

Southeast Asia Region











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Roundtable in Jakarta where the recommendations were developed. We are also grateful to the many regional energy efficiency experts that made the Roundtable a success. Finally we acknowledge the important contributions of our colleagues from the World Energy Council (WEC) for their update on energy efficiency policy developments around the world.

Countries represented:

Brunei Darussalam

Cambodia
Indonesia
Lao People's Democratic Republic

Malaysia

Myanmar

Philippines

Thailand

Singapore

Viet Nam



This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries, and to the name of any territory, city or area

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Background

The IEA and its member countries have identified energy efficiency as the most rapid and cost-effective way to address energy security as well as environmental and economic challenges. To help countries improve their individual energy efficiency, in 2008 the IEA developed a set of 25 energy efficiency policy recommendations. These 25 recommendations have proven an effective way to increase awareness and obtain high-level political support for scaled-up energy efficiency efforts.

The IEA is currently working with regional partners in the developing world to identify energy efficiency policy recommendations that respond to regional energy efficiency opportunities, barriers, and policy needs. The IEA aims to bring these recommendations to the attention of political leaders and technical networks in each region.

The IEA and their regional partners have convened two Experts' Roundtables to develop region-specific energy efficiency policy recommendations.

First, in 2013, they convened an Experts' Roundtable tailored to the needs of the Arab-Southern and Eastern Mediterranean Region (Arab-SEMED).

Second, the IEA organised an Experts' Roundtable on Energy Efficiency Policy Recommendations for the Southeast Asia region, joined by the Asian Development Bank, the Renewable Energy and Energy Efficiency Partnership (REEEP), and the International Copper Association Southeast Asia (ICASEA).

This brochure presents recommendations from the second Experts' Roundtable for the Southeast Asia region.

The two-day Southeast Asia region workshop took place in Jakarta, Indonesia, under the patronage of the Indonesian Ministry of Energy and Mineral Resources.

Energy efficiency experts from ten countries in the region participated in the Roundtable and shared their views on specific regional energy efficiency opportunities, market barriers, and policy needs, including:

- O Rapid growth in energy demand
- Energy price volatility and supply disruption in some energyimporting countries
- Highly subsidised energy prices
- Low access to electricity
- Lack of awareness of energy efficiency
- Lack of policy and regulatory instruments
- Low capacity for enforcing regulatory policies
- O Institutional co ordination issues
- Sparse funding for energy efficiency activities and investments
- Lack of smart financing mechanisms for energy efficiency projects
- Low private sector capacity for identifying, prioritising, and developing energy efficiency projects
- Lack of manufacturing, servicing, and testing capacity for energy-efficient products

During the Jakarta workshop, the Experts Roundtable developed 20 region-specific energy efficiency policy recommendations to address these barriers and help realise the tremendous energy efficiency potential in the region.

Indonesia is aware that energy efficiency measures must be prioritised in order to promote sustainable energy development. Indonesia has changed their paradigm from supply-side management to demand-side management, and has implemented various energy efficiency and conservation

programs in order to achieve their target to reduce energy

intensity by 1% per year, and energy elasticity to less than

1% by 2025. Although we continue to face some barriers

to implementing these programs, Indonesia is committed

to increasing their implementation of energy efficiency and

conservation in all sectors. We believe that saving 1 kilowatt

hour (kWh) of energy is more cost-effective than producing 1

contained herein provide guidance in formulating policies

and programs that accelerate target energy efficiency and

kWh of energy. The energy efficiency policy recommendations

Foreword

Southeast Asia has experienced a decade of strong growth and rising energy demand, and is now demonstrating an increasing political will to implement energy efficiency policies. REEEP was pleased to support this initiative as part of its 9th call for proposals, as energy efficiency – though often overlooked – is crucial for a sustainable pathway towards energy security, economic development, health, and climate goals. REEEP sees the following 20 energy efficiency policy recommendations as a tool for uniting and engaging Southeast Asian stakeholders and providing policy makers a first glimpse of the opportunities for governments to scale up energy efficiency in their countries.

conservation.

Indonesian Mini

Indonesian Ministry of Energy and Mineral Resources

REEEP

Overview of Recommendations

Cross-sectoral



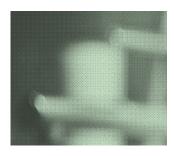
- I Establish energy efficiency data collection and indicators
- 2 Phase-out subsidies on energy prices for all consuming sectors, except where they contribute to social welfare policies
- 3 Leverage private investment in energy efficiency
- 4 Designate lead institutions for planning, implementing, and monitoring energy efficiency policies and programmes

Buildings



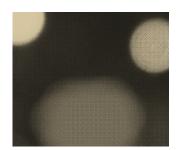
- Require building energy codes and minimum energy performance standards (MEPS)
- 6 Aim for net-zero energy consumption in buildings
- 7 Improve the energy efficiency of building envelopes, systems, and critical building components

Appliances & Equipment



- 8 Require MEPS and labels for appliances and equipment
- 9 Update test standards and measurement protocols regularly
- 10 Accelerate market transformation policies for appliances and equipment

Lighting



- 11 Phase out inefficient lighting products and systems
- 12 Put in place efficient lighting systems

Transport



- 13 Support public transport development
- 14 Require fuel-efficiency standards and labelling for vehicles
- 15 Implement complementary policies promoting high-efficiency vehicles
- 16 Improve vehicle operational efficiency through eco-driving and other measures

Industry



- 17 Require adherence to energy management protocols
- 18 Promote high-efficiency industrial equipment and systems
- 19 Promote energy efficiency in small and medium enterprises (SMEs)
- 20 Implement complementary policies to support industrial energy efficiency

Cross-sectoral

Southeast Asian countries face barriers to energy efficiency investments similar to those faced by other countries around the world. These barriers include:

- Lack of information and information asymmetries among stakeholders.
- Subsidised energy prices, amounting to USD 51 billion in 2012, which deprive energy providers of the revenues needed for new investment. These have been particularly apparent in Malaysia, Indonesia, and Brunei.
- Lack of experience in and knowledge of energy efficiency technologies, benefits, and risks among financial stakeholders.
- A shortage of affordable funding options to finance energy efficiency projects.
- Lack of understanding and technical capacity to develop and implement energy efficiency projects.
- Lack of clarity in the roles and responsibilities of agencies responsible for energy efficiency, resulting in overlaps and gaps.

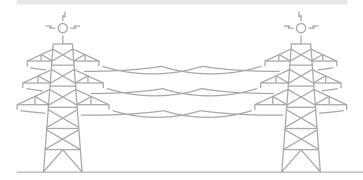
Governments can help scale up energy efficiency by implementing cross-sectoral policies and measures to overcome information, institutional, and financial barriers.

To improve energy efficiency across all sectors, the Roundtable participants recommend:

1. Energy efficiency data collection and indicators

A sound, comprehensive database containing information about energy end uses, markets, technologies, and efficiency opportunities can contribute to the development of effective energy efficiency strategies and policies. Governments should establish stable energy data collection regimes, including adequate data collection and analysis resources and the authority to require data submissions. Governments should also engage in regional co-operation to establish data collection frameworks, build data collection capacity, and, where appropriate, refer to international data collection regimes.

Based on analysis of energy use, markets, technologies, and efficiency opportunities, governments should apply best practices



when developing strategies and national energy efficiency action plans. Best practice strategies and action plans should:

- Identify barriers to cost-effective energy efficiency investments.
- Assess opportunities for energy efficiency improvements and prioritise action in sectors and end uses.
- Set clear objectives and timelines, and establish evaluation methods.
- Ensure coherence with energy, environmental, climate, and economic strategies and plans.
- Take into account the considerable experience and analysis of other countries and international organisations.

Governments should take advantage of regional co operation and capacity-building opportunities to plan energy efficiency policies and measures, and develop a means to track their progress on implementation. These plans should be reviewed and updated regularly.

2. Phase out subsidies on energy prices for all consuming sectors, except where they contribute to social welfare policies (e.g., low-income households)

Energy price reform is needed to unlock the potential of energy efficiency in Southeast Asia. Low energy prices, as a result of fuel subsidies, are reducing the incentives for consumers and industry to invest in more energy-efficient appliances and equipment. As a consequence of rising energy consumption and high energy prices, subsidies have become a major financial burden on governments. Governments should progressively reduce subsidies on energy prices. Targeted subsidies, which serve social welfare objectives, should be retained where they can be justified.

3. Leverage private investment in energy efficiency Governments should facilitate private investment in energy efficiency by:

- Developing innovative financing vehicles for energy efficiency projects by collaborating with financial institutions and by developing expertise in energy efficiency project financing. Policies should include:
- Establishing funding mechanisms to jump-start energy efficiency financing, particularly in the short term, to help companies overcome the initial high set-up costs
- Providing dedicated credit lines for energy efficiency project developers through commercial or development banks
- Supporting development of the pillars of an energy service company (ESCO) industry, including standardised contracting vehicles, measurement and verification protocols, and accreditation procedures.

4. Designate lead institutions for planning, implementing, and monitoring energy efficiency policies and programmes

Governments should consider establishing lead institutions responsible for executing energy efficiency action plans or strategies, including specific policy measures, monitoring, verification, and enforcement of those policies. The role of these institutions includes implementing public awareness programmes for energy efficiency, including publicity campaigns, educational measures, expositions, and pilot projects. Monitoring and evaluation programmes, with baseline assessments and periodic review and reporting, should be established whenever new policies and measures are implemented.

Buildings

Buildings (including appliances and equipment) in Southeast Asia account for approximately 40% of total, final energy consumption.

Energy consumption in buildings will continue to grow rapidly, as a result of new construction spurred by high economic growth, and the increasing demand for cooling in Southeast Asia's hot and humid climate.

Given these circumstances, buildings hold some of the greatest potential for cost-effective energy savings. Governments can achieve energy efficiency in the buildings sector by implementing a package of policies. In particular, governments should:

- Require all new buildings, as well as buildings undergoing renovation, to meet energy codes, minimum energy performance standards (MEPS), and to display building energy performance labels or certificates.
- Support and encourage energy-efficient building technologies and construction, working towards net-zero energy buildings.
- Implement policies to improve the energy efficiency of building envelopes, systems, and critical building components of new buildings and make the same requirements for existing buildings during renovations.

To tap into savings in the buildings sector, the Roundtable participants recommend:

5. Requiring building energy codes and MEPS

Governments should require all new buildings, as well as buildings undergoing renovation, to adhere to energy codes, MEPS, and to display building energy labels or certificates. The aim is to minimise life-cycle costs of buildings' energy use and to provide information to owners, buyers, and renters.

Building energy codes, MEPS, and labels should take a holistic approach that includes the building envelope and the lighting, ventilation and cooling systems within the building.

To maximise the effect of these policies, governments should:

- Make collective regional efforts to establish tailored building energy codes, certifications, and accreditation (based on the ASEAN Energy Management Scheme [AEMAS], ISO 50001).
- Support capacity building and the institutional set-up required for implementation and enforcement of building energy codes and MEPS, as well as monitoring the resulting savings.
- Implement programmes for raising public awareness and acceptance.

6. Aiming for net-zero energy consumption in buildings

Governments should support and encourage the construction of energy-efficient buildings, ultimately aiming for buildings with net-zero energy consumption. Support programmes should include dedicated financing mechanisms, subsidies, and other incentives. Governments should also implement initiatives to promote the adoption of energy-efficient technologies such as building-integrated photovoltaics, when economically viable on a life-cycle cost basis.

7. Improving the energy efficiency of building envelopes, systems and critical building components

Governments should implement a package of policies to improve the energy efficiency of building envelopes, systems, and critical building components such as windows, roofs, ventilation and cooling systems of new buildings and make the same requirements of existing buildings during renovations.

Policies should include:

- MEPS for key building envelope components, energy-using systems, and critical building components.
- Measures to aid building owners, occupants, and manufacturers to improve energy efficiency such as:
- Energy audits, energy rating, and certification schemes
- Incentives to encourage investment in long-lasting building envelopes and system improvements, and increased market penetration of new high-efficiency products with grants or dedicated credit lines.
- A strong commitment by governments to improve the efficiency of public-sector buildings through mechanisms such as green or preferential procurement policies.



Appliances & Equipment

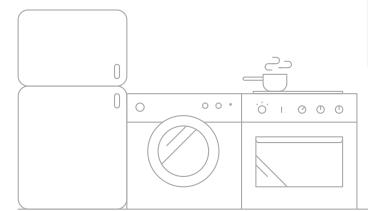
Appliances and equipment drive much of the residential and commercial energy consumption in Southeast Asia.

MEPS and energy efficiency labelling for appliances and equipment have proven effective internationally. Only 20% of Southeast Asian countries have MEPS, while labelling schemes are present but voluntary in half of all countries in the region. The number of products covered by these programmes is low and the penetration rate of high-efficiency household appliances is still low when compared to OECD member countries.

Further, labelling and MEPs are applied differently in each country, partly because penetration rates of appliances vary with each country's needs and preferences: for example, air-conditioners and refrigerators are common appliances region-wide; but fans are more prevalent in Indonesia and the Philippines.

There is limited understanding of appliance and equipment efficiency in Southeast Asia compared to other regions. To increase market share of high-efficiency appliances and equipment, Southeast Asian governments should:

- Harmonise labelling regionally and harmonise MEPS in accordance with international standards.
- Build the capacity for laboratory testing, monitoring and evaluation, and minimise non-compliance.
- Implement consumer education and awareness programmes.
- Introduce or strengthen incentive mechanisms, such as green public procurement, energy supplier energy efficiency programmes, direct subsidies, rebates etc.
- Work collectively to remove trade barriers to efficient appliances and equipment within the region.



To achieve significant energy savings in this sector, the Roundtable participants recommend:

8. Mandatory MEPs and labels for appliances and equipment

Governments should adopt and regularly update mandatory MEPS and energy labels for appliances and equipment, taking into account proven international practices.

Governments should:

- Prioritise MEPS and labels for appliances and equipment that are commonly in use in households and businesses, considering energy savings, economic, and environmental benefits.
- Ensure that MEPS and labelling activities for appliances and equipment are supported by a framework of monitoring, verification, and enforcement.
- Allocate resources to monitoring compliance, verifying accuracy of claimed performance, and enforcing mandatory MEPS and labels for appliances, regardless of whether they are imported or locally-manufactured.

9. Test standards and measurement protocols for appliances and equipment

Governments should adopt and regularly review and update product test standards and measurement protocols. They should also align national policies with the development and use of international test standards and measurement protocols, in order to assist performance comparisons and benchmarking for traded products, and to reduce industry compliance costs.

10. Market transformation policies for appliances and equipment

Governments should aim to accelerate the transformation of the appliance and equipment market through incentives and other measures in order to support the introduction and uptake of new technologies and high-efficiency appliances and equipment.

Measures should include:

- Consumer education and awareness programmes to minimise non-compliance.
- Financial incentives, procurement programmes, endorsement schemes, and other market-enabling measures to support increased use of the most cost-effective, energy-efficient products available.
- Engagement in regional collaboration to establish co-ordinated policies to increase the demand for efficient appliances and equipment, and to remove non-tariff barriers to trade within the region.

Lighting

Lighting accounts for approximately 20% of electricity consumption in Southeast Asia. Both population growth and the strong trend towards urbanisation will continuously increase lighting demand.

There is great opportunity for Southeast Asian countries to take advantage of the benefits of efficient lighting. This region hosts globally important lighting manufacturing centres, including manufacturers of light-emitting diodes (LEDs).

Many Southeast Asian countries have already begun to increase the stringency of their lighting MEPS, with the intent of phasing-out the least efficient lighting sources. For example, in 2013, government regulations and incentive programmes drove LEDs to account for more than 12% of the lighting market in Thailand.

To expedite market penetration, all regulations pertaining to phasing-out inefficient lighting products should be accompanied by incentives to support efficient lamp purchases and, where appropriate, financial and technical support for manufacturers to alter their production lines. Small-scale actions to develop appropriate local capacities prior to rolling out large-scale programmes are strongly recommended. At the same time, regional co operation, for example in standards-setting and building testing capacity, can assist other countries in introducing efficient lighting transformation programmes.

To achieve significant energy savings in this sector, the Roundtable participants recommend:

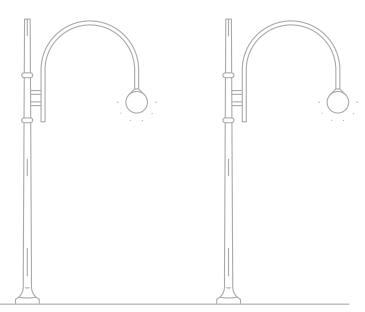
11. Phase-out of inefficient lighting products and systems Governments should phase out inefficient lighting products as soon as technically and economically viable.

Governments should:

- Develop phase-out policies that are comprehensive and integrated, and include at least three elements:
- Performance standards
- Testing protocols for verifying performance
- Enforcement mechanisms
- Phase out the manufacture, import, and sale of inefficient lighting products (including inefficient ballasts, lamps, lamp housings, fixtures, and lighting controls).
- Implement phase-out programmes for inefficient lighting in public buildings and street lighting.

12. Energy-efficient lighting systems

Governments should require and promote improved design and management of lighting systems. This should include building codes that promote the use of natural light, and MEPS for lighting systems. Further measures include information and training directed at architects, builders, owners, and managers.



Transport

Southeast Asia is experiencing one of the fastest rates of urbanisation in the world. This, combined with economic growth and increasing demands for mobility, is expected to lead to a large increase in demand for passenger light-duty vehicles, many of which are made by manufacturers in the region. Growing congestion, air pollution, and oil demand are challenges facing the region and threatening economic productivity, health, and energy security.

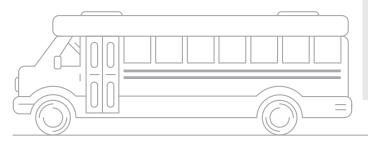
A package of policies is needed to help the region 'avoid' travel through integrated land-use planning, 'shift' travel to more efficient modes, and 'improve' the efficiency of vehicle and fuel technologies.

The 'improve' policies, including fuel economy standards, are gaining traction in much of the OECD world, as well as China and India. However, there are challenges to implementing these in Southeast Asia, including:

- Fuel-price subsidies that hide the real cost of fuel and do not promote the purchase of more fuel-efficient vehicles.
- A lack of fuel economy-testing infrastructure.
- A lack of information and public awareness regarding vehicle energy efficiency.

Government policies, including reforming fuel subsidies, funding for energy efficiency R&D, and differentiated incentives or taxation, can lead to the manufacture of more fuel-efficient vehicles and market transformation. Other measures to decrease transport sector energy intensity could include demand management, greater investment in public transport, and integrated transport and urban planning.

There is also a huge potential for producing bio-fuels in the Southeast Asia region. Increasing the share and quality of biofuels in the energy mix can be beneficial for energy conservation and security, but this is feasible only when policies that promote land use in a sustainable manner have been enforced.



To achieve significant energy savings in this sector, the Roundtable participants recommend:

13. Transport system efficiency

Governments should promote the development of public and collective passenger transport systems, especially in larger urban environments. These public transport systems can be financed by levying taxes on private vehicle users and through leveraging private investments by limiting risks for investors. Policies should also seek to improve the efficiency, safety, accessibility, and comfort of existing public transport systems.

14. Mandatory vehicle fuel-efficiency standards and labelling

Governments should adopt and regularly review and update fuelefficiency standards and labelling for road vehicles. Considering the high use of motorbikes in the region, vehicle fuel-efficiency standards and labelling should cover motorcycles in addition to cars.

Fuel-efficiency standards and labelling should be:

- Established through consultation among government and relevant stakeholders, including the automobile and oil industries.
- Implemented as part of a policy package, including tax and fiscal incentives and consumer awareness programmes.
- Directed to create market demand for high-efficiency vehicles through public and private sectors, leading-by-example programmes, non-price incentives such as car pool lanes, and preferential vehicle registration.

15. Policies promoting high-efficiency vehicles

Governments should adopt a mix of regulatory and incentives policies that encourage the purchase of more fuel-efficient vehicles.

These measures should include:

- Reform of fuel subsidies.
- Tax breaks to encourage the purchase of more fuel-efficient vehicles.
- Encouraging fuel switching to high quality alternative energy sources including: compressed natural gas; renewable fuels such as ethanol and biodiesel; and fuel cells in combination with advanced vehicle technologies such as hybrid, electric or hybrid-electric vehicles.
- Regular vehicle inspection, including combustion and ignition systems, to maintain efficiency of used cars.
- Improving road infrastructure to improve vehicle fuel efficiency.

16. Improving vehicle operational efficiency through ecodriving and other measures

Governments should promote the concept of eco-driving through awareness campaigns and by requiring eco driving as part of driver training for passenger vehicles, taxis, buses, and large fleets.

Governments should also develop policies to encourage carpooling and high-occupancy vehicles, especially for commuters and in urban areas.

Industry

Southeast Asia's industrial sector is growing rapidly along with economic and population growth. Industry consumed 5.5 exajoules of energy in 2009, which is approximately 30% of the total final energy consumption of the region.

Five intensive industrial sectors account for approximately 40% of the energy consumed by industry in Southeast Asia: cement, chemicals, and petrochemicals, followed by paper and steel.

Textiles and clothing are significant in Thailand, Myanmar, and the Philippines, and the chemical industry is prominent in Thailand and Indonesia. Given the diversity of industry across the region and within countries, governments should consider policies that have broad application across industrial subsectors and process types.

There are many opportunities to save energy in the industrial sector, and governments can encourage action through policies and public awareness. For example, governments can promote the creation of energy service companies (ESCOs), which are currently underdeveloped in the region. ESCOs identify energy-savings opportunities and mobilise investment for energy efficiency projects in industry and other sectors.

To achieve significant energy savings in this sector, the Roundtable participants recommend:

17. Energy management in industry

Governments should require large, energy-intensive industry, and encourage other industrial energy users, to conform to ISO 50001 or an equivalent energy management protocol; implement actions to deliver cost-effective energy efficiency measures; and periodically report on their efforts.

Energy management measures should include:

- Appointing an energy manager, submitting energy efficiency improvement plans, and monitoring and reporting energy use and greenhouse gas (GHG) emissions in energy-intensive industries.
- Benchmarking key statistics among industries and their sub-sectors, and ensuring that information on data collection requirements and data analysis is shared by all parties.

18. High-efficiency industrial equipment and systems

Governments should adopt MEPS for industrial-scale electric motors and consider MEPS for other categories of industrial equipment commonly used in the region, such as air compressors and heating and cooling equipment, and encourage the sharing of best operating and maintenance practices among industries. Governments should also encourage installation of energy-efficient equipment during retrofitting.

19. Energy efficiency services for small and medium enterprises (SMEs)

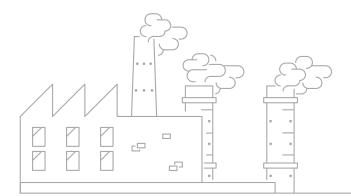
SMEs account for both the highest number of companies and highest number of workers employed in the Southeast Asia region.

Governments should develop and implement a package of specially-designed policies and measures to promote energy efficiency in SMEs. Measures directed at improved energy efficiency in SMEs should include supporting energy audits on a voluntary or mandatory basis, access to information on proven energy efficiency practices relevant to SME operations, and access to affordable financing, as is appropriate to each business sector.

20. Complementary policies to support industrial energy efficiency

Governments can further strengthen industrial energy efficiency by:

- Forming coalitions comprised of government agencies, businesses, and industry associations tasked with addressing energy efficiency initiatives and raising awareness among stakeholders.
- Creating an active role for ESCOs in promoting energy efficiency and improving overall standards of the energy efficiency industry from within by setting standards and benchmarks.
- Sharing best practices among multinational companies who can draw upon their experiences in other countries.



Prioritising recommendations

Recommendation	Policy type	Sector	Relevance	Savings	Ease of implementation	Timeline (yrs
Strongly recommended as they pr	rovide a strong fo	oundation for natio	nal energy efficie	ncy strategy		
1. Establish energy efficiency data collection and indicators						
Designate lead institutions for planning, implementing and monitoring energy efficiency policies and programmes	Institutional	All	High	N/A	Less difficult	1-2
Reform subsidies on energy prices	Economic	·	Very high	Very large	Very difficult	3–5
Recommended for immediate ado	ption by all gove	rnments in the reg	gion			
8. Require minimum energy performance standards (MEPS) for appliances	Regulatory	Appliances	High	Very large		1–2
9. Update test standards and measurement protocols regularly	Institutional			Large	Less difficult	2–3
17. Require adherence to energy management protocols	Regulatory	Industry		Very large		1–2
Recommended for strong consider	ration by all gove	ernments in the re	gion and immedia	ite adoption in mo	ost countries	
3. Leverage private investment in energy efficiency	Economic	All			Can be complicated	
5. Require building energy codes and MEPS	Paridotori	Buildings		Large	Enforcement complicated	2-3
11. Phase-out inefficient lighting products and systems	Regulatory	Appliances			Can be complicated	
13. Support public transit development	Economic Institutional			Very large	Difficult	5–10
14. Require fuel-efficiency standards and labelling for vehicles	Economic Regulatory	Transport	High	Large	Can be complicated	2-3
20. Implement complementary policies to support industrial energy efficiency	Economic Information	Industry		Significant	Less difficult	
19. Promote energy efficiency for small and medium enterprises	Information Economic Regulatory					
18. Promote high-efficiency industrial equipment and systems	Regulatory Economic			Large		
Recommended for consideration a	and adoption					
15.Implement complementary policies promoting high efficiency vehicles	Regulatory Economic	Transport	High	Very large	Very difficult	3–5
10. Accelerate market transformation policies for appliances and equipment	Institutional	Appliances		Large	Can be complicated	5–10
7. Improve the energy efficiency of building envelopes, systems and critical building components	Economic Regulatory	Buildings				2–3
12. Put in place efficient lighting systems		Appliances			Difficult	
16. Improve vehicle operational efficiency through eco-driving and other measures	Information	Transport	High	Significant	Less difficult	1–2
6. Aim for net-zero energy consumption in buildings	Economic Regulatory	Buildings	High		Difficult	5–10

Ease of