



International
Energy Agency

A central graphic of a globe with a grid overlay, set against a background of a city skyline at night with light trails. The globe is the focal point, with the city lights creating a sense of global connectivity and energy.

Energy Efficiency Governance

HANDBOOK



International
Energy Agency

www.iea.org/efficiency



International
Energy Agency



European Bank
for Reconstruction and Development

Energy Efficiency Governance

HANDBOOK

Second Edition

INTERNATIONAL ENERGY AGENCY

The International Energy Agency (IEA), an autonomous agency, was established in November 1974. Its mandate is two-fold: to promote energy security amongst its member countries through collective response to physical disruptions in oil supply and to advise member countries on sound energy policy.

The IEA carries out a comprehensive programme of energy co-operation among 28 advanced economies, each of which is obliged to hold oil stocks equivalent to 90 days of its net imports. The Agency aims to:

- Secure member countries' access to reliable and ample supplies of all forms of energy; in particular, through maintaining effective emergency response capabilities in case of oil supply disruptions.
- Promote sustainable energy policies that spur economic growth and environmental protection in a global context – particularly in terms of reducing greenhouse-gas emissions that contribute to climate change.
- Improve transparency of international markets through collection and analysis of energy data.
 - Support global collaboration on energy technology to secure future energy supplies and mitigate their environmental impact, including through improved energy efficiency and development and deployment of low-carbon technologies.
 - Find solutions to global energy challenges through engagement and dialogue with non-member countries, industry, international organisations and other stakeholders.

IEA member countries:

Australia
Austria
Belgium
Canada
Czech Republic
Denmark
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Japan
Korea (Republic of)
Luxembourg
Netherlands
New Zealand
Norway
Poland
Portugal
Slovak Republic
Spain
Sweden
Switzerland
Turkey
United Kingdom
United States



International
Energy Agency

© OECD/IEA, 2010
International Energy Agency
9 rue de la Fédération
75739 Paris Cedex 15, France

Please note that this publication
is subject to specific restrictions
that limit its use and distribution.
The terms and conditions are available
online at www.iea.org/about/copyright.asp

The European Commission
also participates in
the work of the IEA.

Acknowledgements

The International Energy Agency (IEA), with financial support from the European Bank for Reconstruction and Development (EBRD) and the Inter-American Development Bank (IDB), conducted this study on energy efficiency governance.

The IEA Energy Efficiency Governance team consisted of Nigel Jollands, Head of the Energy Efficiency Unit, Grayson Heffner, Senior Energy Efficiency Analyst and lead author, Sara Pasquier, Energy Policy Analyst, and Aurelien Saussay, Energy Efficiency Policy Analyst. Diana Urge-Vorsatz and Naira Harutyunyan of the Central European University and Odon de Buen provided regional contributions from the Eastern European and Latin America-Caribbean regions. Dilip Limaye provided valuable comments and inputs during the final preparation of this document.

Particular thanks go to Terry McCallion, Andreas Biermann and Fani Kallianou of the European Bank for Reconstruction and Development (EBRD) and Christoph Tagwerker and Claudio Alatorre of the Inter-American Development Bank (IDB) for their kind assistance and support to this effort. We especially thank the EBRD and the Swiss Government for their financial support of this project

A Reference Group of energy efficiency experts from private, public and non-governmental sectors provided suggestions and comments on the research approach and analysis results of this project. Our thanks to Lars Nilsson of Lund University, Aslaug Haga from the Norwegian Federation of Industries, Christian Kornevall, of the World Business Council for Sustainable Development, Ashok Sarkar of the World Bank, David Vincent from the Carbon Trust, and Othmar Schwank for their valuable inputs during the formulation of this study.

Overall supervision was provided by Rick Bradley, Head of the Energy Efficiency and Environment Division and Bo Diczfalusy, Director of the Sustainable Energy Policy and Technology (SPT) Directorate.

We would also like to acknowledge Marilyn Smith and her team for their editorial assistance and Corinne Hayworth and Delphine Grandrieux for their support in the design and layout of this document.

Finally we gratefully acknowledge the hundreds of energy efficiency experts around the world who kindly consented to respond to our surveys and sit with us to be interviewed. This report would not have been possible without their participation.

Table of Contents

Introducing energy efficiency governance	7
The purpose of this handbook	7
What this handbook does not do	8
Where did the information come from for this handbook?	9
Who was this handbook written for?	9
1. Energy efficiency drivers and barriers	10
What drives energy efficiency policy?	10
What are the typical barriers to energy efficiency?	10
What policies are used to address these barriers?	11
Where to find more information	11
Part I. Enabling frameworks	13
2. Energy efficiency laws and decrees	14
Why are laws and decrees important?	14
How to establish an effective legal framework for energy efficiency	14
Where to find more information	15
3. Energy efficiency strategies and action plans	16
Why are energy efficiency strategies and action plans important?	16
How to establish effective energy efficiency strategies and action plans	16
Where to find more information	18
4. Funding energy efficiency programmes	19
Why are energy efficiency funding mechanisms important?	19
How to establish effective funding for energy efficiency	19
Where to find more information	19
Part II. Institutional arrangements	21
5. Structuring energy efficiency agencies	22
What is the issue?	22
How to establish an effective energy efficiency institutional structure	22
Where to find more information	23
6. Resourcing requirements	24
What is important about energy efficiency resource allocations?	24
What is the scale of energy efficiency resourcing in selected countries?	24
Where to find more information	25
7. Role of energy providers in implementing energy efficiency	26
Why are energy providers important to energy efficiency?	26
How to engage energy providers in energy efficiency	26
Where to find more information	28
8. Stakeholder engagement	29
Why is stakeholder engagement important?	29
How to engage stakeholders in energy efficiency	29
Where to find more information	30

9. Public-private sector co-operation	31
Why is public-private sector co-operation important?	31
What models for public-private sector co-operation are available?	31
Where to find more information.....	32
10. International development assistance for energy efficiency	33
Why is international development assistance important?	33
Guidelines for IDA for energy efficiency.....	33
Where to find more information.....	34
Part III: Co-ordination mechanisms	35
11. Governmental co-ordination mechanisms.....	36
Why is governmental co-ordination important?.....	36
How to improve governmental co-ordination	36
Where to find more information.....	38
12. Energy efficiency targets	39
Are energy efficiency targets useful?.....	39
Guidelines for setting energy efficiency targets.....	40
Where to find more information.....	40
13. Evaluation	42
Why is evaluation important?	42
How to establish effective evaluation of energy efficiency policies and programmes.....	43
Where to find more information.....	43
Conclusions	44
References and Reading.....	45

List of Figures

Figure 1 Energy efficiency governance areas and topics.....	8
Figure 2 EE spending and employees per USD billion of GDP (IEA estimates).....	25
Figure 3 Co-ordination mechanisms for addressing horizontal co-ordination.....	37
Figure 4 Co-ordination mechanisms for addressing vertical co-ordination	37

List of Tables

Table 1 Drivers of government energy efficiency policies	10
Table 2 Barriers to energy efficiency.....	10
Table 3 Energy efficiency policies.....	11
Table 4 National energy efficiency strategies and action plans – some examples	18
Table 5 Attributes of EE funding mechanisms.....	20
Table 6 Benefits and disadvantages of stakeholder participation in decision making.....	29
Table 7 Examples of international development assistance on EE governance	34
Table 8 Formulating energy efficiency targets	39
Table 9 Examples of energy efficiency-related savings targets.....	41

Introducing energy efficiency governance

Improved energy efficiency (EE) is a critical response to the pressing climate change, economic development and energy security challenges facing many countries. The pressure is on. Energy efficiency has to deliver benefits, and quickly.

But achieving EE improvements can be difficult. It requires a combination of technology development, market mechanisms and government policies that can influence the actions of millions of energy consumers, from large factories to individual households. Governments, EE stakeholders and the private sector must work together in order to achieve the required scale and timing of energy efficiency improvements needed for sustainable economic development. Much has been written on the role of market forces in delivering energy efficiency, and market-based instruments play a central role in most national energy efficiency policies. However, much less is known about the legal, institutional, and coordination arrangements needed to scale-up energy efficiency. Compiling and presenting what is known about these important issues – together termed energy efficiency governance – is the purpose of this Handbook.

Experience shows that successful EE policy outcomes are more likely if an effective system of EE governance is established (**Box 1**). From the legal frameworks and institutions that develop and implement policy, to the stakeholders who participate in implementation in the market place, EE governance is a complex, and yet critical, part of the energy efficiency delivery system. Time and again, actions to improve energy efficiency have failed to deliver their full potential, in part, because of limited attention to EE governance arrangements.

Box 1 Definition of energy efficiency governance

Energy efficiency governance is the combination of legislative frameworks and funding mechanisms, institutional arrangements, and co-ordination mechanisms, which work together to support implementation of energy efficiency strategies, policies and programmes.

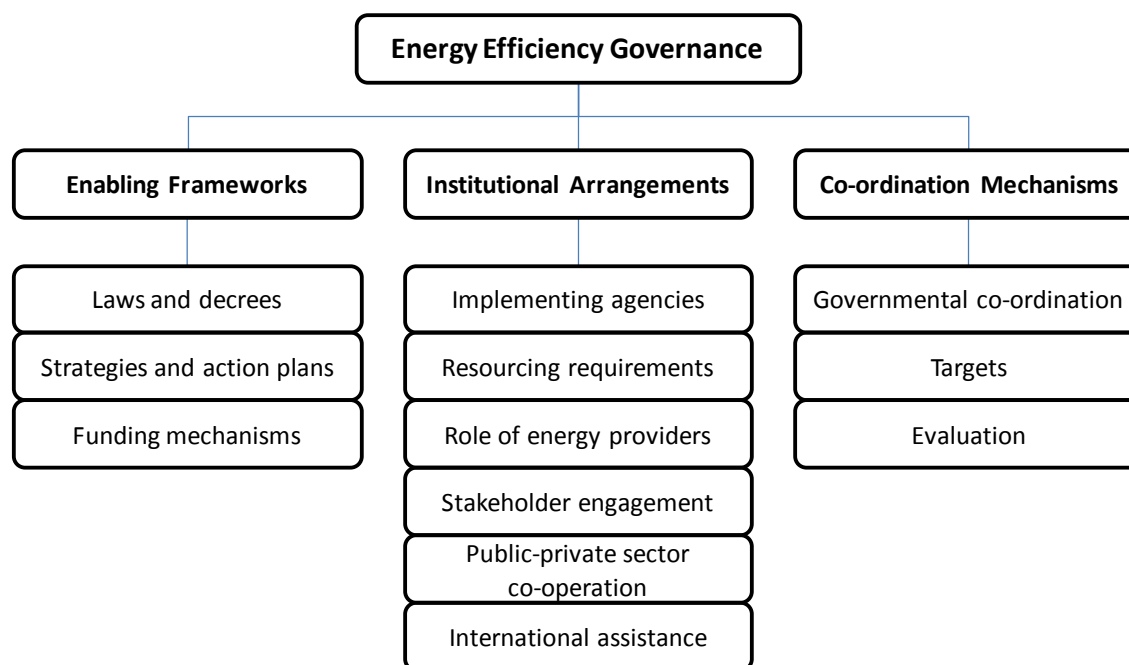
This handbook draws on the experience of hundreds of energy efficiency experts around the world as well as extensive searches of energy efficiency good governance case studies and literature. The findings from this study are presented as guidance to practitioners and stakeholders on how to address the many EE governance issues. EE governance is a complex topic, so this handbook is organised according to the three main governance areas – enabling frameworks, institutional arrangements and co-ordination mechanisms – and contains individual chapters addressing specific governance topics (**Figure 1**).

The purpose of this handbook

This handbook has been written to assist EE practitioners, government officials and stakeholders to establish effective EE governance structures for their country. The handbook provides readers with relevant information in an accessible format that will help develop comprehensive and effective governance mechanisms.

For each of the specific topics dealt with (**Figure 1**), the handbook offers guidelines for addressing issues, or directs readers to examples of how such issues have been dealt with by specific countries.

Figure 1 Energy efficiency governance areas and topics



What this handbook does not do

This handbook does not:

- Describe or analyse the many energy efficiency policy mechanisms that have been developed around the world, although the next chapter lists many of the most-common policies found.
- Recommend how to overcome specific EE barriers or solve specific EE issues.
- Critique the pros and cons of different policies or financing mechanisms. Such EE policy analysis is well-trodden, by the IEA and others (see for example [Taylor et al. \(2008\)](#), [IEA \(2003 and 2008\)](#) and [IEA \(2010d\)](#)). Rather, this handbook focuses on how governments build consensus on the need for energy efficiency policies and how they organize for and implement the EE strategies, policies, regulations and programmes decided upon.
- Offer definitive solutions to how governments should organize to implement their EE policies, regulations and programmes. Variations in country context, EE drivers, sector structure, institutional arrangements and EE barriers make this impossible. Rather, the handbook:
 - a) highlights the critical questions that require policy makers' attention when dealing with EE governance issues; and
 - b) offers successful examples and guidelines for addressing these questions based on experience in many countries around the world.

Policy makers and EE practitioners should find these examples, guidelines and questions useful in developing their own country-specific EE governance approaches.

Where did the information for this handbook come from?

The International Energy Agency (IEA) conducted a global review of the many elements of energy efficiency governance as defined above. The research tools included: a survey of over 500 energy efficiency experts in 110 countries; follow-up interviews of over 120 experts in 27 countries; and extensive desk study and literature searches on energy efficiency good governance.

This handbook presents a summary of the findings from the IEA energy efficiency governance project. The full, detailed findings of the project are presented in the report titled *Enabling Energy Efficiency: A Comprehensive Review of Energy Efficiency Good Governance* (IEA, 2010a).

Who was this handbook written for?

This handbook was written for government officials and stakeholders involved in establishing or running any of the myriad governance arrangements that support the implementation of energy efficiency policy. This handbook will be of interest to people interested in questions ranging from “what issues need to be considered when developing a good energy efficiency legal framework?” and “what are key elements of energy efficiency strategies and action plans?” to “what type of energy efficiency organisation should be created” and “where should it be housed?”

This handbook is not a comprehensive review of all energy efficiency governance issues. For a full discussion, please refer to IEA (2010a).

1. Energy efficiency drivers and barriers

Before delving into the details of EE governance, this section explores the drivers and barriers to energy efficiency and the policies that governments rely on to achieve their EE objectives. Understanding the EE policy landscape can help to develop effective energy efficiency governance.

What drives energy efficiency policy?

The energy efficiency context varies from country to country. However, this study found that many countries had similar drivers for pursuing energy efficiency and faced similar barriers to energy efficiency implementation. These drivers typically fall into four categories (**Table 1**).

Table 1 Drivers of government energy efficiency policies

Driver	Typical objectives
Energy security	<ul style="list-style-type: none"> • Reduce imported energy • Reduce domestic demand to maximise exports • Increase reliability • Control energy demand growth
Economic development and competitiveness	<ul style="list-style-type: none"> • Reduce energy intensity • Improve industrial competitiveness • Reduce production costs • More affordable energy customer costs
Climate change	<ul style="list-style-type: none"> • Contribute to global mitigation and adaption efforts • Meet international obligations under the United Nations Framework Convention on Climate Change UNFCCC • Meet supra-national (<i>e.g.</i> EU) accession requirements or directives
Public health	<ul style="list-style-type: none"> • Reduce indoor and local pollution

What are the typical barriers to energy efficiency?

Energy efficiency improvement is often hampered by market, financial, informational, institutional and technical barriers. These barriers exist in all countries, and most energy efficiency policies are aimed at overcoming them. The major barriers are summarised below (**Table 2**).

Table 2 Barriers to energy efficiency

Barrier	Examples
Market	<ul style="list-style-type: none"> • Market organisation and price distortions prevent customers from appraising the true value of energy efficiency. • Split incentive problems created when investors cannot capture the benefits of improved efficiency (IEA 2007a). • Transaction costs (project development costs are high relative to energy savings).
Financial	<ul style="list-style-type: none"> • Up-front costs and dispersed benefits discourage investors • Perception of EE investments as complicated and risky, with high transaction costs • Lack of awareness of financial benefits on the part of financial institutions.

Table 2 (continued) **Barriers to energy efficiency**

Information and awareness	<ul style="list-style-type: none"> • Lack of sufficient information and understanding, on the part of consumers, to make rational consumption and investment decisions.
Regulatory and institutional	<ul style="list-style-type: none"> • Energy tariffs that discourage EE investment (such as declining block prices). • Incentive structures encourage energy providers to sell energy rather than invest in cost-effective energy efficiency. • Institutional bias towards supply-side investments.
Technical	<ul style="list-style-type: none"> • Lack of affordable energy efficiency technologies suitable to local conditions. • Insufficient capacity to identify, develop, implement and maintain EE investments.

What policies are used to address these barriers?

Over the years, governments at all levels have developed policies to overcome the barriers to energy efficiency. The theory is simple: barriers can be overcome with the design and implementation of targeted energy efficiency policies. Once removed, market forces will ensure economical levels of energy efficiency. Most policies are focused on creating markets for energy efficient equipment or infrastructure and building capacity to deliver EE goods and services. Often times several policy mechanisms are combined to provide a more powerful inducement to EE improvements. Although this handbook does not discuss these policy alternatives in any detail, they are listed (**Table 3**) for the reader to keep in mind in considering implementation requirements.

Table 3 **Energy efficiency policies**

Policy	Example
Pricing mechanisms	<ul style="list-style-type: none"> • Variable tariffs where higher consumption levels invoke higher unit prices.
Regulatory and control mechanisms	<ul style="list-style-type: none"> • Compulsory activities, such as energy audits and energy management. • Minimum energy performance standards (MEPS). • Energy consumption reduction targets. • EE investment obligations on private companies.
Fiscal measures and tax incentives	<ul style="list-style-type: none"> • Grants, subsidies and tax incentives for energy efficiency investments. • Direct procurement of EE goods and services.
Promotional and market transformation mechanisms	<ul style="list-style-type: none"> • Public information campaigns and promotions. • Inclusion of energy efficiency in school curricula. • Appliance labelling and building certification.
Technology development	<ul style="list-style-type: none"> • Development and demonstration of EE technologies.
Commercial development and capacity building	<ul style="list-style-type: none"> • Creation of energy service companies (ESCOs). • Training programmes. • Development of EE industry.
Financial remediation	<ul style="list-style-type: none"> • Revolving funds for EE investments. • Project preparation facilities. • Contingent financing facilities.

Where to find more information

- [IEA Policies and Measures Database](#)
- [WEC, 2008](#)
- [IEA, 2007b](#)
- [Limaye, Heffner and Sarkar, 2008](#)

PART I. ENABLING FRAMEWORKS

2. Energy efficiency laws and decrees

Why are laws and decrees important?

Energy efficiency laws or decrees are important because they can:

- **give direction** to energy efficiency policies, by stating the government’s overall objectives as well as policies and strategies to achieve them;
- **provide a statutory basis** for rules and regulations, such as building codes, appliance efficiency labelling or minimum efficiency performance standards, and obligatory activities (*e.g.* audits or investment);
- **assign responsibility** for developing rules or implementing programmes, which in some cases involves establishing new agencies or institutions;
- **specify funding required and funding mechanisms** for energy efficiency activities.

In many countries, an energy efficiency law or decree forms a critical part of EE governance arrangements. In recent years, there has been rapid growth in the number of countries that have enacted energy efficiency legislation. Over two-thirds of responses to the IEA EE governance survey indicated that their country had some form of legal basis in support of energy efficiency. The importance of energy efficiency laws is clear considering that the most successful energy efficiency programmes around the world have a statutory basis.

How to establish an effective legal framework for energy efficiency

Decision makers should consider six critical elements for inclusion in any EE Law (**Box 2**).

Box 2 Critical elements of effective EE legislation

- Articulate EE policy purpose and intent;
- Include quantitative, time-bound goals or targets;
- Justify government intervention;
- Assign responsibility for planning and implementation;
- Provide funding and resources;
- Include oversight arrangements, such as results monitoring and reporting.

Decision makers need to address other challenges in developing effective EE legislative programmes:

- **Comprehensive vs. incremental laws.** There is a trade-off between a comprehensive law that takes years to develop and enact, and a narrowly focused law that can be quickly enacted but will have limited impact. Which approach is most suitable will vary from country to country, according to both technical and political considerations.
Guideline. A pragmatic way around this dilemma is to target high-impact consuming sectors with a law that includes a mix of reinforcing policy measures (*e.g.* compulsory audits, access to financing and implementation assistance) (see, for example, [Denmark](#) and [Japan](#)).
- **Soft law vs. hard law.** Governments need to decide whether they want to pursue a “soft” energy efficiency law (that provides only principles and intentions) or a “hard” energy efficiency law (that provides the statutory basis and funding authorisations needed for actual implementation).

- **Avoiding implementation delays.** Enacting an EE law is usually only the first step, as many details required for implementation (establishing new agencies, building technical capacity, promulgating regulations, developing standards, establishing reporting protocols, administrative details of incentive mechanisms, etc.) will still need development. In some countries this additional detail is provided through “secondary laws” which promulgate specific procedures and regulations. Implementation delays can be avoided by building capacity in rule-making and programme administration ahead of a law’s passage, and by devoting attention to stakeholder engagement. For example, in Singapore, capacity development of auditors and energy managers is being undertaken well ahead of the expected 2012 enactment of the country’s Energy Conservation Law (ECL).

Guideline. Avoid delays in implementing energy efficiency legislation by:

- building rule-making and programme administration capacity ahead of a law’s passage, allowing a two-track process where rule-making/administration preparation (sometimes called secondary laws) and legislative development take place in parallel, or
 - including more implementation detail in the original legislation, and
 - involving stakeholders in the legislation and rule-setting process.
- **Need for revisions and amendments.** The relevance of energy efficiency laws and decrees will change over time. Increased flexibility can be obtained through rules and regulations governing a whole set of products rather than one specific technology or device. An example of a law designed for flexibility is the [Energy Conservation and Promotion Act 2007 in Thailand](#), which focuses on management methods that encourage continuous improvement in energy efficiency, instead of on specific actions, technologies or investments.

Guideline. To avoid irrelevance over time, periodically update the law and/or design the law in such a way that allows for flexibility.

Balancing “carrots” and “sticks”. The balance between “carrots” (market mechanisms) and “sticks” (regulation) varies according to the public and political acceptance of each in a given country context. However, there is considerable evidence that the trend in many countries is towards greater regulation, especially in light of the proliferation of climate change mitigation policies and targets. See how other countries have dealt with this issue: more free-market approach – [Italy](#), [New Zealand](#), [Singapore](#); more emphasis on regulation – [China](#), [Japan](#), [Vietnam](#).

- **Balancing the conflicting interests of different government departments.** The formulation of energy efficiency laws involves compromise between conflicting interests in the public and private sector, as well as within different government agencies. Creating consensus and balancing intra-governmental conflicts will depend on the country context and the relative role of parliamentarians, government bureaucrats, interest groups and civil society.

Guideline. Make use of intra-governmental co-ordinating mechanisms and include mechanisms for effective stakeholder engagement wherever practical.

Where to find more information

In addition to Chapter 2 of the full report *Enabling Energy Efficiency: A Comprehensive Review of Energy Efficiency Good Governance* (IEA, 2010a), see the following references for more information:

- [APEREC, 2010](#)
- [UNEP, 2007](#)
- [UNESCAP, 1999](#)
- [IEA Policies and Measures Database](#)
- [Limaye, Heffner and Sarkar, 2008](#)
- [UNESCAP, 2010](#)

3. Energy efficiency strategies and action plans

Why are energy efficiency strategies and action plans important?

Many countries use a strategy development or action planning process as a means to engage stakeholders, build consensus and galvanise action on energy efficiency. These strategies and action plans help guide and encourage energy efficiency policy development and implementation by:

- placing energy efficiency policy within the broader policy context;
- allocating resources across the range of possible energy efficiency policies;
- capturing synergies between policies;
- engaging stakeholders and building political consensus; and
- assigning responsibility for policy development, implementation and oversight (IEA, 2009b).

Box 3 Questions relating to strategies and action plans

- Do national strategies and action plans contribute to energy efficiency governance?
- What are the key elements of an EE strategy?
- What issues need to be addressed in developing an EE strategy?
- What guidelines can be suggested for an EE strategy development process?

National energy efficiency strategies play an important role as they provide a high-level view of how a country can meet economy-wide goals. For example, the [European Union's 20-20 target](#) aims for a 20% reduction in primary energy use compared with projected levels by 2020. An EE strategy should also be comprehensive in describing the approach to and rationale for energy efficiency policies and programmes.

How to establish effective energy efficiency strategies and action plans

A checklist for an effective strategy can be developed based on the literature and findings from surveys and interviews (**Box 4**).

Other considerations found to influence the ultimate success of an energy efficiency strategy include:

- **Provide a statutory basis for strategy development and updates.** Embedding strategy mandates in statutes increases the chances of long-term political support. There are many examples of linkages between energy efficiency strategy and energy efficiency law, including: Russia's Federal Law on Energy Savings and Energy Efficiency Increase and Amending Certain Legislative Acts of the Russian Federation; [Korea's Low Carbon Green Growth Strategy](#), which is underpinned by the Low Carbon Green Growth Basic Law; and [New Zealand's Energy Efficiency and Conservation Act 2000](#).
- **Strategies should reflect country context and sectoral issues.** Many experts have noted that there is no "one-size-fits-all" energy efficiency strategy that all countries should follow.

Box 4 Checklist for an EE strategy

- Take a long-term, high-level view, but supplement with shorter-term and more programmatic action plans;
 - Have a strong analytic foundation;
 - Articulate purpose, goals and objectives;
 - Incorporate quantitative time-bound targets, both long term and short term;
 - Identify internal and external factors affecting success;
 - Be comprehensive and cross-sectoral;
 - Ensure integration with other policy areas;
 - Identify the resources needed to turn strategy into action;
 - Prioritise consuming sectors and policy measures;
 - Identify actions and assign responsibility;
 - Provide for results monitoring, updating and revisions;
 - Facilitate stakeholder engagement and build political consensus.
-
- **Link energy efficiency strategy to the broader policy context.** Many energy efficiency policies affect economic activities as well as daily life, and should be considered within the broader social, development and environmental policy context. Strategies that mainstream energy efficiency within these other policies will increase the likelihood of meeting energy efficiency objectives, while contributing to the furtherance of other societal goals (**Box 5**).
 - **Reinforce strategy through action and economic planning.** Any strategy must be complemented by a series of actions to achieve stated goals. While strategies take a high-level view, action and economic plans complement strategies by fleshing out the details of what specific actions are needed, by whom and when. In countries with federal or supra-national governments, action plans are particularly effective when developed in conjunction with the sub-national level. This is the case in the [European Union](#), [China](#) and the [State of Victoria](#) in Australia.
 - **Adopt a learning approach.** The effectiveness of a strategy can be improved by adopting a continuous learning approach, where monitoring and evaluating of energy efficiency results allows for expansion of successful measures and redesign of measures with sub-par results. See, for example, [New Zealand](#).
 - **Establish accountability.** Experts have agreed that accountability is important, but differ on how and where to assign accountability. For example, centralised accountability (*i.e.* with a single energy efficiency agency) ensures easier management, co-ordination and evaluation. More widely distributed accountability (across many agencies) promotes policy support and commitment from a larger number of agencies and decision makers, and expands ownership of energy efficiency strategy goals. Most experts agreed that a single high-level official should have overall accountability for the strategy.
 - **Trade-offs between comprehensive and smaller-scale strategies.** Experts questioned whether national strategies are necessary or whether it is sufficient for a country to create a series of sectoral strategies. Most experts reported that although sectoral approaches are useful in federal systems and programme-specific goals are essential in general, it is important to have national strategies because these increase the profile of energy efficiency and act as drivers for strategic policy change. Conversely, a national strategy is necessary, but by itself is insufficient.

Box 5 EE strategies should link to broader policy context

Good examples of linking strategies to the broader policy context include: France's [National Energy Efficiency Action Plan](#), India's recently announced [National Mission on Enhanced Energy Efficiency](#), [Ontario's Action Plan on Climate Change](#), [Russia's 2030 Energy Strategy](#), and [Ukraine's Energy Strategy to 2030](#).

Table 4 provides a compilation of national strategies and action plans from around the world.

Table 4 **National energy efficiency strategies and action plans – some examples**

Country	Strategy	Year	URL
Canada (Ontario)	Action Plan on Climate Change	2009	www.ene.gov.on.ca/publications/6445e.pdf
European Union	Efficiency Action Plan	2007	http://ec.europa.eu/energy/action_plan_energy_efficiency/doc/com_2006_0545_en.pdf
France	National Energy Efficiency Action Plan	2008	http://ec.europa.eu/energy/demand/legislation/doc/neeap/france_en.pdf
Hungary	National Energy Efficiency Action Plan	2008	http://ec.europa.eu/energy/demand/legislation/doc/neeap/hungary_en.pdf
Indonesia	Master Plan on National Energy Conservation	2010	www.ieej.or.jp/aperc/CEEP/Indonesia.pdf
Japan	New National Energy Policy	2006	www.asiaeec-col.eccj.or.jp/nsp/index.html
Korea	Low Carbon Green Growth Strategy	2009	www.mke.go.kr/language/eng/policy/Epolicies_04.jsp
New Zealand	Energy Efficiency and Conservation Strategy	2007	www.eeca.govt.nz/node/2639
Singapore	National Climate Change Strategy	2008	http://app.mewr.gov.sg/data/ImgUpd/NCCS_Full_Version.pdf
	Sustainable Development Blueprint	2010	http://app.mewr.gov.sg/web/Contents/ContentsSSS.aspx?ContId=1299
South Africa	Energy Efficiency Strategy	2004	http://unfccc.int/files/meetings/seminar/application/pdf/sem_sup2_south_africa.pdf
Ukraine	Energy Strategy to 2030	2009	www.esbs.kiev.ua/en/energy-sector-cooperation-and-reforms/ukraine-s-energy-strategy-to-2030

Where to find more information

In addition to Chapter 3 of the full report *Enabling Energy Efficiency: A Comprehensive Review of Energy Efficiency Good Governance* (IEA, 2010a), see the following references for more information on this topic:

- [European Commission, 2009](#)
- [APERC, 2010](#)
- [US EPA, 2008](#)
- [IEA, 2009b](#)
- [UNECE, 2007](#)

4. Funding energy efficiency programmes

Why are energy efficiency funding mechanisms important?

A steady and reliable source of funding is essential for energy efficiency institutions and programmes. The complex, market transformational nature of energy efficiency programmes means that they often require multi-year funding. If energy efficiency funding depends on annual budget allocation then implementation may be compromised. “Stop-and-go” programme funding is a big concern for energy efficiency managers.

Guidance. Policy makers should avoid funding volatility as a matter of good energy efficiency governance.

How to establish effective funding for energy efficiency

Policy makers should consider five attributes when choosing an energy efficiency funding mechanism: adequacy, stability, autonomy, origin, and potentially distortive effects (Box 7). Each funding mechanism has advantages and disadvantages (Table 5); none satisfy all five funding governance attributes.

Box 6 Key attributes to consider when selecting an EE funding mechanism

<i>Adequacy</i>	The funding should be sufficient to finance policy implementation costs.
<i>Stability</i>	Funding should be steady and predictable from year to year.
<i>Autonomy</i>	The funding source needs to be under the control of the implementing agency.
<i>Origin</i>	The funding source needs to be credible and contribute to overall EE policies.
<i>Distortive Effects</i>	The funding source should not create market distortions or crowd-out other funding.

The **most common energy efficiency funding mechanism** is through government budget allocations. But government allocations can put energy efficiency budgets at risk of short-term fluctuations: the “stop-and-go” programme-funding problem. Two lessons stand out from this report:

- Earmarked energy/environmental taxes and system public-benefit charges are a credible and effective energy efficiency funding source. Although economic theory says that earmarking risks economic inefficiencies in government budget allocations, as a practical matter it is easier to gain public acceptance of an energy/environmental tax if the revenues are used to fund energy efficiency programs ([OECD, 2006](#)). By raising prices, these taxes may also discourage energy consumption or emissions.
- Having a portfolio of diverse funding sources contributes to overall funding reliability.

Where to find more information

In addition to Chapter 4 of the full report *Enabling Energy Efficiency: A Comprehensive Review of Energy Efficiency Good Governance* (IEA, 2010a), see the following references for more information:

- [APERC, 2010](#)
- [Nevius, Eldridge and Krouk, 2009](#)
- [OECD, 2010](#)
- [UNECE, 2010](#)
- [Muller, 2008](#)

Table 5 Attributes of EE funding mechanisms

Funding mechanism	Funding governance attributes					
	Adequacy	Stability	Autonomy	Origin	Lack of distortive effects	
Government budgets	√				√	See APEREC (2010) for list of appropriations for APEC economies.
Grants from other agencies	√				√	See, for example, weatherisation assistance programs in the US and EU Structural Funds .
Earmarked energy or environmental taxes	√	√	√	√		Emission fees for SO₂, NO_x and CO₂ in Estonia , VAT and excise taxes in Poland, excise tax on gasoline in Thailand .
System public benefit charges	√	√	√	√		Countries with SPBC include: Brazil , Jordan and the United States (for example, New York, California).
Stimulus funds	√				√	US Energy Efficiency and Conservation Block Grant Program under the ARRA EU Stimulus package .
Licensing and permitting fees		√	√			In Tunisia, for example, the registration fees for private cars as well as excise duty on import of air conditioning equipment are earmarked for the National Energy Savings Fund.
Carbon finance	√			√		Countries that have taken advantage of this source of funding include Czech Republic and Singapore .
Donor funding	√				√	Can come as grants or loans from bilateral donors such as USAID (United State's Agency for International Development) and German Technical Cooperation (GTZ) our development banks such as EBRD (European Bank for Reconstruction and Development) , and World Bank , or other international organisations such as the GEF (Global Environmental Facility) , and UNDP (United Nations Development Programme) .
Fee-for-service arrangements		√	√	√	√	Motiva Oy of Finland Energy Conservation Centre of Thailand (ECCT) .

PART II. INSTITUTIONAL ARRANGEMENTS

5. Structuring energy efficiency agencies

What is the issue?

Implementing energy efficiency policies and programmes is a complex enterprise. The implementing agency or agencies must co-ordinate policy analysis, project management, marketing, programme evaluation and carry out other functions. As a result, governments often struggle to find the best organisational solution to delivering improved energy efficiency outcomes (**Box 7**). This section provides some guidelines for establishing effective energy efficiency organisations.

Box 7 The key questions relating to structuring EE agencies

- What type of organisation should be created and where should it be housed? How will the agency and its programmes be funded? Who will provide oversight and accountability?
- What skill sets will be required to make the arrangement successful?
- How should an energy efficiency agency be organised internally?
- What factors are critical to agency effectiveness?

How to establish an effective energy efficiency institutional structure

IEA analysis suggests the following guidelines for an effective energy efficiency organisation (**Box 8**).

Box 8 How to establish an effective energy efficiency institutional structure

- A statutory basis is desirable, as it conveys status and permanency to an energy efficiency agency.
- There is no single organisational answer.
- Several critical factors and core competencies contribute to successful energy efficiency agencies.
- Energy efficiency agency design should reflect policy implementation requirements and the targeted sectors.

- **A statutory basis is desirable, as it conveys status and permanency to an energy efficiency agency.** Having a statutory basis confers a definite institutional advantage for an energy efficiency agency, especially if the legal basis includes provisions for funding or other resources. Successful examples of this include: [Brazil's National Electrical Energy Conservation Program \(PROCEL\)](#), [Finland's Motiva Oy](#), [France's ADEME](#), [India's Bureau of Energy Efficiency \(BEE\)](#), [Japan's ECCJ](#), [Korea's KEMCO](#), [Mexico's National Commission for Energy Efficiency \(CONUEE\)](#) and [New Zealand's EECA](#).
- **There is no single organisational answer.** In general, there are five different energy efficiency organisational types: (i) generalised government energy agencies, (ii) specialised government EE/clean energy agencies, (iii) independent EE/clean energy authorities or parastatal corporations, (iv) EE/clean energy NGOs, and (v) EE/clean energy public-private partnerships. Furthermore, there are more organisational designs waiting to be discovered (see, for example, the recent debate on

statutory authorities and [quasi-governmental organisations in the United Kingdom](#)). Each organisational type has advantages and drawbacks, and there is no evidence that any one is consistently preferable. The choice of organisational type should reflect historical development, country context, alignment with sector and energy efficiency objectives, existing institutions and many other factors.

- **Several critical factors and core competencies contribute to successful energy efficiency agencies.** IEA research shows that strong leadership and good external co-operation, including private sector involvement, are important to any EE organisation. Consensus documents such as strategies, plans and targets help build consensus and establish expectations. Professionalism and high calibre of staff, financial independence, and strong incentives for staff and management are all intertwined under the category of sufficient resources.
- **Energy efficiency agency design should reflect policy implementation requirements and the targeted sectors.** An agency should be organised around the implementation tasks it is assigned. The resulting structure will vary according to the type of policy and the targeted sector. Enforcing a thermal building code, for example, will require quite a different organisation from one administering a tax incentive. Policy makers should consider implementation responsibility and capacity whenever promulgating new policies, and periodically review whether energy efficiency agency organisations are meeting current and future needs.

Where to find more information

In addition to Chapter 5 of the full report *Enabling Energy Efficiency: A Comprehensive Review of Energy Efficiency Good Governance* (IEA, 2010a), see the following references for more information on this topic:

- [Blumstein, Goldman and Barbose, 2003](#)
- [Limaye, Heffner and Sarkar, 2008](#)
- [WEC, 2008](#)
- [UNECE, 2007](#)
- [UNESCAP, 2010](#)

6. Resourcing requirements

What is important about energy efficiency resource allocations?

Governments need to allocate sufficient financial and human resources to achieve the desired level of energy efficiency improvement. Implementing agencies need to understand the resources required for different energy efficiency policies in order to properly organise, staff and budget their activities (**Box 9**). Benchmarking or comparing the resources needed for EE policy implementation in different countries is difficult but important as it provides:

- a basis for general resourcing guidelines for implementing different policies;
- an input to evaluating the effectiveness of energy efficiency spending; and
- a guideline for policy makers and decision makers on the resources required to organise, staff and budget energy efficiency agencies and institutions.

Box 9 Questions regarding energy efficiency policy resource requirements

- What resources (staff and budget) are needed for energy efficiency institutions?
- How do energy efficiency policies and programmes vary in their resourcing needs?
- Is it possible to benchmark energy efficiency resourcing requirements across policies, sectors and countries?

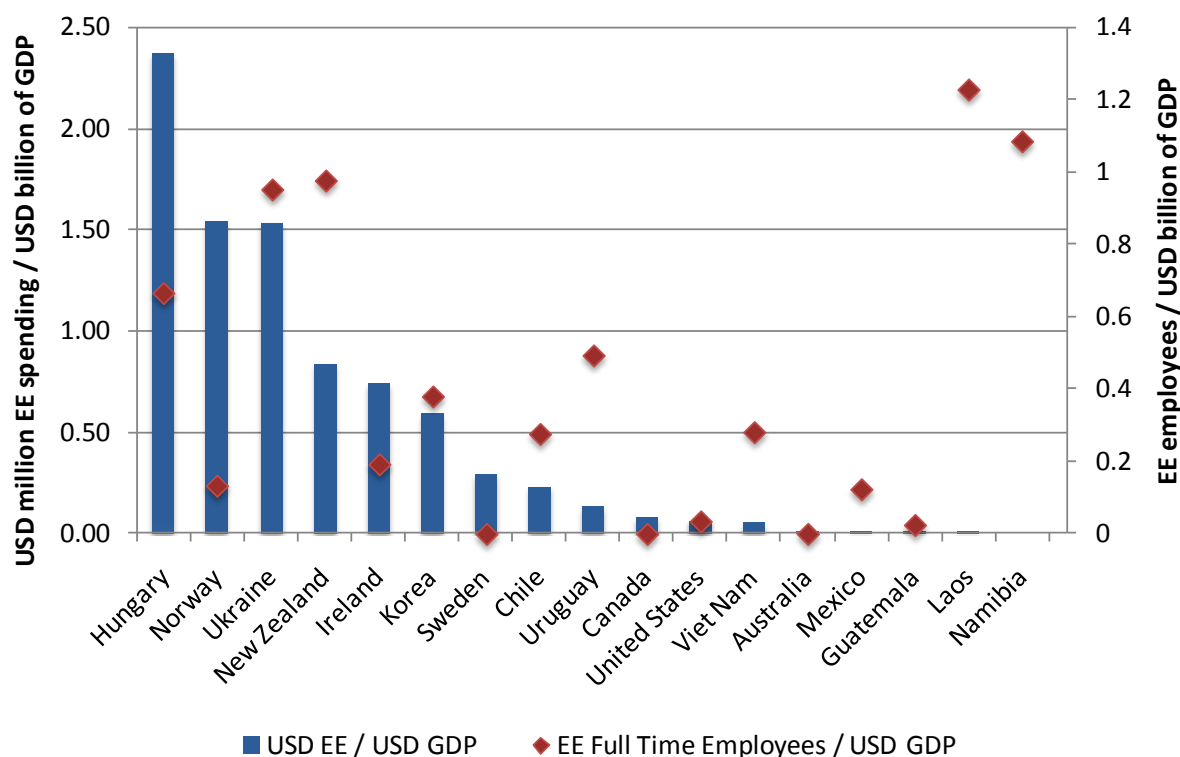
What is the scale of energy efficiency resourcing in selected countries?

Estimating and comparing energy efficiency resource allocations across countries is challenging because resource requirements depend on:

- the policy being implemented;
- the structure of the energy efficiency institutional organisation. For example, energy efficiency functions are often distributed across many departments or agencies. In this case, it can be difficult to isolate the part of the resources in any one agency that is allocated to the work on energy efficiency;
- the boundary of the study; for example, whether administration and support costs are included in the resource estimates.

The background study made a preliminary estimate of resource spending on energy efficiency. This was based on energy efficiency experts' estimates of the "current annual budget allocated by their government at the national level for energy efficiency policy and programme development, implementation and evaluation" (**Figure 2**). Based on the current work and previous work by the Protocol on Energy Efficiency and Related Environment Aspects (PEEREA), it appears that no country spends more than 0.1% to 0.2% of GDP on energy efficiency, and most countries spend between 0.01% and 0.05%.

Figure 2 EE spending and employees per USD billion of GDP (IEA estimates)



These very rough estimates indicate the need to acquire better data on energy efficiency resourcing requirements. The IEA recommends establishing a consistent reporting framework at the sector and policy level in order to facilitate such comparisons. Countries can assist with this framework by ensuring:

- that agencies involved in energy efficiency policy development, implementation and evaluation maintain accurate records on resources allocated to these activities; and
- that the resourcing data are linked to specific sectors, policies and activities.

Where to find more information

In addition to Chapter 6 of the full report *Enabling Energy Efficiency: A Comprehensive Review of Energy Efficiency Good Governance* (IEA, 2010a), see the following references for more information on this topic:

- [APERC, 2010](#)
- [ACEEE, 2010](#)
- [ECS, 2009](#)
- [Nevius, Eldridge and Krouk, 2009](#)

7. Role of energy providers in implementing energy efficiency

Why are energy providers important to energy efficiency?

Energy providers (or “utilities”) are a potential EE implementing agency. Utilities have distinct advantages as EE implementers, if the right institutional framework and enabling conditions can be established. Utilities also have inherent disadvantages, which must be acknowledged and considered in EE policy formulation (**Box 10**).

Box 10 Advantages and disadvantages of energy providers delivering energy efficiency programmes

Advantages:

- ready access to capital;
- an existing relationship with end users, including billing systems and market data;
- a familiar brand name;
- a widespread service and delivery network within their jurisdiction;
- responsible for anticipating and accommodating energy and peak demand growth.

Disadvantages:

- overlap in commercial and societal interests;
- competitive disincentives to incur costs, increase prices or reduce sales.

Regardless of these pros and cons, utilities are an active participant in implementing energy efficiency policies and programmes in much of the world. IEA research has shown that the role that utilities play varies considerably between countries, however. In some countries utilities play a limited role, mainly providing information or building awareness. In other countries utilities are key energy efficiency implementing agencies. This variation reflects different country conditions, as well some questions governments should consider when deciding the role of energy providers (**Box 11**).

Box 11 Key questions relating to the role of energy providers in implementing EE

- What enabling conditions permit energy providers to become effective implementers of EE programmes/projects?
- What is the experience with energy providers as EE implementers?
- What criteria should policy makers use to determine whether energy providers are a viable EE implementing agency in their country?

How to engage energy providers in energy efficiency

There are nine issues to consider when making a decision on the level of utility delivery of energy efficiency programmes (**Box 12**).

Box 12 Key points for ensuring effective EE through utilities

- Use clear criteria for considering whether energy providers should act as EE implementers.
- Utilities can be particularly effective when delivering EE that has resource value.
- Government or regulators must establish the conditions that enable utilities to implement EE.
- Downstream utilities may be better positioned to deliver energy efficiency.
- Avoid complexity and simplify procedures whenever possible.
- Take advantage of the commercial acumen of utilities (where it exists), within a portfolio framework.
- Maintain oversight arrangements to guarantee the cost-effectiveness of results.
- Apportion institutional responsibilities to governmental and regulatory actors.
- Consider System Public Benefit or Wires Charges, as these are an effective way to fund energy efficiency, regardless of who implements the programmes.

- **Utilities that incorporate energy efficiency within their resource plans are particularly effective in delivering energy efficiency:** The most successful efficiency programmes implemented by utilities are those tied to a resource plan (see, for example, Province of [Ontario](#) in Canada and the State of [California](#) in the United States). Treating energy efficiency as equivalent to a supply-side resource in the context of a resource plan makes it much easier for utilities to gauge cost-effectiveness, evaluate results and justify programmes.
- **Government or regulators must establish the conditions that enable utilities to implement energy efficiency:** Utilities must be enabled to undertake efficiency implementation. First, disincentives to promoting energy efficiency must be removed. These include risk of programme cost non-recovery and likelihood of falling revenues or profits due to programme success. However, even after disincentives are removed, utility managers still may not have any motivation to pursue energy efficiency, unless incentives or obligations (carrots and sticks) are introduced. The best combination of carrots and sticks will depend on country-specific variables. Good examples of practical and not-too-costly approaches to mobilising energy providers to become EE implementers can be found in [Canada](#), the [United Kingdom](#) and the [United States](#).
- **Downstream utilities may be better positioned to deliver energy efficiency:** Energy distributors may be better positioned to implement energy efficiency than network companies or generators. Downstream energy providers directly serve end-use customers, and thus have a ready-made commercial relationship and possess detailed data on consumption, appliance holdings and demographics.
- **Avoid complexity and simplify procedures whenever possible:** It is important to avoid unnecessary complexity, overlap and duplication with rules and procedures whenever possible. These should also be appropriate to the nature and value of the programmes.
- **Take advantage of the commercial acumen of utilities (where it exists), within a portfolio framework:** Utilities often possess commercial competencies that can make them effective energy efficiency implementers. They should be given discretion to develop measures and programme designs that reflect their understanding of customers and markets. However, programme development should evolve within a portfolio framework that ensures that all customer segments have access to cost-effective energy efficiency programmes.
- **Maintain oversight arrangements to guarantee the cost-effectiveness of results:** Utility energy efficiency programmes need strong oversight arrangements from regulators or government

agencies. These oversight arrangements add to the cost of programmes, but help ensure that programmes serve energy policy objectives and are working as designed. Oversight arrangements for energy provider-delivered efficiency programmes should include: a formal programme plan; *ex ante* determination of cost-effectiveness for all proposed measures; a mechanism to measure and verify as-delivered results; reporting on a regular basis on results by measure and consuming segment, including programme costs, impacts and cost-effectiveness; and opportunities for the oversight agency and stakeholders to comment on programme plans and results, and to propose plan adjustments.

- **Apportion institutional responsibilities to governmental and regulatory actors:** In apportioning responsibility, it is important to take into account the capacity and resources of existing institutions, and in some cases to create new institutions. It is also important to assign appropriate responsibilities to the different institutions.
- **Consider System Public Benefit Charges (SPBC):** These are an effective way to fund energy efficiency, regardless of who implements the programmes. As described in the preceding section on EE funding mechanisms, an SPBC serves two purposes. Not only does it generate revenue, it also discourages energy consumption by raising prices.

Where to find more information

In addition to Chapter 7 of the full report *Enabling Energy Efficiency: A Comprehensive Review of Energy Efficiency Good Governance* (IEA, 2010a), see the following references for more information on this topic:

- [Barbose, Goldman and Schlegel, 2009](#)
- [Charles River Associates, 2005](#)
- [King et al., 1996](#)
- [Nevius, Eldridge and Krouk, 2009](#)
- [Taylor et al., 2008](#)
- [US EPA, 2007c](#)

8. Stakeholder engagement

Why is stakeholder engagement important?

Stakeholder engagement is a crucial component of an overall energy efficiency governance system. Stakeholder engagement helps build political consensus and ensures broad buy-in to policy implementation. That is not to say that stakeholder engagement is not without its risks, and it is a process which should be actively and carefully managed (**Table 6**).

Table 6 **Benefits and disadvantages of stakeholder participation in decision making**

Benefits of stakeholder participation		
	<i>To stakeholder participants</i>	<i>To government</i>
Decision process	Inform government of diverse opinions	Learn from diversity of opinions and inform stakeholders
	Learn from government	
	Build strategic alliance with government	Build strategic alliances with key implementers
	Persuade and enlighten government	Persuade stakeholders; build trust/reduce anxiety
	Develop a sense of ownership of decisions	Gain legitimacy of decisions
	Educate government of lessons/past experience	Learn from past experience of stakeholders and address misperceptions
Outcomes	Break gridlock; achieve outcomes	Break gridlock; achieve outcomes
	Gain some influence over policy processes	Avoid litigation costs
		Better policy and implementation decisions
Risks/disadvantages of stakeholder participation		
	<i>To stakeholder participants</i>	<i>To government</i>
Decision process	Time consuming	Time consuming; costly
	Pointless if advice is ignored	May backfire; could create more hostility
	Less legitimacy to oppose unwanted decisions	
Outcomes	Risk of legitimising a decision heavily influenced by opposing interest groups	Loss of decision-making control
		Possibility of bad decisions that are politically impossible to avoid

To take into account these advantages and risks, a number of questions relating to stakeholder engagement should be addressed (**Box 13**).

Box 13 Questions relating to stakeholder engagement

- What value does stakeholder engagement bring to successful energy efficiency policy outcomes?
- What can be learned from experiences with stakeholder engagement?
- How does stakeholder engagement fit into an overall energy efficiency governance framework?

How to engage stakeholders in energy efficiency

A review of past experience with stakeholder engagement suggests that:

- The four most important stakeholders in EE governance identified in the survey are: government, private companies, inter-governmental organisations and NGOs.

- Engaging with stakeholders is a characteristic of effective energy efficiency institutions. Respondents considered “On-going engagement with energy efficiency stakeholders” as one of the top three essential elements for institutional effectiveness.

Based on the research conducted for this handbook, it is possible to list some guidelines for successful stakeholder engagement (**Box 14**).

Box 14 Guidelines for stakeholder engagement

- Ensure engagement in EE policy development is open to all interested stakeholders.
 - The legislative framework should make stakeholder engagement a mandatory requirement.
 - Stakeholder diversity should be a goal of engagement.
 - Mechanisms that provide for ongoing stakeholder engagement are particularly useful.
- **Ensure engagement in energy efficiency policy development should be open to all interested stakeholders.** This will allow governments to fully capture the benefits of the stakeholder engagement process.
 - **The legislative framework should make stakeholder engagement a mandatory requirement** (see examples in [Massachusetts](#) and [New Zealand](#)). Integrating public participation into the legal framework has several benefits, among them ensuring that the government engages stakeholders even when decisions need to be made on potentially sensitive issues, and providing clarity to stakeholders in terms of the timing and scope of the engagement process.
 - **Stakeholder diversity should be a goal of engagement**, as stakeholders have different interests and concerns. Also, stakeholders excluded from the decision process may work to disrupt it.
 - **Mechanisms that provide for ongoing stakeholder engagement are particularly useful.** Engaging stakeholders should be part of every policy process, rather than carried out only in response to public outcry. Ensuring that stakeholder involvement is part of all energy efficiency policy development will ultimately lead to improved policy design and implementation.

There are a large number and variety of participation techniques ranging, for example, from opinion polls, to focus groups, citizen juries and consensus conferences. Those governments wishing to explore the issue of how to establish effective stakeholder engagement can refer to [OECD \(2001a\)](#).

Where to find more information

In addition to Chapter 8 of the full report *Enabling Energy Efficiency: A Comprehensive Review of Energy Efficiency Good Governance* (IEA, 2010a), see the following innovative and diverse examples of successful stakeholder engagement:

- [Santos et al., \(2006\)](#)
- [Australia’s National Framework for Energy Efficiency](#)
- [US Massachusetts Energy Efficiency Advisory Council](#)
- Chile’s [Programa País de Eficiencia Energética \(PPEE\)](#) use public- private advisory committees for regional projects implementation.
- [OECD, 2001b](#)
- Consultation under [New Zealand’s Energy Efficiency and Conservation Act](#)

9. Public-private sector co-operation

Why is public-private sector co-operation important?

Co-operation with the private sector in policy development:

- a) ensures that government policies take full advantage of the resources and commercial energy of the private sector.
- b) allows public funding to be leveraged through private investment, as well as private sector participation in programme delivery.
- c) is essential for market transformation strategies, as demand-creation for more efficient products must be accompanied by supply-creation by appliance and equipment manufacturers.

Public-private sector co-operation is a win-win proposition, as government energy efficiency agencies and private firms benefit from close co-operation in designing and implementing energy efficiency policy and programmes.

Box 15 Questions relating to private sector engagement

- Why is public-private sector co-operation important in EE governance?
- What are some good examples of public-private sector co-operation?
- How can the private sector be mobilised in implementing energy efficiency policies?

What models for public-private sector co-operation are available?

Governments can choose from a range of approaches that harness the private sector to deliver energy efficiency:

- **Public-private partnerships (PPPs).** Public-private partnerships are voluntary efforts in which government and the private sector agree to work together to analyse public policy problems and jointly implement solutions. PPPs can be an effective alternative to regulatory approaches. Examples of PPPs include:
 - [US DOE's Industrial Technologies Program \(ITP\)](#)
 - [US EPA's ENERGY STAR Building America Program](#)
 - [The World Bank's Global Gas Flaring Reduction Partnership.](#)
- **Voluntary energy efficiency agreements (VEEAs).** Voluntary energy efficiency agreements are a form of PPP. Examples of VEEAs include:
 - [Japan's Keidanren Voluntary Action Plan](#)
 - [Denmark VEEAs](#)
 - [South Africa's Energy Efficiency Accord with the National Business Initiative](#)
 - [US EPA Climate Leaders Partnership](#)
- **Energy services companies (ESCOs).** Energy services companies are private companies that develop, install and finance energy efficiency projects for other parties, often using contracts that guarantee project performance or savings results. Strong ESCOs can be found in Australia, Austria, China, the

Czech Republic, France, Germany, Italy, Spain, the United Kingdom and the United States. Examples of innovative mechanisms for assisting ESCO markets to develop can be found in:

- [Government procurement of ESCO services in the US](#) , and
- [Thailand's ESCO fund](#).
- **Regulating end-use equipment efficiency.** International practice has shown that appliance standardisation and consumer information systems work best when they have the integral participation of the private sector. Good examples of public-private co-operation are numerous and include Australia, Japan, and the [North American Free Trade Act Signatories \(Canada, United States and Mexico\)](#).

Some guidelines for establishing good public-private sector co-operation:

- **Governments should take the lead with an industry-wide approach.** Governments should identify “win-win” situations where public and private sector benefits overlap.
- **Government must provide oversight to ensure policy objectives are met.**
- **The private sector must have an incentive to co-operate.** With the exception of regulatory policies or government subsidies, it is likely that the public sector needs private sector co-operation more than the reverse. This is why there must be a clear incentive to private companies to co-operate.

Where to find more information

In addition to Chapter 9 of the full report *Enabling Energy Efficiency: A Comprehensive Review of Energy Efficiency Good Governance* (IEA, 2010a), see the following references for more information on public-private sector co-operation:

- [Business Roundtable, 2007](#)
- [Ericsson, 2006](#)
- [GTZ, 2008](#)
- [American National Standards International, 2007](#)
- [International Chamber of Commerce, 2007](#)
- [Price, 2005](#)
- [Taylor et al., 2008](#)

10. International development assistance for energy efficiency

Why is international development assistance important?

International co-operation and assistance is important to many developing and middle-income countries as an element of overall energy efficiency governance. International development assistance (IDA) helps build local technical expertise (in areas such as data, policy development and implementation, and evaluation), support development of governance frameworks (such as formulating legislation or establishing EE agencies), and facilitate stakeholder involvement.

As with any form of development assistance, international funding for energy efficiency has potential pitfalls. One of the biggest challenges is ensuring that the development assistance leads to sustainable governance outcomes after the assistance project is concluded.

Box 16 Questions relating to international development assistance for energy efficiency

- Why is international co-operation to promote energy efficiency in developing countries important?
- How can donors engage with developing and transition-economy countries to help establish the fundamentals of good energy efficiency governance?

Guidelines for IDA for energy efficiency

The following are guidelines for donors seeking to support development of energy efficiency good governance in developing countries (**Box 17**):

Box 17 Guidelines for development assistance for EE

- Design donor-assisted projects that create sustainable outcomes.
 - Engage with stakeholders to create consensus on the importance of energy efficiency policy.
 - Focus on the creation of early markets for energy efficiency that will be sustainable.
- **Design donor-assisted projects that create sustainable outcomes.** Donor-supported activities are usually project-based with a limited time horizon. A too-frequent result is that activity ceases as soon as donor support ends, unless sustainable institutions or permanent structural changes can be made. Donors tackle this problem in various ways: by building professional capacities and skills at local government and community level in order to ensure sustainable energy efficiency services; or through exploring more permanent support mechanisms, such as energy conservation funds.
 - **Identify and engage with stakeholders to create a community of interest around energy efficiency policy.** International assistance can bring in much-needed financial resources to fund stakeholder involvement. If possible, bring influential government or scientific figures into the process, as this is likely to increase the chances of effective action being taken. There are many examples of donor support and expertise creating a critical mass for action on energy efficiency governance, either by passing legislation, developing strategies, creating EE agencies or setting targets.

- **Focus on the creation of early markets for energy efficiency that will be sustainable.** Donor assistance can promote public-private sector partnerships, create awareness of more sustainable production and practices, and contribute to the formation of a shared vision among many stakeholders. In addition to lending and guaranteeing support, donors can mobilise the private sector, facilitate community ownership, and help improve the effectiveness, quality and sustainability of projects. In the case of [China](#), continuous donor support over a decade succeeded in creating a functioning ESCO industry in the country, which carries on today.

Table 7 Examples of international development assistance on EE governance

Country	Donor	Year	Reference
Slovakia	EBRD	2005-2010	www.slovseff.eu
Moldova	EBRD	2009-2010	http://www.ecb.sk/index.php?id=135&L=1#c252
India	US AID	2000-2010	http://eco3.org/BEE
Lebanon	UNDP/GEF	2002-2010	http://lcecp.org.lb/
Jordan	World Bank/GEF and Agence Francaise de Developpement (AFD)/ French Global Environmental Facility (FFEM)	2009-	www.worldenergy.org/documents/jordanie_nerc_tunisia.ppt
Thailand	World Bank/GEF	1992-2000	http://siteresources.worldbank.org/GLOBALENVIRONMENTFACILITYGEFOPERATIONS/Resources/Publications-Presentations/Thailand.pdf
Tunisia	ADEME	1980-2010	www.anme.nat.tn/index.asp?pld=148
Vietnam	Asian Development Bank, World Bank, others		www.adb.org/Documents/TARs/VIE/41077-VIE-TAR.pdf

Where to find more information

In addition to Chapter 10 of the full report *Enabling Energy Efficiency: A Comprehensive Review of Energy Efficiency Good Governance* (IEA, 2010a), see the following references for more information on this topic:

- [ADEME, 2010](#)
- [APERC, 2010](#)
- [GEF, 2010](#)
- [UNESCAP, 2010](#)

PART III: CO-ORDINATION MECHANISMS

11. Governmental co-ordination mechanisms

Why is governmental co-ordination important?

Co-ordination means policy makers, stakeholders and implementers working together to develop and implement energy efficiency policies and programmes. Governmental co-ordination means specialised and general administrative entities at all levels working together to meet energy efficiency goals. This study suggests that insufficient attention to governmental co-ordination is one reason why energy efficiency policies do not always meet their goals.

Co-ordination occurs both horizontally within a single level of government (for example, among national-level institutions) and vertically among different levels of government (for example, federal and provincial or state). The effectiveness of horizontal and vertical co-ordination directly impacts energy efficiency policy outcomes (**Box 18**).

Many EE experts contacted for this study indicated that energy efficiency co-ordination needs improvement. Less than half of the experts in IEA member and European Bank of Reconstruction and Development countries, and even fewer in non-IEA Asia, Middle East and Africa, agreed that energy efficiency policy is well co-ordinated.

Box 18 Questions relating to inter- and intra-governmental co-ordination

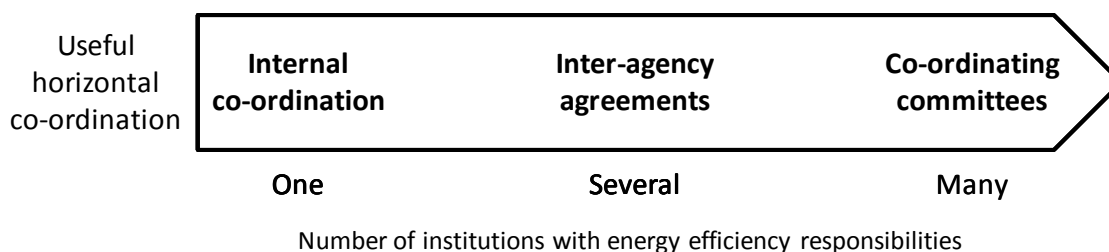
- What is the role of governmental co-ordination within an overall system of energy efficiency governance?
- What co-ordination mechanisms have proven effective?
- How do intra-governmental (horizontal) co-ordination and inter-governmental (vertical) co-ordination issues and mechanisms differ?
- What guidelines can be offered for establishing effective co-ordination mechanisms?

How to improve governmental co-ordination

Horizontal co-ordination. Experience suggests that the type of mechanism used to address horizontal co-ordination issues depends on the concentration of EE implementation responsibility (**Figure 3**). Internal co-ordination will suffice for situations where energy efficiency is centralised. When two or three institutions have overlapping or shared energy efficiency policy responsibilities, an effective approach to co-ordination may be a memorandum of understanding (MOU) or other bilateral intra-governmental agreement, specifying responsibilities, targets, resource flows, etc. The US Department of Energy (DOE) and the US Environmental Protection Agency (US EPA) share responsibility for energy efficiency policy in the United States, and have utilised the [EPA-DOE MOU](#) to govern their shared implementation responsibilities for activities such as ENERGY STAR Program.

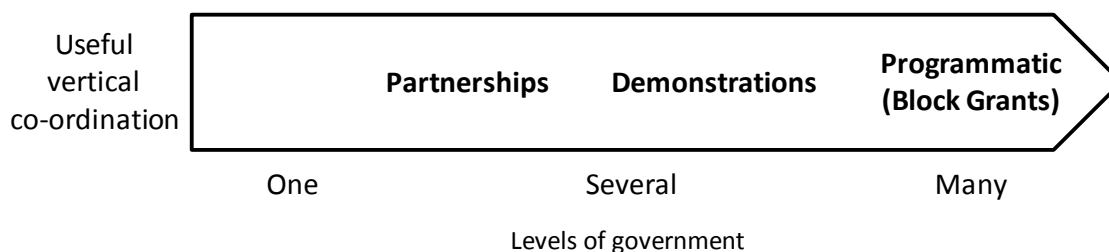
When energy efficiency is dispersed among many agencies, inter-agency agreements and co-ordinating committees become important. Examples of co-ordinating committees include: [Australia's Ministerial Council on Energy](#), [Canada's Council of Energy Ministers](#), [Kazakhstan's Sustainable Development Council \(SDC\)](#), [Korea's Green Growth Committee](#), [Singapore's National Climate Change Committee](#), and [Turkey's Energy Efficiency Coordination Board \(EECB\)](#).

Figure 3 Co-ordination mechanisms for addressing horizontal co-ordination



Vertical co-ordination. A limited number of mechanisms are available for national governments to use in co-ordinating energy efficiency implementation with sub-national governments. These mechanisms seem valid for countries with either federal or unitary forms of government (**Figure 4**). Most vertical co-ordination mechanisms are programmatic approaches in which the national government takes the lead, providing guidelines, assigning tasks and offering funding and technical assistance to sub-national levels. A typical example of a programmatic co-ordination mechanism is the US [Weatherisation Assistance Program](#).

Figure 4 Co-ordination mechanisms for addressing vertical co-ordination



In some countries, the national government has utilised sub-national jurisdictions to demonstrate programme innovations which, if successful, can be replicated. Co-operative partnerships between national government and sub-national jurisdictions work well in unitary states with a limited and manageable number of sub-national jurisdictions. This is the case of the [SwissEnergy](#) programme.

Although there is no single approach for improving co-ordination among and between government levels, policy makers should keep in mind the following co-ordination mechanism guidelines (**Box 19**).

Box 19 Critical elements to consider when establishing both horizontal and vertical co-ordination mechanisms

- Plan co-ordination early;
- Build energy efficiency capacity as a pre-requisite for good co-ordination;
- Co-ordinate energy efficiency and climate change policy;
- Identify strengths of each government level;
- Clearly define objectives and areas of responsibility;
- Create clear accountability.

- **Plan co-ordination early.** To encourage co-operation between policy makers and implementers, co-ordination should take place early in the policy design phase.
- **Build energy efficiency capacity as a prerequisite for good co-ordination.** Building energy efficiency capacity is a frequent prerequisite to effective co-ordination and co-operation, especially when institutional partners are unaccustomed or unfamiliar with energy efficiency programmes or technologies. This is especially true when expansion of national energy efficiency efforts places new work burdens on non-energy agencies at any level of government. It is important to build capacity within partner institutions commensurate with the work programme and co-ordination role expected of them.
- **Co-ordinate energy efficiency and climate change policy.** Energy efficiency and climate change policies need to be co-ordinated when responsibility for each falls under different agencies.
- **Identify strengths of each government level.** Policy makers should actively take advantage of the strengths of each government level and co-ordinate to ensure that these are maximised to implement energy efficiency.
- **Clearly define objectives and areas of responsibility.** National and sub-national governments should clearly define the objectives and areas of responsibility for any co-ordination effort.
- **Create clear accountability.** Accountability is at the core of co-ordination. Inter-agency or inter-governmental co-ordination mechanisms should make implementation easier and improve accountability for results. In many instances, however, efforts devoted to ensuring accountability wane over time. Policies and programmes that rely on inter-agency or inter-governmental co-operation should ensure that accountability systems are in place from the beginning.

Where to find more information

In addition to Chapter 11 of the full report *Enabling Energy Efficiency: A Comprehensive Review of Energy Efficiency Good Governance* (IEA, 2010a), see the following references for more information on this topic:

- [Jollands and Ellis, 2009](#)
- [UNESCAP, 2010](#)
- [Limaye, Heffner and Sarkar, 2008](#)
- [IEA, 2009c](#)

12. Energy efficiency targets

Are energy efficiency targets useful?

Quantitative targets are an increasingly common tool for measuring and managing policy implementation. Governments find targets useful because they help motivate policy implementers, track implementation progress and facilitate mid-term policy adjustments (**Box 20**). Targets also provide a concrete basis for organising multi-year programmes, justifying funding and obtaining resources. However, targets can also mislead or give a false impression of government action if not carefully constructed and accompanied by strong analytic capacity and transparency in how progress is measured. Targets can be counterproductive if they stretch credibility or are impossible to achieve.

Box 20 Questions to consider relating to EE targets

- What role do targets play in an overall system of energy efficiency governance?
- What kinds of targets exist?
- How should targets be formulated and expressed?
- What other considerations enter into the setting of targets?

Targets come in many forms. **Table 8** shows different types of targets, a range of alternative levels of aggregation to which the targets can apply and different target achievement timeframes.

Table 8 Formulating energy efficiency targets

Type of target	Aggregation level	Time frame
Defined improvement	Jurisdiction	Short term (annually)
<ul style="list-style-type: none"> • Energy consumption or emissions (GWh, MtCO₂) 	Sector	Medium term (5-20 years)
Intensity	Industry	Long term (20+ years)
<ul style="list-style-type: none"> • Energy consumption or emissions per unit of economic activity 	Enterprise	
Elasticity	Facility	
<ul style="list-style-type: none"> • Ratio of growth in energy consumption or emissions to growth in GDP or output 	End-use	
Benchmark		
<ul style="list-style-type: none"> • Energy consumption or emissions relative to others 		
Transactional		
<ul style="list-style-type: none"> • Buildings weatherised • CFLs installed • All cost-effective energy efficiency 		

Guidelines for setting energy efficiency targets

Governments should consider the following issues when setting EE targets:

- **Ensure targets are supported by resources and enabling frameworks.** Setting targets in the absence of resources and enabling frameworks undermines the credibility of the energy efficiency policy and weakens organisational resolve.
- **Ensure targets have medium-term relevance and balance stringency with achievability.** Targets that are too ambitious or set too far in the future lose political value and practical utility. If the target is set too high it will be unachievable, thereby becoming a disincentive to any serious attempt to meet it. Targets that are set too far in the future risk creating complacency rather than urgency on the part of implementing agencies. Targets that are not sufficiently stringent will invite criticism from engaged stakeholders and risk the credibility of the energy efficiency policy.
- **Targets should be underpinned by analysis and consultation** with sectoral energy efficiency experts and outside stakeholders. The process of setting targets should be undertaken with the support and commitment of the agencies responsible for implementation.
- **Targets should be straightforward to monitor.** Several interviewees and survey respondents stated that there is a “lack of wider understanding of how energy efficiency is measured” and that the “adoption of a simple definition of the complex measure of technical energy improvement would be a big step forward.” To address this, targets should be simply stated and straightforward to monitor. Ideally, governments should take advantage of existing data collection infrastructure.
- **Avoid overlapping and competing targets.** Creating too many targets runs the risk of overwhelming implementation capacity and the attention of implementers. Targets should also be co-ordinated, to avoid the risk of conflicts among individual targets, or duplication of resource spending on the same objective. This also applies to targets of different but related formulations (e.g. a GHG emission-reduction target and a separate energy efficiency target).
- **Targets should be clearly communicated and documented,** as they constitute a tangible expression of energy efficiency policy.

A range of country examples of targets are summarised in **Table 9** (page 37).

Where to find more information

In addition to Chapter 12 of the full report *Enabling Energy Efficiency: A Comprehensive Review of Energy Efficiency Good Governance* (IEA, 2010a), see the following references for more information on this topic:

- IEA, 2008a
- [IEA, 2009b](#)
- [IEA, 2008b](#)
- [WEC, 2008](#)

Table 9 Examples of energy efficiency-related savings targets

Country	Target description*				
	Sector	Type and Description	Target	Baseline year	Target year
China	Economy-wide	Reduced energy intensity relative to a baseline year	20%	2005	2010
European Union	Economy-wide	Reduced energy consumption relative to a baseline year	9%	2008	2016
Indonesia	Economy-wide	Elasticity	Lower than 1		2025
Mexico	Buildings	Reduced energy consumption relative to a baseline year	16%	2009	2030
	Transport		26%		
	Appliances and lighting		52%		
	Buildings		16%		
	Industry		12%		
Russia	Economy-wide	Reduced energy intensity relative to a baseline year	40%	2007	2020
Turkey ¹	Buildings	Transactional	10 million buildings	N/A	2020
Vietnam	Economy-wide	Reduced energy consumption relative to a baseline year	5-8%	2011	2015

¹ Target reported in interviews.

13. Evaluation

Why is evaluation important?

Evaluation is a critical part of good energy efficiency governance. Evaluation is needed to test planning assumptions, monitor overall results, compare programme performance, fine-tune implementation processes, and incorporate lessons learned into future policies and programmes. Evaluation is particularly crucial to energy efficiency programmes because EE impacts are often difficult to measure. Providing for evaluation as an integral part of energy efficiency policy implementation requires decision makers to answer some key questions relating to EE evaluation in their countries (**Box 21**).

Box 21 Questions to consider relating to EE evaluation

- Is evaluation of EE policies and programmes common practice?
- How can evaluation contribute to good energy efficiency governance?
- Who should perform evaluations?
- Is there a universal standard of effective evaluation or good evaluation practice?
- How can a culture of evaluation be created within an EE agency or programme?

The [US EPA](#) defines energy efficiency evaluation as “the process of determining and documenting the results, benefits, and lessons learned from an energy efficiency program” (US EPA, 2007a). The importance of strong evaluation has increased over the last few years due to several factors: (i) governmental commitments to GHG emissions reductions under the United Nations Framework Convention on Climate Change (UNFCCC); (ii) the use of supra-national efficiency instruments, such as the EU Energy Efficiency Directives; and (iii) adoption of national energy efficiency policies and targets.

Unfortunately, in many cases the scaling-up of evaluation efforts has not matched the scaling-up of energy efficiency policies and programmes. The findings from the analysis of evaluation practice suggest that energy efficiency evaluation remains superficial, merely scratching the surface of interactions among policy and programme impacts, process and market variables, and costs. Many countries undertake no form of evaluation at all. In some countries, evaluation is regarded as an extra expense that detracts from other programme tasks, such as performing audits or providing subsidies. Some countries do undertake evaluation, but only to the minimum prescribed level, funded by bilateral or multilateral donors. Very few countries have a national protocol for energy efficiency evaluation followed consistently by all energy efficiency agencies. Moreover, evaluation and data collection capacity is critically low.

Despite these challenges, there are some encouraging signs. In particular, supra-national organisations and international conventions are spurring more evaluation.

How to establish effective evaluation of energy efficiency policies and programmes

For evaluations to be effective and useful there is a need to:

- **Build an evaluation culture.** In an evaluation culture, impact, process, market and cost evaluation is woven into the fabric of energy efficiency implementation and oversight. An evaluation culture does not emerge overnight; it takes years to develop and is generally part of an overall programmatic, institutional and regulatory structure. There are many examples of countries where an evaluation culture has flourished, including Finland, Canada, the United Kingdom and the United States.
- **Match the evaluation approach** to the policy objectives and programme design.
- **Collect accurate statistics.** Accurate statistics are crucial, particularly when evaluating progress against targets. Incorporating evaluation into the design phase of any policy, programme or project assists actors in identifying the key statistics to be collected.
- **Allocate adequate funding.** Allocation of an agency's budget is always problematic, and evaluation often comes up short because its constituency is diffuse. To avoid this tendency, a percentage of funds for a given policy, programme or project should be designated for evaluation. This is the case in many North American jurisdictions, including California, New York, Ontario and Oregon, and helps to explain their strong evaluation culture. This approach can also help countries avoid situations where energy efficiency evaluations are crowded out by other budget priorities.
- **Build the capacity needed for evaluation.** Evaluation requires a rarefied skill set: econometrics, engineering and market research. Retaining staff with these skill sets is often difficult; thus, energy efficiency agencies and government/regulators should consider retaining highly skilled third experts.
- **Establish clear evaluation methods.** A critical element in developing evaluation is the establishment of common methodologies or protocols for evaluating energy efficiency. Such protocols help to create an evaluation culture within energy efficiency agencies.

Where to find more information

In addition to Chapter 12 of the full report *Enabling Energy Efficiency: A Comprehensive Review of Energy Efficiency Good Governance* (IEA, 2010a), see the following references for more information on this topic:

- [Vine and Sathaye, 1999](#)
- [IEA DSM Implementing Agreement, 2005](#)
- [US EPA, 2007a](#)
- [International Performance Measurement and Verification Protocol \(IPMVP\)](#)
- [California Public Utilities Commission, 2010](#)
- [IEA, 2008b](#)
- [World Bank, 2004a](#)
- [IEA, 2010c](#)

Conclusions

Comprehensive and effective EE governance is needed urgently. Improved energy efficiency is a critical response to the pressing climate change, economic development and energy security challenges facing many countries. Pressure is mounting for energy efficiency to deliver benefits, and quickly, in order to make progress towards the 450 ppm scenario outlined in the World Energy Outlook 2009 (IEA 2009a), which aims to limit greenhouse gas emissions to 450 parts per million in order to limit average temperature rise to 2°C. Governments can only hope to achieve the required scale and timing of energy efficiency improvements if robust and effective energy efficiency governance systems are put in place.

Successful EE policy outcomes are more likely if an effective system of EE governance is established. From the laws and decrees that set policy to the institutional arrangements for implementing policy and the evaluation mechanisms to track policy progress, EE governance is a complex but critical part of national energy efficiency efforts. Experience has shown that energy efficiency policies most often fail to deliver their full potential because of insufficient attention to the governance systems supporting implementation.

This handbook has drawn on the experience of over 500 energy efficiency experts in 110 countries as well as extensive searches of energy efficiency good governance desk studies and literature. It is hoped that this effort will help EE practitioners, government officials and stakeholders to establish the most effective EE governance structures for their country context.

References and Reading

- ACEEE (American Council for an Energy Efficient Economy (ACEEE) (2010), *State Energy Efficiency Scorecard for 2010*, October 2010, ACEEE, <http://aceee.org/research-report/e107>.
- ADB (Asian Development Bank) (2007), Technical Assistance Report - Socialist Republic of Viet Nam: Supporting Implementation of the National Energy Efficiency Program Project, Project Number: 41077, December, ADB, www.adb.org/Documents/TARs/VIE/41077-VIE-TAR.pdf.
- ADEME (Agence de l'Environnement et de la Maîtrise de l'Energie) (2010), "EIE network being copied in Tunisia", in ADEME & Vous International Newsletter, No. 13, April, ADEME, www.ademe.fr/htdocs/publications/international/13/p2.htm.
- ANSI (American National Standards Institute) (2007), *Overview of the U.S. Standardization System- Voluntary Consensus Standards and Conformity Assessment Activities*, July, ANSI, <http://publicaa.ansi.org/sites/apdl/Documents/News%20and%20Publications/Other%20Documents/US-Stdzn-System-FINAL.pdf>.
- APEC (Asia Pacific Economic Cooperation) (2009a), Peer Review on Energy Efficiency in New Zealand, Final Report, November 13, APEC Energy Working Group, www.ieej.or.jp/aperc/PREE/PREE_New_Zealand.pdf.
- APEC (2009b), Peer Review on Energy Efficiency in Vietnam: Final Report, 2 December, APEC Energy Working Group, www.ieej.or.jp/aperc/PREE/PREE_Vietnam.pdf.
- APEREC (Asia Pacific Energy Research Centre) (2010), *Compendium of Energy Efficiency Policies of APEC Economies*, Institute of Energy Economics, Japan, www.ieej.or.jp/aperc/CEEP.html.
- Barbose, G., C. Goldman and J. Schlegel (2009), "The Shifting Landscape of Ratepayer-Funded Energy Efficiency in the U.S.", Environmental Energy Technologies Division, LBNL-2258, October, <http://eetd.lbl.gov/ea/emp/reports/lbnl-2258e.pdf>.
- BC Hydro (2008), *BC Hydro's Electricity Conservation Report: 1989 to 2009: Building a Culture of Conservation in British Columbia*, November, BC Hydro, www.bchydro.com/etc/medialib/internet/documents/planning_regulatory/meeting_demand/DSM_Report_2009.Par.0001.File.GDS09_316_DSM_Report_November_6.pdf.
- BEE (Bureau of Energy Efficiency) (2010), "National Mission for Enhanced Energy Efficiency - Mission Document: Implementation Framework," Ministry of Power, Government of India, 2010, www.indiaenvironmentportal.org.in/node/284120.
- Bhaskar, R. (2009), "Energy Efficient Singapore "What Works, What Doesn't". ASIA CLEAN ENERGY FORUM, organised by ADB & USAID. June, Manila, www.adb.org/documents/events/2009/CCEWeek/Presentation-Ananda-Baskar-Energy.pdf.
- Blumstein, C. C. Goldman, G. Barbose (2003), *Who Should Administer Energy-Efficiency Programs?*, UCEI (University of California Energy Institute) Center for the Study of Energy Markets Working Paper No. 115, August, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.4.861&rep=rep1&type=pdf>.

- Business Roundtable (2007), *More Diverse – More Domestic – More Efficient, A Vision for America’s Energy Future* http://seechange.businessroundtable.org/Media/PDF/2007_BR_Energy_Report.pdf.
- Calikoglu, E. (2010), “Energy Efficiency Policies and Programs in Turkey”, presented at International Consultation Workshop On Energy Efficiency, Institutional Governance, Washington, DC, June 1-2, World Bank, <http://siteresources.worldbank.org/EXTENERGY2/Resources/4114199-1276110591210/Turkey.pdf>.
- Charles River Associates (February 2005), *Primer on Demand-Side Management - With an emphasis on price-responsive programs*, prepared for The World Bank by Charles River Associates, Oakland, California, CRA No. D06090, <http://siteresources.worldbank.org/INTENERGY/Resources/PrimeronDemand-SideManagement.pdf>.
- CPUC (California Public Utilities Commission) (2008), *California Long-Term Strategic Energy Efficiency Plan*, September, CPUC, www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf
- CPUC (2010), Evaluation Measurement and Verification References Materials, www.cpuc.ca.gov/PUC/energy/Energy+Efficiency/EM+and+V/.
- ECS (Energy Charter Secretariat) (2009), “Summary of Analysis and Issues - Legal Frameworks and Organisations”, paper prepared for Meeting of the Working Group on Energy Efficiency and Related Environmental Aspects, 3 November 2009, by EnEffect Consult SP Ltd.
- Efficiency Valuation Organization (2010), *International Performance Measurement and Verification Protocol (IPMVP)*, Efficiency Valuation Organization, www.evo-world.org/, accessed 08 November 2010.
- Ehrhardt-Martinez, K. and J. A. Laitner (May 2008), “The Size of the U.S. Energy Efficiency Market: Generating a More Complete Picture”, *Alliance to Save Energy 2008*, Report Number E083, http://www.sefalliance.org/fileadmin/media/sefalliance/docs/Resources/Green_Economy/EE_in_US_AC_EEE.pdf.
- Energy Programs Consortium (1999), *The Role of the System Benefit Charges in Supporting Public Benefit Programs in Electric Utility Restructuring*, September, National Association of State Energy Officials, www.naseo.org/committees/energyproduction/documents/Role_of_System_Benefit_Charges_in_Support_of_Public_Benefit_Programs_in_Electric_Utility_Restructuring.pdf.
- Energy Trust of Oregon (2009), *Strategic Plan*, December 18, Energy Trust of Oregon, http://energytrust.org/library/plans/2010-14_Strategic_Plan_Approved.pdf.
- Ericsson, K. (2006), *Evaluation of the Danish Voluntary Agreements on Energy Efficiency in Trade and Industry*, April 2006, AID-EE (Active Implementation of the proposed Directive on Energy Efficiency), www.aid-ee.org/documents/011Danishvoluntaryagreements.PDF.
- EUROPA (2008), *Action Plan for Energy Efficiency (2007-12)*, http://europa.eu/legislation_summaries/energy/energy_efficiency/l27064_en.htm.
- European Commission (2006), *Action plan for energy efficiency: realising the potential* http://ec.europa.eu/energy/action_plan_energy_efficiency/doc/com_2006_0545_en.pdf.
- European Commission (2009), *Synthesis of the Complete Assessment of all 27 National Energy Efficiency Action Plans*, http://ec.europa.eu/energy/efficiency/doc/sec_2009_0889.pdf.

- GEF (Global Environmental Facility), (2010). *Investing in Energy Efficiency: The GEF Experience*, Global Environmental Facility, Washington, DC, USA, www.thegef.org/gef/sites/thegef.org/files/publication/Investing-Energy-Efficiency-English.pdf .
- Global Green Growth Institute (2010), “Green Growth Roadmap Development in Republic of Korea”, presented by Siwon Park, ESCAP Brainstorming Meeting, Sept 1, Global Green Growth Institute, www.unescap.org/esd/environment/greengrowth/activities/2010/lowcabon_gg_roadmap/documents/D ay2/Session%206_Siwon%20Park.pdf.
- Government of France (2006), Energy efficiency action plan for France, http://ec.europa.eu/energy/demand/legislation/doc/neeap/france_en.pdf.
- Government of Hungary (2008), Hungary’s National Energy Efficiency Action Plan, 13 February, Ministry of Economy and Transport, http://ec.europa.eu/energy/demand/legislation/doc/neeap/hungary_en.pdf.
- Government of Korea (2009), *Low Carbon Green Growth Strategy* www.mke.go.kr/language/eng/policy/Epolicies_04.jsp.
- Government of Mexico (2009, Diario Oficial, www.conuee.gob.mx/work/files/pronase_09_12.pdf.
- Government of New Zealand (2007a), *Energy Efficiency and Conservation Act 2000*, www.eeca.govt.nz/about-eeca/eecas-role/legislation.
- Government of New Zealand (2007b), *Making It Happen: New Zealand Energy Efficiency and Conservation Strategy - Action plan to maximise energy efficiency and renewable energy*, October, Energy Efficiency and Conservation Authority, www.eeca.govt.nz/sites/all/files/nzeecs-07.pdf.
- Government of New Zealand (2010), *Developing our Energy Potential - Draft New Zealand Energy Strategy and Draft New Zealand Energy Efficiency and Conservation Strategy*, Ministry of Economic Development, www.med.govt.nz/templates/MultipageDocumentTOC_44085.aspx.
- Government of Russia (2010), *Energy strategy of Russia for the period up to 2030*, [http://energystrategy.ru/projects/docs/ES-2030_\(Eng\).pdf](http://energystrategy.ru/projects/docs/ES-2030_(Eng).pdf).
- Government of Singapore (2008), *National Climate Change Strategy*, Ministry of Environment and Water Resources, http://app.mewr.gov.sg/data/ImgUpd/NCCS_Full_Version.pdf.
- Government of Singapore (2009), *A Lively and Liveable Singapore – Strategies for Sustainable Growth* (Sustainable Development Blueprint), Ministry of the Environment and Water Resources and Ministry of National Development, <http://app.mewr.gov.sg/data/ImgCont/1299/Chapter%2001-Exec%20Summary.pdf>.
- Government of South Africa (2004), *Energy Efficiency Strategy of the Republic of South Africa*, http://unfccc.int/files/meetings/seminar/application/pdf/sem_sup2_south_africa.pdf.
- Government of Sweden (2008), *Road map for improved energy efficiency in Sweden*, Stockholm, Sweden, www.secureproject.org/download/18.3d9ff17111f6fef70e9800045495/D+2.2.4+ENERGISTRATEGI+2008_Malm%C3%B6-%C3%B6vers%C3%A4ttning_EN%5B1%5D.doc, http://app.mewr.gov.sg/data/ImgCont/1292/sustainableblueprint_forweb.pdf.
- Government of Ukraine, *Energy Strategy to 2030*, www.esbs.kiev.ua/index.php?option=com_docman&task=doc_download&gid=311&Itemid=176&lang=en

- GTZ (December 2008), *International Experiences with the Development of the ESCO Markets*, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH, www.gtz.de/de/dokumente/en-International-Experience-Developing-ESCO-Markets.pdf.
- Hartog, E. (2006), Structural Funds for energy efficiency. Presentation presented . Vienna, April, www.eurima.org/uploads/workshop_vienna/DG_Regional_Policy_Eddy_Hartog_060406.ppt.
- Heffner, G., Maurer, L., Sarkar, A. and Wang X. (2010), “Minding the Gap: World Bank’s Assistance to Power Shortage Mitigation in the Developing World,” *Energy—The International Journal* 35 (4) pp.1584–1591, www.sciencedirect.com/science?_ob=MIimg&_imagekey=B6V2S-4WKS6CR-4-7&_cdi=5710&_user=946274&_pii=S036054420900214X&_orig=search&_coverDate=04%2F30%2F2010&_sk=999649995&view=c&wchp=dGLbVzW-zSkWb&md5=d5ed293135d5971bd24ae941e5aa9b64&ie=/sdarticle.pdf.
- IANZ (International Accreditation New Zealand) (2007), *Conformity Assessment in New Zealand*. September, www.ianz.govt.nz/publications2/pdfs/IA3_Conformity_Assessment.pdf.
- ICC (International Chamber of Commerce) (2007), *Energy Efficiency: a World Business Perspective*, www.iccwbo.org/uploadedFiles/ICC/policy/environment/Statements/Policy%20Statement%20Energy%20efficiency.pdf.
- International Energy Agency (IEA), 2003. *Creating Markets for Energy Technologies*. IEA/OECD, Paris. http://www.iea.org/publications/free_new_Desc.asp?PUBS_ID=1100
- IEA DSM Implementing Agreement (2005), “Technologies and Programs Evaluation Guidebook, Evaluating Energy Efficiency Policy Measures & DSM Programmes”, Volume 1 Evaluation Guidebook based on National Case Studies and National and International Experiences, www.ieadsm.org/Files/EXCO%20File%20Library/Key%20Publications/Volume1Total.pdf.
- IEA (International Energy Agency) (2005b), *Saving Electricity in a Hurry: Dealing with Temporary Shortfalls in Electricity Supplies*. IEA/OECD, Paris, www.iea.org/Textbase/Papers/2008/cd_energy_efficiency_policy/7-Energy%20utilities/7-savingElec.pdf.
- IEA (2007a), *Energy Efficiency Policy Recommendations: Worldwide Implementation Now*, IEA/OECD, Paris, www.iea.org/papers/2008/cd_energy_efficiency_policy/0_introduction/EffiRecommendations_web.pdf.
- IEA (2007b), *Mind the Gap -- Quantifying Principal-Agent Problems in Energy Efficiency*. IEA/OECD, Paris, www.iea.org/textbase/nppdf/free/2007/mind_the_gap.pdf.
- IEA (2008), *Energy efficiency policy recommendations prepared by the IEA for the G8 under the Gleneagles Plan of Action*. IEA/ OECD, Paris. http://www.iea.org/publications/free_new_Desc.asp?PUBS_ID=2047
- IEA (2008a), “The Use of Energy Efficiency and Related Targets in Selected IEA Member Countries”, IEA Working Paper, IEA/OECD, Paris, December.
- IEA (2008b), “Meeting Energy Efficiency Goals: Enhancing Compliance, Monitoring and Evaluation”, IEA Workshop Discussion Paper, IEA/OECD, Paris, February, www.iea.org/work/workshopdetail.asp?WS_ID=349.
- IEA (2009a), “World Energy Outlook”, IEA/OECD, Paris, www.worldenergyoutlook.org/docs/weo2009/WEO2009_es_english.pdf.
- IEA (2009b), “Innovations in National Energy Efficiency Strategies and Action Plans”, IEA/OECD, Paris, www.iea.org/papers/2009/Innovations.pdf.

- IEA (2009c), “Innovations in Multi-Level Governance for Energy Efficiency: Sharing Experience with Multi-Level Governance to Enhance Energy Efficiency”, IEA/OECD, Paris, December, www.iea.org/papers/2009/mlg_final_web.pdf.
- IEA (2010a), *Enabling Energy Efficiency: A Comprehensive Review of Energy Efficiency Good Governance*. IEA/OECD, Paris.
- IEA (2010b), *Policies and Measures Databases*, IEA/OECD, Paris, www.iea.org/textbase/pm/index.html.
- IEA (2010c), *Policy Pathway: Monitoring, Verification and Enforcement*, IEA/OECD, Paris, www.iea.org/papers/pathways/monitoring.pdf.
- IEA (2010d), *Money Matters*, IEA/OECD, Paris, http://www.iea.org/papers/efficiency/money_matters.pdf.
- Gilberto De Martino Jannuzzi Jollands, N. and Ellis, M., 2009. *Energy efficiency governance – an emerging priority*. 2009 Summer Study of the European Council for an Energy-Efficient Economy. eceee, Nice, France, www.eceee.org/conference_proceedings/eceee/2009/Panel_1/1.086/.%20.
- Jung, Y. (2010), “Energy Efficiency Policies and Practices in Korea”, Presented at the APERC 2010 Annual Conference, Tokyo, 3 March, KEEI (Korea Energy Economics Institute), http://www.ieei.or.jp/aperc/Annual_Conferemce2010.html.
- Korea’s Ministry of Governmental Legislation (2010), Framework Act on Low Carbon, Green Growth, <http://www.moleg.go.kr/english/korLawEng;jsessionid=2XVAoj0GR5aI5jBzbf231tBLR5sfbIXWqUKrdjsnkPDrRoPPZWg4k7g10127dywk?pstSeq=52136>.
- King, M., et al. (1996), “Public Purpose Energy Efficiency Programs and Utilities in Restructured Markets”, *The Electricity Journal*, Vol. 9 No. 6. July, www.sciencedirect.com/science?_ob=MIimg&_imagekey=B6VSS-453CCDF-JV-1&_cdi=6270&_user=946274&_pii=S1040619096802600&_orig=na&_coverDate=07%2F31%2F1996&_sk=999909993&_view=c&_wchp=dGLzVlb-zSkWb&_md5=32760119cab3604bcb6964390163b26c&_ie=/sdarticle.pdf.
- Laponche, B. et al (1997), *Energy efficiency for a sustainable world*, International Conseil Energie, Paris.
- Levine, M. et al. (2010), “Assessment of China’s Energy-Saving and Emission-Reduction Accomplishments and Opportunities During the 11th Five Year Plan”, China Energy Group, Energy Analysis Department, Environmental Energy Technologies Division, LBNL, April, http://china.lbl.gov/sites/china.lbl.gov/files/Ace_Study.LBNL_Report_FINAL_REV.pdf.
- Limaye, D. R., Heffner, and Sarkar, (2008), *An Analytical Compendium of Institutional Frameworks for Energy Efficiency Implementation*, Energy Sector Management Assistance Program (ESMAP) Formal Report 331/08, October, www.indiaenvironmentportal.org.in/files/EE_Institutional.pdf.
- Morris, N. (2010), Deputy Political Editor, “One by One, the Quangos are Abolished. But at what Cost?”, *The Independent*, 27 July 2010. www.independent.co.uk/news/uk/politics/one-by-one-the-quangos-are-abolished-but-at-what-cost-2036175.html
- Muller, B. (2008), “To Earmark or Not to Earmark. A Far-Reaching Debate on the Use of Auction Revenue from (EU) Emission Trading”, *Oxford Institute for Energy Study*, ISBN:978-1-901795-80-6, www.oxfordenergy.org/pdfs/EV43.pdf.

- National Action Plan for Energy Efficiency Leadership Group, (2007), Model Energy Efficiency Program Impact Evaluation Guide - a resource of the national action plan for energy efficiency, www.epa.gov/cleanenergy/documents/suca/resource_planning.pdf.
- National Energy Research Centre of Jordan (2010), "Jordan's Energy Efficiency Strategy", presented by Walid Shahin, Acting President at the WEC-ADEME-ANME-UNDP *Evaluation of Energy Efficiency Policies in the MENA Region* Conference, Tunis, 15-16 March 2010, www.worldenergy.org/documents/jordanie_nerc_tunisia.ppt.
- Nevius, Monica, Richard Eldridge and Johanna Krouk (2009), *The State of the Efficiency Program: Industry Budgets, Expenditures, and Impacts 2009*. Consortium for Energy Efficiency, 98 North Washington Street, Suite 101, Boston, MA 02114, 5 March, www.cee1.org/files/StateofEIndustry2009.pdf.
- North American Energy Working Group (2002), North American Energy Efficiency Standards and Labeling, Natural Resources Canada, December, http://oe.nrcan.gc.ca/NAenergyefficiency/NAEWG_Standards-Labels.pdf.
- OECD (Organisation for Economic Co-operation and Development) (2001a), OECD, "Citizens as partners, OECD Handbook on Information, Consultation and Public Participation in Decision Making." OECD, Paris, www.oecdbookshop.org/oecd/display.asp?K=5LMQCR2KHGS8&DS=Citizens-as-Partners.
- OECD (2001b), *Citizens as Partners in Policy Making*, Focus: Public Management Newsletter, No. 21, September 21, Public Management Service of the OECD Public Management Committee, www.oecd.org/dataoecd/53/32/2536857.pdf.
- OECD (2006), "Can Taxes on Energy Work?", *OECD Observer*, Paris, No 258/259, www.oecdobserver.org/news/fullstory.php/aid/2100/Can_taxes_on_energy_work_.html.
- OECD (2010), "Taxation, Innovation and the Environment", OECD, Paris, http://www.oecd.org/document/6/0,3343,en_2649_34295_46091974_1_1_1_1,00.html
- Ontario Provincial Government (2007), *Go Green: Ontario's action plan on climate change*, www.ene.gov.on.ca/publications/6445e.pdf.
- Pavan, M. (2009) "White Certificates in Italy", Presentation prepared for Federal Ministry for Environment, Natural Conservation and Nuclear Safety and the Wuppertal Institute, Berlin, December, www.wupperinst.org/uploads/tx_wiprojekt/Pavan_BMU_10122009.pdf.
- Price, L. (2005), "Voluntary Agreements for Energy Efficiency or GHG Emissions Reduction in Industry: An Assessment of Programs Around the World", Environmental Energy Technologies Division, LBNL, April, <http://ies.lbl.gov/iespubs/58138.pdf>.
- PROCEL (2010) Brazil's National Electrical Energy Conservation Program, www.eletronbras.com/elb/procel/main.asp.
- Santos, R. *et al.*, (2006), "Stakeholder Participation in the Design of Environmental Policy Mixes", *Ecological Economics*, 60:100 – 110, www.sciencedirect.com/science/article/B6VDY-4J3NYBK-2/2/39f44559a40dd07ea49a883240d0a783.
- Sarkar A. and J. Singh (2010), "Financing Energy Efficiency in Developing Countries—Lessons Learned and Remaining Challenges", *Energy Policy*, doi:10.1016/j.enpol.2010.05.001, www.sciencedirect.com/science?_ob=MIimg&_imagekey=B6V2W-50D0TWX-1-7&_cdi=5713&_user=946274&_pii=S0301421510003502&_origin=search&_coverDate=10%2F31%2F2010&_sk=999619989&_view=c&_wchp=dGLbVtb-zSkzk&_md5=27e9289322351d7adaa3b1a9bfef716c&_ie=/sdarticle.pdf.

- Satchwell, A. *et al.* (June), “A Survey of the U.S. ESCO Industry: Market Growth and Development from 2008 to 2011”, Environmental Energy Technologies Division, LBNL, June, <http://eetd.lbl.gov/ea/emp/reports/lbnl-3479e.pdf>.
- Singh J., *et al.* (2009) *Public Procurement of Energy Efficiency Services*, Energy Sector Management Assistance Program, World Bank, www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/01/04/000333037_20100104232226/Rendered/PDF/524560PUB0publ101Official0Use0Only1.pdf.
- Sustainable Energy Authority of Australia (2004), National Framework for Energy Efficiency - Stakeholder Consultation Report, Energy Efficiency Working Group, August, Energy Efficiency Working Group, www.ret.gov.au/Documents/mce/energy-eff/nfee_documents/nfee_stakehold.pdf.
- Taylor, R.P. *et al.* (2008), *Financing Energy Efficiency - Lessons from Brazil, China, India, and Beyond*, World Bank/IBRD (International Bank for Reconstruction and Development), Washington, DC, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.140.1395&rep=rep1&type=pdf>.
- UNECE (United Nations Economic Commission for Europe) (2007), “Delivering Energy Efficiency”, Working Paper No. WGSO-4/2007/14, Submitted by the Energy Charter Secretariat to the Committee on Environmental Policy, Economic Commission for Europe, 8 May, www.unece.org/env/documents/2007/ece/cep/ac.11/ece.cep.ac.11.2007.24.e.pdf.
- UNECE (2010), “Financing Global Climate Change Mitigation” United Nations ECE Energy Series No. 37, www.unece.org/energy/se/pdfs/gee21/gee21_pub/GEE21_GlobalClimateChangeMitigation_ESE37.pdf.
- UNEP (United Nations Environment Programme) (2007), *UNEP Handbook for Drafting Laws on Energy Efficiency and Renewable Energy Resources*, Prepared for the Environmental Law Branch, Division of Environmental Law and Conventions, UNEP, www.unep.org/law/PDF/UNEP_Energy_Handbook.pdf.
- UNESCAP (United Nations Economic and Social Commission for Asia and the Pacific)(1999), *Energy Efficiency – Compendium of Energy Conservation Legislation in the Asia and Pacific Region*, prepared by the Environment and Development Division (EDD), UNESCAP Reference No. ST/ESCAP/1908, www.unescap.org/publications/detail.asp?id=758.
- UNESCAP (2010), *Assessment Report on Energy Efficiency Institutions in Asia: Assessment Report*, United Nations, New York, <http://eeasia.unescap.org/PDFs/Assessment-Report.pdf>.
- US EPA, (US Environmental Protection Agency) (2007a), “Model Energy Efficiency Program Impact Evaluation Guide”, A Resource of the National Action Plan for Energy Efficiency, prepared by Schiller Associates for US EPA, November, www.epa.gov/cleanenergy/documents/suca/evaluation_guide.pdf.
- US EPA (2007b), “Aligning Utility Incentives with Investment in Energy Efficiency”, a Resource of the National Action Plan for Energy Efficiency, November, www.epa.gov/cleanenergy/documents/suca/incentives.pdf.
- US EPA (2007c), “Guide to Resource Planning with Energy Efficiency”, a Resource of the National Action Plan for Energy Efficiency, November, www.epa.gov/cleanenergy/documents/suca/resource_planning.pdf.
- US EPA (2008), National Action Plan for Energy Efficiency Vision for 2025: A Framework for Change, November, www.epa.gov/cleanenergy/documents/suca/vision.pdf.

- Victoria State Government (2006). Energy efficiency for Victoria action plan, www.sustainability.vic.gov.au/resources/documents/Energy_Efficiency.pdf.
- Vine, E. and J. Sathaye, (1999), "Guidelines for the Monitoring, Evaluation, Reporting, Verification, and Certification of Energy-Efficiency Projects for Climate-Change Mitigation", LBNL (Lawrence Berkely National Laboratory) Report No. 41543 , <http://ies.lbl.gov/iespubs/41543.pdf>.
- Waide, P. and Buchner, B., 2008. *Utility energy efficiency schemes: savings obligations and trading*. Energy Efficiency, 1:297-311.
- WBCSD (World Business Council for Sustainable Development) (2010), *South Africa Energy Efficiency Accord: National Business, WBCSD. Initiative*, www.wbcd.org/plugins/DocSearch/details.asp?type=DocDet&ObjectId=MjlxODE.
- WEC (World Energy Council) (2008), *Energy Efficiency Policies around the World*, WEC, Regency House 1-4 Warwick Street, London W1B 5LT United Kingdom. ISBN: 0 946121 30 3, www.worldenergy.org/documents/energyefficiency_final_online.pdf.
- World Bank (2004a), *Monitoring and Evaluation: Some Tools, Methods and Approaches*, World Bank Operations Evaluation Department, Knowledge Programs and Evaluation Capacity Development Group (OEDKE), Washington, www.mfcr.cz/cps/rde/xbcr/mfcr/WB_Evaluation_ME_Tools_2004_pdf.pdf.
- World Bank (2005), *World Bank/GEF Energy Efficiency Portfolio Review and Practitioners' Handbook*, World Bank Environment Department, Washington, D.C, <http://siteresources.worldbank.org/INTCC/812001-1110807496989/20480590/WBGEFEnergyEfficiencyHandbook2004.pdf> .
- World Bank (2006a), *Post-Implementation Impact Assessment; Thailand Promotion of Electrical Energy Efficiency Project*, prepared for World Bank – GEF Coordination Team by Marbek Resource Consultants Ltd, <http://siteresources.worldbank.org/GLOBALENVIRONMENTFACILITYGEFOPERATIONS/Resources/Publications-Presentations/Thailand.pdf>.
- World Bank (2006b), *Issue Brief: Global Gas Flaring Reduction Partnership*, World Bank, December, <http://siteresources.worldbank.org/INTGGFR/Resources/GGFR-IssueBrief.pdf>.
- World Bank, (2010c), *Winds of Change: East Asia's Sustainable Energy Future*. The World Bank East Asia Infrastructure Unit (EASIN), April, http://siteresources.worldbank.org/INTEASTASIAPACIFIC/Resources/226262-1271320774648/windsofchange_fullreport.pdf.