



# A summary of the ‘Assessment of policy instruments for reducing Greenhouse gas emissions from buildings’ report

## Context

Energy use in buildings has rapidly become a key issue in meeting the climate change challenge. The buildings sector contributes about a third of all energy related CO<sub>2</sub> emissions worldwide (Price *et al.* 2006). Research conducted for the Intergovernmental Panel on Climate Change (IPCC 2007) estimated that 30% of CO<sub>2</sub> emissions in buildings projected for 2020 could be avoided.

The aim of this report is to provide an assessment of the instruments available for improving energy efficiency. This will help governments in formulating policy in the building sector to realize greenhouse gas emission reductions worldwide.

Tapping into the potential in the buildings sector will contribute considerably to solving the global climate change problem. Moreover, it will also bring numerous other benefits such as: decreased air-pollution, better health, improved social welfare and energy security.

## What are the report’s finding based upon?

The report draws upon examples from over 50 government officials, research institutes, non-

governmental organizations and energy experts across 40 countries.

In addition, 12 detailed country studies were conducted, mostly by nationals of the respective countries. Over 80 evaluation case studies or review articles of implemented policy instruments served as the basis for the analysis. They cover 52 countries from all inhabited continents.

## What are the barriers to energy efficiency improvements in buildings?

There are six main barriers which hinder energy efficiency improvements. These are: *economic and financial barriers* (e.g. high initial capital costs); *hidden costs and benefits* (e.g. new technologies might not be compatible with existing sockets / improved energy efficiency results in improved air quality which brings unseen health benefits); *market failures* (e.g. utilities suppliers are not very concerned with reducing clients’ energy use); *behavioural and organisational constraints* (e.g. subsidies artificially lower energy prices which removes an incentive to adopt energy efficient measures); *political and structural barriers* (e.g. lack of government interest in energy efficiency), *information barriers* (e.g. lack of information about the possibilities).

## What are the different policy instruments?

More than 30 policy instruments are currently in use, 20 of which are covered in detail in the full report. These instruments fall into 5 categories:

Control and regulatory instruments		Economic and market based instruments	Fiscal instruments and incentives	Support, information and voluntary action
Normative	Informative			
<ul style="list-style-type: none"> <li>Appliance standards</li> <li>Building codes</li> <li>Procurement regulations</li> <li>Energy efficiency obligations and quotas</li> </ul>	<ul style="list-style-type: none"> <li>Mandatory audits</li> <li>Utility demand-side management programs</li> <li>Mandatory labelling and certification programs</li> </ul>	<ul style="list-style-type: none"> <li>Energy performance contracting</li> <li>Cooperative procurement</li> <li>Energy efficiency certificate schemes</li> <li>Kyoto flexibility mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>Taxation</li> <li>Tax exemptions / reductions</li> <li>Public benefit charges</li> <li>Capital subsidies, grants and subsidised loans</li> </ul>	<ul style="list-style-type: none"> <li>Voluntary certification and labelling</li> <li>Voluntary and negotiated agreements</li> <li>Public leadership programs</li> <li>Awareness raising, information campaigns</li> <li>Billing and disclosure programs</li> </ul>

Policy instruments were accessed for effectiveness of achieving their goals, cost effectiveness and success factors, based on qualitative evidence.

## How do the different types of policy instrument compare?

Many of the instruments analysed can achieve high savings at low or negative costs when they are adapted to the local situation and correctly implemented.

When comparing the four different categories of measures, case studies indicate that *regulatory and control measures* are probably the most effective and the most cost-effective category especially in developed countries.

The effectiveness of *economic instruments* varies, but some, such as energy performance contracting (EPC) and cooperative procurement are promising. However, there is as yet not sufficient evidence about these new instruments to derive solid conclusions.

*Fiscal instruments* vary considerably in their effectiveness. In general, tax exemptions are the most effective tool in the category of *fiscal instruments*, while subsidies, grants and rebates can also achieve high savings, but are usually costly to society.

*Voluntary instruments* vary in their effectiveness. Though they have often failed to reach their goals they can be a good starting point for countries which are just introducing building energy efficiency policies or when mandatory measures are not possible.

The greatest emission reductions resulted from tax exemptions (investment tax credits) in the USA. Overall, appliance standards, building codes, labelling, utility demand-side management (DSM) programs and tax exemptions achieved the highest savings.

## Combinations of policy instruments

Due to the large number of barriers, a single instrument will rarely reach ambitious energy saving targets, and thus combinations of instruments are necessary for progressive results. Packages of instruments often achieve synergistic effects. Those which have shown to be especially effective in reducing emissions are those which combine 'sticks' (regulations), 'carrots' (incentives) and 'tambourines' (measures to attract attention such as information or public leadership programs).

Developing countries in particular require technical and financial assistance, demonstration and information programs and training.

Other factors such as institutionalization of energy efficiency within the governmental structure, regular monitoring and evaluation and adaptation to local circumstances are relevant for the success of policies in all countries.

## How should the correct policy instruments be selected?

Choosing the appropriate policy instruments requires a thorough assessment of the different measures and a profound understanding of the local situation and policy environment.

## What are the main recommendations for policymakers?

- The case studies used indicate that many of the policy instruments evaluated can achieve high savings at low or even negative costs for society.
- Regulatory and control instruments (e.g. building codes and appliance standards) were the most effective and cost-effective category of instruments. Therefore, such measures are recommended for all countries. However, sufficient resources need to be dedicated to their implementation and enforcement, as well as regular updating of the thresholds to follow market dynamics.
- Long-term success can be delivered through regular evaluation and monitoring, then applying lessons learned as soon as possible.
- Long-term commitment of stakeholders and funding agencies is crucial.
- Adaptation to the local situation is a success factor for most instruments.
- In development countries an integrated policy framework combining regulatory instruments, training and information campaigns as well as demonstration projects coupled with fiscal incentives is most likely to effectively reduce greenhouse gas emissions.
- If energy prices reflect real costs a much broader set of efficiency investments becomes profitable than with subsidized prices, therefore, a phase-out or gradual lifting is an important precondition to the success of other energy efficiency policies. In return, the introduction of new energy efficient, but more expensive technologies can be supported through grants, rebates or subsidised loans as well as labelling.
- Financial support allowing easy access to financing and capacity-building is especially important for developing countries.
- Country-specific solutions which taking account of local market structure, culture, climate, traditions and construction styles are more likely to be successful. It is therefore important that the traditional construction know-how is conserved and integrated used to train construction professionals