

Regional Energy Efficiency Policy Recommendations

Arab-Southern and Eastern Mediterranean (SEMED) Region



Supported by



European Bank
for Reconstruction and Development



The International Energy Agency (IEA), League of Arab States, and Regional Centre for Renewable Energy and Energy Efficiency (RCREEE) gratefully acknowledge the financial support of the European Bank for Reconstruction and Development (EBRD), through its SEMED Cooperation Funds Account, to the Arab-SEMED Region Energy Efficiency Policy Recommendations effort. We also would like to thank the Ministry of Energy and Mineral Resources of Jordan for

their patronage of the Regional Energy Efficiency Expert's Roundtable in Amman where the recommendations were developed. We are also grateful to the many regional energy efficiency experts who 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.

Economies represented:

Bahrain

Egypt

Iraq

Jordan

Kuwait

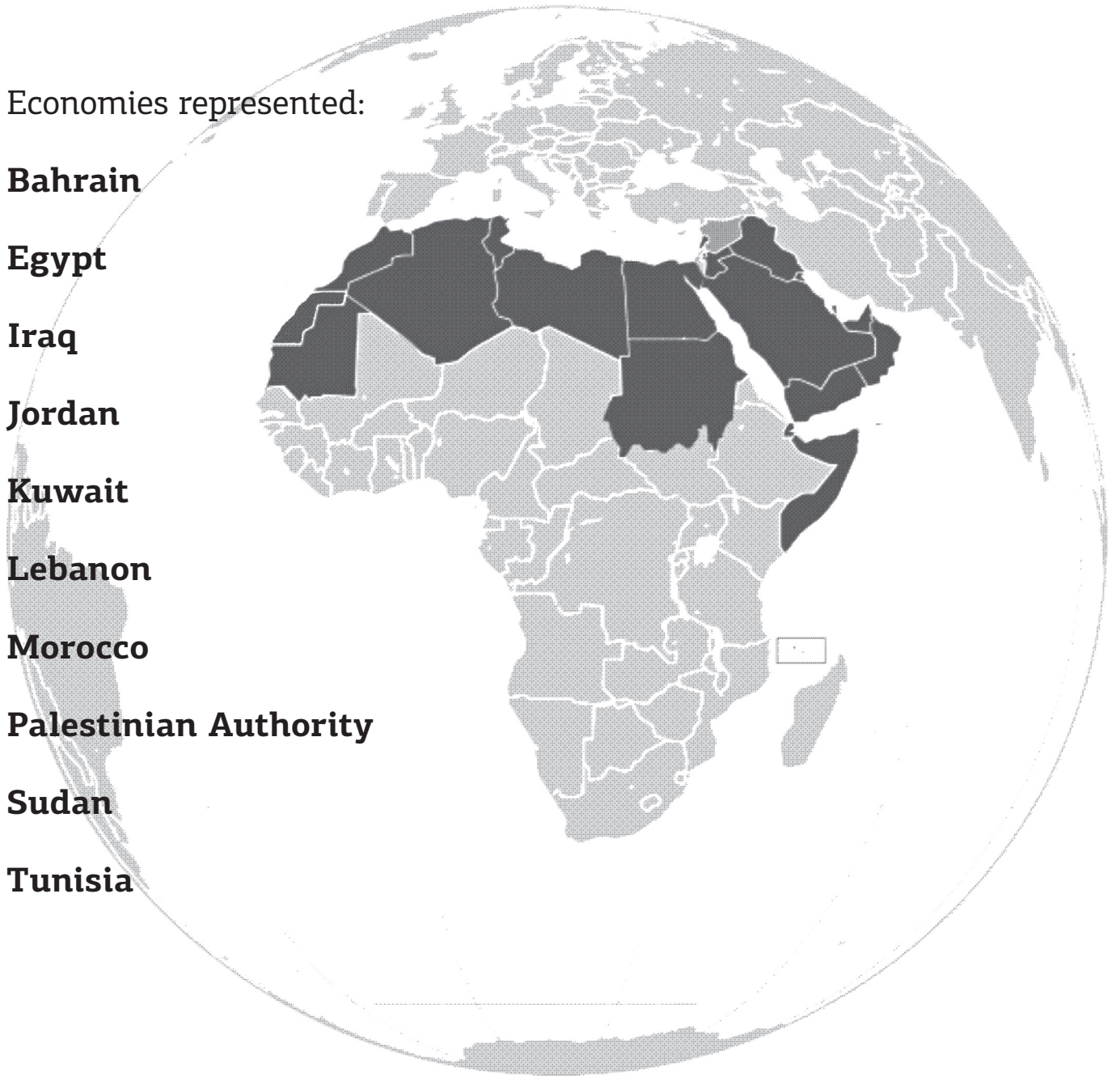
Lebanon

Morocco

Palestinian Authority

Sudan

Tunisia



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

The views expressed in this brochure are the result of a collaboration and, as such, do not necessarily reflect the views or policy of the IEA Secretariat or of its individual member countries. This brochure is produced under the authority of the IEA Director of Sustainable Technology and Policy; comments are welcome and should be directed to rights@iea.org

Printed by INTERNATIONAL ENERGY AGENCY
© 2014

Cover photo: © Shutterstock.com.

Section photos:

Cross-sectoral by Jonas Nilsson Lee. Buildings by Kelly Sikkema. Appliances & equipment by Vee-O. Lighting by Maria Carrasco Rodriguez. Transport and Industry by Martin Wessely.

Background

The IEA and its member countries have identified energy efficiency as the quickest and least costly way to address energy security, environmental and economic challenges. To help countries improve energy efficiency, 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 working with regional partners in the developing world to identify energy efficiency policy recommendations for developing economies that respond to regional energy savings opportunities, barriers, and policy needs. The IEA hopes to bring these energy efficiency policy recommendations to the attention of political leaders and technical networks in each region.

The first of these regional efforts sought energy efficiency policy recommendations tailored to the needs of the Arab-Southern and Eastern Mediterranean (SEMED) region. The IEA teamed up with the Regional Centre for Renewable Energy and Energy Efficiency (RCREEE) and the League of Arab States to organise an Expert's Roundtable on Energy Efficiency Policy Recommendations for the Arab-SEMED region.

This two-day workshop took place in Amman, Jordan, under the patronage of the Jordanian Minister of Energy and Mineral Resources. Energy efficiency experts from 10 economies in the Arab-SEMED region participated in this Roundtable and shared their views on specific regional energy savings opportunities, market barriers, and energy efficiency policy needs, including:

- Rapid growth in energy demand
- Low capacity for enforcing regulatory policies
- Highly subsidised energy prices
- Institutional coordination issues
- Low private sector capacity for identifying and developing energy efficiency projects
- Energy price volatility and supply disruption issues in some energy-importing countries
- Lack of manufacturing, servicing and testing capacity for energy-efficient products
- Demanding climatic conditions
- Sparse funding for energy efficiency activities and investments

The regional Expert's Roundtable developed 20 energy efficiency policy recommendations to address these barriers and help realise the tremendous energy-savings potential in the region. These recommendations are presented in this brochure.

Foreword

The current situation calls on the Arab States to integrate energy efficiency programmes as part of their national strategies and national development programmes. Energy efficiency programmes should be given serious attention to achieve energy security and improve economic and social conditions. In that respect, the Executive Bureau of The Arab Ministerial Council of Electricity has adopted the "Arab Guideline to improve Electricity Efficiency and its Rationalization at the End User," which can be considered as the first Arab action of its kind in the field of energy efficiency. The Arab League values its partnership with IEA and RCREEE and looks forward to further developing this relationship by assisting with the dissemination and implementation of Energy Efficiency Policy Recommendations that bring multiple benefits to our Member States.

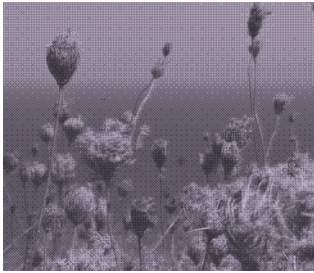
League of Arab States

RCREEE was pleased to join with the IEA, EBRD and League of Arab States in conceiving and delivering this workshop and developing the energy efficiency policy recommendations you see here. We consider the workshop and this brochure to be a small but important start in increasing the awareness of policy makers in the Arab region regarding the importance of energy efficiency and the need for government policies that support energy-saving investments and activities. Furthermore, the publication of these recommendations coincides with the release of the Arab Future Energy Index (AFEX) 2013, which provides an assessment of Arab countries' progress in energy efficiency according to four evaluation categories: Energy Pricing, Policy Framework, Institutional Capacity and Utility. Assessment under AFEX Energy Efficiency demonstrates that countries with better energy efficiency performance in the Arab region are those that have more cost-reflective electricity tariffs, better regulatory frameworks and stronger institutional capacity. The set of policy recommendations presented here will make an important contribution to our dialogue on the results of AFEX assessment with our member states on improving the overall energy efficiency governance frameworks in the region.

RCREEE

Overview of Recommendations

Cross-sectoral



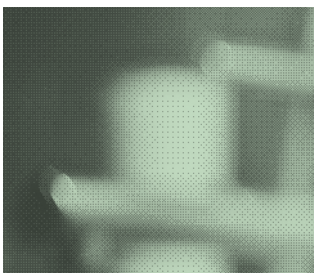
- 1 Establish energy data collection capacity
- 2 Develop national energy efficiency plans
- 3 Facilitate private investment
- 4 Designate lead energy efficiency institutions
- 5 Progressively remove energy price subsidies

Buildings



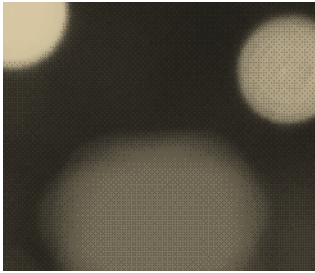
- 6 Require and enforce building energy codes
- 7 Support energy-efficient building renovations
- 8 Encourage use of high-efficiency building components

Appliances & Equipment



- 9 Require minimum energy performance standards for appliances
- 10 Monitor, verify and enforce standards

Lighting



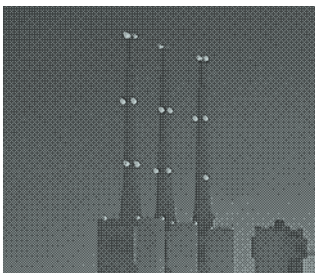
- 11 Phase-out energy-inefficient lamps
- 12 Put in place high-efficiency street lighting

Transport



- 13 Require fuel economy standards for vehicles
- 14 Encourage light duty vehicle fleet renewal
- 15 Promote eco-driving
- 16 Support public transport development

Industry



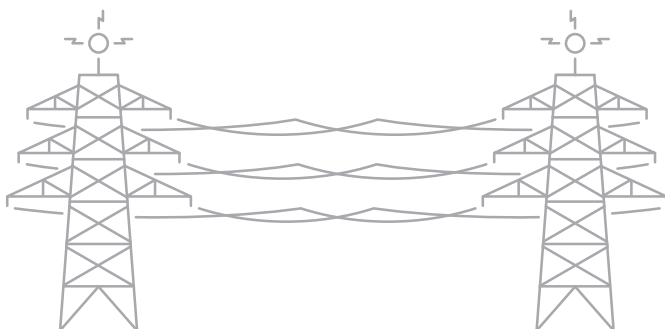
- 17 Require adherence to energy management protocols
- 18 Require minimum energy performance standards for equipment
- 19 Promote energy efficiency for small and medium enterprises (SMEs)
- 20 Put in place complementary policies to support industrial energy efficiency

Cross-sectoral

Many of the barriers that prevent investments in energy efficiency are common across all sectors. Regional cross-sectoral barriers include:

- Limited know-how of policy makers.
- Little awareness of energy efficiency of consumers and the financial sector.
- Lack of technical capacity to develop and implement energy efficiency projects.
- Limited access to affordable financing.
- Subsidised energy prices.
- Organisational and institutional gaps and overlaps.

Governments can improve energy efficiency results by taking a cross-sectoral approach to addressing institutional barriers, such as the lack of private-sector capacity or institutional coordination issues.



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

1. Energy efficiency data collection and indicators

Reliable, timely and detailed data across all sectors on energy end uses, markets, technologies and efficiency opportunities contribute to the development of effective energy efficiency strategies and policies. Governments in the Arab-SEMED region 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, reference international data collection regimes.

2. Strategies and action plans

Governments in the Arab-SEMED region should apply best practices for developing strategies and national energy efficiency action plans. These plans should describe the barriers to efficiency investments, set clear objectives and timelines that include savings targets, and identify specific policy measures and programmes to realise energy efficiency objectives. Governments should take advantage of regional cooperation and capacity-building opportunities to further the planning process and to develop a means to track implementation progress. These plans should be updated regularly or, at least, every five years.

3. Private investment in energy efficiency

Governments in the Arab-SEMED region should facilitate private investment in energy efficiency by:

- 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.
- Promoting public-private partnerships whereby energy efficiency projects for public buildings are tendered to private ESCOs.

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

Governments in the Arab-SEMED region should consider establishing lead institutions responsible for carrying forward energy efficiency action plans or strategies, including specific policy measures and monitoring and evaluation of these policies. Monitoring and evaluation, with baseline assessments and periodic review and reporting, should be established whenever new policies and measures are implemented.

5. Remove energy subsidies from the 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 the Arab-SEMED region. Governments in the Arab-SEMED region should progressively reduce subsidies on energy prices. Targeted subsidies, which serve social welfare objectives, should be retained where they can be justified.



Buildings

Buildings account for about one-third of total final consumption of energy across the region.

More importantly, the buildings sector in the Arab-SEMED region is one of the fastest growing (after the transport sector), as a result of increasing populations and urbanisation.

The buildings sector is perhaps the most complex consuming sector, and certainly the most difficult to address via energy efficiency policies. Market failures abound, notably that building tenants usually pay energy bills whereas owners make the investment decisions (e.g. owners do not have the financial incentive to pay higher upfront investment costs on energy efficiency because they are not benefiting from the resulting lower energy bill).

To tap savings in the buildings sector, the roundtable participants recommend:

6. Mandatory building energy codes and minimum energy performance requirements

Governments in the Arab-SEMED region should require all new buildings to meet mandatory energy efficiency building codes (EEBC) that aim to minimise the life-cycle costs of buildings energy use. EEBCs should take a holistic approach that includes the building envelope and the lighting, heating ventilation and cooling systems within the building. Governments should also support capacity building and also the institutional set-up required for implementation and enforcement of EEBC and the monitoring of the resulting savings. Governments should take advantage of regional co-operation, such as through the MED-ENEC activity, on setting EEBC, building design and inspection capacity, and monitoring results.

7. Improving the energy efficiency of existing buildings

Governments in the Arab-SEMED region should consider a package of policies to encourage energy efficiency improvements in existing buildings. This includes programmes to improve the efficiency of public-sector buildings, grants or other assistance to energy audits for existing buildings, and dedicated credit lines with concessional terms that can encourage investment in energy savings measures with longer payback periods.

8. Improved energy performance of building components, especially glazing, air conditioning, and solar water heating

A small number of building components account for most of the building energy consumption in the Arab-SEMED region. Governments in the region should consider the potential for building system efficiency improvements. For example, standards could be applied to windows, heating, ventilating and cooling systems, and solar water heating in order to improve the overall energy performance of existing buildings. A package of policies might include customs duty exemptions for imported high-efficiency buildings components, incentives for installation of approved equipment, and procurement and installation of high-efficiency systems in public buildings.



Appliances & Equipment

Appliances and equipment drive much of the residential and commercial energy consumption in the Arab-SEMED region. Along with transport and buildings, this is also a fast-growing consuming sector. Appliance standards and labelling (S&L) have already taken hold in some Arab-SEMED countries, and there is no reason why the design and success of these policies cannot be quickly replicated in other countries in the region.

The combination of minimum energy performance standards (MEPS) and mandatory energy efficiency labelling has proven effective all over the world. There are ample opportunities for cost-saving regional co-operation on issues associated with standards and labelling (S&L), including harmonising MEPS and labels, establishing certified-testing procedures, and compliance and enforcement efforts.

Appliance MEPS and labelling policies should draw from international standards activities and be accompanied by investments in laboratory testing, market sampling and compliance enforcement. Monitoring, verification and enforcement (MVE) are all actions that support the objectives of S&L policies.

The goal of MVE activities is to ensure the integrity of MEPS and labelling programmes by minimising non-compliance:

- Monitoring allows for measuring efficiency claims against a standard in a consistent manner, using accurate instrumentation applied by qualified staff in controlled conditions.
- Verification allows transparent mechanisms to confirm the efficiencies claimed by appliance and equipment suppliers.
- Enforcement is the action taken by programme administrators against suppliers of non-compliant products, based on monitoring or verification.

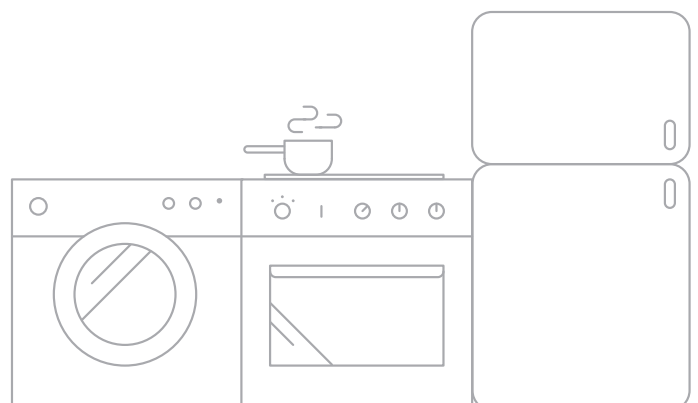
To achieve significant energy savings in this sector, the roundtable participants recommend:

9. Mandatory MEPS and labels for appliances and equipment

Governments in the Arab-SEMED region should adopt mandatory MEPS and labels for the appliances and equipment in common use in households and businesses, beginning with refrigerators and air conditioners, and taking into account proven international practices. Governments should allocate resources to monitoring compliance, verifying accuracy of claimed performance and enforcing mandatory MEPS and labels for covered appliances regardless of whether they are imported or locally-manufactured.

10. Test standards and measurement protocols for appliances and equipment

Monitoring, verification and enforcement (MVE) protocols are essential to realising the energy savings of appliance S&L policies in the same way the code enforcement is essential to realizing the energy savings of building energy codes. Governments in the Arab-SEMED region should ensure that appliance and equipment standards and labelling activities are supported by a framework of monitoring, verification, and enforcement. Governments should take advantage of regional cooperation, especially for building MVE capacity and jointly developing product testing infrastructure.



Lighting

Lighting accounts for around one-third of electricity consumption in the Arab-SEMED region. The en.lighten consortium estimates that phasing-out incandescent lighting in the region would save almost 38 terawatt hours (Twh) of electricity, about 6% of total regional electricity consumption. Since much of this electricity consumption is subsidised, it makes sense for governments to consider subsidising the extra cost to purchase efficient lighting instead of subsidising the cost of energy.

Incentives to support efficient lamp purchases together with a phase-out policy for inefficient lamps would overcome the main barriers to lighting market transformation - customer inertia, product quality concerns and perceived risk. Such a phase-out policy should be comprehensive and integrated, and include:

- Financing schemes and fiscal arrangements to lower initial high cost of more efficient products.
- Labelling schemes to disseminate information and promote efficiency.
- Government leadership through early procurement of efficient lighting technologies in public buildings.
- Safeguards for lower-income consumers facing high initial costs.

The successful implementation of large-scale compact fluorescent lamp (CFL) replacement programmes in recent years together with regional initiatives such as en.lighten have created a favourable climate for taking the next step in efficient lighting policy initiatives.

Street lighting is a relatively small but potentially important sector for saving energy in the Arab-SEMED region. Replacing standard street lights with high-efficiency or even solid-state (e.g. Light-emitting diode [LED]) lighting can create significant savings both in energy (over 60% lower energy consumption for LEDs compared to High Pressure Sodium lamps) and operations and maintenance expenses (LED lifetime three times longer than HPS with lower failure rates). Since street lighting is usually publicly-owned, it is a ready opportunity for early and vigorous investment by central and local governments, that can be aided by bilateral and multilateral donors.

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

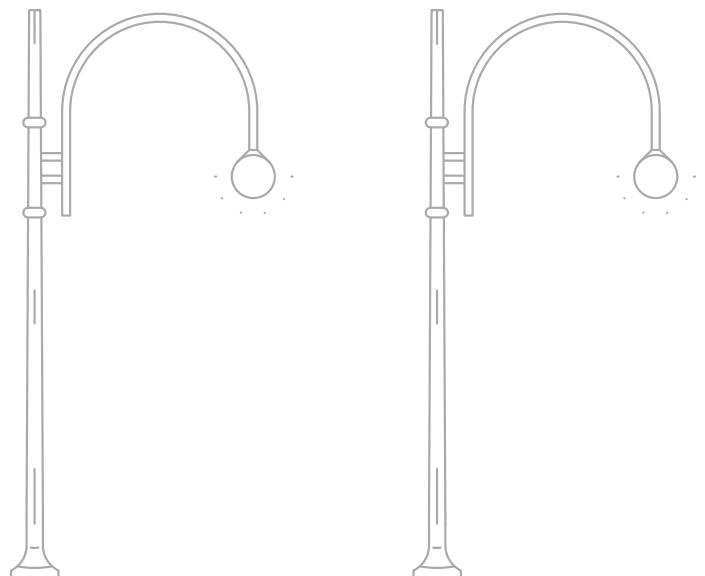
11. Phase-out of inefficient lighting products and systems

Governments in the Arab-SEMED region should:

- Phase out the manufacture, import and sale of inefficient incandescent bulbs as soon as commercially and economically viable.
- Take advantage of regional cooperation, through networks such as MEDENER, RCREEE, and the League of Arab States, to ensure a smooth incandescent lamp phase-out process.
- Take into account any economic disruption, especially as regards local lamp manufacturers, in implementing the phase-out.
- Develop phase-out policies that are comprehensive and integrated, and include provisions for sound management of used lamps as well as arrangements to reduce the high initial costs of efficient lighting, especially for lower-income consumers.

12. High-efficiency street lighting

Governments in the Arab-SEMED region should support the early deployment of high-efficiency street and public lighting, including cooperation with municipalities and development agencies to mobilise the necessary investment.



Transport

Transport is the fastest-growing energy consuming sector in the SEMD-Arab region. Transport ranges from a little over one-quarter to almost one-half of total final consumption in countries across the region, with oil providing almost all of transportation energy demand. No region of the world has a transport sector that is more energy intensive. Consumption is driven by rapid urbanisation as well as rising living standards and the presence of transportation fuel price subsidies in many countries.

The Arab-SEMED region is the fourth-largest regional market for new and used vehicles, however, no country in the region has yet enacted vehicle fuel efficiency standards. Implementing vehicle fuel efficiency standards in the region will be challenging for many reasons:

- Consumer preferences for larger cars with big engines, and for keeping their existing vehicle on the road rather than purchasing a new vehicle (this preference is supported by networks of small auto repair shops and availability of inexpensive but poor-quality replacement parts).
- Fuel-price subsidies, climate, long distances and population demographics make it difficult to create demand for smaller, less powerful vehicles.
- Lack of fuel economy testing infrastructure.
- Large purchase-price differential between conventional and fuel-efficient vehicles such as hybrids.
- Technical and capacity issues which must be addressed with some high-efficient vehicle technology strategies, such as dieselization.

Others measures to decrease transport sector energy intensity in the region could include demand management, greater investment in public transport, measures to improve vehicle fuel economy, and integrated transport and urban planning, and, above all, reducing fuel price subsidies.

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

13. Mandatory vehicle fuel-efficiency standards

Governments in the SEMED Arab region should adopt and regularly update fuel-efficiency standards for road vehicles. Vehicle fuel economy standards should be implemented as part of a policy package, such as tax and fiscal incentives, consumer awareness through vehicle economy fuel economy labelling, creating market demand for high-efficiency vehicles through the public and private sectors leading-by-example programmes, non-price incentives such as car pool lanes and expedited vehicle registration.

14. Policies promoting light duty vehicle fleet renewal

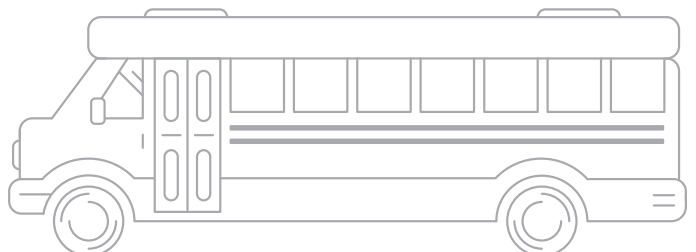
The vehicle fleets in many Arab-SEMED region countries are dominated by older cars. Governments in the Arab-SEMED region should adopt a mix of regulatory and incentives policies that encourage more rapid turn-over of the vehicle fleet. These measures should include a ban on importing vehicles more than five years old, national policies to encourage fleet renewal, vehicle fuel economy labels, reform of national fuel prices to foster fuel efficiency, vehicle taxes to encourage the purchase of more fuel-efficient vehicles, incentives to encourage fuel switching, infrastructure support and incentive schemes for fuel-efficient vehicles, and regular vehicle inspection to include combustion and ignition systems.

15. Improving vehicle operational efficiency through eco-driving and other measures

Governments in the Arab-SEMED region should promote the concept of eco-driving, e.g. increased efficiency in operating light- and heavy-duty vehicles, as a matter of policy. Governments should require eco-driving as part of driver training for passenger vehicles, taxis, buses and large fleets, and encourage private companies with large vehicle fleets to do the same. Governments should also develop policies to encourage carpooling and high-occupancy vehicles, especially for commuters and for urban areas. Finally, governments should encourage private companies to optimise capacity of heavy-duty vehicles and adopt guidelines for fleet management.

16. Transport system efficiency

Governments in the Arab-SEMED region should promote public transport development, notably by developing policies that lead to public transport infrastructure alternatives to private vehicle use, promoting development of more-efficient transportation alternatives for passengers and freight, and improving the efficiency, accessibility and comfort of existing public transport.



Industry

The industrial sector is large and diverse across the Arab-SEMED region. The industrial sector makes up about 30% of total final consumption throughout the region and as much as 50% in some Gulf countries. The industrial sector in the Arab-SEMED region has higher energy intensities (between 10 and 25%) when benchmarked against comparable industries in the European Union.

The structure of the industry sector varies considerably according to the degree of industrial diversification, reliance on hydrocarbon extraction, processing and export, and presence of other resource extraction industries. Energy-intensive manufacturing industries in the region include cement, steel, fertilisers and glass, all of which contribute significantly to GDP and employment. Given this diversity, it makes sense for governments to consider policies which have broad application across industrial classes and process types.

The regional ESCO industry is not yet sufficiently developed to provide the services needed to develop industrial energy efficiency projects – identifying energy savings opportunities and mobilising investment.

There are large opportunities to save energy in the industrial sector, which governments can encourage through appropriate policies. Industrial energy savings opportunities in the Arab-SEMED region include heat recovery and co-generation, process optimisation/ automation, and improved energy management systems and procedures.



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

17. Mandatory adherence to energy management protocols

Governments in the Arab-SEMED region should require large industrial energy users to conform to ISO 50001 or an equivalent energy management protocol; implement actions to deliver cost-effective energy savings; and periodically report on their efforts. Energy management measures should include assessing energy saving opportunities by measuring consumption and comparing measurements to benchmarks, acting on identified energy-saving opportunities deemed to be economical, and reporting the energy-saving opportunities identified and the actions taken to capture them.

18. High-efficiency industrial equipment and systems

Industrial equipment standards have only been adopted in a handful of Arab-SEMED countries. Governments should adopt minimum energy performance standards (MEPS) for industrial-scale electric motors and consider MEPS for other categories of industrial equipment in common use, e.g., compressors, pumps, fans and boilers, consistent with international best practice. Governments should take advantage of regional cooperation, through networks such as the Mediterranean Association of National Agencies of Energy Conservation (MEDENER) or Regional Center for Renewable Energy and Energy Efficiency (RCREEE), to jointly consider international best practice and establish a MEPS regime suitable for the region.

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

The small and medium enterprise (SME) sector is critical in driving economic development and job creation, and accounts for 90% of new job creation in the Arab-SEMED region. Governments in the Arab-SEMED region should develop specially designed policies and measures to promote energy efficiency in SMEs. Complementary policies 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 appropriate to each business sector.

20. Complementary policies to support industrial energy efficiency

Governments in the Arab-SEMED region can further strengthen industrial energy efficiency by:

- Encouraging industrial energy efficiency programmes by putting in place targeted financial incentives, (particularly tax incentives), fostering private finance of energy efficiency upgrades in industry through risk-sharing or loan guarantees with private financial institutions, and enabling the market for energy performance contracting.
- Raising awareness among relevant stakeholders.
- Improving the market for energy service companies and/or energy performance contracting.

Prioritising Recommendations

Recommendation	Policy type	Sector	Relevance	Savings	Ease of implementation	Timeline (yrs)
Strongly recommended as they provide a strong foundation for national energy efficiency strategy						
1. Establish energy data collection capacity	Institutional	All	High	N/A	Less difficult	1-2
2. Develop national energy efficiency plans						
Recommended for immediate adoption by all governments in the region						
9. Require energy performance standards for appliances	Regulatory	Appliances	High	Very large	Less difficult	1-2
17. Require adherence to energy management protocols		Industry				
Recommended for strong consideration by all governments in the region and immediate adoption in most countries						
3. Facilitate private investment	Economic	All	High	Large	Can be complicated	2-3
4. Designate lead energy efficiency institutions	Institutional				Enforcement complicated	
6. Require and enforce energy efficiency building codes	Regulatory	Buildings				
10. Monitor, verify and enforce standards	Institutional	Appliances		Very large	Can be complicated	
11. Phase-out energy-inefficient lamps	Regulatory					
14. Encourage light duty vehicle fleet renewal	Economic	Transport		Large		
Recommended but require special attention and additional consideration before adoption						
5. Progressively remove energy price subsidies	Economic	All	Very high	Very large	Very difficult	3-5
13. Require fuel economy standards for vehicles	Regulatory	Transport				
Recommended for consideration and adoption						
7. Encourage energy efficient building renovations	Economic	Buildings	High	Significant	Less difficult	1-2
8. Encourage use of high-efficiency building components			Significant			
12. Put in place high efficiency street lighting		Appliances		Large		
15. Promote eco-driving	Information	Transport		Significant		
16. Support public transport development	Economic		Large	Very large	Difficult	5-10
18. Require energy performance standards for equipment	Regulatory	Industry		Large		2-3
19. Promote energy efficiency for small and medium enterprises	Information		High			1-2
20. Put in place complementary industrial energy efficiency policies	Economic Information		Significant		Less difficult	2-3