



Implementation of the 25 energy efficiency policy recommendations in IEA member countries: recent developments

Period from March 2009 to March 2011

Prepared by Sara Bryan Pasquier

The views expressed in this paper are those of the authors and do not necessarily reflect the views or policy of the International Energy Agency (IEA) Secretariat or of its individual member countries. This paper is a work in progress, designed to elicit comments and further debate; thus, comments are welcome, directed to the authors at: sara.pasquier@iea.org

Implementation of the 25 energy efficiency policy recommendations in IEA member countries: recent developments

30 March 2011

Introduction

To support governments with their implementation of energy efficiency, the IEA recommended the adoption of specific energy efficiency policy measures to the G8 summits in 2006, 2007 and 2008. The consolidated set of recommendations to these summits covers 25 fields of action across seven priority areas: cross-sectoral activities, buildings, appliances, lighting, transport, industry and electric utilities.

In 2009, the IEA conducted a first evaluation of member-country implementation of these 25 energy efficiency policy recommendations, and similar measures. A second evaluation is underway and will be published in October 2011.

This report provides a short description of policy developments related to the 25 energy efficiency recommendations since the last evaluation in 2009. This paper does not seek to provide a comprehensive review of all energy efficiency-related policy in IEA member countries.

The following countries provided inputs into this report:

- Australia
- Austria
- Canada
- Czech Republic
- Denmark
- Finland
- Germany
- Hungary
- Ireland
- Italy
- Japan
- Korea
- Luxembourg
- Netherlands
- New Zealand
- Norway
- Portugal
- Slovak Republic
- Spain
- Sweden
- Switzerland
- Turkey
- UK
- USA

Summary

Countries reported a wide range of energy efficiency policy activity related to the IEA 25 energy efficiency policy recommendations. Compared with the evaluation conducted in spring 2009, countries have increased efforts to adopt common energy savings verification and measurement protocols to reduce uncertainties in quantifying the benefits of energy efficiency investments. Many countries have also implemented policies to improve compliance, monitoring and enforcement.

In the buildings sector, countries are implementing a variety of policies to promote energy efficiency. For example, many countries reported efforts to increase public awareness of building energy

performance through building certification, publication of information on the building stock and advice on how to improve building efficiency.

Appliances and equipment are also getting attention. Countries reported strengthening the minimum energy performance standards (MEPs) of televisions, set-top boxes and other products.

Policies to improve energy management in the industry sector are underway, as are various schemes to encourage electricity providers to deliver cost-effective energy savings to end users.

Perhaps the greatest progress with implementing energy efficiency policies related to the IEA 25 energy efficiency recommendations occurred in the transport sector. Countries reported efforts to lower rolling resistance and promote appropriate tyre inflation pressure. They also outlined recent policies to strengthen fuel-efficiency standards for light-duty vehicles. Many countries also mentioned policies to promote eco-driving through driver's education programmes and required installation of feedback systems.

1. Cross sectoral

Several countries reported efforts by the government to facilitate the private sector's involvement in energy efficiency investments. Often these efforts take the form of adopting common energy savings verification and measurement protocols to reduce existing uncertainties in quantifying the benefits of energy efficiency investments. For example, **Canada's** Global Superior Energy Performance (GSEP) public-private partnership seeks to promote the adoption of an energy management system through a network of harmonised certification programmes established by participating governments. Under GSEP, a measurement and verification (M&V) protocol will be developed to verify conformance to ISO 50001 and energy performance improvements.

Denmark has developed standard values for savings in relation to the energy saving obligations for utilities. A new study shows companies have met their 2010 target. From 2011, energy savings are weighted in relation to life-time, CO₂ reduction, and other criteria. For more information, see: <http://www.ens.dk/EN-US/CONSUMPTIONANDSAVINGS/Sider/Forside.aspx>

In all **EU** member countries, energy savings protocols are being developed under the Directive on Energy End-use Efficiency and Energy Services (2006/32/EC) Articles 9 and 15.

The **Slovak** Innovation and Energy Agency (SIEA) operates an energy efficiency monitoring system according to Act No. 476/2008 Coll. on Energy Efficiency. Energy savings protocols will be gradually included as a part of the monitoring system.

In the **United States**, the Superior Energy Performance initiative, which is directed at US and global improvements in energy management based on ISO 50001, began developing and testing an improved monitoring and verification protocol. In parallel, new methods for measuring and verifying energy savings are being developed that take advantage of advanced measuring devices, and new statistical methods.

Several countries have launched programmes to fund energy efficiency improvements. **Hungary**, for example, launched a large-scale economic incentive package, called the New Szechenyi Plan, in early 2011. This multi-year programme with a EUR 2,5 billion budget seeks to improve the competitiveness of the economy. Two of the plan's seven priority areas – green economy and home-guiding programme – include funding for energy efficiency. The energy efficiency of small and medium enterprises will also be a priority under this plan.

Korea's KEMCO has partnered with a private bank to provide USD 550 million to support industry and building energy efficiency projects in 2011. Public-private funding is also available through Korea's carbon fund (USD 180million).

New Zealand reports that several programmes have active 3rd party funding partnership relationships with the finance sector and are achieving useful funding outcomes.

In the **Slovak Republic**, SIEA is collaborating with the private financial sector to establish tools to facilitate energy efficiency financing. SIEA is responsible for preparing draft model contracts for energy services and financial instruments for achieving energy savings. Also in the Slovak Republic, schemes like SLOVSEFF are used to finance energy efficiency measures. SLOVSEFF is based on a credit line and financial resources from the Bohunice International Decommissioning Support Fund, administered by EBRD through Slovak commercial banks. Another project financed from this source and administered by SIEA is called “Energy Efficiency in Public Buildings”.

Energy efficiency strategies and action plans

A few countries, including Australia and Turkey, reported work on national energy efficiency strategies. In July 2010, **Australia** updated its National Strategy on Energy Efficiency (NSEE), which covers a range of policy measures designed to overcome barriers that prevent energy efficiency uptake. The NSEE focuses on demand-side energy efficiency across all end-use sectors and is accelerating energy efficiency efforts to help prepare the economy for the introduction of a carbon price mechanism. Of note, the NSEE does not contain specific energy saving targets.

Turkey drafted the Energy Efficiency Strategy Paper, which includes indicative sectoral targets. This paper will be sent to the High Planning Council via the Ministry of Energy and Natural Resources (MENR) for formal approval.

Indicators

The **Slovak Republic** reported on work to improve the quality of energy efficiency data submitted in the annual template developed by the IEA in co-operation with other organisations. Monitoring systems are gradually being implemented and individual components are in different stages of preparation and implementation. Much of the data template can be completed. The Slovak Republic recognises, however, that there is insufficient data provided on the service sector and an incomplete data series for the transport sector.

Compliance, monitoring, enforcement and evaluation

Governments are improving methods to ensure both voluntary and mandatory energy efficiency policies are adequately monitored, enforced and evaluated. For example, **Australia's** Energy Efficiency Opportunities Act (EEO Act) established measures for compliance and verification. Consultation with large energy using companies in the EEO programme is underway to establish better monitoring and evaluation procedures for the EEO programme's second cycle, which runs from July 2011 to June 2016. Australia's Minimum Energy Performance Standards (MEPS) programme has standard procedures for compliance, monitoring and enforcement that are followed for each new item of plant and equipment to be covered under the programme. Institutional arrangements exist for the enforcement of MEPS.

Canada described a robust system (established by the Energy Efficiency Act) for evaluating policy and programme success during and after implementation. The Energy Efficiency Act requires this information to be published in an annual ‘Report to Parliament.’ Programmes and policies are audited according to Canada-wide procedures for audits (e.g. through the Auditor General and the Commissioner of the Environment and Sustainable Development), and reviewed in annual planning and priorities submissions. In compliance with the federal Transfer Payments Policy, all programmes are also regularly evaluated and the results published.

EU member countries are significantly improving compliance, monitoring and enforcement (CME) through transposition of several Directives. The **Slovak Republic**, for example, reported passing several acts to implement EU Directives that lead to greater CME; Act No. 476/2008 Coll. on Energy Efficiency (defining reporting requirements of all stakeholders in legislation), Act No. 555/2005 Coll. on Energy Performance of Buildings, Act No. 17/2007 Coll. on Regular Inspection of Boilers, Heating Systems and Air Conditioning Systems and Act No. 529/2010 Coll. on Ecodesign.

In **Turkey**, a new Division of Monitoring and Evaluation was established in the General Directorate of Electrical Power Resources Survey Administration (EİE) at the end of 2010. A new project will start in 2011 to establish a comprehensive monitoring and evaluation system and infrastructure.

The **UK** has been actively strengthening market surveillance and enforcement of product standards and labels through the appointment of the National Measurement Office as a newly dedicated central market surveillance authority.

The **United States** has substantially increased the resources allocated to product certification, compliance and enforcement over the last two years and has begun to implement strict new requirements for third party testing and verification for products with Energy Star labels. The Department of Energy (DOE) now has its own product test facility and is in the process of constructing an even larger facility. DOE has initiated dozens of compliance actions to ensure full compliance with its product standards and Energy Star labeling requirements.

2. Buildings

Many IEA member countries reported recent policies to improve the efficiency of the buildings sector. For example, in May 2010, **EU** member countries adopted a recast of the Energy Performance of Buildings Directive (EPBD, 2002/91/EC), which sets requirements for energy efficiency in building codes, including minimum energy performance standards and energy certificates (2010/31/EU). The recast seeks to strengthen energy performance requirements and clarify and streamline some earlier provisions.

Building codes for new buildings

Countries described efforts to strengthen and enforce building codes for new buildings. **Canada**, for example, is supporting the design and construction of new houses and buildings to be 25% more energy efficient than current practices by 2011 for commercial buildings and 2012 for houses, by working with all levels of government to support the development of a more stringent National Energy Code for Buildings (with housing code work due in 2012). The federal government will also support provinces and territories in the adoption and implementation of mandatory energy efficiency requirements for all new housing using the EnerGuide for Houses rating tool. Canada is committed to undertaking work to further strengthen the 2011 building code by 2015. The federal government is developing the next generation of its voluntary energy-efficiency design standards for new houses to be seamless with the new energy requirements being developed for the building code.

In June and December 2010, **Korea** reinforced building code standards and standby power. A further revision of building-code standards is scheduled in 2012.

In August 2010, **Luxembourg** updated its building codes related to energy performance in non-residential buildings.

The **Netherlands** reported that the building code standard is set for cost efficiency over the lifetime of the measures.

In the **UK**, building regulations were revised and strengthened in 2010. Further revisions will follow in 2013 and 2016.

Passive-energy houses and zero-energy buildings

Denmark, along with a few other countries, is implementing policies to support the construction of buildings with very-low or no-net energy consumption (Passive Energy Houses and Zero Energy Buildings). Denmark set targets for new builds in 2015 and 2020 at or lower than the passive-energy house standard. In accordance with a revised strategy for energy consumption reduction in buildings adopted in April 2009, by 2010, all new buildings must meet requirements for low-energy houses, i.e. less than 50 kWh/m²/year. By 2015, energy consumption of new buildings will have to be reduced by

60 % compared to actual requirements. Denmark requirements for new residential buildings will, by 2015, be equivalent to current voluntary **German** standards for passive-energy houses. The overall vision of the Danish government is that, in the long run, all buildings should be "plus-energy-houses", i.e. houses that produce more energy than they consume.

Existing buildings

Governments reported systematically collecting information on energy efficiency in existing buildings. For example, **Canada** communicates information on energy efficiency to building owners, operators and suppliers of professional services across the country through an electronic newsletter that is sent on a monthly basis to 20,000 readers in the commercial buildings sector. Available in all Canada's provinces and territories, the ecoENERGY for Buildings and Houses programme has encouraged both the construction and retrofit of more energy-efficient buildings and houses and offered a wide range of information, publications, training and other resources on energy-efficient technologies and practices in buildings. Information and initiatives for industrial buildings have been provided through ecoENERGY for Industry and its Canadian Industry Program for Energy Conservation. Information is also available on the NRCan web site and a special stakeholder relations team is in place to pro-actively market building energy efficiency to appropriate target audiences.

In **Germany**, the Energy Service Act requires energy supply companies to inform end-users about available energy services and about the effectiveness of energy savings measures on a yearly basis. The Federal office for energy-efficiency (Bundesstelle für Energieeffizienz) created a publicly available national database for energy services at the end of January 2011. Further information is available through the project "Zukunft Haus", operated by the German Energy Agency (dena).

Japan's DECC, Database for Energy Consumption of Commercial buildings, includes information on building application, size, type and age.

In **New Zealand**, a range of programmes fund upgrades in commercial buildings. A large insulation programme, Warm up New Zealand: Heat Smart, is funding upgrades of ceiling and floor insulation in homes. Grants are available for highly-efficient heaters.

Building certification

Governments are taking action to make building energy efficiency more visible and to provide information on major energy-savings opportunities. For example, several **EU** countries reported progress towards adopting the Directive on the Energy Performance of Buildings (EPBD, 2002/91/EC), which sets, among other things, requirements for building energy certificates (a recast of the EPBD 2010/31/EU was adopted in May 2010). For example, the **Netherlands** mentioned that energy labels for buildings are mandatory and that sanctions for noncompliance will be strengthened in January 2013. The **Slovak Republic** noted its monitoring system for energy certificates has been in operation since 2010.

Sweden also mentioned that an energy certificate is required whenever a building is sold, rented or constructed. A certificate is also required when the building is large and holds public-sector functions. The owner is responsible for providing an energy certificate. In public buildings, energy certificates must be visible. Energy certificates must contain suggestions of how to improve energy efficiency (for further details, see government regulation 2006:1592 and the stipulations by the Swedish National Board of Housing (BFS 2007:4)).

The **UK** reported rolling out mandatory Energy Performance Certificates (EPC) for all buildings on sale or for lease. EPCs contain recommendations for cost-effective action to improve building efficiency and links to sources of advice. UK government departments are currently exploring options to strengthen the EPC regime to ensure information for buyers or renters is relevant, targeted, and applicable to a specific property.

By the end of 2010, half of **Swiss** cantons, equivalent to around 40% of the Swiss population, had voluntarily implemented the “energy passport in buildings scheme”. Under this scheme, an energy – performance certificate, called an energy passport, is issued by the owner.

Windows and other glazed areas

A few countries outlined plans to improve the efficiency windows and other glazed areas. The **EU**, for example, extended the Eco-design directive to energy related products. In the next few years, MEPS for windows will likely be established at the EU level.

To promote improved energy efficiency in windows and other glazed areas, an independent energy rating assessment scheme has been developed by the National Standards Authority of **Ireland**. The scheme is voluntary in nature, although early indications are that it has proved popular among manufacturers.

In **Norway**, energy-efficient windows are covered by the Enova label scheme "Enova anbefaler" and other grant programmes for innovative technologies, including passive houses etc. An incentive for the acquisition of energy-conserving windows is provided through a variety of subsidy schemes (e.g. the programme to introduce highly efficient systems in residential buildings) and tax breaks (e.g. investment-type tax reductions for energy conservation renovation work including installation of solar power generation equipment). Moreover, the national or local governments promote the procurement of ecologically friendly products (for example, double-pane glass).

3. Appliances

Governments are implementing a range of policies to improve the efficiency of appliances. In **EU** member countries, for example, the recast Directive Establishing a Framework for Setting Ecodesign Requirements for Energy-related Products (Ecodesign, 2009/125/EC) aims to improve energy efficiency throughout a product’s lifecycle. It applies to products that use energy and to products that have an impact on energy use, such as building components. This directive was passed in October 2009. Several Directives have been passed to implement the recast.

Also involving EU member countries, the European Parliament passed Directive 2010/30/EU in May 2010. This Directive requires labelling and standard product information on the consumption of energy and other resources by energy-related products.

Several countries are introducing minimum-energy performance standards for televisions and set-top boxes. **Australia**, for example, introduced minimum energy performance standards and labelling for televisions in October 2009. **Canada** has amended the Energy Efficiency Act to include the regulation of TV set top boxes. Pay TV STB have been covered by a voluntary code since January 2010. As well, ENERGY- STAR qualified televisions are actively promoted in the Canadian market. These televisions use approximately 40% less energy than standard units.

Japan revised top-runner standards for TV sets in February 2010. In this revision, TV sets using energy efficient LED backlight were added to improve energy performance. As a result of this standard, the energy consumption of TV sets is expected to improve more than 37% by 2012 over 2008.

Japan is also actively promoting the exchange of information on standards and labelling of energy-saving devices, and supporting various countries’ development and use of international measurement criteria through participation in the Super-efficient Equipment and Appliance Deployment (SEAD) Initiative and the Partnership for Energy Efficiency and Conservation (IPEEC). Moreover, Japan has signed the IEA/4E Implementing Agreement, and has been actively involved in the mapping and benchmarking of energy-saving devices in IEA/4E and actively supporting various countries’ development and use of international measurement criteria.

Korea is adopting policies to promote low-power modes. The Ministry of Knowledge Economy established "Standby Korea 2010" which is a roadmap to limit standby power below 1W by the end of 2010. In 2011, Korea has mandatory 1W standards for around thirty products through the e-Standby

Program and Energy Efficiency Label and Standard Program. Starting in July 2010, Korea mandated a standby warning label for 19 products that do not meet the specified standby power standards.

The **United States** established minimum energy performance standards for over 40 types of appliances and equipment and voluntary Energy Star labelling guidelines for more than 50 products. Over the past two years, DOE expanded the coverage and updated the stringency of standards for a number of major energy using products and has allocated the budget resources necessary to further accelerate these efforts.

4. Lighting

Phase-out of inefficient fuel-based lighting

Several governments reported on programmes to support international efforts to stimulate the adoption of higher efficiency alternatives to fuel-based lighting in off-grid communities.

In **Canada**, for example, the ecoENERGY for Aboriginal and Northern Communities Program has provided USD 15 million in funding for over four years to support Aboriginal and northern communities working on clean energy projects, including community energy baselines; integrating energy efficiency/renewable energy technologies into community infrastructure projects; and large energy projects.

Japan supports the spread of solar cell based lighting in villages detached from power supply grids through the Japanese International Cooperation Agency (JICA) and NEDO, a Japanese organisation that promotes research and development, as well as the dissemination of industrial, energy and environmental technologies.

The **Netherlands** also supports international lighting efforts through the Energising Development programme and the Daeij Ouwens Fund.

The **UK's** Department for International Development, both through its own programmes and working with the Development Banks, is supporting action to replace fuel-based lighting. One example is the Lighting Africa Programme.

The **United States** is sponsoring, through the Clean Energy Ministerial, the Solar and LED Energy Access Program (SLED), a multi-million dollar effort that focuses on the approximately 1.6 billion people who lack access to grid electricity. It aims to transform the global market for affordable, clean and quality-assured off-grid appliances by addressing fundamental barriers to market development. The programme will initially focus on replacing dirty, fossil fuel-based light sources like kerosene lanterns with solar LED lights. The programme is expected to improve lighting services for 10 million people within five years.

Other

Canada supports the development of high-efficiency lighting alternatives through research into new solid-state technologies. The Solid State Lighting Project is a three-year initiative to develop silicon lighting and demonstrate its application in commercially viable lighting products.

For **EU** member countries, Commission Regulation 244/2009 phases out non-directional incandescent bulbs between 2009 and 2012. Directional (reflector) incandescent bulbs will soon be phased out. Also for EU member countries, the Energy Performance of Buildings Directive (2010/31/EU) requires lighting to be considered within the whole building energy performance. However, as opposed to other technical building systems, it is not mandatory for EU Member States to set separate requirements on lighting systems. Non-mandatory EU harmonised standards (CEN) exist that contain reference values for different types of efficient lighting systems.

Korea is moving ahead with policies to phase out the most inefficient incandescent bulbs. The phase out of incandescent lamps began in Korea in June 2010. Incandescent lamps of 10-15 lm/W are no

longer manufactured or sold on the market because MEPS were set at 20 lm/W. Incandescent lamps of 70W-150W (mainly 100W which accounts for 26% of all incandescent lamps) will be phased out of the market from January 2012. Incandescent lamps of 25W-70W (mainly 60W and 30W, which account for 74% of all incandescent lamps) will be phased out of the market from January 2014.

5. Transport

Most IEA member countries have made great progress with implementing policies in the transport sector since March 2009.

Tyres

Efforts to lower rolling resistance and promote appropriate tyre inflation pressure are underway across IEA member countries. In July 2009, for example, EU member countries adopted regulation “concerning type-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units” (EC 661/2009). The European Union also adopted a separate regulation on “the labelling of tyres with respect to fuel efficiency and other essential parameters” (EC 1222/2009) in November 2009. Fuel efficiency, wet grip and external rolling noise of tyres will be indicated in the label. Similar to measures for tyre rolling resistance and noise limits, this regulation will cover almost all tyres used on public roads, such as tyres for passenger cars, light commercial vehicles and heavy-duty vehicles. Tyre labels will be displayed at the point of sale and in technical promotional literature, including websites, by November 2012. This label will allow consumers to make more informed choices and should result in fuel cost savings, as well as a reduction of CO₂ emissions, from vehicles. The EU default is implementation underway. EU member countries will receive “fully implemented” in 2012.

Switzerland is closely following EU tyre regulation. Tyre labelling will enter into force in November 2012.

In December 2008, the **Japanese** government established the Fuel-Efficient Tire Promotion Council. This council published a final report in July 2009 recommending the measurement methods of tyre rolling resistance and wet grip and the establishment of a labelling scheme. In response, the test procedures for tyre rolling resistance referring to the ISO 28580 were established as JIS D4234 in December 2009. The labelling scheme, which is applied to replacement tyres for passenger cars, has been implemented on a voluntary basis since January 2010.

In the **United States**, all new vehicles have been required to have tyre pressure monitoring systems since 2007 and in 2009, the government proposed new energy efficiency labeling requirements for tyres.

Mandatory fuel-efficiency standards for light-duty vehicles

Several governments reported introduction of new mandatory fuel-efficiency standards for light-duty vehicles. In April 2010, for example, Environment **Canada**, the Ministry of Environment, proposed Passenger Automobile and Light Truck Greenhouse Gas (GHG) Emission Regulations (de facto fuel efficiency standards). These regulations were finalized in October 2010 and impose stringent new standards for model year (MY) 2011 and will increase in stringency on an annual basis until MY 2016. For MY 2011, the Canadian standards are aligned with fuel economy standards established by the U.S. National Highway Traffic Safety Administration. For MY 2012-2016, the Canadian standards are aligned with similar GHG standards established by the United States Environmental Protection Agency. In October 2010, Canada announced its intention to further reduce GHG emissions from new cars and light-duty trucks from MY 2017, in collaboration with the United States.

In April 2009, EU member countries adopted the regulation “setting emission performance standards for new passenger cars as part of the Community’s integrated approach to reduce CO₂ emissions from light-duty vehicles” to reduce CO₂ emissions from passenger vehicles (EC 443/2009). Average emissions from new passenger vehicles sold in the European Union have to reach the 120 g CO₂/km

target by 2015. Improvements in motor technology will reduce average emissions to no more than 130 g CO₂/km, while complementary measures will contribute a further emissions cut of up to 10 g CO₂/km, thus reducing overall emissions to 120 g CO₂/km. These complementary measures include efficiency improvements for car components with the highest impact on fuel consumption, such as tyres and air conditioning systems, and a gradual reduction in the carbon content of road fuels, notably through greater use of biofuels. Efficiency requirements for these components are being discussed and will be introduced for these car components.

In July 2009, **Korea** announced a new fuel-economy standard for passenger cars as part of the national Green Growth strategy. The new standards will be phased in from 2012 and then fully implemented in 2015. Each automobile manufacturer can choose between two corporate average targets, i.e. 17 km/L or 140 g CO₂/km. This allows for flexibility in addition to the phase-in approach. Other than phasing-in and corporate average targets, the design of the standard is well aligned with those of the United States and the European Union on features such as weight-based target values, and the credit trading/carry over scheme.

In May 2010, the **United States** required manufacturers to meet an estimated combined mpg-rating of 34.1 for light-duty vehicles by MY 2016. Government agencies have announced their intention to propose light duty vehicle fuel economy standards for years beyond 2016 by September 2011.

Mandatory fuel-efficiency standards for heavy-duty vehicles

Japan is the only country in the world to have fuel-efficiency standards in place for heavy-duty vehicles. In November 2010, the **United States** proposed, for the first time, fuel economy standards for medium- and heavy-duty vehicles. These standards are expected to be made final in 2011.

Eco-drive

Many IEA member countries are making strides to ensure that eco-driving is a central component of government initiatives to improve energy efficiency and reduce CO₂ emissions. In 2009, for example, **EU** member countries adopted the regulation (EC 661/2009), which stipulates the mandatory fitting of a gear-shift indicator (GSI) in all new passenger cars with manual transmission, as part of a European strategy on reducing CO₂ emissions from road vehicles. The GSI displays shifting up or down signs on the instrument panel to ensure optimal gear changing and thereby improve fuel efficiency. It is one of the in-car feedback instruments recommended by the IEA to promote fuel-efficient driving.

Under EU regulations, it is compulsory to teach eco-driving to novice drivers. The implementation of eco-driving training, as a part of the driving license education and examination, can improve fuel economy. Many countries have implemented eco-driving through national and regional eco-driving programmes. For example, in the **Netherlands**, the Institute for Sustainable Mobility runs a partly government-financed campaign to promote eco-driving for professional drivers. It also runs a partly government-financed campaign to promote the importance of correct tyre pressure. Eco-driving measures introduced to the **UK** driving test require new drivers to show that they can drive with fuel-efficiency as well as safely. Learner drivers are expected to know the basics of eco-driving such as accelerating and braking less harshly and changing gears sooner.

Outside the EU, **Korea** is actively involved in promoting eco-driving. As part of the presidential committee adopted five-year action plan for green growth (2009-2013), several initiatives to promote eco-driving have been established. For example, Korea founded an eco-driving education centre in 2010, made agreements with entities and individuals to commit themselves to carrying out eco-driving, and provided information on eco-driving through the internet homepage.

Korea reports that buses, taxis and vans shall be equipped with idling stop devices from 2011. The Ministry of Knowledge Economy will give a subsidy to fleet operators to install an eco-driving indicator in 2011. Korea acknowledges that although measures to promote eco-driving are voluntary, more and more vehicles for public transportation and freight transport, and privately-owned cars have been participating in the eco-driving initiatives.

Other

Several countries reported on planned activity to achieve savings in the transport sector. The **Australian** Government, for example, committed to introducing mandatory CO₂ emissions standards from 2015. The consultation process to determine the emissions targets and to design the standards is underway, with the initial consultation phase completed by mid 2011.

The draft **New Zealand** Energy Efficiency and Conservation Strategy seeks to create a more energy-efficient transport system with a greater diversity of fuels and renewable energy technologies. The government is investigating the optimal mix of measures that can be successfully applied in New Zealand to continue to improve the rate of energy efficiency gain in the fleet.

Other countries have recently implemented transport policies not covered in the 25 energy efficiency recommendations. **Norway** described a light-duty vehicle taxation programme with a CO₂-emission component. The tax (NOK/CO₂) increases with the size of the engine/ CO₂-emissions. This gives a strong incentive to buy vehicles with smaller engines (less CO₂-emissions). In addition to the vehicle tax, a CO₂ tax on fuel increases the incentive to choose fuel-efficient cars and promotes fuel efficient driving.

6. Industry

Minimum energy performance standards (MEPs) for electric motors

Governments are adopting MEPs for electric motors in several countries. For example, in its National Strategy on Energy Efficiency (NSEE), the **Australian** government identified lack of suitable information as the primary barrier to the optimisation of energy efficiency in electric motor-driven systems. Under NSEE key element 1.1.1.c, work is underway to develop targeted outreach information, which will be disseminated to industry on the Energy Efficiency Exchange (EEX) website.

EU member countries adopted MEPs for certain kinds of motors in July 2009 as part of the 2009 European Commission Regulation No 640/2009 implementing Directive 2005/32/EC. An EU evidence study has been commissioned by the European Commission as the first stage in developing minimum performance standards that will cover electric motors that fell outside the scope of the initial regulation.

In response to the IEA's recommendation on motor efficiency, the **Japanese** government issued JIS 4034-2-1 referring to IEC 60034-2-1, which is the international standard for motor measurement methods and JIS C4034-30 referring to IEC 60034-30, which is the standard for efficiency classes. In January 2011, the Japanese government added three-phase induction motors to the Top Runner Program and established a committee for examining concrete standards.

Updated standards for medium-sized electric motors went into effect in the **United States** in December 2010.

Energy management

Governments are providing assistance in the development of energy management (EM) capability through the development and maintenance of EM tools, training, certification and quality assurance. For example, during its mid-cycle review in 2010, the **Australian** EEO found that many EEO companies have developed and adopted formal EM policies. The EEO program covers about 45 % of Australian total energy end use, and 60 % of business energy end use.

In **Norway**, EM is promoted as an integrated part of the industrial energy efficiency programmes (Enova). The European standard for EM has been adapted as a national standard (NS-EN 16001). A specific programme addressing EM is under development.

The **Slovak Republic** supports through EU structural funds a system of industrial energy consumption monitoring and control, which includes installation and modernization of energy monitoring and management systems. Energy audits, on a voluntary basis, are planned measures in the National Energy Efficiency Action Plan (NEEAP) for years 2011–2013.

The **UK** has done a lot to establish a scheme to monitor, evaluate and report industrial energy consumption. The government publishes the "Digest of UK Energy Statistics" and the associated "Energy Consumption in the UK", which breaks consumption down into 12 industrial subsectors. Practical examples of the monitoring, evaluation and reporting of collected data include: (i) the Carbon Reduction Commitment, a mandatory scheme aimed at large public and private sector organisations. Participating organisations are responsible for around 10% of the UK's emissions. The scheme features a published annual performance league table that ranks participants on energy efficiency performance; Climate Change Agreements cover a wide range of industry sectors, from major energy-intensive processes such as steel, chemicals and cement, to agricultural businesses. Attainment of the energy saving target set under the Climate Change Agreements allows for a discount of up to 80% of the Climate Change Levy (an energy tax).

The results of these CCAs are published with a sectoral breakdown. The Carbon Trust has also produced a series of energy benchmarking tools, including for the industrial buildings sector.

Small and medium-sized enterprises

Governments are planning and implementing a package of policies and measures to promote energy efficiency in small and medium-sized enterprises (SMEs). **Italy's** National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), for example, is planning activity in this area.

Portugal's Cabinet Resolution n°.2/2011 passed in January 2011 created the legal framework for energy service companies (ESCOs) and procurement management of energy services for SMEs.

The **Slovak Republic's** SIEA is implementing the energy efficiency information project "Live with Energy". This project is financed through EU Structural funds and provides information support to different stakeholders including entrepreneurs in SMEs.

Spain's Energy Efficiency Action Plan 2008-2012 includes subsidy programmes for SMEs to improve energy efficiency through equipment renovation and substitution of technical processes (grants of up to 30% of eligible cost). Spain's second NEEAP (to be submitted to the European Commission by the end of June 2011) will also include such support for SMEs.

Sweden put in place a support scheme for energy audits for SMEs in January 2010 (Government Regulation 2009:1577). Under this scheme, SMEs can receive a maximum of EUR 3,500 (or 50 % of total costs) for energy audits. The scheme will be in place until 2014.

7. Energy utilities

Governments are developing and implementing mechanisms that strengthen the incentives for utilities to deliver cost-effective energy savings to end users. For example, **Canada's** Council of Energy Minister's supports collaborative actions to promote and support energy efficiency. Under the auspices of the Steering Committee on Energy Efficiency, the Built Environment and Equipment Working Group, with representatives from the federal, provincial, territorial governments, has outlined tools and policy measures to encourage stakeholders to implement energy efficiency best practice. In addition, with jurisdictional authority over utilities, a number of provinces have implemented diverse measures to encourage energy savings at the utility level. In British Columbia, for example, the 2010 Clean Energy Act commits to meeting 66% percent of future incremental power demand from conservation and efficiency improvements by 2020.

In **Denmark**, all distribution companies have energy-saving obligations with annual targets, which were increased 100% in 2010. The savings are weighted in relation to life-time, Co2- reduction, non-ETS, etc.

The government of **Ireland** has outlined a programme for placing obligations on energy suppliers of >75GWh to Irish energy end-users. Finalisation of annual targets, eligible measures and savings credits are underway and it is intended that companies will have signed voluntary agreements to meet these targets by mid-2011. Some energy providers have already begun operating in the energy-service market in preparation for the obligation programme. Currently vehicles for trading energy savings will be left to participants who will be allowed to buy compliance from over-performing participants or to negotiate action on their behalf. For more information on the scheme, see the Department of Communications, Energy and Natural Resources consultation document.

Spain will include several initiatives to incentivise utilities to deliver cost-effective energy savings to end users in its second National Energy Efficiency Action Plan, to be submitted to the European Commission by the end of June 2011.

The **UK** established CERT, a statutory obligation on all domestic energy suppliers in England, Scotland and Wales with a customer base in excess of 50,000 to make savings in the amount of CO2 emitted by householders. CERT is the third cycle of the UK's household energy supplier obligation, previously called the Energy Efficiency Commitment, which has been running since 2002. It was announced on 30 June 2010 that, subject to Parliamentary approval, a restructured Carbon Emissions Reduction Target will be extended to December 2012. The UK government is currently exploring options for the successor to CERT, to run from 2013.

Under new proposals in the UK, energy suppliers are required to deliver measures that will provide overall lifetime carbon dioxide savings of 293 million tonnes of lifetime CO2 savings (currently 185 million tonnes, or an annual net saving of 4.2 million tonnes of CO2 by the end of the programme). Suppliers meet their targets by promoting energy saving measures, including loft and cavity wall insulation and high-efficiency lighting and appliances. Direct subsidy of energy saving products has been a typical promotion activity.

The Community Energy Saving Programme 2009-2012 (CESP) places a domestic carbon reduction obligation on energy companies (both generation and supply) to help families in the most deprived areas of Great Britain to reduce energy bills. CESP sets an obligation on energy suppliers with 50,000 or more domestic customers, and electricity generators who have generated on average 10 TWh/yr or more over three years.

In the **United States**, twenty-four states, representing over 50% of the US population and energy demand, have placed energy efficiency resource obligations on their regulated electricity utilities.