Asia-Pacific
Economic Cooperation

Compendium of Energy Efficiency Policies in APEC Economies

Energy Working Group
Asia Pacific Energy Research Center

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FOREWORD

Energy efficiency is the one common "energy resource" available to every economy. At a global level, it is one of the most important and cost-effective tools to building a sustainable energy ecosystem. At the individual economy level, energy efficiency enhances energy security, economic productivity and helps economies to achieve climate change objectives.

Indeed, the International Energy Agency has aptly termed it the 'first fuel' as all scenarios aimed at achieving sustainability targets require a significant contribution from energy efficiency first. The growing focus on energy efficiency in policy making across the globe has also prompted increasing international collaboration.

Within the region, APEC recognises the importance of energy efficiency in the development of member economies and in progressing its overall objectives. As such, at the 2007 Meeting of APEC Energy Ministers in Australia, the Ministers agreed to work towards achieving an APEC-wide aspirational goal to reduce energy intensity by at least 25% by 2030 compared with 2005 levels. This goal aimed to encourage APEC economies to set individual goals and action plans for improving energy efficiency, reflecting the individual circumstances of each economy.

Subsequently in 2011, following APERC's analysis of the 2007 target, the APEC Energy Working Group (EWG) recommended an increased target in recognition of structural economic changes and ongoing energy efficiency and conservation work. As a result, APEC Leaders agreed on a 45% reduction in APEC's aggregate energy intensity by 2035 compared with 2005 levels.

The Compendium of Energy Efficiency Policies in APEC Economies seeks to promote information sharing of energy efficiency and energy conservation policies and practices across APEC economies. It contains information on energy efficiency policies and initiatives in all APEC economies (with the exception of Papua New Guinea). From 2017, APERC revamped The Compendium turning into a living document, which will be updated with information gathered through other projects such as the annual APEC Energy Overview and Participation in meetings of the APEC Energy Working Group (EWG) and the Expert Group on Energy Efficiency and Conservation (EGEE&C).

APERC hopes that this report will help to deepen the understanding of energy efficiency issues within APEC.

Takato Ojimi
President
Asia Pacific Energy Research Centre (APERC)

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AUSTRALIA

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

The Australian Government released the Energy White Paper 2015 (EWP 2015) to provide consumers with certainty and confidence in energy policy. The EWP 2015 includes a strategic policy framework that addresses the challenges in Australia's energy sector and positions the economy for long-term transformation regarding the way it produces and uses energy.

As part of the EWP 2015, the government announced a National Energy Productivity Plan (NEPP), including an energy productivity improvement target of 40% between 2015 and 2030. This is equivalent to a 402 petajoule (PJ) energy demand reduction compared to business-as-usual (BAU). Energy productivity will be measured as the number of Australian dollars of GDP produced per PJ of primary energy. Australia also has an emissions reduction target of 26% to 28% below 2005 levels by 2030.

There are a number of Government programmes, grants and incentives to assist in achieving the 40% energy productivity improvement.

2. ENERGY EFFICIENCY STRATEGY

The key objective of the NEPP is to empower energy consumers in all sectors to make better energy decisions and effectively manage their energy costs. Attached to this overall objective is the 40% energy productivity target. The NEPP includes:

- Measures that support efficient decisions when selecting energy services such as smart meters, cost-reflective prices, access to information, and labels.
- Measures that support the development of better energy services through innovation and competition such as reducing barriers to entry in the market for new technologies and service options.
- Measures that ensure efficient minimum services and performance including those through standards for equipment, appliances, and buildings as well as financial resources and budget allocation.

FUNDING

The NEPP is not funded directly; however, a number of other programmes at state and federal level will contribute to achieving the target.

LINKS

The National Energy Productivity Plan: http://www.environment.gov.au/energy/national-energy-productivity-plan

3. ENERGY EFFICIENCY ACTION PLAN

Not applicable.

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

The National Energy Productivity Plan, discussed previously, is the government's tent pole energy efficiency policy. It targets an energy productivity improvement of 40% between 2015 and 2030.

The Australian Government is also committed to reducing greenhouse gas emissions to 26% to 28% below 2005 levels by 2030.

LINKS

The National Energy Productivity Plan: http://www.environment.gov.au/energy/national-energy-productivity-plan

Climate Change Policy: http://www.environment.gov.au/climate-change

5. SECTORAL ENERGY EFFICIENCY TARGETS

The EWP 2015 and NEPP do not state sectoral targets although the EWP does provide estimates of potential energy savings by sector. If all energy efficiency potential is achieved, then Australia would far surpass its energy productivity target.

LINKS

NEPP Annual Report 2016: http://www.coagenergycouncil.gov.au/publications/national-energy-productivity-plan-annual-report-2016

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

The Department of the Environment and Energy (DEE). Established in July 2016 from components of the former Department of the Environment and Department of Industry, Innovation and Science.

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

The Australian Constitution divides legislative powers between the federal and state governments. As such, policy responsibility for energy efficiency varies between the levels of government. At the economy level, the DEE has direct responsibility for the development of energy efficiency policies and measures as well as the coordination of the implementation of the NEPP. A number of other federal government agencies have sectoral interests in energy efficiency, including the departments in charge of transport, industry, research and development and education.

STAFF AND BUDGET

Total departmental resourcing is estimated to be AUD $62.96 million in the 2016-17 financial year with an average staffing level of 1 755. Specific energy efficiency budget and staffing numbers are not available.

BUDGET USE

Not available.

LINKS

The DEE: http://www.environment.gov.au

The 2016 DEE Budget: http://www.environment.gov.au/system/files/resources/cf243495-d7df-4dc8-84fd-4411be7f4df7/files/environment-pbs-2016-17.pdf

7. OTHER ENERGY EFFICIENCY AGENCIES

The NEPP is the main mechanism for coordinating energy efficiency policies and actions with the state and local governments through the Commonwealth of Australian Governments (COAG). At the state/territory level, there is a wide range of institutional structures. The following list covers the agencies that are primarily responsible for energy efficiency:

- Australian Capital Territory: The Environment, Planning and Sustainable Development Directorate.
- New South Wales: Department of Planning and Environment.
- Northern Territory: Department of Lands, Planning and the Environment.
- Queensland: Department of Energy and Water Supply.
- South Australia: Department of State Development and Department of Environment, Water and Natural Resources.
- Tasmania: Department of State Development and Department of Premier and Cabinet.
- Victoria: Department of Environment, Land, Water and Planning.
- Western Australia: Public Utilities Office within the Department of Finance.

LINKS

ACT: http://www.environment.act.gov.au/

NSW: http://www.environment.nsw.gov.au/ and http://www.resourcesandenergy.nsw.gov.au

NT: https://denr.nt.gov.au/

QLD: https://www.dews.qld.gov.au/

SA: http://www.environment.sa.gov.au/Home and http://statedevelopment.sa.gov.au/resources/energy-efficiency

TAS: http://www.stategrowth.tas.gov.au/energy and http://www.dpac.tas.gov.au/divisions/climatechange/Climate_Change_Priorities

VIC: https://www.climatechange.vic.gov.au/

WA: http://www.finance.wa.gov.au/cms/Public_Utilities_Office.aspx

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

At the federal level, DEE manages a wide range of information, capacity building, and knowledge-sharing web resources, including the following:

- The Energy Efficiency Exchange (EEX) – supporting energy management and energy efficiency strategies for industry, covering a range of sectors and technologies.
- YourEnergySavings.gov.au – how to save energy, save money, and reduce one's impact at home, including information regarding all available government assistance.
- YourHome.gov.au – providing guidance on building and renovating homes in a sustainable manner.

The department also manages the COAG website for the Equipment Energy Efficiency Programme and developed several mobile applications that allow consumers to compare the energy efficiency of labelled appliances and lighting through their smartphones.

LINKS

Energy Efficiency Exchange: http://www.eex.gov.au

Your Savings at Home: http://www.YourEnergySavings.gov.au

Your Home: http://www.YourHome.gov.au

Energy Rating: http://www.energyrating.gov.au

9. ENERGY EFFICIENCY AWARENESS RAISING

There are no economy-wide energy efficiency awareness-raising programmes. However, awareness campaigns may be undertaken within specific initiatives such as the phasing out of inefficient incandescent lighting. Some states also participate in awareness-raising activities.

LINKS

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

The NEPP includes a number of measures related to capacity building for industry, including supporting businesses to improve their energy efficiency and assisting businesses to ensure that they have adequate knowledge and skills as well as the capacity to meet the challenges of operating in a low-carbon economy. Key elements of these measures include developing targeted outreach information and addressing skills gaps and shortages. A number of state governments also offer energy efficiency training, particularly targeted towards business.

LINKS

NSW Training: http://www.environment.nsw.gov.au/business/energy-efficiency-training.htm

VIC Training: http://www.sustainability.vic.gov.au/services-and-advice/business/energy-and-materials-efficiency-for-business/boosting-productivity/energy-efficiency-capability-grants

11. PRIVATELY OPERATED TRAINING

A significant number of professional and industry organisations, universities and vocational education institutions provide training related to energy efficiency.

LINKS

Energy Efficiency Exchange Training Providers: https://www.eex.gov.au/business-support/energy-efficiency-skills-and-training/energy-efficiency-training-providers

Higher Education Training Providers: http://sustainability.edu.au/

12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

In general, Australia adopts a technology-neutral approach to research and development funding, with researchers focusing on energy efficiency-related projects that compete with other projects for funding. However, there are a number of specific programmes that support energy efficiency R&D.

- Clean Energy Finance Corporation

  The AUD $10 billion Clean Energy Finance Corporation was established in July 2013, independent from the Australian Government. It invests in the commercialisation and deployment of renewable energy, low pollution, and energy-efficient technologies. Investments are divided into two streams: a renewable energy stream and an energy-efficient, low-emissions technology stream, each with half of the allocated funding.

- Entrepreneurs' Programme

  Provides practical support for business, researchers and entrepreneurs including in the form of co-funded grants to commercialise novel intellectual property in the form of new products, processes and services.

- Cooperative Research Centres (CPC) Programme

  Supports industry-lead collaboration between industry, researchers and the community to focus on research and development towards commercialisation.

LINKS

CEFC: http://www.cefc.com.au/

Entrepreneurs' Programme: https://www.business.gov.au/assistance/entrepreneurs-programme

CPC Programme: https://www.business.gov.au/assistance/cooperative-research-centres-programme

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

At the federal level, the Department of the Environment and Energy is responsible for energy efficiency policy and analysis. Assessments of programmes are generally carried out ex post either by the Department or externally at the Department's request.

State and Territory Governments also generally carry out assessments of their own programmes when completed.

LEGAL POWERS

The National Greenhouse and Energy Reporting Scheme (NGERS), established in 2007, is the framework for reporting and disseminating company information about greenhouse gas emissions, energy production and consumption and other information specified under the legislation and is administered by the Clean Energy Regulator. For the 2010-11 financial year and subsequent years, corporations must report if their group consumes more than 200 terajoules (TJ) of energy per year or if a facility in their group consumes more than 100 TJ of energy per year.

LINKS

NGERS: http://www.cleanenergyregulator.gov.au/NGER

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

Surveys, statistical compilations, end-use information, monitoring, and trend analysis are all undertaken. In addition, databases are maintained to assist in programme evaluation, meeting international reporting obligations, and policy formation. The Australian Government's DEE is mainly responsible for energy efficiency monitoring and reporting. Its programmes and measures include:

- Through the Commercial Building Disclosure Programme, the DEE produces a public listing of energy performance regarding office buildings in Australia, along with an increasingly rich set of data analyses.
- The DEE also publishes the Australian Energy Statistics, Australia's official and authoritative source of energy statistics. The Australian Bureau of Statistics also collects and publishes a wide range of energy-related statistics.

LINKS

NGERS: http://www.cleanenergyregulator.gov.au/NGER

CBD dataset: http://cbd.gov.au/registers

Australian Energy Statistics: http://www.environment.gov.au/energy/energy-statistics

Australian Bureau of Statistics Energy Statistics: http://www.abs.gov.au/Energy

15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

Government funded programmes are usually required to conduct an evaluation when concluded.

16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

Emissions Reduction Fund

OBJECTIVE

Provides businesses with the opportunity to earn Australian carbon credit units (ACCUs) for every tonne of carbon dioxide equivalent stored or avoided emitting through projects that adopt new practices and technologies. ACCUs can then be sold to generate income.

OUTLINE

The Emissions Reduction Fund (ERF) is a scheme that provides financial incentives to organisations and individuals to use new practices and technologies in their business, so they can reduce their greenhouse gas emissions and improve their energy efficiency.

Participants in the scheme can earn Australian carbon credit units (ACCUs) for every tonne of carbon dioxide equivalent they store or avoid emitting. ACCUs can be sold to generate income for participants.

To ensure emissions reductions are not displaced by a rise in emissions elsewhere in the economy, the Emissions Reduction Fund includes a safeguard mechanism, which encourages large businesses to keep their emissions within historical levels.

LINKS

ERF: https://www.business.gov.au/assistance/emissions-reduction-fund

Tax measures

OBJECTIVE

The Australian Government offers an R&D tax incentive programme to encourage more Australian companies to undertake R&D.

OUTLINE

The incentive allows for:

- A 43.5% refundable tax offset for eligible R&D entities with a turnover of less than $20 million per annum.
- A non-refundable 38.5% tax offset for all other eligible R&D entities.

To be eligible, energy efficiency projects must be experimental, based on established scientific principles and processes, and be conducted for the purpose of generating new knowledge.

LINKS

Energy Efficiency Tax Incentives: https://www.eex.gov.au/business-support/grants-funding/tax-incentives

R&D Tax Incentive: https://www.business.gov.au/assistance/research-and-development-tax-incentive

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

Not applicable.

18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

Fuel Consumption Labelling Standard (ADR81/02) and Fuel Consumption Label

OBJECTIVE

Mandated fuel consumption labelling to enable new vehicle purchasers to compare vehicles on a common basis and incorporate vehicle fuel use into their decision-making processes.

OUTLINE

The fuel consumption labelling standard was introduced in 2004 (ADR81/01) and subsequently updated in 2008 (ADR81/02). The standard requires all new vehicles up to 3.5 tons (which includes passenger cars, four-wheel drive vehicles, and light commercial vehicles) to display a model-specific, removable fuel consumption label on the front windscreen.

The label indicates the fuel used (in litres) to travel 100 kilometres and the amount of CO_2 emissions (in grams) that the vehicle emits for each kilometre travelled.

In 2010, a revised version of the fuel consumption label, ADR81/02, was developed to suit electric vehicles and plug-in hybrids. The new label uses the same format as the existing label, but reframed as an Energy Consumption label in order to list the test results for energy consumption and range on the vehicle. The label also includes fuel consumption and CO2 emissions, with pure-electric vehicles displaying '0' and plug-in hybrids displaying their respective testing results. A cross reference to the Green Vehicle Guide website is also provided to address the potential for CO2 emissions during recharging.

LINKS

Green Vehicle Guide: http://www.greenvehicleguide.gov.au/pages/Information/FuelConsumptionLabel

Fuel Consumption Labelling: https://infrastructure.gov.au/roads/environment/fuel_consumption_label.aspx

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Commercial Building Disclosure (CBD)

OBJECTIVE

The CBD Programme is an economy-wide initiative designed to improve the energy efficiency of Australia's large office buildings.

OUTLINE

Under the programme, most sellers or lessors of office space of 2000 square meters (1000 square meters from 1 July 2017) or more are required to obtain and disclose a current Building Energy Efficiency Certificate (BEEC). The BEEC, which is valid for 12 months, must be publicly accessible on the online Building Energy Efficiency Register and include the following:

- A NABERS Energy Star rating for the building.
- An assessment of tenancy lighting in the area of the building that is being sold or leased.
- General energy efficiency guidance.

The Commercial Building Disclosure programme aims to stimulate investment in energy efficiency improvements to existing commercial buildings by providing purchasers and lessees with credible information about the energy efficiency of large, commercial office buildings at the point of sale, lease, and sublease. The programme will lead to more informed purchasers and lessees as well as help transition the commercial office market to a low-carbon future. The programme also provides a wide range of public information that is useful to energy service providers in identifying markets for improved energy-performance services.

LINKS

Commercial Building Disclosure: http://cbd.gov.au/

Minimum Energy Performance Standards and Labelling

OBJECTIVE

To specify mandatory requirements for the minimum energy performance standards and energy labelling of appliances, including offences and penalties for non-compliance.

OUTLINE

The Greenhouse and Energy Minimum Standards Act 2012 (GEMS Act) provides the framework for mandatory minimum energy performance standards (MEPS) and energy efficiency labelling. Products are included in the programme based on whether the community would benefit from their regulation. The establishment of MEPS and labelling requirements in Australia is a cooperative process between government and industry. Technical and economic analyses are undertaken in the development and negotiation of targets and timetables. MEPS, labelling, and test method standards that are called up by regulation are Australian (in conjunction with New Zealand, where appropriate), and they are set to be the equivalent of the world's best practices, where possible.

The energy-rating label allows consumers to compare the energy efficiency of domestic appliances, thereby providing manufacturers with an incentive to continuously improve the energy performance of their appliances. The label includes two main features. First, it rates the energy efficiency of an appliance on a scale of 1 to 10 stars or 1 to 6 stars (in half-star increments). In this case, the more stars, the more efficient the appliance is compared to other models of similar size and capacity. Second, the label displays an estimated energy consumption figure based on typical use of the appliance (usually in kWh/year).

The star system is regularly regraded in order to achieve a better spread in energy-efficient products (taking into account improvements in energy efficiency that occur over time and to allow room for further improvement). Labelling is mandatory for the following electrical products sold in Australia:

- Refrigerators and freezers
- Clothes washers
- Clothes dryers
- Dishwashers
- Air conditioners
- Televisions

A number of other products, including certain types of water heaters, air conditioners, power supplies and lamps are also regulated by MEPS.

LINKS

MEPS: http://www.energyrating.gov.au/

National Construction Code (NCC) - Energy Efficiency Provisions

OBJECTIVE

The aim of the NCC – Energy Efficiency Provisions is to improve the energy efficiency of the design and construction of new buildings by reducing the energy consumption predominantly associated with thermal comfort, lighting, and hot water.

OUTLINE

Energy efficiency provisions for housing were first introduced in 2003, following an extensive consultation process. The provisions are produced and maintained by the Australian Building Codes Board (ABCB) on behalf of the Australian and state and territory governments (through the COAG). The 'deemed to satisfy' provisions vary according to the climate zone in which the building will be located. The original provisions included: the ability of the roof, walls, and floor to resist heat transfer; the resistance to heat flow and solar radiation of the glazing; the sealing of the house; the provision of air movement for free cooling, in terms of openings and breeze paths; and the insulation and sealing of air-conditioning ductwork and hot-water piping.

The provisions were developed to achieve a nominal level of energy efficiency equivalent to a 3.5- to 4-star rating under the Nationwide House Energy Rating Scheme (NatHERS), which includes a maximum rating of 10 stars. Following the implementation of the provisions, some states indicated that they wanted to increase the stringency of the provisions. As such, the provisions were developed by the ABCB to increase the nominal level of energy efficiency equivalent to 5 stars under NatHERS. Enhanced housing provisions were introduced in 2006. The most significant changes were made to the provisions on building fabric and external glazing.

In April 2009, COAG requested that the ABCB develop more stringent provisions to allow for a 6-star home rating to be included in the 2010 BCA. The new proposals were subject to a regulatory impact assessment (cost-

benefit analysis) which found them to be cost-effective. In addition to enhanced provisions for the thermal shell of residential buildings, the new residential standards included requirements for hot water and lighting. The 2010 BCA energy efficiency provisions for residential and commercial buildings were agreed on by the states and territories and adopted on May 1, 2010.

LINKS

National Construction Code: http://www.abcb.gov.au/Resources/NCC

NatHERS: www.nathers.gov.au

The National Carbon Offset Standard (NCOS)

OBJECTIVE

The NCOS sets requirements for becoming carbon neutral based on a rigorous and transparent framework.

OUTLINE

The National Carbon Offset Standard, which was introduced by the government on July 1, 2010, is administered by the Department of the Environment and Energy. The NCOS's Carbon Neutral Programme is a voluntary scheme that certifies products or organisations as 'carbon neutral' and provides a trademark for participants to promote their carbon neutral status. This helps consumers and businesses trust such claims as well as provide them with another way to take effective action on climate change and energy efficiency.

LINKS

National Carbon Offset Standard: http://www.environment.gov.au/climate-change/carbon-neutral/ncos

20.ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

The government cooperates with non-government organisations to stimulate energy efficiency improvements as appropriate.

The Australian Government is committed to engaging with the business sector and providing support to new technologies through public-private partnerships, including the $10 billion CEFC. The objective of the CEFC is to overcome capital market barriers that hinder the financing, commercialisation, and deployment of commercially oriented, energy-efficient, renewable, and low-emissions technologies.

The CEFC was built on the success of Low-Carbon Australia Limited (LCAL), formally the Australian Carbon Trust, which provided more than $100 million in funding to promote investment in energy efficiency and building retrofits. Concurrent with the commencement of operation of the CEFC, in July 2013, the LCAL and the CEFC merged, which allowed the CEFC to leverage off the systems and the expertise of the LCAL, while providing certainty as well as the efficient delivery of financial support to the market.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

Australia is a member of the International Energy Agency (IEA) and Asia Pacific Economic Cooperation and is involved in various energy efficiency working groups associated with these organisations. It is also involved in discussions related to better data collection and the development of energy efficiency indicators.

The International Partnership for Energy Efficiency Cooperation (IPEEC) is a high-level international forum that provides global leadership on energy efficiency by identifying and facilitating government implementation of policies and programmes that yield considerable energy efficiency gains. The IPEEC also aims to promote information regarding best practices as well as facilitate initiatives to improve overall energy efficiency.

Founded in May 2009, the IPEEC is a voluntary forum of developed and developing economies that represent the major economies of the world. As of September 2017, the members of the IPEEC include: Australia, Argentina, Brazil, Canada, China, the European Union, France, Germany, India, Italy, Japan, Mexico, Russia, South Africa, South Korea, the United Kingdom, and the United States.

Relevant international standards are considered in the development of Australian MEPS.

LINKS

The IEA: https://www.iea.org/topics/energyefficiency/

IPEEC: https://ipeec.org/

21. OTHER ENERGY EFFICIENCY EFFORTS

Energy Efficiency in Government Operations

The purpose of this policy is to improve the energy efficiency of Australian government operations with particular emphasis on building energy efficiency. It is committed to progressive improvement of overall agency energy performance through minimum efficiency requirements and regular energy reporting.

A major component of the policy is the Green Lease Schedule (GLS) through which Australian Government tenants and their building owners commit to working collaboratively in order to maintain and maximise the energy efficiency of the building. The GLS management framework also enables agencies to incorporate required energy efficiency standards into their leases and other procurement activities.

LINKS

http://www.environment.gov.au/energy/efficiency/non-residential-buildings/government-buildings/eego

BRUNEI DARUSSALAM

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

In March 2014, Brunei Darussalam launched an Energy White Paper (EWP) with detailed strategies on energy efficiency and conservation. The EWP is a long-term policy document developed to achieve and fulfil the objectives of Vision 2035 (Wawasan 2035). It establishes a framework for action in order to address energy challenges and manage future risks to the economy. To ensure that all initiatives are translated into real action, the outcomes achieved are continuously generated, evaluated, and implemented.

2. ENERGY EFFICIENCY STRATEGY

In 2011, Brunei Darussalam established an Energy Efficiency and Conservation (EEC) roadmap that specifies a comprehensive action plan to 2035. Brunei Darussalam will reduce total energy consumption by up to 63%, primarily from a reduction of fossil fuel supply for domestic energy use via five major sectors: power, commercial, residential, transportation and industrial.

FUNDING

Supported by the government.

LINKS

Brunei Darussalam's INDC:

http://www4.unfccc.int/submissions/INDC/Published%20Documents/Brunei/1/Brunei%20Darussalam%20INDC_FINAL_30%20November%202015.pdf

3. ENERGY EFFICIENCY ACTION PLAN

The government has established a number of legislative measures to realise EEC targets such as the standard and labelling order, financial incentives for energy efficient appliances and products, and the adoption of an energy management policy that is compatible with ISO 50001, among others.

FUNDING

Supported by Energy and Industry Department, Prime Minister's Office (EIDPMO), Ministry of Communications, Ministry of Development and Ministry of Education.

LINKS

Brunei Darussalam's INDC:

http://www4.unfccc.int/submissions/INDC/Published%20Documents/Brunei/1/Brunei%20Darussalam%20INDC_FINAL_30%20November%202015.pdf

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

Brunei Darussalam has set a target to achieve 45% energy intensity reduction by 2035 (baseline 2005), which is in line with the Asia-Pacific Economic Cooperation (APEC) target declared in Honolulu, Hawaii in 2011. In addition, at the United Nations Climate Change Summit 2014 in New York, Brunei Darussalam announced plans to reduce total energy consumption by 63% by 2035 with 2009 as the baseline (compared to business-as-usual).

LINKS

2014 Energy White Paper:

http://energy.gov.bn/Shared%20Documents/Publications/Energy%20White%20Paper%202014(1).pdf

5. SECTORAL ENERGY EFFICIENCY TARGETS

Not applicable.

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

The Energy Efficiency & Conservation (EEC) Unit of the Sustainable Energy Division at EIDPMO

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

The EEC unit is responsible for ensuring that all EEC projects form an integral part of reducing carbon emission in order to support the economy's aspiration on the mitigation of climate change issues. The strategic goals are as follow:

- Implementation of all EEC legislative measures.
- Promoting and developing all plans and programmes related to EEC economy-wide.
- To incorporate and integrate the reduction of carbon emission via the energy intensity reduction into the climate change programme.

STAFF AND BUDGET

No information.

BUDGET USE

No information.

LINKS

EEC Unit of EIDPMO: http://www.ei.gov.bn/SitePages/Sustainable%20Energy%20Unit.aspx

7. OTHER ENERGY EFFICIENCY AGENCIES

Not applicable.

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

Information on energy efficiency and conservation is continuously disseminated through briefings, seminars, workshops, reference books, energy-saving booklets and posters, the official website, and the media. This information and knowledge sharing is aimed at all levels of society in both urban and rural areas.

LINKS

Not applicable.

9. ENERGY EFFICIENCY AWARENESS RAISING

The EIDPMO holds an annual energy awareness campaign titled, 'Energy Week', to continually increase the public's awareness of the subject. It also works closely with educational stakeholders through its 'Energy Club', which is held at schools to educate students about energy efficiency and conservation.

Capacity-building and energy efficiency and conservation activities have been going on for the past few years. To enhance competency, seminars/workshops have also been conducted in collaboration with local and international organisations.

LINKS

Not applicable.

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

Brunei National Energy Research Institute (BNERI) carried out the research and development on EEC projects that will support the Vision 2035 under the Energy White Paper. It was established in April 2012 as an energy think tank.

LINKS

BNERI: http://www.bneri.org.bn/research

11. PRIVATELY OPERATED TRAINING

Not applicable.

12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

Research and development of energy efficiency programmes are also being carried out by the UBD|IBM Centre, which is a research collaboration between the University of Brunei Darussalam and the IBM Corporation.

LINKS

Not applicable.

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

Not applicable.

14.EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

Not applicable.

LINKS

15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

Not applicable.

16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

Not applicable.

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

Energy Management

OBJECTIVE

To reduce energy consumption to 10 percent from the Business-As-Usual (BAU) scenario of the total targeted energy intensity reduction by 2035.

OUTLINE

- Introducing energy management process that is compatible with international standards such as ISO 50001.
- Introducing energy audit policy for buildings and industries.
- Promoting Energy Service Company (ESCO).

LINKS

Not applicable.

18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

Fuel Economy Regulation

OBJECTIVE

To establish a cleaner, greener, and more sustainable transport system as part of the EEC initiatives to reduce energy intensity by 45% by 2035.

OUTLINE

- To set efficiency standards of 17.2 km/L by 2020 and 21.3 km/L by 2025 (EU 2020 target equivalent).
- Introduce hybrid vehicles, electric vehicles (EVs), and fuel-efficient vehicles (FEVs) as well as improving the deployment of public transport.

LINKS

Brunei Darussalam's INDC:

http://www4.unfccc.int/submissions/INDC/Published%20Documents/Brunei/1/Brunei%20Darussalam%20INDC_FINAL_30%20November%202015.pdf

19. BUILDING ENERGY EFFICIENCY INITIATIVES

EEC Building Guidelines for non-residential sector

OBJECTIVE

To establish energy efficiency and conservation standards as well as a regulatory mechanism for buildings in Brunei Darussalam.

OUTLINE

- A collaboration project with the Ministry of Development.
- The guidelines were launched on May 14, 2015, by the Minister of Development.
- The guidelines are mandatory for all government buildings and voluntary to all commercial buildings. Regarding the latter, it will become mandatory upon notification by government authorities.

LINKS

Brunei Darussalam's INDC:

http://www4.unfccc.int/submissions/INDC/Published%20Documents/Brunei/1/Brunei%20Darussalam%20INDC_FINAL_30%20November%202015.pdf

20.ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

Both non-government organisations and private-sector organisations have shown support for all EEC initiatives and programmes set by the EIDPMO. Some of these organisations have come forward with funding for EEC events such as the Energy Efficiency and Conservation video, energy club projects, and the energy exhibition. Private funding was also provided to sponsor EE technologies such as the inverter air-conditioning system for "Energy Club" activities at schools. EIDPMO is also working together with Earth Hour Brunei to implement the event on an annual basis.

The private sector has also made efforts to increase the awareness of energy efficiency and conservation as well as to implement their own EEC activities. The government has supported these initiatives and has brought different sectors to participate in workshops, seminars, and trainings such as energy auditing and energy management. Energy audits have also been conducted on selected companies.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

- Energy Efficiency and Conservation – Sub Sector Network (EEC-SSN)

  The EEC-SSN is an important platform for all ASEAN member states to establish effective networks toward the development and implementation of various EEC programmes and initiatives. All EEC programmes that endorsed through EEC-SSN meetings have helped narrow the gaps regarding the implementation of the EEC initiatives, especially in terms of policy and legal frameworks. All EEC programmes that have been endorsed by the EEC-SSN will be materialised under the AJEEP programme.

- ASEAN-Japan Energy Efficiency Partnership (AJEEP)

  The AJEEP programme is important for Brunei Darussalam since it provides an opportunity to seek assistance directly from Japan for the development of EEC programmes, including policy and legal frameworks. For the past three years, experts from the Energy Conservation Centre of Japan (ECCJ), the Institute of Energy Economics, Japan (IEEJ), and the Economic Research Institute of ASEAN and East Asia (ERIA) have visited Brunei Darussalam to conduct training workshops and provide advice. Through AJEEP, Brunei Darussalam is able to participate in the Energy Conservation ASEAN Partnership (ECAP) workshop, which is jointly organised by the Ministry of Economy, Trade and Industry (METI) of Japan, the ASEAN Centre of Energy (ACE), and the ECCJ.

  Brunei Darussalam's participation under the AJEEP programme has yielded many benefits in the development of EEC legislative measures, which include the Standard and Labelling Order and the EEC Building Guidelines. Brunei Darussalam also sees the continued involvement with AJEEP as an effective platform to accelerate the development of other EEC initiatives/programmes, especially the implementation of important legislative measures such as energy management policies and the expansion of the standards and labelling scheme.

- Board of Judges on ASEAN Energy Awards (BOJ-AEA)

  The Board of Judges on ASEAN Energy Awards (BOJ-AEA) is another important platform for Brunei Darussalam to learn and implement best practice building efficiency management. Additionally, this programme has given Brunei Darussalam an opportunity to participate in building management and efficiency competitions at the ASEAN level.

- APEC Expert Group on Energy Efficiency and Conservation (EGEEC)

  The EGEEC promotes energy conservation and the application of energy-efficient practices and technologies through advancing demonstrated options. The EGEEC also aims to enhance trade between APEC economies in products and services as well as energy-efficient practices and technologies. Brunei Darussalam benefits from this work, especially toward the development of EEC programmes and initiatives. However, Brunei Darussalam is not a regular participant in the EGEEC, and hence, receiving assistance from APEC experts is limited.

LINKS

Not applicable.

21. OTHER ENERGY EFFICIENCY EFFORTS

Not applicable.

CANADA

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

In Canada, the federal government collaborates with the 13 provincial and territorial governments, local governments, Indigenous Peoples, and public and private stakeholders to develop and deliver energy efficiency policies and programmes. The federal government draws its authority from the *Energy Efficiency Act* that allows the Minister of Natural Resources to regulate products that use energy and cross borders, promote energy efficiency and low carbon fuels, and collect data on energy use.

The Pan-Canadian Framework on Clean Growth and Climate Change: Canada's Plan to Address Climate Change and Grow the Economy (PCF) represents Canada's plan to reduce GHG emissions, create clean jobs and growth, and increase Canada's resiliency to the impacts of climate change. Energy efficiency measures account for one third of the emissions reductions in the PCF.

The Office of Energy Efficiency (OEE) within Natural Resources Canada (NRCan) is mandated to strengthen and expand Canada's commitment to energy efficiency and alternative fuels. OEE uses regulations, standards, certification, and information to help meet the Government's policy goals (e.g., delivering energy cost savings), to help achieve its climate change targets (e.g., reducing greenhouse gas emissions [GHGs] by 30% below 2005 levels by 2030), and to support clean innovation and green infrastructure.

Energy efficiency initiatives support several goals under the Federal Sustainable Development Strategy (FSDS) that provides development priorities, establishes goals and targets, and highlights government actions from 41 federal organisations over the next three years. The 2016–2019 FSDS was tabled in Parliament in October 2016. With 13 aspirational goals for a more sustainable Canada, the 2016–2019 FSDS demonstrates federal leadership on climate change, and includes the environment-related 2030 Sustainable Development Goals, measurable and ambitious targets, and the role that partners play. http://fsds-sfdd.ca/index.html#/en/goals/

2. ENERGY EFFICIENCY STRATEGY

The Pan-Canadian Framework on Clean Growth and Climate Change: Canada's Plan to Address Climate Change and Grow the Economy (PCF) was adopted in 2016 and affirmed the importance of ongoing federal, provincial and territorial collaboration to implement the Framework and track progress of reducing GHG emissions. As per the PCF, Canada's GHG emissions target is 523 megatonnes in 2030 – a reduction of 30% below 2005 levels.

The PCF has four main pillars: pricing carbon pollution; complementary measures to further reduce emissions across the economy; measures to adapt to the impacts of climate change and build resilience; and actions to accelerate innovation, support clean technology, and create jobs. The PCF includes aspirational commitments for energy efficiency in the buildings sector, the industrial sector, the transportation sector, as well as for federal operations (efficiency of government buildings and fleets).

To support commitments made as part of the PCF, the federal government develops minimum energy performance standards and model codes, supports provincial and territorial adoption of these standards and

codes, promotes energy efficiency through information and awareness initiatives, and regulates energy performance of energy using products that cross borders (closely aligning product standards with those in the United States).

FUNDING

Federal activities under the PCF are funded chiefly through the federal budget. For example, Budget 2017 allocated CAD $21.9 billion in funding for green infrastructure to help support implementation of the PCF. This funding will flow through three distinct streams: bilateral agreements with provinces/territories, the Canada Infrastructure Bank, and a series of federally delivered programmes.

LINKS

Pan-Canadian Framework:

https://www.canada.ca/content/dam/themes/environment/documents/weather1/20170125-en.pdf

Budget 2017: http://www.budget.gc.ca/2017/docs/plan/budget-2017-en.pdf

Energy Efficiency Act: http://laws-lois.justice.gc.ca/eng/acts/e-6.4/

Canada's Energy Efficiency Regulations: http://www.nrcan.gc.ca/energy/regulations-codes-standards/6845

Forward Regulatory Plan 2017-19: http://www.nrcan.gc.ca/energy/regulations-codes-standards/18318

3. ENERGY EFFICIENCY ACTION PLAN

The PCF acts as a guide for federal energy efficiency programmes, in partnership with provinces and territories. It details federal, provincial/territorial actions on energy efficiency in the buildings sector, industrial sector, transportation sector, and federal government operations (efficiency of government buildings and fleets.)

The federal government is committed to improving energy efficiency standards while minimising regulatory burden, through harmonisation of requirements across Canada, as well as alignment with the U.S. and other jurisdictions, like Mexico. In support of this, Canada intends to update the Energy Efficiency Regulations to introduce new and updated standards for up to 50 product categories over the coming years.

FUNDING

As detailed above.

LINKS

Pan-Canadian Framework:

https://www.canada.ca/content/dam/themes/environment/documents/weather1/20170125-en.pdf

Energy Efficiency: http://www.nrcan.gc.ca/energy/efficiency

Forward Regulatory Plan 2017-19: http://www.nrcan.gc.ca/energy/regulations-codes-standards/18318

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

Canada made a commitment at COP21 in Paris, December 2015, to reduce its GHG emissions by 30% below 2005 levels. This commitment was reaffirmed by federal, provincial/territorial governments at the Vancouver Declaration on Clean Growth and Climate Change in March 2016. Energy efficiency measures outlined in the PCF will contribute to the attainment of this target.

Canada has also made a commitment to reduce emissions from Government operations (including fleets and facilities) by 40% by 2030, with an aspirational goal of 2025.

Under the Department of Natural Resources' 2017-18 Departmental Plan, the expected result for energy efficiency is that energy consumers and producers adopt environmentally responsible products and practices related to energy use and production. The performance indicator to measure progress toward this result is Canada's total annual energy savings due to efficiency (difference between energy use without energy efficiency improvements and energy use with energy efficiency improvements) with a target of positive five-year trend in PJ saved.

LINKS

Pan-Canadian Framework:

https://www.canada.ca/content/dam/themes/environment/documents/weather1/20170125-en.pdf

Departmental Plan 2017-18: http://www.nrcan.gc.ca/plans-performance-reports/dp/2017-18/19238

5. SECTORAL ENERGY EFFICIENCY TARGETS

Not applicable.

LINKS

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

The OEE, established in 1998, administers the Energy Efficiency Regulations and provides other programmes and information that promote energy efficiency in the major energy-using sectors of the economy (e.g., commercial and consumer products, residential, commercial and institutional buildings, industry, and transportation and alternative fuels).

The OEE plays a dynamic leadership role in helping Canadians save millions of dollars in energy bills each year, while contributing to a healthier environment.

The OEE provides practical energy conservation information and advice to consumers, businesses, and institutions and helps to inform key decision-makers in government, industry, and non-profit sectors.

The OEE also plays a regulatory role under the *Energy Efficiency Act*. The Act gives the Government of Canada the authority to develop and implement minimum energy performance standards for energy-using products or

products that affect energy use, which are either imported to Canada or manufactured in Canada and shipped across provincial or territorial borders. The regulations currently cover 50 products.

STAFF AND BUDGET

Planned Full Time Equivalent staff in 2017-18 is 252.

BUDGET USE

Funding is used to design and implement programming geared at addressing market barriers to the adoption of energy efficient practices and technology/products by Canadians, builders, and industry.

In the Government of Canada's 2017 Budget, the following amounts were allocated to energy efficiency programming at Natural Resources Canada. This funding is in addition to existing, ongoing funding used by Natural Resources Canada to deliver energy efficiency programmes:

- $67.5 million over four years to renew and continue existing energy efficiency programmes.
- $13.5 million over five years to provide expertise to other federal departments in the best approaches to implement energy efficiency and clean energy technologies, to retrofit federal buildings, and to reduce or eliminate emissions from vehicle fleets.
- $120 million to deploy infrastructure for electric vehicle charging and natural gas and hydrogen refuelling stations, as well as to support technology demonstration projects.
- $182 million to develop and implement new building codes to retrofit existing buildings and build new net-zero energy consumption buildings across Canada.

LINKS

Office of Energy Efficiency: http://www.nrcan.gc.ca/energy/offices-labs/office-energy-efficiency

Natural Resources Canada 2016-17:

https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/plansperformancereports/rpp/2016-2017/pdf/NRCan_RPP_2016-17-eng.pdf

NRCan Departmental Plan 2017-18: http://www.nrcan.gc.ca/plans-performance-reports/dp/2017-18/19238

7. OTHER ENERGY EFFICIENCY AGENCIES

Energy Efficiency is an area of shared jurisdiction in Canada. Sub-federal entities (provinces/territories) in Canada are active in the field of energy efficiency. Many energy utilities are also integral to provincial/territorial policy and programming. Information regarding provincial/territorial programmes is provided by the OEE Directory of Energy Efficiency and Alternative Energy Programmes in Canada (see link below).

Close collaboration and coordination among the federal and provincial/territorial governments is essential to operationalise commitments made as per the PCF. Collaboration occurs through annual meetings of the Energy and Mines Ministers Conference and regular meetings of the Steering Committee on Energy Efficiency, which includes representatives from all of Canada’s provinces and territories. These efforts aim to generate a complementary agenda for energy efficiency in which the ministers continue to develop real and sustainable

energy solutions in their own jurisdictions, as well as collaborate on crosscutting initiatives that require a more integrated approach.

LINKS

Directory of Energy Efficiency and Alternative Energy Programmes: http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/policy_e/programs.cfm?attr=0

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

Information dissemination is the responsibility of individual programme departments, which cooperate with stakeholders in the government, industry, and civil society. Comprehensive information on OEE programmes and related energy efficiency issues is available on the OEE website.

NRCan also publishes the yearly Fuel Consumption Guide, which provides fuel consumption data for every vehicle model available in Canada. This information assists consumers in making fuel-efficient purchasing decisions.

In addition, the Minister of Natural Resources Canada issues an annual, public report to the Parliament of Canada on the results of OEE's programmes.

LINKS

Energy Efficiency: http://www.nrcan.gc.ca/energy/efficiency

Energy Efficiency Publications: http://www.nrcan.gc.ca/energy/publications/17756

Energy Efficiency Publications: http://www.nrcan.gc.ca/energy/products/reference/12527

Improving Energy Performance in Canada: http://oee.nrcan.gc.ca/publications/statistics/parliament/2015-2016/pdf/parliament15-16.pdf

9. ENERGY EFFICIENCY AWARENESS RAISING

The EnerGuide energy disclosure label for equipment rates and summarises the energy efficiency of major household appliances as well as heating, ventilating and air-conditioning (HVAC) equipment. The EnerGuide label shows how much energy major appliances use so that consumers can easily compare models of the same size and class.

The ENERGY STAR® symbol identifies the most energy-efficient products in their class. Products that carry the ENERGY STAR® symbol are certified to meet premium levels of energy efficiency, and make it easy for consumers to choose high efficiency products.

Increasingly, Natural Resources Canada is using digital tools and social media to inform and engage Canadians. For example, the department is working with partners and using a mobile app called Carrot Rewards to raise energy efficiency awareness and nudge people to take action.

LINKS

Not applicable.

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

FleetSmart is an energy efficiency programme that provides numerous educational opportunities to commercial and institutional fleets through free, practical training to reduce fuel consumption. Training opportunities include:

- Smart*Driver* training - Fleet energy management training to improve fuel efficiency.
- Fuel Management 101 - A one-day workshop for fleet managers to help develop and implement effective fuel management plants.
- Web-based training - FleetSmart online training.

Dollars to $ense Energy Management Workshops, run since 1997, are delivered through six key modules where industrial, commercial and institutional organisations can work to improve energy efficiency:

- Energy management information systems,
- Recommissioning,
- Energy management planning,
- Energy savings opportunities,
- Energy monitoring, and
- Energy efficiency financing.

As of 2016, Dollars to $ense is now being run by the Canadian Institute for Energy Training (see below).

LINKS

Fleetsmart training: http://www.nrcan.gc.ca/energy/efficiency/transportation/commercial-vehicles/fleetsmart/training/16946

Dollars to $ense Energy Management Workshops: http://www.nrcan.gc.ca/energy/efficiency/industry/training-awareness/5461

11. PRIVATELY OPERATED TRAINING

The Canadian Institute for Energy Training (CIET) is an energy training centre founded in 1996 that focuses on sustainable energy training programmes, including energy efficiency training. Examples of courses include Efficient Building Envelope (EBE), Efficient Lighting, Energy Efficiency for Managers, Energy Efficiency for Programme Design and Implementation, and Energy Efficiency Programme Evaluation.

LINKS

CIET sustainable energy training: http://cietcanada.com/energy-efficiency-training-programs/

12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

Natural Resources Canada (NRCan) is the federal government's primary funder and performer of energy research and development activities. Through the Office of Energy Research and Development (OERD), NRCan delivers a number of programmes to support and accelerate innovative clean energy technologies, including those that improve energy efficiency. Programmes include:

- Energy Innovation Programme: Budget 2017 announced $229M over four years to support clean energy innovation, including improving efficiency in sectors such as transportation, industry, and the built environment.
- Electric Vehicle Infrastructure Demonstration: Budget 2016 committed $46.1M to support the demonstration of next generation electric vehicle charging infrastructure.
- Next Generation Clean Energy Infrastructure: Budget 2017 announced a number of programmes to deliver investments that support Canada's transition to a clean economy. These include $79M to support the research, development and demonstration of technologies that improve energy use in buildings and next generation charging infrastructure for electric vehicles.
- Programme for Energy Research and Development: funds core 'public good' research and development activities at 13 federal departments and agencies to ensure a sustainable energy future for Canada.

NRCan's CanmetENERGY and CanmetMATERIALS national laboratories act as important regional hubs for innovation. Canmet laboratories perform early stage research and development, in addition to related science activities (RSA), to support codes and standards and advance energy efficient technologies in a number of sectors, such as:

- Buildings and Communities: Net-zero houses, buildings, and communities; modelling and simulation software tools; advanced heating, ventilation, air- conditioning, and refrigeration technologies; and intelligent buildings.
- Industrial: Iron and steel production; pulp and paper sector including bio-refineries; industrial heat management and waste heat recovery; cogeneration; and tools for industrial system optimisation.
- Transport: Includes advanced fuels, hybrid and electric vehicles, advanced materials, and emissions control technologies.

The Clean Energy Science and Technology sub-programme (NRCan Plans and Priorities), which funds initiatives such as the Energy Innovation Programme mentioned above, was budgeted CAD $103 million in 2016-17 with planned spending of CAD $96 million in 2017-18. Part of this budget will be directed at supporting 11 external RD&D projects across the industry and buildings sectors to improve energy efficiency and reduce GHG emissions.

LINKS

Clean Energy Innovation: http://www.nrcan.gc.ca/energy/science/programs-funding/18876

CanmetENERGY: http://www.nrcan.gc.ca/energy/offices-labs/canmet/5715

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

The primary source of energy use statistics is the National Energy Use Database (NEUD). The statistics are compiled from multiple sources, including Statistics Canada and NRCan's own in-house models (link is below). NRCan is the primary federal ministry responsible for monitoring and analysing energy efficiency data.

LEGAL POWERS

Programme departments are responsible for monitoring and reporting on their individual programmes. The efforts of Natural Resources Canada are compiled into the Report to Parliament under the *Energy Efficiency Act*, which is tabled annually in Parliament by the Government of Canada.

LINKS

National Energy Use Database: http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/data_e/sources.cfm

Energy Efficiency Act: http://laws-lois.justice.gc.ca/eng/acts/e-6.4/

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

The OEE produces a publicly available report on Energy Efficiency Trends in Canada as well as its companion document, the Energy Use Data Handbook.

LINKS

NEUD Publications: http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/data_e/publications.cfm?attr=0

NEUD Tables: http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/data_e/databases.cfm?attr=0

15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

The Minister of Natural Resources Canada tables an annual report to the Parliament of Canada on the results of OEE's programmes.

Improving Energy Performance in Canada: http://oee.nrcan.gc.ca/publications/statistics/parliament/2015-2016/pdf/parliament15-16.pdf

NRCan describes expected results, performance indicators, targets and dates, if applicable, for each of its planning priorities each year. The following link is to NRCan's Departmental Plan for 2017-18: http://publications.gc.ca/collections/collection_2017/rncan-nrcan/M2-13-2017-eng.pdf

NRCan's annual Departmental Report programme outlines the results of the previous fiscal year. The following link is to NRCan's 2015-16 Departmental Performance Report:

https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/plansperformancereports/dpr/2015-16/NRCan-DPR2015-16_e.pdf

Reporting on the progress of energy efficiency initiatives will form part of Pan-Canadian Framework reporting as well as Federal Sustainable Development Strategy reporting.

16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

The Pan-Canadian Framework on Clean Growth and Climate Change (PCF)

OBJECTIVE

The PCF is Canada's collective plan to grow its economy while reducing emissions and building resilience to adapt to the effects of climate change. It is Canada's plan to meet the commitment made at COP21 in Paris, December 2015, and reaffirmed by federal, provincial/territorial governments through the Vancouver Declaration, to reduce its GHG emissions by 30% below 2005 levels.

OUTLINE

The PCF includes Energy Efficiency initiatives in the buildings sector, industrial sector, transportation sector, and government leadership (government buildings and fleets.)

LINKS

Pan-Canadian Framework:

https://www.canada.ca/content/dam/themes/environment/documents/weather1/20170125-en.pdf

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

Canadian Industry Programme for Energy Conservation (CIPEC)

OBJECTIVE

ENERGY STAR® for Industry provides a basic approach for developing a systematic energy management programme, relying on industry best practices and benchmarking tools. As the organisation develops its ENERGY STAR® programme, it will learn about the benefits that a comprehensive energy management system brings and may decide to implement ISO 50001 as the next step in the development of its energy efficiency culture.

OUTLINE

The ENERGY STAR® for Industry programme was launched in Canada in August 2017. It is comprised of two components, the ENERGY STAR® for Industry Certification, which became available upon the August 2017 launch, and the ENERGY STAR® for Industry Challenge, which was announced in the fall of 2017.

LINKS

Not applicable.

ISO 50001 Energy Management Systems standard

OBJECTIVE

ISO 50001 is an internationally recognised standard that provides the framework for an organisation to develop its energy management system.

OUTLINE

Natural Resources Canada's Office of Energy Efficiency supports implementation of the ISO 50001 standard through cost-shared assistance for pilot projects. Canada is also leading, in partnership with UNIDO, the Energy Management Working Group under the Clean Energy Ministerial, which aims to increase the global uptake of ISO 50001 in industrial facilities and commercial buildings.

LINKS

ISO 50001 Energy Management Systems Standard:

http://www.nrcan.gc.ca/energy/efficiency/industry/cipec/5379

18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

Electric Vehicle and Alternative Fuel Infrastructure Initiative

OBJECTIVE

The purpose of this initiative is to address barriers to the deployment of electric or alternative fuelled vehicles, through the deployment of market ready EV chargers, and alternative fuel (e.g. natural gas and hydrogen) refuelling stations along key passenger and freight corridors.

OUTLINE

Phase 1 provided $67.5M over 2 years to support the deployment of EV chargers along Canada's highways, and alternative fuel (e.g. natural gas, hydrogen) stations along freight corridors and established markets. By March 2018, all Phase 1 deployment projects will be completed, resulting in over 100 new EV fast chargers, seven natural gas and three hydrogen stations built.

Phase 2 will provide a total of $120M over 4 years for the following initiatives:

- Deployment of EV fast chargers, and alternative fuel (e.g. natural gas and hydrogen) refuelling infrastructure.
- Demonstration of next generation charging technologies.
- Development and revision of codes and standards for EV and Alternative Fuelled vehicles and charging/refuelling infrastructure.

LINKS

Electric Vehicle Deployment: http://www.nrcan.gc.ca/energy/alternative-fuels/fuel-facts/ecoenergy/18352

SmartWay

OBJECTIVE

The SmartWay Transport Partnership is a collaboration with the freight industry designed to help businesses reduce fuel costs while transporting goods in the cleanest most energy efficient way possible. Originally launched by the United States Environmental Protection Agency (EPA) in 2004, SmartWay has been administered in Canada by Natural Resources Canada (NRCan) since 2012.

OUTLINE

SmartWay allows carriers to benchmark their energy efficiency and emissions against industry peers with similar operations while tracking year-over-year performance. The programme offers tools to collect and track partner operations data and provides a benchmarking report, a toolkit, and other resources that help improve fuel efficiency. In April 2018, the programme will launch additional activities to accelerate the adoption of energy management best practice in fleets and supply chains through fleet energy audits, and supporting innovative best practices in supply chain and logistics efficiency.

LINKS

SmartWay Homepage: http://www.nrcan.gc.ca/energy/efficiency/transportation/commercial-vehicles/smartway/7615

Partner List: http://oee.nrcan.gc.ca/smartway/index.cfm?pg=1

Consumer Awareness

OBJECTIVE

NRCan promotes and delivers information and awareness materials to consumers and commercial fleet managers with a focus on informing their vehicle purchasing decisions, encouraging fuel switching and promoting fuel-efficient driving behaviour.

OUTLINE

NRCan has developed a suite of materials and tools, meant to influence consumer behaviour, including:

- Working with the U.S Department of Energy on the development of an electric vehicle and alternative fuel station location map.
- Developing customised apps which, based on individual driving behaviour, can recommend low carbon vehicle purchasing options.
- Developing and implementing a series of social innovation initiatives, analysing the consumer vehicle buying process, and developing a social initiative that will reward efficient driving behaviour.
- Maintaining the Vehicle Fuel Consumption Guide & EnerGuide labels, which provide consumers with the fuel consumption information for new vehicle purchase.
- Developing materials related to fuel-efficient driver training for both consumers and commercial fleets.

- Supporting industry in the development of a suite of information materials (e.g. website, workshops, economic analysis, best practices, and permitting guides) which outline the barriers and benefits of switching from diesel to natural gas in medium and heavy duty trucks.

LINKS

2017 Fuel Consumption Guide: http://www.nrcan.gc.ca/energy/efficiency/transportation/cars-light-trucks/buying/7487

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Buildings Initiatives

OBJECTIVE

The Federal Buildings Initiative

The Federal Buildings Initiative (FBI) supports the Government's target to reduce greenhouse gas emissions from federal operations by at least 40 per cent below 2005 levels by 2030 (this goal is also supported through Greening Government Fleets, summarised in the transportation tab.)

Premium Housing Standards

NRCan delivers two premium, voluntary home labelling programmes for new home construction: ENERGY STAR® for New Homes, and R-2000. Both programmes are designed to encourage the construction of homes that are more energy efficient than provincial building codes, in order to improve the energy efficiency of the residential housing stock and reduce GHG emissions.

OUTLINE

Federal Buildings Initiative

The FBI is an NRCan initiative designed to assist federal departments and agencies in reducing their energy consumption, by providing expertise to other federal departments in the best approaches to implement energy efficiency and clean energy technologies, and to retrofit federal buildings. Introduced in 1991, the programme facilitates access to tools and services to undertake energy efficiency retrofit projects in buildings owned or managed by the Government of Canada. More specifically, it helps federal organisations enter into third-party performance contracts that allow major retrofits to be self-financing, thus addressing barriers to retrofitting such as the lack of capital and resources.

Premium Housing Standards

ENERGY STAR® for New Homes and R-2000 are voluntary home labelling programmes designed to promote low-rise home construction that is approximately 20% and 50% more energy efficient, respectively, than provincial building codes. ENERGY STAR® is unique in that it offers builders two flexible paths to meeting the standard, and thus appeals to a wide range of builders and house types. R-2000-certified new homes are best-in-class energy-efficient homes that include high levels of insulation, clean air features and measures to help protect the environment, save energy, and increase home comfort. (The ENERGY STAR® programme was

developed by the U.S. EPA and is used in Canada under agreement.) As of 2017, over 70,000 homes have been labelled to these standards across Canada.

LINKS

Federal Building Energy Efficiency: http://www.nrcan.gc.ca/energy/efficiency/buildings/eefb/3705

Energy Efficiency Housing Initiatives: http://www.nrcan.gc.ca/energy/efficiency/housing/new-homes/18767

Building codes

OBJECTIVE

The National Energy Code for Buildings (NECB) and the National Building Code of Canada (NBC) establish minimum energy performance for new buildings and energy efficiency requirements for houses and low-rise buildings, respectively.

Under the Pan-Canadian Framework for Clean Growth and Climate Change, federal, provincial, and territorial governments will collaborate to develop and adopt increasingly stringent model building codes, starting in 2020, with the goal that provinces and territories adopt optimal 'net-zero energy ready' model building codes by 2030. Additionally, governments will work to develop a model code for existing buildings by 2022, with the goal that provinces and territories adopt the code.

Budget 2017 allocated funding to develop and implement new building codes to retrofit existing buildings and build new net-zero energy consumption buildings across Canada.

OUTLINE

The NECB was introduced in 1997 and has been periodically updated to ensure high-energy efficiency in new buildings, where it is most cost-effective to achieve energy savings. The NECB focuses on five key building elements affecting energy efficiency that are typically considered during the design phase: building envelope, lighting, heating, ventilating and air conditioning systems (HVAC), service water heating, and electrical power systems and motors. The NBC introduced energy efficiency requirements for houses in 2012. Under Canada's constitution, provinces and territories regulate the design and construction of new houses and buildings and, therefore, adoption and enforcement of the code is the responsibility of the provincial and territorial authorities having jurisdiction. As of 2016-17, 12 provinces and territories adopted, committed to adopt, or indicated they would consider adopting the NECB or its equivalent and 9 provinces had adopted housing energy efficiency requirements for new construction as part of their building codes (NBC section 9.36 or equivalent).

LINKS

Canada's Energy Code: http://www.nrcan.gc.ca/energy/efficiency/buildings/eenb/codes/4037

Energy benchmarking and labelling

OBJECTIVE

ENERGY STAR® Portfolio Manager provides an apples-to-apples comparison of buildings' energy performance while at the same time adjusting for regional differences like weather.

The EnerGuide Rating System provides an unbiased, credible way to estimate home energy use and encourage reductions. An EnerGuide home energy rating estimates the energy performance of both existing homes and in the planning phase for new construction.

OUTLINE

Currently, more than one fifth of commercial floor space in Canada is being tracked using ENERGY STAR® Portfolio Manager. This tool provides an apples-to-apples comparison of buildings' energy performance while at the same time adjusting for regional differences like weather. The ENERGY STAR® programme was developed by the U.S. EPA in 1992 in order to encourage energy efficiency by identifying and promoting energy saving products. Canada has used the ENERGY STAR® symbol since 2001.

The EnerGuide Rating System is managed by NRCan and has been applied to over 1 million homes across Canada. It supports energy efficiency programming at a federal, provincial, territorial or municipal level, including for regulations, building codes and incentive programmes; currently it is in use in 50 programmes or regulations economy-wide. It also forms the foundation for Natural Resources Canada's premium new housing standards (ENERGY STAR® and R-2000).

Under the Pan-Canadian Framework for Clean Growth and Climate Change, federal, provincial, and territorial governments will work together with the aim of requiring labelling of building energy use by as early as 2019.

LINKS

Energy Benchmarking: http://www.nrcan.gc.ca/energy/efficiency/buildings/energy-benchmarking/3691

EnerGuide Home Evaluation: http://www.nrcan.gc.ca/energy/efficiency/housing/home-improvements/5005

20. ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

Canada cooperates with other APEC economies and external organisations through a number of mechanisms including via formal memorandum of understandings, letter of agreements and joint strategies on energy efficiency.

The North American Energy Strategy, a joint agreement between Canada, the United States and Mexico, provides a strategic framework for energy related cooperation. This strategy identifies specific commitments on aligning energy efficiency standards, reducing energy use and increasing competitiveness in the industrial and commercial sectors, as well as how to pilot programmes with major industry partners for adoption by small to medium-sized enterprises. These joint commitments serve to achieve common objectives in improving the applications of energy efficiency in the North American economy.

In addition to the high-level joint strategy on energy, Canada also has various agreements with the U.S. (Department of Energy and the Environmental Protection Agency) on specific energy efficiency programmes for cooperation such as on Energy Star®, Smartway, ISO50001 and other programmes aim to increase the uptake energy efficiency in various sectors (building, transportation, industry, and commercial). Canada and the United States also collaborate on energy efficiency standards and test method alignment through the Regulatory Cooperation Council.

While Canada has extensive bilateral activities with the United States, there are also some less active arrangements with other APEC economies such as Mexico (Canada-Mexico Partnership), China (Canada-China Energy Working Group) and Russia (Canada-Russia Intergovernmental Economic Commission).

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

In addition to the arrangements listed above, Canada participates in a number of international fora that advance energy efficiency policy, including: the International Partnership for Energy Efficiency (IPEEC), the International Energy Agency (IEA), the Clean Energy Ministerial (CEM), Asia Pacific Economic Cooperation (APEC), the G20, the G7, the International Standards Organisation and the Organisation for Economic Cooperation and Development (OECD). Participation may include contribution to various committees that support/manage these fora as well as sub-working groups on joint initiatives on energy efficiency. For example, Canada contributes to the Policy Committee, Executive Committee, the Building Energy Efficiency Task group, the Energy Efficiency Financing Task Group, the Networked Devices Task Group and others under the umbrella of the IPEEC.

LINKS

Regulatory co-operation: http://www.nrcan.gc.ca/energy/regulations/17308

Encouraging Market Transformation:

http://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/emmc/pdf/Encouraging%20Market%20Transformation_access_eng.pdf

Pan-Canadian Framework:

https://www.canada.ca/content/dam/themes/environment/documents/weather1/20161209-1-en.pdf

Energy Efficiency Standards: https://energy.gov/sites/prod/files/2016/07/f33/2016-17%20Energy%20Efficiency%20Work%20Plan_0.pdf

International Energy Cooperation: https://www.nrcan.gc.ca/energy/resources/17924

21. OTHER ENERGY EFFICIENCY EFFORTS

Canada has a federal system of government, where both the federal government as well as provincial and territorial governments administer and promote energy efficiency programmes. The following is a list of provincial or territorial resources for general energy efficiency information and existing policies.

LINKS

- BC: http://www2.gov.bc.ca/gov/content/industry/electricity-alternative-energy/energy-efficiency-conservation
- AB: https://www.efficiencyalberta.ca/
- SK: http://www.publications.gov.sk.ca/details.cfm?p=8000
- MB: https://www.gov.mb.ca/jec/energy/green_bldg.html
- ON: https://www.ontario.ca/page/how-use-less-electricity-home

- QC: http://www.transitionenergetique.gouv.qc.ca/en/home/
- NB: http://www2.gnb.ca/content/gnb/en/news/efficiency_nb.html
- NS: https://energy.novascotia.ca/energy-efficiency
- PE: https://www.princeedwardisland.ca/en/topic/energy-efficiency
- NL: http://www.nr.gov.nl.ca/nr/energy/efficiency/
- YT: http://www.energy.gov.yk.ca/energy_efficiency.html
- NT: http://www.pws.gov.nt.ca/en/services/energy-programs
- NU: http://www.energy.gov.nu.ca/en/home.aspx

CHILE

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

Energy efficiency is among Chile's priorities as it works towards achieving its key goal of enhancing its energy security. These efforts also encompass the stabilisation of demand growth through energy efficiency measures. The government promotes energy efficiency measures through the Energy Agenda and Energy Policy.

2. ENERGY EFFICIENCY STRATEGY

The government promotes energy efficiency measures through the Energy Agenda and Energy Policy. The Energy Policy defines long-term goals by 2035 and 2050 in energy efficiency. These goals are organised in eleven principles:

- Forming a robust market of consultants and enterprises of energy services.
- Applying progressively energy management tools validated by competent entities.
- Using local available resources and exploit the potential energy in the productive process.
- Building efficiently incorporating EE standards in the design, construction, and conditioning of buildings.
- Promoting smart control systems and own energy production in way to move along to buildings with efficient solutions.
- Strengthening the efficient edification market, moving along to more productive and efficient local markets.
- Improving energy efficiency of vehicles.
- Promoting more efficient transportation alternatives.
- Ensuring the availability of massive and clear information regarding rights and duties of consumers, including alternative energies and methods.
- Designing, implementing, and tracking of an energy education strategy, which joins the different initiatives developed by the Ministry of Energy and related institutions.
- Developing professional and technical human capital for the production.

Since 2016 the Ministry of Energy has carried out the "Mi Hogar Eficiente" capacity-building programme, which is a training on energy efficiency in the home along with an efficiency kit that enables the most vulnerable households in the economy to diminish their energy consumption. For the year 2017, the Programme's goal is to train 100,000 families with efficiency kits.

FUNDING

No information provided.

LINKS

Chile's Energy Policy: http://www.energia2050.cl/wp-content/uploads/2016/08/Energy-2050-Chile-s-Energy-Policy.pdf

3. ENERGY EFFICIENCY ACTION PLAN

Street Lighting Programme: the massive replacement of public lighting in different municipalities of the economy, by more efficient technologies (LED).

Energy Efficiency Programme in Public Buildings: Implement measures to improve Energy Efficiency in Public Buildings, by including measures of technology change or optimisation of processes.

Comprehensive Education Programme in Energy Efficiency: Promote the incorporation of Energy Efficiency in schools curriculum, developing capacities in the different actors of the educational community for the incorporation of EE from education.

Efficient Cogeneration Programme: Programme, which seeks to plan and prepare cogeneration projects and generate domestic capacity for the development and promotion of this technology.

FUNDING

No information provided.

LINKS

Energy Efficiency Agency projects: http://www.acee.cl/proyectos-emblematicos/

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

The current goal is to foster the efficient use of energy as an energy resource. The government has established a 20% savings goal by the year 2025 after considering the expected growth in energy consumption for the economy. The implementation of different plans, campaigns and programmes, as well as the future Energy Efficiency Law aims to achieve a total savings of 20,000 GWh per year by 2025, equivalent to an installed capacity of 2,000 MW.

LINKS

Energy Policy Targets: http://www.energia2050.cl/wp-content/uploads/2016/08/PRINCIPAL-GOALS.pdf

Energy Efficiency Information from Ministry of Energy - http://www.energia.gob.cl/eficiencia-energetica

5. SECTORAL ENERGY EFFICIENCY TARGETS

Goals for 2035:

- Mining and Industrial Sector: 100% of the large consumers of energy (industrial, mining and transportation sectors) make efficient use of energy, with proactive energy management systems and the implementation of energy efficiency measures.
- Residential, Public and Commercial Sector: 100% of new public and residential buildings meet OECD standards for efficient construction. All residential buildings being sold in Chile report their energy consumption.
- Appliances: 70% of the main categories of appliances and equipment sold in the market are energy efficient.
- Transport Sector: Chile has energy efficiency standards for the largest consumers of energy for road transport. All new tenders for public passenger transport include energy efficiency criteria in their evaluation. Energy efficiency standards are introduced for new lightweight vehicles.

Goals for 2050:

- Growth in energy consumption is decoupled from GDP growth.
- Residential, Public and Commercial Sector: 100% of new buildings meet OECD standards for efficient construction, and are fitted with intelligent energy control and management systems.
- Appliances: 100% of the main categories of appliances and equipment sold in the market are energy efficient.
- Transport Sector: Chile has adopted the highest international standards of energy efficiency for road, air, rail, and maritime transport.

LINKS

Chile's Energy Policy: http://www.energia2050.cl/wp-content/uploads/2016/08/Energy-2050-Chile-s-Energy-Policy.pdf

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

Chilean Energy Efficiency Agency 2011 under the supervision of the Ministry of Energy.

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

In terms of energy efficiency, the Ministry of Energy is responsible for the development of policies and guidelines, including the promotion and enhancement of economy-wide efficient energy use as a means of contributing to the achievement of this goal. Furthermore, in pursuing these objectives, the Ministry of Energy entrusts the Chilean Energy Efficiency Agency, which is responsible for implementing many of these policies by promoting, disseminating and implementing dedicated programmes, opening new markets and exploring opportunities in the field of energy efficiency, and developing energy efficiency markets to recognise and reward leading energy efficiency companies.

STAFF AND BUDGET

AChEE includes approximately 30 staff members, with more involved through various projects. The budget for 2017 is around USD 580,000 (CHP 358 million).

BUDGET USE

No information available.

LINKS

Energy Efficiency Agency - http://www.acee.cl/

Ministry of Energy Budget Analysis - http://lyd.org/wp-content/uploads/2016/10/Ppto-Energ%C3%ADa-2017.pdf

7. OTHER ENERGY EFFICIENCY AGENCIES

No other agencies responsible for energy efficiency.

LINKS

Not Applicable.

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

AChEE has responsibility for energy efficiency information dissemination. They do this through a number of portals, publications, and campaigns. More information can be found on the website. The Ministry of energy also supports these activities with information of their own.

LINKS

Top-ten energy efficiency information site: https://top-ten.cl/

ACHEE: https://www.acee.cl/

9. ENERGY EFFICIENCY AWARENESS RAISING

AChEE carries out awareness campaigns including publications, websites, and information provision about energy efficiency opportunities available.

LINKS

ACHEE: https://www.acee.cl/

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

The government, through the Ministry of Public Works, supports training in energy efficiency in public buildings, training of public sector drivers, and the on-line training carried out by “Gestiona Energía” for administrators of public building.

Courses:

- Santiago | Internal Audit and Maintenance of Energy Management Systems Based on ISO 50001 | 2017.
- Santiago | Efficient Driving Techniques and Teaching Methodology for Professional Drivers School Instructors | 2017.
- Santiago | Incorporation of Energy Efficiency in the Design of Processes and Projects | 2017.

LINKS

Energy efficiency training courses - http://www.acee.cl/cursos/

11. PRIVATELY OPERATED TRAINING

There are numerous opportunities for energy efficiency training for professionals. This includes courses offered at approximately 20 universities along with two engineering associations that offer subgroups focused on energy.

LINKS

No information provided.

12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

The Energy Efficiency Division has conducted a series of studies to evaluate the potential savings and benefits of energy efficiency. Research highlights include the following:

- Study of basis for the elaboration of an Action Plan for Energy Efficiency.
- Study of energy end uses in the residential sector.
- Study of energy end uses in the hospitals.
- Study of energy end uses in the industry and mining sector.
- Study of energy end uses in the schools.
- The government is currently developing policies on energy efficiency research, development and demonstration.
- Although research is done mostly in universities, there are energy efficiency research projects and programmes in the government.

LINKS

Government supported R&D information – http://www.acee.cl/linea-apoyo/

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

The Chilean Energy Efficiency Agency carries out energy efficiency monitoring and reporting. The methodologies used to measure and verify are defined by IPMVP (International Performance Measurement and Verification Protocol).

LEGAL POWER

No information provided.

LINKS

Energy efficiency reports - http://www.acee.cl/papeleria/guias-agencia/reportes/Reporte-2015.pdf

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

No comprehensive assessments of potential have been reported, although the AChEE makes annual reports of progress.

15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

No information provided.

16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

Carbon Tax

OBJECTIVE

A carbon tax will be implemented from 2017 to promote the reduction of carbon emissions through efficiency and renewable energy.

OUTLINE

The carbon tax is applied to carbon emissions produced by fixed sources (boilers or turbines) that individually or together add up to 50 MWt (thermal megawatts) or more. The tax is equivalent to US$ 5.0 per tonne of carbon emitted and will not apply to fixed sources whose primary energy source is biomass.

LINKS

Carbon tax page: http://www.retc.cl/ley-20-780-articulo-8-impuestos-verdes-a-las-fuentes-fijas/

Energy Efficiency Seal

OBJECTIVE

To stimulate companies to implement energy efficiency by providing a recognition seal that can then be used for branding and marketing purposes.

OUTLINE

The Energy Efficiency Seal (EE Seal) is a recognition for companies that have established an energy efficiency policy through the implementation of initiatives, goals, and energy efficiency indicators. The EE Seal is an acknowledgment by the Ministry of Energy, administered by the Chilean Energy Efficiency Agency to leading companies in economy' different productive sectors, such as transportation, industry, mining, commerce, among others. The SEAL EE demonstrates a high commitment of the board and management. The EE Seal has three categories, Gold, Silver, and Bronze, which differ according to the level of progress and effort of the companies in this matter.

LINKS

Energy efficiency seal: http://www.selloee.cl/

Verificatee (Verify you)

OBJECTIVE

Information support for development of verification and energy measurement professionals, as well as guide potential users of the service.

OUTLINE

It is a platform to facilitate capacity development and formal qualification of energy professionals.

LINKS

Verification and measurement information: http://www.verificatee.cl

ISO 50001 Implementation

OBJECTIVE

To promote the implementation of the ISO 50001 environmental standards, and stimulate an increase in qualified professionals capable of implementing it.

OUTLINE

The ISO 50001 standard facilitates organisations regardless of their sector of activity or their size for the improvement of energy performance. This standard allows:

- Know the amount of energy consumed in each process, which will enable users to take the appropriate corrective measures.
- Improve the energy efficiency of operations, systematically.

- Increase the use of renewables or surplus energies of own or third parties.
- Ensure their conformity with their energy policy and demonstrate this compliance to others.

LINKS

ISO 50001 guide: http://guiaiso50001.cl/

Energy manager training

OBJECTIVE

The programme aims to strengthen human skills in the buildings sector for the inclusion of the concept of Energy Efficiency.

OUTLINE

The initiative initially identified three types of energy mangers to train: EE Manager for the Public Sector, EE Manager for the Commercial Sector, and EE Manager for the Residential Sector. Then the programme developed training courses of a modular nature. The sectors covered by the Energy Manager projects are Commercial, Public, Residential, Hotels, Hospitals and, Construction.

LINKS

Energy manager training: http://www.gestorenergetico.cl/

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

Energy efficient cogeneration

OBJECTIVE

Improve existing cogeneration, and increase deployment of efficient cogeneration.

OUTLINE

Support platform for the development of efficient cogeneration in the economy that promotes and provides expertise to cogeneration projects.

LINKS

Efficient cogeneration page: http://www.cogeneracioneficiente.cl/

18.TRANSPORT ENERGY EFFICIENCY INITIATIVES

OBJECTIVE

The objective of the energy consumption label is to provide official and reliable information about fuel efficiency to enable consumers to search and compare different vehicles under the same consumption parameters.

OUTLINE

The car labelling scheme started operating in 2013 in light-duty oil fuelled vehicles and was later expanded to new technology vehicles, such as electric or hybrid vehicles. From June 2017 car labelling will be applied over sedans, SUVs, hatchbacks, and vans using gasoline, diesel or electricity. The fuel consumption label applies to all motor vehicle models that:

- Weigh less than 3,860 kg.
- Use diesel, gasoline, or electricity.
- For passenger or freight transport.
- Have been presented for their first sale after the entry into force of the Regulation of labelling of energy consumption for motor vehicles light and medium.

LINKS

Car labelling scheme: http://www.consumovehicular.cl/#/

Green tax on motor vehicles

OBJECTIVE

A tax that aims to encourage efficient vehicles that pollute less to enter the fleet.

OUTLINE

This is a one-time tax applied to new, light and medium-sized automobiles, depending on their urban performance. The tax is calculated according to urban driving fuel economy, nitrogen oxide emissions, and vehicle sale price.

LINKS

Car green tax - http://www.sii.cl/portales/reforma_tributaria/impuestoverde.html

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Sustainable Construction

OBJECTIVE

Sustainable Construction seeks to optimise resources and building systems, to minimise the impact on the environment and human health.

OUTLINE

Sustainable Construction (SC) will be understood as "a way of conceiving the architectural and urban design, which refers to the incorporation of the concept of sustainability in the process of planning, design, construction, and operation of buildings and their environment." SC seeks to optimise resources and building systems, to minimise the impact on the environment and human health.

The scope of the SC Strategy is the construction of buildings and infrastructures. It considers all stages of the building process and has as a goal of 100% of new buildings and new infrastructure meet sustainability conditions by 2020.

Stage 1: Definition of Strategy. The Intra-ministerial agreement seeks to promote, disseminate and promote sustainable construction in the economy. Also, the agreement establishes the criteria for the definition of the sustainable construction strategy.

Stage 2 (2014): Establishment of the Baseline and the publication of the Code of Sustainable Construction. Start the dissemination and education process on Sustainable Construction. Creation of the CS Seal (Sustainable Construction).

Stage 3 (2015): Development of Building and Infrastructure Projects. Pilot programmes for sustainable housing construction.

Stage 4 (2016): Incorporation of Sustainable Construction in the programmes of the Ministry of Housing and its regulations.

LINKS

Sustainable construction website - http://csustentable.minvu.cl/

Appliance labelling scheme

OBJECTIVE

Increase appliance energy efficiency by improving energy consumption information in the market. Leading to consumers choosing higher efficiency models where possible.

OUTLINE

Chile's product labelling programme leverages the European appliance labelling scheme, which breaks-down all similar models of a product into one of seven efficiency categories: A (most efficient) through G (least efficient). This labelling is currently applied to following products:

- Appliances: fridges, refrigerator-freezer, freezers, microwave oven (standby), TV (stand By), TV decoder (standby), home theatres (Standby), air conditioner, washing machine (under review), clothes dryer, dishwasher, TV (active).
- Lighting: Incandescent lamps, single and double socket fluorescent lamp, halogen lamps, tungsten halogen lamp with dichroic reflector.
- Home entertainment: Musical instruments (standby), DVD (standby), Blu-ray (standby).
- Others: Three-phase induction motor type squirrel cage, gas cookers, water heaters, wood burners, printers (standby).

LINKS

Labelling scheme: https://top-ten.cl/

20. ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

The Ministry of Energy works with several NGOs and international organisations in energy efficiency projects including: the United Nations Development Programme (UNDP) with a public lighting replacement programme; and the United Nations Environment Programme (UNEP) with the "Enlighten" initiative to develop a strategy for the transition to efficient lighting.

The "Enlighten" project went into a second stage thanks to the Green Environmental Facility in partnership with the Ministry of Energy, the Ministry of the Environment, the United Nations Environment Programme (UNEP) and the Fundación Chile participate, among others, with the goal of putting the definitions and strategies elaborated during a previous stage into practice.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

Chile participates in the Pan American Standards Commission (COPANT in Spanish) for the harmonisation of energy efficiency standards, and participated in the design discussions of the ISO 50 001 standard. Chile also actively participates in the APEC Energy Working Group (EWG).

On a regional level, Chile participates in MERCOSUR's efforts to promote energy efficiency in the region, and collaborates with the Economic Commission for Latin America and Caribbean (ECLAC) in this area.

Chile has several non-binding cooperation agreements that involve energy efficiency with institutions from different economies, including New Zealand, Korea, and the US State of Massachusetts, among others.

Another area of cooperation is the collaboration agreement with the Japan International Cooperation Agency (JICA). JICA is funding part of a two-week visit to Japan for professionals related to energy efficiency. The agreement considers funding of three visits over a period of three years. It is hoped that at the end of these three years, at least 45 Chilean professionals will have learned about the energy efficiency policies being implemented by Japan and will bring this knowledge to their companies. The agreement will conclude next year.

LINKS

No information provided.

21. OTHER ENERGY EFFICIENCY EFFORTS

LINKS

No information provided.

CHINA

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

Energy is a key strategic issue concerning China's economic development, social stability and national security. As the economy moves toward its goals of modernisation and common prosperity for its people, energy becomes more important than ever. Since China adopted the policy of reform in the late 1970s, its energy industry has made significant advances. At the same time, China has also experienced high economic growth accompanied by high-energy consumption. However, recognising that the rapid growth in energy demand is unsustainable, China has been taking steps to rebalance the economy.

In June 2015, China submitted its Intended Nationally Determined Contribution (INDC) under the Paris Agreement, with a target of achieving peak emissions around 2030 reducing emission intensity by 60%-65% below the level of 2005. In line with such commitments, China's State Council issued the 13th Five-Year Plan (FYP) in March 2016, laying the blueprints for a "moderately prosperous society". China's 13th FYP outlines the central government's policy objectives and strategies from 2016 to 2020, with a strong focus on energy and carbon dioxide emissions intensity reduction targets as well as improvements in energy efficiency.

2. ENERGY EFFICIENCY STRATEGY

In the outline of the 13th FYP, the State Council stipulated that by year 2020, non-fossil energy will increase to 15% of total primary energy consumption, carbon dioxide intensity and energy intensity will decrease by 18% and 15% respectively compared to 2015 levels. An economy-wide energy cap will be imposed for all energy sources to be less than five billion tons of coal over 2016 -2020. The FYP also supports increase in renewable energy capacity and connection through government support for wind, solar, and biomass energy production.

China released the *Comprehensive Work Plan on Energy Conservation and Emission Reduction during the 13th Five-Year Plan Period* in December, 2016. In this work plan, State Council of China emphasises to improve energy efficiency in eight different areas, including strengthening energy conservation in industry, promoting building energy conservation, pushing forward energy conservation in transportation, promoting energy conservation in the field of trade and commerce, pushing forward energy conservation in agriculture and rural areas, improving energy efficiency in public institutions, strengthening the management of energy conservation in key energy user, strengthening the management of energy conservation of key energy-consuming equipment.

The most important feature of China’s strategy to improve energy efficiency is the creation of a chain of responsibility that reaches from the economy-wide target down to the target that must be achieved by the local energy authorities. In this way, efforts to improve energy efficiency are incorporated into the economic and development plans of each locality, and placed on the priority agendas of local governments.

In terms of energy law, China enacted the Energy Conservation Law of the People’s Republic of China in 1997 to promote overall social energy conservation, and improve energy efficiency and environmental protection. The Law provided a policy framework for all provincial level governments to implement energy conservation. In particular, the Law required all levels of government to arrange funds to implement energy conservation

measures; set limits on energy-intensive products; and establish a system for discontinuing backward, energy-consuming products and equipment. The Law also identified key energy-using entities (with an annual consumption more than 10,000 tonnes of standard coal equivalent) to appoint an energy manager and submit periodic reports related to energy consumption and conservation. In 2007 and 2016, the Law was amended to implement energy conservation targets and evaluation system. The amended part states that "conservation of resources is the China's basic domestic policy, China will implement energy development and conservation simultaneously, and put energy conservation in the first place of China's energy development strategy".

FUNDING

The central government budget continued to be arranged to support energy-saving projects. A total of 1.3 billion Yuan of budget was appropriated in 2014 to support 617 energy-saving technology transformation and industrialisation projects and capacity-building projects for energy monitoring institutions, equivalent to an energy saving potential of 2.68 Mtce annually.

LINKS

China's policies to mitigate climate change:

http://www.china.org.cn/environment/news/2015-11/23/content_37136145.htm

Energy efficiency evaluation, measurement and verification:

http://www.raponline.org/wp-content/uploads/2016/05/rap-crossleyslotesherman-globalemv-2014-mar-19.pdf

3. ENERGY EFFICIENCY ACTION PLAN

In 2014, China released the Interim Measures for the Promotion of Energy-Saving, Low-Carbon Technologies and Catalogue of National Key Low-Carbon Energy Technologies for Promotion, to promote adoption of energy-saving, low carbon technologies.

The Interim Measures for the Assessment and Examination of Energy Efficiency of Fixed-Assets Investment Projects, published by the NDRC in order to enhance energy efficiency management on fixed-asset investment projects, promote the scientific and rational use of energies, curb energy waste at the source, and improve energy use efficiency. This regulation applies to any fixed-asset investment projects that are constructed within China, and mainly focuses on energy efficiency assessments and energy efficiency document examinations.

FUNDING

No information available.

LINKS

China's Policies and Actions for Addressing Climate Change (2016):

http://cdm.ccchina.gov.cn/archiver/cdmcn/UpFile/Files/ccer/China's%20Policies%20and%20Actions%20on%20Climate%20Change%20(2016).pdf

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

In the 13th FYP, China targets to reduce energy intensity by 15%, and carbon intensity by 18% by 2020 (from 2015 levels). China has also implemented a mandatory target to decrease the share of coal in total energy consumption to 58%, with an overall energy consumption cap of five billion tons of coal equivalent. See Tables 1 and 2 below for more details.

LINKS

Table 1: http://www.ndrc.gov.cn/zcfb/zcfbtz/201701/W020170117335278192779.pdf (Energy Development Planning of 13th FYP)

Table 2: http://www.ndrc.gov.cn/zcfb/zcfbqt/201701/W020170105634585914832.pdf (Comprehensive Work Plan for Conserving Energy and Reducing Emission During 13th FYP)

Table 1: 13th FYP Energy Development Main Index

Category	Index	Unit	2015	2020	Average Annual Growth	Binding/ Anticipatory
Energy Amount	Primary Energy Production	Billion tons of SC	3.62	4	2.00%	Anticipatory
	Installed Power Capacity	Billion kWh	1.53	2	5.50%	Anticipatory
	Total Energy Consumption	Billion tons of SC	4.3	<5	<3%	Anticipatory
	Total Coal Consumption	Billion tons of Raw Coal	3.96	41	0.70%	Anticipatory
	Total Electricity Consumption	Trillion kWh	5.69	6.8-7.2	3.6%-4.8%	Anticipatory
Energy Security	Rate of Energy Sufficiency	%	84	>80	-	Anticipatory
Energy resource structure	Proportion of Installed non-fossil fuel Capacity	%	35	39	[4]	Anticipatory
	Proportion of Electricity from non-fossil Fuel Energy Generation	%	27	31	[4]	Anticipatory
	Proportion of non-fossil fuel consumption	%	12	15	[3]	Binding
	Proportion of Natural Gas Consumption	%	5.9	10	[4.1]	Anticipatory
	Proportion of Coal consumption	%	64	58	[-6]	Binding
	Power Station Coal Consumption Proportion in Total Coal Consumption	%	49	55	[6]	Anticipatory
Energy Efficiency	Decreasing of Energy Consumption per unit of GDP	%	-	-	[15]	Binding
	Coal Consumption from Thermal Power Generators	Grams of SC per kWh	318	<310	-	Binding
	Line Loss Rate of Power Grid	%	6.64	<6.5	-	Anticipatory
Energy Environment Protection	Decreasing of CO2 Emission per unit of GDP	%	-	-	[18]	Binding

[ ] means the value cumulated in 5 years

Table 2: 13th FYP Provincial-Level Energy Consumption and Energy Intensity Goals

Province	13th FYP Goal of Decresing Energy Intensity (%)	Total Energy Consumption in 2015(million tons of SC)	Control Targets of Total Energy Consumption increase in 2020(Million tons of SC)
Beijing	17	68.35	8
Tianjing	17	82.6	10.4
Hebei	17	293.95	33.9
Shanxi	15	193.84	30.1
Inner Mongolia	14	189.27	35.7
Liaoning	15	216.67	35.5
Jilin	15	81.42	13.6
Heilongjiang	15	121.26	18.8
Shanghai	17	113.87	9.7
Jiangsu	17	302.35	34.8
Zhejiang	17	196.1	23.8
Anhui	16	123.32	18.7
Fujian	16	121.8	23.2
Jiangxi	16	84.4	15.1
Shandong	17	379.45	40.7
Henan	16	231.61	35.4
Hubei	16	164.04	25
Hunan	16	154.69	23.8
Guangdong	17	30.145	36.5
Guangxi	14	97.61	18.4
Hainan	10	19.38	6.6
Chongqing	16	89.34	16.6
Sichuan	16	198.88	30.2
Guizhou	14	99.48	18.5
Yunnan	14	103.57	19.4
Xizang	10	—	—
Shaanxi	15	117.16	21.7
Gansu	14	75.23	14.3
Qinghai	10	41.34	11.2
Ningxia	14	54.05	15
Xinjiang	10	156.51	35.4

5. SECTORAL ENERGY EFFICIENCY TARGETS

See Table 3 for a list of sectoral targets.

Table 3: Sectorial Energy Intensity (Efficiency) Targets in the 13th FYP

Index	Unit	2010 (Actual Value)	2020	
			Target Value	Variarition/Rate of Change
Industrial				
Industrial Energy Consumption per Unit area	%			[-18%]
Power-Supply Coal Consumption	grams of SC per kWh	315	306	-12%
Total Energy Consumption per One ton of Steel	Kilograms of SC	572	560	-12%
Cement Clinker Energy Consumption	Kilograms of SC per ton	112	105	-7
Aluminium-intergrated AC power consumption	kWh per ton	13350	13200	-150
Crude Oil Processing Energy Consumption	Kilograms of SO per ton	65	63	-2
Ethylene Production Energy Consumption	Kilograms of SC per ton	816	790	-26
Synthetic Ammonia Production Energy Consumption	Kilograms of SC per ton	1331	1300	-31
Paper and Paperboard Production Energy Consmption	Kilograms of SC per ton	530	480	-50
Building				
Accumulated Area of Energy-saving Reconstruction in existing urban residential buildings	Billion square meters	1.25	1.75	+0.5
Accumulated Area of Energy-saving Reconstruction in existing urban pubilc buildings	Billion square meters	0.1	0.2	+0.1
Implementation Rate of Green Building Standard of New Constructions in Urban Area	%	20	50	+30

Table 3: Sectorial Energy Intensity (Efficiency) Targets in the 13th FYP

Traffic and Transport					
Raidway Transport Comprehensive Energy Consumption per Workload		Ton of SC per million ton/km	4.71	4,47	[-5%]
Decreasing rate of Energy consumption of Commercial Vehicles unit of Transport Turnover					[-6.5%]
Decreasing rate of Energy consumption of Commercial Ships Unit of Transport Turnover					[-6%]
Energy Consumption of aviation Transport Turnover		Kilograms of SC per ton*kilometers	0.433	<0.415	>[-4%]
Average Oil Consumption of New Production Passagener Vehicles		Liters per 100 kilometers	6.9	5	-1.9
Public Institutions					
Energy Consumption of Public Institutions per unit area		Kilograms of SC per square meters	20.6	18.5	[-10%]
Energy Consumption of Public Institutions per Person		Kilograms of SC per person	370.7	330	[-11%]
Energy-use Terminal equipment					
System Efficiency of Electromotor		%	70	75	+5
Market Share of Level 1 Energy Efficiency Volume Air-compressor	<55kW	%	15	30	+15
	55kW-220kW	%	8	13	+5
	>220kW	%	5	8	+3
Market Share of Level 1 Energy Efficiency Power Transformer		%	0.1	10	9.9
Market Share of Level 2 and Above Energy Efficiency Room Air-conditioner		%	22.6	50	+27.4
Market Share of Level 2 and Above Energy Efficiency Refrigerator		%	98.3	99	+0.7
Market Share of Level 2 and Above Energy Efficiency household Gas Water Heater		%	93.7	98	+4.3

[ ] Indicates the changing rate

LINKS

Table 3: http://www.ndrc.gov.cn/zcfb/zcfbqt/201701/W020170105634585914832.pdf (Comprehensive Work Plan for Conserving Energy and Reducing Emission During 13th FYP)

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

National Leading Group for Climate Change and Energy Conservation and Emission Reduction (NLGCCECER).

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

The Chinese National People's Congress (NPC), the highest organisation of state power in China, produces a Five-Year Plan to guide economic policies in five-year increments. The drafting and implementation of the plan is tasked to the State Council, the administrative organisation of the government. In terms of energy efficiency, China's government established the National Leading Group for Climate Change and Energy Conservation and Emission Reduction (NLGCCECER) to coordinate all of the energy conservation activities in China, with premier of the State Council as its head and 20 ministers as members.

The National Development and Reform Commission (NDRC) undertakes specific work by the NLGCCECER and plays a crucial role in the design and execution of policies on energy efficiency and conservation. The Resource Conservation and Environmental Protection Department of the NDRC is responsible for day-to-day efforts in energy efficiency. In addition, energy saving and emission reduction are still crucial tasks of other departments in the Chinese Government. All provinces, autonomous regions and municipalities directly under the central government have established their own leading groups and working organs to address climate change and energy conservation issues.

STAFF AND BUDGET

Currently, there are approximately 15 staff members in the key agency of the department above who are directly in charge of energy conservation and emission reduction projects. There are significantly more staff members once all of the departments and the regional governments are included.

BUDGET USE

No information available.

LINKS

China's Policies for Addressing Climate Change 2011:

http://www.scio.gov.cn/zfbps/ndhf/2011/Document/1052718/1052718_3.htm

7. OTHER ENERGY EFFICIENCY AGENCIES

See Table 4 below.

Table 4: Government agencies involved with energy efficiency

Name of organisation	Roles of organization
National Development and Reform Commission	Overall work and coordination
Ministry of Industry and Information Technology	Energy conservation and efficiency in the industrial and information sectors
Ministry of Transport	Energy conservation and efficiency in the transport system
Ministry of Housing and Urban Rural Construction	Energy conservation and efficiency in building
National Government Offices Administration	Energy conservation and efficiency in public institutes
The Ministry of Agriculture	Energy conservation and efficiency in the agriculture sector
The National Energy Bureau	Energy conservation and efficiency in energy supply systems
Ministry of Finance	Finance and tax measures related to e nergy conservation and efficiency
Ministry of Science and Technology	R&D of energy conservation and efficiency technology
Administration of Quality Supervision, Inspection and Quarantine (Standardization Administration of China, Certification and Accreditation Administration)	Energy efficiency standards, labels, certifications, accreditation, and monitoring,, verification, and enforcement
National Bureau of Statistics of the People's Republic of China	Energy statistics

LINKS

Not applicable.

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

China has organised economy-wide actions for energy conservation and emission reduction through 17 government departments covering nine special actions. China's government also runs its "National Energy Efficiency Promotion Week" and "National low-carbon Day" once a year, promotes its "Energy Conservation and Emission Reduction: Actions by All People" campaign through CCTV, and conducts other awareness activities to enhance public consciousness about energy conservation and environmental issues. The "National Energy Efficiency Promotion Week" and "National low-carbon Day" have different themes every year, for instance, the theme of "National Low-Carbon Day" is "Low-Carbon Industrial Development". Presently, energy conservation and emission reduction are common topics discussed in the public domain.

LINKS

China's Policies and Actions for Addressing Climate Change (2016):

http://cdm.ccchina.gov.cn/archiver/cdmcn/UpFile/Files/ccer/China's%20Policies%20and%20Actions%20on%20Climate%20Change%20(2016).pdf

9. ENERGY EFFICIENCY AWARENESS RAISING

During the National Energy Efficiency Promotion Week and the National Low-Carbon Day, various publicity activities were held by local governments according to their own conditions to improve public awareness of energy conservation, environmental protection, greenhouse gas emission and low carbon development among the public. Chinese enterprises also proactively implemented policies related to energy conservation.

LINKS

China's Policies and Actions for Addressing Climate Change (2016):

http://cdm.ccchina.gov.cn/archiver/cdmcn/UpFile/Files/ccer/China's%20Policies%20and%20Actions%20on%20Climate%20Change%20(2016).pdf

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

The government of China organises energy management training for government staffs, researchers from universities and enterprise managers every year. These training include content such as energy efficiency, energy auditing, energy planning, energy measurement and statistics, etc. The local government operates most of these training, and information on the training is usually sent to enterprises or university by fax or email.

LINKS

Not available.

11.PRIVATELY OPERATED TRAINING

The government of China offers plenty of energy efficiency training opportunities to the government staffs, managers from state-owned enterprises, professors in universities and researchers from government institutions, most of these trainings are short courses, such as two weeks camps or 3-5 days conference. The trainings about sectoral specific programmes are offered by different ministries in China. These trainings are focusing on the specific regions of energy efficiency, like reducing energy loss in power transmission line, improving energy efficiency in PV system and energy conservation in public buildings, etc.

LINKS

Beijing Jiaotong University: http://news.bjtu.edu.cn/info/1027/26391.htm

12.GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

The Ministry of Science and Technology (MOST) is in charge of promoting energy efficiency research and development and demonstrations (RD&D). Programmes that encourage RD&D in energy efficiency have been established, including the State Key Basic Research Programme, the National Science and Technology Support Programme, and the High-Tech Development Projects. The MOST also supports fundamental scientific researches in climate change area.

Beijing Energy Efficiency Centre (BECon) is proposed by the Energy Research Centre of the National Development and Reform Commission (NDRC) and founded in December 1993. It has another name called "Energy Efficiency Centre of the Energy Research Institute". BECon is an authoritative organisation to

comprehensively study on issues of energy saving and energy efficiency in China, is one of technical support and mainly policy consulting organisations relied by the state departments related to energy conservation, and is a core agency to connect the China and oversea government organisations, non-government organisations and enterprises to promote and implement energy saving activities. BECon also undertakes the tasks and consulting services entrusted from the local governments, enterprises and related organisations.

LINKS

Energy Research Institute National Development and Reform Commission:

http://eng.eri.org.cn/jgsz.php?aid=231&cid=61

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

Economy-wide level targets are set by the central government, subdivided and assigned to provincial-level governments and administrators of key programmes. Provincial level targets are set by the State Council. Representing the State Council, the NDRC is responsible for reviewing the progress of energy efficiency plan and organises formal review and evaluation team (composed by officials and experts from ministries) to each of the provinces annually.

LEGAL POWER

National Bureau of Statistics of the People's Republic of China (NBS), NBS collects energy data including energy production, consumption, energy policies, energy conservation data, and etc., from provincial-level statistics bureau, and release the monthly data, annual data through official website (http://www.stats.gov.cn/), press conferences, statistical communiques, and annual publication: China energy statistical yearbook. This book contains energy data such as energy production, consumption, construction of energy industry, pollution related to energy industry, and etc.

National Energy Bureau and National Development and Reform Commission. These two government sectors only collect energy data when they run some specific projects or intend to enact energy-related policies. With authorisation from state council, they can collect energy data from enterprises, local governments and provincial-level statistics bureaus directly.

LINKS

Energy Efficiency Plan of China and its monitoring and evaluation:

https://www.esmap.org/sites/esmap.org/files/China.pdf

Energy Efficiency Evaluation, Measurement, and Verification:

http://www.raponline.org/wp-content/uploads/2016/05/rap-crossleyslotesherman-globalemv-2014-mar-19.pdf

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

Since amendment of the Law in 2007, China has established an energy conservation and emission reduction leadership group and assigned energy conservation goals to local governments and major enterprises. For local government, their performance assessments are based on the Energy Conservation and Emission Reduction Statistics and Monitor Evaluation System and Method. Local governments are commended and rewarded if they meet their requirements. However, if the requirements are not met, then a wide range of sanctions may occur, including the following:

- Barred from participation in the annual awards or receiving an honorary title.
- New high energy-consuming projects in these regions cannot be approved.
- Provincial leaders must submit a written report to the State Council and indicate a deadline for correction measures.

Statistics departments at all government levels are required to develop a strong energy statistics system in order to report on local government performance. For the industry, high energy-consuming projects must contract energy managers and provide annual reports on energy efficiency and conservation activities.

A comprehensive evaluation of target realisation for provincial governments is carried out every year by the central government, which is helpful for understanding the local energy conservation situation, identifying problems, and promoting energy conservation efforts.

For major enterprises who are considered key energy-using entities, they must submit annual reports to the government, containing information on whether their energy intensity targets had been achieved. Penalties will be imposed for failure to achieve targets or implement energy efficiency measures.

LINKS

China's Policies and Actions for Addressing Climate Change:

http://www.gov.cn/english/official/2011-11/22/content_2000272_4.htm

15.SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

No information available.

16.CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

Energy-Efficient or Water-Saving Equipment Directory of Corporate Income Tax Concessions

OBJECTIVE

To reduce corporate income tax for enterprises that Promote the use of energy-efficient devices and equipment, and stimulate technological innovation and energy efficiency improvement.

OUTLINE

Reduced corporate income tax rate is granted to qualified advanced and new technology enterprises. Applicable fields include solar energy, wind energy, biomaterial energy, and geothermal energy.

LINKS

Water-Saving Equipment Directory of Corporate Income Tax Concessions:

http://news.bjx.com.cn/html/20130730/448909.shtml

Financial Rewards for Energy-Saving Technical Retrofits

OBJECTIVE

To encourage and motivate enterprises to invest in energy conservation technological transformation and promote the implementation of key energy-conservation projects.

OUTLINE

The Financial Rewards for Energy-Saving Technical Retrofits programme, under the Ministry of Finance (MOF) and the National Development and Reform Commission (NDRC), rewards enterprises for energy savings achieved through technical renovation projects.

LINKS

Financial Rewards for Energy-Saving Technical Retrofits:

http://iepd.iipnetwork.org/policy/financial-rewards-energy-saving-technical-retrofits

China Leading Energy Efficiency Programme (LEP)

OBJECTIVE

Promote adoption of energy efficient products.

OUTLINE

LEP is an economy-wide programme focusing on promoting energy efficient products, and facilitate market transformation towards high efficiency products through promoting them with a package of toolkit, e.g. public campaign, prioritisation in government procurement programme, engagement of industry, and digital measures (QR code label and smartphone APP), etc.

There are also products specific requirements and considerations for each product. For example, manufacturers need to meet the following requirements in order to apply for LEP for their products:

- Manufactured and used within mainland China.
- Have registered with the China Energy Label scheme and obtained Energy Conservation Certification.
- No non-complying products under its brand reported in the past year in any provincial, or above, level product quality checks and China Energy Label checks.

LINKS

LEP: http://www.sdpc.gov.cn/zcfb/zcfbtz/201501/t20150108_659703.html

Minimum Energy Performance Standards (MEPS) for High-Energy-Consuming Products

OBJECTIVE

The energy efficiency standards form the policy basis for controlling energy consumption regarding high-energy-using products.

OUTLINE

In 1989, China introduced the first mandatory minimum energy performance standards to target improving minimum efficiencies for eight of the highest energy-consuming and most popular household appliances. Since then, China has rapidly expanded its MEPS programme to become one of the world's largest programmes, covering not only common household appliances, but also lighting products, office and commercial equipment, transport and industrial equipment. MEPS and mandatory China Energy Labels are also introduced for new products every year, but there is no pre-determined schedule for new or revised standards.

LINKS

MEPS: https://china.lbl.gov/sites/all/files/china_sl_info.pdf

Administration Regulation on Energy-Efficiency Labelling

OBJECTIVE

Promote the adoption of energy efficient appliances.

OUTLINE

China requires appliances to meet a standard and requires manufactures to put an energy use label on all appliances sold on the market. Launched by the NDRC and the General Administration of Quality Supervision, Inspection and Quarantine, the mandatory appliance labelling system now covers 30 types of household appliances. It requires manufacturers to register each product at China National Institute of Standardisation (CNIS) website before introducing it to the market and to attach a China Energy Label to each model revealing its energy efficiency grade as compared to the appliance standard. Appliance standards, on the other hand, set minimum allowable energy efficiency levels.

LINKS

Energy-Efficiency Labelling: http://www.belfercenter.org/sites/default/files/legacy/files/policy-instruments-residential-building-energy-china-3.pdf

17.INDUSTRY ENERGY EFFICIENCY INITIATIVES

"100, 1000, 10000" energy conservation initiative

OBJECTIVE

To reduce energy intensity.

OUTLINE

This programme aims to put the top 100 energy consuming enterprises in China under regulation of the central government, the top 1,000 energy consuming enterprises under the regulation of their respective provincial-level governments, and other high energy consuming enterprises under the regulation of lower-level governments. It encourages enterprises to take voluntary measures to reduce energy consumption; facilitates the development of energy management, measurement and consumption monitoring systems; and carry out energy reviews and efficiency evaluations.

Under the programme, agreements on energy efficiency measures and energy intensity targets are established in energy savings responsibility contracts. Central government agencies set the objectives, targets, scope, and implementation guidelines in the contracts. Provincial level governments are in charge of most of the details of implementation. Progress in each individual enterprise is evaluated annually.

LINKS

Report on China's economic, social development plan: http://www.china.org.cn/china/NPC_CPPCC_2017/2017-03/18/content_40472171.htm

13th FYP: http://en.ndrc.gov.cn/newsrelease/201612/P020161207645765233498.pdf

One Hundred Energy Efficiency Standard Promotion Programme

OBJECTIVE

To provide a technical basis for energy-saving assessments of new projects in order to phase-out backward production capacity and high-energy-consuming enterprises.

OUTLINE

This programme was initiated in 2012. As of September 2015, a total of 105 compulsory energy consumption standards and 70 mandatory energy efficiency standards have been published. These norms specify the energy efficiency values for new and existing enterprises.

LINKS

One Hundred Energy Efficiency Standard Promotion Programme:

http://cdm.ccchina.gov.cn/archiver/cdmcn/UpFile/Files/ccer/China's%20Policies%20and%20Actions%20on%20Climate%20Change%20(2016).pdf

Implementation Scheme of Energy-Efficiency Leader System

OBJECTIVE

introduced in Dec 2014, the government wants to increase the level of energy-efficiency amongst high energy-consuming products and equipment, high energy-consuming industries and public institutions. It also hopes to

establish a long-term mechanism to promote energy-saving and emission-reduction based on this scheme. This scheme will raise current standards of energy-efficiency through incentive programmes and industry benchmarks.

OUTLINE

The key component of the programme is the designation of so-called energy-efficient "leaders"—i.e., manufacturers and brands that meet or exceed specific energy-efficiency benchmarks. To qualify, leaders must abide by energy-efficiency standards higher than those currently set by the China Energy Label, a tag that informs Chinese consumers of the degree of energy efficiency of a designated product. This scheme further recommends energy-saving renovation projects that were supported by central finance, to use the 'leader' products. The government also encourages qualified enterprises to use 'leader' label and China Energy Label for branding, promotional and commercial purposes.

LINKS

New Leader Programme Aims to Promote Energy Efficiency in China's Home Appliances: http://news.ihsmarkit.com/press-release/technology/new-leader-program-aims-promote-energy-efficiency-chinas-home-appliances

Energy Conservation and Environmental Protection (ECEP)

OBJECTIVE

Promote energy saving and emission reduction, develop new areas for economic growth

OUTLINE

The ECEP is an industry supported by the government to provide technical support for energy resources conservation, circular economy development, and eco-environment protection. The energy conservation industry is one of the three key industries within the ECEP industry (together with resources utilisation and environmental protection industries). Energy-saving technologies and equipment (such as boilers, furnaces, motors, waste heat and waste pressure equipment, and instruments), energy-efficient products (including appliances, lighting, vehicles, and building materials), and energy-efficiency services are identified as key areas for the energy conservation industry.

LINKS

ECEP: http://iepd.iipnetwork.org/policy/promotion-energy-conservation-and-environmental-protection-industry

Energy efficiency financing

OBJECTIVE

To facilitate development of energy efficient industries.

OUTLINE

Energy efficiency financing has been emphasised since the 11th FYP and a series of governmental policies and regulations have been issued on enhancing financial services related to energy efficiency, emission reduction and environmental protection, such as the Green Loan/Credit and Green Security. In the 13th FYP, government committed to establish a green finance system, develop green credit and bonds, and launch green development funds to increase support for credit and loans to energy-efficiency projects.

LINKS

Financing Regulations and Instruments: http://iepd.iipnetwork.org/policy/ee-financing-regulations-and-instruments

13th FYP: http://en.ndrc.gov.cn/policyrelease/201612/P020161207645766966662.pdf

Strengthening Energy Conservation in Industrial Field (One Chapter in Comprehensive Work Plan on Energy Conservation and Emission Reduction During the 13th Five-Year Plan Period)

OBJECTIVE

Implement industrial energy efficiency catch-up activity; strengthen energy consumption management in high-energy consumption industries; Implement energy efficiency benchmarking system in key energy consumption industries; promote the constructions of energy control and regulation centres in industrial enterprises; popularise industrial intelligent energy monitoring and diagnosis technology.

OUTLINE

By 2020, China targets to increase industrial energy utilization efficiency and usage level of clean energy significantly. It also seeks to reduce the unit added value energy consumption of industrial enterprises above designated size by 18%, compared to 2015 levels. The energy efficiency of key energy consuming industries (such as power, steel, nonferrous metals, building materials, petroleum, petrochemical and chemical industries) has reached the world's advanced level.

LINKS

http://www.ndrc.gov.cn/zcfb/zcfbqt/201701/W020170105634585914832.pdf (Comprehensive Work Plan for Conserving Energy and Reducing Emission During 13th FYP)

18.TRANSPORT ENERGY EFFICIENCY INITIATIVES

Energy conservation in transportation sector

OBJECTIVE

Promote energy conservation in transportation sector.

OUTLINE

In 2014, the Ministry of Transport (MOT) released "Key Outlines of Energy Conservation and Emission Reduction of Transport" and "Accounting Rules for Transportation Energy-Saving and Emission Reductions and Energy Conservation Investment", which designed green transport system and implemented evaluation systems for green traffic. It also promoted energy monitoring pilots.

LINKS

Mitigating climate change: http://www.china.org.cn/environment/news/2015-11/23/content_37136145.htm

New Energy Vehicles (NEV)

OBJECTIVE

Encourage uptake of alternative energy vehicles.

OUTLINE

Since 2012, the Ministry of Finance provided subsidies ranging from RMB 30,000 to 60,000 ($4,600-9,200) for passenger NEVs and RMB 500-600,000 ($77,000-92,000) for commercial NEVs, most of which are also matched by provincial governments. Sales tax and licence taxes have since also been waived for electric vehicles (EVs). While China's major metropolitan areas control the growth of their vehicle population by employing a licence lottery or auction system, EVs are generally excluded from these controls. The government has introduced multiple R&D programmes to promote battery technology development, and has been encouraging charging infrastructure development. In December 2015, the government issued a plan to add 1,200 charging stations and 4.8 million distributed charging piles by 2020.

LINKS

China's 13th FYP – Implications for Oil Markets:

https://www.oxfordenergy.org/wpcms/wp-content/uploads/2016/06/Chinas-13th-Five-Year-Plan-Implications-for-Oil-Markets.pdf

Vehicle Fuel Economy Standards

OBJECTIVE

To require passenger vehicles and light-duty cargo vehicles to meet efficiency standards, which vary according to the vehicle's weight.

OUTLINE

China started implementing fuel economy standards in July 2005. In January 2016, China launched Stage 4 of the standards, requiring passenger vehicles fuel consumption per 100 kilometres to fall from 6.9 litres to 5 litres between 2016 and 2020.

LINKS

Fuel Economy Standards: https://www.chinadialogue.net/article/show/single/en/9414-China-s-EV-push-hurting-fuel-economy-standards

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Building codes and regulation

OBJECTIVE

Since 2008, the Energy Conservation Regulations for Civil Buildings was enacted to strengthen the energy conservation management of civil buildings, improve energy efficiency, and reduce energy consumption in civil buildings.

OUTLINE

China imposes mandatory building codes for residential and commercial buildings in urban areas, while compliance with rural residential building codes is voluntary and promoted through incentives. The State Council also issued guidelines on urbanisation, highlighting resource and energy conservation as well as environmental protection in building design and construction. In the 13th FYP, the government continued to promote energy efficiency standards, renewable energy and green building in construction.

LINKS

Building energy efficiency in China:

http://www.chinafaqs.org/files/chinainfo/Building%20Energy%20Efficiency%20Fact%20Sheet_0.pdf

Green Building Action Plan

OBJECTIVE

Promote adoption of green buildings.

OUTLINE

In 2014, the Green Building Action Plan mandated public buildings and any single building area over 20,000 square meters to meet the green building standards of China's 3-Star Rating System GBEL (The Green Building Evaluation Label). In 2015, the green building evaluation standards were updated and all newly-built urban buildings had to adopt the more stringent energy efficiency standards.

LINKS

Green Building Action Plan: https://www.export.gov/apex/article2?id=China-Construction-and-Green-Building

20. ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

The Chinese Government cooperates with non-government organisations to stimulate energy efficiency improvements, as appropriate.

For example, the World Wide Fund is the first international conservation organisation invited to work in China, and the collaboration includes four energy efficiency improvement programmes:

- Low-Carbon City Initiative in China (LCCI), which explores low-carbon development models in different cities and works to improve energy efficiency in the industrial, building, and transport sectors.
- Business engagements.
- Climate change: post-Kyoto negotiations.
- "20 Ways to 20%" initiative.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

The Chinese Government cooperates with other economies through bilateral, regional, and multilateral schemes for energy efficiency improvements, such as the United States, Japan, Korea, the European Union, etc. Currently, China has established bilateral cooperation mechanisms with 36 economies and regions, and it is involved in multilateral energy cooperation mechanisms in 22 international organisations and international conferences.

China has other cooperative arrangements with international organisations for energy efficiency improvement, in addition to APEC, such as the Asian Development Bank, the World Bank, etc.

For example since 1997, NDRC, the World Bank, and the Global Environment Facility (GEF) have jointly organised the China Energy Conservation Project. This project seeks to build a model of ESCOs and an energy management contract mechanism, based on the market economy system in China. It also establishes support for technical institutions, both technically and financially.

The Barrier Removal to the Cost-Effective Development and Implementation of Energy Efficiency Standards and Labelling (BRESL) project, another international cooperation venture, is sponsored by the UNDP and the GEF. China is the lead economy on the BRESL project with the Executing Agency being the NDRC. The BRESL project is aimed at accelerating the adoption and implementation of the energy standards and labels (ES&L) programme in Asia, which will also facilitate harmonisation of test procedures, standards, and labels among developing economies in Asia.

China actively participated in international climate change discussions such as the Major Economies Forum on Energy and Climate, the Petersburg Conference, the UN High Level Conference on Climate Change, the Montreal Protocol, the International Civil Aviation Organisation and the International Maritime Organisation. It also participated in relevant climate change negotiations under international systems such as the Universal Postal Union and the International Organisation for Standardisation. China continues to pay attention to relevant discussions in the G20, the APEC, the East Asian Leaders Meeting and the United Nations General Assembly.

LINKS

China's Policies and Actions for Addressing Climate Change (2016):

http://cdm.ccchina.gov.cn/archiver/cdmcn/UpFile/Files/ccer/China's%20Policies%20and%20Actions%20on%20Climate%20Change%20(2016).pdf

21.OTHER ENERGY EFFICIENCY EFFORTS

No information.

HONG KONG, CHINA

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

To increase and sustain energy conservation and saving through a combination of educational, social, economic and regulatory means, especially for buildings and inhabitants to become highly energy efficient by 2025.

2. ENERGY EFFICIENCY STRATEGY

Hong Kong, China employs the following strategies to save energy, with a focus on government taking the lead by:

- Improving building energy efficiency for both new and existing buildings, which account for 90% of the city's electricity usage.
- Enabling companies, institutions and residents to make energy efficiency choices when they invest in electrical appliances and vehicles.
- Promoting energy saving practices and lifestyle for residents.

FUNDING

Funding is allocated annually and can be found in the government's estimates.

LINKS

Energy Saving Plan: http://www.enb.gov.hk/sites/default/files/pdf/EnergySavingPlanEn.pdf

Energy Efficiency and Conservation Policy:

http://www.enb.gov.hk/en/about_us/policy_responsibilities/energy_efficiency.html

The 2017-18 Budget: https://www.budget.gov.hk/2017/eng/estimates.html

3. ENERGY EFFICIENCY ACTION PLAN

Key actions include:

- Economic: to take the lead in promoting energy saving and green building development by enhancing the green performance of government buildings, public housing and public sector developments, such as to set the target for all major new government buildings and new public housing to achieve at least BEAM Plus Gold and Gold ready respectively. To also achieve a 5 per cent electricity reduction target for government buildings by 2020 (2014 as base) and explore further reduction from 2020 to 2025 in 2019/20.

- Regulatory: to conduct periodic reviews to expand and/or tighten relevant energy-related standards including the statutory requirements under the Buildings Energy Efficiency Ordinance, the Building (Energy Efficiency) Regulation, and the Energy Efficiency (Labelling of Products) Ordinance.
- Educational: update schools and public education programmes and strengthen Government energy saving efforts by appointing Green Managers and Energy Wardens, and encourage public sector institutions to save energy.
- Social: support community campaigns through government funding schemes, and collaborate with key energy consumers in the commercial sector to develop sector-specific campaigns to promote energy saving. More importantly, the Secretary for the Environment will engage building sector leaders to accelerate green building adoption.

FUNDING

Funding is allocated annually and can be found in the government's estimates.

LINKS

Energy Saving Plan Press Release:

http://www.info.gov.hk/gia/general/201505/14/P201505140408.htm

Energy Saving Plan: http://www.enb.gov.hk/sites/default/files/pdf/EnergySavingPlanEn.pdf

The 2017-18 Budget: https://www.budget.gov.hk/2017/eng/estimates.html

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

The existing targets Hong Kong, China is aiming to achieve are:

- An energy intensity reduction of 40% by 2025 using 2005 as the base.
- Absolute carbon emissions reduction of 20% by 2020 and 26-36% by 2030 (compared to 2005).
- Carbon intensity reduction of 50-60% by 2020 and 65-70% by 2030 (compared to 2005).

LINKS

Energy Intensity: http://www.enb.gov.hk/sites/default/files/pdf/EnergySavingPlanEn.pdf

Carbon emissions and intensity reduction:

http://www.enb.gov.hk/sites/default/files/pdf/ClimateActionPlanEng.pdf

5. SECTORAL ENERGY EFFICIENCY TARGETS

There is no energy efficiency target at sectoral level.

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

The Energy Efficiency Office (EEO) of the Electrical and Mechanical Services Department (EMSD) under the directive of the Environment Bureau (ENB).

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

The ENB, as the policymaker, and the EEO of the EMSD, as the regulator and implementer.

The government (the ENB and the EEO/EMSD) is responsible for promoting energy efficiency both within the government and in the community. The government works with professional bodies, tertiary institutes, related industries, and the public to promote energy efficiency through voluntary and mandatory schemes.

The EEO of the EMSD was established in 1994.

STAFF AND BUDGET

There are 90 employees in the EEO.

BUDGET USE

Funding is allocated annually and can be found in the government's estimates.

LINKS

Energy Efficiency and Conservation:

http://www.emsd.gov.hk/en/energy_efficiency/about_energy_efficiency_and_conservation/index.html

The Environment Bureau: http://www.enb.gov.hk/en/top.html

The 2017-18 Budget: https://www.budget.gov.hk/2017/eng/estimates.html

7. OTHER ENERGY EFFICIENCY AGENCIES

Not applicable

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

For major energy efficiency policies, public consultation and business impact assessments may be conducted. Information is mainly disseminated through the media and via press releases and websites.

LINKS

Energy Saving for All (Chinese/English): http://www.energysaving.gov.hk/en/home/index.html

ENB Press Releases: http://www.enb.gov.hk/en/news_events/press_releases/index.html

EMSD Press Releases: http://www.emsd.gov.hk/en/media/press_releases/current_year/index.html

ENB Policy and Consultation Papers:

http://www.enb.gov.hk/en/resources_publications/policy_consultation/index.html

9. ENERGY EFFICIENCY AWARENESS RAISING

The Hong Kong, China Government organises and participates in various exhibitions, seminars, outreach programmes to schools, guided tours on education, and workshops to promote energy efficiency and conservation in various sectors. There are also websites and the Energy Efficiency Newsletter to promote energy efficiency and renewable energy.

Technical information related to energy-efficient products is promoted and disseminated through the publication of information leaflets and technical guidelines and the posting of information for the public via the following websites: HK EE Net , HK RE Net, Energy Label Net, and Energy Saving for All Portal.

The Hong Kong, China Government has also launched publicity programmes and campaigns to promote awareness of energy efficiency and conservation, particularly regarding specific measures such as the Energy Efficiency Labelling Scheme, the Energy Saving Charter, 4Ts Charter (4Ts means target, timeline, transparency and together) and Energy Saving Championship schemes. In addition, it launched the Liberal Studies Education Kit for New Senior Secondary Curriculum, the New Energy New Generation Solar Car Competition, and the Youth Energy Saving Award to promote energy efficiency and conservation among students.

LINKS

HK Energy Efficiency Net: http://ee.emsd.gov.hk

HK Renewable Energy Net: http://re.emsd.gov.hk

Mandatory Energy Efficiency Labelling: http://www.energylabel.emsd.gov.hk

Energy Saving for All (Chinese/English): http://www.energysaving.gov.hk

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

Capacity building is achieved by organising strategic and specific briefings as well as presentations and workshops for both industry and public. Professional bodies and educational institutions are also involved in sharing experiences and providing training to build up the necessary capacity in relevant sectors.

LINKS

Education Path and School Outreach Programme:

http://www.emsd.gov.hk/en/energy_efficiency/publicity_and_public_education/guided_tour_on_education_path/index.html

Property Management Seminar:

http://www.emsd.gov.hk/en/about_us/public_education/conferences_and_seminars/property_management_seminar/index.html

11. PRIVATELY OPERATED TRAINING

Several organisations occasionally organise courses, seminars, talks, workshops and visits on energy saving and renewable energy.

LINKS

ENB Resources and Publications: http://www.energysaving.gov.hk/en/resources/capacity.html

12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

In order to evaluate and review the application of new energy efficiency and conservation technologies, the Hong Kong, China Government promotes applied research and development activities, including energy efficiency projects through university research grants and dedicated technology funds.

LINKS

Innovation and Technology Fund (ITF): http://www.itf.gov.hk/l-eng/about.asp

Environment and Conservation Fund (ECF): http://www.ecf.gov.hk/en/home/index.html

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

The Energy Efficiency Office (EEO) of the Electrical and Mechanical Services Department publishes annual sectoral energy end-use data. The Census and Statistics Department publishes the Hong Kong Energy Statistics Annual Report. The report describes energy supply and demand by fuel type and includes an overall energy balance.

LEGAL POWER

There is no legislation on mandatory submission of energy end-use consumption information. The EEO uses surveys to collect data. Trade statistics are the primary data source used in compiling The Hong Kong Energy Statistics Annual Report.

LINKS

Annual end-use data:

http://www.emsd.gov.hk/en/energy_efficiency/energy_end_use_data_and_consumption_indicators/hong_kong_energy_end_use_data/index.html

Energy Statistics Annual Report: http://www.censtatd.gov.hk/hkstat/sub/so90.jsp

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

Annual evaluation of the reduction in energy intensity is compiled in the Hong Kong Energy End-use Data set.

LINKS

Hong Kong Energy End-use Data:

http://www.emsd.gov.hk/en/energy_efficiency/energy_end_use_data_and_consumption_indicators/hong_kong_energy_end_use_data/data/index.html

15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

Energy efficiency programmes performance targets and indicators are reflected in the Controlling Officers' Reports in the government's Budget estimates.

16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

There is no cross-sector energy efficiency initiative.

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

There is no specific energy efficiency initiative for the industry sector.

18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

Tax incentives for the promotion of electric vehicles

OBJECTIVE

The scheme covers first registration tax concessions on new vehicle purchases for electric vehicles. Furthermore, the government supports the development of a network of charging stations.

OUTLINE

The first registration tax for electric commercial vehicles (including goods vehicles, buses, light buses, taxis, and special purpose vehicles), electric motor cycles and electric motor tricycles is waived in full. However, there is a cap on first registration tax waiver imposed for private electric cars.

The government collaborates with power companies and the commercial sector to develop a network of charging stations.

LINKS

Promotion of Electric Vehicles in Hong Kong, China:

http://www.epd.gov.hk/epd/english/environmentinhk/air/prob_solutions/promotion_ev.html

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Mandatory Energy Efficiency Labelling Scheme - enacting Energy Efficiency (Labelling of Products) Ordinance (Chapter 598)

OBJECTIVE

To facilitate the choice of energy-efficient appliances and raise public awareness on energy saving in electrical appliances.

OUTLINE

The Energy Efficiency (Labelling of Products) Ordinance, enacted in May 2008, provides the basis for implementation of the Mandatory Energy Efficiency Labelling Scheme. This scheme requires that prescribed

products have an energy label shown in order to inform consumers of the product's energy performance. The first phase, covering room air conditioners, refrigerating appliances, and compact fluorescent lamps, has been in full implementation since November 2009. The second phase extends the coverage to washing machines and dehumidifiers, and was implemented in September 2011. The energy efficiency grading standards of room air conditioners, refrigerating appliances, and washing machines were reviewed in late 2014 and tightened standards introduced in November 2015.

LINKS

Mandatory Energy Efficiency Labelling Scheme:

http://www.emsd.gov.hk/en/energy_efficiency/mandatory_energy_efficiency_labelling_scheme/index.html

Building (Energy Efficiency) Regulation (Chapter 123M)

OBJECTIVE

To regulate the design and construction of external walls and roofs of buildings in order to achieve a minimum overall thermal transfer value and control the energy consumption of commercial buildings and hotels.

OUTLINE

The Building (Energy Efficiency) Regulation, enacted in 1995, regulates the design and construction of external walls and roofs of buildings in order to maintain a suitable overall thermal transfer value and control the energy consumption of commercial buildings and hotels. Thus, reducing energy consumption and therefore the emission of greenhouse gases from power generation.

LINKS

Building Energy Efficiency Regulation Programme:

http://www.bd.gov.hk/english/documents/pnap/signed/APP067se.pdf

Buildings Energy Efficiency Ordinance (Chapter 610)

OBJECTIVE

To regulate building installations, including lighting, electrical, air-conditioning, lifts, and escalators, in order to comply with the specified minimum energy efficiency standards and requirements.

OUTLINE

The Buildings Energy Efficiency Ordinance for mandatory implementation of the Building Energy Code (BEC) and energy audit was fully implemented in September 2012. The ordinance requires compliance with the BEC in the design of new construction and major retrofitting works of prescribed buildings, especially regarding four types of installations (lighting, electrical, air conditioning, and lifts and escalators) as well as the implementation of energy audits for commercial buildings. Further energy savings will occur by requiring compliance with the BEC when major retrofitting works and energy audits are conducted on existing buildings. The first comprehensive review of the codes commenced in the third quarter of 2014. The BEC 2015 for newly constructed buildings and existing buildings has taken effect on 11 June and 11 September 2016 respectively.

LINKS

The Buildings Energy Efficiency Ordinance: http://www.beeo.emsd.gov.hk/

Fresh Water Cooling Towers Scheme (FWCT Scheme)

OBJECTIVE

To promote the use of more energy efficient water-cooled air conditioning systems (WACS) using fresh water-cooling towers.

OUTLINE

The FWCT Scheme – initially launched as a pilot scheme in 2000 before becoming a standing scheme in 2008 – aims to promote the wider use of energy-efficient, WACS using fresh water-cooling towers, and facilitate the territory-wide implementation of WACS. It is a voluntary scheme open for application by owners who plan to use fresh water for evaporative cooling for non-domestic usage within designated areas.

LINKS

FWCT Scheme: http://www.emsd.gov.hk/en/energy_efficiency/fwct_scheme/index.html

Energy Saving Charter and 4Ts Charter

OBJECTIVE

Hong Kong, China launched the Energy Saving Charter and 4Ts (target, timeline, transparency and together) Charter schemes to solicit the support of various sectors in the community to work together to reduce energy consumption with a view to gradually achieving the target of energy intensity reduction of 40 % by 2025 using 2005 as the base.

OUTLINE

Over the past decade, air-conditioning electricity consumption has accounted for about 30 per cent of total power consumption in Hong Kong, China. The Government launched the Energy Saving Charter on Indoor Temperature in 2012 and invited the building and property management sectors to sign up to the Charter by pledging to maintain the average indoor temperature at their premises between 24 and 26 degrees Celsius during the mid-summer months of June to September to reduce electricity consumption on air-conditioning. For the Energy Saving Charter 2017, the invitation list was expanded to include restaurants, hotels and hospitals in an effort to engage staff and students to adopt the energy saving practices together. Apart from calling for the maintenance of the appropriate indoor temperature, the Charter also included pledges for switching off appliances when not in use and procuring energy-efficient appliances. Over 3 300 organisations have signed up to the Energy Saving Charter 2017.

Hong Kong, China also launched the 4Ts Charter that aims to promote energy saving by following the 4Ts of 'target', 'timeline', 'transparency', and 'together': setting a target with a timeline, ensuring transparency to track the energy saving result, and encouraging people to work together on the energy saving target. Over 1 000 organisations have signed up to the Charter.

LINKS

Energy Saving and 4Ts Charters: http://www.energysaving.gov.hk/esc2017

Energy Saving Programme for government buildings

OBJECTIVE

Hong Kong, China has set an electricity saving target and timeline for government buildings so that staff of government bureau & departments (B&Ds) can work together to reduce electricity consumption through implementation of electricity saving projects and housekeeping measures. B&Ds' electricity saving results will be published in their environmental performance reports.

OUTLINE

As announced in the Policy Address 2015, Hong Kong, China has set a new target of 5% saving in electricity consumption for government buildings from 2015 to 2020 compared with a business as usual scenario with a base year of 2013-14. Energy audits are conducted for over 300 government buildings with annual electricity consumption exceeding 500 000 kWh required to identify energy management opportunities for enhancing energy-saving performance and green building measures. As announced in the Policy Address 2017, Hong Kong, China has earmarked at least $500 million to implement energy saving projects identified by audits with a view to gradually achieving the target of energy saving.

LINKS

Policy Address 2015 (Paragraph 176): https://www.policyaddress.gov.hk/2015/eng/p173.html

Policy Address 2017 (Paragraph 135): https://www.policyaddress.gov.hk/2017/eng/p134.html

Implement a District Cooling System (DCS) at the Kai Tak Development (KTD)

OBJECTIVE

District Cooling Systems consume 35% and 20% less electricity than traditional air-cooled air-conditioning systems and individual water-cooled air-conditioning systems using cooling towers, respectively.

OUTLINE

DCS is a large scale centralised air-conditioning system that utilises seawater to produce chilled water at the central plants and distributes the chilled water to consumer buildings in the KTD through an underground water-piping network. Upon full development, the annual savings in electricity consumption will be up to 85 million kwh, with a corresponding reduction of 59 500 tonnes of carbon dioxide emissions per annum.

LINKS

District Cooling at the Kai Tak Development:

http://www.emsd.gov.hk/en/energy_efficiency/district_cooling_system_at_kai_tak_development/introduction/index.html

Promote retro commissioning for existing buildings

OBJECTIVE

To improve the energy efficiency of existing buildings in Hong Kong, China

OUTLINE

Retro commissioning is a cost-effective and systematic process to periodically check an existing building's performance. The process identifies operational improvements that can save energy and thus lower energy bills. It can be performed alone or with a retrofit project, such as adjust set point of Central Building Services Installations and fitting meters to measure operations.

Technical Guidelines on Retro-commissioning (RCx) were developed to clarify the RCx process and focus on providing clear energy-saving improvement proposals for building owners and the building industry.

LINKS

Retro commissioning: http://www.energysaving.gov.hk/en/retro_commissioning_rcx/index.html

Tax concessions provided for environmental protection facilities

OBJECTIVE

To encourage the businesses to adopt environmentally friendly machinery and equipment.

OUTLINE

In order to encourage businesses to adopt environmentally friendly machinery and equipment, the 2008/09 Budget introduced a 100% profits tax deduction for capital expenditure on such equipment in the first year of purchase. For environmentally friendly installations mainly ancillary to buildings, the depreciation period has also been shortened from the usual 25 years to five years.

LINKS

Inland Revenue Department Hong Kong: http://www.ird.gov.hk/eng/pdf/e_dipn05.pdf

20.ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

The Hong Kong Green Building Council, which was established in November 2009 to advance green building initiatives in the HKC Government, is a professional organisation that supports the creation of green, energy-efficient buildings, and promotes standards throughout Hong Kong, China.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

Hong Kong, China maintains close collaboration with the Chinese Government in order to harmonise the adoption of appropriate energy efficiency standards and approaches and participates in the APEC Energy Working Group.

LINKS

Hong Kong Green Building Council: https://www.hkgbc.org.hk/eng/

Regional and International Activities:

http://www.emsd.gov.hk/en/energy_efficiency/regional_international_activities/index.html

21. OTHER ENERGY EFFICIENCY EFFORTS

Promoting the replacement of incandescent light bulbs with more energy-efficient lighting products.

Encouraging power companies to invest in renewable energy facilities and enhance energy efficiency through provision of incentives in the post-2008 Scheme of Control Agreements. Incentives will be revamped to better encourage power companies' performance in promotion of energy efficiency and conservation as well as the development of renewable energy in the post-2018 Scheme of Control Agreements.

Assist the public in choosing energy efficient products through a Voluntary Energy Efficiency Labelling Scheme. The scheme now covers 22 types of household appliances and office equipment of which 13 are electrical appliances, seven are office equipment, and two are gas appliances.

Promoting the application of BEC, The Hong Kong Energy Efficiency Registration Scheme for Buildings launched in October 1998. Under the scheme, if the designer/owner of a building submits an application to the EMSD that successfully meets the individual BEC standards, then a registration certificate is issued to the building.

LINKS

No Incandescent Light Bulbs:

http://www.energysaving.gov.hk/no-ilb/en/charter/about_charter/index.html

Power Company Control Agreements:

http://www.info.gov.hk/gia/general/201704/25/P2017042500763.htm

INDONESIA

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

Indonesia has several laws in place aimed at improving energy efficiency. Energy Law Number 30 Year 2007 provides an overarching umbrella of the policies on the governance of renewable energy and energy efficiency. The Government regulation on Energy Conservation Number 70 Year 2009 contains policies to specifically improve energy efficiency in industry, building and commercial, and residential sectors. The Presidential Regulation Number 22 Year 2017 concerns a General Plan on National Energy and is a general guideline for government institutions from various sectors to setup policy and a roadmap of energy plan in their specific sectors, including greenhouse gas emission reduction policy, energy elasticity reduction policy, and energy efficiency programmes from 2015 to 2050.

2. ENERGY EFFICIENCY STRATEGY

Indonesia's central government introduced Presidential Regulation Number 22 Year 2017 entitled General Plan for National Energy that also includes overarching policies, targets, and strategies on energy efficiency for electricity, industry, transport, commercial buildings, and residential sectors.

The Ministry of Energy and Mineral Resources of Indonesia, through its agency Directorate General of New Renewable Energy and Energy Conservation (DGREEC), has three main strategies to promote energy efficiency:

- Reduce energy intensity in the utilisation of primary energy by an average of 1% per year.
- Increase the number of public buildings that are audited for energy efficiency practices and increase the number of energy efficiency auditors.
- Improve labelling for energy efficiency in electric home appliances and introduce an investment-grade audit programme.

FUNDING

The DGREEC provides funding for developing technical standards for energy efficiency labelling programmes, and establishing technical qualifications for energy efficiency auditors and building managers, financing public campaigns to encourage energy efficiency practices in the household and industry sectors.

LINKS

Directorate General of New, Renewable Energy, and Energy Conservation: http://www.ebtke.esdm.go.id/

3. ENERGY EFFICIENCY ACTION PLAN

The Government of Indonesia, through the Ministry of Energy and Mineral Resources, has developed a mid-term strategic plan between 2015 and 2019 that includes action plans on specific energy efficiency programmes:

- Energy audit on government buildings.
    - Pilot project on electricity usage monitoring in buildings.
    - Investment in energy efficiency and conservation.
    - LEDs used for road lightings.
    - Energy efficiency labelling.
    - The enforcement of ISO 5000 of Energy Management System.
    - Two pilot projects of cogeneration.
    - Developing regulations on energy efficiency.
    - Public campaign for energy conservation.

FUNDING

Energy efficiency programmes area co-financed between the public sector fund, bilateral/multilateral grants, and private sector financing.

LINKS

Strategic Plan of the Ministry of Energy and Mineral Resources of Indonesia (2015 – 2019): http://prokum.esdm.go.id/renstra%202015/DATA%20to%20MAIL%20NEW%20REV%20BUKU%20RENSTRA%202015.pdf

New Energy and Industrial Technology Development Organisation (NEDO) (2014), "Feasibility Study on Energy Conservation in Data Centres Adopting Energy Management System and Other Energy Efficient Facilities in Indonesia": http://www.nedo.go.jp/content/100766252.pdf

Indonesian and Germany Cooperation on the Development of Efficient Air-conditioning and Process Cooling Supply for the Indonesian Industry and Commerce (Green Chiller):

http://lintas.ebtke.esdm.go.id/konservasi-energi/id/swasta/view/1/6-kerjasama-indonesia-jerman-giz

https://www.giz.de/expertise/downloads/giz2015-en-indonesia-greenchillers-nama.pdf

Indonesia Cooperation – UNIDO, Promoting Industrial Energy Efficiency through System Optimisation and Energy Management Standard in Indonesia:

http://lintas.ebtke.esdm.go.id/konservasi-energi/en/swasta/view/1/3-indonesia-cooperation-unido

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

Presidential Regulation Number 22 Year 2017 entitled General Plan for National Energy stipulates national targets for energy efficiency and emission reductions from 2015 until 2050. Total CO2 emissions were 554 Million tonnes (Mt) in 2015 and is forecast to rise to 893 Mt in 2025 and 1 950 Mt in 2050.

The energy conservation programme resulted in energy savings of equivalent to 148 million tonnes of oil equivalent (Mtoe) in 2015. It is estimated to save 248.4 Mtoe in 2025 and 641.5 Mtoe in 2050 respectively.

Total primary energy consumption is targeted to decrease 1% annually from a baseline energy intensity of 1.54 in 2015. Energy intensity is projected to reach 0.84 in 2025 and 0.46 in 2050 respectively.

LINKS

Strategic Plan of the Ministry of Energy and Mineral Resources of Indonesia (2015 – 2019): http://prokum.esdm.go.id/renstra%202015/DATA%20to%20MAIL%20NEW%20REV%20BUKU%20RENSTRA%202015.pdf

Presidential Regulation of Republic Indonesia Number 22 Year 2017 about the General Energy Plan of Indonesia: http://ditjenpp.kemenkumham.go.id/arsip/ln/2017/ps22-2017.pdf

5. SECTORAL ENERGY EFFICIENCY TARGETS

Presidential Regulation Number 22 Year 2017 entitled General Plan for National Energy also incorporates long-term targets on energy efficiency for the transport, industry, and building sectors.

The transport sector is projected to consume 75 Mtoe in 2025 and 169 Mtoe in 2050. Energy efficiency goals and targets for the transport sector include:

- Improved availability of gas charging stations to 632 units with a total capacity of 282 million standard cubic feet per day (MMSCFD) in 15 cities by 2025 and further increase the number of the stations to 2 888 units with a total capacity of 1 291 MMSCFD by 2050.
- Develop hybrid/electric vehicles to reach 2 200 cars and 2.1 million motorcycles by 2025.
- Introduce a policy on flexi-fuel engine that encourages the utilisation of motor vehicles with dual fuels of petrol and ethanol.
- Prepare a roadmap for biofuel blending policies for the road, marine, air, and train sub-sectors.
- Improve the share of public transport to 30% by 2025 by improving connectivity between Mass-Rapid Transit, Light Rail Transit, Trams, and buses in 13 urban areas.
- Develop intelligent transport system for 24 cities and area-traffic control systems for 50 cities.

The industry sector is projected to consume 118 Mtoe in 2025 and 293 Mtoe in 2050 respectively. Of these totals, in 2025, 101 Mtoe will be used for fuels and 17 Mtoe for production components and in 2050, 258 Mtoe will be used for fuel consumption and 35 Mtoe will be used for production components.

Energy efficiency targets for buildings contain a target of energy consumption of equivalent to 12.2 Mtoe in 2025 and 73 Mtoe in 2050 respectively. To improve the efficiency, electricity is expected to increase its share from 77% in 2015 to 83% in 2025 and 87% in 2050 respectively.

LINKS

Strategic Plan of the Ministry of Energy and Mineral Resources of Indonesia (2015 – 2019): http://prokum.esdm.go.id/renstra%202015/DATA%20to%20MAIL%20NEW%20REV%20BUKU%20RENSTRA%202015.pdf

Presidential Regulation of Republic Indonesia Number 22 Year 2017 about the General Energy Plan of Indonesia: http://ditjenpp.kemenkumham.go.id/arsip/ln/2017/ps22-2017.pdf

The 2016 Performance Report of Directorate General of New, Renewable Energy and Energy Conservation: http://ebtke.esdm.go.id/category/4/buku.lakip

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

Directorate General of New Renewable Energy and Energy Conservation (DGREEC) was established in 2010 to develop, implement, and monitor policies on energy efficiency and energy conservation particularly in the electricity sector. DGREEC is an agency within the Ministry of Energy and Mineral Resources (MEMR).

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

The DGREEC is within the Ministry of Energy and Mineral Resources and has responsibility for formulating and implementing policies on the governance, control, and supervision of geothermal, bioenergy, new and renewable energy, and energy conservation.

STAFF AND BUDGET

Directorate General of New Renewable Energy and Energy Conservation (DGREEC) manages 347 people with a total budget equal to US$118 million in 2016. The Directorate of Energy Conservation, a sub-organisation of DGREEC, has 57 employees and had a budget of US$17 million in 2016.

BUDGET USE

The energy efficiency budget is mainly used to monitor the implementation of energy efficiency programmes and fund pilot projects of energy efficiency campaign, and energy efficiency achievement awards.

LINKS

The 2016 Performance Report of Directorate General of New, Renewable Energy and Energy Conservation: http://ebtke.esdm.go.id/post/2017/03/09/1585/laporan.kinerja.ditjen.ebtke.tahun.2016

7. OTHER ENERGY EFFICIENCY AGENCIES

- The Ministry of Environment and Local governments share responsibilities for cross-sectoral policies on energy conservation that involves regional planning and utilisation and environmental sustainability targets such as achieving CO2 emission targets.
- The Ministry of Industry is responsible for developing and monitoring energy efficiency policies for the industry sector.

- The Ministry of Transport is responsible for developing, implementing and monitoring energy efficiency policies for the transport sector.
- The Ministry of Public Works is responsible for developing, implementing and monitoring energy efficiency policies in the building and residential sectors.

LINKS

The Ministry of Public Works of Indonesia: http://www.pu.go.id/

The Ministry of Industry of Indonesia: http://www.kemenperin.go.id/

The Ministry of Environment of Indonesia: http://www.menlh.go.id/

The Ministry of Transportation of Indonesia: http://www.dephub.go.id/

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

The Ministry of Energy and Mineral Resources through the DGREEC has specific publication channels to disseminate information including an internet portal, YouTube channel, economy-wide TV campaigns, newspapers, and monthly bulletins to disseminate energy efficiency campaign programmes.

LINKS

Directorate of New, Renewable Energy and Energy Conservation: http://www.ebtke.esdm.go.id/link

The campaign on 10% cut on energy use: http://ebtke.esdm.go.id/video/watch/NGYblKDP--s

Internet Campaign through the Youtube Channel for campaign on 10% cut on energy use: https://www.youtube.com/watch?v=s58YjdKhlMw

Newspaper campaign for campaign on 10% cut on energy use: http://ekonomi.metrotvnews.com/read/2017/05/21/703418/kementerian-esdm-gelar-kampanye-hemat-energi

9. ENERGY EFFICIENCY AWARENESS RAISING

The Ministry of Energy and Mineral Resources of Indonesia has three main programmes to improve awareness and introduce the importance of energy efficiency, targeting different groups of audiences:

- Kampanye Potong 10% (10% Cut of Energy Use Campaign) - Targeting all stakeholders in energy sector including government organisations, industry, NGOs, and general public to reduce energy consumptions by 10% . The programme is funded by the Ministry of Energy and Mineral Resources of Indonesia and started in May 2016.
- Konservasi Energi Goes to Campus - (Energy Conservation Goes to Campuses) aims to introduce university students to the basic principles of energy efficiency, the ISO 500001 international standard: Energy Management, job opportunities for energy auditors and energy managers. The programme is managed and funded by the Ministry of Energy and Mineral Resources of Indonesia.

- The replacement of street lighting from conventional halogen lamps to LED as a public campaign for energy efficiency. The programme is funded by MEMR and it has been running since 2016 in 93 cities.

LINKS

Educational campaign to universities in Indonesia to encourage future generations of reducing energy use: http://ebtke.esdm.go.id/post/2017/04/22/1637/kenalkan.konservasi.energi.kepada.mahasiswa.pemerintah.laksanakan.konservasi.energi.goes.to.campus

Energy Efficiency Programme to use LED lights for street lightings: http://ebtke.esdm.go.id/post/2017/05/13/1658/pembangunan.pju.bentuk.kampanye.konservasi.energi

10. GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

Ministry of Energy and Mineral Resources (MEMR) and Ministry of Manpower of Indonesia have worked together to established competency standards for Energy Managers and Energy Auditors. These two institutions have been working subsequently with institutions such as universities and training centres to deliver training programmes (short courses and sectoral specific programmes for energy managers and energy auditors in industry and buildings). MEMR aims to improve the number of certified Energy Managers and Energy Auditors by working with Himpunan Ahli Konservasi Energi (HAKE) or Professional Association of Experts in Energy Conservation. The total number of certified energy managers is 306 people in 2016 while energy auditors have reached 213 in 2016.

LINKS

Himpunan Ahli Konservasi Energi (HAKE) or Professional Association of Experts in Energy Conservation: http://lsphake.or.id/index.html

11. PRIVATELY OPERATED TRAINING

Private training and certification programmes on energy efficiency are conducted by institutions, such as:

- Lembaga Sertifikasi Profesi Himpunan Ahli Konservasi Energi Indonesia: Certification of energy auditor for building and industry, and certification of energy managers for building and industry sector.
- DGREEC delivers regular capacity building on energy auditors
- The University of Indonesia: Postgraduate Study of Master of Mechanical Engineering, specific on energy conservation and audit.

LINKS

Capacity Building Programme for Energy Auditors: http://aplikasi.ebtke.esdm.go.id/pome/home/detailberita/34

University Curriculum that incorporate subjects of energy conservation and audit: http://eng.ui.ac.id/wp-content/uploads/Struktur-kurikulum-S2-Teknik-Mesin1.pdf

12.GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

The Ministry of Research and Higher Education has introduced a Roadmap of National Research Programmes from 2015 to 2045.

One of the key programmes includes research on advanced technologies on energy conservation, such as technologies for smart and energy self-sufficient buildings, integrating smart grid and energy management systems and energy components.

Key parties involved are the Ministry of Research and Higher Education, the Ministry of Energy and Mineral Resources, and the Agency for assessment and application of technology.

Research and development for energy efficiency is included as part of R&D for renewable energy research which is accounted for a total budget of US$748.97 million (based on currency exchange estimate of 1US$ = 13,351.69 IDR) from 2017 to 2019.

LINKS

Research and development for energy efficiency: http://risbang.ristekdikti.go.id/regulasi/RIRN.pdf

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

The DGREEC at the Ministry of Energy and Mineral Resources is responsible for energy efficiency policy and evaluation. The agency undertakes ex post programme evaluation of energy efficiency policy and programmes annually.

LEGAL POWER

The authority for data collection and analysis is split between government institutions at the central, provincial, and city levels. The Ministry of Energy and Mineral Resources has the authority of collating energy efficiency data across different sectors while the Ministry of Environment focuses on carbon emission reduction data. The Ministry of Public Works and Housing is responsible for policy and data collection of green building programme, The Ministry of Industry oversees implementation of energy efficiency in the industry sector. The Ministry of Transportation manages data on energy efficiency for the transport sector while local governments at the provincial and city levels have the authority of energy policy on industrial parks or off-grid electrical consumers.

LINKS

Energy Conservation Policy and Programme Information: http://lintas.ebtke.esdm.go.id/konservasi-energi/id/swasta/view/4/31-deskripsi

The 2016 Performance Report of Directorate General of New, Renewable Energy and Energy Conservation: http://ebtke.esdm.go.id/category/4/buku.lakip

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

The Ministry of Energy and Mineral Resources is mainly responsible for energy efficiency monitoring and reporting and publishes statistical data and analysis of energy sector annually including:

- Achievement of annual energy intensity reduction and CO2 emission reductions by sector.
- Realisation of targeted number of government buildings that are audited for energy efficiency.
- Realisation of targeted number of certified energy managers and energy auditors.
- Development of technical standards for minimum energy performance for home appliances.
- Progress on Investment Grade Audit (IGA) policy in building sector.

LINKS

The 2016 Performance Report of Directorate General of New, Renewable Energy and Energy Conservation: http://ebtke.esdm.go.id/category/4/buku.lakip

The 2016 Statistic on New, Renewable Energy and Energy Conservation: http://ebtke.esdm.go.id/category/11/buku.statistik.ebtke

Energy Conservation Programme for Industry: http://www.kemenperin.go.id/artikel/1421/Kementerian-ESDM-Wajibkan-Industri-Hemat-Energi

Government Policy on Green Building: http://www.pu.go.id/berita/10176/Kementerian-PUPR-Sosialisasikan-Permen-Bangunan-Gedung-Hijau

15.SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

All government institutions who are delivering energy efficiency programmes must publish annual progress report and a final project report must be disclosed to the public when a project has been completed.

16.CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

Investment Grade Audit (IGA)

OBJECTIVE

Investment Grade Audit (IGA) is a platform for technical and economic assessment of Energy Saving Performance (ESP) in an energy saving project proposal. IGA provides a guideline on evaluating potential savings and costs implementing energy efficiency projects across different sectors, including building and commercial, industry and transportation. It adopts a life-cycle assessment methodology for calculating costs associated with design/construction, operating and maintenance costs per year. It also provides indicative returns on investment and project risk profile of an energy efficiency project.

OUTLINE

Investment Grade Audit (IGA) programme is a part of Energy Saving Performance Contract – ESPC framework where it is managed by DGREEC. The IGA was first implemented for two volunteer companies in the commercial sector and five government buildings in 2016.

LINKS

Investment Grade Audit Programme: http://lintas.ebtke.esdm.go.id/konservasi-energi/en/swasta/view/1/24-activity-investment-grade-audit-iga

17.INDUSTRY ENERGY EFFICIENCY INITIATIVES

Energy Management and Energy Audit for Food and Beverage Industry

OBJECTIVE

Implementation of energy management and energy audit, based on ISO 50001, to the foods and beverage industry. Companies that agree to an audit on energy management will receive technical assistance from the MEMR for preparing a financial proposal for an energy efficiency project to submit to financial institutions for financing.

OUTLINE

The project provides an example of inter-department cooperation on energy efficiency programme. It involves the Ministry of Energy and Mineral Resources (MEMR), Ministry of Industry, and Financial Services Authority. The project introduces Energy Services Company (ESCO) to conduct energy audit for the food and beverage industry and then assists the owners or operators in preparing an energy efficiency project proposal. The Financial Services Authority provides guidelines of various finance options and a document checklist for submission of energy efficiency proposal to financial institutions.

LINKS

Investment Grade Audits: http://lintas.ebtke.esdm.go.id/konservasi-energi/id/swasta/view/1/24-kegiatan-investment-grade-audit-iga

Green Lending Policy to support energy efficiency programme: http://www.ojk.go.id/sustainable-finance/id/publikasi/panduan/Documents/Green%20Lending%20Model%20Final.pdf

Energy Efficiency Programme for Industry Sector: http://iesr.or.id/wp-content/uploads/Kemenperin-Compatibility-Mode.pdf

18.TRANSPORT ENERGY EFFICIENCY INITIATIVES

Jakarta Smart City integrated public transport modes

OBJECTIVE

The Jakarta Smart City integrated public transport modes is a government initiative aimed at improving connectivity of the transport system and enhancing its efficiency by integrating various modes of public transport systems in the Capital city of Jakarta and its surrounding areas.

OUTLINE

An agency for managing Jakarta's integrated transportation system was established based on the Presidential Regulation Number 103 Year 2015. The agency is responsible for developing policy and delivering programmes associated with the integration of public transport systems between the capital city of Jakarta and its satellite cities such as Bekasi City, Depok City, Bogor City, and Tangerang province. A programme of integrated public transport was introduced in 2016 to integrate the Transjakarta busway system and metro train system. The integrated mode of public transport will also include Mass-Rapid Transport (MRT) train system and Light-Rapid Transport -monorail system that will commence its operation in 2019 respectively.

LINKS

The Authority Body of Greater Jakarta Transportation: http://bptj.dephub.go.id/

The Ministry of Public Transportation Programme of Integrated Public Transportation Modes of Jakarta: http://www.dephub.go.id/welcome/readPost/kemenhub-dorong-percepatan-integrasi-antarmoda-transportasi-umum-di-jakarta

Transjakarta busway system and metro train system: http://jakartamrt.co.id/2017/03/12/pt-mrt-jakarta-inisiasi-pengembangan-kawasan-transit-dukuh-atas/

Jakarta Mass Rapid Transport Project: http://jakartamrt.co.id/mengenai-proyek/

Jakarta Smart City Initiative: http://interactive.smartcity.jakarta.go.id/

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Green Building Initiative

OBJECTIVE

Green Building Initiative is a collaboration between government institutions, property developers, home appliance manufacturers, and an independent green building association to encourage energy efficient practices in the development and operation of commercial and residential buildings in Indonesia.

OUTLINE

The regulation of green building was introduced in 2015 through a Ministry of Public Works and Buildings regulation number 02/PRT/M/2015 about Green Building. The regulation provides a guideline, technical specifications and minimum requirements for property development to be classified as a green building project process, which include:

- Green building certification for commercial and residential buildings that meet specification and conditions such as efficient use of energy, water and other resources, secure, and environmentally sustainable criteria.
- Incentive from local governments for buildings that are classified and receive certificate as a green building.

LINKS

Ministry of Public Works and Buildings regulation number 02/PRT/M/2015 about Green Building: http://birohukum.pu.go.id/uploads/DPU/2015/Lamp-PermenPUPR02-2015.pdf

Green Building Council of Indonesia: http://gbcindonesia.org/

Penghargaan Energi Efisiensi Nasional (PEEN)

OBJECTIVE

Penghargaan Energi Efisiensi Nasional (PEEN) or National Energy Efficiency Awards aims to:

- Improve stakeholder participation in building and industry sectors to support energy efficiency programmes.
- Improve stakeholder awareness on the importance and the benefits of implementing energy efficiency and energy conservation.
- Introduce industry models and building models as best practices for energy management systems.
- Provide incentive to the central and local governments that have implemented energy efficiency.

OUTLINE

The PEEN is a government initiative managed by DGREEC to improve energy efficiency in building and industry sectors. The PEEN is aligned with ASEAN Energy Award that is organised by the ASEAN Centre for Energy (ACE) to promote energy efficiency practices in ASEAN economies.

LINKS

Penghargaan Energi Efficiency National (The National Award on Energy Efficiency): http://aplikasi.ebtke.esdm.go.id/peen/

Mandatory Energy Efficiency Label for Compact Fluorescent Lamp (CFL)

OBJECTIVE

The purpose of Mandatory Energy Efficiency Label for CFL is to reduce energy consumption for lighting, primarily in the building and residential sectors. This is the first measure of labelling policy for energy efficiency that will be expanded for other appliances such as refrigerators, air conditioners, televisions, washing machines, water pumps and rice cookers.

OUTLINE

The Ministry of Energy and Mineral Resources (MEMR) introduced Regulation number 18 year 2014 regarding mandatory label for Energy Efficiency Label for CFL that has been widely used for lighting in residential and commercial buildings. This regulation applies to all CFL products that are sold in Indonesia.

LINKS

The Government Regulation on Mandatory efficiency label for compact fluorescent lamps: http://ebtke.esdm.go.id/post/2014/11/13/712/index.html

20. ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

Directorate General of New Renewable Energy and Energy Conservation (DGREEC) has established energy efficiency cooperation with various organisations, including:

- Asosiasi Perusahaan Penunjang Konservasi Energi Indonesia (Indonesia Energy Conservation Support Companies Association) to develop a commercially viable business model for implementing Energy Saving Performance Contract (ESPC) for energy efficiency practices in Energy Services Company (ESCO) in Indonesia.
- ASEAN Centre for Energy (ACE) for ASEAN Energy Award, which aims to promote renewable energy utilisation and energy conservation and efficiency in the ASEAN region. The cooperation between DGREEC and ACE is to introduce a economy-wide competition for Penghargaan Efisiensi Energi Nasional (PEEN) or a National Award for Energy Efficiency, which aims to encourage improvement of energy efficiency and conservations among stakeholders from government building management, commercial buildings, and industry. The PEEN Award commenced in 2012.
- Masyarakat Konservasi dan Efisiensi Energi Indonesia (MASKEEI) or Indonesia Energy Conservation and Efficiency Society for managing an international event of Energy Efficiency and Conservation Conference & Exhibition (IEECCE) from 19 to 21 April 2017 in the Jakarta Convention Centre, Jakarta with a theme of 'Optimising Energy Productivity for Sustainable Development'. More than 300 participants and 70 presenters attended the event from domestic and international companies and organisations including the IEA, MEMR, The National Energy Council, and Schneider Electric.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

The Ministry of Energy and Mineral Resources (MEMR) of Indonesia through its agency of DGREEC has established cooperation with various international organisations, including:

- The United Nations Industrial Development Organisation (UNIDO) for an energy efficiency project from 2012 to December 2017 named 'Energy Efficiency Promotion Through System Optimisation and Application of Energy Standard Management in Indonesia' which is aimed at developing industry capacity in energy efficiency into an integrated company management system through energy optimisation and energy management with ISO 50001 standard.

- New Energy and Industrial Technology Development Organisation (NEDO) of Japan for 'A Demonstration Project for Smart Communities in Industrial Parks'. The Memorandum of Understanding (MoU) between MEMR and NEDO was signed in 2013 to conduct a joint study on the possibility of introducing smart community technologies and a sustainable business model for dissemination in industrial parks where one of the objectives is to conserve energy use. The project has commenced its operations following the completion of installations in May 2017.
- GIZ, Germany for a cooperation project of Nationally Appropriate Mitigation Action (NAMA) Development of an Efficient Air-conditioning and Process Cooling Supply for the Indonesian Industry and Commerce (Green Chiller). The project commenced from June 2014 to May 2018. The project aims to establish a Nationally Appropriate Mitigation Action (NAMA) for industrial and commercial refrigeration and air-conditioning systems, thereby making a significant contribution to meeting Indonesia's GHG emissions reduction targets.

LINKS

Penghargaan Energi Efficiency National (The National Award on Energy Efficiency): http://peen.ebtke.esdm.go.id/view/4/2-tentang-peen

The ASEAN Energy Awards: http://www.aseanenergy.org/aea/

Energy Services Company of Indonesia: http://lintas.ebtke.esdm.go.id/konservasi-energi/id/swasta/view/1/23-penerapan-model-bisnis-energy-saving-performance-contract-espc-oleh-energy-services-company-esco-untuk-mendukung-implementasi-efisiensi-energi-di-sektor-publik

NEDO and DG NREEC Joint Study on Energy Saving from Manufacturing Process: http://www.nedo.go.jp/english/other_20151130.html

Indonesia – Germany (GIZ) Cooperation on the Development of an Efficient Air-conditioning and Process Cooling Supply for the Indonesian Industry and Commerce (Green Chiller): http://lintas.ebtke.esdm.go.id/konservasi-energi/id/swasta/view/1/6-kerjasama-indonesia-jerman-giz

https://www.giz.de/expertise/downloads/giz2015-en-indonesia-greenchillers-nama.pdf

Indonesia – UNIDO Cooperation on Promoting Industrial Energy Efficiency through System Optimisation and Energy Management Standard in Indonesia: http://lintas.ebtke.esdm.go.id/konservasi-energi/en/swasta/view/1/3-indonesia-cooperation-unido

Indonesia Energy Efficiency and Conservation Conference and Exhibition: http://ieecce.com/

21.OTHER ENERGY EFFICIENCY EFFORTS

Not applicable.

JAPAN

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

The government implements energy efficiency policies through regulation and economic incentives, such as subsidies and tax cut for installing efficient equipment. The Energy Conservation Law, enacted in 1979 after the oil crises, is the basis of energy efficiency and conservation regulations in Japan. It requires improving the energy efficiency of industry, transport and buildings (residential and commercial).

In 2015, the government approved the Long-term Energy Supply and Demand Outlook, which presents the ideal energy supply-demand structure in 2030 fiscal year. The Outlook includes various energy efficiency measures across the sectors, estimating a saving of 13% (50 billion litres of crude oil equivalent) from the level without energy efficiency. Japan's GHG emissions reduction target, 26% below 2013 levels by 2030 fiscal year, is based on the Outlook.

2. ENERGY EFFICIENCY STRATEGY

The government promote energy efficiency through regulation and economic incentives.

The Energy Conservation Law has regulations targeting all the main sectors (industry, buildings, and transport sectors), including:

- Regular reports on energy efficiency and efforts for energy intensity improvement of 1%/year for factories and business establishments with energy consumption of 1,500kl/year.
- Top Runner Programme (efficiency standard) for automobiles and residential electric appliances.
- Regular reports on energy efficiency implementation for specified-scale cargo owners and carriers.
- The Law also requires factories and business establishments (with energy consumption of 3,000kl/year) to appoint qualified energy managers.

Economic incentives include: Subsidies, accelerated depreciation and tax reductions for installing efficient equipment or facilities; as well as R&D subsidies for high-efficient technologies, such as high-performance heat pumps and insulation materials.

FUNDING

Economic incentive programmes are conducted by the government.

LINKS

METI Energy Efficiency: http://www.meti.go.jp/english/policy/energy_environment/energy_efficiency/

3. ENERGY EFFICIENCY ACTION PLAN

The Energy Conservation Act guides actions on energy efficiency, but there is no action plan.

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

In 2015, the government approved the Long-term Energy Supply and Demand Outlook, which presents the ideal energy supply-demand structure in 2030 fiscal year. The Outlook includes various energy efficiency measures across the sectors, estimating a saving of 13% (50 billion litre crude oil equivalent) from the level without energy efficiency.

Japan's GHG emissions reduction target, 26% below 2013 levels by 2030 fiscal year, is based on the Outlook.

LINKS

METI Outlook: http://www.meti.go.jp/english/press/2015/pdf/0716_01a.pdf

5. SECTORAL ENERGY EFFICIENCY TARGETS

The Outlook also estimates sectoral energy savings in each sector in FY2030: 10.42 billion litre (crude oil equivalent) in industry, 12.26 billion litre in commercial, 11.60 billion litre in residential and 16.07 billion litre in transport sector.

LINKS

METI Outlook: http://www.meti.go.jp/english/press/2015/pdf/0716_01a.pdf

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

Energy Conservation and Renewable Energy Department, Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry.

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

The Ministry of Economy, Trade and Industry (METI) is responsible for designing the energy policy of the economy. Within METI, the Agency for Natural Resources and Energy (ANRE) is in charge of securing stable supply of energy, promoting efficient energy use, and regulating electricity and other energy industries. The Energy Conservation and Renewable Energy Department in the ANRE covers energy efficiency and conservation policies.

STAFF AND BUDGET

Total budget for the ANRE is estimated to be JPY 2.3 trillion in the 2016-17 financial year. Staffing numbers and specific energy efficiency budget not available.

BUDGET USE

No information available.

LINKS

METI English sites: http://www.meti.go.jp/english/index.html

METI Policies: http://www.meti.go.jp/english/policy/energy_environment/energy_efficiency/

7. OTHER ENERGY EFFICIENCY AGENCIES

The Energy Conservation Law requires factories and business establishments (with energy consumption of 3,000kl.year) to appoint qualified energy managers. The Energy Conservation Centre, Japan (ECCJ) is in charge of implementing examination and training for qualified energy managers. The ECCJ is also involved in a number of energy efficiency activities, including energy audit/consultation, capacity building and information provision.

LINKS

Energy Conservation Centre Japan: http://www.asiaeec-col.eccj.or.jp/index.html

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

At the economy level, the ANRE manages a wide range of policy information, knowledge-sharing web resources. The ANRE has internet portals for general public and business for policy information dissemination. In addition, Hokkaido Bureau of Economy, Trade and Industry, METI has published a guidebook as well as launched an application for smartphone to promote energy conservation activities in residential sector.

The ECCJ publishes a monthly magazine "Energy Conservation", the only magazine dealing with energy conservation in Japan.

LINKS

ANRE Information website: http://www.enecho.meti.go.jp/category/saving_and_new/saving/general/

ANRE Information website: http://www.enecho.meti.go.jp/category/saving_and_new/saving/enterprise/

Energy efficiency guidebook: http://www.hkd.meti.go.jp/hokpw/ouchi/h28ouchi.pdf

9. ENERGY EFFICIENCY AWARENESS RAISING

Energy Conservation Grand Prize - This is the annual award for excellent energy conservation activities and products, organised by the ECCJ and supported by the METI. The winners are widely publicised to promote high-efficient activities and products.

LINKS

Energy Conservation Grand prize: https://www.eccj.or.jp/bigaward/item.html

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

METI provides a number of funding, tax exemption and auditing to the small and medium sized companies to promote energy efficiency training.

LINKS

METI Savings enterprise support:

http://www.enecho.meti.go.jp/category/saving_and_new/saving/enterprise/support/

METI Savings guideline: http://www.enecho.meti.go.jp/category/saving_and_new/saving/data/f27gaiyou.pdf

11. PRIVATELY OPERATED TRAINING

The ECCJ provides seminars as well as trainings related to energy efficiency. These programmes are partially order-made basis to take into account trainees' demands.

LINKS

ECCJ Training: https://www.eccj.or.jp/profile_info/minkan.html

12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

The government has two main pillars in terms of R&D support; one focuses on improving efficiency in industrial processes, such as Iron & Steel (budget: JPY 2.4 billion for FY2017) and Chemicals (JPY 2.3 billion), while the other for innovative high-performance technologies across the sectors (for example, JPY 9.6 billion for the Programme for Strategic Innovative Energy Saving Technology).

LINKS

METI R&D: http://www.meti.go.jp/main/yosangaisan/fy2017/pr/energy.html

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

At the economy level, the ANRE is responsible for energy efficiency policy and analysis. Assessments of the programmes are generally carried out ex-post either by the ANRE or outsourced to external institutes. Examples of these assessments include: analysis by the ANRE on cost-effectiveness of energy efficiency subsidies; analysis by the ECCJ (outsourced by METI) on energy efficiency of factories and business establishments specified under the Energy Conservation Law; and KEIDANREN's review on their progress toward the voluntary action plan.

Ministry of the Environment (MOE) is in charge of estimating and analysing GHG emissions every fiscal year in Japan, and reporting to the United Nations Framework Convention on Climate Change (UNFCCC).

There are several data sources useful for analysing energy efficiency in Japan, including: General Energy Statistics and Energy Consumption Statistics published by the ANRE; Handbook of Japan's & World Energy & Economics Statistics updated annually by the Institute of Energy Economics, Japan; Household Expenditure Survey by Ministry of Internal Affairs and Communication; Consumer Confidence Survey by the Cabinet Office. Assessment and survey reports are available through the METI's website.

LEGAL POWER

Part of energy-related data collected by the ANRE is based on legislation, including the Statistics Act.

LINKS

Energy information sources in Japan:

http://www.enecho.meti.go.jp/statistics/total_energy/

http://eneken.ieej.or.jp/en/publication/index.html

http://www.stat.go.jp/data/kakei/

http://www.cas.go.jp/jp/seisaku/gyoukaku/H27_review/H27_Review_Sheet001/H27_Review_Sheet001.html

http://www.meti.go.jp/committee/sougouenergy/shoene_shinene/sho_ene/pdf/012_02_00.pdf

http://www.keidanren.or.jp/policy/2015/102.html

http://www.meti.go.jp/meti_lib/report/2014fy/E004383.pdf

http://www.env.go.jp/earth/ondanka/ghg/

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

Japan employs a sectoral approach to evaluate energy efficiency progress and potential. The Energy Conservation Law requires factories and business establishments (with energy consumption of 1,500kl/year) as well as specified-scale cargo owners and carriers to report their energy consumption regularly. The Law also requires these specified-scale businesses to submit medium to long-term plans to improve efficiency. In addition, The Top Runner Programme requires companies (manufacturers and importers of specified products, such as electric appliances and vehicle), to fulfil the efficiency targets by the targeted years.

LINKS

METI Policy: http://www.meti.go.jp/english/policy/energy_environment/energy_efficiency/

15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

Energy efficiency programmes regulated by the law are usually required to conduct an evaluation regularly.

16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

Tax for Climate Change Mitigation

OBJECTIVE

To promote renewable energy and energy saving across the sectors.

OUTLINE

Japan introduced the Tax for Climate Change Mitigation in October 2012. This tax is levied on crude oil/oil products, gas and coal. The tax has raised in phases in April 2014 and 2016; the tax value is JPY 289 per tonne-CO2 for each kind of product since April 2016. Revenue from this tax is used for implementing various measures to promote energy efficiency and renewable energy, as well as for the use of clean fossil fuels.

LINKS

Ministry Of Environment: http://www.env.go.jp/policy/tax/about.html

Keidanren Action Plan toward Low-Carbon Society

OBJECTIVE

To reduce GHG emission and mitigate global warming through voluntary actions.

OUTLINE

KEIDANREN (Japan Business Federation) is a comprehensive economic organisation with a membership of 1,350 representative companies of Japan, 109 industrial associations and 47 regional economic organisations (as of April 2017).

The Action Plan consists of two phases. Phase I was published in 2013 with a focus on 2020 targets; Phase II was published in 2015 with targets for the year 2030. Voluntary targets, such as CO2 reduction, were individually formulated by 62 industries/companies in the industrial, commercial, transport and transformation sectors. As of April 2017, the action plan covers 31 industries in the industry sector, 12 in the transport, 16 in the commercial and 3 in the transformation.

LINKS

Keidanren: http://www.keidanren.or.jp/en/

Keidanren action plan: http://www.keidanren.or.jp/policy/2015/031_honbun.pdf

Top Runner Programme

OBJECTIVE

To promote energy saving in the residential, commercial and transport sectors by implementing efficiency standard for specified products.

OUTLINE

The Top Runner Programme is mandatory for companies (manufacturers and importers of specified products), to fulfil the efficiency targets by the targeted years, which encourages competition and innovation among the companies without increasing market prices. Manufacturers are required to achieve such targets (by a weighted average method) for all of their products per category for each predetermined target year.

The programme was introduced in 1998 to curb energy consumption in residential, commercial and transport sectors. This programme initially covered 11 items in 1998, and expanded to 31 items in 2013.

LINKS

Top Runner: http://www.enecho.meti.go.jp/category/saving_and_new/saving/data/toprunner2015e.pdf

Benchmark system

OBJECTIVE

To promote energy efficiency in the industry, commercial and electricity sector through intra-business comparison.

OUTLINE

The benchmark system is an energy efficiency standard for industrial processes and the commercial sector. Companies that belong to the top 10-20% of each specified category are better rated in the regular reporting system under the Energy Conservation Law. Ten categories in six industry sub-sectors, accounting for approximately 80% of the total manufacturing energy consumption, are under this system. The government plans to expand the system to the commercial sector, targeting to cover 70% of the total industry plus commercial energy consumption. A benchmark system for convenience stores started the 2017-18 fiscal year.

LINKS

METI Benchmark: http://www.enecho.meti.go.jp/category/saving_and_new/benchmark/

METI Benchmark report:

http://www.meti.go.jp/committee/sougouenergy/shoene_shinene/sho_ene/koujo_wg/2016/pdf/001_03_00.pdf

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

Prefecture level emissions trading scheme

OBJECTIVE

To curb GHG emissions in the specified sector

OUTLINE

Prefecture level emissions trading schemes have been implemented in Tokyo, Kyoto and Saitama prefectures. Specified business operators, for example, in Tokyo, factories and business establishments in the industry and commercial sectors with an energy consumption of 1,500kl-oil equivalent/year, are required to meet emissions regulations. Sectoral coverage varies by prefectures; Tokyo focuses on the industry and commercial sectors, while Kyoto includes transport as well. The level of regulation in Tokyo, as an example, is as follows: 8% and 17% reductions in commercial buildings, and 6% and 15% in factories in FY2010-14 and FY2015-19, respectively, from the averaged emissions in the consecutive three years in FY2002-07.

LINKS

METI: http://www.meti.go.jp/report/whitepaper/data/pdf/20170414001_02.pdf

Tokyo Government Site: http://www.metro.tokyo.jp/tosei/hodohappyo/press/2016/11/04/10_01.html

18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

Labelling programme for light vehicles fuel economy

OBJECTIVE

To enrich information provision about light vehicles fuel economy.

OUTLINE

Japan has decided to introduce an international labelling standard-WLTC mode-for measuring the fuel economy of light vehicles. WLTC stands for worldwide-harmonised Light vehicles Test Cycle. Ministry of Land, Infrastructure, Transport and Tourism (MLIT) announced that all labels for light vehicles will be based on the WLTC mode from Oct 2018. Vehicle manufacturers are switching their labels from the current JC08 mode to the WLTC since summer 2017. The existing labels show a fuel economy based on the JC08 mode, whereas the new labels indicate fuel economy based on the WLTC mode as well as "city-driving" mode, "suburb-driving" mode and "Highway-driving" mode.

LINKS

METI: http://www.meti.go.jp/committee/sougouenergy/shoene_shinene/sho_ene/pdf/024_02_00.pdf

Prefecture level emissions trading scheme

OBJECTIVE

To curb GHG emissions in the specified sector

OUTLINE

Prefecture level emissions trading schemes have been implemented in Tokyo, Kyoto and Saitama prefectures. Specified business operators, for example, in Tokyo, factories and business establishments in the industry and commercial sectors with an energy consumption of 1,500kl-oil equivalent/year, are required to meet emissions regulations. Sectoral coverage varies by prefectures; Tokyo focuses on the industry and commercial sectors, while Kyoto includes transport as well. The level of regulation in Tokyo, as an example, is as follows: 8% and 17% reductions in commercial buildings, and 6% and 15% in factories in FY2010-14 and FY2015-19, respectively, from the averaged emissions in the consecutive three years in FY2002-07.

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Tokyo Government Site: http://www.metro.tokyo.jp/tosei/hodohappyo/press/2016/11/04/10_01.html

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Energy saving labelling programme

OBJECTIVE

To assist consumers to purchase energy efficient products

OUTLINE

The labels affixed to the products indicate the achievement ratio of the energy efficiency and conservation standards. There two types of label: the Energy Saving Label and the Uniform Energy Saving Label.

The Energy Saving Label is a labelling programme for manufactures to indicate energy-saving performance under the Top Programme. This label is displayed in the brochure or product itself. As of March 2015, the programme now includes 21 categories of products are subject to labelling.

The Uniform Energy Saving Label, another labelling programme that applies to retailers, is a multistage rating scheme of energy-saving performance based on an achievement ratio under the Top Runner Programme. This label is designed to assist consumers to purchase efficient products. The programme is covering six categories of products (air conditioners, TVs, electric refrigerators, electric freezers, electric toilet seats, and lighting equipment for fluorescent lamps). The Simplified Uniform Energy Saving Label is displayed for other 10 products that are not covered by the Uniform Energy Saving Label.

LINKS

Labelling programme: https://www.eccj.or.jp/labeling/

Unified labelling programme: http://www.shouene-kaden2.net/learn/eco_label.html

Mandatory Compliance on Building Energy Efficiency Standard

OBJECTIVE

To improve energy-saving performance of buildings and houses.

OUTLINE

The Energy Conservation Law requires housing manufacturers that supplies +150 houses/year to comply energy efficiency standard. The Law also requires building owners and manufactures to submit energy-saving plans when they construct middle- to large-size new buildings (with floor area larger than or equal to 300 square meters).

LINKS

No link provided.

Prefecture level emissions trading scheme

OBJECTIVE

To curb GHG emissions in the specified sector.

OUTLINE

Prefecture level emissions trading schemes have been implemented in Tokyo, Kyoto and Saitama prefectures. Specified business operators, for example, in Tokyo, factories and business establishments in the industry and commercial sectors with an energy consumption of 1,500kl-oil equivalent/year, are required to meet emissions regulations. Sectoral coverage varies by prefectures; Tokyo focuses on the industry and commercial sectors, while Kyoto includes transport as well. The level of regulation in Tokyo, as an example, is as follows: 8% and 17% reductions in commercial buildings, and 6% and 15% in factories in FY2010-14 and FY2015-19, respectively, from the averaged emissions in the consecutive three years in FY2002-07.

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Tokyo Government Site: http://www.metro.tokyo.jp/tosei/hodohappyo/press/2016/11/04/10_01.html

20.ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

METI, NEDO and JICA offer a number of energy efficiency cooperation programmes, such as capacity building, technology transfer, and financing (ODA loan), for emerging economies. For example, JICA's projects include: establishment of energy conservation training centre in Iran, assistance for developing a master plan for energy conservation in Oman and Viet Nam, and transfer of high-efficient coal-fired technologies to Indonesia.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

Japan has been involved in discussions related to energy efficiency, such as capacity building, technology transfer as well as data collection, through various multilateral cooperation schemes, including IEA, APEC, ASEAN+3, EAS and IPEEC. Japan is also enhancing bilateral cooperation with Asian economies as well as energy producing economies in order to promote energy efficiency and conservation.

LINKS

JICA: https://www.jica.go.jp/activities/issues/energy_minig/case.html

JICA: https://www.jica.go.jp/english/our_work/thematic_issues/energy/study.html

METI: http://www.enecho.meti.go.jp/about/whitepaper/

METI: http://www.enecho.meti.go.jp/about/whitepaper/2017html/3-9-1.html

21. OTHER ENERGY EFFICIENCY EFFORTS

No information provided.

KOREA

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

Korea's energy efficiency policy is guided by the Energy Use Rationalisation Act (EURA) of 1980 and wholly amended in 2007. The Act aims to stabilise energy demand and supply, improve efficiency, and reduce environmental damage caused by energy consumption in all energy end-use sectors.

In the wake of the second oil shock in 1979, the Ministry of Energy and Resources (later incorporated with the Ministry of Trade, Industry and Energy) was established to exclusively administer the planning and enforcement of energy policies. In the following year, the EURA was promulgated in an attempt to ensure energy security and promote energy efficiency and conservation.

The EURA is comprised of the following chapters: General Provisions; Plans and Measures for Rationalisation of Energy Use; Policies for Rationalisation of Energy Use; Management of Heat-Using Machinery/Equipment or Materials; Organisation of Constructors; Energy Management Corporation; Supplementary Provisions; and Panel Provisions.

The full text is available at http://www.moleg.go.kr/english/korLawEng?pstSeq=57721.

2. ENERGY EFFICIENCY STRATEGY

The 2nd National Energy Master Plan (NEMP) (2014–2035) published in 2014, provides a comprehensive strategy of energy policies, including energy efficiency promotion. The 5th Energy Use Rationalisation Plan, announced in 2014, plays a role as an action plan for the NEMP.

FUNDING

No Information available.

LINKS

NEMP: http://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs_seq_n=78654&bbs_cd_n=81

3. ENERGY EFFICIENCY ACTION PLAN

The 5th Energy Use Rationalisation Plan (2013–2017) is the action plan arising from the NEMP to promote energy efficiency. The plan is designed to cope with high global oil prices and climate change as well as to improve the balance of trade. The plan introduces policies to support new demand-side management (DSM) technologies and market schemes in the electricity sector which are expected to help achieve the targets. The plan also aims to improve coal thermal efficiency and utilise heat recovery to reduce conversion losses. It will redesign power market mechanisms in order to reduce prices, improve market efficiency, and provide consumers with effective price signals. In addition, it will increase the availability of energy information, thus raising public awareness.

Other initiatives in the plan include supporting R&D on demand-side management, improving financing and energy service company (ESCO) programmes, re-inspecting and maintaining the three major energy efficiency programmes, and enhancing security for thermal equipment to obtain energy efficiency improvements.

FUNDING

Sectoral energy-saving programmes have been implemented using various incentives and regulation policies, such as financing, tax reductions, research and development (R&D) subsidies, and certification.

LINKS

5th Energy Use Rationalisation Plan:

http://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs_seq_n=156772&bbs_cd_n=81

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

The 2nd National Energy Master Plan (NEMP) (2014–2035), published in 2014, stipulates that Korea will reduce its final energy consumption to 216.4 Mtoe (million tons of oil equivalent) by 2035 from an estimated 249.4 Mtoe (13%) in the business-as-usual (BAU) estimation.

The 5th Energy Use Rationalisation Plan aims for a 4.1% reduction of the final energy consumption and an improvement in energy intensity of 3.8% by 2017 (compared to BAU).

LINKS

NEMP documents:

http://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs_seq_n=78654&bbs_cd_n=81

NEMP documents:

http://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs_seq_n=156772&bbs_cd_n=81

5. SECTORAL ENERGY EFFICIENCY TARGETS

As part of the NEMP, the government set interim sectoral energy efficiency improvement goals for 2017 (compared to BAU) as follows:

- Industrial sector: reduction in energy use of 5.3 Mtoe,
- Transport sector: reduction in energy use of 2.5 Mtoe.
- Buildings sector: reduction in energy use of 1.2 Mtoe.
- Public sector and others: reduction in energy use of 0.3 Mtoe.

LINKS

MOTIE: http://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs_seq_n=78654&bbs_cd_n=81

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

The Ministry of Trade, Industry and Energy (MOTIE). The ministry was established at the birth of the Republic of Korea in 1948 as the Ministry of Trade and Industry (MTI) with the mission to coordinate domestic industries. In 1993, the MTI was merged with the Ministry of Energy and Resources, an agency charged with ensure stable energy supply, to create the MOTIE. The ministry was reorganised in 1998 as the Ministry of Commerce, Industry, and Energy (MOCIE), in 2008 as the Ministry of Knowledge Economy (MKE), and in 2013 as the MOTIE.

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

MOTIE runs the Office of Energy and Resources which includes the Energy Efficiency & Climate Change Bureau to drive overall energy efficiency policy of the economy. The bureau consists of three divisions: energy efficiency policy division, energy management division, and new energy-related industry division.

STAFF AND BUDGET

MOTIE has 1,293 staff as of August 2017. Specific information on the energy efficiency budget is not available.

BUDGET USE

Not available

LINKS

http://english.motie.go.kr/www/main.do

7. OTHER ENERGY EFFICIENCY AGENCIES

MOTIE, KEA, and the Ministry of Land, Infrastructure, and Transport (MOLIT) are responsible for energy efficiency improvements in Korea. MOTIE and MOLIT are the policymaking bodies, while the KEA is the policy implementer.

The overall energy efficiency policy is driven by MOTIE. In addition, energy-saving activities in the industrial and building sectors are managed by MOTIE, while construction-related work for energy efficiency in the transport and building sectors is managed by MOLIT. The Prime Minister has coordinated overall economy-wide energy efficiency programmes through the National Energy Committee. KEA's role is to improve energy efficiency, diffuse renewables, and reduce greenhouse gases across various sectors. For this purpose, KEA implements various projects aimed at rationalising energy use. KEA has 12 regional offices.

Local governments have promoted energy efficiency by setting up regional energy basic plans for a five-year period. Regional energy efficiency programmes can be partially supported by MOTIE, especially those focusing on public sector innovation and demonstrations for energy efficiency.

KEA's regional offices have cooperated with regional non-government organisations and research institutes to implement regional energy efficiency activities based on the plan.

LINKS

KEA: http://www.energy.or.kr/renew_eng/main/main.aspx

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

A wide range of energy efficiency information is readily available to Korean energy consumers through KEA's website and other media. A mandatory procurement guideline on purchasing energy-efficient products has been applied to public institutions.

LINKS

KEA: http://www.energy.or.kr/renew_eng/energy/industry/enms.aspx

9. ENERGY EFFICIENCY AWARENESS RAISING

Awareness campaigns have been undertaken with specific initiatives such as the Heating 2018 in winter or the Energy Minus Love Plus campaign in summer aimed at increase awareness of space conditioning. Also National Energy Efficiency Awards for businesses, the designation of November as energy saving month are good examples. Other examples include some public relations activities through the media (television, radio), a prize contest for branding materials (poster, catch phrases), an economy-wide exhibition (Korea Energy Show), mobile exhibitions, and early education in elementary and middle school.

LINKS

KEA campaign: http://www.energy.or.kr/renew_eng/pr/pr/campaign.aspx

KEA exhibition: http://www.energy.or.kr/renew_eng/pr/pr/exhibition.aspx

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

Capacity-building programmes have been undertaken for various actors, such as energy managers in high energy-consuming industries or buildings above 2,000 toe per annum, boiler and pressure vessel operators, local government officials, and energy auditors.

LINKS

KEA training: http://www.energy.or.kr/renew_eng/pr/education/training.aspx

11. PRIVATELY OPERATED TRAINING

No information provided

LINKS

No information provided

12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

The government recognises the role of new technology and R&D in achieving its energy objectives. In May 2006, it announced the Basic Scheme for National Energy Resource Technology Development (2006–2015), which includes the promotion of R&D in energy efficiency and conservation.

The 2nd National Energy Master Plan (2014–2035) also reinforces technological development. Korea will increase its support for R&D to improve the energy efficiency of industrial equipment and facility upgrades as well as provide support for companies that invest in energy efficiency.

The Korea Institute of Energy Technology Evaluation and Planning (KETEP) was established in December 2007, with the key mission of advancing energy technology R&D and supporting MOTIE in formulating energy technology policies. The Energy Efficiency R&D Programme has been undertaken by KETEP with the objective of securing additional energy saving potential of 5% of the total primary energy supply during 2006–2015. The seven Runner Programmes that focus on typical energy consuming end-use devices have been prioritised in energy efficiency R&D. The seven objects identified for R&D that cover approximately 41% of total final energy consumption include super boilers, premium electric motors, HVACs, industrial furnaces, dryers, lighting, and home appliances. Individual R&D projects are generally undertaken in cooperation with enterprises, and R&D subsidies can be provided in part for the required total investment.

LINKS

EE R&D: http://www.ketep.re.kr/contents/siteMain.do?srch_mu_lang=CDIDX00023

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

At the domestic level, MOTIE is responsible for energy efficiency policy and analysis. Assessments of programmes are generally carried out ex-post either by the Ministry or externally at the Ministry's request.

LEGAL POWER

At the domestic level, MOTIE is responsible for energy efficiency policy and analysis. Assessments of programmes are generally carried out ex-post either by the Ministry or externally at the Ministry's request.

Legal Powers

MOTIE has the authority to consolidate energy demand and supply data to establish NEMP and energy policies. It also provides domestic energy statistics to the public via the Korea Energy Statistics Information System that is operated by Korea Energy Economics Institute (KEEI). Other institutions that are responsible for providing related statistics include:

- KEEI - Energy balance and national energy demand and supply
- KEA - New and renewable energy(NRE) and group energy
- Korea National Oil Company(KNOC) - Oil and oil product
- Korea Power Exchange(KPX) - Electricity related
- Korea Gas Company(KOGAS) - Natural gas
- Korea Coal Association - Coal production

- Korea City Gas Association - City gas consumption.

LINKS

Korea Energy Statistics: https://www.kesis.net/

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

MOTIE is responsible to establish the long term 'Energy Use Rationalisation Plan', which is based on the overall evaluation of energy consumption and efficiency, every five years according to the 'Energy Use Rationalisation Act'.

LINKS

Legislation: http://www.moleg.go.kr/english/korLawEng?pstSeq=57721

15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

Government funded programmes are usually required to conduct an intermediate and ex-post evaluation.

16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

Tax Reduction and Exemption Act (by National Tax Service)

OBJECTIVE

To strengthen the competitiveness of business enterprises by promoting investments in energy-saving facilities.

OUTLINE

In case of investments in the installation of specified energy-efficient facilities, 10% of the relevant investment amount shall be deducted from the total income tax or corporate tax. This scheme started in 1982, and it has been temporarily applied during designated time periods.

LINKS

KEA Tax breaks: http://www.energy.or.kr/renew_eng/energy/industry/benefits.aspx

Energy Use Rationalisation Fund (1980)

OBJECTIVE

To strengthen the competitiveness of business enterprises by promoting investments in energy-saving facilities.

OUTLINE

Since 1980, the government has provided long-term, low-interest loans for energy efficiency and conservation investments, along with tax incentives. KEA oversees the operation and monitoring the loan. The rate of the loans is 1.75% per year, as of the first quarter of 2017.

LINKS

KEA EE investment support: http://www.energy.or.kr/renew_eng/energy/industry/benefits.aspx

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

Energy Process Auditing

OBJECTIVE

To improve the energy efficiency of businesses that use large amounts of energy in industrial and commercial sectors.

OUTLINE

Energy auditing started in 1990 as a voluntary programme. In 2007, it was made mandatory for businesses using more than 2,000 toe in order to improve the efficiency of large energy consumers. This was in response to the implementation of the United Nations Framework Convention on Climate Change and the Kyoto Protocol.

KEA has implemented energy auditing for more than 30 years in domestic industrial and building sites. It has also conducted important research activities to find energy distribution optimisation models and other related opportunities.

The KEA achieved the ISO 9001 Quality Management System certification for the energy auditing service.

LINKS

KEA Energy auditing: http://www.energy.or.kr/renew_eng/energy/industry/audit.aspx

Energy Service Company (ESCO)

OBJECTIVE

To encourage investments in energy-saving facilities through ESCOs that provide a broad range of energy saving solutions with investment costs covered by energy bill reductions.

OUTLINE

The ESCO programme was launched in 1993. There were only three registered ESCOs at the time, but by June 2017, the number has increased to 360. ESCOs mainly focus on high-efficiency lighting, waste heat recovery, heating and cooling systems, and manufacturing process improvement.

When energy users want to replace or improve existing facilities but are unable to do so due to technical or financial problems, they can make a contract with ESCOs. After the terms of the contract are set, the ESCOs will make the investment on behalf of the energy users after which the ESCOs profit from the energy cost savings.

The legal grounds for ESCOs were established under the Energy Use Rationalisation Act in 1991. ESCOs have been registered and in operation since 1992. The scopes of the projects include the following:

- Projects related to energy-saving plant investments

- Management of service projects for saving energy in energy-using facilities
- Projects related to energy saving such as energy management, and diagnosis.

LINKS

KEA ESCO: http://www.energy.or.kr/renew_eng/energy/industry/esco.aspx

18.TRANSPORT ENERGY EFFICIENCY INITIATIVES

Average Fuel Economy (AFE) Programme

OBJECTIVE

To manage the fuel efficiency of passenger vehicles by requiring manufacturers to achieve an average fuel efficiency for all vehicles sold by each manufacturer (calculated by dividing the sum of the fuel efficiencies of the vehicles sold during the previous year by the quantity sold).

OUTLINE

If a manufacturer's average fuel efficiency does not satisfy the limit set by the government, then it may order the improvement of fuel efficiency by a certain time. If the improvement order is not performed, then a corresponding announcement may be published through the press. The average fuel efficiency levels are:

- By 2013 – 16.0 km per litre
- By 2017 – 19.2 km per litre
- And by 2020 – 24.3 km per litre

LINKS

KEA Average Fuel Efficiency: http://www.energy.or.kr/renew_eng/energy/transport/afe.aspx

Incentives for small vehicles

OBJECTIVE

To promote low energy-consuming, lightweight passenger vehicles.

OUTLINE

Several incentives such as tax exemptions for purchasing, registration and acquisition, 50% discounts on parking fees and tolls, and congestion charges, are provided.

LINKS

National Law Information Centre:

http://www.law.go.kr/lsSc.do?menuId=0&subMenu=1&query=%EC%A7%80%EB%B0%A9%EC%84%B8%EB%B2%95%20%EC%8B%9C%ED%96%89%EB%A0%B9#AJAX

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Energy Efficiency and Label Standards Programme:

OBJECTIVE

To save energy by enabling consumers to easily identify high-efficiency products and encouraging manufacturers (and importers) to produce (or import) and sell these products. It employs a label that indicates the energy efficiency level of each product on a 1 to 5 grading scale.

The labelling scheme works in tandem with the minimum energy performance standard (MEPS) scheme, which bans low-efficiency products from entering the market. It also promotes technical development by setting up and controlling the minimum required efficiency standard.

OUTLINE

The Energy Efficiency Labelling and Standards Programme enables consumers to identify energy-efficient products through mandatory energy efficiency labels, mandatory reporting, and the application of MEPS. The efficiency scale of the labels includes five grades with Grade 1 products being the most efficient. In fact, Grade 1 products are 30% to 40% more efficient than a Grade 5 product. To keep the scheme current and to incentivise further development, MOTIE and KEA constantly revise the requirements. If the standard is strengthened, then different grades can be seen, even among the same products. MEPS ban the production, importation, and sale of products that fall below the minimum energy performance standard. MEPS are applied to 27 items.

LINKS

KEA Labelling: http://www.energy.or.kr/renew_eng/energy/appliances/labeling.aspx

Energy Saving Design Criteria for Buildings

OBJECTIVE

To improve energy efficiency in the design and construction of new buildings.

OUTLINE

MOLIT developed the building energy codes, while local government building officials enforce the codes as part of the building permitting process for new buildings. The property developer must fill out an energy saving worksheet and submit it to the local government in order to obtain a building permit.

The submission of energy saving plans has become mandatory for buildings larger than certain sizes in order to reinforce insulation, increase the supply of high-efficiency and new/renewable energy facilities, and promote the energy saving mindset among building owners.

LINKS

MOLIT: http://www.molit.go.kr/USR/NEWS/m_71/dtl.jsp?id=95078442

Building Certification System

OBJECTIVE

To provide objective information regarding the energy performance of buildings such as energy consumption, carbon dioxide emissions, and energy-saving opportunities that could benefit relevant stakeholders, including construction companies, building owners, building managers, and building users.

OUTLINE

Building companies apply for certification of new buildings based on design information after which preliminary certification may be awarded. Final certification of the energy efficiency grade is provided after completion of an evaluation using final design drawings and field surveys.

LINKS

KEA Buildings:

http://www.energy.or.kr/renew_eng/energy/buildings/buildings_certification.aspx

20. ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

Energy efficiency campaigns, which require the participation of the private sector, have been performed in cooperation with NGOs. NGOs act as a representative voice of the citizens' energy efficiency behaviour.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

Korea has been actively participating in international cooperative activities such as IEA 4E, APEC EGEE&C, IPEEC, etc., to develop policies to enhance energy efficiency in the facilities and equipment sectors as well as strengthen international cooperation systems.

IEA 4E (Implementing Agreement on Efficient Electrical End-Use Equipment) is one of the implementation agreements of the International Energy Agency (IEA), which seeks to promote the adjustment and development of policies of various economies through collaborative research and forums aimed at enhancing machine efficiency.

In cooperation with the IEA 4E, MOTIE and KEA are participating in the main annex, Mapping & Benchmarking (M&B). The overall goal of the M&B annex is to provide policymakers with a single source of knowledge on product performance and associated policies employed by economies across the world, thus enabling more informed policymaking at the economy and regional levels.

APEC EGEE&C (Expert Group on Energy Efficiency and Conservation) is one of the expert groups under the Energy Working Group (EWG), which targets energy saving as well as the development of energy efficiency policies and technologies. Korea hosted the 49th APEC EWG meeting in Gyeongju on June 2015 and the 49th EGEE&C in Jeju on March 2017.

The EGEE&C has maintained the Energy Standards Information System (ESIS) since 2002. ESIS provides the latest information about energy standards and regulations for appliances and equipment. MOTIE and KEA funded USD 10,000 for this ESIS project in 2007 and both organisations continue to take an active role in this system.

IPEEC (International Partnership for Energy Efficiency Cooperation) is an international partnership for energy efficiency cooperation among the European Union, the G8 economies (United States, United Kingdom, France, Germany, Italy, Canada, Japan, and Russia), and seven additional economies (China, India, Brazil, Mexico, Korea, Australia, and South Africa).

LINKS

KEA Cooperation: http://www.energy.or.kr/renew_eng/pr/in/c1.apx

21. OTHER ENERGY EFFICIENCY EFFORTS

The consumer price of oil products is determined by market-based pricing systems, but the major part of the price includes taxes. Prices of electricity, city gas, and thermal energy supply can be influenced by the government by adjusting the corporate-investment maintenance ratio that is required by each tariff structure.

Currently, progressive electricity pricing, according to the amount of use, has been applied to the residential sector. However, a pricing system that exposes consumers to the full cost of energy (or high costs) in order to stimulate energy efficiency or greenhouse gas emissions reductions is unfeasible, since it would be a difficult process with low social acceptance. Until now, subsidies and tax incentives have been used to promote consumer behaviour for energy efficiency.

LINKS

KEA: http://home.kepco.co.kr/kepco/EN/F/htmlView/ENFBHP00101.do?menuCd=EN060201

MALAYSIA

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

Malaysia has recently published a Five Year Plan that focuses on sustainable growth and resource management. In this plan, Malaysia demonstrates a strong commitment to energy efficiency with aggressive targets and suggested actions.

Malaysia introduced its first Energy Efficiency Policy in 1979 with a main objective of promoting the efficient utilisation of energy and the elimination of wasteful and non-productive patterns of energy consumption. With this objective, many regulations and new policies were introduced such as:

- National Green Technology Policy (2009).
- National Automotive Policy (2014).
- Eleventh Malaysia Plan (2016-2020).

Related laws to Energy Efficiency are:

- Electricity Supply Act 1990 and the Electricity Supply Act (amended) 2001.
- Gas Supply Act 1990.
- Efficient Management of Electrical Energy Regulation 2008 (subsidiary regulation to Electricity Supply Act).
- Electricity Regulation 1994 and the Electricity Regulation (amended) 2013.

2. ENERGY EFFICIENCY STRATEGY

Malaysia is currently working on a Demand-side Management Strategy that will concentrate on Energy Efficiency. In the meantime, the following laws guide energy efficiency actions:

- Electricity Supply Act 1990 and the Electricity Supply Act (amended) 2001,
- Eleventh Malaysia Plan that spans 2016-2020 period that covers buildings, industries and households.
- National Automotive Policy - promotes EEV.
- National Energy Efficiency Action Plan 2016-2025 (NEEAP).
- Building Energy Intensity (BEI) Labelling

FUNDING

Energy efficiency is funded through direct government budget, international aid, and some private funding.

LINKS

Sustainable use of Energy paper: http://www.epu.gov.my/sites/default/files/Strategy%20Paper%2017.pdf

3. ENERGY EFFICIENCY ACTION PLAN

The recently developed National Energy Efficiency Action Plan 2016-2025 (NEEAP) contains the key actions to progress energy efficiency in the economy. This plan is aligned with the 11th Malaysia Plan (RMK-11) that governs policy across the economy.

FUNDING

Government and private funding.

LINKS

Sustainable use of Energy paper: http://www.epu.gov.my/sites/default/files/Strategy%20Paper%2017.pdf

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

Malaysia is in the midst of formulating a new energy efficiency policy by initiating a demand-side management study covering the whole energy sector (as stated in Eleventh Malaysia Plan). Malaysia also has an emissions reduction target, as announced during COP21 Paris, to reduce its greenhouse gas (GHG) emissions intensity of GDP by 45% by 2030 relative to the emissions intensity of GDP in 2005. This consists of 35% on an unconditional basis and a further 10% is conditional upon receipt of climate finance, technology transfer and capacity building from developed economies.

The Malaysian government announced the third National Automotive Policy (NAP) in 2014 with aims to turn Malaysia into an energy efficient vehicle (EEV) hub in ASEAN. The Malaysia Automotive Institute (MAI) is working with the government in shaping industrial competitiveness in the automotive sector.

LINKS

Green growth paper: http://www.epu.gov.my/sites/default/files/Chapter%206.pdf

INDC Malaysia:

http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Malaysia/1/INDC%20Malaysia%20Final%2027%20November%202015%20Revised%20Final%20UNFCCC.pdf

Energy efficient vehicles:

http://www.mai.org.my/index.php?option=com_content&view=article&id=25&Itemid=177&lang=en

5. SECTORAL ENERGY EFFICIENCY TARGETS

All targets were introduced under the 11th Malaysia Plan that covers the period 2016-2020.

Targets for buildings:

- Achieve a target of 700 registered electrical energy managers (REEMs).

- Extend EPC to other government buildings.
- All new government buildings to adopt energy efficient designs.
- Retrofit 100 government buildings.
- Register 70 energy service companies (ESCOs).
- Target 100 companies to implement ISO 50001.

Targets for industry:

- Introduce enhanced time of use (EToU) with three different time zones.
- Abolish the Special Industrial Tariff (SIT).
- Install 4 million smart meters.
- Increase on-grid co-generation capacity of 100 MW or more by reviewing utility standby charges.

Households:

- Additional appliances with minimum energy performance standards (MEPSs) and labelling programme.

Transport (forecast):

- Based on definition set by MAI, EEV accounted for around 33% of the total vehicle sales in 2015 and it is expected to reach 40% in 2016 and 85% in 2020.

LINKS

Sustainable use of energy paper: http://www.epu.gov.my/sites/default/files/Strategy%20Paper%2017.pdf

Automotive target: http://www.mai.org.my/v3/index.php/component/k2/item/1340-eev-bakal-kuasai-pasaran-2017

6. LEAD ENERGY EFFICIENCY INSTITUTION

The Energy Section of the Economic Planning Unit (EPU) of the Prime Minister's Department (established in 1965) is the primary policy agency and the Ministry of Energy, Green Technology and Water (MEGTW) (established in 2009) leads implementation. Other agencies with energy efficiency responsibilities include the Energy Commission (EC) established in 2001; the Sustainable Energy Development Authority (SEDA), established in 2011; and the Malaysia Green Technology Corporation (MGTC).

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

The role of the MEGTW is to formulate an energy efficiency policy, in coordination with the EPU. The EPU provides the general direction, strategies, and determines the level of implementation, while the EC is the regulatory agency for the electricity and piped gas supply industry. The commission's main tasks are to provide technical and performance regulations for the electricity and piped gas supply industry (as the safety regulator for electricity and piped gas) and advise the minister on all matters related to electricity and piped gas supply,

including energy efficiency and renewable energy issues. SEDA Malaysia and MGTC are the executing agencies for energy efficiency projects.

STAFF AND BUDGET

There are five officers in the MEGTW and 13 officers in SEDA Malaysia who deal with both renewable energy and energy efficiency issues, and 11 officers in the EC who handle only energy efficiency matters.

BUDGET USE

Government development budget for project implementation.

LINKS

Ministry of Energy, Green Technology, and Water: http://www.kettha.gov.my/portal/index.php#

Energy Commission: http://www.st.gov.my/index.php/en/

Sustainable Energy Development Authority: http://www.seda.gov.my/

7. OTHER ENERGY EFFICIENCY AGENCIES

The Ministry of International Trade and Industry (MITI) has come out with National Automotive Policy (NAP). Although NAP does not have any direct target in energy efficiency, the policy laid out help to improve energy efficient vehicle (EEV) penetration in domestic market. The Ministry of Science, Technology and Innovation (MOSTI) is responsible for some R&D grants for EE technologies. Malaysia Green Technology Corporation, an agency under the MEGTW, also promotes green technology.

LINKS

Ministry of International Trade and Industry: http://www.miti.gov.my/

Ministry of Science, Technology and Innovation: http://www.mosti.gov.my/en/corporate-profile/about-mosti/

Malaysia Green Technology Corporations: http://www.greentechmalaysia.my

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

The key source of energy information is the Malaysia Energy Information Hub (MEIH), which is a web based economy-wide energy database with information on energy supply and demand. Additionally, the Energy Balances are published annually and the Malaysia Electricity Supply Outlook provides a view of the electricity sector.

LINKS

Malaysia Energy Information Hub: http://meih.st.gov.my/

9. ENERGY EFFICIENCY AWARENESS RAISING

The Malaysian government supports SWITCH! a Non-Government Organisation (NGO) campaign on energy efficiency with support from industry. It carries out events, produces publications and has a web-based information portal.

Yayasan Hijau Malaysia (YaHijau), which literally means Malaysia Green Foundation, is an NGO that promotes green technology and its benefits towards sustainable living.

The International Greentech & Eco Products Exhibition & Conference Malaysia (IGEM) is an annual event aimed at promoting green technologies and discussing energy issues.

Other events include the Energy Efficiency Challenge for secondary schools to promote awareness in students, similarly the Energy Efficiency Run is well attended biannual event with around 1,500 participants.

LINKS

YaHijau: http://www.yahijau.com/index.php/us/

SWITCH!: http://www.switch.org.my/v1/

Greentech Conference: http://www.igem.my/home/index.php

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

The government supports a number of energy efficiency training initiatives including the Industrial Energy Efficiency for Malaysia Manufacturing Sector (IEEMMS) programme, the Energy Efficiency and Energy Management Training Programme provided by SEDA and the ASEAN Energy Management Scheme (AEMAS).

LINKS

IEEMMS: http://ieemms.org/

SEDA: http://www.seda.gov.my

Greentech Malaysia Training: http://greentechmalaysia.my/services/training/professional-programmes

11. PRIVATELY OPERATED TRAINING

The Centre for Education, Training, Research in RE, and EE (CETREE), based at the University of Science Malaysia, offers a number of courses and publications on energy efficiency. The government supports this programme as well.

The Malaysia Association of Energy services Companies (MAESCO) also provides a number of courses.

LINKS

MAESCO: http://cetree.usm.my/index.php/ms/

CETREE: http://cetree.usm.my/index.php/ms/

12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

Technical research on energy efficiency and conservation is mainly conducted by government-sponsored universities. The government, through MEGTW set up the Malaysian Electricity Supply Industries Trust Account (MESITA) Fund to funds this kind of research.

LINKS

Malaysia Science and Technology Information Centre: http://mastic.mosti.gov.my/en/web/guest/home

MESITA Fund: http://mesita.kettha.gov.my/

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

For one-off projects, the progress and achievement is monitored through an outcome-based assessment method. The assessment report is prepared twice (at half way and at the end of the plan) and submitted to the MEGTW or EPU.

The Energy Commission carries out a number of data collection and evaluation projects including:

- Regular data collections for different sectors.
- MEPS evaluation and implementation.
- Enforcement of Efficient Management of Electrical Energy Regulations 2008.

LEGAL POWER

As energy regulator in Peninsular Malaysia and Sabah, the Energy Commission has the power to compel the provision of energy data from different sectors of the market, as per the Electricity Supply Act 1990.

LINKS

Energy commission:

http://www.st.gov.my/index.php/en/consumer/electricity/list-of-installation-affected-under-emeer-2008

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

No periodic evaluation initiated so far.

LINKS

Not available.

15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

Not applicable.

16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

Green Technology Financing Scheme

OBJECTIVE

To provide financial support to local, green-technology industries, encourage local industries to embrace green technology, and help incorporate green-technology elements into specific projects related to the identified sectors with Energy, waste and water, building, and transport sectors are all applicable.

OUTLINE

The government has provided RM 3.5 billion to create the fund for this scheme. The fund provides soft loans to companies that supply or utilise green technology. The maximum financing for companies who are producers and users of green technology is RM 50 million and RM 10 million, respectively. The government will bear 2% of the total interest/profit rate. In addition, the government will provide a guarantee of 60% on the financing amount via the Credit Guarantee Corporation Malaysia Berhad, with the remaining 40% financing risk to be borne by participating financial institutions. Loan applications can be made through the Malaysian Green Technology Corporation (GreenTech Malaysia), an agency under the Ministry of Energy, Green Technology and Water.

Companies are required to submit their project proposals for technical evaluation to GreenTech Malaysia. Upon passing the technical evaluation, companies may apply for financing from any participating financial institution.

LINKS

GreenTech Fund: https://www.gtfs.my/

Green Investment Tax Allowance and Exemption (GITA&GITE)

OBJECTIVE

To strengthen the development of green technology, the Government will continue to provide incentives in the form of investment tax allowances for the purchase of green technology assets and income tax exemption for the use of green technology services and system.

OUTLINE

The incentives, which were announced in Budget 2014, cover broader scope of green technology activities in the areas of energy, transportation, building, waste management, and supporting services activities. It also facilitates the transition of the expired (by 31 December 2015) tax incentives relating to renewable energy (RE) and energy efficiency (EE) projects under the Promotion of Investment Act (PIA), 1986.

LINKS

Tax incentives for green industry: http://www.mida.gov.my/home/tax-incentives-for-green-industry/posts/

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

Efficient Management of Electrical Energy Regulation 2008

OBJECTIVE

Under the regulation, all installations that consume three million kWh or more of electricity over a period of six months will be required to employ an energy manager to analyse the total consumption of electricity, advise on measures to improve energy efficiency, and monitor the effectiveness of the measures taken.

OUTLINE

A mandatory regulation set for energy intensive industries and commercial. Penalties are imposed for non-compliance; however, this regulation only covers electricity use.

LINKS

Energy Commission:

http://www.st.gov.my/index.php/en/consumer/electricity/list-of-installation-affected-under-emeer-2008

Energy Efficiency and Conservation Guidelines Part 1 and 2 and MEPS for selected industrial equipment

OBJECTIVE

To introduce MEPS for selected equipment, such as motors, chillers, cooling towers, and compressors. Currently, the development of a standard for motors is underway.

OUTLINE

The guidelines have been framed to encourage industries to adopt energy-efficient practices as well as manage and improve their energy utilisation and environmental management (on a voluntary basis).

LINKS

Audit Guidelines: http://www.st.gov.my/index.php/en/download-page/category/95-guidelines-energy-efficiency?download=615:electrical-energy-audit-guidelines-for-building

SEDA: http://seda.gov.my

Eleventh Malaysia Plan

OBJECTIVE

The Malaysia plan is the overall policy guide for the government. In the Eleventh plan, there the government included a number of energy efficiency actions for the industry sector:

- Introduce enhanced time of use (EToU) with three different time zones.
- Abolish the Special Industrial Tariff (SIT), which a form of subsidy to energy intensive industry.

- Install 4 million smart meters.
- Increase on-grid co-generation capacity of 100 MW or more by reviewing utility standby charges.
- Energy Audit Conditional Grants (EACG).

OUTLINE

Eleventh Malaysia Plan is a five-year development plan for 2016-2020. The annual budget for this plan is a mix of public-private funding.

LINKS

Eleventh Malaysia Plan: http://www.epu.gov.my/en/rmk/eleventh-malaysia-plan-2016-2020

18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

No current initiatives in the transport sector.

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Green Building Index Malaysia and MyHIJAU Mark (Voluntary)

OBJECTIVE

The Green Building Index Malaysia (GBI Malaysia) certification is a profession-driven initiative to lead the Malaysian property industry to become more environmentally friendly. The energy efficiency of a building is one of the criteria for this certification.

MyHIJAU Mark is Malaysia's official green labelling scheme endorsed by the government of Malaysia, bringing together certified green products and services that meet local and international environmental standards under one single mark.

OUTLINE

The Green Building Index (GBI) is Malaysia's industry recognised green rating tool for buildings to promote sustainability in the build environment and raise awareness among developers, architects, engineers, planners, designers, contractors and the public about environmental issues.

MyHijau Mark is to promote the sourcing and purchasing of green products and services in Malaysia. Its aim is to encourage the adoption of environmentally friendly practices in the economy, while catalysing the growth of Malaysian's green economy.

LINKS

YaHijau: https://www.myhijau.my/

Building rating scheme: http://new.greenbuildingindex.org/

Products Minimum Energy Performance Standards and Labelling

OBJECTIVE

To raise awareness and provide energy consumption information of appliances and equipment to consumers by labelling appliances.

To reduce energy demand and promote innovation in the market by banning low performing appliances and equipment.

OUTLINE

Currently, there are Minimum Energy Performance Standard (MEPS) for five electrical appliances: refrigerator, domestic fan, TV, air-conditioners and lamp. Further MEPS are under discussion.

LINKS

Energy commission: http://www.st.gov.my/index.php/en/consumer/electricity/minimum-energy-performance-standards-meps

MEPS Status Presentation:

http://bseep.gov.my/App_ClientFile/df08bc24-99fb-47a3-937f-dc25df9d3997/Assets/EE%20FEATURES/TEEAMBSEEP.pdf

Amendments to the Uniform Building By-Laws (UBBL)

OBJECTIVE

Energy efficiency requirements under the MS1525, which is the Code of Practice on the Use of Renewable Energy and Energy Efficiency in Non-Residential Buildings, were incorporated in the amendments to the Uniform Building By-Laws (UBBL)

OUTLINE

Although Uniform Building By-Laws were amended in 2013, responsibility lies with local government and has not yet been fully implemented.

LINKS

Amendment presentation: http://architecturemalaysia.com/Files/Pool/81_170214_0739543954_pam_north_11jan2017_vonkl.pdf

Passive design building guidelines: http://bseep.gov.my/App_ClientFile/df08bc24-99fb-47a3-937f-dc25df9d3997/Assets/Building%20Energy%20Efficiency%20Technical%20Guideline%20for%20Passive%20Design.pdf

Energy Performance Contracting for Government Buildings

OBJECTIVE

Under the EPC concept, government buildings may engage energy services companies (ESCOs) to improve energy efficiency. This initiative can help develop an ESCO industry in Malaysia.

OUTLINE

In 2013, the cabinet approved the implementation of EPC projects for government buildings.

LINKS

EPC in Malaysia:

http://bseep.gov.my/App_ClientFile/df08bc24-99fb-47a3-937f-dc25df9d3997/Assets/BSEEP%20NCA2017/PAPER%206%20-%20EPC%20Energy%20Efficiency%20Financing%20Program%20-%20BSEEP%20National%20Conference%202017%20New%20Template%20xNMN.pdf

Eleventh Malaysia Plan (2016-2020)

OBJECTIVE

Under the Eleventh Malaysia Plan, targets for buildings are separated into residential and service buildings.

Services:

- Achieve a target of 700 registered electrical energy managers (REEMs).
- Extend EPC to other government buildings.
- All new government buildings to adopt energy efficient designs.
- Retrofit 100 government buildings.
- Register 70 energy service companies (ESCOs).
- Target 100 companies to implement ISO 50001.
- Wider adoption of the Green Building Index to benchmark energy consumption in new and existing buildings.

Residential:

- Additional appliances with minimum energy performance standards (MEPSs) and labelling programme.

OUTLINE

The Eleventh Malaysia Plan is a five-year development plan for 2016-2020. The annual budget for this plan is a mix of public-private funding

LINKS

EPU Buildings: http://www.epu.gov.my/sites/default/files/Strategy%20Paper%2017.pdf

Green buildings index: http://new.greenbuildingindex.org/

20.ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

Building Sector Energy Efficiency Project (BSEEP) supported by GEF and implemented by UNDP and Malaysia Public Works Department. The goal is to reduce the growth rate of greenhouse gas emissions in the building sector through improved energy efficiency in buildings, particularly in the commercial and government sectors. This programme ends in mid-2016.

The government has developed cooperation with non-government organisations such as the Federation of Malaysian Consumers Associations, the Water and Energy Consumer Association, the Malaysia Association of Energy Service Companies (MAESCO), the Federation of Malaysian Manufacturers (FMM), the Association of Consulting Engineers Malaysia (ACEM), and the Electrical and Electronics Association of Malaysia (TEEAM) to promote energy efficiency activities. The promotional activities are mainly in the form of campaigns, workshops, seminars, and publications of energy efficiency-related materials.

Industrial Energy Efficiency for the Malaysian Manufacturing Sector (IEEMMS), launched in April 2012, will last for five years. Implemented by the United Nations Industrial Development Organisation (UNIDO) and SME Corporation Malaysia. The project aims to improve energy efficiency in the manufacturing sector through the optimisation of energy and production systems as well as the implementation of energy management systems based on the ISO 50001 standard.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

ASEAN Plan of Action for Energy Cooperation (APAEC). The APAEC outlines strategies such as ASEAN energy standards and labelling, the promotion of ESCOs, information sharing, and capacity building to improve energy efficiency in the region.

ASEAN Energy Management Accreditation Scheme (AEMAS), an initiative under the ASEAN Energy Efficiency and Conservation Sub-Sector Network (EE&C-SSN). The main objectives of the AEMAS are to reduce energy consumption in the industrial sector, reduce emissions of greenhouse gases, and increase the professional standing of accredited energy managers; and

ASEAN Standards Harmonisation Initiative for Energy Efficiency. Establishment of the EU-ASEAN Energy Efficiency Standards and harmonisation initiative as well as for testing methods.

EGEEC, an initiative under EWG that promotes energy efficiency and best practice sharing.

LINKS

ASEAN Energy: http://www.aseanenergy.org/programme-area/eec/

APEC EGEE&C: http://www.egeec.apec.org/

21. OTHER ENERGY EFFICIENCY EFFORTS

Not applicable.

MEXICO

ENERGY EFFICIENCY GOALS

22.GOVERNMENT POLICY ON ENERGY EFFICIENCY

The Mexican government stated that energy efficiency is a key component of domestic energy policy. The government acknowledges its importance on the preservation and rational use of energetic resources, increase on global economic productivity, climate change mitigation, enhancing energy security and, ultimately, promoting sustainable development.

The overarching Energy Efficiency Law in Mexico is the Energy Transition Law (LTE, Ley de Transición Energética) which came to effect on December 2015. The LTE is part of the landmark Energy Reform approved in 2013. The Energy Reform brought major changes to most to oil and gas as well as the power industry, but it also strengthen policy towards an increase on clean energy and demand side management.

The Ministry of Energy (SENER, Secretaría de Energía) published the Transition Strategy to promote the use of Cleaner Technologies and Fuels (Estrategia de transición para promover el uso de tecnologías y combustibles más limpios) (the Transition strategy forthwith) in which it defined domestic goals for clean power generation and energy efficiency. Mexico's clean power generation goals is 25% of total generation by 2018, 35% by 2024 and 50% by 2050. Likewise, the domestic energy efficiency goal consists of an annual average reduction rate on end-use energy consumption of 1.9% between 2017 and 2030. Moreover, this reduction rate should be of at least 3.7% 2031 and 2050.

23.ENERGY EFFICIENCY STRATEGY

The Energy Transition Law (LTE) mandates the drafting of four main documents on energy policy. The first one is the Transition Strategy, which is the guiding instrument of domestic policy in the medium and long term in clean energy and energy efficiency.

The Transition Strategy was as basis for two special programmes with concrete actions and targets that became obligatory policies:

- The Special Programme for Energy Transition (PETE, Programa Especial de la Transición Energética).
- The National Programme for the Sustainable Use of Energy (PRONASE, Programa Nacional para el Aprovechamiento Sustentable de Energía).

Finally, the National Commission for the Efficient Use of Energy (Conuee, Comisión Nacional para el Uso Eficiente de la Energía) was mandated to draft the Energy Efficiency Roadmap (Hoja de Ruta en materia de Eficiencia Energética) which establishes the responsible actors, timeframes and resources to achieve its objectives.

As the guiding instrument of energy efficiency policy, the Transition Strategy has three main objectives:

- Establish energy efficiency roadmap for its implementation.
- Encourage the electricity industry's pollutant emissions reduction.

- To reduce fossil fuel dependency as the main source of energy.

The strategy has a 30-year long-term plan for the proposed scenarios to meet the clean energy and energy efficiency goals. This component contains a set of analysis and studies on technical, scientific, technological, economic, financial, fiscal, environmental and social impacts of the infrastructure for exploitation, production, transformation, transmission, distribution and end-use of energy.

The Transition Strategy also includes medium-term (15 year) targets including:

- Upgrading the electricity industry, in general, and electricity generation through clean energy in particular.
- The final energy consumption level.
- Obstacles to the development of clean energy.
- The environmental pollution caused by the electricity industry, according to the information provided by the Ministry of Environment and Natural Resources (SEMARNAT).
- Dependence on fossil energy sources for electricity generation and progress in energy efficiency.
- Technological evolution in electricity generation and cost reduction, as well as other technology elements that can add value to the electricity system.

FUNDING

The Energy Transition Law (LTE) has a chapter on the financing on energy efficiency. In it, the public funding to reach the strategy goals will come primarily from the annual Federal Government Budget in two ways:

- The Energy Transition and Sustainable Use of Energy Fund (FOTEASE),
- The annual budget of the main energy efficiency actors, namely, CONUEE and SENER.

The LTE also addresses the responsibility of the government on promoting private investments and cooperation on the energy efficiency sector. Finally, the law also stablishes a yearly assessment of the Strategy, the Energy Transition Special Programme (PETE) and the National Programme for the Sustainable Use of Energy (PRONASE); the results of these yearly assessments will have an impact on the following year's budget.

LINKS

Transition Law: http://www.diputados.gob.mx/LeyesBiblio/pdf/LTE.pdf

PRONASE: http://www.dof.gob.mx/nota_detalle.php?codigo=5469371&fecha=19/01/2017

PETE: https://www.gob.mx/cms/uploads/attachment/file/213322/PETE.pdf

Transition Strategy:

https://www.gob.mx/cms/uploads/attachment/file/182202/20161110_1300h_Estrategia_CCTE-1.pdf

24. ENERGY EFFICIENCY ACTION PLAN

The PRONASE or National Programme for the Sustainable Use of Energy is the action plan for achieving the objectives and targets for energy efficiency. SENER released the current version of PRONASE on January 2017. It establishes Mexico's six general objectives for energy efficiency, each one with concrete strategies for its achievement.

Moreover, CONUEE published Mexico's first Energy Efficiency Roadmap on March 2017. The relevance of the roadmap is that it drafts, on an unprecedented way in Mexico, a detailed plan for energy efficiency policies implementation including responsible actors, execution times and resources needed. As a result, Mexico has a current and relevant action plan and an Energy Efficiency Roadmap. The Energy Efficiency Roadmap identifies five areas of focus of action:

- Regulation and public policy.
- Institutions.
- Capabilities.
- Markets and Financing.
- Research, development and innovation.

These areas of focus are explores in four main sectors of energy efficiency: buildings, industry, transport and municipal services (city governments' services). The Energy Efficiency Roadmap establishes 66 concrete actions to achieve its objectives. CONUEE coordinates the implementation of 22 of these actions while State and local governments share an important bulk of responsibility in these policies implementation.

These sectorial actions include measures such as reinforcement on building codes, improvements on fuel quality, electric vehicle deployment, and enhance ESCO's deployment. For instance, the first (development of technical standards for EV infrastructure) has an achievement date of 2019, while the longest term one (enhancement of research, adoption and assimilation of technology in the industrial sector) is scheduled for 2050.

FUNDING

The Transition Strategy includes several funding mechanisms including research and development grants, preferential rates for investing on the productive sector, financing through development banks, and other financial institutions for infrastructure projects aimed at particular sectors. The main sources of funding for energy efficiency projects in Mexico:

- The Energy Transition and Sustainable Use of Energy Fund (FOTEASE), which provides credit guarantees and financial support for projects which meet the objectives of the Energy Transition Law. Resources managed by FOTEASE during 2015 were around 1 billion pesos.
- The Electric Energy Savings Trust Fund (FIDE), a private trust fund created by CFE that offers funding and technical assistance for energy efficiency projects.
- The Shared Risk Trust Fund (FIRCO), led by the Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA).

- The Trust Funds for Agriculture (FIRA), comprised by four public trust funds to facilitate access to credit to productive projects in rural areas.
- The National Infrastructure Fund (FONADIN), the Federal Government's fund for infrastructure development on energy, communications, transport, water, environment and tourism.
- The National Bank of Foreign Trade (BANCOMEXT).
- Nacional Financiera S.N.C. (NAFIN).
- The National Works and Public Services Bank (BANOBRAS).

LINKS

Transition Strategy: https://www.gob.mx/cms/uploads/attachment/file/182202/20161110_1300h_Estrategia_CCTE-1.pdf

FOTEASE: http://www.gob.mx/sener/articulos/el-fondo-para-la-transicion-energetica-y-el-aprovechamiento-sustentable-de-la-energia-es-un-instrumento-de-politica-publica-de-la-secretaria

FIDE: http://www.fide.org.mx/index.php?option=com_content&view=article&id=109&Itemid=181

FIRCO: http://www.firco.gob.mx/Paginas/About-Us.aspx

FIRA: https://www.fira.gob.mx/Nd/Eficiencia.jsp

FONANDIN: http://www.fonadin.gob.mx/

BANCOMEXT: http://www.bancomext.com/

NAFIN: http://www.nafin.com/portalnf/content/home/home.html

BANOBRAS: https://www.gob.mx/banobras

25.ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

The Transition Strategy establishes two main goals towards 2050, one for power generation coming from clean sources and the other for energy efficiency:

- The first goal mandates a 35% share of power generation coming from clean energies by 2024, 37.7% by 2030 and 50% by 2050. In 2015, the share was around 22%.
- The energy efficiency goal is to reduce energy consumption intensity by a 1.9% in annual average for the 2016 – 2030 period. This increases to a 3.7% annual intensity reduction for the 2031 – 2050 period.

LINKS

Energy Efficiency Action plan: http://www.gob.mx/conuee/acciones-y-programas/estrategia-de-transicion-para-promover-el-uso-de-tecnologias-y-combustibles-mas-limpios-64062

26.SECTORAL ENERGY EFFICIENCY TARGETS

Mexico does not have sector level target. However, forecasting carried out during the policymaking process generated consumption curves for the three key sectors (buildings, transport, and industry) that will serve as signposts for progress. The assessed potential reductions are 41% for the industry sector, 50% for transport, and 35% for buildings compared to a business-as-usual approach. In total, SENER's forecast includes a potential reduction of 42% between both scenarios by 2050.

LINKS

Transition Strategy: http://www.gob.mx/conuee/acciones-y-programas/estrategia-de-transicion-para-promover-el-uso-de-tecnologias-y-combustibles-mas-limpios-64062

27. LEAD ENERGY EFFICIENCY INSTITUTIONS

The National Commission for the Efficient Use of Energy (CONUEE or Comisión Nacional para el Uso Eficiente de la Energía) is the lead federal agency for energy efficiency policy in Mexico.

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

CONUEE (before 2008, known as the National Commission for Energy Saving (CONAE)) is Mexico's federal agency in charge of executing the energy efficiency policies and programmes. CONUEE is a decentralised agency within the Ministry of Energy (SENER), with administrative and operative autonomy.

CONUEE's main responsibilities are the following:

- Promote energy efficiency in Mexico and propose domestic energy efficiency goals.
- Develop the energy efficiency strategy and the National Programme for the Sustainable Use of Energy (PRONASE).
- Develop mandatory energy efficiency standards (NOMs).
- Promote research and development on energy efficiency.
- Provide technical support to the federal, state and local governments.
- Disseminate information and data on energy efficiency with the public, private and social sectors.
- Promote the implementation of Energy Management Systems among large energy users (UPAC).
- Identify international best practices on energy efficiency.
- Implement the activities established in PRONASE.
- Promote the creation and strengthening of capacities of public and private institutions, local, state and regional governments to support energy efficiency in municipal services and small and medium enterprises.

STAFF AND BUDGET

CONUEE has 145 employees. According to its last annual report, CONUEE has an annual budget of 110 million pesos.

BUDGET USE

CONUEE spends around two thirds of its budget on staff wages, one third in 'general services' and around 1% of the total budget in materials.

LINKS

CONUEE: http://www.gob.mx/conuee

28.OTHER ENERGY EFFICIENCY AGENCIES

Ministry of Energy (SENER)

SENER is responsible for conducting the energy policy and guaranteeing the competitive, sufficient, high quality, economically accessible and environmentally sustainable supply of energy that required for domestic development. This includes the design and assessment of energy efficiency policies and programmes.

Energy Regulatory Commission (CRE)

The CRE is the energy sector's main regulatory institution. It is a coordinated regulatory body that directs the interests of users and regulated subjects to the development of a competitive and sustainable energy market. The CRE regulates the activities of the energy industry that are within its competence, in order to generate certainty that encourages productive investment, fosters healthy competition, provides adequate coverage and reliability, quality and safety in the supply, delivering services at competitive prices, for the benefit of society.

Electric Energy Savings Trust Fund (FIDE)

It is a private, non-profit trust, constituted at the initiative of CFE, in support of the Electric Energy Savings Programme. It is an organisation that contributes to energy security, mitigation of environmental impact and social equity; provides financing, certification and technical assistance; promotes and develops integral programmes and projects of saving, conservation and efficient use of energy, distributed generation, cogeneration and use of renewable sources for the energy transition. In addition, it develops applied research and technological innovation, and disseminates the culture of saving and the efficient use of energy.

National Institute of Electricity and Clean Energy (INEEL)

The INEEL used to be the Institute of Electricity Research (IIE) but in December 2015 it was assigned new tasks and responsibilities as well as a new name (due to the Energy Transition Law) transforming it into the National Institute of Electricity and Clean Energy (INEEL). It is a decentralised public body of SENER, with legal personality, property and autonomy of management.

National Energy Control Centre (CENACE)

CENACE is the electricity grid Independent System Operator; it performs its functions under the principles of efficiency, transparency and objectivity. CENACE is a decentralised public body whose objectives are to exercise

the operational control of the electrical system, the operation of the Wholesale Electricity Market, and to guarantee impartiality in access to the transmission network and to the distribution networks.

Federal Electricity Commission (CFE)

It is the state-owned electric utility, defined by the 2013 reform as a State Productive Company, which objectives are to provide the public electric energy service with criteria of sufficiency, competitiveness and sustainability to generate, transmit, distribute, and commercialise electric energy; and contribute through this to the transition to a low-carbon energy matrix.

Ministry of the Environment and Natural Resources (SEMARNAT)

SEMARNAT is responsible for designing and implementing, within its competence, the promotion and regulatory instruments to prevent, control and remediate pollution from the generation and transmission of electrical energy, including greenhouse gases and compounds. SEMARNAT is also responsible of the elaboration of Mexican Official Standards (NOMs) that establish limits of progressive emissions according to the type of technology of electricity generation, considering best practices. SEMARNAT is also responsible for determining negative externalities originated by the fossil energies.

Ministry of Economy (SE)

The Ministry of Economy offers direct support to small and medium-sized enterprises using existing mechanisms; prepares a study to determine the needs and potential of the electric power industry in clean energy; and promotes investment in technological development and innovation in clean energy.

In coordination with SENER, the Ministry of Economy is responsible for designing and implementing a roadmap to promote the development of clean energy value chains, under conditions of economic sustainability and in accordance with the approved budgetary conditions.

LINKS

SENER: https://www.gob.mx/sener

CRE: http://www.gob.mx/cre

FIDE: http://www.fide.org.mx/

INEEL: https://www.ineel.mx/inicio.html

CENACE: https://www.gob.mx/cenace

CFE: http://www.cfe.gob.mx/paginas/Home.aspx

SEMARNAT: http://www.gob.mx/semarnat

SE: http://www.gob.mx/se/

29.ENERGY EFFICIENCY INFORMATION DISSEMINATION

CONUEE hosts and maintains a series of internet portals, produces publications and radio campaigns aimed at the public to raise awareness and provide information on energy efficiency. In 2015, these included:

- Nine promotional video-clips with different energy efficiency topics such as water heating, street lighting, solar thermal heating, and clean public transport. This video-clip campaign was published on Twitter and Mexico City subway's screens.
- Five radio spots with more than 8,000 reproductions in 59 radio stations across the economy.
- Three ads in five economy-wide circulation magazines.
- Recurrent posts in its social networks sites such as Twitter and YouTube.
- Additionally activities of awareness and information dissemination are carried out per sectoral programme: Federal Public Administration, States and municipalities, Energy Companies, Large Energy Consumers, Small and Medium Companies, Residential sector, as shown in the Annual Work Plan 2016 (PAT).

LINKS

CONUEE: http://www.gob.mx/conuee/archivo/videox?idiom=en

CONUEE's Youtube channel: https://www.youtube.com/user/CanalConuee

CONUEE's Twitter wall: https://twitter.com/conuee_mx?lang=es

CONUEE's Annual work plan: https://www.gob.mx/cms/uploads/attachment/file/61078/PAT_2016_FINAL.pdf

30.ENERGY EFFICIENCY AWARENESS RAISING

Aside from the mentioned programme from CONUEE, FIDE implements Educational Programme for Electrical Energy Saving and Rational Use (EDUCAREE, Educación para el Ahorro y Uso Racional de la Energía Eléctrica) now in its 18th year. The EDUCAREE programme includes courses, workshops, conferences and exhibitions presented generally in schools and museums. In 2016, almost 500,000 people attended at EDUCAREE activities in more than 1500 different schools. Besides that, EDUCAREE gave lectures to more than 200,000 employees from government institutions and private companies. EDUCAREE has free didactic material available online in its webpage

LINKS

FIDE: http://www.fide.org.mx/index.php?option=com_content&view=article&id=103&Itemid=191

31.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

The National Institute of Electricity and Clean Energy (INEEL) offers five types of education and capacity-building opportunities on energy efficiency:

- Technical certifications on photovoltaic systems installation or electricity technician expert.
- Short courses on different energy topics, including energy efficiency.

- Tailor-made training courses that can include energy efficiency and clean energy topics.
- A 2-years full-time Master's degree programme on Energy Sciences
- A PhD programme on energy in partnership with other universities in Mexico.

The institute also, provides technical and scientific support to agencies, organisations, PEMEX, CFE and the private sector. The INEEL also patents and licenses technology developments and the results of research.

CONUEE has a graduate diploma called "Sustainable Energy Use in Municipalities" https://www.gob.mx/conuee/articulos/diplomado-aprovechamiento-sustentable-de-la-energia-en-municipios

FIDE also offers certification degrees on professional competencies mainly related to photovoltaic systems installations. Finally, CONUEE offers workshops and conferences on energy efficiency topics to government institutions and companies.

LINKS

INEEL Postgrad studies: https://www2.ineel.mx/posgrado/index.html

FIDE training: http://fide.org.mx/index.php?option=com_content&view=article&id=618&Itemid=242

CONUEE Capacity building: http://www.gob.mx/conuee/acciones-y-programas/capacitacion-apf-2016

32. PRIVATELY OPERATED TRAINING

Some universities, technological institutes, and research centres offer more than a 100 different programmes in Mexico related to energy efficiency. These courses rank from online courses of foreign universities to full-time undergraduate and masters programmes specialising in renewable energies and/or energy efficiency.

LINKS

Examples of universities and institutes offering energy management studies:

http://www.itesm.mx/wps/wcm/connect/itesm/tecnologico+de+monterrey/maestrias+y+doctorados/escuelas/escuela+de+ingenieria+y+ciencias/maestria+en+ciencias+con+especialidad+en+ingenieria+energetica/monterrey+mie

https://www.educaedu.com.mx/energias-renovables-eficiencia-energetica

http://www.ulsa-noroeste.edu.mx/licenciatura_ingenieria_energias_renovables

http://www.itsmotul.edu.mx/index.php/carreras/ingenieria-en-energias-renovables

http://www.proyectotierra.com.mx/cursos-presenciales.html

https://www.uacm.edu.mx/programaenergia

http://www.unade.mx/maestria-en-eficiencia-energetica-y-energias-renovables/

https://www.gob.mx/imjuve/articulos/conviertete-en-experto-universitario-en-energias-renovables-y-eficiencia-energetica?idiom=es

http://www.une.edu.mx/index.php/oferta-educativa/ed/meree

http://www.uao.edu.co/ingenieria/especializacion-en-eficiencia-energetica

33. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

SENER has a joint trust fund for Research on Energy Sustainability in partnership with the National Council of Science and Technology (CONACYT). This trust fund is directed to research centres and universities that have research programmes focusing on renewable energy and energy efficiency. This trust-funds also provides scholarships for graduate programmes in Mexico or overseas on professional specialising in the energy sector

LINKS

CONACYT Funds for sustainable energy:

https://conacyt.gob.mx/index.php/fondos-sectoriales-constituidos2/item/conacyt-sener-sustentabilidad-energetica

Government Energy Scholarships:

http://www.gob.mx/sener/articulos/becas-de-posgrado-en-materia-energetica-7904

ENERGY EFFICIENCY MEASURES

34. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

CONUEE has the responsibility of data collection on energy efficiency. CONUEE has developed some energy indicators to follow-up the progress on the targets stablished in the PRONASE. These indicators and others, related to energy savings can be found in the Report: "National Programme for the Sustainable Use of Energy: achievements 2016".

LEGAL POWER

The Energy Transition Law (LTE) stablishes in its article 18 CONUEE's responsibilities and duties including data collection for energy efficiency measures and related savings. Energy data collection not related to energy efficiency is responsibility of SENER.

LINKS

CONUEE Annual Report: http://www.gob.mx/CONUEE/documentos/informes-CONUEE?idiom=es

PRONASE Report:

http://transparencia.energia.gob.mx/rendicion_cuentas/archivos/Logros%202016PRONASE.pdf

35. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

CONUEE has the mandate to draft an Annual Activities Report in which progress and achievements of CONUEE's energy efficiency programmes are included. CONUEE's 2015 Activities Report is the latest available to the public in its official webpage. Likewise, energy efficiency achievements and progress carried out in Mexico are required every year by the President's Office to be analysed and, eventually, included in the Annual President's Report.

The Energy Transition Law (LTE) stablishes in its article 18 CONUEE's responsibilities and duties including data collection for energy efficiency measures and related savings. Energy data collection not related to energy efficiency is responsibility of SENER. Any revision or modification to the strategy will have to be approved by the President of the Republic and publish in the Mexico's Official Gazette.

LINKS

Not applicable.

36. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

Energy efficiency programmes are not required to carry other evaluation or report, aside from the above mentioned CONUEE's annual report and the report named "National Programme for the Sustainable Use of Energy: Achievements 2016".

37. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

Mexico Municipality Energy Efficiency and Sustainability Project (PRESEM)

OBJECTIVE

The PRESEM is a joint pilot project between SENER and the World Bank started in 2014. The project objective is to reduce energy consumption in municipalities (local governments) by enhancing planning, financing and implementation capabilities for carrying out energy efficiency projects. The project focuses on three municipal seceded services: street lighting, water supply and wastewater treatment and municipal buildings.

The PRESEM will last five years and the estimated energy savings are of around 1,775 GWh of electricity and emissions reductions of 463,405 tons of CO_2. Additionally, estimated investments on energy efficiency projects in municipalities will affect directly and indirectly 20 million people. This could trigger economic benefits of more than USD $490 million over the 5 years of PRESEM's operation. Finally, PRESEM is expected to enhance the public's energy efficiency knowledge and change energy use patterns.

OUTLINE

The World Bank provided a USD 100 million fund for policy development, institutional strengthening, and municipal energy efficiency investments that SENER will implement over five years. The first component includes capacity building on municipal or local government's energy efficiency, sector-wide policy support and project monitoring and management activities. SENER and CONUEE are the responsible parties on leading these activities with local governments.

The second component is the actual investment on cost-effective project in street lighting, water supply and wastewater treatment and municipal buildings in 32 municipalities, each one located in a different state. The

Electric Energy Savings Trust Fund (FIDE) is responsible for the implementation and administration of the funds for each of the municipalities' projects with the cooperation of SENER and the state-owned power utility CFE

LINKS

Municipal energy efficiency: http://www.gob.mx/sener/prensa/mexico-invertira-aproximadamente-3-mmdp-para-la-eficiencia-energetica-en-municipios-59752

World Bank Paper: http://documentos.bancomundial.org/curated/es/222971467992503902/pdf/PAD1193-PAD-P149872-R2016-0023-1-OUO-9.pdf

Municipal energy efficiency: http://www.gob.mx/sener/documentos/marco-de-gestion-ambiental-y-social-mgas-del-proyecto-eficiencia-y-sustentabilidad-energetica-en-municipios?idiom=es

Energy Efficiency in Street Lighting Project

OBJECTIVE

The project aims to boost energy efficiency through the replacement of inefficient street lighting systems with newer technology, reducing electricity consumption. This project is implemented by CONUEE, the state-owned public utility CFE and the National Works and Public Services Bank (BANOBRAS). The Energy Efficiency in Street Lighting Project seeks to diminish street lighting costs by an average of 35%, improve street lighting quality and reduce emissions by consuming less electricity.

OUTLINE

The Energy Efficiency in Street Lighting Project has provided technical assistance to more than 700 municipalities in the 32 states, from which 24 municipal projects have been completed. To date, this has allowed the installation of 173,489 public lighting systems with efficient technologies, which amount to an investment of $ 741 million pesos, directly benefiting 4.56 million inhabitants.

LINKS

Municipal street lighting:

https://www.gob.mx/conuee/acciones-y-programas/estados-y-municipios-proyecto-nacional-de-eficiencia-energetica-en-alumbrado-publico-municipal

38. INDUSTRY ENERGY EFFICIENCY INITIATIVES

National Programme for Energy Management Systems (PRONASGEn, Programa Nacional para Sistemas de Gestión de la Energía)

OBJECTIVE

On 2015, CONUEE launched this Programme to overcome and minimise the main barriers and poor practices that prevent energy users from the systematic adoption of energy efficiency measures. The programme also encourages the adoption of energy management systems (EMS).

PRONASGEn's main objective is to promote the improvement of energy performance among energy users, through the implementation of an energy management system, establishing technical and managerial measures to raise competitiveness.

PRONASGEn is expected to have a significant impact on the energy consumption of the participants. The programme plan is that participants achieve savings of 25% on electricity and 37% on natural gas consumption and a commensurate reduction of carbon emissions.

OUTLINE

PRONASGEn's activities focus on the most energy intensive industrial sectors, but it also includes small and medium-sized enterprises, refineries and public buildings. PRONASGEn is part of the ISO 50001 Global Impacts Research Network, where the IET 50001 software is key to calculate the uptake and impacts of all this activities.

PRONSAGEn promotes the establishment of "learning networks" composed of consulting firms, education and research institutions, and the programme's participants. The goal is to promote training and implementation of energy management system (EMS) by using these "learning networks" where participants are able to support each other through sharing experiences. Currently, there are 50 companies implementing EMS through five learning networks in Mexico.

Finally, as a positive externality of PRONASGEn, Mexico has exchanged the programme experiences and learning with Central American economies like El Salvador, Nicaragua and Costa Rica. The project has already included 30 companies from these economies.

LINKS

Learning networks: https://www.gob.mx/conuee/articulos/redes-de-aprendizaje-sobre-sistemas-de-gestion-de-la-energia

PRONAGSEn on Twitter: https://twitter.com/pronasgen?lang=es

Business Eco-Credit Programme

OBJECTIVE

The programme's objective is to increase the competitiveness of micro, small and medium enterprises by reducing their operating costs through the replacement of obsolete equipment by those of high efficiency approved by the Electric Energy Savings Trust Fund (FIDE).

OUTLINE

The programme works by granting financing to "commercial" electricity rate clients for the replacement or acquisition of inefficient electrical equipment such as commercial refrigeration, electric motors, air conditioning, efficient lighting and electrical substations.

LINKS

Micro, Small, and Medium Enterprise support programme:

https://www.inadem.gob.mx/wp-content/uploads/2016/09/wwcd7nf127624l33784u4ehnv177x1q06iwkhv33.pdf

PRONASE: http://transparencia.energia.gob.mx/rendicion_cuentas/archivos/Logros%202016PRONASE.pdf

FIDE: www.fide.org.mx/index.php?option=com_content&view=article&id=645&Itemid=224

39. TRANSPORT ENERGY EFFICIENCY INITIATIVES

No current programmes.

40. BUILDING ENERGY EFFICIENCY INITIATIVES

Energy Efficiency Standards Programme

OBJECTIVE

The Energy Efficiency Standards Programme key objective is the issuance of mandatory technical specifications (NOM) or standards to limit the consumption of energy in equipment, appliances and systems.

OUTLINE

CONUEE is responsible for issuing the mandatory technical specifications in a long process that involves testing laboratories, certification and verification bodies. Energy efficiency standards issued by CONUEE integrate innovative technology to ensure a more efficient energy use and are the result of joint work and consensus of manufacturers, research institutes, professional associations, industrial and commercial chambers and the Federal Government.

The Mexican Official Standards for Energy Efficiency (NOMENER) formulation is based on the Federal Law on Metrology and Standardization, which came into force in 1993 with the first standards issued in 1995. As of 2017, CONUEE has 30 energy efficiency NOM in place; of which 24 NOM regulate energy consumption in appliances and equipment, and six NOM for systems.

This programme has been the most successful energy efficiency public policy in Mexico in cost-benefit terms. Studies carried out by CONUEE have identified the Energy Efficiency Standards Programme as the main factor of decoupling rising electric energy consumption in the residential sector with electricity consumers' growth rate as well as the reduction of LPG and natural.

LINKS

Standards and labelling scheme:

http://www.gob.mx/conuee/acciones-y-programas/normas-oficiales-mexicanas-en-eficiencia-energetica-vigentes

Ahórrate una luz (Save a light) Programme

OBJECTIVE

SENER launched the Ahórrate una luz programme which consists on exchanging incandescent lamps with 40 million compact fluorescent lamps (CFLs) in communities of less than 100 thousand inhabitants. The programme main goals are to decrease energy consumption, lower the beneficiaries' electricity bills and, ultimately, emitting less pollutants from power generation plants.

OUTLINE

The Ahórrate una luz programme is operated by FIDE in collaboration with DICONSA, an agency of the Ministry of Social Development with a network of 27 thousand stores located in rural communities across Mexico. Qualified beneficiaries must be residents of communities of less than 100 thousand people and pay the "household low-consumption" rate in their electricity bills. Beneficiaries have to go to a DICONSA rural store with an electricity bill and incandescent lamps. In exchange, they will receive 5 compact fluorescent lamps with no extra charge. Beneficiaries of the programme will be reflected the impact of energy savings in their next electricity bill.

LINKS

Ahorrate una luz: http://www.ahorrateunaluz.org.mx/MicroSitio/Default.aspx

Hipoteca Verde Programme

OBJECTIVE

The Hipoteca Verde programme is a housing finance scheme developed by the National Workers' Housing Fund Institute (INFONAVIT) for promoting the use of energy efficient systems and technologies in low-income households. The programme's goals are to encourage the inclusion of green and efficient technologies in new buildings, which in turn would decrease energy consumption and household expenses on bills.

OUTLINE

Hipoteca Verde translates as 'green mortgage', the programme is targeted to INFONAVIT's recipient families and provides an additional mortgage credit of up to US $ 1,250 to cover the cost of installing energy efficient technologies in their houses such as solar water heaters and lightbulbs.

LINKS

Hipoteca Verde:
http://portal.infonavit.org.mx/wps/wcm/connect/infonavit/trabajadores/cuido_mi_casa/hipoteca+verde

Federal Public Administration Energy Saving Programme

OBJECTIVE

The programme's objective is to establish a continuous improvement process to increase energy efficiency in buildings, vehicle fleets and industrial facilities of the Federal Government's Ministries and Agencies. These savings will decrease administrative costs, which in turn will result in a better allocation of taxpayer's resources and reduced carbon emissions.

OUTLINE

This programme stablishes administrative guidelines for all Ministries and Federal Agencies to adopt energy efficiency best practices. The programme consists of 2,000 public servants grouped in 240 committees in charge of overseeing and monitoring 2,430 buildings, 1,952 transport fleets and 11 industrial facilities.

Since 2012, the Federal Public Administration Energy Saving Programme has resulted on energy savings of around 9,550 GWh, and a 2.4 million tons reduction of carbon emissions.

LINKS

Energy Efficiency in Government: http://www.gob.mx/conuee/acciones-y-programas/programa-de-eficiencia-energetica-en-la-administracion-publica-federal-2016

Sustainable Improvement in Existing Housing Programme

OBJECTIVE

This pilot programme is managed by the Electric Energy Savings Trust Fund (FIDE) and aims to support the residential sector in the acquisition of sustainable and efficient technology in order to reduce family spending by electricity consumption.

OUTLINE

The programme gives access to credits of up to 50,000 pesos for families with incomes of less than five times the minimum wage (around 80 pesos per day) to purchase solar or gas-fired heaters, air conditioners, efficient lighting equipment, thermal windows, thermal envelopes, solar control films and the installation of photovoltaic panels. Payment can be made through power utility bills.

LINKS

Sustainable Improvements Programme: http://www.gob.mx/sedatu/articulos/el-programa-de-mejoramiento-integral-sustentable-en-vivienda-permitira-ahorros-hasta-por-5-mil-pesos-anuales-en-consumo-de-energia

41.ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

Mexico coordinates an agenda of international cooperation in energy matters whose main objectives are:

- Strengthen the consolidation of the energy sector and Mexico's position in the international energy community.
- Use the exchange of experiences and knowledge to be made of the best practices at international level.

Currently, Mexico has signed 70 international energy cooperation agreements with 23 economies, 3 energy agencies / organisations, the International Energy Agency, 3 international initiatives, and 3 energy institutes, among others. Energy cooperation issues include:

- Renewable energy and other clean technologies.

- Nuclear energy.
- Rational and efficient use of energy.
- Carbon capture and storage.
- Oil and natural gas.
- Reform and transformation of the electricity sector.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

As described above.

42.OTHER ENERGY EFFICIENCY EFFORTS

Not applicable.

NEW ZEALAND

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

New Zealand has a long history of supporting energy efficiency and in 2000 parliament passed the Energy Efficiency and Conservation Act to promote energy efficiency, energy conservation, and renewable energy in New Zealand. The act can be found at:

www.legislation.govt.nz/act/public/2000/0014/latest/whole.html#dlm54948

This act established the Energy Efficiency and Conservation Authority (EECA) as a government entity with the responsibility of promoting energy efficiency, energy conservation, and renewable energy across all sectors of the economy. The act gives the EECA powers to promote energy efficiency standards and labelling for appliances as well as the disclosure of information to compile statistics on energy efficiency, energy conservation, and renewable energy.

2. ENERGY EFFICIENCY STRATEGY

The New Zealand Energy Strategy 2011 – 2021, published in 2011, is the most comprehensive strategy about energy policies, including energy efficiency promotion. The New Zealand Energy Efficiency and Conservation Strategy (NZEECS) 2017–2022, announced in 2017 replaces the previous strategy that covered the 2011-2016 period.

The NZEECS are developed as a requirement of the Energy Efficiency and Conservation Act 2000 and is companion document to the New Zealand Energy Strategy (NZES). In it, the government outlines its policies and actions on energy efficiency, energy conservation, and renewable energy. It also gives effect to the energy efficiency, energy conservation, and renewable energy objectives set out in the NZES.

FUNDING

A wide range of sources provides funds for energy efficiency actions in New Zealand. This includes the government appropriation, a levy on electricity, and in special cases, charities and NGOs for specific programmes provides the funds for energy efficiency.

In the fiscal year 2013/14, NZD $89 million were allocated for the Energy Efficiency and Conservation Authority (EECA) in order to promote energy efficiency. This figure is revised on an annual basis.

LINKS

NZ Energy Strategy: https://www.mbie.govt.nz/info-services/sectors-industries/energy/documents-image-library/nz-energy-strategy-lr.pdf

Energy Efficiency Strategy: http://www.mbie.govt.nz/info-services/sectors-industries/energy/documents-image-library/NZEECS-2017-2022.pdf

3. ENERGY EFFICIENCY ACTION PLAN

New Zealand does not have an overarching Energy Efficiency Action Plan, but the NZEECS 2011 details objectives in different sectors, and the Energy Efficiency and Conservation Authority (EECA), in partnership with other government entities and the private sector, will develop programmes to address these objectives. EECA's work plan is the ongoing action plan.

FUNDING

As covered in section 2.

LINKS

Energy Efficiency Strategy: http://www.mbie.govt.nz/info-services/sectors-industries/energy/documents-image-library/NZEECS-2017-2022.pdf

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

The New Zealand Government's economy-wide energy efficiency target is for New Zealand to continue to achieve a rate of energy intensity improvement of 1.3% per annum.

LINKS

Energy Efficiency Strategy: http://www.mbie.govt.nz/info-services/sectors-industries/energy/documents-image-library/NZEECS-2017-2022.pdf

5. SECTORAL ENERGY EFFICIENCY TARGETS

The latest NZEECS has three specific targets:

- Industry - Decrease in industrial emissions intensity of at least one per cent per annum on average between 2017 and 2022.
- Electric vehicles to make 2% of the vehicle fleet by the end of 2021.
- 90% of electricity will be generated from renewable sources by 2025.

These targets are embedded within a series of broader energy objectives in the economy:

- Businesses make energy efficient and renewable energy investments and adopt best practice energy management.
- Individuals, households and community institutions choose energy efficient technologies, adopt energy efficient behaviours and make greater use of renewable energy.
- The public sector demonstrates leadership by adopting greater energy efficiency and renewable energy.

The NZEECs also highlight shared responsibilities with partner agencies for the delivery on objectives. For example, energy efficiency in the transport sector will require the integral participation of the Ministry of Transport.

LINKS

Energy Efficiency Strategy: http://www.mbie.govt.nz/info-services/sectors-industries/energy/documents-image-library/NZEECS-2017-2022.pdf

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

The Energy Efficiency and Conservation Authority (EECA), which was established in 2000, is the principal energy efficiency programme delivery agency.

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

EECA is a Crown entity, established under the Energy Efficiency and Conservation Act 2000 and subject to the Crown Entities Act 2004. EECA is governed by a chair and board members (up to a maximum of eight) who report to the Minister of Energy and Resources. The EECA acts as a policy maker, regulator, programme funder, and implementer.

EECA's function is to encourage, promote, and support energy efficiency, energy conservation, and the use of renewable energy sources in New Zealand. The EECA works closely with government operational and policy agencies in order to help them design, implement, and monitor policies related to energy efficiency.

STAFF AND BUDGET

In 2015-16, EECA had between 80 and 90 full time employees, and an estimated budget of NZD 54 mill.

BUDGET USE

The budget supports spending on employees, premises, and programme support.

LINKS

EECA: www.eeca.govt.nz

7. OTHER ENERGY EFFICIENCY AGENCIES

MBIE has the responsibility of providing high-level energy efficiency policy advice to the Minister of Energy and Resources and monitoring progress towards the NZEECS objectives.

The Ministry of Transport and the New Zealand Transport Agency are responsible for most of the transport-related energy efficiency initiatives with the exception of vehicle fuel-consumption labels (see Section 2.2.3 below). The EECA has a Memorandum of Understanding with the New Zealand Transport Agency regarding the management of fuel-consumption information.

Other agencies that share responsibility for energy efficiency include: the Ministry of Agriculture and Forestry (renewable fuels, industry), the Housing New Zealand Corporation (state housing improvement programmes), Standards New Zealand (for energy efficiency in products/equipment), and the Ministry of Foreign Affairs and

Trade (WTO, mutual recognition arrangements, APEC forums, etc.). The New Zealand government also works closely with the Australian Government on product and appliance standards and labelling.

There are 17 regional government authorities (11 regional councils and six unitary councils) in New Zealand. Each regional council is required to produce a "regional policy statement" that covers all natural resources, including energy. The NZEECS must be taken into consideration in the preparation of regional policy statements. Land transport strategies must also be consistent with the NZEECS.

LINKS

Ministry of Transport: http://www.transport.govt.nz/

New Zealand Transport Agency: http://www.nzta.govt.nz/

Ministry of Business, Innovation and Employment: http://www.mbie.govt.nz/

Ministry of Foreign Affairs and Trade: https://www.mfat.govt.nz/

Standards New Zealand: https://www.standards.govt.nz/

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

The EECA has a number of websites that host a several energy efficiency related portals, and links to other useful energy efficiency. EECA also sponsors a series of television commercials with basic energy efficiency information for a variety of stakeholders.

There are other portals hosted by other agencies, but these may change with time.

The New Zealand Government conducts quarterly surveys to monitor the public's awareness, willingness, and commitment to energy efficiency. Brand association and energy use behaviour change are also monitored. Survey results are published on a monthly and quarterly basis. The business sector also publishes case studies to promote energy technologies and behavioural changes in the industry.

LINKS

EECA Information websites:

www.eeca.govt.nz

www.energywise.govt.nz

www.eecabusiness.govt.nz

http://www.energywise.govt.nz/resource-centre/videos/

9. ENERGY EFFICIENCY AWARENESS RAISING

Information about energy efficiency is provided to New Zealanders through a number of channels, the main mechanisms of which include the following websites that focus on EECA's three distinct audiences (i.e., people at home, businesses, and our corporate stakeholders):

- EECA (corporate website): www.eeca.govt.nz
- ENERGYWISE (consumer-focused website): www.energywise.govt.nz
- EECA Business (all businesses): www.eecabusiness.govt.nz

Another avenue for the provision of information is a number of television commercial spots called the Energy Spot cover topics such as hot water wastage, energy-efficient renovation, saving fuel in business, and choosing efficient lighting. There are currently more than 30 episodes available for viewing at: http://www.energywise.govt.nz/resource-centre/videos/

Mandatory labelling of appliances and vehicles (including second-hand vehicles) plus voluntary labelling, i.e., Energy Star.

Finally, the EECA Awards (held every two years) celebrate and promote energy efficiency practices in communities, businesses, and industries. This programme provides an award in a number of categories that enable companies can then capitalise on by using the award in their branding. This includes a wide range of marketing and advertising campaigns for print, radio, and TV.

LINKS

EECA: www.eeca.govt.nz

Energy Efficiency information: www.energywise.govt.nz

Energy efficiency information for business: www.eecabusiness.govt.nz

Energy spot: http://www.energywise.govt.nz/resource-centre/videos/

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

Under the "Warm Up New Zealand: Heat Smart" and "Warm Up New Zealand: Healthy Homes" programmes, service providers have been required by the EECA to provide proof that they have the internal capacity and capability to deliver the programmes and meet the required standards. Applicants are assessed on these criteria by an independent evaluation panel that makes annual reviews to ensure that they have the ongoing capacity to deliver the programme while meeting the standards.

The EECA financially supports the Insulation Association of New Zealand (IAONZ), which has developed a four-stage training module for insulation installers.

LINKS

EEVA Training: https://www.energywise.govt.nz/funding-and-support/free-insulation-and-installation-support

11. PRIVATELY OPERATED TRAINING

Universities and technical institutes, mostly as part of wider engineering courses, have traditionally delivered capacity-building interventions in the business sector. More recently, the focus has intensified on developing specific energy management training in the following areas of high-economic potential:

- Commercial buildings: Courses are in place to improve electricity management and efficiency in the commercial building services industry (targeting energy specialists, facilities managers, and commercial property values). Courses are delivered by the Energy Management Association New Zealand (EMANZ), which is an industry association of energy management experts, including energy auditors, energy managers, and suppliers of energy-efficient products and services.
- Industrial sector: The University of Waikato provides training and accreditation programmes in energy efficiency for pumps, fans, and compressed-air systems.
- Transport: The EECA's Heavy Vehicle Fuel Efficiency Programme is designed (among other things) to improve the fuel efficiency of heavy-vehicle fleets through expert advice and driver training. The EECA trains independent and in-company fuel advisors and trainers.

LINKS

Energy Management Association of New Zealand: http://www.emanz.org.nz/

12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

The lead agency for the government's policy on research and development is the Science, Skills, and Innovation Division of the Ministry of Business, Innovation and Employment (MBIE). It includes the mandate to transform New Zealand by driving science and innovation to improve the economic, environmental, and innovation sectors.

The EECA Business Programme is designed to overcome market barriers across the three groups related to the scale of energy use, and to that end, it includes the following capability initiatives: training and accreditation programmes for service providers and training programmes for end-users and key influencers.

EECA also administers an internal research programme that focuses on the following areas:

- Better information – energy-efficient technology research.
- Research energy end-use in industrial, commercial, and residential buildings.
- Primary production and manufacturing sector energy end-use research.
- Macro-economic modelling of energy efficiency potentials.
- Behaviour change research and understanding end-user service needs.

LINKS

EECA Business: www.eecabusiness.govt.nz

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

Energy efficiency in New Zealand is not systematically monitored, but the Energy Efficiency Conservation Authority (EECA) carries out periodic sectoral analysis to understand the cost-benefit of efficiency opportunities. EECA also carries out quarterly market research on the awareness of energy efficiency and the awareness of the EECA brand and its different initiatives.

Similarly, EECA monitors the results of its Standards and Labelling programme through the collection of sales data from major retailers and manufacturers.

LEGAL POWER

The Standards and labelling law that is part of the EECA law enables the authority to compel retailers and manufacturers to provide sales and product detail data. This is part of the Monitoring, Verification, and Enforcement (MVE) of the programme.

Statistics New Zealand has the power to collect any information through official collections, although no energy efficiency analysis is undertaken through this process.

The Ministry of Business, Innovation, and Employment can compel data from major energy suppliers, but this is mostly used for supply side statistics rather than efficiency.

LINKS

Not applicable.

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

No regular comprehensive evaluation of potential is carried out.

15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

EECA reports on the progress of its projects to the Minister of Energy and Resources. However, there are no comprehensive evaluations carried out.

16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

Energy Efficiency (Energy Using Products) Regulations 2002

OBJECTIVE

To reduce energy demand, enhance economic growth through improved productivity, provide savings to end-users by improving the energy efficiency of a product class. This will be achieved through setting MEPS that result in improvements to the most energy-intensive models for sale in a product class and category, and requirements to display energy performance labels. The programme stimulates the production and purchase of more energy-efficient products, while ensuring that a wide range of products are available to meet consumers'

needs. It is a joint Australia-New Zealand programme that offers industries in both economies improved economies of scale and reduced business-compliance costs.

OUTLINE

Energy Efficiency (Energy Using Products) Regulations were first published in 2002. The New Zealand Government entered into the Equipment Energy Efficiency Programme (E3) with Australia in 2004-05. MEPS and labelling are the main mechanisms that the E3 uses to improve product efficiency in which requirements are set out in energy performance standards. The standards set out the testing method to establish a product's energy performance and consumption. All covered products must meet or exceed this standard before they can be sold to consumers. The E3 jointly funds the following:

- The profiling of products and technologies on the market, and assessments of their energy efficiency potential.
- Cost-benefit analysis of options for intervention.
- Consultation documents and regulatory impact statements.
- Development and publication of joint Australia/New Zealand standards.
- Compliance testing of products.
- Marketing and communications.

Labelling is mandatory for the following electrical products for sale in New Zealand:

- Refrigerators and freezers.
- Clothes washers.
- Clothes dryers.
- Dishwashers.
- Air conditioners.
- TVs.
- Monitors.

The plan also identifies other products for investigation or review, including electric and heat pump water heaters; solar water heaters; residential, commercial, and LED lighting; commercial air conditioners; commercial and household refrigeration; and three-phase motors.

LINKS

MEPS Legislation: http://www.legislation.govt.nz/regulation/public/2002/0009/latest/DLM108730.html

Crown Energy Efficiency Loan Scheme

OBJECTIVE

The EECA-administered Crown loans scheme supports capital investment for public sector agencies.

OUTLINE

The scheme, introduced in 1989, provides funds to government agencies in order to encourage investment in energy efficiency measures in their building, facilities, and vehicle fleets. The loans are repaid by the recipient department/agency over a calculated period. The enduring energy savings accrue to the recipient for the remaining life of the project or measure.

LINKS

Crown Loans: https://www.gets.govt.nz/EECA/ExternalTenderDetails.htm?id=4167882

Emissions Trading Scheme

OBJECTIVE

To provide and economic incentive to choose lower carbon energy options. This regularly translates into higher carbon options being more expensive than low carbon.

OUTLINE

The programme requires suppliers of energy to surrender carbon credits for each tonne of carbon in the energy they sell. The suppliers will transfer the costs to consumers through higher prices of energy. The carbon credits can be traded through a market and the price per credit is floating.

LINKS

Emissions Trading Scheme: http://www.mfe.govt.nz/climate-change/reducing-greenhouse-gas-emissions/new-zealand-emissions-trading-scheme

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

EECA Business Programme

OBJECTIVE

To support enhanced business competitiveness and lower CO2 emissions through the reduction of energy demand and/or conversion to renewable energy options.

OUTLINE

The EECA Business Programme is designed to overcome market barriers across three groups related to the scale of energy use:

- Top 200 energy users – the programme is for direct engagement with senior decision-makers to create long-term, company-wide energy management partnerships.

- Large energy users (1,000) – where engagement is led by accredited service providers, industry associations, and sector groups.
- Medium and small energy users (200,000+) – where targeted EECA information campaigns are used to influence change.

The programme ensures that the right combination of information, incentives, and standards are in place, and targets priority sectors in which there is the potential for energy-efficient improvements (e.g., meat and dairy, pulp and paper, and commercial buildings). The components of the programme include the following: information and influencing, capability initiatives, information initiatives, co-funding energy audits, commercial building design advice, NABERSNZ (National Australia Building Energy Rating Scheme: New Zealand), industrial energy efficiency improvements, and demonstration projects and feasibility funding.

LINKS

EECA Business: https://www.eecabusiness.govt.nz/

18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

Vehicle Fuel Economy Labelling

OBJECTIVE

To achieve reductions in fossil fuel demand and emissions, and savings to end-users by improving the average fuel efficiency of the vehicle fleet.

OUTLINE

The Energy Efficiency (Vehicle Fuel Economy Labelling) Regulations were first published in 2007. The Vehicle Fuel Economy Labelling scheme came into effect in April 2008, which made it compulsory for vehicle traders and online vendors to display information about the fuel economy of their vehicles. The aim of the programme is to allow consumers to make more informed decisions when purchasing a vehicle, and place appropriate values on fuel economy. In addition, it allows consumers to consider the effect that fuel efficiency will have on the environment and their fuel costs. This is designed to stimulate the supply and purchase of more fuel-efficient vehicles. The regulations also require that fuel-economy information labels be displayed on all new and used passenger vehicles (manufactured after 2000) at the point of sale, if the information is available. The seller should use the information provided on the vehicle fuel-economy label generator page (see http://www.eeca.govt.nz/vehicle-fuel-economy-labels/label-generator#970). These regulations apply to any vehicle sold by a motor vehicle trader or on Internet trading websites. The fuel economy information is expressed as follows:

- Fuel economy cost per year.
- Fuel economy rating out of six stars.
- Fuel economy litres per 100 km.

LINKS

Vehicle Labelling: https://www.energywise.govt.nz/energy-labels/vehicle-fuel-economy-labels/

Heavy Vehicle Fuel Efficiency Programme

OBJECTIVE

To improve the efficiency of the heavy-vehicle fleet.

OUTLINE

The Heavy Vehicle Fuel Efficiency Programme, which started in 2012, helps heavy-vehicle fleets to develop systems and disciplines that save fuel, reduce CO2 emissions, and leads to greater road safety. The focus of the programme is on working alongside fleet managers to put fuel management action plans in place. This involves driver behaviour change, vehicle selection, and better management systems. Realistic fuel savings of approximately 7% per fleet are possible, especially when company management demonstrates strong leadership.

LINKS

EECA: https://www.eecabusiness.govt.nz/sectors/transport/fleet-management/

Electric Vehicle Promotion Programme

OBJECTIVE

The government has identified electric transportation as an important opportunity for New Zealand. The aim of this programme is to increase the deployment of electric vehicles.

OUTLINE

The programme consist of a number of measures to promote electric vehicles including economic measures as well as preferential treatment measures. These include tax exemptions, promote electric vehicles to commercial fleet purchasers, and a contestable fund to promote and support low carbon transport options.

LINKS

Ministry of Transport: http://www.transport.govt.nz/ourwork/climatechange/electric-vehicles/

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Energy Star

OBJECTIVE

To achieve reductions in energy demand and energy-related greenhouse gas emissions as well as savings to end-users through the uptake, demand, and marketability of high-efficiency products.

OUTLINE

The Energy Star concept was developed by the U.S. Environmental Protection Agency in 1992 as a voluntary labelling programme designed to promote energy-efficient products and reduce greenhouse gas emissions. It provides an independent endorsement mark for high-efficiency products that can be used by industry/retail partners in product labelling, promotional materials, and advertising.

Energy Star was launched in New Zealand in 2005, and by 2015, coverage had been extended to 20 product categories, including white ware, windows, home electronics, office equipment, air conditioners (heat pumps), solar water heating, and different types of lighting.

LINKS

Energy Star: https://www.eeca.govt.nz/standards-ratings-and-labels/energy-star/

NABERS New Zealand

OBJECTIVE

Improve energy performance in commercial buildings

OUTLINE

In May 2013, EECA Business, in collaboration with the New Zealand Green Building Council (NZGBC), launched a scheme to measure and rate the energy performance of commercial buildings in New Zealand. The New Zealand scheme, NABERSNZ, is based on the successful National Australian Built Environment Rating System (NABERS). NABERSNZ is a voluntary scheme that aims to assist owners and tenants to reduce energy use and costs as well as reduce greenhouse emissions. Under NABERSNZ, qualified assessors measure and score the energy performance of office buildings, giving tenants and owners rating of up to six stars.

Since the inception of the programme, nearly 600 self-assessments have been completed and 29 certified ratings have been processed. In 2014/15, 14 certified ratings were processed.

LINKS

NABERS NZ: https://www.nabersnz.govt.nz/

Warm Up New Zealand: Healthy Homes

OBJECTIVE

To improve energy efficiency in the residential sector, and improve the health of people living in cold, damp houses by targeting low-income households for home insulation, particularly families with children and individuals with high health needs.

OUTLINE

In May 2013, the government announced an investment of NZD 100 million to insulate 46,000 homes through a new three-year insulation programme. This programme targeted low-income households, particularly those with children, the elderly, and those at high risk of developing cold-related illnesses. Unlike its predecessor, Warm Up New Zealand: Heat Smart, the new programme does not provide any funding to general-income households or for clean-heating devices. The government's investment of up to 60% of the cost of a home's insulation is augmented by significant levels of funding from trusts and other third parties. This makes insulation available to those households in most need, at low or no cost.

As of September 2015, 41,000 houses had been insulated under the programme.

LINKS

Warm Up NZ HH: https://www.energywise.govt.nz/funding-and-support/funding-for-insulation/

Efficient Lighting/The Right Light Programme

OBJECTIVE

To encourage the uptake of efficient lighting technologies.

OUTLINE

The EECA's efficient lighting programme supports the Right Light information and capability-building programme.

LINKS

Right Light: https://www.energywise.govt.nz/at-home/lighting/choosing-the-right-energy-efficient-bulb/

20.ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

MBIE and EECA work closely with the following government organisations: the Ministry of Health; the Ministry of Social Development; the Ministry for the Environment; the Ministry of Transport; the Ministry of Agriculture and Forestry; Housing New Zealand; and Statistics New Zealand. The EECA also works closely with local government and district health boards.

In general, non-government organisations (NGOs) and community energy groups in New Zealand have sufficient knowledge and awareness of energy efficiency improvement programmes implemented by the central government under the NZEECS. NGOs have also established partnerships with central agencies to realise the goals of the NZEECS in certain areas. The central government agencies have been providing financial and technical support to local governments in implementing energy efficiency and renewable programmes. Local governments are currently focused on energy efficiency improvement efforts to lower or maintain their energy expenditures, while NGOs are focused on alleviating fuel poverty and improving health outcomes among lower-income families. Through the EECA, NGOs, community and energy groups are implementing the Warm Up New Zealand: Healthy Homes programme and using local networks to assist in reaching more participants.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

The New Zealand Government cooperates with other economies and New Zealand agencies on energy efficiency, which include the following:

- The Australian Department of Resources, Energy, and Tourism (DRET) and Australian State Regulators (through the E3 committee) to set joint standards and regulatory requirements for appliances and equipment.
- APEC and International Energy Agency (IEA) membership and forums.

- Energy Regulators Advisory Council (Australia and New Zealand) to align regulations for energy-using products such as gas/electrical safety and radio spectrum management.
- The Commonwealth Scientific and Industrial Research Organisation (CSIRO, Australia).
- Regulators' Forum.
- The World Trade Organisation (WTO) Technical Barriers to Trade (TBT) notification.

LINKS

No Links provided.

21. OTHER ENERGY EFFICIENCY EFFORTS

No information provided.

PERU

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

In November 2010, the National Energy Policy was approved. It contains nine objectives with their respective policy guidelines. Some of the key objectives are:

- To have a diversified energy matrix, with an emphasis on energy efficiency and renewable energy.
- To improve efficiency in the production chain and use of energy.
- To develop an energy sector with minimum environmental impact and low carbon emissions within a framework of sustainable development.

In 2000, the government passed the Law for the Promotion of the Efficient Use of Energy. Consistent with this legislation, in 2007, the Supreme Decree (DS) No. 053–2007–EM, regulation of the law of the efficient use of the energy was issued. The Peruvian Government then created significant initiatives to support energy efficiency. These included DS–No. 034–2008–EM of 19 June 2008 (Energy Saving Measures in Public Services), and RM No. 038–2009–MEM/DM of 21 January 2009 (Energy Consumption Indicators and their Monitoring Methodology). The DS–No. 034–2008–EM was replaced by the DS–No. 04–2016 of February 2016, through which, the Peruvian Government promoted energy-saving measures in the public sector, such as replacing less-efficient incandescent lamps with compact fluorescent lamps and acquiring equipment with energy efficiency labels. Through DS 09-2017 of April 2017, the Technical Regulation on the Energy efficiency labelling for energy equipment was approved.

2. ENERGY EFFICIENCY STRATEGY

To meet the objectives set out in the National Energy Policy, the following strategies on energy efficiency were developed:

- Define the energy matrix based on integrated planning of resource development and establish mechanisms for its implementation.
- Incorporate energy efficiency as part of the energy matrix.
- Form a culture of efficient use of energy through the transfer of information, dissemination and education.
- Achieve specific quantifiable targets for energy efficiency as part of domestic energy policy.
- Achieve high levels of energy efficiency compatible with international standards and foster certification bodies.

- Involve companies of the energy sector and users in energy efficiency programmes through incentive mechanisms and incentives.
- Achieve automation of supply and demand management through intelligent technological systems
- To create an energy efficiency centre as a decentralised entity dependent on the sector, responsible for promoting the efficient use of energy.

FUNDING

No information.

LINKS

Energy Policy: http://www2.osinerg.gob.pe/MarcoLegal/docrev/DS-064-2010-EM-CONCORDADO.pdf

3. ENERGY EFFICIENCY ACTION PLAN

In 2009, the Ministry of Energy and Mines presented the Benchmark Plan for Efficient Use of Energy from 2009 to 2018. This plan outlined various projects that would be implemented in the industry through 2018 with potential energy savings of 15% compared to a scenario without energy efficiency measures. This plan calls for the replacement of lighting systems, boilers and engines, as well as implementation of a labelling scheme for computers. To date, the implementation plans have been delayed due to a shortage of audit firms and a lack of incentives.

FUNDING

From 2009 to 2010, a programme to replace 1.5 million incandescent lamps with saving lamps was carried out with fiscal funding. In order to reduce energy consumption and greenhouse gas emissions, the following projects have been conducted and supported by the United Nations:

- With support from the United Nations for Development (UNDP), between 2013 and 2017, the Energy Efficiency Standardisation and Labelling Project has been developed. One of the results was the elaboration and approval of the Technical Regulation of Labelling.
- Since 2013, with the support of the United Nations Environment Programme (UNEP), the Transformation of the Lighting Market project is being developed.
- Since 2016, a project has been undertaken to design Nationally Appropriate Mitigation Actions (NAMA) in end use of energy and renewable energy, for the connected system and isolated systems.

LINKS

Energy efficiency under the Ministry of Energy and Mines: http://www.minem.gob.pe/_sector.php?idSector=12

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

Peru has made a commitment to COP 21 to reduce its emissions by 2030 (Intended Nationally Determined Contributions), through a series of measures, including energy efficiency measures.

LINKS

http://www.minam.gob.pe/wp-content/uploads/2015/12/Informe-T%C3%A9cnico-Final-CM- -R-S-129-2015-PCM_Secretar%C3%ADa-T%C3%A9cnica-18-09-2015-vf.pdf

5. SECTORAL ENERGY EFFICIENCY TARGETS

Not applicable.

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

The General Directorate of Energy Efficiency (DGEE), under the Ministry of Energy and Mines.

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

In 2010, the Peruvian Government created the DGEE as a part of the Ministry of Energy and Mines. The mission of the DGEE is to identify, develop, promote, implement and spread the technologies, process, renewable energies and patterns of consumption to improve the efficiency and energy sustainability in the economy.

The main goals of the DGEE are:

- To reduce energy intensity by promoting the best use of energy, use of renewable resources, energy savings and generating a culture of energy efficiency without affecting social welfare; and
- To make compatible the use of energy with environment preservation.

STAFF AND BUDGET

The agency has about 13 professionals – 5 dedicated to energy efficiency and renewable energy promotion, 6 dedicated to energy planning and others for administrative issues. The budget of the agency is approximately US$1.1 million.

BUDGET USE

The budget provides remuneration of management personnel, consultants to carry out studies to design energy efficiency programmes or determine the inventory of renewable energies, conducting educational and demonstrative campaigns on energy efficiency, and training, among others.

LINKS

Energy efficiency under the Ministry of Energy and Mines: http://www.minem.gob.pe/_sector.php?idSector=12

7. OTHER ENERGY EFFICIENCY AGENCIES

Measures of eco-efficiency developed by the Ministry of the Environment, directed to the entities of the public sector.

The Ministry of Housing, Construction and Sanitation has approved the technical code for sustainable construction.

LINKS

Summary of the technical code:
http://msi.gob.pe/portal/wp-content/uploads/2016/06/2016.11.4.-C%C3%B3digo-T%C3%A9cnico-de-Construcciones-sostenibles.pdf

Official publication of technical code:

http://www3.vivienda.gob.pe/dnc/archivos/Estudios_Normalizacion/Normalizacion/normas/DS%20015-2015-VIVIENDA.pdf

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

- The website of the Ministry of Energy and Mines.
- Campaigns of diffusion using demonstrative equipment in schools, fairs, public squares, etc.
- Campaign of diffusion denominated "The tunnel of the energy", by radio and television.

LINKS

Energy efficiency under the Ministry of Energy and Mines: http://www.minem.gob.pe/_sector.php?idSector=12

News release on campaign: http://www.minem.gob.pe/_detallenoticia.php?idSector=12&idTitular=7895

"The tunnel of the energy" campaign: https://www.youtube.com/watch?v=LYqV7U1YHDw

9. ENERGY EFFICIENCY AWARENESS RAISING

Awareness raising programmes overlap with the information dissemination efforts outlined above.

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

No information.

11. PRIVATELY OPERATED TRAINING

No information.

12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

No information.

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

The General Directorate of Energy Efficiency is in charge of establishing the indicators of energy consumption.

Information is collected annually for the compilation of the Energy Balance. From 2013 to 2015, a survey was carried out which underpinned the first Balance of Useful Energy report, realised in January 2017. So far, two studies of energy consumption habits have been carried out, a study of the residential sector in 2008 and a study of the production and services sector in 2012.

LEGAL POWER

The legal basis for collecting statistical information is Supreme Decree No. 043-2001-PCM, which approves the Regulation of Organisation and Functions of the National Institute of Statistics and Informatics, establishing the power to obtain information from public and private entities.

LINKS

Balance of Useful Energy:

http://www.minem.gob.pe/_publicacion.php?idSector=12&idPublicacion=540

Supreme Decree No. 043-2001-PCM: ftp://ftp2.minsa.gob.pe/descargas/ogei/SINADEF/DS-043-2001-PCM.pdf

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

No information.

15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

No information.

16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

Nationally Appropriate Mitigation Actions on End Use Energy and Renewable Energy.

OBJECTIVE

The project will contribute to the achievement of the objectives established through the planned and determined contributions at the national level (INDC) communicated to the United Nations Framework Convention on Climate Change.

The expected direct reduction of CO2 emissions from the project would be approximately 962,000 tonnes of CO2 equivalent, and indirect emissions around 1,600,000 tonnes of CO2 in 10 years.

OUTLINE

The project is financed by the Global Energy Find (GEF) for US$ 4.5 million and is co-financed by Peruvian agencies for US$ 32 million.

Components:

- Baseline Greenhouse Gas Emissions - Business-as-usual scenario.
- Mitigation options for the energy generation and end use.
- Implementation of NAMAs in selected sub-sectors.
- MRV system and registry of mitigation measures in the energy generation and end use sector.

LINKS

Under construction.

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

No information.

18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

No information.

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Energy Efficiency Labelling

OBJECTIVE

The Energy Efficiency Label will provide information on the energy consumption of energy equipment so that users can make a better decision at the time of purchase. Reducing energy consumption will prevent the construction of thermal power plants and reduce CO2 emissions, enhancing energy security and environmental sustainability. It also seeks to promote business competitiveness, and upgrade energy equipment to the most efficient technologies, such as LED lamps.

OUTLINE

Regulatory framework is provided by the Law No. 27345, Law of Promotion of the Efficient use of the Energy and the National Energy Policy of Long Term (2010-2040). Labelling is required for the following items:

- Electric engines
- Washing and drying machines
- Boilers
- Water heaters

- Lamps
- Air Conditioners
- Refrigerators

LINKS

http://etiquetaenergetica.minem.gob.pe/

20.ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

There is an agreement between the Ministry of Energy and Mines of Peru and Korea Energy Management Corporation (KEMKO). The objective is to promote energy efficiency by undertaking related programmes and or projects. The scope of this agreement includes technology transfer and technical efficiency, system supervision and programmes, projects or activities monitoring to be created within the scope of the framework agreement, financing and/or investment mechanism for energy efficiency projects, energy audits for productive sectors and others.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

Peru is one of the economies of Asia-Pacific Economic Cooperation.

LINKS

Not available.

21. OTHER ENERGY EFFICIENCY EFFORTS

No information.

THE PHILIPPINES

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

The Republic Act No. 7638 is an Act creating the Department of Energy (DOE) and functions of government agencies related to energy and for other purposes. The policy of the State is:

- To ensure a continuous, adequate, and economic supply of energy with goal of ultimately achieving self-reliance in the Philippines's energy requirements. This will be done through (i) integrated and intensive exploration, production, management, and development of indigenous energy resources; (ii) judicious conservation, renewal and efficient utilisation of energy to keep pace with growth and economic development; as well as (iii) active participation of the private sector in the various areas of energy resource development.

- To rationalise, integrate, and coordinate the various programmes of the Government towards self-sufficiency and enhanced productivity in power and energy without sacrificing ecological concerns.

The Act also defines the following powers and functions of government agencies, for the development of energy efficiency and conservation plans:

- Establish and administer programmes for the exploration, transportation, marketing, distribution, utilisation, conservation, stockpiling and storage of energy resources of all forms, whether conventional or nonconventional;

- Formulate and implement programmes, including a system of providing incentives and penalties, for the judicious and efficient use of energy in all energy-consuming sectors of the economy.

2. ENERGY EFFICIENCY STRATEGY

The policy of the government seeks to promote the judicious conservation and efficient utilisation of energy resources through adoption of the cost-effective options toward the efficient use of energy to contribute on ensuring energy security and help mitigate climate change.

In view of the absence of an enabling law on energy efficiency and conservation, and while awaiting for Energy Efficiency & Conservation Bill be enacted into law in both houses of congress during the 17th congress, the DOE nevertheless has been guided by its Energy Efficiency & Conservation Roadmap 2017-2040 - a revised version from its previous 2014-2030. The current government administration provided a more focus strategic directions on energy efficiency programmes and activities that would complement the 2017-2040 economic goal and vision. A comprehensive list of sectoral strategies to promote energy efficiency is provided in the Energy Efficiency & Conservation Roadmap 2017-2040.

FUNDING

The programmes and activities are funded under the yearly budget from Congress under the General Appropriation Act. There are two sources: (a) Regular Budget or Fund 101; and (b) Locally Funded Projects or Fund 151.

LINKS

Energy Efficiency & Conservation Roadmap 2017-2040:

https://www.doe.gov.ph/pep/energy-efficiency-conservation-roadmap-2017-2040

3. ENERGY EFFICIENCY ACTION PLAN

The government's action plan details energy efficiency programmes that cut across the sectors' of government, transport, industrial, residential, and commercial building. The strategic directions are envisioned to provide market signals to all relevant stakeholders in industry development in the short- and medium-term; strengthen policies, programmes and institutional structures; and, ensure sustainability by mobilising and rationalising private sector participation at the end of the long-term plan. The action plan is shown below:

Short Term (2017-2019)

- Conduct market demand scoping
- Advocate the passage of Energy Efficiency and Conservation Bill
- Establish cross-sectoral energy performance and rating systems
- Create business tool-kit for ESCOs
- Collaborate with stakeholders for expanded financing models for EE projects
- Conduct IEC campaign on EE practices
- Integrate EE at the Local Government Units (LGUs) level

Medium Term (2020-2022)

- Create enabling mechanism for private sector participation
- Enhance demand side management mechanism
- Integrate EE&C in the learning and education system
- Mainstream EE&C at the LGUs level

Long Term (2023-2040)

- Institutionalise EE&C knowledge Management System
- Develop advanced EE&C Research & Development (R&D) capacity

FUNDING

The programmes and activities are funded under the yearly budget from Congress under the General Appropriation Act. There are two sources: (a) Regular Budget or Fund 101; and (b) Locally Funded Projects or Fund 151.

LINKS

Philippines Energy Efficiency and Conservation Action Plan 2016-2020:

https://www.doe.gov.ph/sites/default/files/pdf/announcements/philippines_energy_efficiency_action_plan2016-20.pdf

Energy Efficiency & Conservation Roadmap 2017-2040:

https://www.doe.gov.ph/pep/energy-efficiency-conservation-roadmap-2017-2040

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

Economic development shall be through efficiency gains and ensure energy security with a reduction in energy intensity across key economic sectors. Philippines has committed to reduce its energy intensity by 40% in 2030 based on 2005 energy intensity level.

LINKS

An Energy Efficiency Roadmap for the Philippines, 2014-2030:

https://www.doe.gov.ph/sites/default/files/pdf/announcements/energy_efficiency_and_conservation_roadmap2014-2030.pdf

Philippines Energy Efficiency and Conservation Action Plan (2016-2020):

https://www.doe.gov.ph/sites/default/files/pdf/announcements/philippines_energy_efficiency_action_plan2016-20.pdf

5. SECTORAL ENERGY EFFICIENCY TARGETS

Residential: Establish Minimum Energy Performance (MEP) Standard and Labelling for Home Appliances, Motor Vehicles and devices.

Period: 2017-2019

Description: A Department Circular 2016-004-0005 established the Philippine Energy Standard and Labelling Programme (PESLP) for home appliances, motorised vehicles and other devices. The objective is to establish MEP label on various home appliances, passenger cars and light duty vehicles in the short term period. MEP labels for room air-conditioners, refrigerators and freezers including CFLs has been already established in the past. The MEP label shall be expanded to other home appliances such as TV sets, washing machine, and electric fans. A Vehicle Fuel Economy Label is in the offing of development for passenger cars and light commercial duty vehicles.

Commercial Building, Industrial, Transport: Establish MEP in Building, Industrial, and Transport Sectors

Period: 2017-2019

Description: The objective is to be able to develop MEP at various sub-sector levels or an energy consumption benchmark to help guide these sectors to make decision through comparative analysis on a sector where they belong. This helps the company understand the level of their specific energy consumption and can be used to monitor and evaluate the company's energy efficiency programmes and projects as part of the total energy management system tool. The draft policy, a Department Circular, undergone public consultations to get comments from the affected sectors.

Government: Integration & mainstreaming energy efficiency at the Local Government Units (LGUs)

Period: 2017-2022

Description: The DOE will provide capacity building for local executives, including members of the city/municipal and provincial councils, and other relevant government agencies and stakeholders, to integrate energy efficiency policy at the LGU level. The objective is for the LGU to develop their own energy efficiency roadmap/action plan that can be incorporated into their urban planning development. The development of an Energy Efficiency Policy Regulation is essential for a successful local programme implementation. Examples of local ordinance include Green Building Code; requirement for street lights to use only LEDs or other energy efficient lighting technology; regulation of fumes emission from motorised vehicle; declaration of a municipal or city as a low carbon town; incentives for the use of energy efficient technology in combination with renewable technologies and other smart technologies.

LINKS

Department Circular 2016-004-0005:

https://www.doe.gov.ph/laws-and-issuances/department-circular-no-dc2016-04-0005

Philippines Energy Efficiency and Conservation Action Plan 2016-2020:

https://www.doe.gov.ph/sites/default/files/pdf/announcements/philippines_energy_efficiency_action_plan2016-20.pdf

An Energy Efficiency Roadmap for the Philippines, 2014-2030:

https://www.doe.gov.ph/sites/default/files/pdf/announcements/energy_efficiency_and_conservation_roadmap2014-2030.pdf

Energy Efficiency & Conservation Roadmap, 2017-2040:

https://www.doe.gov.ph/pep/energy-efficiency-conservation-roadmap-2017-2040

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

Established in 1992, the DOE is the lead agency responsible for the formulation and development of energy efficiency policies of the Philippines.

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

Under the DOE, the Energy Utilisation Management Bureau (EUMB) was created to promote energy efficiency and conservation initiatives in all sectors. Their main responsibilities are:

- Assist in the formulation and implementation of policies for the efficient and economical transformation, conversion, processing, refining, marketing, distribution, transportation, and storage of petroleum, coal, natural gas, geothermal, and other non-conventional energy resources such as wind, solar, biomass, and others.
- Monitor sectoral energy consumption and conduct energy audits, technical training, energy management advisory services, and technology application projects on efficient energy utilisation.
- Assist in the formulation of an operational plan for the allocation of oil, fuel, and energy sources in the event of declaration of critically low energy supply.
- Provide information on energy technology and develop middle and long-term energy technology development strategies in cooperation with the Department of Science and Technology (DOST).
- Require industrial, commercial, and transport establishments to collect waste oil for recycling
- Develop and implement a continuing energy conservation programme designed to optimise energy utilisation, including an economy-wide information campaign on energy conservation.

STAFF AND BUDGET

The DOE has a total of 741 regular employees with a budget of USD 53.15 million for year 2017.

Under the DOE's Energy Utilisation Management Bureau-Energy Efficiency and Conservation Division (EUMB-EECD), there are ~24 employees. The division's budget for 2017 is USD 1.82 million.

BUDGET USE

The entire budget has been allocated for the promotion of energy efficiency in all sectors. Majority of the budget goes to the implementation of Information, Education, and Communication (IEC) campaign.

The remaining budget will be used for the printing of energy efficiency booklets, tri-media, and other energy efficiency related contracting-out services such as feasibility study development, development of energy efficiency modules for K12 and College level, etc.

LINKS

DOE's website: https://www.doe.gov.ph/

Role of DOE in energy efficiency: https://www.doe.gov.ph/energy-efficiency-ec

7. OTHER ENERGY EFFICIENCY AGENCIES

No other government agency involved.

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

The Philippines has specific channels for energy information dissemination. Among of which are the use of the agency's internet portal, social media, tri-media (TV, radio and news print), seminar-workshops & conferences, the use of Audio-Video Presentation materials shown in public places such as passenger terminals of airports, bus, and seaports. Printing of various energy information on brochures, flyers, leaflets, Guide Manuals, booklets and other infomercial materials are likewise developed and disseminated to the appropriate and relevant target sectors.

LINKS

Information on cost of electricity in Philippines: www.kuryente.org.ph

Consumers' guide on the selection of home appliances: www.wattmatters.org.ph

9. ENERGY EFFICIENCY AWARENESS RAISING

Household:

- Seminar on Energy Efficiency & Conservation – This is a community base-approach by involving the Local Government Units through its local executives and councils. It promotes the selection of energy efficient home appliances, and share information on best practices involving the proper and judicious use of energy.
- Tri-Media & Social Media – The development of taglines and themes is an important aspect in government campaign programmes. Likewise, other communication materials such as Audio-Video Presentation (AVP), flyers, booklets, manual guide, etc have been developed. For tri-media, channels to communicate are television, radio and news-print. For social media, consumers are guided on the selection of home appliances through a website www.wattmatters.org.ph and for the cost of electricity at www.kuryente.org.ph. Some of the AVPs are shown in the airport, bus, and seaport.

Education:

- Seminar on Energy Efficiency & Conservation and Climate Change for teachers and students – The objective is have a wider outreach to the academia.
- Integration of Energy Efficiency & Conservation into the K-12 and college curriculum – The objective is to steer behavioural change among students by instilling appreciation on the proper use of energy resources and impart knowledge about the effect of global climate change. Introduction of proper energy management best practices, energy efficient technologies, climate change mitigation are the major subject topic of the modules being developed. A Memorandum of Agreement was established with the Department of Education for the K-12 grade level and the Commission on Higher Education for the College level. Under the Agreement, high school teachers and college professors will undergo training. They will be equipped with educational modules, visual aids and other logistical material aids.

Government:

- Seminar on Energy Efficiency & Conservation for government employees and Local Executives – government offices and its attached bureaus, including state colleges and universities, government-own

hospitals, government owned and controlled corporations, and other government facilities, have to reduce electricity and fuel consumption by at least 10% for a minimum of three years from 2005 levels. However, such target has been extended and is now an ongoing target. Henceforth, government Enercon Officers and employees have to be given briefings and seminars to carry out the Order that emanate from the Office of the President of the Republic.

Transport:

- Seminar for Drivers (Public transport, government, private, private fleet)
- Conduct Fuel Economy Run - This is promote fuel-efficient vehicles in the market, specifically for brand new passenger cars and light duty vehicles. This is in collaboration with car manufacturers, dealers, distributors, and importers. Sponsorship of the event normally is in partnership with an Oil Company to promote quality fuel standard (i.e. Euro 4 fuel).

LINKS

Administrative Order No. 110, 110-A and 126, Directing the Institutionalization of a Government Energy Management Programme (GEMP):

https://mfo.doe.gov.ph/mfo_files/downloadable_files/AO%20110.pdf
https://mfo.doe.gov.ph/mfo_files/downloadable_files/AO%20110.pdf
https://www.doe.gov.ph/sites/default/files/pdf/issuances/ao_126.pdf

Philippines Energy Plan 2012-2030: https://www.doe.gov.ph/sites/default/files/pdf/pep/2012-2030_pep.pdf

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

- The DOE through its Bureaus, Service and Field Offices have provided training funds for its personnel for capacity building on energy efficiency. Local trainings as well as foreign training funds were made available on its annual budget allocated for the given year. Some of the government supported training programmes were in the form participation in the seminars, conferences, short-training courses, to certification and graduate degree diploma courses on energy.
- DOE collaborates with the Development Academy of the Philippines through a partnership agreement to provide capacity development trainings on energy efficiency best practices, energy efficient technologies, effect of climate change, energy efficiency policy development for Local Government Units. The training programmes provided are free-of-charge.
- In addition, with the UNIDO-GEF technical assistance grant, training was provided to develop and recognise Energy Management Experts and Systems Optimisation Experts under the Philippines Industrial Energy Efficiency Project.

LINKS

DOE's website: https://www.doe.gov.ph/

Energy efficiency: https://www.doe.gov.ph/energy-efficiency-ec

11. PRIVATELY OPERATED TRAINING

None at this time.

12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

The Department of Science and Technology-Philippine Council for Industry, Energy, and Emerging Technology Research and Development (DOST-PCIEERD) provides support on energy efficiency programmes. It provides financial support to research and technology innovation for future commercialisation.

LINKS

The Philippine Council for Industry, Energy, and Emerging Technology Research and Development: http://pcieerd.dost.gov.ph/

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

The EUMB is tasked to collect, analyse and monitor energy consumptions of industrial, commercial, transport, household, and government building sectors.

This are mandatory regulatory requirements for energy consuming sectors (Commercial, industrial, and Transport) to submit reports on a Quarterly basis, while government buildings have to submit monthly energy consumption reports.

The Energy Policy and Planning Bureau of the DOE also collates all primary energy mix data including energy consumption to reflect final energy consumption demand. This is reported in the Philippine Energy Plan (PEP).

LEGAL POWER

Submission of energy consumption is a requirement under the following issued legal policies from the DOE and Office of the President of the Philippines:

- Department Circular 93-03-05

  All commercial, industrial, and transport establishments with an Annual Energy Consumption level of 2 million LOE (4 million Kwh) have to submit Quarterly Energy Consumption Reports to the DOE. In addition, establishments with an annual energy consumption level of 4 million LOE (8 million Kwh) have to submit an Annual Energy Conservation Programme for the year reported.

- Administrative Order 110 s. 2004, 110-A, 126 as amended

  The government agencies including its attached bureaus and regional offices, government-owned and controlled corporations, state colleges and universities, government hospitals, and other government facilities are required to reduce their electricity and fuel consumption by 10% from 2005 level for a minimum period of three years, which has now been a continuing programme. In addition, these government entities have to submit Monthly Electricity & Fuel Consumption Report to the DOE.

LINKS

DOE's website: https://www.doe.gov.ph/

Administrative Order No. 110, 110-A and 126, Directing the Institutionalisation of a Government Energy Management Programme (GEMP):

https://mfo.doe.gov.ph/mfo_files/downloadable_files/AO%20110.pdf
https://mfo.doe.gov.ph/mfo_files/downloadable_files/AO%20110.pdf
https://www.doe.gov.ph/sites/default/files/pdf/issuances/ao_126.pdf

Philippines Energy Plan 2012-2030: https://www.doe.gov.ph/sites/default/files/pdf/pep/2012-2030_pep.pdf

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

There is no periodic evaluation of energy efficiency potential or progress. However, specific sectoral surveys are conducted on an ad-hoc basis to assess the penetration of energy efficient technologies and best practices for market and individual energy users. For instance, in 2007, the Philippine Statistics Authority (PSA) conducted the Household Energy Consumption Survey (HECS). For 2017, market demand scoping likewise has been given priority to further assess the level of energy efficiency penetration in the commercial, industrial and transport sectors.

LINKS

Not available.

15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

Energy efficiency programmes are evaluated based on the following:

- From an Agency Performance Assessment Perspective – Energy efficiency programmes are evaluated based on their achievements or accomplishments, and budget utilisation for the implementation activities in a given year. A comprehensive report will be submitted to substantiate claims on budget utilisation vis-a-vis performance.
- From the Performance Assessment Perspective – An Energy Intensity (Energy Consumption/GDP) Indicator is used to assess the impact of energy efficiency programme on a level. Other than the Department of Energy that advocate proliferation of energy efficiency through policy formulation and project implementation the other stakeholders that contributes to the economy includes energy service providers, vendors/suppliers/distributors of energy efficient technologies, professional associations, civil society group, etc. The result was included in the overall energy efficiency report of the Agency.

16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

The National Energy Efficiency & Conservation Programme (NEECP)

OBJECTIVE

The NEECP is an umbrella programme on energy efficiency with a key objective of advancing economic development through energy efficiency and energy conservation, contributing to improved energy security, and helping to mitigate climate change.

Activities under NEECP are geared towards the promotion of efficient and judicious utilisation of electricity and fuel. Energy efficient technologies are being promoted and introduced, together with best practices and measures that does not require investments. Behavioural change through values formation is one of the key aspects of promoting energy conservation among the people.

OUTLINE

The NEECP began in 2004 and targets all energy consuming sectors. The programme has the following sub-components: (a) Information, Education, Communication Campaign Programme (b) Government Energy Management Programme (c) Recognition Award Programme (d) Fuel eco-run activity, and (e) Energy Audit services.

The budgetary support fund requirement to implement the entire programme requires congressional approval and must be allowed under the General Appropriation Act.

LINKS

NEECP: https://www.doe.gov.ph/national-energy-efficiency-and-conservation-program

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

Energy Management System and System Optimisation initiatives for pulp and paper, cement, steel-metal, food and chemical industry sectors.

OBJECTIVE

This is a five-year technical assistance grant from UNIDO-GEF with the purpose of developing recognised energy management experts and systems optimisation experts on steam system, pumping system, compress-air system. The key objectives are: (a) to provide technical assistance support to identified energy intensive industries; (b) to develop an energy management system and identify systems optimisation projects; (c) to promote energy management system based on ISO 50001 energy management standard framework; and (d) to develop capacity building on appropriate financing scheme.

OUTLINE

The project provide trainings on Energy Management System and Systems Optimisation as well as capacity building on financing schemes. Training is offered to plant facility engineers and manager, individual consultants, energy efficient product suppliers and vendors, individual service provider engineers, among others. Walk-through plant assessment/audit was likewise conducted for possible project identification. The Energy Management System was promoted with the intention to make it form part of Corporate Management guidelines, rules and policies.

LINKS

News release regarding the Philippine Industrial Energy Efficiency Project:

http://www.assistasia.org/index.php/media-center/newsroom/241-philippine-industrial-energy-efficiency-project-pieep

Website of Philippine Industrial Energy Efficiency Project: www.iee-philippines.com

18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

Vehicle Fuel Economy Labelling Programme

OBJECTIVE

The implementation of this programme was in accordance with the Philippine Energy Standard and Labelling Programme. It includes motorised vehicles such as passenger cars and light duty commercial vehicles.

The main objectives are: (a) to establish and label minimum energy performance of all vehicles including their fuel economy rating; (b) to empower the public to choose the most fuel efficient vehicles sold in the market; (c) to encourage investment on fuel efficient vehicles including alternate-fuelled vehicles; and (d) to contribute to the overall mitigation of climate change.

OUTLINE

As above.

LINKS

An Energy Efficiency Roadmap for the Philippines, 2014-2030:

https://www.doe.gov.ph/sites/default/files/pdf/announcements/energy_efficiency_and_conservation_roadmap2014-2030.pdf

Philippines Energy Efficiency and Conservation Action Plan (2016-2020):

https://www.doe.gov.ph/sites/default/files/pdf/announcements/philippines_energy_efficiency_action_plan2016-20.pdf

Fuel Economy Run activity

OBJECTIVE

This project collects data on current fuel mileage rating or fuel consumption of brand new vehicles sold in the local market. The measurement indicator is in kilometres per litre of fuel consumption.

The objective is to empower the consumer to choose the best and most fuel efficient vehicles sold in the market. This is an interim strategy towards bridging the current programme as specified in the Department's policy issuance on DC 2016-004-00005.

OUTLINE

This activity is conducted in cooperation with car manufacturers, distributors, dealers, importers, motor vehicle associations, oil companies, other government agencies, among others. There are two categories - the passenger car category, and light commercial vehicle category composed of SUVs and vans. Participating vehicles need to travel an assigned distance in the range of 250 to 300 kilometres, with an average constant cruising speed of 80 km/h. Results from the run and individual vehicle efficiency performance is collected by the DOE. This activity is a prelude to the upcoming policy implementation on vehicle fuel economy labelling.

LINKS

Fuel Economy Run: https://www.doe.gov.ph/fuel-economy-run-results

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Government Energy Management Programme

OBJECTIVE

Under the Administrative Orders 110, 110-A, 126, it requires government buildings to reduce electricity and transport fuel consumption by at least 10% in reference to their average energy consumption in 2005 (which has now been a continuing programme of the government). Government offices directed to comply in these Orders includes the Government Agencies, Government Own and Controlled Corporations, State Colleges and Universities, Government Hospitals, Military and other facilities of the government.

OUTLINE

In 2012, under a loan agreement with the Asian Development Bank, 150 government buildings were retrofitted for lighting system from an existing 40-watt linear fluorescent lamp to 28-watt linear fluorescent lamp.

Given the success of the programme, a similar initiative is in the offing for possible similar project for 2017, where the goal is to retrofit selected 150 government buildings using linear LED lamp and Inverter Type air-conditioner and/or the possibility of introducing a district cooling system whenever viable and practical.

LINKS

The Philippines Energy Efficiency Project – Lighting Up the Philippines in an Efficient Way:

http://k-learn.adb.org/system/files/materials/2015/10/philippine-energy-efficiency-project-lighting%C2%A0-philippines-efficient%C2%A0way.pdf

Integration and mainstreaming of Energy Efficiency in the LGU level

OBJECTIVE

The project, in partnership with the Development Academy of the Philippines, is on the "Integration and Mainstreaming of Energy Efficiency in the LGU level". The main objective is to introduce energy efficiency & conservation policies to help capacitate and for an LGU to develop their own version of policies suitable within their jurisdiction and governance. It may include Green Building Code or simply a Minimum Energy Efficiency Performance for all Building type. The purpose is to develop a local policy ordinance that will require all existing

and newly construction buildings to comply with the set Code and/or standard in buildings. Such policy can be operationalised through issuance of building or business permits for instance.

OUTLINE

Currently, there is a private sector initiated and government supported voluntary green building rating system called Building for Ecologically Responsive Design Excellence (BERDE). The Philippine Green Building Council (PHILGBC) develops the rating system to measure, verify and monitor building performance based on existing mandatory regulations and standards.

LINKS

Integration & Mainstreaming of Energy Efficiency at the Local Government Units:

https://d2oc0ihd6a5bt.cloudfront.net/wp-content/uploads/sites/837/2017/06/1_Integration-_-Mainstreaming-of-Energy-Efficiency-at-the-Local-Government-Units-LGUs.pdf

Philippine Green Building Council: http://philgbc.org/

20.ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

None at this time.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

The following are the current foreign assisted cooperation of the Department of Energy:

- EU – Access for Sustainable Energy Programme. The sub-project components are:
    - Standard and Labelling
    - Energy Efficiency in Government Buildings
    - Energy Efficiency in Power Plants
- APEC – Expert Group on Energy Efficiency & Conservation. The DOE co-sponsors the following APEC-EWG Projects:
    - Nearly (Net) Zero Energy Building
    - Distribution Transformers' Energy Efficiency
- ASEAN Energy Awards – Specifically on the following:
    - Energy Management Award for Industries and Buildings
    - Energy Efficiency & Conservation Best Practices Award
    - Green Building Award

LINKS

EU launches P6-B programme for PHL energy programmes:

https://www.doe.gov.ph/energist/index.php/2-uncategorised/11082-eu-launches-p6-b-program-for-phl-energy-programs

ASEAN Energy Awards:

http://www.aseanenergy.org/aea/

21. OTHER ENERGY EFFICIENCY EFFORTS

The "Energy Efficiency in the Power Sector Programme" is the new target initiatives comprises of the following: (a) Power Plants (b) Transmission Lines, (b) Distribution Lines, and (d) Power Substation facilities. Under this scheme, the objective is to ensure reliability and transparency on the conditions of these power facilities especially during calamities. Transmission up to the distribution supply side of the value chain is the focus of the programme.

The "Energy Efficiency in Power Plant" has been included in the short-term plan. The programme will start with thermal power plants (coal, oil, and other solid fuels) followed by diesel generating facilities and other selected renewable power generating plants such as geothermal, hydro, and others in the near future.

Transmission and distribution lines, including power substations, will also be implemented in cooperation with other government energy offices such as PSALM, NEA, NPC, ERC, and other stakeholders. This is in compliance with the directive from the Office of the Secretary of the DOE, whereby a Task Force and a Committee Group chaired by the DOE has been created for the its purpose.

LINKS

Not available online.

RUSSIA

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

Federal Law number 261-FZ was enacted on 23 November 2009 to create legal, economical and administrative foundations to stimulate energy conservation and improve energy efficiency.

2. ENERGY EFFICIENCY STRATEGY

On 15 April 2014, the Russian government approved the state programme "Energy efficiency and energy sector development" developed by the Ministry of Energy. The key purpose of this programme is to improve the energy efficiency of Russia's economic system.

FUNDING

- There is a subsidy on property tax and accelerated amortisation of energy efficient equipment. The government approves the list of complying equipment.
- Energy service contracts are signed by the state budget funded organisations.

LINKS

Background information on energy efficiency: https://minenergo.gov.ru/node/5195

Government list of energy efficient equipment and technologies qualifying for funding: http://government.ru/docs/all/102323/

Energy Strategy 2030: https://minenergo.gov.ru/node/1026

3. ENERGY EFFICIENCY ACTION PLAN

No information available.

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

- In 2008, the President set target for energy efficiency improvement to lower the energy intensity by 40% from 2007 level by 2017 (No. 889 from 4 June 2008). However based on current funding programmes, it is expected that by 2020, the economy can lower the energy intensity by 9.41% compared to 2007 level.
- The target for the federal and municipal buildings was to reduce energy demand by 15% over 5-year period compared to 2009 level, with annual reduction of no less than 3%.
- To achieve 2.5% share of investments in technological innovations as a share of total goods and services cost by 2020.

LINKS

"Energy efficiency and power sector development" state programme: https://minenergo.gov.ru/node/1921

5. SECTORAL ENERGY EFFICIENCY TARGETS

In 2015, the Ministry of Construction of the Russian Federation developed guidelines to identify the energy efficiency class of multi-apartment buildings. The guidelines were approved on 6 June 2009 (No. 399/pr) and set the base values for the average annual energy intensity of multi-apartment buildings as well as the mandatory requirements implementing key energy efficient technologies for certain classes of energy efficiency.

LINKS

Ministry of Construction guidelines on energy efficiency in multi-apartment houses: https://minjust.consultant.ru/documents/20368

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

Federal State Budget Authority "Russian Energy Agency" of the Ministry of Energy of the Russian Federation.

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

- Produce, maintain and administer the use of information, funds, databases and data banks in the constituent entities (regions) of the Russian Federation. It is also involved in the preparation, publication and dissemination of the results of scientific, technical and innovation activities based on information and documentation from relevant organisations, including the publication of the "Information Resources of Russia" magazine. Furthermore, it is responsible for the development of automated data processing systems, information storage and dissemination, as well as acquisition of federal and industry's information assets.
- Provide data and analytical support for the activities of the Ministry of Energy of the Russian Federation in the fuel and energy sector, including data collection on resource conservation and energy efficiency improvement, renewable energy sources and alternative fuels. It also provides administrative and technological support for the Ministry of Energy of Russia.
- Implement federal target programmes, state programmes and the federal targeted investment programmes.
- Assist with the practical adoption of new information technologies in Russia.
- Cooperate with foreign organisations on data transfer, exchange and procurement issues.
- Promote energy security and develop measures to ensure the resiliency of the energy sector. Implement conservation measures, rational and efficient use of fuel and energy resources.
- Develop integrated investment projects in the energy sector and support the implementation of these investment projects with the participation of local and foreign companies, as well as international financial organisations. This includes developing tools to attract investors to participate in public-private partnerships, pre-investment preparation, development of business plans and feasibility studies of investment projects.

STAFF AND BUDGET

No information available.

BUDGET USE

No information available.

LINKS

Russian Energy Agency. Background information:

http://rosenergo.gov.ru/about_the_organization/obschaya_informatsiya

7. OTHER ENERGY EFFICIENCY AGENCIES

No information available.

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

- Official website of All-Russia Energy Conservation Festival #ВместеЯрче (#VmesteYarche)
- Official information resource of All-Russia competition of projects for energy conservation and energy efficiency improvements
- "Energy efficiency" section of the official website of the Ministry of Energy
- International Energy Efficiency and Energy Sector Development Forum "ENES" (2011-2016). Since 2017, the forum has been renamed as the International forum on Energy Development "Russia's Energy Week".

LINKS

The third all-Russia energy efficiency competition ENES-2016: http://enes-expo.ru/ru/forum/konkursy-2016/tretij-vserossijskij-konkurs-enes-2016.html

Energy Efficiency and Energy Saving International Forum 2017: http://enes-expo.ru/en/

9. ENERGY EFFICIENCY AWARENESS RAISING

- All-Russian festival on energy conservation #ВместеЯрче (#VmesteYarche) was held first time in 2016. The idea started as a youth initiative, presented during the ENES-2015 forum. The festival was arranged as a large-scale family activity, and was held from 2 to 11 September 2016. It was held on the main squares of over 60 regional capitals and key cities of Russia, as a follow-up many supporting activities were held in all regions from September to November 2016.
- Social media widely reported thousands of messages with the hashtag #ВместеЯрче (#VmesteYarche) from towns and villages, from adults and children, participated in the events everywhere from Vladivostok to Kaliningrad. More than 15 million people knew about the event, and over 200,000 adults actively participated in the events. Hundreds of thousands of children and students in Russia

participated in the week-long activities themed around energy conservation, competitions and open days, arranged by fuel and energy companies and regional authorities.

LINKS

All-Russia energy efficiency festival: https://вместеярче.рф/ and https://www.xn--b1agaa6a0afi1cwe.xn--p1ai/

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

Proficiency enhancement

The training is one of the measures described in the sub-programme "Energy conservation and improvement of energy efficiency" of the state programme "Energy conservation and energy sector development", approved by the government on 3 April 2015 No. 512-r.

This sub-programme prescribes the annual trainings for proficiency enhancement of the people responsible for energy conservation and energy efficiency improvement of the state budget-funded entities.

The purpose of the training is to update the attendees on the latest government policies on energy conservation and energy efficiency improvement, as well as training of management and experts of the state budget-funded entities to solve the relevant issues in accordance with the government policy.

In 2014, nearly 30,000 participants in all regions of Russia attended the training. The training has been on hold since 2015.

LINKS

Ministry of Energy. Proficiency enhancement: https://minenergo.gov.ru/node/445

11. PRIVATELY OPERATED TRAINING

No information available.

12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

No information available.

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

Federal State Budget Authority "Russian Energy Agency" of the Ministry of Energy of the Russian Federation.

LEGAL POWER

Federal authorities of the executive branch carry out statistic surveys to consolidate information for the annual state report "Energy conservation and energy efficiency improvement in the Russian Federation". Industry sub-sector specific energy conservation and energy efficiency analysis is carried out by the federal authorities of the

executive branch responsible for industry subsectors as per the request from the Ministry of Energy. In the absence of submitted data, expert estimates would be used.

LINKS

Energy Efficiency. Annual state report: https://minenergo.gov.ru/node/5197

State information system in energy saving and energy efficiency improvement: https://gisee.ru/

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

- Annual state report on the status of energy conservation and energy efficiency improvement in the Russian Federation.
- State information system for energy conservation and energy efficiency improvement (SIS "Energy efficiency") was established in 2011. It provides information on:
    - Government policies for energy conservation and energy efficiency improvements and their implementation plans
    - Data on energy intensity of Russia's economy and its sub-sectors
    - Energy intensity improvement potential
    - Successful projects and outstanding achievements in energy conservation and energy efficiency improvements.
- After the implementation of the changes to the Federal Law No. 261-FZ, government and municipal authorities have a choice to submit either an energy passport or energy declaration.

LINKS

Not available.

15.SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

Annual State Report on the status of energy conservation and energy efficiency improvement in the Russian Federation.

16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

Personal contribution to the energy efficiency in the form of a petition or a declaration alongside the #ВместеЯрче (#VmesteYarche) all-Russia festival.

OBJECTIVE

Declarations and petitions to promote energy efficient lifestyle in the economy alongside the annual all-Russia festival #ВместеЯрче (#VmesteYarche)

OUTLINE

During 2016:

- Over 59,000 people joined the Declaration on their personal contribution to the energy efficiency improvement of the Russian economy,
- Over 45,000 people joined the petition to switch to LED-lighting,
- Over 48,000 people joined the petition for energy efficient heat supply.

LINKS

Petition initiative: https://www.вместеярче.рф

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

Market reform for the promotion of energy efficient lighting

OBJECTIVE

The project targets to reduce greenhouse gas emissions in Russia through lighting efficiency improvements. It seeks to reform Russia's lighting market through energy efficient lighting technologies and systems promotion and gradual replacement of inefficient lighting equipment.

Scope: Lighting systems of all energy demand sectors: residential buildings, state budget entities, educational and industrial sectors, street lighting.

To achieve its objectives the project will focus on the following:

- Development of standards and technical regulations for energy efficient technologies, to serve as a foundation for developing and implementing market reforms. The following will be established: (i) the Federal energy efficient lighting council; (ii) development and implementation of new lighting energy standards; and (iii) regulations for commercial buildings, new residential buildings, street lighting and industrial lighting.
- Support domestic development of energy efficient lighting manufacturing. This support will include assistance with the establishment of international joint companies and local industry upgrades.
- Development and implementation of demonstrations/pilot projects in residential and public buildings (hospitals and schools) of the city of Moscow with information disseminated throughout Russia.
- Development and implementation of demonstrations/pilot projects in street-lighting with information disseminated throughout Russia.

It is expected that during 10 years of project implementation, Russia will achieve up to 60% of energy saving potential in lighting. Energy savings are estimated at 31 TWh per year, and CO2 emissions are expected to reduce by 15.5 Mt per annum.

OUTLINE

From 2015 to 2016, under the initiative of the Ministry of Energy of Russia and with the support from UNDP, significant measures were taken in the field of technical regulation of lighting market and energy efficient lighting promotion.

Starting 1 July 2016, first-order requirements for energy efficiency of light bulbs and appliances procured for government and municipal contracts were established. These requirements prescribe the transitioning to LED lighting in the state budget funded sector (government decree No. 898 from 28 August 2015)

LINKS

UNDP in Russian Federation. Transforming the Market for Efficient Lighting: http://www.undp.ru/index.php?iso=RU&lid=1&cmd=programs&id=190

Guidelines on energy efficiency of goods and services for state and municipal contracts: http://publication.pravo.gov.ru/Document/View/0001201509030003

Ban on incandescent light bulbs over 100W, and total ban of incandescent light bulbs for state and municipal needs.

OBJECTIVE

Improve lighting efficiency.

OUTLINE

Starting from 1 January 2011, a law banning the sales of incandescent light bulbs over 100W capacity, and the use of incandescent light bulbs in government and municipal facilities was enacted (Federal law 261-FZ from 23 November 2009).

In 2013, the government of the Russian Federation approved an action plan aimed at limiting the sales of incandescent light bulbs in Russia as well as to support the demand for energy efficient lighting (government decree No. 1973-r from 28 October 2013).

State-controlled entities are obliged to reach the share of 75% LED by 2020 with intermediate goals in 2017-2019 (government decree No. 971 from 27 September 2016).

LINKS

Government decree on restriction of sales incandescent light bulbs and promoting the energy efficient light sources: http://publication.pravo.gov.ru/Document/View/0001201310290009

Government decree on guidelines for energy saving and energy efficiency programmes: http://publication.pravo.gov.ru/Document/View/0001201609290014

18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

No information available.

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Roadmap on improving the energy efficiency of buildings

OBJECTIVE

To remove technical, regulation, data and other barriers for energy efficiency improvements, and establish energy efficiency indicators during the design, construction, use and overhaul of buildings.

The targets are to:

- Ensure the rational use of energy resources for buildings through establishing energy efficiency requirements of buildings.
- Reduce utility bills through energy efficiency improvements in residential sector, including the overhaul of multi-apartment buildings and provision of energy services in residential sector.
- Increase the share of design and construction of buildings with high energy efficiency rating.
- Ensure energy efficiency in contracts for construction, re-construction and major overhauls of buildings.
- Attract private investment to increase energy efficiency, including energy service contracts.
- Develop technical regulations and standardisation in the area of energy efficiency of buildings, including the development of infrastructure for standards compliance assessment.
- Develop methodology, enhance information availability, increase training in the area of improving energy efficiency of buildings.

OUTLINE

As outlined above.

LINKS

Roadmap for energy efficiency improvements in buildings and structures: http://government.ru/media/files/RnhU0rvDLLc5Z6mHK7wYENRMG6N7efOS.pdf

Rules for Establishing Energy Efficiency Requirements for Buildings and Requirements for the Rules for Determining the Class of Energy Efficiency of Multi-Apartment Houses.

OBJECTIVE

Improve energy efficiency for buildings

OUTLINE

- These Regulations determine the content, conditions of use and the procedure for establishing energy efficiency requirements for buildings and structures (hereinafter referred to as "energy efficiency requirements").

- Energy efficiency requirements shall be applied to the design, expertise, construction, commissioning and operation of buildings that have been built, are reconstructed or overhauled buildings and structures equipped with heat-consuming installations, power receivers, water-distribution plant and (or) devices for use of natural gas, in order to provide consumers with energy resources and utilities.
- Energy efficiency requirements are established by the Ministry of Construction and Housing and Communal Services of the Russian Federation. After establishing the basic level of energy efficiency requirements for buildings and structures, the energy efficiency requirements should be revised at least every 5 years.

  For newly-constructed buildings and structures:

  - from January 1, 2018 - not less than 20% efficiency improvement compared to the base level
  - from January 1, 2023 - not less than 40% efficiency improvement compared to the base level
  - from January 1, 2028 - not less than 50% efficiency improvement compared to the base level

  For reconstructed or overhauled buildings (excluding multi-apartment buildings) and structures:

  - from January 1, 2018 - not less than 20% compared to the base level.

LINKS

Guidelines for energy efficiency of buildings and structures: http://www.consultant.ru/document/cons_doc_LAW_109801/

Financial support for refurbishment of common areas of multi-family building.

OBJECTIVE

The approved rules determine the procedure and conditions for granting financial support at the expense of the Fund to the budgets of the constituent entities/regions of the Russian Federation for major overhaul of common areas of multi-apartment buildings.

According to the Rules, financial support from the Fund is directed towards the reimbursement of part of the costs for the provision of services, energy conservation and energy efficiency improvements performed during the provision of services and / or major overhaul of common areas in apartment buildings. At the same time, such overhaul must lead to reduction in energy consumption by at least 10%.

In addition, according to this resolution, the financial support of the Fund is also directed towards the reimbursement of part of the interest payments for loans granted and used to pay for services and major overhaul of common areas of a multi-apartment building.

OUTLINE

The resolution establishes a number of conditions for the provision of financial support. A multi-apartment building claiming financial support should not be recognised as an unfit building and subject to demolition; it must be more than 5 years but less than 60 years since the year of commission, and be equipped with building-

level water, power, gas meters. Major overhauls should not be financed from maintenance funds of a regional operator, formed from contributions by owners of another apartment building.

With the help of the Fund, no more than half of the cost of repairing a multi-apartment building and no more than five million roubles per house can be reimbursed.

Financial support will be provided at the expense of the total limit for capital repairs, which is set at ~822 million roubles. Information on the total limit for financial support from the Fund's funds for major overhaul on applications submitted after July 1, 2016, is posted on the Fund's website in "How to Obtain Financing / Limits for Providing Financial Support" section.

LINKS

Government guidelines on the support programme for major overhauls of multi-apartment buildings: http://government.ru/media/files/xagLjQeUIT84xBXJktHGZuAXXqFc2m37.pdf

20.ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

- On 23 Nov 2016, in Moscow, alongside the 5th International forum on energy efficiency and energy sector development ENES-2016, the first international meeting on energy efficiency improvement and sustainable development for city mayors was held. One of the outcomes of the meeting was the signing of the energy efficiency and sustainable development Declaration, aimed at promotion of the ideas and values it contains. In addition, this Declaration describes the means of support for such meeting to be held on an annual basis. Russia is part of this Declaration.

- On 7 June 2017, in Beijing, China, on the margins of the 8th meeting of the Clean Energy Ministerial (CEM8), Russia and South Korea led the initiative on energy efficiency and urban sustainable development. Large economies such as PRC, UAE, Mexico, SAR as well as well-known international organisations: IRENA, IPEEC and UNEP also joined this initiative. The initiative is aimed at further development of international cooperation, including but not limited to the inter-city experience exchange, the formation and data filling of international databases on city best practices for high quality targeting, promotion of energy efficiency urban lifestyle.

OUTLINE

The key idea of the Initiative was to conduct an international benchmarking of the cities on six indicators: buildings, transportation, smart-city, renewables, lighting and heat supply. During the first stage. the cities would be clustered based on comparable climate, geographic conditions and size. Then they are compared on six indicators: buildings, transportation, smart-city, renewables, lighting and heat supply. Because of this benchmarking, an accelerated adoption of energy efficient technologies is expected.

LINKS

ENES-2016. Declaration on sustainable city development: http://enes-expo.ru/en/enes-exhibition/declaration-on-sustainable-city-development.html

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

No information available.

21. OTHER ENERGY EFFICIENCY EFFORTS

No information available.

SINGAPORE

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

Singapore ratified the Paris Agreement in Sep 2016, formalising its pledge to reduce emissions intensity by 36% from 2005 levels by 2030, and to stabilise emissions with the aim of peaking around 2030. This pledge builds on its existing commitment to reduce greenhouse gas emissions by 16% from the business-as-usual level by 2020, which Singapore is on track to meet. Improving EE will remain our key strategy for reducing emissions and achieving our pledge across the industry, transport, buildings, household, waste, and water sectors. We will work with the manufacturing sector industries to achieve EE improvement rates of around 1-2% per annum.

2. ENERGY EFFICIENCY STRATEGY

Singapore's geographical constraints limit the extent of alternative energy deployment. Therefore, Singapore has identified energy efficient as a key strategy to mitigate greenhouse gas emissions. It also helps to improve competitiveness, energy security, and environmental sustainability. To improve its energy efficiency, Singapore has increased its capabilities, raised awareness across the major energy-consuming sectors of its economy, and addressed sector-specific barriers using incentives or regulatory measures.

Since April 2013, the Energy Conservation Act (ECA) has been introduced to mandate energy efficiency requirements and energy management practices of large energy users in Singapore. Its main requirements include the appointment of energy managers, reporting of energy use, and submission of energy efficiency improvement plans. In March 2017, enhancements to the Act were announced to take effect from 2018 to help Singapore achieve its pledge under the Paris Agreement. These include strengthening the measurement and reporting requirements for greenhouse gas emissions, requiring companies to undertake regular energy efficiency opportunity assessments and introducing minimum energy performance standards for common industrial equipment and systems.

FUNDING

Not applicable.

LINKS

Enhancements to Energy Conservation Act:

http://www.nea.gov.sg/corporate-functions/newsroom/news-releases/enhancements-to-the-energy-conservation-act

3. ENERGY EFFICIENCY ACTION PLAN

The Sustainable Singapore Blueprint 2015 outlines Singapore’s vision and plans for a more liveable and sustainable Singapore. It includes plans to raise solar penetration rates and grow capability in green buildings.

The Climate Action Plan, launched in July 2016, comprises two publications that set out Singapore's plan to mitigate the effects of climate change while meeting its obligations under the Paris Agreement. In particular, the first publication, "Take Action Today, for a Carbon-Efficient Singapore", sets out four key strategies on how Singapore intends to reduce greenhouse gas emissions and increase energy efficiency.

FUNDING

Singapore's climate change efforts are funded domestically and by the government.

LINKS

List of EE programmes in Singapore: http://www.e2singapore.gov.sg/

Publications to mitigate climate change and increase energy efficiency:

https://www.nccs.gov.sg/resources/publications

Sustainable Singapore Blueprint: https://www.mewr.gov.sg/Data/Editor/Documents/Press%20Release%20-%20Annex%20A.pdf

Publication "Take Action Today, for a Carbon-Efficient Singapore":

https://www.nccs.gov.sg/sites/nccs/files/NCCS_Mitigation_FA_webview%2027-06-16.pdf

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

Singapore ratified the Paris Agreement in Sep 2016, formalising its pledge to reduce emissions intensity by 36% from 2005 levels by 2030, and to stabilise emissions with the aim of peaking around 2030. This pledge builds on its existing commitment to reduce greenhouse gas emissions by 16% from the business-as-usual level by 2020, which Singapore is on track to meet.

LINKS

Singapore's ratification of the Paris Agreement:

https://www.mfa.gov.sg/content/mfa/overseasmission/geneva/press_statements_speeches/2016/201609/press_20160921.html

5. SECTORAL ENERGY EFFICIENCY TARGETS

Singapore does not have any sectoral energy efficiency improvement goals.

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

Energy Efficiency Programme Office ("E2PO"), established in 2007.

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

Various agencies under the E2PO are in charge of energy efficiency policies under their respective sectors.

STAFF AND BUDGET

No information.

BUDGET USE

No information.

LINKS

E2PO objectives and members:

http://www.e2singapore.gov.sg/About_Esup2/supPO/Objective_and_Members.aspx

Overview of E2PO:

http://www.e2singapore.gov.sg/data/0/docs/Energy_Efficiency_Opportunities_for_Businesses.pdf

7. OTHER ENERGY EFFICIENCY AGENCIES

The National Climate Change Secretariat (NCCS) was established in July 2010 to develop and implement Singapore's domestic and international policies and strategies to tackle climate change. NCCS is part of the Strategy Group which supports the Prime Minister and his Cabinet to establish priorities and strengthen strategic alignment across Government. It is also the secretariat for the Inter-Ministerial Committee on Climate Change (IMCCC), which enhances Whole-of-Government coordination on climate change policies. As increasing energy efficiency is one of the key climate change strategies, this entails working closely with the agencies who are involved in the E2PO.

LINKS

NCCS: https://www.nccs.gov.sg/about-nccs

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

Awareness is promoted through several programmes, including:

- The Home Energy Auditor (HEA) and the Life Cycle Cost Calculator (LCCC), which are mobile applications developed to improve information on high energy-consuming appliances and their lifetime costs.
- There are also posters in schools, retail stores, community spaces and housing states to raise household awareness on energy saving habits
- A "Resource Efficiency Guide for New Homeowners" is also made available to new homeowners to provide information on a typical household's energy consumption profile and tips on energy efficient appliances
- Campaigns are also held in schools to cultivate energy efficient habits among students.
- BCA has implemented outreach programmes, including: a public online portal; roving green building exhibitions; and new social media (Facebook). The BCA has also partnered with the Green Mark

Champion, CDL, to hold the BCA-CDL Green Sparks Competition 2010 in order to stimulate innovation among the youth on retrofitting existing buildings.

- The BCA organises an annual International Green Building Conference (IGBC) as a platform in the building sector to gather for knowledge sharing and collaborations.

LINKS

Energy efficiency initiatives in Singapore:

https://www.iitk.ac.in/ime/anoops/FOR%20-%2016/PPTs/Day%20-%205%20-%20Singapore/Mr.%20Kok%20Kiat%20Ang%20-%2019%20-%20Singapore%27s%20Energy%20Efficiency%20Efforts%20(for%20circulation).pdf

LCCC website: http://www.e2singapore.gov.sg/Households/Saving_Energy_At_Home/LCC_Calculator.aspx

9. ENERGY EFFICIENCY AWARENESS RAISING

Energy Efficiency National Partnership (EENP) - Introduced by NEA, EMA and EDB in 2010, the EENP serves as a platform to help companies reduce energy consumption by conducting relevant courses and workshops as well as providing energy efficiency- related resources, incentives and recognition. It is a voluntary partnership programme for companies that wish to be more energy efficient, thereby enhancing their long-term business competitiveness and reducing their carbon footprint. Since 2011, a National Energy Efficiency Conference is held annually to provide partners with opportunities to learn and exchange energy efficiency technologies and best practices. As of May 2017, 246 companies have joined as partners. The EENP Awards also accords recognition to companies and individuals who excel in the areas of energy management through annual national awards.

LINKS

EENP: http://www.e2singapore.gov.sg/Programmes/Energy_Efficiency_National_Partnership.aspx

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

The Singapore Certified Energy Manager (SCEM) programme aims to equip energy managers with technical skills and competence to manage energy services within a facility. Currently, there are two certifiable training levels namely the Associate SCEM course that is targeted at diploma level candidates, and the Professional SCEM course that is targeted at degree level candidates. The SCEM training grant partially funds the cost of SCEM training cost at Professional Level.

The BCA academy also offers a variety of energy efficiency/management courses.

The IEA and EMA launched the inaugural Singapore-IEA Energy Efficiency Training Week for Asia-Pacific in Singapore in July 2017

LINKS

Energy efficiency-related courses supported by the government:

- http://www.e2singapore.gov.sg/Training/Courses.aspx

- https://www.bcaa.edu.sg/what-we-offer/courses?CourseCategory=19f324c2-3230-6ef1-b0a0-ff0000a28c6c&SearchText=energy
- https://www.iea.org/topics/energyefficiency/e4/e4trainingweeks/eetwsoutheastasia2017/

11. PRIVATELY OPERATED TRAINING

The Sustainable Energy Association of Singapore (SEAS) offers energy efficiency courses such as the SCEM, Energy Management System Foundation and Energy Management System Advanced Lead Auditor to help firms and organisations address and reference energy management issues on a global standard.

LINKS

Energy efficiency courses by Sustainable Energy Association of Singapore:

http://www.seas.org.sg/index.php?option=com_events&view=trainingprogrammes&Itemid=113

12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

In 2014, government announced the commitment of S$100million to fund two initiatives in energy research and development (R&D), specifically in building energy efficiency and research on green data centres - the "Building Energy Efficiency Research Development and Demonstration Hub" and the "Green Data Centre Research Hub Programme".

The Energy National Innovation Challenge (Energy NIC) was established by the National Research Foundation (NRF) in Feb 2011 to bring about significant changes in Singapore's energy landscape in a whole-of-government effort. Under the National Research Foundation's 2015 Strategic Plan, the Energy NIC has been allocated S$300 million to harness Singapore's R&D base to increase energy efficiency, reduce carbon emissions and increase energy options. NCCS and NRF have jointly commissioned a series of Technology Roadmaps and earlier Technology Primers to accelerate research to deployment of energy efficiency and low carbon technologies in Singapore.

LINKS

News release of government funding for energy R&D: http://www.eco-business.com/news/govt-invest-s100m-research-energy-efficiency/

Energy NIC: https://www.nrf.gov.sg/programmes/national-innovation-challenges

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

Agencies monitor and evaluate the progress of the EE programmes and activities under their purview.

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

EMA collects energy data under Electricity, Gas and Statistics Act. NEA collects energy use and GHG emissions data of energy-intensive users in the industrial sector under the Energy Conservation Act.

15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

No information.

16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

Carbon tax from 2019

OBJECTIVE

A carbon tax will enhance Singapore's existing and planned mitigation efforts under the Climate Action Plan, and stimulate clean technology and market innovation. Currently, emitters in Singapore do not face a cost to release greenhouse gases (GHGs), which contribute to climate change and impacts today's and future generations. The carbon tax will provide a price signal on GHG emissions to incentivise emitters to factor in the costs of their GHG emissions in their business decisions, and encourage companies to improve on energy efficiency and innovate.

OUTLINE

In 2017, the Singapore Government announced the intent to implement a carbon tax on the emission of greenhouse gases from 2019. The tax will generally be applied upstream, for example, on power stations and other large direct emitters, rather than electricity users. The expected tax rate is between $10 and $20 per tonne of greenhouse gas emissions. Details are pending the results of industry consultation.

LINKS

Carbon pricing: https://www.nccs.gov.sg/climate-change-and-singapore/domestic-actions/reducing-emissions/carbon-pricing

Public consultation regarding carbon tax: https://www.nccs.gov.sg/public-consultation

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

- **Mandatory Energy Management Practices under the ECA – Apr 2013**
- **Enhancements to the ECA – Jun 2017**

OBJECTIVE

To help companies adopt more energy-efficient processes, so that Singapore can achieve its pledge under the Paris Agreement to reduce emissions intensity by 36% from 2005 levels by 2030, and stabilise GHG emissions with the aim of peaking around 2030.

OUTLINE

Mandatory Energy Management Practices under the ECA

Energy-intensive users in the industrial sector that consume 54TJ or more of energy annually in at least two out of the three preceding years have to comply with the following requirements:

- Appoint at least one certified energy manager.
- Monitor and report energy use and GHG emissions annually.
- Develop an energy efficiency improvement plan and update the plan annually.

Enhancements to the ECA

- Large industrial facilities are required to submit a monitoring plan for NEA's approval and an enhanced GHG emissions report based on the approved monitoring plan. In addition, facilities have to adopt specified methodologies, in line with international best practices and internationally recognised protocols such as the World Resources Institute's Greenhouse Gas (GHG) Protocol, International Standards Organisation (ISO) and the Intergovernmental Panel on Climate Change (IPCC) guidelines.
- New industrial facilities and major expansions with potentially large energy consumption will be required to review the facility design for energy efficiency and report the energy performance of key energy-consuming systems using measured data. Existing facilities under the ECA will be required to strengthen their energy management practices by implementing a structured energy management system and conducting periodic energy efficiency opportunities assessments.
- Minimum Energy Performance Standards (MEPS) will also be introduced for common industrial equipment and systems starting with MEPS for motors from 2018.

LINKS

Enhancements to the ECA: http://www.nea.gov.sg/corporate-functions/newsroom/news-releases/enhancements-to-the-energy-conservation-act

Incentives and grants

OBJECTIVE

Encourage uptake of energy-efficient equipment and technologies

OUTLINE

- Energy Efficiency Fund (E2F) – This fund supports the energy efficiency efforts at industrial facilities, namely efficient design of new facilities, conducting of energy assessments, and adoption of energy

efficient equipment and technologies. E2F provides up to 50% co-funding for industrial companies to review the design of their new facilities to integrate energy and resource efficiency improvements as well as to carry out periodic energy assessments to understand their energy consumption patterns and identify potential energy improvement opportunities. For companies that would like to replace their existing equipment with more energy efficient ones, up to 30% of the project costs could be subsidised.

- Energy Efficiency Financing Programme: To encourage industrial and manufacturing facilities to adopt energy-efficient equipment or technologies, a third-party financier pays for the cost of energy efficiency projects and the energy savings are shared among all stakeholders.
- The One-Year Accelerated Depreciation Allowance Scheme: This tax incentive scheme allows capital expenditures on qualifying energy-efficient equipment to be written off within one year instead of three.
- The Investment Allowance (IA) Scheme: This tax incentive scheme encourages companies to replace old energy-consuming equipment with more energy-efficient equipment by allowing an additional 30% of investment allowance to be deducted from the companies' taxable income.

LINKS

Energy Efficiency Fund: http://www.e2singapore.gov.sg/Incentives/Energy_Efficiency_Fund.aspx

List of other programmes to incentivise energy efficiency in industry: https://www.spring.gov.sg/NewsEvents/Events/Documents/SS_ISO50001/7-Industrial%20EE%20Programmes-NEA.pdf

SME Energy Efficiency Initiative

OBJECTIVE

In 2013, the Singapore government launched the SME Energy Efficiency Initiative as one of the solutions to assess, monitor and improve the energy performance of small and medium enterprises (SMEs).

OUTLINE

Developed by SPRING Singapore and led by SEAS, this S$17 million-dollar initiative brings together existing government grants to help SMEs reduce their energy costs, increase productivity, and promote energy efficiency. The grant provides funding for Energy Audit, Energy Monitoring System, Energy Efficiency Project Implementation and Energy Efficiency Thought Leadership.

LINKS

SME Energy Efficiency Initiative: http://www.seas.org.sg/SME3/index.php/about-smeee-initiative/

18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

Since the transport sector accounts for a substantial and growing share of total energy use and carbon emissions, the government supports energy efficiency through various measures, including: investing in new mass rapid transit (MRT) lines, upgrading existing facilities, central bus planning, bus priority schemes, tightening quality of service standards, and enhancing commuter information.

Land Transport Master Plan (LTMP) 2013

OBJECTIVE

By 2030 the key objectives are the following:

- Length of cycling paths: 700 km
- Modal share of journeys made via public transport during peak hours: 75%
- Length of rail network to double to 360 km
- 80% of households within a 10-min walk from MRT stations

OUTLINE

Beyond Land Transport Master Plan (LTMP) 2013, the Land Transport Authority (LTA) has embarked on the Walk Cycle Ride (WCR) SG strategy to build a car-lite Singapore that is so well-connected that commuting needs can be met without having to own a car. The commuting experience is more than just getting from point A to B and it becomes a meaningful part of the day and the community

LINKS

LTMP: https://www.lta.gov.sg/content/ltaweb/en/about-lta/what-we-do/ltmp2013.html

WCR SG: https://www.mot.gov.sg/Transport-Matters/Public-Transport/Walk-Cycle-Ride-SG/

Other energy efficiency initiatives in the transport sector

OBJECTIVE

Incentivise energy efficiency in transport sector.

OUTLINE

- Managing car ownership and usage by limiting the growth of vehicle numbers through the Vehicle Quota System (VQS), refining the Electronic Road Pricing (ERP) system with the ERP 2.0 which is a satellite-based ERP system, and further developing Intelligent Transport System (ITS) solutions.
- Testing new technologies such as the Diesel Particulate Filter (DPF), diesel-hybrid buses, vehicle emission test laboratory and electric cars.
- Developing a Green Framework for the Rapid Transit System (RTS). The Green Mark provides a systematic and structured approach in evaluating and rating the environmental performance of the RTS for existing and future lines.
- Vehicle Emissions Scheme (VES). VES will take over from Carbon-Emissions Vehicle Scheme (CEVS) from 1 Jan 2018 onwards and include emissions of harmful air pollutants on top of carbon dioxide.
- Fuel Economy Labelling Scheme (FELS). Since 2012, any passenger and light-goods vehicles sold in Singapore has to show a Fuel Economy Label that provides information on its fuel efficiency to help

buyers make better decisions. Fuel economy labels will be re-designed to help potential vehicle buyers make informed decisions in choosing cleaner, more fuel-efficient cars in 2018.

- The BlueSG: Singapore's First large-scale Electric Vehicle Car-sharing Scheme. 1,000 shared electric vehicles and 2,000 charging points to be deployed across all HDB towns by 2020. The first phase of the scheme will be launched in 2H 2017 with 125 Bluecars and 200 charging points. This lays the foundation for nation-wide EV charging infrastructure (20% of charging points opened to public).

LINKS

Transportation schemes to encourage energy efficiency:

https://www.lta.gov.sg/content/ltaweb/en/roads-and-motoring.html

http://www.e2singapore.gov.sg/Transport.aspx

Fuel-efficient technologies for vehicles:

https://www.lta.gov.sg/content/ltaweb/en/roads-and-motoring/transport-options-for-motorists/encouraging-green-vehicles/adopting-fuel-efficient-technologies.html

19. BUILDING ENERGY EFFICIENCY INITIATIVES

BCA Green Mark Scheme

OBJECTIVE

The Building and Construction Authority (BCA), a statutory board under the Ministry of National Development, spearheads energy efficiency improvements in the building sector.

The BCA Green Mark scheme is a green building rating system launched in 2005 to promote sustainability in the built environment and raise environmental awareness among developers, designers and builders.

OUTLINE

It is a benchmarking scheme that evaluates a building on its environmental impact and performance. There are four ratings under this scheme – Platinum, Gold Plus, Gold and Certified. Since 2008, all new and existing buildings with a gross floor area of 2000 m2 that are undergoing major retrofitting must minimally meet the Green Mark Certified standard.

LINKS

BCA Green Mark scheme: https://www.bca.gov.sg/greenmark/green_mark_buildings.html?p=building

Public Sector Sustainability Plan

OBJECTIVE

The public sector will continue to take the lead charting Singapore's strategies for a more carbon-efficient and being a good steward of our resources. Under the Public Sector Sustainability Plan, launched by MEWR in 2017, the Government aims to achieve electricity savings of 15.0% by FY2020 from the baseline electricity consumption

in FY2013. Thus far, agencies have committed electricity saving measures that will collectively lead to 15.2% electricity savings by FY2020. These include "hardware" improvements, such as replacing or upgrading air-conditioning systems and lightings, and "software" actions, like promoting organisational habits that minimise electricity consumption.

The annual energy savings from the Government's committed measures amount to 290 GWh. This is sufficient to power 50,000 households for an entire year.

OUTLINE

Each ministry is required to submit reduction targets and management plans to meet the targets. In addition, new public sector buildings with an air-conditioned area equal or exceeding 5,000m2 are required to attain the BCA Green Mark Platinum Standard - the highest rating possible. Existing large and mid-sized public sector buildings are required to achieve BCA Green Mark GoldPlus and Gold respectively via retrofitting by 2020.

LINKS

Public Sector Sustainability Plan:

http://www.e2singapore.gov.sg/Programmes/Public_Sector_Taking_the_Lead_in_Environmental_Sustainability.aspx

Green Building Masterplan

OBJECTIVE

In its third and latest Green Building Masterplan launched in September 2014, BCA set out ambitious plans accelerate the green building agenda and continue to meet the target of greening 80% of the buildings in Singapore by 2030. The existing incentives include the following:

OUTLINE

- S$50 Million Green Mark Incentive Scheme for Existing Buildings and Premises – Launched in 2014, this is targeted to encourage small and medium enterprises (SMEs) tenants and building owners, or building owners with at least 30% of SME tenants to adopt energy efficiency improvement measures. The scheme co-funds up to 50% of the retrofitting cost for energy improvements, or up to S$3 million for building owners and S$20,000 for tenants.
- Building Retrofit Energy Efficiency Financing (BREEF) Scheme – Introduced in 2011 to offer financing aid through an energy performance contract arrangement to offset high upfront costs of energy efficiency retrofits. With the scheme, applicants can obtain financing from participating financial institutions and service the loans through energy savings.
- Green Mark Gross Floor Area Incentive Scheme – To encourage private sector to achieve higher-tier Green Mark ratings, additional floor area will be granted for private developments with Green Mark Platinum or Gold plus from April 2014 to April 2019.
- S$5 Million Green Mark Incentive Scheme, Design Prototype – Valid from Dec 2014 to Dec 2018, this aims to encourage developers and building owners to strive for greater energy efficiency in buildings

at the design stage, by providing funding support to engage consultants to during the design phase for green buildings.

- S$100 Million Green Mark Incentive Scheme for Existing Buildings - For building owners of existing private commercial developments to implement energy efficient solutions and to conduct energy audit in their existing buildings

LINKS

Green Building Masterplan: https://www.bca.gov.sg/Professionals/Technology/technology.html

Building energy codes and standards

OBJECTIVE

To improve energy efficiency of buildings, with regular review to make sure they are in line with international standards.

OUTLINE

Singapore's building codes and standards have been regularly updated to encourage improvement in energy efficiency of buildings. Currently, building owners are required to conduct energy audits on their air-conditioning systems every 3 years to ensure that they are operating at the designed efficiency levels. Since 2013, Singapore abolished the British Standards and adopted the Eurocodes, one of the world's most technically advanced design standards, as its building codes to raise the standards of the building industry. Since 2014, all new buildings are mandated to register 28% improvement in energy efficiency compared to code compliant building while existing buildings are to register 25% improvement in energy efficiency.

LINKS

Minimum green mark standard for existing buildings:

https://www.bca.gov.sg/envsuslegislation/others/minimum_standards.pdf

BCA building code: https://www.bca.gov.sg/Newsroom/pr25032013_EC.html

20.ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

Cooperation with the International Energy Agency (IEA), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, and the United Nations Environment (UN Environment): Sustainable Building and Climate Initiative (SBCI) have been initiated to facilitate the transfer of technologies, policies, and exchange of the best practices in energy efficiency as well as other aspects of sustainable development.

- Sustainable Energy Association of Singapore (SEAS) and the Institution of Engineers Singapore (IES) for the Singapore Certified Energy Manager Programme.

- Cooperation with the Singapore Green Building Council (SGDC): SGBC-BCA Green Individual Award recognises the contributions of professionals and individuals who have been leading the green building movement in Singapore.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

Singapore actively participates in multilateral forums on energy such as the APEC Energy Working Group, ASEAN, and the East Asia Summit (EAS) Energy Cooperation Task Force (ECTF).

Singapore joined IEA as an association economy in 2016. Singapore and IEA organised a 5-day EE Training Week in 2017 as the first activity under the Singapore-IEA Regional Training Hub launched in October 2016 at the Singapore International Energy Week by Minister for Trade and Industry (Industry) Mr S Iswaran and IEA Executive Director Dr Fatih Birol. The Regional Training Hub taps on Singapore's strategic location to provide the region with greater access to IEA's expertise and training programmes.

Singapore also hosted several EE workshops under the Singapore Cooperation Programme (SCP) and participated in workshops. See more details in Singapore's 2nd Biennial Update Report (BUR).

LINKS

Singapore's 2nd Biennial Update Report: http://www.nea.gov.sg/docs/default-source/energy-waste/climate-change/second-biennial-update-report-(16-dec-2016).pdf

21. OTHER ENERGY EFFICIENCY EFFORTS

Household sector:

- Under the ECA, registrable household appliances that are sold in Singapore must show the mandatory energy label, which displays the energy rating of an appliance by the number of ticks (from 1 to 5, with 5 being the most energy efficient). This Mandatory Energy Labelling Scheme currently covers household refrigerators, air conditioners, clothes dryers, televisions, and lamps.
- Household refrigerators, air conditioners, clothes dryers, and lamps supplied in Singapore must meet the Minimum Energy Performance Standards (MEPS).
- Launched in 2012, the HDB Greenprint programme aims to guide greener HDB town development, and create sustainable homes. Under the programme, features such as solar panels, rainwater harvesting system, retrofitted lifts with energy regeneration system that reduced energy consumption by 20% and retrofitted LED street lights which halved the energy consumption have been introduced.

LINKS

Mandatory Energy Labelling Scheme: http://www.e2singapore.gov.sg/Households.aspx

HDB Greenprint programme: http://www.hdb.gov.sg/cs/infoweb/about-us/our-role/smart-and-sustainable-living/hdb-greenprint

CHINESE TAIPEI

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

The goal is to improve energy efficiency by more than 2% per annum (compared to 2005 levels) in order to achieve a 20% energy intensity reduction by 2015. The target extends to 50% by 2025 with the support of further technological breakthroughs and administrative measures. Bureau of Energy, Ministry of Economic Affairs is the responsible agency in overseeing and implementing energy efficiency measures by utilising Energy Management Law (EML), which is designed to govern the energy efficiency of energy-consuming devices. Under the Intended Nationally Determined Contribution (INDC), Chinese Taipei will implement an economy-wide target, through domestic abatement effort to reduce its greenhouse gas emissions (214 $MtCO_2$-e) by 50% from the business-as-usual level (428 $MtCO_2$-e) by 2030.

2. ENERGY EFFICIENCY STRATEGY

- Energy Management Law (EML): designed to govern the energy efficiency of energy-consuming devices. Under this law, energy efficiency is expected to improve by 2% every year for the next eight years starting from 2008; improve appliance energy efficiency 10% to 70% by 2015.
- Minimum Energy Performance Standard (MEPS) and EE Rating Labelling for Appliances and Lighting; Fuel Efficiency Standards for Automobiles.
- Energy Conservation Labelling Programme

FUNDING

Government funding.

LINKS

Energy efficiency policy: http://www.moea.gov.tw/AD/Ad04/content/ContentDetail.aspx?menu_id=4618

3. ENERGY EFFICIENCY ACTION PLAN

No information.

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

The goal is to improve energy efficiency by more than 2% per annum (compared to 2005 levels) in order to achieve a 20% energy intensity reduction by 2015. The target extends to 50% by 2025 with the support of further technological breakthroughs and administrative measures. Chinese Taipei will implement an economy-wide target, through domestic abatement effort to reduce its greenhouse gas emissions (214 $MtCO_2eq$) by 50% from the business-as-usual level (428 $MtCO_2eq$) by 2030.

LINKS

Target for energy intensity reduction:

http://www.moea.gov.tw/AD/Ad04/content/ContentDetail.aspx?menu_id=4621

Chinese Taipei's submitted INDC:

http://enews.epa.gov.tw/enews/enews_ftp/104/1117/174044/Submission%20by%20Republic%20of%20China%20(Taiwan)Intended%20Nationally%20Determined%20Contribution.pdf

5. SECTORAL ENERGY EFFICIENCY TARGETS

All targets are using year 2008 as base year.

- Industry - Reform the industrial sector towards a high value-added, low energy-intensive structure so that its carbon intensity could decrease by more than 30% by 2025.
- Transport - Raise the standard fuel efficiency for private vehicles (measured in terms of passenger kilometres per litre) incrementally to 25% by 2015.
- Residential and commercial - Raise appliance efficiency standards by 10% to 70% in 2011. Further increase the efficiency standards in 2015 to promote high-efficiency products.
- Government - Reduce the energy use of governmental agencies and schools by 7% in 2015.

LINKS

Energy saving and carbon reduction action plan:

http://web3.moeaboe.gov.tw/ECW/main/content/wHandMenuFile.ashx?file_id=800

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

Bureau of Energy, Ministry of Economic Affairs.

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

- Draw up drafts of policies and laws.
- Plan and predict the energy supply and demand.
- Examine and approve energy development, distribution, and sales.
- Monitor energy prices.
- Build an energy database.
- Energy savings promotion and dissemination, energy technology R&D.

STAFF AND BUDGET

Approximately 140 employees.

BUDGET USE

Not applicable.

LINKS

Bureau of Energy, Ministry of Economic Affairs: http://www.moeaboe.gov.tw

7. OTHER ENERGY EFFICIENCY AGENCIES

No information.

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

There are two awareness-raising programmes:

- Research and Promotion of the Energy Conservation Labelling and Energy Efficiency Labels; and
- Energy Conservation Environment Establishment, Achievements Appraised, and Technology Promotion.

LINKS

Efficiency Standards and Benchmarks:

http://web3.moeaboe.gov.tw/ecw/english/content/Content.aspx?menu_id=1535

Energy Conservation Labelling: http://www.energylabel.org.tw/

9. ENERGY EFFICIENCY AWARENESS RAISING

Media dissemination programmes evaluate potential audiences. Meanwhile, an economy-wide telephone survey is conducted to assess public awareness.

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

There is a government programme to train energy auditors and managers for manufacturing firms and the commercial sector.

LINKS

http://web3.moeaboe.gov.tw/ecw/populace/content/SubMenu.aspx?menu_id=104

11. PRIVATELY OPERATED TRAINING

Not applicable.

12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

The Chinese Taipei government's Energy Conservation Technology Mid-Term Project is administered by the Bureau of Energy, Ministry of Economic Affairs. The project is applicable to the transport, residential, commercial, and government sectors (excluding agriculture).

The aim of the project is to develop and advance Chinese Taipei's R&D capabilities and intellectual property in various energy technologies, including LED lighting, photovoltaic, hydrogen power, air conditioning, refrigeration, electric motors, energy information, and communication technology. The government allocates an annual budget of approximately US$ 33 million to this project, of which 59% is used for energy-related research and design.

LINKS

Bureau of Energy, Ministry of Economic Affairs 2015 Annual Report:

https://www.moeaboe.gov.tw/ecw/populace/content/wHandMenuFile.ashx?file_id=21

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

Bureau of Energy, Ministry of Economic Affairs.

LEGAL POWER

Under the Energy Administration Act, the Energy Management Law (EML) is designed to govern the energy efficiency of energy-consuming devices.

LINKS

Bureau of Energy, Ministry of Economic Affairs: http://www.moeaboe.gov.tw

Energy Administration Act: http://law.moj.gov.tw/Eng/LawClass/LawAll.aspx?PCode=J0130002

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

- Measure the sales of energy-efficient appliances on a monthly basis.
- Monitor the progress of energy efficiency standard revisions on a quarterly basis.
- Monitor the results of voluntary energy-saving agreements on a quarterly basis.

LINKS

Bureau of Energy, Ministry of Economic Affairs: http://www.moeaboe.gov.tw

15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

Not applicable.

16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

Master Plan on Energy Conservation and GHG Emission Reduction

OBJECTIVE

Reduce CO_2 emissions by applying cleaner energy and energy conservation measures.

OUTLINE

The Master Plan includes ten major benchmarking programmes and thirty-five benchmarking plans that include all aspects of energy conservation and carbon reduction in Chinese Taipei. The ten benchmarking programmes are:

- Sound legal framework
- Low carbon energy system
- Low carbon community & society
- Low carbon industry
- Green transportation
- Green agriculture & building
- Energy saving and emission reduction technology
- Low carbon public construction
- Energy saving and emission reduction education
- Public education

LINKS

Master Plan on Energy Conservation and GHG Emission Reduction:

http://www.moeaboe.gov.tw/ECW/english/content/Content.aspx?menu_id=1527

Free Energy Audit

OBJECTIVE

The Free Energy Audit scheme began in 2010 to assist business owners in improving their energy efficiency and to increase energy efficiency by 30% by 2025 in the industrial and commercial sectors.

OUTLINE

As detailed in link below.

LINKS

Free Energy Audit: http://www.ecct.org.tw/ and https://www.go-moea.tw/news_info.asp?id=223

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

Master Pan on Energy Conservation and GHG Emission Reduction – Build Low Carbon Industrial Structure

OBJECTIVE

Gradually advance the industry towards "low carbon", increase value-add per unit of carbon emissions, reduce intensity of carbon emissions' per unit of output, and strengthen the development of green energy industry. Promote industrial energy conservation & carbon reduction. Conduct environmental impact assessment of energy-intensive industrial policy. Promote Sunrise programme of green energy industry. Promote agricultural energy conservation & carbon reduction.

OUTLINE

- Reform the industrial sector towards a high value-added and low energy intensive structure, so that its carbon intensity could reduce more than 30% by 2025.
- Allocate emission quotas and reduction duty to push the industry towards an energy-conserving and emission-reducing production and sales model.
- Assist small and medium-sized enterprises to improve emission reduction capacity. Establish incentive measures and administrative schemes to encourage the application of clean production technology.
- Promote green energy industry, including energy conserving industries and renewable energy industries, to move towards a clean energy economy.

LINKS

Master Plan on Energy Conservation and GHG Emission Reduction:

http://www.moeaboe.gov.tw/ECW/english/content/Content.aspx?menu_id=1527

Framework of Chinese Taipei Sustainable Energy Policy:

http://web3.moeaboe.gov.tw/ecw/english/content/Content.aspx?menu_id=1524

18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

Master Plan on Energy Conservation and GHG Emission Reduction – Build Green Transport Network

OBJECTIVE

Reduce carbon emissions from the transport sector, build convenient and intelligent transport systems, promote the use of low-carbon fuel, and relieve the use and growth in cars and motorcycles. Establish green, seamless highway transportation systems. Expand construction of convenient public rail transport network. Establish intelligent road service. Create transportation environment based on people-oriented green transport. Promote efficiency and standards of private vehicles and new cars.

OUTLINE

- Provide a convenient mass transportation system to reduce the usage of private vehicles.
- Construct an intelligent transportation system to provide instant traffic information and enhance traffic management capacity.
- Build a user-oriented and green-oriented municipal transportation environment.
- Raise the fuel efficiency standard for private vehicles by 25% in 2015.

LINKS

Master Plan on Energy Conservation and GHG Emission Reduction:

http://www.moeaboe.gov.tw/ECW/english/content/Content.aspx?menu_id=1527

Framework of Chinese Taipei's Sustainable Energy Policy:

http://web3.moeaboe.gov.tw/ecw/english/content/Content.aspx?menu_id=1524

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Framework of Chinese Taipei's Sustainable Energy Policy-Residential and Commercial Sector

OBJECTIVE

Promote energy conservation in the residential and commercial sector.

OUTLINE

- Improve urban planning, as well as promote forestation in urban areas to create a low carbon city.
- Promote low carbon and energy conserving green architecture through energy conserving design of building facades and air-conditioning system.
- Raise appliance efficiency standards by 10% to 70% in 2011. Further raise the efficiency standards in 2015 to promote high efficiency products.
- Promote energy conserving lighting solutions. Replace conventional lighting devices with high efficiency products.

LINKS

Framework of Sustainable Energy Policy:

http://web3.moeaboe.gov.tw/ecw/english/content/Content.aspx?menu_id=1524

20. ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

Chinese Taipei is an affiliate partner of the Collaborative Labelling and Appliance Standards Programme (CLASP) based in the U.S. state of California to promote energy-efficient products by developing and updating the standards and labelling programme.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

The Chinese Taipei Government participates in APEC Energy Working Group projects that are related to energy efficiency and conservation.

LINKS

APEC Expert Group on Energy Efficiency and Conservation: http://www.egeec.apec.org/

21. OTHER ENERGY EFFICIENCY EFFORTS

Not applicable.

THAILAND

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

Thailand Integrated Energy Blueprint (TIEB) was specially designed in 2015 to synchronise all the major energy policy related plans into a single comprehensive economy-wide plan, aimed to balance economy, ecology and security of the economy. TIEB consists of five long-term plans – the Energy Efficiency Plan (EEP 2015); Power Development Plan (PDP 2015); Alternative Energy Development Plan (AEDP 2015); Natural Gas Supply Plan (Gas Plan 2015); and Oil Supply Management Plan (Oil Plan 2015).

EEP 2015 set the target of energy intensity reduction of 30 percent by 2036 (with the base year of 2010) in four major economic sectors including industry, commercial and governmental buildings, residential and transportation. Some of the main measures applied in the plan are:

- Standards for energy conservation and energy management in factories and buildings
- Building standards for new construction for energy conservation
- Standards and labelling of machinery and materials equipment used for energy conservation
- Mandatory standards of energy conservation for manufacturers and distributors
- Assistance and subsidies for operations relating to energy conservation
- Using energy saving lighting system and energy conservation in transportation

2. ENERGY EFFICIENCY STRATEGY

EEP 2015 features 10 measures classified into three major categories (compulsory, voluntary, and complementary) targeting all major sectors (industrial, commercial and government, residential, and transport). The measures in the voluntary category contributed to a majority of the energy saving (40,728 ktoe or 79% of total) while the measures in the compulsory (10,971 ktoe, 21%) contributed to the rest.

Thailand also has the Energy Conservation Promotion Act, B.E. 2535 (1992) (amended to No. 2, B.E. 2550 (2007)) to enforce energy conservation, particularly in designated factories and buildings. The act stipulates the duties of owners of designated factories/buildings with regard to energy conservation in their facilities and promotes the use of energy-efficient machinery/equipment as well as materials contributing to energy conservation. The act also establishes penalties for noncompliance with the regulations issued under this act.

FUNDING

The ENCON Fund was established under the ENCON Act to serve as working capital, grants, or subsidies for implementation of energy conservation programmes in the public and private sectors. The programmes can be in the areas of renewable and alternative energy, R&D projects, human resource development, and public awareness and education. In FY2016, THB 2.7 billion (approximately USD 90 million) was allocated for the energy

efficiency programme. In addition, there are many other financial tools to be used such as energy efficiency revolving fund, tax incentives, joint venture, soft loan and grants.

LINKS

Policy and measures on EEP: http://www.eppo.go.th/index.php/th/plan-policy/tieb/eep (pages 3-17)

ENCON fund (2016 balance sheet): http://www.enconfund.go.th/pdf/56-financial.pdf (pages 12-13)

3. ENERGY EFFICIENCY ACTION PLAN

The 10 measures of EEP 2015 are:

- Measure for designated factories and buildings management
- Measures for buildings standard
- Measure on energy efficiency standard and labelling
- Measure on Energy Efficiency Resource Standards (EERS) for energy/utility producers\
- Measure on financial support
- Measure on the use of LED
- Measure on energy conservation in the transportation sector
- Measure for promotion of education, research and development on energy conservation
- Measure on personnel development in energy conservation fields
- Measure to create public awareness on energy conservation

FUNDING

Government funding via the ENCON fund.

LINKS

Thailand Integrated Energy Blueprint:

http://www.eppo.go.th/images/Infromation_service/journalissue/ISSUE-SPECIAL2559.pdf

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

The EEP, ratified by the National Energy Policy Council (NEPC) in 2015, stated an energy intensity reduction target of 30% by 2036 (compared with 2010), equivalent to a decrease of final energy consumption by 56 Mtoe.

Additionally, at the UNFCCC (COP20), Thailand had adopted the goal to reduce greenhouse gas emissions in the transportation and energy sectors by 7%-20% (compared with 2005) in accordance with Thailand Climate Change Master Plan enacted by the Office of Natural Resources and Environmental Policy and Planning (ONEP).

LINKS

EEP targets: http://www.eppo.go.th/index.php/th/plan-policy/tieb/eep (pages 1-2)

5. SECTORAL ENERGY EFFICIENCY TARGETS

The EEP has sectoral energy efficiency targets out to 2036 in ktoe:

Sector	**Reduction**	**Share**
Industrial	14,515	28.1%
Commercial + government	4,819	9.3%
Residential	2,153	4.2%
Transport	30,213	58.4%
Total (EEP 2015) covering 2015-2036	**51,700**	**100%**
• Energy reduction achieved during 2010-2014	4,442	
Total	**56,142**	

LINKS

EEP targets: http://www.eppo.go.th/index.php/th/plan-policy/tieb/eep (pages 6-16)

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

The following departments/entities under the Ministry of Energy of the Royal Thai Government deal with energy efficiency policy and programmes:

- Energy Policy and Planning Office (EPPO) – As the policy and action plan development agency, it examines economy-wide energy conservation policies, management and development plans, and budget allocation. In addition, EPPO also coordinates the follow-up and evaluation of policy implementation outcomes.
- Department of Alternative Energy Development and Efficiency (DEDE) – As the implementation and regulation agency, its duties include promotion, support, and monitoring of energy efficiency and conservation activities. In addition, DEDE also develops energy efficiency standards and research as well as information dissemination for awareness and training.

STAFF AND BUDGET

No estimation of staffing numbers since there are many organisations involved directly and indirectly with these programmes.

BUDGET USE

Information on the daily operation budget is not available.

LINKS

Energy Policy and Planning Office: http://www.eppo.go.th/index.php/th/

Department of Alternative Energy Development and Efficiency: http://weben.dede.go.th/webmax/

7. OTHER ENERGY EFFICIENCY AGENCIES

- National Energy Policy Council (NEPC) – It is responsible for the oversight of energy agencies to ensure that they operate in accordance with the provisions specified in the ENCON Act (1992) and the management of the Energy Conservation Promotion Fund (ENCON Fund).
- Electricity Generating Authority of Thailand (EGAT) – This is the owner-operator of power generation, transmission, and distribution systems. It includes a Demand-Side Management Office to promote energy conservation, especially in electrical appliances through standard and labelling schemes. The EGAT is also a significant player in encouraging energy efficiency in major industries via energy service companies (ESCOs).
- Energy Conservation Centre of Thailand (ECCT), established in 1987 (pursuant to a cabinet resolution) as an agency to promote energy conservation activities in the economy, is responsible to provide technical expertise and services in energy conservation by working closely with DEDE.

LINKS

NEPC: http://www.eppo.go.th/images/policy/PDF/docs/p01_EnergySectorManagement.pdf

Electricity Generating Authority of Thailand:

https://www.egat.co.th/en/index.php?option=com_content&view=article&id=149&Itemid=186

Energy Conservation Centre of Thailand: http://www.ecct-th.org/main/aboutus.htm

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

There are several information dissemination activities including:

- Production of a series of television commercials on energy saving methods and their benefits.
- Dissemination of energy conservation issues through various types of media (newspapers, magazines, energy talks via television programmes, etc.).
- Energy mobile units undertaken by regional energy offices.

- Energy camps for students.
- Plays and cultural shows based on energy conservation themes
- Establishment of energy information centre to disseminate materials, posters, and other printed materials regarding issues related to energy conservation and renewable energy.

LINKS

Information dissemination efforts under the Energy Efficiency Development Plan (2011 – 2030): http://www.eppo.go.th/images/POLICY/ENG/EEDP_Eng.pdf (pages 42, 74)

9. ENERGY EFFICIENCY AWARENESS RAISING

Public Awareness (PA) Creation and Behavioural Change, comprising three measures as follows:

- Public relations and provision of knowledge about energy conservation to the general public, via the teaching/learning process in educational institutions, fostering youth awareness, and other PA activities; e.g., eco-driving and Thailand Energy Award.
- Putting forth the concept and promoting activities related to the development of low carbon society and low carbon economy, which will bring about cooperation between local administration organizations and the business sector in the planning and implementation of activities that will lead to reduction of GHG emissions and efficient use of energy.
- Determination of energy prices to reflect the actual costs and application of tax measures as an important tool to promote energy conservation with a view to fostering public awareness and changing their energy consumption behaviour.

In 2017, Thailand also launched the "Thailand Energy Efficiency Week 2017". This activity aims to provide networking and business matching opportunity to connect ESCOs with both government sectors and private companies that are interested in developing energy efficiency projects.

Energy Conservation Market Stimulation and Promotion via Energy Service Companies (ESCOs)

ESCOs are firms with the capabilities to provide consultation and expertise regarding energy conservation and renewable energy under energy management contact (EPC). The Ministry of Energy realises their importance and assigns DEDE, in cooperation with the Federation of Thai Industries (FTI), to help promote the utilisation of ESCOs. The stimulation and promotion conducted by DEDE are in the form of awareness promotions through networking and business matching as well as the regulation and improvement of various aspects concerning ESCO standards e.g., Measure and Verification (M&V) methods, Energy Performance Contracts (EPCs), and ESCO Accreditation.

LINKS

Awareness raising efforts under the Energy Efficiency Development Plan (2011-2030): http://www.eppo.go.th/images/POLICY/ENG/EEDP_Eng.pdf (page 41-42)

Thailand Energy Award: http://www.thailandenergyaward.com/TH/home.php

Thailand Energy Efficiency Week 2017:

http://www.eco-business.com/press-releases/thailand-energy-efficiency-week-2017-launches-business-matching-event/

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

The implementation of the Strategic Management Programme for capacity building which is carried out under the ENCON Programme includes the following:

- Policy research to provide recommendations, options or situation overviews comprising several dimensions. Examination of the economic, social, and environmental impacts of energy supply/demand, the findings of which can be used to enhance the Energy Efficiency Improvement Programme or Renewable Energy Development Programme so that the programmes can correspond with the changing situations. The research outcomes can also serve as guides for setting and implementing work priorities and budget allocation.
- Monitoring and management to ensure efficient and effective implementation of the Energy Conservation Programme.
- Special tasks to support and enhance implementation that is of particular importance or urgency.

Additional capacity-building measures and policies aimed at the community include the following:

- Development of curriculum and teaching materials that integrate energy efficiency and the environment into the education system to increase awareness in younger generations.
- Short-term projects/activities (e.g., school recycling banks and energy conservation competitions) to increase participants' knowledge and understanding of energy conservation, stimulate improvement in their energy consumption behaviour, and share their experiences and knowledge with their peers.
- Short-term human resource development and technical visit abroad.
- Undergraduate and post-graduate scholarships (both local and abroad).
- Provision of funds to encourage students in public and private universities to seriously consider research on energy management, energy efficiency, and renewable energy technologies.

In addition, there is also a Bureau of Human Resource Development under DEDE with the following responsibilities:

- Studying, analysing, conducting and developing training courses, media, manuals as well as human resource development in the energy field.
- Establishing standards and criteria for certification for trainers on energy sector.
- Setting action plans and providing training for human resource development concerning alternative energy and energy efficiency technologies, supporting educational Institutions, public and private organisations in personnel training on energy and offering testing knowledge and performances for those personnel who wants to be registered as responsible persons for energy.

- Managing the Energy Technology Learning Centre.

LINKS

Government supported training under the Energy Efficiency Development Plan (2011 – 2030): http://www.eppo.go.th/images/POLICY/ENG/EEDP_Eng.pdf (page 42)

Bureau of Human Resource Development under DEDE: http://weben.dede.go.th/webmax/content/bureau-human-resource-development

11. PRIVATELY OPERATED TRAINING

Human Resources and Institutional Capability Development, comprising two measures as follows:

(11.1) Support for the development of professionals in the energy conservation field to be persons responsible for energy management and operation, verification and monitoring, consultancy and engineering services provision, and the planning, supervision and promotion of the implementation of energy conservation measures.

(11.2) Support for the development of institutional capability of agencies/organisations in both public and private sectors, responsible for the planning, supervision and promotion of the implementation of energy conservation measures.

LINKS

Support by EPPO on professional development: http://www.eppo.go.th/images/POLICY/ENG/EEDP_Eng.pdf (page 42)

12.GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

The government, via the ENCON Fund, supports R&D by allocating more than THB 100 million (approximately USD 3 million) each year for energy conservation technologies. This funding can be accessed by academic institutions, public sector research institutions, and non-profit private institutions. The R&D work under the Energy Conservation Programme must demonstrate its practical application in line with the short-term measures designed for energy efficiency improvements.

LINKS

Promotion of technology and innovation: http://www.eppo.go.th/images/POLICY/ENG/EEDP_Eng.pdf (page 42)

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

The EPPO is entrusted to supervise, monitor and evaluate the implementation of domestic energy policies and energy management plans. The Alternative Energy and Efficiency Information Centre under DEDE also has the responsibilities to collect and analyse the energy efficiency data with the following key tasks:

- Surveying, studying, analysing, conducting, and administrating Information on alternative energy and energy efficiency.
- Disseminating statistical information on alternative energy and energy efficiency.
- Conducting and managing DEDE's Information system

LEGAL POWER

Under the energy acts and regulation, EPPO is empowered to collect energy data from related organisations to monitor and evaluate the implementation of domestic energy policies and energy management plans.

LINKS

NEPC Act B.E. 2535, 2550, 2551: http://www.eppo.go.th/index.php/en/related-laws/acts-royal-ordinance

14.EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

The evaluation of the energy efficiency progress is included as a part of the action plan monitoring report issued on a quarterly basis by EPPO.

LINKS

Quarterly report on EPPO activity progress: http://www.eppo.go.th/index.php/th/plan-policy/evaluation/eva-operrate?orders[publishUp]=publishUp&issearch=1

15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

No information available.

16.CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

High Energy Performance Standards and Labelling (HEPS)

OBJECTIVE

To educate public on the energy efficient appliances/equipment and simultaneously build awareness of the energy efficiency in the consumer sector.

OUTLINE

Thailand established HEPS, known as the Energy Efficiency Labelling No. 5 Programme, on a voluntary basis. It seeks to inform consumers that No. 5 labelled appliances/equipment are highly energy efficient and can help reduce their electricity bills. This will also enhance competition among manufacturers and further improve the energy efficiency of their products. This programme, in operation since 1993, applies to the industrial, commercial, and residential sectors. The project finances and budget allocation come from various sources, including GEF grants and the Australian Government (1993–2000), concessional loans from the JBIC (OECF) (1994–2002), reimbursements through the Automatic Electricity Tariff Adjustment Mechanism (Ft) (1993–2000), and since 2000, reimbursement through the base tariff (in EGAT's annual budgeting).

The programme's main purpose is to provide consumers with better awareness regarding the importance of energy-efficient appliances and equipment, especially when making purchasing decisions. Thus, it will gradually help to remove low energy-efficient products from the market. The labelling of appliances is the responsibility of EGAT, which has labelled 19 types of typical household appliances.

In 2015, Thailand established another energy efficiency labelling programme for non-appliances on a voluntary basis, under the responsibility of DEDE. Currently, there are eight labelled products including liquefied petroleum gas (LPG) cooking stoves (low-pressure), LPG cooking stoves (high-pressure), glazing panes, three-phase motors, variable speed drives, fiberglass insulation, small diesel engines, and small gasoline engines.

LINKS

HEPS programme and structure:

http://www.dede.go.th/ewtadmin/ewt/dede_intra/ewt_dl_link.php?nid=125&filename=innovation55

Promoting Use of Light Emitting Diode (LED)

OBJECTIVE

To replace the traditional fluorescent bulb with LED to reduce energy consumption.

OUTLINE

It is estimated that LEDs can save approximately 50% in energy consumption (equivalent to 928 ktoe) with a longer service life when compared to that of the fluorescent light bulbs. Other than replacing these traditional light bulbs with LEDs, the project also aims to use monetary measures to expedite the affordability of LEDs.

The initial stage of the plan is to use LEDs for streetlights (3 million bulbs) and in governmental buildings (3 million bulbs) with the price subsidy mechanism.

LINKS

Promoting Use of LED: http://www.eppo.go.th/index.php/th/plan-policy/tieb/eep (page 4)

Stand-alone PEA Renewable Energy and Energy Efficiency Project

OBJECTIVE

Improve energy efficiency.

OUTLINE

The Provincial Electricity Authority (PEA) is collaborating with the Forest Industry Organisation (FIO) to invest in a pilot biomass power-generation project (using biomass residuals from FIO plantations) in order to scale up to approximately 100 sites (approximate total capacity of 100 MW) in the next five years, in addition to associated transmission lines and substations. The PEA also includes a plan to improve the energy efficiency of streetlights on highways, with private participation by ESCOs.

In addition, the PEA includes a Master Plan for Energy Conservation that focuses on the following: energy conservation projects for public and street lighting; energy efficiency for PEA buildings (air conditioning and

lighting); and consulting services in energy management for PEA customers. The PEA estimates a reduction in energy consumption of at least 300 GWh per year, which is equivalent to THB 750 million (approximately USD 23 million). The financing structure of the energy efficiency activities includes the following items: a public-private partnership scheme to finance energy-efficient street lighting; the turn-key method for building retrofitting; and normal energy efficiency consultancy services for PEA customers.

LINKS

PEA plans on improving energy efficiency: http://www.pea-encom.com/index.php?mo=10&art=41906580

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

Minimum Energy Performance Standards and Labelling (MEPS)

OBJECTIVE

To prevent the production and import of sub-standard and non-efficient equipment.

OUTLINE

With collaboration between DEDE and Thailand Industrial Standard Institute (TISI), Minimum Energy Performance Standards (MEPS) were implemented on the basis that only the equipment with high standard is eligible for certification marks. The certification schemes include mandatory and voluntary certification options for different product classes. Mandatory certification is required for air conditioners and refrigerators, while voluntary certification is optional for the following types of equipment:

- Lighting: Double-capped fluorescent lamps, self-ballasted lamps, single-capped fluorescent lamps, magnetic ballasts, and electronic ballasts.
- Appliances: Microwaves, rice cookers, electric ovens, electric kettles, irons, and LPG cooking stoves.
- Three-phase motors and water pumps.
- Fiberglass insulation.
- Diesel engines and motorcycles.

LINKS

MEPS: http://www.eppo.go.th/index.php/th/plan-policy/tieb/eep (page 4)

Energy Efficiency Resources Standard (EERS)

OBJECTIVE

To involve the electric service sector in promoting energy efficiency awareness and performance for their customers.

OUTLINE

Electric utility companies, under the revised Energy Efficiency Plan (EEP 2015), must help their customers reduce their energy consumption. While the specifics of the measure are still under consideration, the measure is expected to reduce final energy consumption by 0.3%.

LINKS

EERS: http://www.eppo.go.th/index.php/th/plan-policy/tieb/eep (page 4)

18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

Improvement of Energy Efficiency of Motor Vehicles

OBJECTIVE

To assess energy efficiency improvement potential of motor vehicles.

OUTLINE

Thailand has a large untapped energy conservation potential in the transport sector, as reflected by the expected energy savings of more than 30,000 ktoe over the course of EEP 2015. The measures that will be implemented in the transport sector consist of the following:

- Remove subsidies from fossil fuels, allowing the market prices to reflect the true cost.
- Implement CO2 emission-based excise tax for cars.
- Increase efficiency in cars/trucks/buses via energy labelling for tires, eco-driving techniques, and logistics management.
- Improve infrastructure e.g., double-track railway and elevated transit systems.
- Implement pipeline transport of fuels.

LINKS

Improvement of Energy Efficiency of Motor Vehicles:

http://www.eppo.go.th/images/POLICY/ENG/EEDP_Eng.pdf (pages 28-29)

Energy Efficiency Improvement by Shifting the Modes of Travel and Goods Transport

OBJECTIVE

To assess energy saving potential as a result of a travel and goods transport mode shift.

OUTLINE

Private cars consume 2.8 and 5.5 times more energy than buses and public rail systems respectively and freight trucks consume 3.1 times more energy than water freight and about 10 times higher than rail.

The assessment of energy saving potential is divided into two zones: urban and intercity. For the urban zones, the assessment is made with reference to the outcomes of relevant studies commissioned by the Office of Transport and Traffic Policy and Planning (OTP), Ministry of Transport:

- The Mass Rapid Transit Master Plan in Bangkok Metropolitan Region: M-MaP,
- The Report on Integrated Plan of Bus Rapid Transit (BRT) System Routing Network in Bangkok Metropolitan Region.
- The Project on Master Plan and Preliminary Design of Mass Transit System for Chiang Mai City, in which comparisons of travel modes are made under the Base Case.

LINKS

Energy Efficiency Improvement by Shifting the Modes of Travel and Goods Transport:

http://www.eppo.go.th/images/POLICY/ENG/EEDP_Eng.pdf (page 29)

Energy Efficiency Improvement by Travel Demand Management (TDM)

OBJECTIVE

To apply TDM to improve the travel behaviour and travel demand to be more energy efficient.

OUTLINE

TDM measures fit into three groups:

- Measures supporting travel modes with high transport vehicle occupancy such as the provision of "Park-and-Ride" areas in the suburbs increase in convenience to connect mass transit systems with other transport systems and discounts on public transport system fees during off-peak hours.
- Measures creating incentives to reduce travel demand such as:
    - Charges for the use of roads ("road pricing") in heavily congested areas.
    - Limitation of car-parking areas or collection of high parking fees in city central areas.
    - Annual license plate taxation according to the distance travelled per year.
    - Prohibition of driving into inner-city areas on odd/even dates based on car plate numbers.
- Measures promoting alternative activities to reduce traveling such as working from home.

LINKS

TDM: http://www.eppo.go.th/images/POLICY/ENG/EEDP_Eng.pdf (page 29)

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Compulsory Energy Management Programme for Designated Buildings and Factories

OBJECTIVE

Assess the energy consumption characteristics in the commercial building and residential sector (both large and small commercial buildings and residential) and plan energy conservation potential programmes.

OUTLINE

Buildings and factories with installed electricity meters of over 1000 kW, consume more than 20 TJ of energy per year, or with total transformer capacity of 1,175 kVA or more are required to implement energy management systems as prescribed in the regulations. An energy management report must be submitted to DEDE in March of each year (implemented since 2010). The energy efficiency improvements expected from the implementation of these energy management systems are around 5%–10%.

LINKS

Compulsory Energy Management Programme for Designated Buildings and Factories:

http://www.eppo.go.th/index.php/th/plan-policy/tieb/eep (page 3)

Building Energy Code (BEC)

OBJECTIVE

Project to improve energy efficiency in the design/construction of new/retrofitted buildings that occupy more than 2,000 m2.

OUTLINE

A mandatory energy code has been set under the Ministerial Regulation Prescribing the Type or Size of Building and Standards, Criteria and Procedures for Designing Buildings for Energy Conservation, B.E. 2552 (2009). The code was set for major energy systems, including the building's envelope, lighting, air conditioning and heating system, to promote the concept of energy efficiency design as well as the utilisation of highly-efficient equipment and materials. In practice, the regulation will be initially applied to new/retrofitted buildings that occupy more than 10,000 m2 to ensure regulation suitability and provide the time for adaptation. The regulation will be applied to smaller buildings (2,000 m2) over the next five years. This programme is expected to save approximately 10%-20% of energy, compared to conventional designs.

LINKS

BEC: http://www.eppo.go.th/index.php/th/plan-policy/tieb/eep (page 3)

Coordinating Centre for BEC Design: http://www.2e-building.com/index.php

20. ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

Thailand has established close relationships in energy efficiency in the areas of capacity-building and technical assistance with neighbouring economies, such as Lao PDR, Cambodia, Myanmar, Malaysia and Viet Nam.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

No information.

21. OTHER ENERGY EFFICIENCY EFFORTS

There is financial support from designated banks to support energy audits and investments in energy efficiency for university compounds, hospitals, and public buildings through the ENCON Fund. Other energy efficiency programmes also involve joint studies, R&D, and promotional activities to enhance the efficient use of energy in the transport, industrial, and household sectors as well as capacity-building and development of personnel dealing with energy efficiency improvement projects/activities through academic conferences, seminars, training, and technical visits. The latter activities include scholarships to pursue further study at the bachelor's, master's and Ph.D. levels, through the ENCON Fund.

LINKS

ENCON fund: http://iepd.iipnetwork.org/policy/energy-conservation-promotion-fund-encon-fund

THE UNITED STATES

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

Federal government energy efficiency policies are determined by legislation and subsequent rulemaking. Landmark energy efficiency legislation enacted over the past twenty-five years includes the National Appliance Energy Conservation Acts of 1987 and 1988 (NAECA); the Energy Policy Act of 1992 (EPAct 1992); the Energy Policy Act of 2005 (EPAct 2005); and the Energy Independence and Security Act of 2007 (EISA 2007). Taken together, this package of legislation provides the basis for most federal government energy efficiency policies, including vehicle fuel economy standards, appliance and equipment energy performance standards, federal support to the adoption of building energy codes, and obligatory energy-saving targets for federal agencies and facilities.

Apart from federal policies, 20 states have established mandatory state-wide energy efficiency resource standards, and an additional eight states have established goals. Under a new Administration as of 2017, past goals - including doubling energy productivity (economic output per unit of energy consumed) between 2010 and 2030 - are under review.

2. ENERGY EFFICIENCY STRATEGY

The U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy published its "2016-2020 Strategic Plan" in November 2015. Two of its seven strategic goals focus on improving the energy efficiency of vehicles, buildings, and industry. However, these strategies are currently under review by the new Administration.

FUNDING

The U.S. Congress funds the Department of Energy and its constituent offices through annual appropriations.

LINKS

"2016-2020 Strategic Plan" U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, November 2015: https://www.energy.gov/sites/prod/files/2015/12/f27/EERE_Strategic_Plan_12.16.15.pdf

3. ENERGY EFFICIENCY ACTION PLAN

The Department of Energy's Building Technologies Office published its “Multi-Year Programme Plan for Fiscal Years 2016-2020” in February 2016. The Department's Advanced Manufacturing Office issued its draft “Multi-Year Programme Plan for Fiscal Years 2017-2021” in December 2016; the plan is currently under review. The Department's Vehicle Technologies Office released its "2016 Annual Merit Review Report" in December 2016.

FUNDING

The U.S. Congress funds the Department of Energy and its constituent offices through annual appropriations.

LINKS

"Multi-Year Programme Plan for Fiscal Years 2016-2020", U.S. Department of Energy, Building Technologies Office, February 2016:

https://energy.gov/sites/prod/files/2016/02/f29/BTO%20Multi-Year%20Program%20Plan%20-%20Final.pdf

"Multi-Year Programme Plan for Fiscal Years 2017-2021 – Draft", U.S. Department of Energy, Advanced Manufacturing Office, December 2016:

https://energy.gov/sites/prod/files/2017/01/f34/Draft%20Advanced%20Manufacturing%20Office%20MYPP_1.pdf

"2016 Annual Merit Review Report" U.S. Department of Energy, Vehicle Technologies Office, December 2016:

https://energy.gov/sites/prod/files/2016/12/f34/2016%20Annual%20Merit%20Review%2C%20Vehicle%20Technologies%20Office%20FINAL_0.pdf

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

Energy efficiency and greenhouse gas emissions policies and targets are under review by the new Administration.

LINKS

Not available.

5. SECTORAL ENERGY EFFICIENCY TARGETS

The National Highway Traffic Safety Administration has established corporate average fuel economy standards for new passenger cars and light trucks sold in the U.S. for model years 2017 through 2025. These standards project a corporate average fuel economy of 41 miles per gallon in 2021 and 54.5 miles per gallon in 2025. The National Highway Traffic Safety Administration is required to conduct a mid-term review of proposed corporate average fuel economy standards for model years 2022-2025 by April 2018.

The Department of Energy's Building Technologies Office set a goal to reduce the U.S. building sector's energy use per square foot by 30% by 2030, relative to a 2010 baseline, with a long-term goal of a 50% reduction. These goals are under review by the new Administration.

LINKS

"Final Rule, 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards", National Highway Traffic Safety Administration and Environmental Protection Agency, October 15, 2012: https://www.gpo.gov/fdsys/pkg/FR-2012-10-15/pdf/2012-21972.pdf

"Multi-Year Programme Plan for Fiscal Years 2016-2020," U.S. Department of Energy, Building Technologies Office, February 2016:

https://energy.gov/sites/prod/files/2016/02/f29/BTO%20Multi-Year%20Program%20Plan%20-%20Final.pdf

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

The U.S. Congress establishes federal energy efficiency policies, and multiple Executive Branch agencies implement policies and programmes, including the Department of Energy, the Department of Transportation, and the Environmental Protection Agency. States, local governments, and utilities also establish their own energy efficiency programmes. For example, twenty states have established mandatory state-wide energy efficiency resource standards, and an additional eight states have established efficiency goals.

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

The U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy has primary responsibility for R&D and programmes to improve the energy efficiency of buildings, vehicles, and industry, and for setting minimum efficiency standards for key appliances and equipment.

STAFF AND BUDGET

The Office of Energy Efficiency and Renewable Energy's budget for efficiency in fiscal year 2016 was approximately $720 million. The office employed approximately 170 staff in its efficiency programmes, not including contractors and Department of Energy National Laboratory staff.

BUDGET USE

The Office of Energy Efficiency and Renewable Energy's budget for energy efficiency supports a comprehensive portfolio of programmes to improve the energy efficiency of homes, buildings, and industries. The office supports development of compelling new energy-efficiency options for businesses and consumers, including products that perform at higher efficiency and with improved performance, new ways to design homes and buildings, and new approaches to improve the vast stock of existing buildings.

More specifically, the energy efficiency budget supports:

- Emerging technologies R&D in areas such as lighting, heating and cooling, and building envelope.
- Development of model building codes.
- Establishment of minimum efficiency standards for key appliances and equipment.
- R&D on advanced combustion engines, electric vehicle batteries and drivetrains, and vehicle light weighting.
- Enables the research, development, demonstration, and deployment of industrial efficiency and crosscutting clean energy manufacturing technologies.
- Provides access to home weatherisation services for low-income households across the economy.
- Provides formula and competitive grants to state energy offices and assists federal government agencies to meet energy-related goals and provide energy leadership to the economy.

LINKS

U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy:

https://energy.gov/eere/office-energy-efficiency-renewable-energy

7. OTHER ENERGY EFFICIENCY AGENCIES

The U.S. Environmental Protection Agency and the Department of Energy jointly administer the ENERGY STAR programme, a voluntary energy efficiency labelling programme for appliances and consumer electronics.

The Department of Transportation's National Highway Traffic Safety Administration and the Environmental Protection Agency set standards for, respectively, vehicle fuel economy standards and vehicle greenhouse gas emissions standards.

LINKS

ENERGY STAR programme: https://www.energystar.gov/

Corporate Average Fuel Economy standards: https://www.nhtsa.gov/laws-regulations/corporate-average-fuel-economy

Department of Transportation's National Highway Traffic Safety Administration: https://www.nhtsa.gov/

Environmental Protection Agency: https://www.epa.gov/

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

Within the U.S. Department of Energy, the Energy Information Administration collects, analyses, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment.

The Database of State Incentives for Renewables & Efficiency (DSIRE) is a comprehensive source of information on federal, state, local, and utility incentives that support renewable energy and energy efficiency.

LINKS

U.S. Energy Information Administration: https://www.eia.gov/

Database of State Incentives for Renewables & Efficiency: http://www.dsireusa.org/

9. ENERGY EFFICIENCY AWARENESS RAISING

The ENERGY STAR voluntary labelling programme began in 1992 and has approximately 85% brand recognition in the United States. It began as a labelling programme for efficient appliances and consumer electronics and has expanded to cover homes, buildings, and industrial plants. When consumers buy a product with the ENERGY STAR label, they are getting a product whose energy efficiency is in approximately the top 25% of similar products available on the market.

The U.S. Department of Energy established the Better Buildings initiative in 2011. Through its Better Buildings Alliance, building owners and operators share information and best practices on improving the efficiency of

their buildings. The Better Buildings Challenge has attracted 345 partners to commit to making their buildings 20% more efficient over 10 years. The Better Buildings initiative has expanded to a Better Plants programme, in which 2,600 participating manufacturing facilities have committed under the Better Plants Challenge to set an efficiency goal, report progress, and share best practices. The Department of Energy's Superior Energy Performance programme supports and recognises industrial facilities that implement the ISO 50001 energy management system, plus set and achieve a publicised goal for efficiency improvement.

The Environmental Protection Agency administers a mandatory fuel economy labelling (or window sticker) programme for all new passenger cars and light trucks. The Environmental Protection Agency conducts the testing and provides the official fuel economy number for each vehicle model.

LINKS

ENERGY STAR programme: https://www.energystar.gov/

Better Buildings Alliance: https://betterbuildingsinitiative.energy.gov/

Better Plants programme: https://energy.gov/eere/amo/better-plants

Superior Energy Performance programme: https://energy.gov/eere/amo/superior-energy-performance

Vehicle fuel economy labelling programme: https://www.epa.gov/fueleconomy/basic-information-fuel-economy-labeling

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

The U.S. Department of Energy's Better Buildings and Better Plants programmes offer a variety of training resources (primarily recorded and live webinars) focused on improving efficiency in buildings and industrial facilities. The Department of Energy's Federal Energy Management Programme produces a variety of training (primarily webinars and on-demand short courses) on improving efficiency and incorporating renewable energy into federal government facilities, but these training are applicable to, and used by, people from many different sectors of the economy.

LINKS

Better Buildings training: https://betterbuildingssolutioncenter.energy.gov/webinars-list

Better Plants training: https://betterbuildingssolutioncenter.energy.gov/better-plants/tools-and-trainings

Federal Energy Management Programme training: https://energy.gov/eere/femp/federal-energy-management-program-training

11. PRIVATELY OPERATED TRAINING

The Department of Energy's Office of Energy Efficiency and Renewable Energy maintains a webpage listing many training opportunities offered by public and private providers.

LINKS

Training listing: https://www.energy.gov/eere/education/find-trainings

12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

The Department of Energy's Building Technologies Office offers an emerging technologies programme that supports R&D in areas such as lighting, heating and cooling, and building envelope. The Department's Advanced Manufacturing Office supports R&D, as well as demonstration and deployment of industrial efficiency and crosscutting clean energy manufacturing technologies, including next-generation machines, materials, and manufacturing processes. The Department's Vehicle Technologies Office supports R&D on advanced combustion engines, electric vehicle batteries and drivetrains, and vehicle light weighting. These offices support R&D at Department of Energy National Laboratories and through funding opportunities for universities and companies.

LINKS

Building Technologies Office emerging technologies initiatives:

https://www.energy.gov/eere/buildings/emerging-technologies-0

Advanced Manufacturing Office R&D initiatives: https://www.energy.gov/eere/amo/research-development

Vehicle Technologies Office R&D initiatives: https://www.energy.gov/eere/vehicles/technology-areas

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

The Department of Energy's Energy Information Administration collects and analyses energy consumption information with high frequency from all sectors of the economy. The Department of Transportation's National Highway Traffic Safety Administration is responsible for calculating achieved corporate average fuel economy each year and assessing vehicle manufacturers' performance against the corporate average fuel economy requirements.

The Department of Energy obtains information on energy consumption and efficiency from its voluntary partners in the Better Buildings and Better Plants initiatives; this information is not shared with other parties by the Department of Energy.

LEGAL POWER

EIA surveys are conducted under the authority of the Federal Energy Administration Act of 1974 (Public Law 93-275), Sec. 13(b), 5(a), 5(b), 52.

LINKS

Energy Information Administration: https://www.eia.gov/

National Highway Traffic Safety Administration, corporate average fuel economy standards: https://www.nhtsa.gov/laws-regulations/corporate-average-fuel-economy

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

The Energy Information Administration publishes energy consumption data in its Monthly Energy Review. Evolving energy efficiency potential is accounted for in periodic revisions of model energy codes for buildings by the Department of Energy. Minimum efficiency standards for appliances and equipment are reassessed periodically by the Department of Energy. Efficiency thresholds for products covered under the voluntary ENERGY STAR labelling programme are reassessed periodically by the joint programme administrators, the Department of Energy and the Environmental Protection Agency.

LINKS

Energy Information Administration: https://www.eia.gov/totalenergy/data/monthly/

Department of Energy's Building Energy Codes Programme: https://www.energy.gov/eere/buildings/building-energy-codes-program

Department of Energy's Appliance and Equipment Standards Programme: https://www.energy.gov/eere/buildings/appliance-and-equipment-standards-program

ENERGY STAR programme: https://www.energystar.gov/

15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

The Department of Energy's Office of Energy Efficiency and Renewable Energy undertakes periodic reviews of each programme's progress. One focus of these activities is to assess whether planned technical goals were met and commercialisation and market results achieved. Another focus is to identify opportunities to make continuous improvements in programmes in order to effectively and efficiently manage public investments. See https://energy.gov/eere/analysis/program-evaluation.

16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

Energy efficiency initiatives (regulatory schemes, tax or price incentives, etc.) are primarily administered by states, local governments, and utilities. Twenty states have established mandatory state-wide energy efficiency resource standards, and an additional eight states have established efficiency goals. The Database of State Incentives for Renewables & Efficiency (DSIRE) is a comprehensive source of information on federal, state, local, and utility incentives that support renewable energy and energy efficiency.

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

Better Plants Programme

OBJECTIVE

The Better Plants Programme is part of the Department of Energy's Better Buildings initiative and supports leading manufacturers to set a goal to improve their energy intensity, usually by 25& over ten years, develop energy management plans, and track and report their annual progress.

OUTLINE

The Department of Energy helps Better Plants partner companies establish key energy performance metrics, evaluate energy- saving opportunities, and organise plant-level training events. Technical assistance is delivered through technical account managers who help companies develop energy management plans, identify energy-saving opportunities, and track energy performance metrics. Better Plants partners can also participate in or host in-plant training sessions. The Department provides recognition and technical assistance to help partners meet their energy efficiency goals. Recognition comes in the form of profiles on the Department's web sites, letters from Department leadership, invitations to special events, and articles in the Better Plants newsletter. Better Plants partners consist of nearly 200 industrial companies encompassing close to 2,600 facilities. To date they have saved $3.1 billion in energy costs.

The Better Plants Challenge is a more select group of manufacturers that take on additional commitments to openly share their energy performance data and market-leading energy efficiency strategies. The Department provides additional recognition to Challenge partners for their willingness to share best practices and solutions.

LINKS

Better Plants programme: https://energy.gov/eere/amo/better-plants

Superior Energy Performance Programme

OBJECTIVE

The Department of Energy's Superior Energy Performance programme certifies industrial facilities that implement an energy management system that meets the ISO 50001 global energy management system standard and that achieve verified, improved energy performance.

OUTLINE

To become certified for Superior Energy Performance, facilities must implement an energy management system that meets the ISO 50001 standard and demonstrate improved energy performance. An independent third party audits each facility to verify achievements and qualify it for recognition at the Silver, Gold, or Platinum level, based on energy performance improvement. This certification emphasises measureable savings through a transparent process. Certified Superior Energy Performance facilities receive recognition from the Department of Energy.

LINKS

Superior Energy Performance programme: https://energy.gov/eere/amo/superior-energy-performance

18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

Corporate Average Fuel Economy Standards

OBJECTIVE

The Department of Transportation's National Highway Traffic Safety Administration sets corporate average fuel economy standards for vehicles to encourage manufacturers to continually improve the fuel economy of the vehicles they sell in the United States.

OUTLINE

The National Highway Traffic Safety Administration has established corporate average fuel economy standards for new passenger cars and light trucks sold in the U.S. for model years 2017 through 2025. These standards project a corporate average fuel economy of 41 miles per gallon in 2021 and 54.5 miles per gallon in 2025. The National Highway Traffic Safety Administration is required to conduct a mid-term review of proposed corporate average fuel economy standards for model years 2022-2025 by April 2018. The National Highway Traffic Safety Administration is responsible for calculating achieved corporate average fuel economy each year and assessing vehicle manufacturers' performance against the corporate average fuel economy requirements.

In concert with the National Highway Traffic Safety Administration's establishment of fuel economy standards, the Environmental Protection Agency sets corresponding greenhouse gas emission standards for new vehicles. In addition, the Environmental Protection Agency administers a mandatory fuel economy labelling (or window sticker) programme for all new passenger cars and light trucks. The Environmental Protection Agency conducts the testing and provides the official fuel economy and greenhouse gas emissions numbers for each vehicle model.

Fuel efficiency standards for medium- and heavy-duty vehicles were established for 2014-2018 by the National Highway Traffic Safety Administration and the Environmental Protection Agency. In 2016, the two agencies issued fuel efficiency standards for medium- and heavy-duty vehicles through 2027.

LINKS

National Highway Traffic Safety Administration, corporate average fuel economy standards:

https://www.nhtsa.gov/laws-regulations/corporate-average-fuel-economy

Vehicle fuel economy labelling programme: https://www.epa.gov/fueleconomy/basic-information-fuel-economy-labeling

SuperTruck Programme

OBJECTIVE

The Department of Energy launched the SuperTruck programme in 2009 to develop and demonstrate a 50% improvement in overall freight efficiency (expressed in a ton-mile per gallon metric) for a heavy-duty Class 8 tractor-trailer truck.

OUTLINE

Class 8 trucks in the United States haul 80% of goods and use about 28 billion gallons of fuel per year, or around 22% of total transportation energy usage. The Department of Energy's SuperTruck partners are the major truck manufacturers providing Class 8 over-the-road trucks in North America and represent over 99% of the U.S.

market share for these trucks. Multiple partners exceeded the 50% improvement goal, with one achieving a 115% improvement in freight efficiency. Approximately 21 technologies demonstrated through the SuperTruck programme have been successfully commercialised.

LINKS

Department of Energy's SuperTruck Programme:

https://energy.gov/eere/articles/supertruck-leading-way-efficiency-heavy-duty-long-haul-vehicles

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Better Buildings

OBJECTIVE

Better Buildings aims to help operators of commercial, public, industrial, and residential buildings make their buildings 20% more energy efficient over the next decade.

OUTLINE

The Department of Energy established the Better Buildings initiative in 2011. Through its Better Buildings Alliance, building owners and operators share information and best practices on improving the efficiency of their buildings. The initiative challenges market leaders to accelerate the pace of energy efficiency adoption, highlights partner success stories and industry best practices, and encourages the latest technological innovation. Better Buildings efforts maintain a focus on four key strategic areas: 1) developing innovative, replicable solutions with market leaders, 2) making energy efficiency investment easier, 3) developing a skilled clean energy workforce and 4) leading by example in the federal government. Among the component programmes are the Better Buildings Alliance, the Better Buildings Challenge, Better Buildings Accelerators, Performance Contracting, a Better Buildings Solution Centre, and a Financing Navigator. The Better Buildings Challenge has attracted 345 partners to commit to making their buildings 20% more efficient over 10 years. These Challenge partners have saved $1.9 billion in energy costs. The Better Buildings initiative is administered by the Department of Energy's Building Technologies Office.

LINKS

Department of Energy's Better Buildings initiative: https://energy.gov/eere/better-buildings

ENERGY STAR Programme

OBJECTIVE

ENERGY STAR is a voluntary labelling programme jointly administered by the U.S. Environmental Protection Agency and the Department of Energy to identify and promote energy-efficient products and buildings in order to reduce energy consumption, improve energy security, and reduce pollution.

OUTLINE

The ENERGY STAR voluntary labelling programme began in 1992 and has approximately 85% brand recognition in the United States. It began as a labelling programme for efficient appliances and consumer electronics and has expanded to cover homes, buildings, and industrial plants. To maintain consumer trust and improve the oversight of ENERGY STAR certified products, homes, and commercial facilities, EPA has implemented third-party certification requirements and testing. ENERGY STAR is used on products in more than 70 different categories, with more than 4.8 billion sold since 1992. More than 1.5 million new homes and more than 22,000 facilities carry the ENERGY STAR certification.

LINKS

ENERGY STAR programme: https://www.energystar.gov

Appliance and Equipment Standards Programme

OBJECTIVE

The Department of Energy, through its Building Technologies Office, sets minimum energy efficiency standards for approximately 60 categories of appliances and equipment used in homes, businesses, and other applications, as required by existing law.

OUTLINE

The appliances and equipment covered provide services that are used by consumers and businesses each day, such as space heating and cooling, refrigeration, cooking, clothes washing, and lighting. The products regulated by the programme represent about 90% of home energy use, 60% of commercial building energy use, and 30% of industrial energy use. The programme has issued 21 new or updated standards since 2013. All standards together are projected to result in utility bill savings of $1 trillion by 2020 and $2 trillion by 2030.

LINKS

Department of Energy's Appliance and Equipment Standards Programme:

https://www.energy.gov/eere/buildings/appliance-and-equipment-standards-program

20.ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

Many non-governmental organisations are prominent in promoting energy efficiency in the United States. Examples include the Alliance to Save Energy; the American Council for an Energy Efficient Economy; the American Society for Heating, Refrigeration and Air Conditioning Engineering; and various trade associations. These organisations sometimes partner with the federal government to perform specific tasks.

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

The United States participates in a variety of the International Energy Agency's Technology Cooperation Programmes (TCPs). Many of the TCPs are mechanisms for pooling international resources to facilitate joint energy research, development, and deployment of energy efficiency technologies. The United States actively

participates in the International Partnership for Energy Efficiency Cooperation (IPEEC), which provides a forum for dialogue - and action - to promote energy efficiency improvements among its seventeen member economies. The United States participates in the Clean Energy Ministerial, which includes multiple initiatives for improving energy efficiency. The United States participates in APEC, and particularly the APEC Energy Working Group. The Department of Energy's Office of Energy Efficiency and Renewable Energy has efficiency-focused projects with economies including China, India, Brazil, and Saudi Arabia.

LINKS

Department of Energy: https://www.energy.gov/ia/international-affairs-initiatives

21. OTHER ENERGY EFFICIENCY EFFORTS

Not available.

VIET NAM

ENERGY EFFICIENCY GOALS

1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

The first decree on energy efficiency and conservation was issued in 2003. In June 2010, the Law on Economical and Efficient Use of Energy (No. 50/2010/QH12) was promulgated to promote economical and efficient use of energy, and states the rights, obligations and responsibilities of organizations, households and individuals in economical and efficient use of energy. The Law covers all areas of the economy, including industry, construction and public lighting, transport, agriculture, service and households, across state-funded investment projects and agencies.

A summary of five-year implementation results in 2015 showed that the Law has enabled up to 85% of the population the accessibility to energy saving knowledge and awareness, energy saving at 6% (equivalent to 11.88 Mtoe) and at least 10,000 products are qualified with energy labels. However, due to several unimproved challenges, the legal frameworks are being proposed to be amended.

2. ENERGY EFFICIENCY STRATEGY

The Government released the Decree No. 21 in 2011 to detail the 2010 Law. This Decree provides statistical work on energy use; identification of major energy users; economical and efficient use of energy in state budget-funded agencies and units; energy labelling of energy-consuming devices and equipment; measures to promote economical and efficient use of energy; and examination and inspection of economical and efficient use of energy.

Besides, Decree No. 134 in 2013 is a supporting document regulating penalties in energy efficiency and conservation. It defines acts of violation, form, rate of fine, remedial measures, procedures and authority to sanction administrative violation in the field of electricity, safety of hydroelectric dam, thrifty and effective use of administrative that are not crimes.

FUNDING

Not applicable.

LINKS

Decree No. 21:

http://vanban.chinhphu.vn/portal/page/portal/chinhphu/hethongvanban?class_id=1&mode=detail&document_id=99634

Decree No. 134:

http://vanban.chinhphu.vn/portal/page/portal/chinhphu/hethongvanban?class_id=1&mode=detail&document_id=170275

3. ENERGY EFFICIENCY ACTION PLAN

In 2005, the Ministry of Industry and Trade (MOIT) released the National Strategic Programme on Energy Savings and Effective Use (Viet Nam National Energy Efficiency Programme, (VNEEP)) for 2006–2015. The programme aims to remove barriers and create breakthrough changes in improving end-use efficiency The areas of are Industrial manufacturing; large energy-consuming buildings; transportation; services, household; popularization of energy saving, high performance equipment and facility. The programme expects to achieve the goal of total energy saving in the whole economy and in large energy consuming individual sectors, bring social and economic benefits; contribute to reduced investment in energy supply system development, ensure energy security, environmental protection; rational exploitation of energy resources, and sustainability for socio-economic development.

The VNEEP is the first-ever long-term comprehensive plan to institute measures for improving energy efficiency and conservation in all sectors of the economy in Viet Nam. By end 2015, roughly 20 legal documents related to energy efficiency have been issued. The third phase (2016-2020) is under proposal (updated: June 2017).

FUNDING

Total funding of the programme is 930 billion VND (phase 2), from

- Central budget funding: 350 billion VND, consisting of:
    - Development investment funding: 80 billion VND;
    - Operation funding: 270 billion VND.
- Local budget funding: 300 billion VND
- Capital funding from international organizations and foreign economies: 180 billion;
- Others: 100 billion.

Besides, Joint Circular No. 45/2014/TTLT-BCT-BTC-BKHĐT gives guidance on management and use of the state budget for implementation of the target programme on energy saving and efficiency for the period 2012 -2015.

LINKS

The approval of VNEEP, the newest version Decision No. 1427:

http://www.chinhphu.vn/portal/page/portal/chinhphu/hethongvanban?mode=detail&document_id=163946

Programme's website:

http://vneec.gov.vn/ or http://tietkiemnangluong.com.vn/

Joint Circular No. 45/2014

http://vanban.chinhphu.vn/portal/page/portal/chinhphu/hethongvanban?class_id=1&mode=detail&document_id=178494

4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

Under VNEEP, an energy savings goal of 3%–5% of the total energy demand (compared to business-as-usual (BAU)) during 2006–2010 and 5%–8%, equivalent to 11 million TOE to 17 million TOE in the period 2012-2015. In reality the percentage of saving is up to 6% after five years. New target for 2016-2020 is now under proposal. (Decision No. 1427)

LINKS

http://www.chinhphu.vn/portal/page/portal/chinhphu/hethongvanban?mode=detail&document_id=163946

5. SECTORAL ENERGY EFFICIENCY TARGETS

1) Extensive use of high-performance equipment to replace low-performance equipment; and remove obsolete equipment and technology. Application of advanced technical standards and norms in order to improve energy efficiency in production and business activities of enterprises; achieve at least 10% of reduction in energy intensity over 2011 levels in energy-intensive industries of which:

- Steel: Reduce the average energy consumption for the production of 01 ton of steel components from 179 kgoe in 2011 to 160 kgoe in 2015;
- Cement industry: Reduce the average energy consumption for the production of 01 ton of cement from 97 kgoe in 2011 to 87 kgoe in 2015;
- Textile and apparel industry: Reduce the average energy consumption for the production of 01 ton of fibre in 2011 was 773 kgoe to 695 kgoe in 2015.

2) Implementation of mandatory management in compliance with Vietnamese Construction Standards "Energy efficiency construction buildings" from 2012, for 100% of new or renovated buildings within the scope of the Standards. Deployment of energy saving technology solutions in public lighting, application of high-performance lighting, energy saving for 100% of the new public lighting;

3) Development of transportation system to meet the transport demand with increasingly high quality, save fuel and reduce environmental pollution. Reinforce the application of new technologies, renewable energy to replace traditional fuels in transportation. Strive to have public transport in 2015 meeting 10 - 15% of travel demand in large urban areas.

LINKS

http://www.chinhphu.vn/portal/page/portal/chinhphu/hethongvanban?mode=detail&document_id=163946

6. LEAD ENERGY EFFICIENCY INSTITUTIONS

Energy Efficiency Office (EECO)

INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

Under the General Directorate of Energy of the Ministry of Industry and Trade (MOIT), the EECO was established in 2006 and designated as the driving agency for energy efficiency at governmental level. The office is responsible for coordinating and implementing projects and activities for energy efficiency and conservation, including communications and awareness raising. EECO is in collaboration with a number of specialized

institutions (such as the Institute of Energy, Energy Conservation Centres (ECCs) and technical universities) and social organizations (such as the Viet Nam Women Union, Viet Nam Union of Science and Technology Association) in Viet Nam, in order to develop systems in central and local governments to carry out the work of VNEEP.

Since its establishment, the EECO has completed preparatory tasks, including the formulation of action plans and detailed programmes required to launch and implement the VNEEP in cooperation with other governmental organizations.

At the level of implementing agencies, the following main agencies have been carrying out energy efficiency related programmes:

- People's Committee of Provinces and Cities (under central management).
    - Develop local policies on energy conservation and effective uses.
    - Coordinate the implementation of projects in local areas.
- Energy Efficiency Centres in large cities such as Ha Noi, Tien Giang, HCM City, Phu tho, Dongthap, Haiphong, and Danang.
- Institute of Energy (IE).
- Viet Nam Standards and Quality Institute (VSQI)—STAMEQ (MOST).
- Electricity of Viet Nam (EVN).
- Other agencies under different ministries.

STAFF AND BUDGET

The Steering Committee of VNEEP, includes 12 representatives from various ministries and chaired by the Minister of MOIT. The Director of the Department of Science, Technology and Energy Efficiency in GDE reports about its activities.

BUDGET USE

Daily budget is not available.

LINKS

Website of Viet Nam National Energy Efficiency Programme:

http://vneec.gov.vn/ or http://tietkiemnangluong.com.vn/

Environmental and Social Management Framework under the Viet Nam National Energy Efficiency Programme:

http://documents.worldbank.org/curated/en/958671468135015942/pdf/SFG1550-EA-P151086-ESMF-Box393258B-PUBLIC-Disclosed-11-23-2015.pdf

7. OTHER ENERGY EFFICIENCY AGENCIES

Other related ministries, such as the Ministry of Science and Technology, the Ministry of Construction, the Ministry of Transport, the General Statistics Office, the People's Committee (at the provincial level), etc., are responsible for coordinating with the MOIT in implementing the state management of energy efficiency and conservation in the provinces and sectors. In addition to the leadership of MOIT, the Steering Committee of VNEEP comprises representatives from:

- Ministry of Information and Communications
- Ministry of Planning and Investment
- Ministry of Finance
- Ministry of Transport
- Ministry of Education and Training
- Ministry of Construction
- Ministry of Environment and Natural Resources
- Viet Nam Union of Science Technology Associations

Other than Ministries, the Viet Nam Energy Conservation and Energy Efficiency Association (VECEA) was established in 2011 under a decision of Ministry of Home Affairs. The association involves all individuals and organizations that do any management, research, training, manufacturing, service concerning energy efficiency and conservation with a common goal of disseminating knowledge and discussing about related issues. Quite a few English translation of legal documents can be found on its website.

LINKS

VECEA: http://beta.vecea.vn/

8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

VNEEP and EVN are active website-based channels for dissemination of energy saving campaigns. There are also a number of other websites containing information energy efficiency improvement from the EEC HCM Centre, the EE Ha Noi Centre, etc. Information on energy efficiency improvement is also reported in the five-year summary of the programme implementation. All television channels have programmes with energy saving content.

One of the most prominent activity that gains attention of the public is Earth Hour Viet Nam. Viet Nam joined the WWF campaign Earth Hour since 2009 and the campaign gained economy-wide popularity since 2013. It is initiated by MOIT and sponsored by various parties, including EVN. All cities and provinces are encouraged to turn off electrical devices for an hour or more in the evening (usually on one chosen day in March). 2017 Earth Hour campaign in Viet Nam was with the message "Lights off to turn on the future" while 2016 was "Small Action, Big Impact". It is reported to save 451.000 kWh in 2016 after the campaign.

LINKS

EVN: http://www.evn.com.vn/c3/pages-c/An-toan-Tiet-kiem-dien-6-18.aspx or

http://tietkiemnangluong.vn/c3/pages-c/EVN-voi-cong-dong-111-135.aspx

VNEEP: http://vneec.gov.vn/ or http://tietkiemnangluong.com.vn/

Earth Hour: http://giotraidat.vn/ or http://earthhour.vn/

9. ENERGY EFFICIENCY AWARENESS RAISING

Under Decision No. 1427, Project 1 is named "Strengthening education, information dissemination, community mobilization, awareness raising, promoting the use of energy efficiency and conservation, environmental protection". The Project consists of three components:

- Dissemination and awareness raising on energy efficiency and conservation to the people.
- Embed energy efficiency and conservation in the education system.
- Create a pilot model of large-scale alternative energy forms and energy saving model family.

Estimated budget is up to 220 billion VND.

LINKS

http://tietkiemnangluong.vn/d6/news/Tang-cuong-giao-duc-van-dong-cong-dong-su-dung-nang-luong-tiet-kiem-va-hieu-qua-123-119-2205.aspx

10.GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

Apart from Project 1 under Decision No. 1427 which the Ministry of Education and Training is responsible for, there is no economy-wide movement or course/degree available.

However, a wide range of different training courses, workshops, the publishing of technical documents for energy efficiency knowledge, and assessments addressing all six components are being developed and implemented under the VNEEP. These include training courses on energy auditing, publishing a guidebook on energy efficiency, and capacity building for EEC centres. Most of these activities are scheduled to be completed in the first phase of the programme (2006-2011).

Training courses have also been developed under the VNEEP for the construction and design of energy-efficient buildings, enhancing capacity for facility management on the energy efficiency of local industry department leaders, and energy managers.

LINKS

http://tietkiemnangluong.com.vn/tin-tuc/hoat-dong-chuong-trinh/t7858/giao-duc-su-dung-nang-luong-tiet-kiem-va-hieu-qua-trong-truong-hoc.html

11. PRIVATELY OPERATED TRAINING

No information.

12.GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

Viet Nam has no specific policy for the support of energy efficiency R&D. However, some measures of the VNEEP encourage R&D in this area. Decision No. 1427 points out five solutions for implementing VNEEP:

- Selectively invest in strengthening capacity for energy design consultancy, testing, audit organizations.
- Integrate the research content of energy efficiency and conservation with State science and technology programme for the period 2011 – 2015.
- Investment in training and capacity building for managers, particularly for local authorities and designated energy using businesses on energy efficiency and conservation.
- Investment in communication, information, advocacy, education and community awareness raising of energy saving.
- Programme Steering Committee to cooperate with other ministries, in proposing topics for developing new technology for energy saving products, developing policies energy efficiency and conservation through annual science and technology funding of the ministries.

The importance of R&D in energy efficiency improvement was also spelled out earlier in the Decision No. 1855/QD-TTg on Viet Nam energy development strategy to 2020, with a 2050-vision; and Decree on Energy Conservation and Energy Efficiency (102/2003/ND-CP).

However, to date, there are no specific actions developed in accordance with the measures stipulated in the above documents.

LINKS

Not available.

ENERGY EFFICIENCY MEASURES

13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

While EECO is in charge of energy efficiency, some sector-based information are managed by other ministries, for example, details of building constructions are collected by Ministry of Construction and some technical data are analysed by Institute of Energy.

LEGAL POWER

Not available.

LINKS

Not available.

14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

Every five years, an economy-wide workshop on energy efficiency is conducted to summarize the activities, in line with VNEEP scheme and energy efficiency law. The latest workshops were carried out in 2015 (for VNEEP) and 2016 (for the Law).

LINKS

Five year summary of Law implementation:

http://tietkiemnangluong.com.vn/trang-chu-video.html?VideoId=25978

https://www.most.gov.vn/vn/tin-tuc/9307/hoi-nghi-tong-ket-5-nam-trien-khai-luat-su-dung-nang-luong-tiet-kiem-va-hieu-qua.aspx

Five year summary of VNEEP implementation (in each region: Northern 18.11, Central 31.7, Southern 30.10):

http://nangluongsachvietnam.vn/d6/news/Hoi-nghi-5-nam-trien-khai-chuong-trinh-MTQG-ve-su-dung-nang-luong-TKHQ-giai-doan-2011-2015-tai-khu-vuc-mien-Nam-6-18-129.aspx

https://www.cpc.vn/home/TTuc_Detail.aspx?pm=ttuc&sj=TK&id=15133

http://www.baoxaydung.com.vn/news/vn/xa-hoi/nhi-n-la-i-5-nam-trien-khai-chuong-trinh-su-dung-nang-luong-tiet-kiem-hieu-qua.html

15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

As described above.

16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

Energy labelling

OBJECTIVE

Energy labelling is a MEPS and a mandatory process to a list of equipment and appliances since 2013.

OUTLINE

The 2013 scheme put refrigerators, fans, washing machines, rice cookers, TVs, lighting equipment: CFLs, TFLs, electronic ballasts, air conditioner, three-phase electric motors and transformers on the mandatory list.

In 2017, ,more devices and equipment subject to energy labelling, including LED lights, water heaters with reserve, laptops, and passenger cars of more than 7 seats to 9 seats, motorcycles, and mopeds. Compulsory energy labelling shall be conducted from 2020 for LED lights, water heaters with reserve, laptops, motorcycles, mopeds and from 2018 for passenger cars of more than 7 seats to 9 seats. Road map for application of the MEPS to LED lights, water heaters with reserve, laptops shall be prescribed later by the Prime Minister.

LINKS

MEPS: http://nhannangluong.com/home

17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

Energy saving equipment [Under Decision No. 1427]

OBJECTIVE

Extensive use of high-performance equipment to replace low-performance equipment; and remove obsolete equipment and technology. Application of advanced technical standards and norms in order to improve energy efficiency in production and business activities of enterprises; achieve at least 10% of reduction in energy intensity over 2011 levels in energy-intensive industries of which:

- Steel: Reduce the average energy consumption for the production of 01 ton of steel components from 179 kgoe in 2011 to 160 kgoe in 2015;
- Cement industry: Reduce the average energy consumption for the production of 01 ton of cement from 97 kgoe in 2011 to 87 kgoe in 2015;
- Textile and apparel industry: Reduce the average energy consumption for the production of 01 ton of fibre in 2011 was 773 kgoe to 695 kgoe in 2015.

OUTLINE

Under Decision No. 1427, Project 2 is named "Development and dissemination of high-performance, energy-saving equipment, gradual phase out of low-performance equipment". Project consists of four components:

- Develop energy performance standards and implement mandatory energy labelling programme.
- Provide technical assistance to manufacturers, assembly factories, importers, retailers of high-performance products and to testing laboratories of energy performance in the economy.
- Support businesses in the application of standards, technical norms, improve performance for better energy efficiency and conservation.
- Develop energy management standards and model in energy using facilities.

LINKS

http://www.chinhphu.vn/portal/page/portal/chinhphu/hethongvanban?mode=detail&document_id=163946

Circular on solutions for economical and efficient use of energy in industries, No. 02/2014/TT-BCT (apart from No. 1427)

OBJECTIVE

This Circular mostly applies to industrial producers prescribed in Article 9 Clause 1 of the Law (Decision No. 50/2010/QH12) and regulates:

- Economical and efficient use of energy in general industrial processes.
- Management and solutions for economical and efficient use of energy in chemical industry

OUTLINE

The Circular has detailed regulations on general processes, including the economical and efficient use of energy in combustion processes, heat supply and cooling system, conditioning system and hot water supply, electrical engines and compressed air system. It also regulates the use of heat waste from system of combustion, heat supply and heat transfer, power lost protection, lighting technology and management in plants and offices of enterprises. Besides, the Circular has specific articles for regulating levels of energy consumption and expected improvement in industries, especially in chemical industry. Detailed numbers can be found in the Appendix of the Circular.

LINKS

http://vanban.chinhphu.vn/portal/page/portal/chinhphu/hethongvanban?class_id=1&mode=detail&document_id=172384

Clean production and Energy Efficiency Project

OBJECTIVE

The project was approved by MOIT and the World Bank in 2011 and sponsored by GEF. It is to strengthen the capacity of the Government of Viet Nam and other key stakeholders for the effective delivery of the energy efficiency programme in key industrial sectors (such as chemical, beverages, paper, plastic, textile, ceramics and ESCO), thereby improving energy efficiency and reducing associated greenhouse gas emissions. Project's duration is five years: 2011-2016.

OUTLINE

Three components were designed:

- Component 1: Energy Efficiency Action Plans for Key Industrial Sectors. This component involves a two-stage approach composed of the following elements:
    - Formulation of energy efficiency strategy and action plan for energy-intensive and high-growth industry sectors, charting the course for setting long-term goals, and outlining specific strategies for achieving industrial energy efficiency
    - Demonstration of voluntary agreements with pilots in at least five enterprises, including support to government's introduction of policy incentives and mechanisms, and dissemination of programme results for wider stakeholders for scale-up programme.
- Component 2: Development of Energy Service Providers. This component will focus on expanded capacity building of energy service providers, key market players, and many stakeholders as one mechanism to deliver increased energy savings in the energy efficiency market.

- Component 3: Capacity Building for Programme Management, and Monitoring and Evaluation. This component will support capacity building of the MOIT staff through provision of expert assistance and training activities in implementation, and monitoring and evaluation (M&E) of various energy efficiency projects, programmes, and policies.

LINKS

http://cpee.vn/

Energy Efficiency for Industrial Enterprises (VEEIE) for Viet Nam

OBJECTIVE

The World Bank's Board of Executive Directors in April 2017 supported the government of Viet Nam with a loan of USD 102 million for industrial enterprises to adopt energy-efficiency technologies and practices. Under this five-year project, industrial enterprises can access a new line of credit to fund their purchases of energy-efficiency and production-optimization technologies, thus reducing energy consumption and production costs and increasing their overall competitiveness in the domestic and international markets. The project is related to Decision No. 563/QĐ-TTg.

OUTLINE

The objective of VEEIE is to improve energy efficiency in Viet Nam's industrial sector. The project has two components:

- Energy Efficiency Investment Lending component consists of an Energy Efficiency lending programme. An Operational Manual (OM) was developed, which outlines selection criteria for sub borrowers and subprojects, appraisal procedures, roles and responsibilities of the Participating Financial Institutions (PFIs) and the government, the PFIs' internal institutional arrangement for project implementation, technical evaluation, environmental and social assessment, procurement, and financial management frameworks that are consistent with the Bank and the Vietnamese government rules and procedures. During project implementation, the PFIs will be responsible for identifying, appraising and financing subprojects that meet the criteria in the OM and will bear all associated risks.
- Project Implementation Support component will provide technical assistance and capacity building support to MOIT on project monitoring and supervision, including audits of project activities and safeguards implementation.

LINKS

http://projects.worldbank.org/P151086?lang=en

18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

Promoting energy efficiency in the transport sector [Under Decision No. 1427]

OBJECTIVE

Development of transportation system to meet the transport demand with increasingly high quality, save fuel and reduce environmental pollution. Reinforce the application of new technologies, renewable energy to replace traditional fuels in transportation. Strive to have public transport in 2015 meeting the 10 - 15% of travel demand in large urban areas

OUTLINE

Under Decision No. 1427, Project 4 is named, "To promote energy efficiency in the transportation sector". Project consists of three components:

- Energy saving in the planning and construction of transportation infrastructure
- Improve energy efficiency in organizations and exploit the transportation system
- Application of new technology, renewable energy in transport.

LINKS

Not available.

Legal document: Circular 64/2011/TT-BGTVT

OBJECTIVE

Ministry of Transport provides measures for economical and efficient use of energy in transport in general.

OUTLINE

Ministry of Transport provides measures for improving economical and efficient use of energy in transport activities as well as regulations in planning, construction and upgrading of transport works. For example, organizations and individuals engaging in transportation business must apply the norm of fuel consumption level for 1000 transportation production units (T.Km; Hk.Km) and execute management and technical measures to reduce such level in their units. For developing transportation project, the content of economical and efficient use of energy must be brought into project selection criteria and priority shall be given to options which shorten transport distance, raising advantage coefficient of load and distance. No specific levels/limits are given in this Circular.

LINKS

Circular 64/2011/TT-BGTVT:

http://moj.gov.vn/vbpq/lists/vn%20bn%20php%20lut/view_detail.aspx?itemid=27426

19. BUILDING ENERGY EFFICIENCY INITIATIVES

Energy saving and efficiency in buildings [Under Decision No. 1427]

OBJECTIVE

Implementation of mandatory management in compliance with Vietnamese Construction Standards "Energy efficiency construction buildings" from 2012, for 100% of new or renovated buildings within the scope of the Standards. Deployment of energy saving technology solutions in public lighting, application of high-performance lighting, energy saving for 100% of the new public lighting.

OUTLINE

Under Decision No. 1427, Project 3 is named "Energy saving and efficiency in buildings". Project consists of three components:

- Strengthen energy saving standards in new constructions and renovation for large buildings.
- Apply energy saving solutions, technology, equipment, materials; organize contests for green energy saving building, energy saving.
- Energy efficiency in public lighting.

The Ministry of Construction is the lead agency for this project, with estimated budget up to 135 billion VND.

LINKS

Ministry of Construction: http://tietkiemnangluong.vn/d6/news/Su-dung-nang-luong-tiet-kiem-va-hieu-qua-trong-cac-toa-nha-123-119-2410.aspx

Viet Nam Energy Efficiency Building Codes in QCVN 09:2013/BXD

OBJECTIVE

This National Technical on Energy Efficiency Buildings provides mandatory technical standards to achieve energy efficiency in the design and construction/retrofit of civil buildings (e.g., office buildings, hotels, hospitals, schools, commercial buildings, service buildings, and apartments buildings) with a gross floor area of 2,500 m2 or larger.

OUTLINE

The project released in 2013 was led by the Ministry of Construction, in collaboration with the International Finance Corporation, United States Agency for International Development and Danish Energy Agency. The final building codes include 60 pages of technical standards replace its previous version named 09:2005. The standards apply for:

- The building envelope, except envelopes of non-air conditioned storage space or warehouses;
- Equipment and systems in the building, including:
    - Interior lighting
    - Ventilation and air conditioning
    - Water heating

- Energy management equipment, and
- Elevators and escalators.

LINKS

Paper on building code: http://www.ibst.vn/DATA/nhyen/QCVN%2009%202013%20BXD.pdf

20. ENERGY EFFICIENCY COOPERATION

COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

The Vietnamese Government cooperates with other economies through:

- Promotion of Energy Efficiency in ASEAN Economies (PROMEC Programmes, funded by Japan);
- Promotion of Energy Efficiency in Small and Medium Enterprises (PECSME Programme, in cooperation with UNDP)

BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

Other programmes and initiatives include:

- Viet Nam Clean Production and Energy Efficiency Project (CPEE), with World Bank/GEF;
- Barrier Removal to the Cost-Effective Development and Implementation of Energy Efficiency Standards and Labelling (BRESL), with UNDP/GEF;
- Low Carbon Energy Efficiency (LCEE) Programme, with Danish Government;

Viet Nam has been receiving donations from ADB, Danida, EC, Finland, JICA, KFW, SDC, UNDP/GEF, UNIDO/GEF, World Bank, IFC on energy efficiency projects including:

- Supporting implementation of the Energy Efficiency programme (ADB).
- Load management and demand-side management (Agence Francaise de Development (AFD)).
- Technical training and certification programme for energy efficiency (Danish International Development Agency (DANIDA)).
- Study on National Energy Efficiency Master Plan (Japan International Cooperation Agency (JICA)).
- Demand-Side Management and Energy Efficiency Project (The World Bank Group).
- The UNDP's Viet Nam Energy Efficient Public Lighting (VEEPL).

LINKS

Not available.

21. OTHER ENERGY EFFICIENCY EFFORTS

No recent activity.