

MALAYSIA

1. GOALS ON EFFICIENCY IMPROVEMENT

1.1. Overall energy efficiency improvement goals

Various efforts have been undertaken by the Malaysian Government to utilize energy efficiently. A number of key energy efficiency programmes were initiated in the Eighth Malaysia Plan (2001-2005), aimed at strengthening further the Utilisation Objective of Malaysia's Energy Policy (1979), which seeks to promote the efficient utilization of energy and the elimination of wasteful and non-productive patterns of energy consumption. In our efforts to speed up the implementation of energy efficiency and conservation initiatives, the Ministry of Energy, Green Technology and Water is now in the midst of finalising a National Energy Efficiency Master Plan with clear goals and targets to coordinate and implement energy efficiency and energy conservation in a systematic and holistic manner in the country. The Master Plan is scheduled for completion in middle 2012.

1.2. Sectoral energy efficiency improvement goals

The National Energy Efficiency Master Plan will be focused on the industrial, building and equipment sectors.

1.3. Action plans for promoting energy efficiency

The Ninth Malaysia Plan (2006-2010) has outlined strategies for promoting energy efficiency improvement and continued to be given emphasis under the Tenth Malaysia Plan (2011-2015).

The Economic Transformation Programme (ETP) identified a few National Key Economic Areas (NKEA) in order to achieve a high income economy by 2020. An Entry Point Project (EPP) on energy efficiency was designed under the Oil, Gas and Energy (OGE) NKEA which is known as EPP9: Improving Energy Efficiency. EPP9 is also known as Sustainability Achieved via Energy Efficiency (SAVE) Program that focuses on 5 key initiatives as follows:

- i) Government leading by example;
 - To promote and implement efficient energy management system and practices in government buildings.
- ii) SAVE Program [Rebate];
 - The SAVE Program [Rebate] focuses on increasing sales of energy efficient appliances by increasing demand through giving rebates for 5-Star rated appliances.
 - Rebates given for the purchase of efficient 5-Star rated refrigerator (100,000 units) and air-conditioner (65,000 units) for domestic users and replacement to energy efficient chillers (72,000 Refrigerant Tons) for private commercial building owners.
- iii) Promotion of building insulation;
- iv) Promotion of more economically viable cogenerations for industries; and
- v) Efficiency transport from energy efficient vehicles

Objectives:

Energy efficiency measures will be intensified to harness energy savings potential and reduce Malaysia's carbon emissions and dependence on fossil fuels. Intrinsic barriers to energy efficiency that pose challenges in capturing this opportunity will also be addressed.

a) Applicable sectors:

Residential, Township, Industrial and Building

b) Outline:

- i) Phasing out of incandescent light bulbs by 2014;
- ii) Increase energy performance labelling from four to ten electrical appliances;
- iii) Introduction of guidelines for green townships and rating scales based on carbon footprint baseline;
- iv) Increasing the use of energy efficiency machineries and equipment such as high efficiency motors, pumps and variable speed drive controls;
- v) Introduction of Minimum Energy Performance Standards for selected appliances;
- vi) Revision of the Uniform Building By-Laws to incorporate the Malaysian Standard: Code of Practice on Energy Efficiency and Renewable Energy for Non-Residential Buildings (MS1525);
- vii) Wider adoption of the Green Building Index (GBI); and
- viii) Increasing the use of thermal insulation for roofs in air conditioned building.

c) Financial resources and budget allocation

The SAVE Program was created and administered federally by the Ministry of Energy, Green Technology and Water (MEGTW) and is funded by the Government in Economic Transformation Program (ETP) RM45million in total for the rebates and its promotional campaign activities throughout the country. The budget should cover the purchases of as many as 100,000 units of refrigerators, 65,000 units of air-conditioners and 72,000RT capacity of energy efficient chillers for eligible domestic consumers and private companies.

d) Method for monitoring and measuring effects of action plans

The progress and achievement is monitored through an outcome-based assessment method. The assessment report is prepared twice (at the middle of the Plan and at the end of the Plan period). The reports will be submitted to the Economic Planning Unit of the Prime Minister's Department.

e) Expected results

a) Industry

- i) The Efficient Management of Electrical Energy Regulation 2008, under the Electricity Supply Act. Under the regulation, all installations that consume 3 million kWh or more of electricity over a period of six months will be required to engage an electrical energy manager who shall, among others, be responsible to analyse the total consumption of electrical energy, to advise on the development and implementation of measures to ensure efficient management of electrical energy as well as to monitor the effectiveness of the measures taken;
- ii) The *Energy Efficiency and Conservation Guidelines Part 1: Electrical Energy-use Equipment*. The guidelines to encourage industries to adopt EE practices as well as manage and improve their energy utilisation and environmental management. The guidelines, covering a number of commonly-used equipments such as fans, motors, pumps, chillers, transformers, air-compressors, also highlight the best practices in the selection and design with standard efficiency values as well as best practices in operation, monitoring and maintenance of the equipment;
- iii) The *Energy Efficiency and Conservation Guidelines Part 2: Thermal Energy-use Equipment*. The guidelines to encourage industries to adopt EE practices as well as manage and improve their energy utilisation and environmental management. The guidelines, covering a number of commonly-used equipments such as boilers, thermal oil heaters, industrial furnaces, absorption chillers, heat exchangers, cogeneration systems, also highlight the best practices in the selection and design with standard efficiency values as well as best practices in operation, monitoring and maintenance of the equipment;
- iv) The *Industrial Energy Audit Guidelines*. The guidelines is prepared based on fifty-four (54) energy audits in eight energy-intensive industrial sub-sectors namely iron and steel, cement, wood, food, glass, pulp and paper, ceramics and rubber that carried out under Malaysian Industrial Energy Efficiency Improvement Project (MIEEIP); and
- v) Energy-use benchmarks for eight energy-intensive industrial sub-sectors namely iron and steel, cement, wood, food, glass, pulp and paper, ceramics and rubber.
- vi) Increasing the use of energy efficient machineries and equipment such as high efficiency motors, pumps and variable speed drive controls;
- vii) Introduction of Minimum Energy Performance Standards for selected appliances to restrict the manufacture, import and sale of inefficient appliances to consumers.
- viii) To accelerate the transformation of consumer appliances market to increase the share of Energy Efficient (EE) models and to phase out inefficient models from the local market so as to reduce the price premium for the EE products.

b) Building

- i) 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). All non-residential buildings have to comply with the energy efficiency requirements of the UBBL that allows for integration of renewable energy systems and energy saving features in buildings;

- ii) Minimum ten percent reduction of electricity use in selected government buildings. The Ministry of Energy, Green Technology and Water conducted energy audits and retrofitting works in selected government buildings to estimate the saving potential and to formulate a plan to achieve the stipulated target;
- iii) Wider adoption of Green Building Index (GBI) to benchmark energy consumption in new and existing buildings; and
- iv) Increasing the use of thermal insulation for roofs in air conditioned buildings to save energy.
- v) Implementation of no-cost measure initiative by setting temperature of all government buildings to not lower than 24 degrees Centigrade This step shows the government's commitment in reducing the overall electricity consumption by leading the way by doing it and starting with the no cost measures which can be implemented easily

c) Residential

- i) Dissemination of information and awareness to create a voluntary behavioural shift of residential energy users;
- ii) Increasing energy performance labelling from four (air-conditioner, refrigerator, television and fan) to ten electrical appliances (six additional appliances of rice cooker, electric kettle, washing machine, microwave, clothes dryer and dishwasher). Labelling appliances enables consumers to make informed decisions as they purchase energy efficient products; and
- iii) Phasing out of incandescent light bulbs by 2014 to reduce carbon dioxide emissions by an estimated 732,000 tonnes and reducing energy usage by 1,074 gigawatts a year.
- iv) The amount of targeted energy savings for the SAVE Program would be 127.3GWh equivalent to the savings of electricity bill will be RM 32.04 million yearly based on the current electricity tariffs. The estimated savings in proportion to life span for energy efficient electrical appliance where it is expected to be about seven (7) years for refrigerators and air conditioners, and 15 years for chillers, the projected savings would be up to RM 382.1 million.

f) Future tasks

Enhance the legal framework on energy efficiency improvement through the drafting of the Energy Efficiency and Conservation Law and finalising a National Master Plan on Energy Efficiency and Conservation (Electrical and Thermal) to promote energy efficiency improvement on a holistic manner.

1.4. Institutional structure

a) Name of Organisation

The key Malaysian Government ministries and agencies involved in energy efficiency improvement are the Energy Unit of Economic Planning Unit (EPU) of the Prime Minister's Office, the Ministry of Energy, Green Technology and Water (MEGTW), the Energy Commission (EC) and the Sustainable Energy Development Authority (SEDA Malaysia).

b) Status of Organisation

All agencies perform their duties for the central government.

c) Roles and responsibilities

The role of *MEGTW* is to formulate energy efficiency policy, in coordination with the *EPU*. The *EPU* provides the general direction, strategies and determines the level of implementation. 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 regulation for the electricity and piped gas supply industry, as the safety regulator for electricity and piped gas and to advise the Minister on all matters relating to electricity and piped gas supply including energy efficiency and renewable energy issues. *SEDA Malaysia* is the executing agency for Entry Point Project (EPP) on energy efficiency.

d) Covered sectors

Industry, building, residential and government sectors.

e) Established Date

The *MEGTW* was established in April 2009 following the reshuffle of the Malaysian Cabinet. Formerly the Ministry was known as the Ministry of Energy, Water and Communications in 2004 and the Ministry of Energy, Communications & Multimedia in 1998. The *EC* has been established since 2001 replacing the Department of Electricity and Gas Supply (DEGS). *SEDA Malaysia* was established in September, 2011.

f) Number of Staff

There five officers in *MEGTW* in charge of renewable energy and energy efficiency, four officers in the Energy Commission (*EC*) to handle energy efficiency matters and *SEDA Malaysia* has 12 officers in charge of both renewable energy and energy efficiency.

1.5 Information dissemination, awareness raising and capacity building

A large number of information dissemination seminars and workshops have been held for energy users by organisations involved in promoting energy efficiency, e.g. The Centre for Education, Training, and Research in Energy Efficiency and Renewable Energy (CETREE) which is located in the Universiti Sains Malaysia. CETREE had successfully implemented various activities related to Renewable Energy (RE) and Energy Efficiency (EE) through mass media, competitions, exhibitions, etc. that covered primary and secondary school levels. Capacity building program such as Promotion of Energy Efficiency and Conservation (PROMECC) ó Energy Management and ASEAN Energy Management Accreditation Scheme (AEMAS) has been successfully conducted among the energy auditors, energy managers and focal point of the government agencies in

order to gaining knowledge to adopt some of the efficient energy management in their own premises and at the same time recognize the vast business opportunities that lie ahead.

1.6 Research and development in energy efficiency and conservation

Technical research on energy efficiency and conservation are conducted mainly by government sponsored universities. The research works are funded by the Government through the Ministry of Science, Technology and Innovation.

2. MEASURES FOR ENERGY EFFICIENCY IMPROVEMENTS

2.1. Government laws, decrees, acts

a) Name

Electricity Supply Act 1990 and the Electricity Supply Act (Amended) 2001 or Act A1116.

b) Purpose

The main purpose of the Act is to regulate the electricity supply industry. The A1116 also has provisions on efficient use of electricity

c) Applicable Sectors

All electricity users are bound under the Act.

d) Outline

Part VA of the Act provides the following provisions on efficient use of electricity:

-Section 23A: The Minister may, from time to time, prescribe the standards, specifications, practices and measures to be adopted and any other matters in respect of the efficient use of electricity.

-Section 23B: No person shall use or operate any installation unless the installation meets such requirements as may be prescribed in respect of the efficient use of electricity.

-Section 23C: No person shall manufacture, import, sell or offer for sale or lease any equipment unless the equipment meets such requirements as may be prescribed in respect of the efficient use of electricity.

e) Financial resources and budget allocation

Annual budget from the Government.

f) Expected results

Electricity saving and better electrical load management.

2.2. Regulatory measures

a) Name

The Efficient Management of Electrical Energy Regulations 2008.

b) Purpose

To promote efficient use of electrical energy through better energy planning and management system.

c) Applicable Sectors

Industry and commercial.

d) Outline

The Efficient Management of Electrical Energy Regulations 2008 was gazetted on 15 December 2008, which required any installation with total electricity consumption of 3 million kWh or more over 6 consecutive months to appoint electrical energy managers and implement efficient electrical energy management.

e) Financial resources and budget allocation

Annual budget from the Government

f) Expected results

Better energy management.

2.3. Voluntary measures

Green Building Index Malaysia (GBI Malaysia) certification.

The GBI Malaysia is a profession driven initiative to lead the Malaysian property industry towards becoming more environment-friendly. Energy efficiency of a building is one of the criteria for the green building index certification.

The High-Efficiency Motor (HEM) program is a voluntary program to promote increased use of high-efficiency motors in Malaysia. The Energy-Efficient Refrigerator (EER) and Labeling Program is a voluntary program to promote energy-efficient refrigerators by introducing labels showing the energy use of appliances.

The *Energy Efficiency and Conservation Guidelines Part 1: Electrical Energy-use Equipment* is to encourage industries to adopt EE practices as well as manage and improve their energy use. The guidelines, covering a number of commonly-used equipments such as fans, motors, pumps, chillers, transformers, air-compressors, also highlight the best practices in the selection and

design with standard efficiency values as well as best practices in operation, monitoring and maintenance of the equipment.

The *Energy Efficiency and Conservation Guidelines Part 2: Thermal Energy-use Equipment* is to encourage industries to adopt EE practices as well as manage and improve their energy utilisation and environmental management. The guidelines, covering a number of commonly-used equipments such as boilers, thermal oil heaters, industrial furnaces, absorption chillers, heat exchangers, cogeneration systems, also highlight the best practices in the selection and design with standard efficiency values as well as best practices in operation, monitoring and maintenance of the equipment.

2.4. Financial measures taken by the government

2.4.1. Tax scheme

Tax scheme for energy efficiency improvements are as follows:

Companies providing services for energy efficiency improvement are eligible for:

- Pioneer Status with income tax exemption of 100% of statutory income for 10 years; or
- Investment Tax Allowance of 100% on the qualifying capital expenditure incurred within a period of 5 years. The allowance to be set-off against 100% of the statutory income for each year of assessment; and
- Import duty and sales tax exemption on energy-efficient equipment that are not produced locally and sales tax exemption on the purchase of equipment from local manufacturers.

Companies which incur capital expenditure for improvements of their energy consumption are eligible for:

- Investment Tax Allowance of 100% of the qualifying capital expenditure incurred within 5 years. The allowance to be set-off against 100% of statutory income for each year of assessment; and

Import duty and sales tax exemption on energy-efficient equipment that are not produced locally and sales tax exemption on the purchase of equipment from local manufacturers

Companies which import energy efficient products are eligible for:

- Exemption of import duty and sales tax is given on energy-efficient equipment such as high efficiency motors and insulation materials to importers including authorized agents approved by the Energy Commission.

Owners of buildings with Green Building Index Certificate are eligible for:

- Tax exemption equivalent to 100% of the capital expenditure incurred to obtain the GBI certificate. The exemption is allowed to be set-off against 100% of the statutory income for each year of assessment. New buildings and retrofitted buildings are eligible for this incentive.

Buyers of buildings and residential properties awarded GBI certificates from real property developers are eligible for:

- Stamp duty exemption on instruments of transfer of ownership of such buildings. The amount of stamp duty exemption is on the additional cost incurred to obtain the GBI certificate.

2.4.2 Low-interest Loan

a) Name

Green Technology Financing Scheme (GTFS)

b) Level

Federal Government

c) Purpose

To promote green technology

d) Applicable Sectors

Industry and commercial

e) Outline

The fund provides soft loans to companies that supply or utilise green technology. For suppliers, the maximum financing is RM50 million and for consumer companies RM 10 million. The Government provides interest rate subsidy of 2% of the loans procured. The Government also provides a guarantee of 60% on the loan amount, with the remaining 40% by banking institutions. Loan applications can be made through the National Green Technology Centre.

f) Financial Resources and Budget Allocation

RM 1.5 billion.

g) Expected Results

About 140 companies are expected to benefit from this fund and this will spur green technology development especially market creation and penetration of green technology in the economy.

2.5. Energy pricing

Energy prices are regulated by the Government and heavily subsidised. Under the Ninth Malaysia Plan the Government has stated the policy to review the energy pricing structure to reflect closely the market prices. As such, the Government had taken steps to gradually reduce subsidies on energy prices. Currently, the oil products prices, gas price for the primer and non-primer sectors as well as electricity tariffs had been reviewed to reflect close to market prices.

2.6. Other efforts for energy efficiency improvements

2.6.1. Cooperation with non government organisations

The government has developed cooperation with non government organisations such as Federation of Malaysian Consumers Associations and Water and Energy Consumer Association of Malaysia Association of Energy Service Companies (MAESCO), Federation of Malaysian Manufacturers (FMM), Association of Consulting Engineers *Malaysia* (ACEM) and The Electrical and Electronics Association of Malaysia (TEEAM) to promote energy efficiency activities. The promotion activities are mainly in the form of campaign, workshop, seminar and publication of energy efficiency related materials.

2.6.2. Cooperation through bilateral, regional and multi-lateral schemes

Malaysia actively involves in regional and multi-lateral schemes on energy efficiency improvements. Malaysia and other South East Asia economies under the Association of South East Asia Nations (ASEAN) are agreed to improve energy efficiency through the ASEAN plan of Action for energy cooperation (APAEC). The current APAEC (2004-2009) has outlined strategies such as ASEAN Energy standards and Labelling, promotion of Energy Services Companies (ESCOs), information sharing and capacity building to improvement energy efficiency in ASEAN region. In the East Asia Summit (EAS), which Malaysia is one of the member, members are agreed to work together to improve energy efficiency in the EAS region. And as a member of United Nations, Malaysia hosted the Malaysian Industrial Energy Efficiency Improvement Project (MIEEIP) with assistance and co-funding from United Nations Development Program (UNDP) and Global Environment Facility (GEF). The MIEEIP was aimed to address barriers to energy efficiency and energy conservation in Malaysian industrial sector.

Malaysian Chapter of ASEAN Energy Management Accreditation Scheme (AEMAS), initiative under ASEAN Energy Efficiency and Conservation Sub-Sector Network (EE-SSN) has been successfully launched by Government of Malaysia in July 2011. The main objectives of the AEMAS are to reduce energy consumption in the industrial sector in ASEAN, to reduce emissions of greenhouse gases in ASEAN, and to increase the professional standing of accredited energy managers. The launch of the Malaysian Chapter of AEMAS marks an important milestone that will support our transition to an energy efficient nation, as we place priority on the need for human capital competency and the drawing up of a code of practices to use technology effectively.

Promotion of Energy Efficiency and Conservation (PROMEEC) 6 Energy Management for Malaysia has been successfully organised in November 2011. This program is under EE-SSN as well that was jointly conducted with ASEAN Centre for Energy (ACE) and funded by Government of Japan via Ministry of Economy Trade and Industry. PROMEEC activity is one of the capacity building programs to disseminate the energy data and reinforce the understanding and capabilities in managing energy more effectively and efficiently.