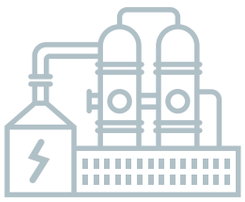
Philippines

2017-2040

Energy Efficiency and Conservation Roadmap



ENERGY UTILIZATION MANAGEMENT BUREAU

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The Philippines
Energy Efficiency and Conservation Roadmap
2017-2040

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ENERGY UTILIZATION MANAGEMENT BUREAU

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Disclaimer

This document was developed with the assistance of the European Union under the SWITCH Policy Support Component Philippines. The contents of this publication are the sole responsibility of the authors and implementing consortium and can in no way be taken to reflect the views of the European Union.

The SWITCH Policy Support Component Philippines is part of the EU SWITCH-Asia Programme. EU SWITCH-Asia is the largest programme in Asia focussing on sustainable consumption and production (SCP) as an approach to development. The programme promotes economic prosperity and poverty reduction in Asia by encouraging a sustainable approach to growth with positive environmental and social impacts.

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List of Acronyms

AEMAS	ASEAN Energy Management Scheme
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
COP	Conference of Parties
DOE	Department of Energy
DOTC	Department of Transportation and Communications
DOTr	Department of Transportation
DPWH	Department of Public Works and Highways
DSM	Demand Side Management
DTI-BPS	Department of Trade Industry-Bureau of Product Standards
EE	Energy Efficiency
EE&C	Energy Efficiency & Conservation
EUMB	Energy Utilization Management Bureau
ESCO	Energy Service Companies
I-O	input-output
IEA	The International Energy Agency
LGU	Local Government Unit
LGUs	Local Government Units
M&E	Monitoring and Evaluation
MEPS	Minimum Energy Performance Standards
NAMAs	Nationally Appropriate Mitigation Actions
NEECP	National Energy Efficiency & Conservation Program
NGO	Non-Governmental Organization
OVI	Objectively Verifiable Indicators
PEEP	Philippine Energy Efficiency Project
PIEEP	Philippine Industrial Energy Efficiency Project
RBM	Results Based Management
SDG	Sustainable Development Goals
UNIDO	United Nations Industrial Development Organization
VAC	Ventilation, air-conditioning and cooling

Foreword

We shoulder the shared responsibility of ensuring our planet remains inhabitable and safe. This is a collective obligation that every nation plays an indispensable role.

Unfortunately it has been brought to global attention that most economies are culpable of overzealous energy consumption in the pursuit of modernization and development. Therefore, to play its part as a global entity, the Philippines places great priority to reverse and reduce excessive energy consumption by strategic and pragmatic approaches towards human development and green growth to ultimately ensure Philippines is a nation that is in harmony with the environment and nature.

The Philippines Energy Efficiency Roadmap 2017-2040 is a compact yet comprehensive document that we strongly believe will steer us towards achieving our mission to improve the quality of life of the Filipino by formulating and implementing policies and programs to ensure sustainable, stable, secure, sufficient, accessible and reasonably-priced energy. It calls upon us to view and plan development and the accompanying processes through more informed and responsible perspectives. The commencement of this document is to corroborate and strengthen the various ongoing initiatives in the Philippines to ensure that collectively as a nation we are able to achieve our goals towards sustainable growth for the well-being of the present and future generations to come.

Acknowledgements

We are appreciative to be part of the SWITCH-Asia Program which is the largest EU Program on Sustainable Consumption and Production (SCP) in Asia.

The Philippines has always been open and receptive towards collaborative projects with the best interest of the Filipino people, the nation and global agendas. The EU SWITCH-Asia Policy Support Component has provided the platform for officials, experts, academics and consultants the opportunity to deliberate and discuss pertinent issues and the way forward to ensure sustainable consumption and production is incorporated into national development plans. The whole program has been a dynamic process than has managed to bring together various stakeholders to share, discuss and plan towards a common goal. This exercise will also help to avoid unnecessary duplication and to reduce less effective silo initiatives which in turn will encourage prudent financial management and increase efficiency.

We acknowledge the multi-faceted challenges faced in completing the Philippines Energy Efficiency Road Map 2017-2040 and the endless dedication of many individuals. We would like to extend deepest gratitude on behalf of the Department of Energy, Philippines. Our appreciation goes out to the committed technical team; Dr. Channa Gunawardena the team leader, Mr. Mark Lister who served as a consultant, Mr. Alex Arter and Ms. Maria Balamiento the energy advisors, the design team of ECCI Corporation and Dr. Rona Chandran the editor. This initiative would not have been possible without the financial support by the European Union under the SWITCH-Asia Policy Support Component Philippines.

Maraming Salamat Po

Executive Summary

The Philippines has dedicated programmatic activities to advance energy efficiency since 2004. Over the last decade there have been numerous energy efficiency policy initiatives by the Government; while these initiatives have been consistent and complimentary, room to narrow gaps and improve implementation and monitoring exists.

The Philippines Energy Efficiency and Conservation Roadmap 2017 – 2040 provides a framework for building an energy-efficient nation and in making energy efficiency and conservation a way of life for all Filipinos. Energy efficiency will advance the country's economic development and help ensure energy security, optimal energy pricing and sustainable energy systems. The development of this Roadmap commenced with a review of the energy demand context of the Philippines and its current energy efficiency programs. This review considered the effectiveness of current programs, identified gaps and unrealized opportunities based on international best practice.

A first version of the Roadmap was completed in 2014. However, it has been deemed essential to revise the roadmap in 2016 prior to publishing. This Roadmap is a consolidated national level document of policy instruments to enhance energy efficiency in the Philippines for the period 2017 to 2040. It integrates identified opportunities with existing energy efficiency policy instruments and strategies. The document also incorporates the priority goals of the current administration (2017-2022).

The first part of this document sets the background to the integration process and the development of the road map. Policy targets, opportunity, priority areas and further considerations are discussed. The second part of the document embarks on the road map with introductory statements of objectives and targets. This is followed by short, medium and long term strategies to achieve the stated objectives.

The successful attainment of the goals and targets set is highly dependent on the corresponding and complementing sector-based action plans, which will detail the approach of implementing the recommendations of the roadmap, including allocating roles and responsibilities and financial resources.

1 Planning: Background

1.1 Introduction

The Philippines Energy Efficiency and Conservation Roadmap 2017-2040 (the Roadmap) is a detailed outline of the strategic plans and actions required to create a more energy-efficient Philippines across all sectors of economic activity. The road map was developed based on a pragmatic review of current state with respect to implementation and existing policies, targets and opportunities. Key stages involved in the development of the road map were:

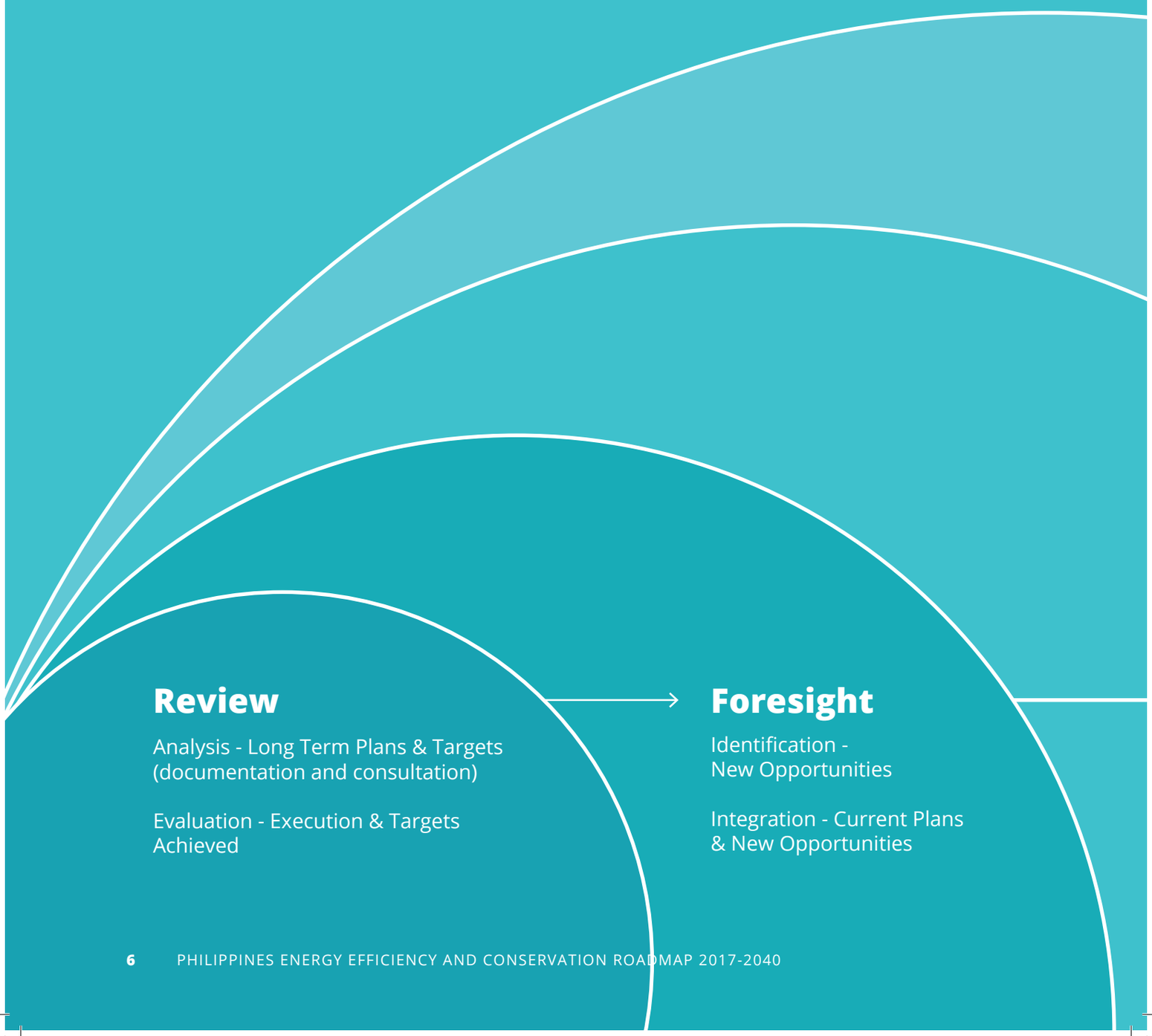
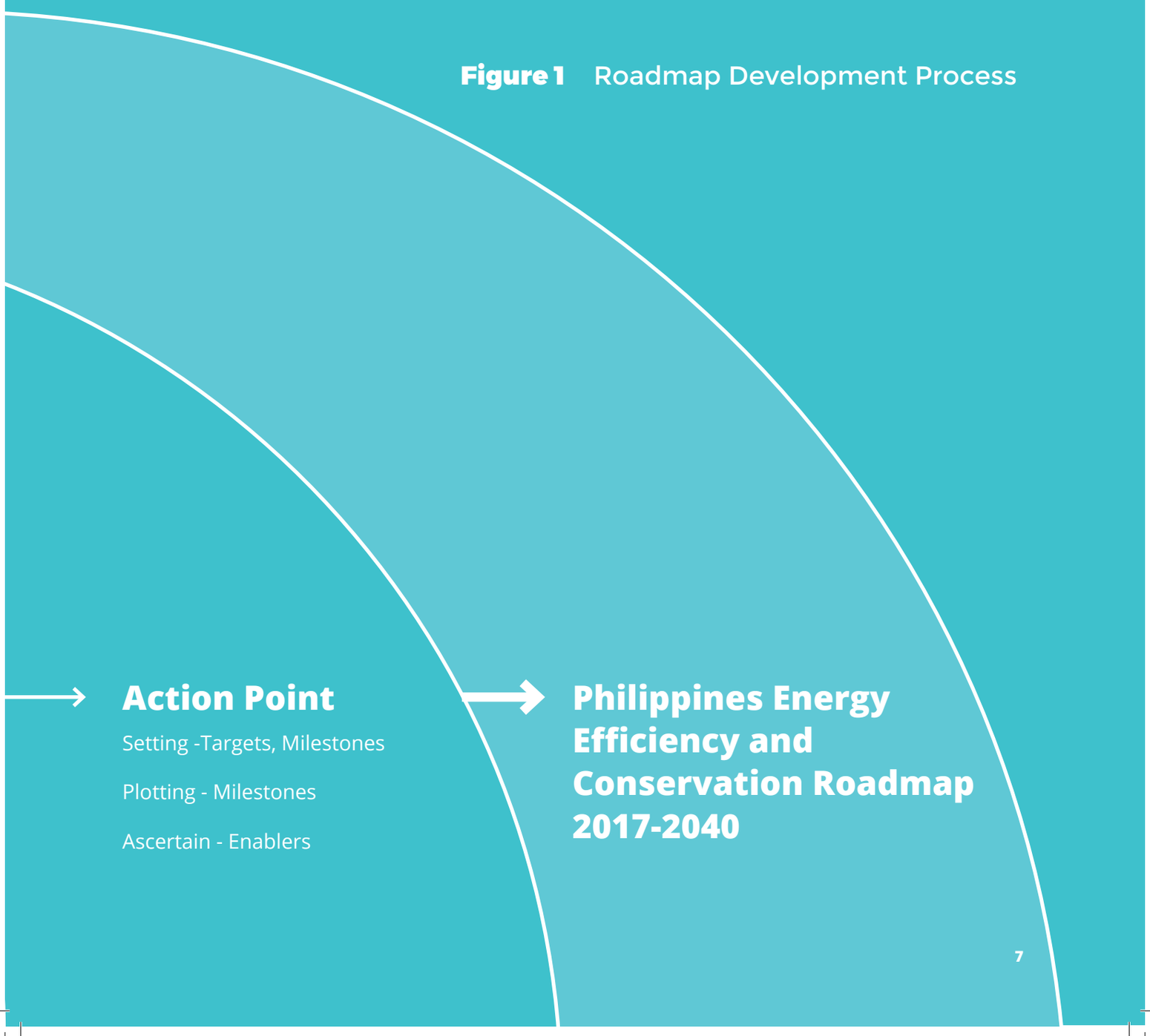


Figure 1 Roadmap Development Process



1.2 Review of existing energy efficiency policies, targets and objectives

Setting the scene

The Philippine Government has emphasized on energy efficiency since 1975 via a wide range of statements of strategic intent on energy efficiency (Annex 1) and the Republic Act 7638 which was the basis for the formation of the Department of Energy (DOE). These statements have both built on and augmented the mandates given to the DOE and other bodies to pursue energy efficiency activities at various levels.

In more recent times, the 2008 Philippine Energy Summit discussion on Energy Efficiency and Conservation resulted in the drafting of several major priority action plans.

Targets

The Philippine Government has emphasized on energy efficiency since 1975 via a wide range of statements of strategic intent on energy efficiency (Annex 1) and the Republic Act 7638 which was the basis for the formation of the Department of Energy (DOE). These statements have both built on and augmented the mandates given to the DOE and other bodies to pursue energy efficiency activities at various levels.

The Philippines has two long term statements on energy efficiency clearly documented in the National Energy Efficiency & Conservation Program (NEECP). These existing statements remain highly relevant and served as a concrete platform for this roadmap.

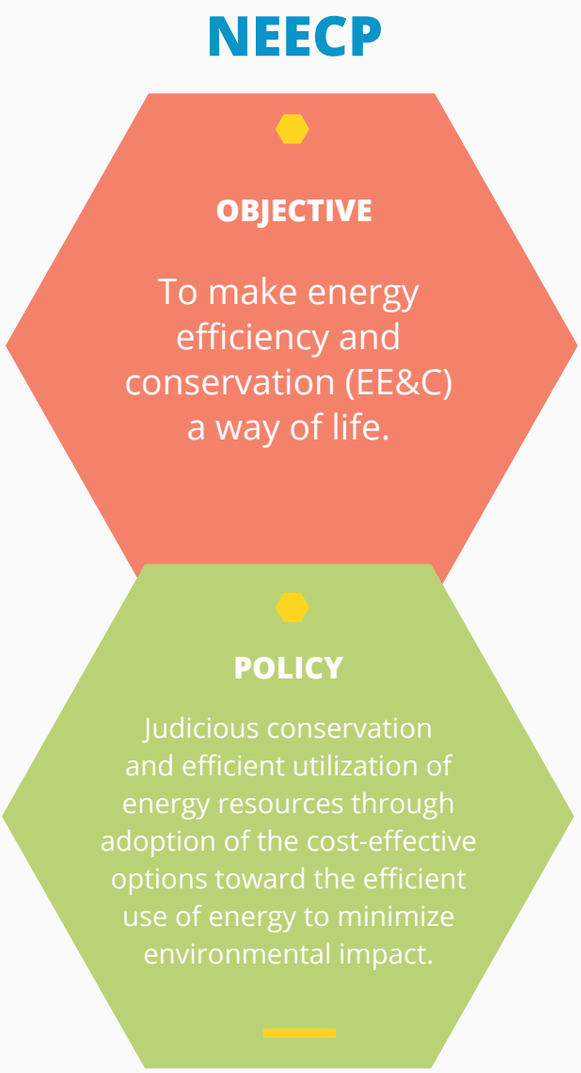
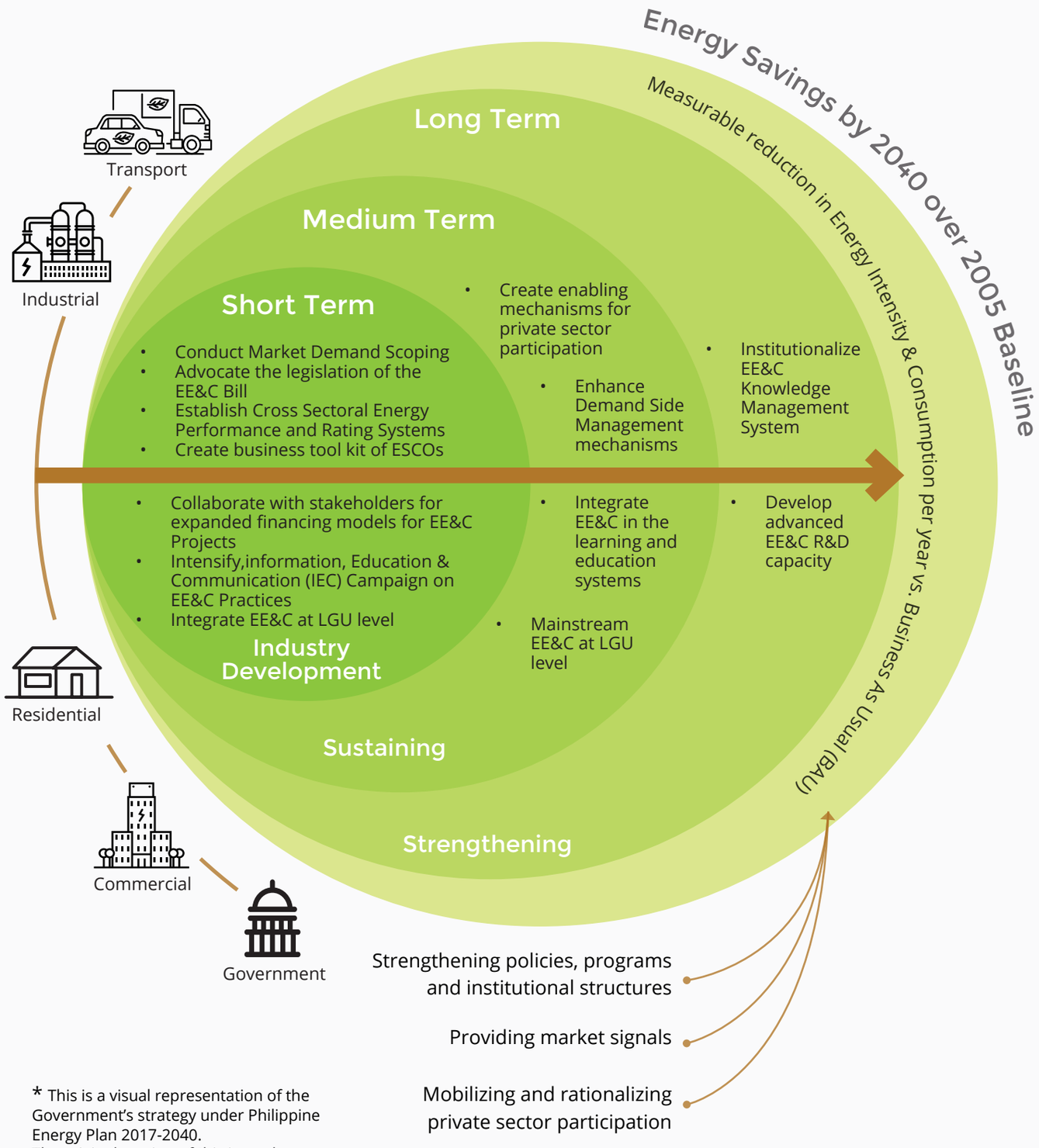


Figure 2 Philippine Government strategies and priorities for energy efficiency



* This is a visual representation of the Government's strategy under Philippine Energy Plan 2017-2040.
The original version of this is made available in page 25.

1.3 National and international policy cohesion

National policy cohesion

The Roadmap has aimed to align the Government's cross-sectoral and long-term planning and strategy documents that have relevance to energy efficiency, including numerous transport strategies, industry strategies, the Philippine Development Plan and National Climate Change Action Plan, while still acknowledging the specific emphasis of each of these plans.

The Asia-Pacific Economic Cooperation (APEC) Peer Review of Energy Efficiency policies completed in 2012 set out fifty-four recommendations for future energy efficiency action for the Philippines, which have been considered in the development of a revised Roadmap.

International policy cohesion

ASEAN Plan of Action for Energy Cooperation 2016-2025 (APAEC) This plan, endorsed by all ASEAN member states, aims to reduce energy intensity in ASEAN by 20% until 2020.

The International Energy Agency (IEA) in October 2013 released a series of recommendations on how to unlock energy efficiency in buildings, appliances, transport and industry, as well as end-use applications such as lighting in Southeast Asia. It is mostly concerned with energy supply scenarios for the region. However it strongly acknowledges that energy savings can be a very important and cost-effective source of additional energy "supply" for the region and also deliver substantial economic gains. The Roadmap is consistent with this.

Sustainable Development Goals (SDGs) The Roadmap is consistent with the SDGs especially with Goal 7 which sets to ensure universal access to affordable, reliable and modern energy services and expand infrastructure and to upgrade technology for supplying modern and sustainable energy services for all in developing countries, in accordance with their respective programs of support by 2030.

Conference of Parties (COP) climate change negotiations: The Roadmap supports the Philippines position at the COP21 and COP22 climate change negotiations.

Secretary Emmanuel M. de Guzman, Vice chair of the Climate Change Commission and head of the Philippine delegation to COP 21 (Paris, 2015) stated:

"Our Paris Agreement may not be as perfect as we wished it to be, but it is essentially an acceptable accord. We can build on it and make it better over time. We must now focus on its implementation and on the compliance procedures and will engage in the process."

Assistant Secretary Evelyn Cruzada, Office of the Philippine Cabinet Secretary, Republic of the Philippines declared the Philippines position for COP 22 (Marrakesh, 2016): "In essence adaptation, mitigation, including economic growth do not have to be separate activities or choices. These objectives can all be achieved given the right approach."

The Roadmap supports the Philippines commitments at COP21 and COP22 by providing a consistent and holistic approach for implementing energy efficiency measures in the short, medium and long term. These measures support economic development and competitiveness by promoting energy efficiency and security across key economic sectors of the country.

1.4 Policy instruments

How targets and milestones will be achieved

Policy instruments are tools that the government can use to effect desired changes. These changes should target the main players of the economy, namely the consumers and the producers (business). Key policy instruments which can support the implementation of Energy Efficiency (EE) strategies are depicted in figure 3 below.

Figure 3 Types of policy instruments

Regulatory instruments

Laws, regulations, administrative orders, circulars, guidelines

Regulation is the strongest intervention which a government can choose to influence the operating conditions of a market. Regulatory instruments are the most commonly used policy instruments in modern economies. They are mandatory by nature and can influence positively the behavior of consumers and producers.

Economic instruments

Loans, taxes, incentives, subsidies, grants, awards, commercial funding

A range of economic instruments need to be harnessed to increase energy efficiency implementation. Alignment of economic signals with desired outcomes, including elimination of subsidies and cross-subsidies, or the creation of pricing incentives, sends clear signals to provide incentives for energy efficiency. It is critical to assess if the desired behavior continues once the economic instrument is removed. Economic instruments deploy their maximum effectiveness often in tandem with regulatory instruments.

Hybrid instruments

Pilot projects, programs

Hybrid instruments focus on activities such as projects or pilots with a fixed time period. They sometimes combine functions of two or more instruments typically education, information and partnership.

Information instruments

Information resources, communication campaigns, dissemination platforms, public information activities

Public awareness requires effective communication campaigns. Communication needs collaboration between the Government as the main source of information in cooperation with non-government stakeholders and the private sector. To promote energy efficiency effectively content must be customized for specific target audiences and disseminated via effective channels.

Partnership instruments

Networks, partnerships, platforms, stakeholder forum

Partnership instruments deal with creating working arrangements between a variety of stakeholders including within the Government and between the Government and other stakeholders such as industry, Non-Governmental Organizations (NGOs), academia.

Education instruments

Curricula, guidelines, teacher training, school programs, industry training, capacity building

Education is a critical instrument to accompany most energy efficiency initiatives. It can take numerous forms such as integration in secondary and tertiary education curricula, training of trainers programs and capacity building for government, industry and Energy Service Companies (ESCOs).

2 Embark: Towards an Energy Efficiency Philippines

2.1 Intendment

The Roadmap provides a consistent and cohesive approach to guide the Philippines in its national energy efficiency approach. It aims to support the country's economic development through efficiency gains and ensure energy security through a 3% reduction in energy intensity across key economic sectors.

Energy demand is forecast to grow by 80% between 2017 and 2040, at an average annual rate of 3.5%. This will be driven by population growth of approximately 32% over this period. Transport, buildings and industry will be the dominant energy use sectors.

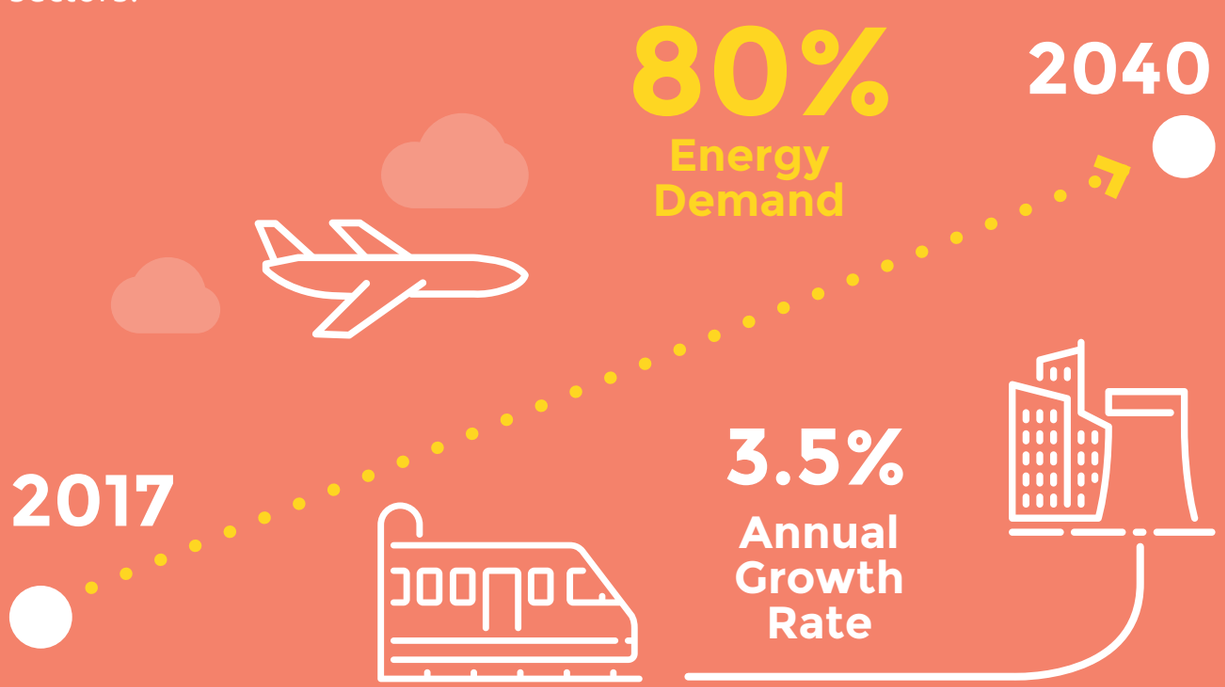


Figure 4

Indicative energy efficiency targets

	Annual energy saved by 2040 (KTOE)	Implied annual % savings (total savings by 2040)	
Transport	**4,500**	1.9%	(25%)
Industry	**3,000**	1.3%	(15%)
Residential	**1,000**	1.2%	(20%)
Commercial	**1,200**	1.9%	(25%)
Agriculture	**300**	0.9%	(10%)
Total	**10,000**	1.6%	(24%)

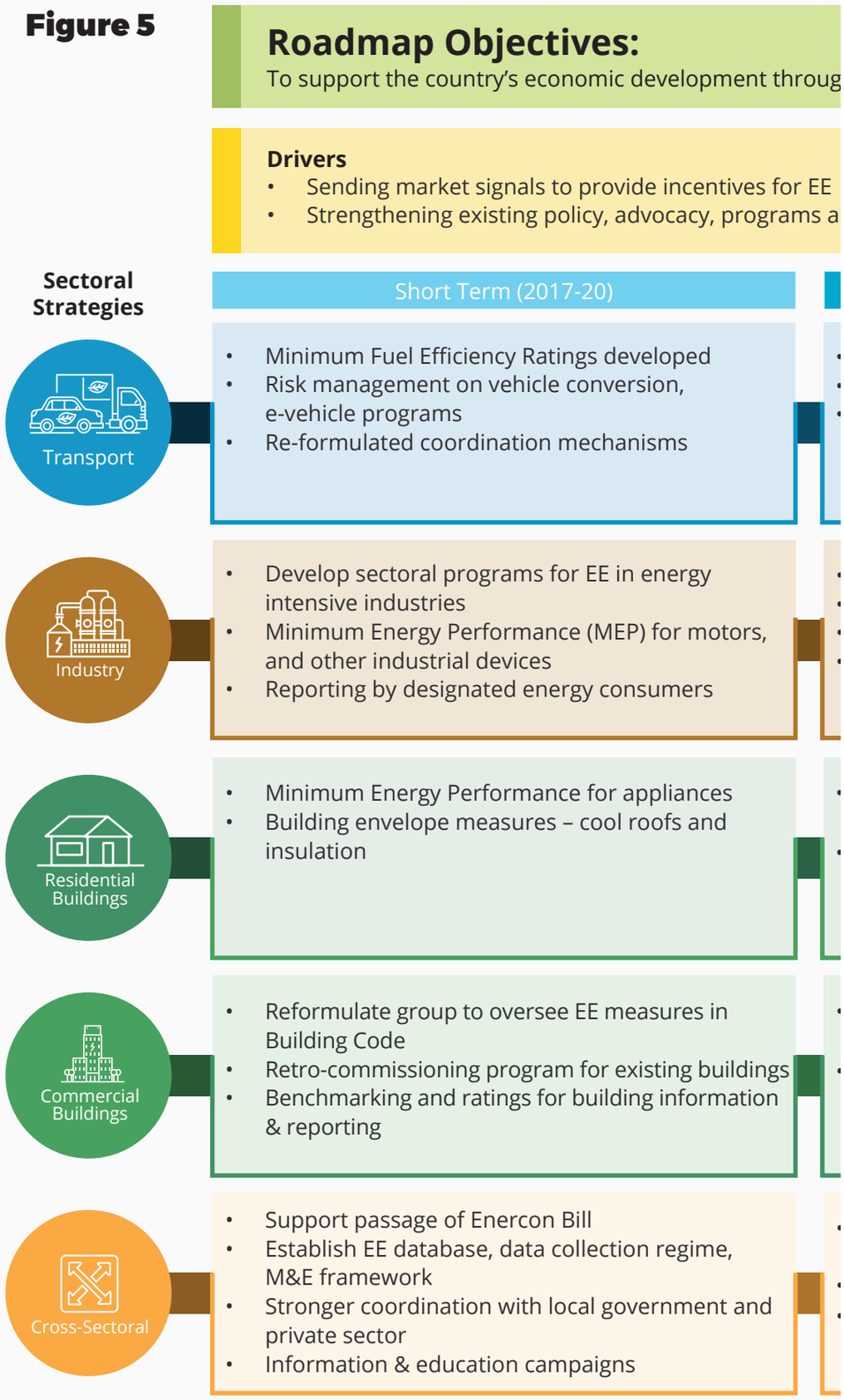
Economy-wide improvement in energy intensity **3%**

* This level of efficiency improvement is assumed through endogenous technology advancement; no initiatives are proposed for the agricultural sector given its small percentage share of national energy use.

2.2 Overview and milestones

The diagram below presents the framework of the Philippines Energy Efficiency and Conservation Roadmap, 2017- 2040. The framework, which consists of drivers and sectoral strategies, builds on the Philippine Government strategies and priorities for energy efficiency.

Figure 5



ough efficiency gains and ensure energy security with a reduction in energy intensity across key economic sectors.

EE
ns and institutional structures

- Harnessing private sector /partner finance
- Enabling innovation and new technologies

Medium Term (2021-30)	Long Term (2031-40)
• Financial incentives for EE through vehicle taxes • Promotion of key vehicle technologies • Driver education and fleet management programs	• EE programs beyond road transport (passenger and cargo ships, aviation fuels) • Reintegration of urban planning and transport energy use • Congestion taxes
• Update MEP for industrial devices • Implement demand side management programs • Review of energy pricing • Enhanced reporting & management for designated energy consumers	• Review inward investment rules for EE to remove distortions
• Develop role of utilities as key implementation partners and information providers • Specific EE programs for low-income households	• Towards energy efficient housing precincts • Inclusion of EE measures in residential Building Code
• EE measures for inclusion in national and regional building codes • Enhance benchmarking and ratings	• Incentive funds in place for EE, including private financiers • Mandatory disclosure of commercial building energy intensity
• National strategy for efficiency in power supply sector • Establish enforcement regimes • Enhanced reporting and monitoring	• Enhanced institutional arrangements • Enhanced predecessor activities

Short Term (2017-2020)

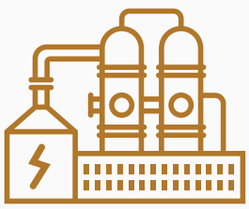
Transport Sector

Closer support to manage identified risks in vehicle conversion and e-vehicle/e-trike programs – initiatives to target key energy use sub-sectors in transport such as tricycle and taxi fleets.

Fuel Efficiency Ratings developed for light-duty vehicles, vans/ jeepneys, tricycles and heavy vehicles (trucks) – a long-stated objective, this could be a very effective mechanism for increasing the efficiency of vehicles in a given category, though its impact through new vehicles could take time.

Re-formulated coordination mechanisms with other agencies – reinstating talks and coordination bodies with Department of Trade Industry-Bureau of Product Standards (DTI-BPS), Department of Transportation (DOTr) and other agencies regarding road transport fuel efficiency will be important to implement and align with overall energy efficiency goals.

Manufacturing Sector

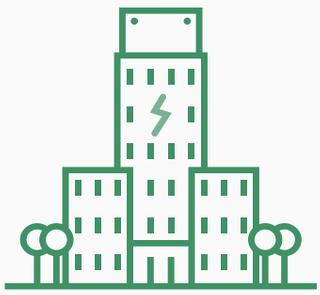


Minimum Energy Performance for industrial devices – Minimum Energy Performance (MEP) will be introduced for electric motors and other industrial devices like pumps. Motors are the largest end-user of electricity in the world, accounting for nearly half of global electrical energy use (IEA, 2011). The applications for these motors cover almost every stage of manufacturing and processing, and also extend to commercial buildings. MEP for motors shall incrementally be introduced in a time phased manner to keep pace with best practices internationally (e.g. IE2 and IE3).

Reporting by designated energy consumers – energy consumers utilizing energy above designated thresholds shall be mandated to provide annual reports on their energy consumption. These reports shall gradually be extended to include plans for energy efficiency measures.

Develop sectoral focus programs to facilitate EE in energy intensive industries (cement and construction, sugar) – specific programs for energy intensive industries need to be developed. Sugar processing and cement/construction are suggested as first priorities. This could include specific expertise and advice for industry on motors and drives, or on efficient cement production through dry kiln processes, and facilitation of industry-specific retrofit project development.

Commercial Buildings Sector



Reformulate group to oversee EE measures in building code – inclusion of EE measures in the national building code is a key policy measure for better performance of commercial buildings. In the short term, working group discussions need to be re-invigorated between departments especially the DOE and Department of Public Works and Highways (DPWH).

Retro-commissioning program for existing buildings – this would involve supplementing existing training workshops and seminars with stronger information and guidance on building management systems, to ensure that available energy savings are realized without the need to allocate budget to building retrofit.

Benchmarking and ratings for building information and reporting – while not saving energy directly, this benchmarking activity is essential to future efforts to measure and monitor energy efficiency activity, and to specify thresholds for building performance in the Philippine Building Code. It is also a key contributor to processes such as the development of Nationally Appropriate Mitigation Actions (NAMAs) by the Climate Change Commission.

Residential Buildings Sector

MEP for appliances – continuation of the successful MEP approach on key energy-using residential appliances such as air-conditioners, refrigerators, televisions, washing machines.

Building envelope measures – along with ongoing rollout of lighting retrofit and efficiency programs that have been successful in the past such as the 'cool roofs' and insulation program by the Philippine Energy Efficiency Project (PEEP) in partnership with utilities could aim to redirect spending on household-level building material provision (insulation, roofing materials) to create improvements for better efficiency. It is noted that enforcement will be implemented through Local Government Units (LGUs), which requires building implementation capacity.

Support passage of Enercon Bill – the bill sets out a number of crucial and enforceable measures to improve on data collection, information and consideration of larger scale EE opportunities. It also bestows authority on the DOE to pursue EE action more concertedly with other agencies and organizations.

Cross-Sectoral

Build stronger coordination with LGUs and private sector - given decentralized decision making processes in the country, it is important that stronger coordination is achieved with other levels of government and the private sector. This is especially true of the links with local government units/city governments, which have a pivotal stake in implementation of key initiatives like the e-trike project and the enforcement of EE measures in the building code. Relevant partnerships should be established with private sector via business organizations like Chambers of Commerce and industry associations.

Establish EE database, data collection regime and monitoring and evaluation framework – this is a high priority task that must materialize regardless of the status of the Enercon Bill and its passage. While the Bill sets up a data collection mechanism for large energy users, a more comprehensive data collection framework is required such as how the data will be assembled and used to monitor progress towards EE targets.

Conduct information and education campaigns – information campaigns will develop specific messages for specific target groups (e.g. government, local government, private sector and consumers). Messages shall be disseminated via the most effective channels including ongoing schemes such as the power patrol, social media, mass media and localized events. Education campaigns shall focus on teacher training, integration of EE in curricular, school programs and stronger linkage with the environmental education program of the DENR.

Medium Term (2021-2030)

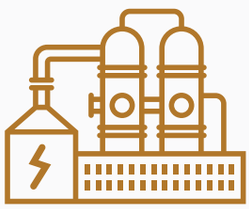
Transport Sector

Financial incentives for EE through taxes – a key means of enforcement of vehicle standards is through fiscal measures such as vehicle registration and other road taxes. Concessional payments/penalties can be linked to ownership of vehicles that meet or do not meet prescribed standards. In the long run, congestion taxes in dense urban areas will be explored.

Promotion of key vehicle technologies – overcoming the rolling resistance of tires and the operation of cooling and lighting systems can consume a significant proportion of transport fuel. Improved promotion and use of these non-engine vehicle components can be promoted to increase fuel efficiency.

Driver education and fleet management programs – driver education programs and larger-scale fleet management for larger corporates, government and freight companies are also cost effective measures for improving fuel efficiency.

Manufacturing Sector



Update MEP for industrial devices – update for existing industrial devices will be pursued in line with international best practices. Other devices such as fans, chillers, boilers, furnaces and industrial ventilation, air-conditioning and cooling (VAC) systems will be added to the MEP regime in line with international trends and best available technology.

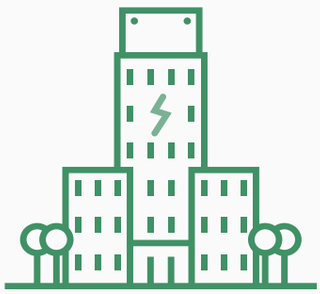
Facilitating example business models including ESCOs and finance – as part of capacity building efforts for ESCOs, the DOE can facilitate the execution and promotion of successful industrial case studies that demonstrate how energy services have been procured, and the financial model deployed.

Implement demand side management programs – international best practice links economic instruments to the use of energy by large consumers during times of peak demand. The Philippines has a sophisticated wholesale electricity market that would enable delivery of such programs. Lower tariff rates could be imposed during off peak hours and higher rates during peak hours to encourage less power usage during peak hours.

Enhanced reporting and management by designated energy consumers – the regime of mandating energy consumers utilizing energy above designated thresholds to pro-vide reports and measures will be enhanced in line with best practices. Measures can include energy audits, integration of renewable energy generation by these consumers and awareness activities for the surrounding community.

Review of energy pricing models – it is widely acknowledged that high electricity tariffs in the Philippines curtail the use of energy to some extent. However, through further pricing and tariff structure reform it may also be possible to promote efficiency for large users more directly.

Commercial Buildings Sector



EE measures included in national building code – the inclusion of efficiency measures in the national building code can create impact on a large scale, based on the existing Guidelines for Energy Conserving Designs of Buildings. There are many international reference points for the successful inclusion of energy efficiency measures into building codes. This will need a strong enforcement regime in order to be effective.

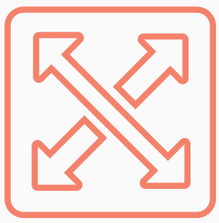
Promote benchmarking and building ratings – A number of initiatives are in place which have developed ratings for commercial buildings. Such ratings and minimum benchmarking measures need to be scaled up with a focus on mandating their use in the transactions of commercial buildings (sale and lease).

Residential Buildings Sector

Develop role of utilities as key implementation partners and information providers – electric utilities and fuel providers are uniquely placed at the customer interface and can play an important role in information provision and energy efficiency awareness. Experience in other countries suggests that provision of energy usage information and targeted advice is a cost effective way to achieve a reduction in energy use.

Specific EE programs for low-income households – consideration can be given to the types of measures that may be most beneficial and practical to low income households, in an effort to ensure relevance to the majority of the residential sector, and as a way of integrating the EE and poverty reduction objectives of government.

Cross-Sectoral



National strategy for efficiency in power supply sector – energy consumed by the power supply industry is significant. A detailed strategy setting out cost-effective opportunities, priorities and expected savings is necessary to guide further actions.

Establish enforcement regimes – while the Philippines has established a range of efficiency standards for energy-using equipment and appliances, and plans to do so for vehicles and other equipment, it will be of increasing importance that compliance with the standards is enforced if projected efficiency gains are to be realized.

Enhanced reporting and monitoring – Earlier work on data collection and M&E should be enhanced in the medium term with the development of improved indicator systems and reporting, including the dissemination of performance results to stakeholders.

Long Term (2031-2040)

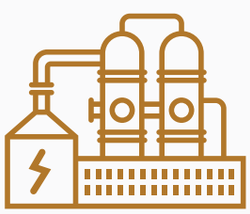
Transport Sector

EE programs beyond road transport (passenger and cargo ships, aviation fuels) – road transport is the focus of transport efficiency given its dominance, however substantial opportunities also exist in the longer term to address efficiency in air and sea transport.

Reintegration of urban planning and transport energy use – building on measures introduced to the building code, strengthened ties with LGUs and improved coordination mechanisms on EE across agencies, in the long term the Government must aim for EE to be fully and systematically considered in city planning processes.

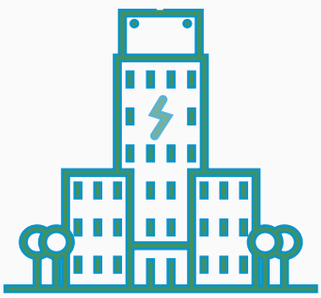
Regulatory and economic instruments - such as congestion charges or emission taxes will be explored particularly for major urban areas like Metro Manila.

Manufacturing Sector



Review inward investment rules for EE to remove distortions – the DOE has stated an objective to ensure that new entrants and new investments in industrial plant in the Philippines uses best practice with regard to EE. In the longer term, it may be appropriate to examine whether certain industrial practices can be encouraged through agreements, restrictions and incentives negotiated with inward investors.

Commercial Buildings Sector



Incentive funds in place for EE, including private financiers – in the long term, following capacity building for the ESCO sector and an increased ability for the commercial finance sector to take EE risk, government can facilitate the creation of a private sector fund or revolving fund that creates a funding pathway for building retrofits.

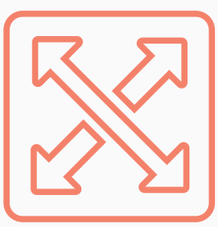
Mandatory disclosure of building performance – efforts to increase existing building ratings penetration will enable a stronger regime of information requirements for commercial buildings, specifically a requirement to disclose building performance on the sale or lease of a building. This information sends an important signal to the market and experience has shown that it can drive uptake of efficient building practices and can create financial returns for EE buildings through differential rental rates.

Residential Buildings Sector

Towards EE housing precincts – in the long term, there is scope to consider development of EE precincts at the barangay level or local energy supply cooperative level. This may allow for more sophisticated measures to support EE, such as group purchasing of EE equipment, on-bill financing models, and decentralized or on-site energy generation.

Inclusion of residential measures in building code – following on from the inclusion of EE measures for commercial buildings in the national building code, measures for residential housing can also be introduced. This is more difficult based on less stringent controls and enforcement for standard of residential housing in the country.

Cross-Sectoral



Enhanced institutional structure – The cross nature and scale of activities can justify the strengthening of the DOE to act as a focal point with a clear legislative mandate to lead and administer the EE activities of Government across all agencies. It is also noted that the Enercon Bill contains some provisions in this regard.

2.3 Monitoring Progress

Data collection and management

The current National Energy Consumption Database requires strengthening. A more comprehensive data collection and management platform must consider:

- Identification of key data sets – both at a macroeconomic level and by target sector
- Identification of data sources (contributor organizations and bodies)
- Establishment of data collection protocols and responsibilities
- Consistency of data storage, including selection of an appropriate data management platform
- Ensuring data quality and checking/control procedures
- What resources will be needed at each stage of data management
- Identification of who will be responsible for data analysis, and against which parameters analysis will be applied
- Identification of to whom and how often results will be disseminated.

As a separate effort in establishing data management and commencement of reporting, it is desirable for the Philippines to undertake an Energy Intensity Study with the explicit aim of separating efficiency effects from the effect of changing economic composition when measuring energy intensity.

Monitoring and evaluation (M&E)

Appropriate M&E systems, processes and resources are an important prerequisite to ensure that activities supporting this Roadmap can be monitored and steered towards achieving their intended results and objectives.

To this effect an M&E system will be established with the objectives to:

- Systematically assess performance of EE activities across relevant levels and at suitable time intervals
- Establish quantifiable Objectively Verifiable Indicators (OVIs) and targets at the result and activity levels
- Support decision making by DOE and planning of result areas, activities and specific subactivities
- Orient the implementation of EE programs towards a Results Based Management (RBM) approach as opposed to an activity driven approach
- Support performance assessment of EE as per government requirements, government ratings and in alignment with international donor best practices

- Integrate monitoring and learning across policy instruments, programs and amongst implementing stakeholders
- Contribute to improved quality and management EE

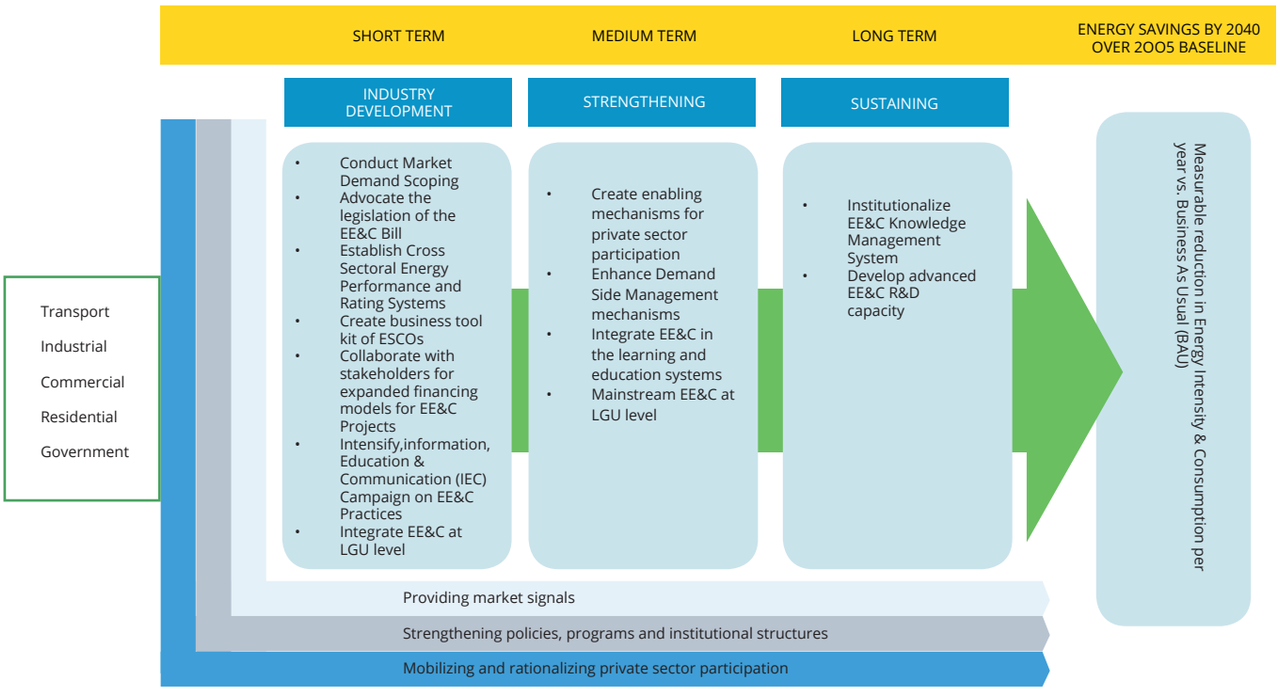
The establishment of an M&E system would involve the following activities:

- The development of a M&E strategy including a M&E Framework and criteria
- Development of specific tools such as indicator systems, results frameworks and theory of change models to measure progress towards targets
- Establish data gathering strategies as described in the previous section
- Conduct of baseline surveys, where baseline information is missing
- Gathering of M&E data to assess progress using tools established
- Establish systematic reporting procedures
- Outreach of results within DOE, other Government decision makers and broader stakeholders
- Learning processes to identify factors which determine performance and introduce improvements
- Follow up and corrective action as required which inform future work plans, programs and projects

Reporting

The Roadmap proposes consolidated evaluation of progress to be reported publicly every 2 years, with the first report compiled by the end of 2018.

Philippine Government strategies and priorities for energy efficiency



** Original version of the representation on page 9*

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