficiency funds, and energy saving obligations for energy companies, and (3) energy taxation, emissions trading, and the reform of energy subsidies that will eliminate distortions in energy prices, which are an economic barrier to energy efficiency.

In Figure 2, the specific policy instruments for energy-efficient renovation of existing buildings are grouped according to their function in the two-dimensional optimisation problem: (1) Achieving very energy-efficient and comprehensive, "deep" retrofits whenever a building is renovated, and (2) increasing the rate at which buildings undergo such "deep" energetic renovations [5].

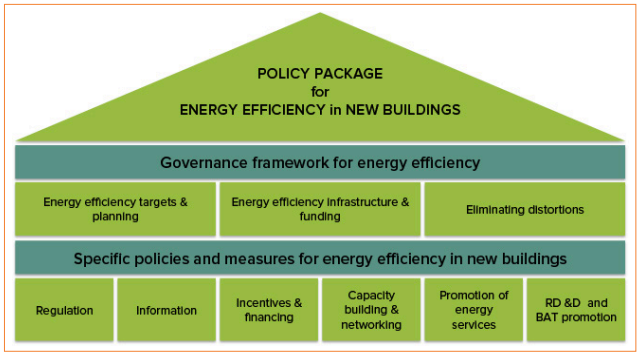

FIGURE 1 The bigEE recommended policy package for energy efficiency in new buildings
Source: www.bigee.net

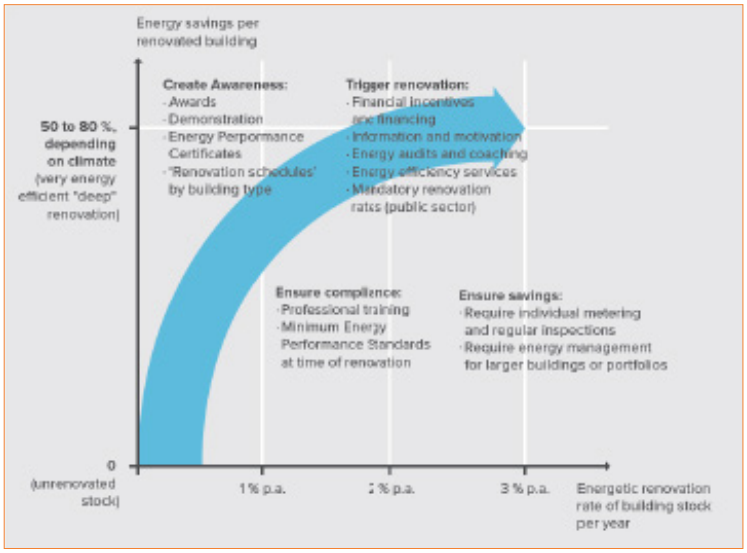

FIGURE 2 The bigEE recommended specific policies and measures for energy efficiency in the renovation of existing buildings
Source: www.bigee.net

On bigee.net (http://www.bigee.net/en/policy/guide/buildings/package_examples/), detailed information can be found on the policy packages of five advanced countries, which have all implemented packages very similar to the one recommended by the bigEE project.
What is the status of research on such sectoral policy packages in general, and where is more research needed?

- New buildings: package is well developed.
- Energy-efficient renovation of buildings: developed but further proof needed.
- Appliances: well developed.
- Industry: further analysis needed.
- Transport (avoid – shift – improve): further analysis needed.
- Integration of energy efficiency and sufficiency: research at the initial stage only.
- Integration of energy and material efficiency: research at the initial stage only.

Conclusions

Energy efficiency has multiple benefits. It usually is a win-win option for all aspects of sustainability – environment, social objectives, and economy. It is also crucial for achieving a low-carbon society.
Therefore, we need much more evaluation and communication of these multiple benefits – to citizens, companies, and policy-makers.
Even then, energy efficiency will still only partially happen by itself, because of the manifold and strong market barriers.
Governance and policy packages for energy efficiency are therefore needed to tap the full potential and develop energy efficiency markets. More research is needed to develop our understanding on effective policy packages and how to better integrate citizens and companies into energy efficiency governance.
Evaluation shows effective policy can achieve around 2% per year of additional energy savings. We need more policy evaluation too, in order to know and communicate these benefits.

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