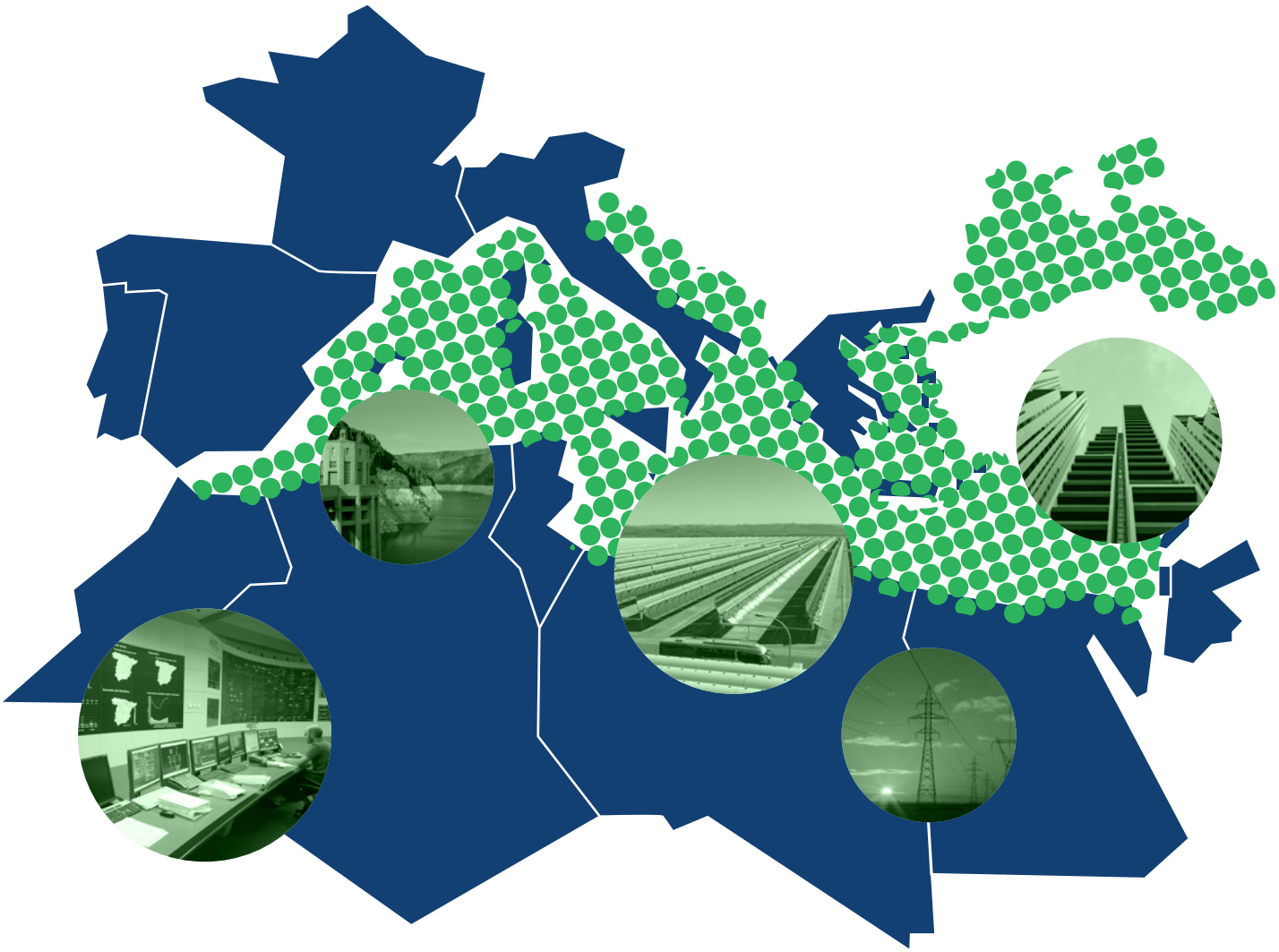
meetMED

Mitigation Enabling Energy Transition in the MEDiterranean region

Together We Switch to Clean Energy

ENERGY EFFICIENCY AND RENEWABLE ENERGY STRATEGIES AND POLICIES



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The meetMED project is a two-year project funded by the EU and jointly carried out by the Mediterranean Association of the National Agencies for Energy Management (MEDENER) and by the Regional Centre for Renewable Energy and Energy Efficiency (RCREEE). Its main goal is to reinforce regional cooperation aimed at fostering the energy transition in Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Palestine and Tunisia under the umbrella of the UfM REEE platform.

The meetMED team in Brussels coordinates the project partners and experts in implementing the project activities, in the following areas of work: assessing EE and RES strategies and policies; advancing vocational training and public awareness; attracting sustainable RE and EE investments; supporting the UfM Renewable Energy and Energy Efficiency Platform.

The meetMED activities target and benefit a wide range of stakeholders, including policy makers, public authorities, investors and financial institutions as well as local communities and final customers. meetMED supports regional cooperation by building the technical capacity and raising the public awareness necessary to implement RE and EE projects and solutions, while creating synergies with other initiatives targeting energy transition in the Mediterranean region.

MEDENER is an international non-profit organization gathering agencies from the northern and southern Mediterranean countries in charge of implementing public policies on energy efficiency and the promotion of renewable energy sources, by implementing regional projects facilitating the sharing of know-how and best practices among its members and international partners, as well as accelerating the transfer of skills, methods and technologies in the field of energy efficiency and renewable energy.

RCREEE is an intergovernmental organization aiming at enabling the adoption of renewable energy and energy efficiency practices in the Arab region. RCREEE brings together regional governments and global organizations to initiate and lead clean energy policy dialogues, strategies, technologies and capacity development in order to increase Arab states' share of tomorrow's energy. Its key work areas are capacity development and learning, policies and regulations, research and statistics, and technical assistance.

Foreword

Giorgio Graditi

It is a great honour for me to introduce the first meetMED report, which focuses on Energy Efficiency and Renewable Energy strategies and policies. Let me start by expressing my highest appreciation for the proactive work of the meetMED REN. This is a network gathering more than 50 experts coming from the national agencies and departments for EE and RE of 13 Mediterranean countries, whose aim is to provide the necessary technical support to national, regional and local authorities for the assessment and the implementation of the energy policies. Thanks to a continued exchange of data among them and to the completion of the Country Policy Papers, this report represents one of the main outcome of the Project as it provides an overview of the EE and RE policies and strategies currently in force across the Mediterranean Region, by highlighting their strengths and real impacts while keeping in mind the goals set in the Energy Scenario 2040. The Country Policy Papers are indeed valuable documents to assess the progress made on the energy transition by our neighbouring countries. Based on the data collected, the Mediterranean region is making important progress with respect to the adoption of EE and RE regulatory frameworks and action plans as well as establishing financial incentives and supporting schemes. Nevertheless, there is still a lot to be done as significant barriers to a smooth functioning of the market tools supporting EE and RE persist in the region, particularly the wide-spread presence of monopolies limits the positive effects that might originate through the liberalization of the electricity market. Furthermore, the creation of networks promoting regional cooperation remains key to facilitate the energy transition in the meetMED target countries: thus, regional networks can accelerate the exchange of good practices, the implementation of innovative measures, and even help overcome barriers by improving communication among different regional actors.

This report is the first milestone for the meetMED Project, which I am sure will contribute more and more to improve capacity-building, security of energy supply, climate change mitigation, sustainable and inclusive growth thanks to all the involved partners, the publication of further reports and studies and the organization of targeted events and other dissemination activities.

Giorgio Graditi
MEDENER President

Foreword

Ahmed Badr

This project represents a major strategic opportunity that implies the mobilization of all the local and international community efforts in the Renewable Energy (RE) and Energy Efficiency (EE) framework. It is noteworthy to mention that the Southern Eastern Mediterranean Countries (SEMCs) are significantly embedded in the global energy order and have contributed to some extent to shaping it. Nevertheless, the slow pace of the socio-economic growth and political developments have hindered their efforts in the energy transition and climate change mitigation which prompted regional cooperation for building technical capacity, given that our Mediterranean region is so rich in renewable energy deriving from wind, solar, and water sources. Consequently, there is a massive need to achieve impressive deployment growth dynamics of renewables through assessing Renewable Energy Sources (RES) and EE strategies and policies in the Mediterranean region in order to support national governments in the implementation of RE and EE policies. The experts - meetMED REN - help carry this out. In this regard, the amount of collected data contributes remarkably to raising public awareness for public authorities and Small Medium Enterprises, which are considered as a veritable tool in economic growth and development, in addition to other stakeholders through advanced vocational trainings. Furthermore, the policy and regulatory risks and barriers are deemed to impede financing RES and EE in the region, thus providing guidelines and technical assistance would effectively pave the way for sustainable growth and investments. Additionally, it's very important to have all the project activities be consistent with the UfM REEE Platform which aims to trigger and sustain the gradual development of RE and EE measures for socio-economic development.

Eventually, this project is a distinguished outcome of all the exerted efforts made in supporting the Mediterranean countries in their energy transition. I would like to extend my appreciation to all our partners for the tremendous support and we are aiming for more well-prepared reports, studies, and methodological assessment.

Ahmed Badr
RCREEE Executive Director

Acknowledgements

This meetMED report is primarily the result of the work carried out by the meetMED Regional Expert Network (REN) appointed by the meetMED partners, who have collected valuable information to formulate recommendations which could strengthen the implementation of the national strategies for energy efficiency and renewable energy.

The meetMED report was drafted under the lead of Ms. Inês Mendes and Mr. Luís Silva from ADENE (Portugal), with the contribution of Mr. Adel Mourtada and Mr. Said Chehab from ALMEEE (Lebanon) and of Mr. Maged Mahmoud and Ms. Rim Boukhchina from RCREEE. Ms. Alicia Tsitsikalis and Mr. Didier Bossebouef from ADEME (France) provided useful supervision as leaders of this meetMED workstream.

An initial draft of the meetMED report was presented at the annual meeting of the Renewable Energy and Energy Efficiency platform of the Union for the Mediterranean (UfM) in Barcelona in January 2019. At this regard, I thank the experts from the Ministry of Energy of Algeria, the New and Renewable Energy Authority (NREA) of Egypt, the Ministry of Energy and Mineral Resources of Jordan, the Lebanese Centre for Energy Conservation (LCEC), the Renewable Energy Authority of Libya (REAOL), the Agence Marocaine pour l'Efficacite Energetique (AMEE), the Palestinian Energy Authority (PEA) and the Ministry of Industry and SMEs of Tunisia, for their insightful comments.

The key to coalescing such as large number of national experts from a variety of countries and organisations was the constant support of Ms. Roberta Boniotti, MEDENER Secretary General, and of Mr. Ashraf Kraidy, RCREEE Director for Planning and Technical Projects, together with the very solid contribution of Ms. Alice Giallombardo, meetMED Communication Officer, of Ms. Federica Brazzoduro, meetMED Accounting Officer, and of Mr. Mohamed Badr, meetMED Local Accounting Officer.

To all of them I would like to convey my gratitude and appreciation for their continuous commitment to the meetMED project.

Matteo Barra
meetMED Project Manager

Experts from the meetMED Regional Expert Network (REN)

ADEME (France)

Didier Bosseboeuf
Alicia Tsitsikalis

ADENE (Portugal)

Jerónimo Cunha
Ricardo Bernardo
Luís Silva
Inês Mendes

ALMEE (Lebanon)

Adel Mourtada
Rita Najjar
Said Chehab
Mohamad Hmadi

ANME (Tunisia)

Hassen El Agrebi
Fethi Hanchi
Nafaa Baccari
Nadia BCHINI
Ons Khechine

APRUE (Algeria)

Nadia CHIOUKH
Nadia DJELOUAH

CRES (Greece)

Markos Damassiotis
Aristotelis Botzios

ENEA (Italy)

Simona De Iuliis
Alessandro Federici

IDAE (Spain)

Marisa Olano
Virginia Vivanco
Carlos Garcia Barquero

PEA/PEC (Palestine)

Basil Yasenn
Nidal Abu Rub

NERC/RSS (Jordan)

Muhieddin Tawalbeh
Rashed Manaa

NREA (Egypt)

Ehab Ismail Abdalla
Mohamed Ahmed Abdelaziz

Ministry of Energy Mines and Sustainable Development (Morocco)

Chater Boubker
Amina Ouattassi

RCREEE

Maged Mahmoud
Rim BOUKHCHINA
Hossam AlHerafi
Eman Adel

REAOL (Libya)

Khaled Dadesh
Nouri Mohamed Alkishriwi

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Abbreviations and Acronyms

ADEME	French Environment and Energy Management Agency
ADENE	Portuguese Energy Agency
ALMEE	The Lebanese Association for Energy Saving & for Environment
ANME	Tunisian National Agency for Energy Conservation
APRUE	Algerian National Agency for Energy Conservation
CECRE	Control Centre of Renewable Energies
CES-MED	Cleaner and Energy Saving - Mediterranean Cities
CFLs	Compact fluorescent lamp
CRES	The Greek Centre for Renewable Energy Sources and Saving
EBRD	European Bank for Reconstruction and Development
EE	Energy Efficiency
EEBC	Energy Efficiency Building Codes
EFSD	European Fund for Sustainable Development
EgyptSEFF	Egypt Sustainable Energy Financing Facility
EIE	Espaces Info Énergie
EIP	Emerging Investment Partners
ENEA	Italian National Agency for New Technologies, Energy and Sustainable Economic Development
ESCO	Energy Service Companies
EU	European Union
FITs	Feed-in-Tariffs
FNMEERC	National Fund for Energy Management, Renewable Energies and Cogeneration
FTE	Energy Transition Fund
GDP	Gross Domestic Product
GEFF	Green Economy Financing Facility
GHG	Greenhouse Gases
IDAE	The Spanish Institute for Diversification and Energy Saving
IPP	Independent Power Producer/Project
JREEEF	Jordan Renewable Energy and Energy Efficiency Fund
LCEC	Lebanese Center for Energy Conservation
LEED	Leadership in Energy & Environmental Design
LEEREFF	Lebanon Energy Efficiency and Renewable Energy Finance Facility
MEDENER	Mediterranean Association of National Agencies for Energy Management

meetMED	Mitigation Enabling Energy Transition in the Mediterranean Region
meetMED REN	meetMED Regional Experts Network
MEPS	Minimum Energy Performance Standards
MICR	meetMED Investment Country Reports
MORSEFF	Morocco Sustainable Financing Facility
NEEAP	National Energy Efficiency Action Plan
NEEREA	National Energy Efficiency and Renewable Energy Action
NERC	National Energy and Research Centre of Jordan
NREA	New and Renewable Energy Authority
NREAP	National Renewable Energy Action Plan
OME	Observatoire Méditerranéen de l'Energie
ONEE	Office National de l'Electricité et de l'Eau Potable
PV	Photovoltaic (Solar Energy)
RE	Renewable Energy
REE	Red Eléctrica de Espanã (Transmission System Operator)
REEL	Renewable Energy and Energy Efficiency Law No. 13
RES	Renewable Energy Sources
RCREEE	Regional Center for Renewable Energy and Energy Efficiency
RSS	Royal Scientific Society
SEMCs	Southern Eastern Mediterranean Countries
SIE	Société d'Investissements Énergétiques
SLIG	Sustainable Logistics and Interconnectivity Guarantee
SME	Small and Medium Enterprises
SUNREF PALESTINE	Sustainable Use of Natural Resources and Energy Finance Palestine
SWH	Solar Water Heater
UfM REEE	Union for the Mediterranean Renewable Energy and Energy Efficiency Platform
VAT	Value Added Tax

Executive Summary

Background

This meetMED report forms part of the initial activity of the project 'Mitigation Enabling Energy Transition in the Mediterranean Region' (meetMED) and focuses on the 'Energy Efficiency and Renewable Energy Strategies and Policies' implemented in the meetMED target countries: Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Palestine and Tunisia. The main objective of the report is to provide an overview of the current energy efficiency and renewable energy strategies and policies, including regulatory frameworks and a summary of the principal challenges encountered in the promotion of EE and RE projects in the meetMED target countries. The report concludes with a set of policy recommendations aimed at encouraging the development and ensuring the implementation of EE and RE measures in these countries.

This report is the result of the collective work of national experts on EE and RE in the meetMED target countries. The first step taken in the preparation of the report was the creation of a regional network of experts (meetMED REN) appointed by the meetMED project partners from governmental energy agencies and the ministries of Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Palestine and Tunisia. The meetMED REN experts drafted country policy papers which describe the energy efficiency and renewable energy polices and strategies adopted in their respective countries and identify the main barriers with respect to the implementation of EE and RE measures as well as the development of EE and RE markets. The country policy papers were discussed at the meetMED workshop that took place on 3 October 2018 in Amman in Jordan, and was hosted by the Jordanian National Energy Research Centre (RSS/NERC). This report is based on the country policy papers and discussions that were held among the meetMED REN experts.

National Energy Strategies

Energy efficiency and renewable energy strategies and policies are key to the sustainable development of every country. Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Palestine and Tunisia have been strongly engaged in addressing these issues. These countries have put in place national energy strategies and national energy efficiency and renewable energy action plans and have also allocated investment funds to help promote the dissemination of good practices. Despite the existence of a government commitment and regulatory and institutional frameworks, the implementation of these programmes is evolving slowly in these countries. It is worth noting that the meetMED target countries have generally adopted national energy strategies, with the sole exception of Libya.

Regarding energy efficiency, Egypt, Jordan and Tunisia are the countries with the most ambitious targets. While the Jordanian strategy aims to reduce energy consumption by 20% by 2020 and 18% by 2030, Egypt aims at a 18% reduction by 2030 and Tunisia seeks to reduce energy consumption by 17% by 2020 and by 30% in 2030. On the other hand, Algeria, Morocco and Palestine have set lower targets: 9% by 2030 for Algeria, 5% by 2020 and 20% by 2030 for Morocco, and 5% by 2020 for Palestine. In Lebanon, the national energy efficiency action plan aims at a level of 5% savings in the total Lebanese electric power demand in 2020.

With regard to national renewable energy targets Egypt and Morocco are the countries that have established the most ambitious goals. While the Egyptian strategy aims at reaching 20% RE installed capacity by 2022 and a 42% share of RE in energy production by 2035, the Moroccan plan seeks to reach a 42% share by 2020 and a 52% share by 2030. However, Jordan, Libya and Palestine have set much lower targets: respectively, a 10% RE share by 2020 for Jordan, 5% by 2020 for Libya, and 10% by 2020 for Palestine, with a foreseen increase from 130 MW in 2020 to 300 or 500 MW in 2030. Tunisia aims to increase the share of renewable energies in electricity generation from 3% in 2016 to 30% in 2030, corresponding to an increase from 250 MW in 2016 to 3800 MW in 2030. Algeria has a 27 % target for the

RE share in the generation of electricity by 2030. Lebanon has set a target corresponding to 12% of renewable energy in electric and thermal supply levels by 2020 and to 30% of the total electricity consumed by 2030.

National Policies and Measures for Energy Efficiency

The implementation of specific plans or programmes such as the National Energy Efficiency Action Plans (NEEAPs) is the crucial element in attempting to decrease energy consumption levels in meetMED target countries. With the sole exception of Libya, the meetMED target countries are currently developing or implementing their second NEEAPs. These action plans focus on the various economic sectors (construction, transport, industry, commercial and public services, agriculture and forestry) which may benefit from specific types of energy efficiency policies. However, there are broader measures that can be implemented in order to increase energy efficiency in all sectors, such as the development of markets for Energy Service Companies and energy price reforms with a view to reducing energy subsidies in the countries in question.

Energy Efficiency in Buildings

The building sector is one of the areas that present the highest levels of energy consumption in the Southern and Eastern Mediterranean countries, due to demographic growth and increasing urbanisation. In the meetMED target countries this sector is one of the main targets of the energy efficiency measures, such as the implementation of building codes for envelopes and systems, the development of thermal insulation standards and the implementation of minimum energy performance standards (MEPS) and labelling systems for appliances.

Energy Efficiency in Transportation

In the SEM region the transport sector presents the highest levels of energy consumption as a result of growing levels of urbanisation and improved household income levels. In order to promote energy efficiency in this sector all eight meetMED target countries have implemented policies relating to urban planning and urban transport initiatives, and scrappage schemes for old cargo transport vehicles and taxis. Other measures include the introduction of compulsory technical inspections and tax incentives to promote the use of low fuel con-

sumption vehicles, the creation of emission limit standards and the dissemination of energy audits for commercial vehicles. Some countries, such as Jordan, Algeria and Palestine have also started to promote the use of electric vehicles.

Energy Efficiency in Industry

In the industrial sector investments in energy efficiency do not represent a major priority compared to investments in increasing production capacity. The meetMED target countries have promoted the use of efficient equipment and a higher degree of energy efficiency in production processes through the introduction of mandatory energy audits, the assignment of energy managers, the optimization of production processes, the implementation of new cogeneration and trigeneration systems and technology as well as the implementation of labelling systems for industrial equipment, especially with regard to electric motors.

Energy Efficiency in Commercial and Public Services

Some of the meetMED target countries have introduced measures to promote energy efficiency within the spheres of commercial activities and public services. These include, for example, the development of energy-efficiency service markets, the promotion of energy audits, the use of high-performance lights as well as the introduction of renewable energy for public lighting, the promotion of behavioural changes and awareness-raising activities.

Energy Efficiency in Agriculture and Forestry

Some countries have also adopted measures to improve energy efficiency in the agriculture sector and, in particular, regarding the optimisation of energy performance levels in farms with, for example, the installation of solar pumping projects and renewable energy production.

Supporting Schemes for Energy Efficiency Measures

The report reveals that the meetMED target countries already have in place a wide set of financial incentives that contribute to the development of the energy efficiency sector in the region. Loans, grants and subsidies are the most common incentives, and are available in most of these states. Fiscal measures, namely tax reduction and tax exemption, are also widespread across the area.

Challenges to the Implementation of Energy Efficiency Measures

The meetMED target countries face certain challenges with respect to the dis-

semination and implementation of energy efficiency measures. These may be governmental or technical issues or may be related to the dissemination of information. Table 1 presents the main challenges faced by the target countries.

Table 1: Main Challenges for EE Promotion.

Governmental	Technical	Information
Low enforcement of national strategies and regulatory frameworks	Low capacity for manufacturing or servicing EE products	Low awareness on the part of the population and investors
Lack of institutional coordination	Lack of accredited equipment testing laboratories	Low dissemination of EE benefits
Lack of financing solutions		Lack of energy data

National Policies and Measures for Renewable Energy

To increase the penetration of renewable energy, most meetMED target countries have enacted specific schemes or programmes, such as the National Renewable Energy Action Plans (NREAPs). In Morocco and in Jordan, the energy strategy itself is an action plan. Regulatory frameworks mainly focus on solar technology, both for utility-scale PV and small-scale PV, and on large scale wind technology.

Despite the sinking costs of renewable energy technologies their degree of penetration in the meetMED target countries is still low when compared to other regions in the world. Investments in RE are deeply affected by a lack of comprehensive regulatory frameworks, by environmental and social risks and by a shortage of supporting schemes.

Supporting Schemes

This report shows that the meetMED target countries have in place a wide range of financial incentives that contribute to increasing the penetration of renewable energy in the region. Loans, grants and subsidies and fiscal incentives are available in most countries. Bidding schemes, namely direct proposals, and net-metering schemes are the most common in the region.

Challenges to the Implementation of RE Projects

The meetMED target countries face various challenges with respect to the development of renewable energy projects. These may be either government-related or technical challenges or may concern the dissemination of information. Table 2 presents the main challenges of the targeted countries.

Table 2: Main Challenges for RE Promotion.

Governmental	Technical	Information
Low enforcement of national strategies and regulatory frameworks	RE grid integration	Low awareness among the population and investors
Absence of a regional electricity market	Low capacity	Low dissemination of RE benefits
Lack of financing solutions	Lack of storage	Lack of energy data

Recommendations to Improve the Implementation of Energy Efficiency Measures and Projects

Despite progress across all meetMED countries further action can be taken to improve the implementation of EE action plans and to reach the national targets for energy efficiency in the various economic sectors of these countries:

- Enforcement of strategies and action plans focusing on sectoral EE deployment;
- Assignment of responsibilities for the implementation of action plans;
- Strengthening policy monitoring for decision making;
- Establishing and improving data collection procedures;
- The introduction of more financial incentives;
- Updating energy pricing;
- Introducing capacity development;
- Awareness-raising campaigns;
- The development of studies on energy efficiency (multiple) benefits.

Energy Efficiency in Buildings

EE measures have been implemented mainly in the building sector, with the inclusion of policies aimed at increasing the efficiency of building envelopes or appliances. However, in this sector there are still various areas that may be improved:

- Establishing and enforcing the implementation of EE Building Codes;
- Improvement of energy efficiency levels in existing buildings;
- Establishing and enforcing the implementation of MEPS in appliances;
- Phasing-out of inefficient products and systems.

Energy Efficiency in Transport

The transport sector is one of the main energy-consuming sectors in the region. Therefore, it is important to promote energy efficiency in the transport system.

- Promotion of efficiency of the transport system;
- Promotion of the renewal of light-duty vehicle fleets;
- Establishing vehicle fuel-efficiency standards;
- Promotion of energy efficiency in mobility (e.g., eco-driving);
- Promotion of electric mobility.

Energy Efficiency in Industry

With regard to the industrial sector it is also important to promote energy management procedures and the use of highly efficient equipment as several countries still have no comprehensive industrial EE policies in place.

- Implementation of energy management protocols and dedicated policies;
- Implementation of high-efficiency industrial equipment and systems;
- Introduction of local efficient industry;
- Providing for attractive financing mechanisms.

[See Table 26: *Policy Recommendations for the Improved Implementation of Energy Efficiency Strategies and Policies.* – Page 65]

Recommendations to Increase the Penetration of Renewable Energy Sources in the Energy Systems

The renewable energy sector has been developing for many years now in the meetMED target countries. However, penetration of RE in the energy mix of the SEMCs can be further improved:

- Definition, implementation and enforcement of national renewable energy strategies and action plans (development of untapped resources);
- Assignment of responsibilities for the implementation of the action plans;
- Establishing an effective regulatory framework;
- Definition of a national plan for the manufacturing of renewable energy equipment;
- Introduction of further financial incentives;
- Reform of energy pricing;
- Investment in research and development;
- Building capacity development;
- Raising public awareness;
- Developing studies on renewable energy benefits, i.e., assessment of the impact of RE, including social and environmental aspects;
- Improvement of regional networks.

[**See Table 27: *Policy Recommendations for the Improved Implementation of Renewable Energy Strategies and Policies.* – Page 66**]

Conclusions and Way Forward

Across all meetMED target countries ambitious targets define the EE and RE long-term strategies.

Action plans and regulatory frameworks define the measures required to implement the national strategies and to achieve the national targets. Their implementation requires accountable institutions, accurate monitoring and assessment as well as adequate financial incentives.

The construction sector is where the EE measures are more highly developed and widely implemented, however such measures are often not man-

datory. Phasing-out programmes are rare and subject to competition with inefficient imported goods. The electrification of transport is in its infancy and involves fiscal measures and public procurement. Energy audits in industry and commerce remain underdeveloped.

Regulatory frameworks in the fields of RE are more comprehensive, however their implementation also requires institutional commitment in relation to grid capacity, incentives, research and development.

A functioning market for EE and RE goods and services is essential to mobilize the private and public investments required to achieve the national energy transition targets. The activation of EE and RE markets will require mobilizing private and public investments as well as raising the awareness of the public authorities and of the general public in adopting behavioural changes in favour of EE and RE goods and services.

The key policy recommendations formulated in this report highlight the areas where the implementation of EE and RE strategies and policies could be strengthened across all sectors at the various institutional levels, in the market and with respect to the general public.

Besides national strategies and policies, regional cooperation is crucial to facilitate energy transition in the meetMED target countries. Regional platforms, initiatives and institutions play a key role in developing the technical capacity - of both the institutions and the market players - required to implement EE and RE solutions and to overcome national barriers. In response to the need to activate markets for EE and RE goods and services, regional cooperation should focus on professional training across all sectors, the development of networks among institutions, including quality infrastructures and industrial associations, raising awareness among the general public and removing barriers to cross-border regional trade and investments.

1. Introduction

This report is part of the Mitigation Enabling Energy Transition in the Mediterranean region (meetMED) project and focuses on the "Energy Efficiency and Renewable Energy Strategies and Policies" implemented in the Southern Eastern Mediterranean (SEM) partner countries. The meetMED project is a two-year EU-funded project, developed by the Mediterranean Association of the National Agencies for Energy Management (MEDENER) and the Regional Centre for Renewable Energy and Energy Efficiency (RCREEE).

As a result of the increasing commitment to improve the functioning of the energy sector in the Southern and Eastern Mediterranean countries (SEMCs), several initiatives have been developed through regional cooperation in order to promote the energy transition in the region. The League of Arab States has already harmonized a certain level of regional coordination among the countries and offers high-level convening power and long-term sustainability. The Union for the Mediterranean platform is another good example: this platform that facilitates and promotes regional dialogue and cooperation as well as the development of concrete projects and initiatives in the fields of energy and climate action.

Three important reports on these issues have been released in 2018. The UfM carried out the "Assessment of 14 UfM Countries" that focused on the electricity market, energy efficiency and renewable energy. The Technical Assistance Facility for Sustainable Energy report "Stocktaking and Identification Mission on Energy Efficiency in Buildings and Products in the Neighbourhood South region" provides an in-depth assessment and analysis of the EE policies and regulatory frameworks, for the building and appliances sector, in force in the eight countries of the EU Southern Neighbourhood in order to identify opportunities and challenges for a possible regional initiative and to formulate concrete recommendations to foster their deployment. MEDENER and OME, supported by ADEME, also developed a report on "Renewable Energy in the Mediterranean" focusing on its tendencies, perspectives and good practices.

At the municipal level, some initiatives have also been launched, such as the "Cleaner Energy Savings Mediterranean Cities" project (CES-MED) that

focuses on providing training and technical assistance support to local and national authorities in the region as well as, on raising awareness to local sustainable energy policies.

1.1. The meetMED project

The meetMED project was developed to support regional cooperation and build technical capacity for the energy transition in the SEMCs, namely in Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Palestine and Tunisia. The Project was officially launched in May 2018 at the headquarters of the Union for the Mediterranean (UfM) in Barcelona, Spain. Its main goal is to foster the energy transition in the SEMCs, by enhancing the share of Renewable Energy Sources (RES) and Energy Efficiency (EE) in their energy mix. The meetMED project is developed through four workstreams, briefly described below: (1) assessing EE and RES strategies and policies; (2) advancing vocational training and public awareness; (3) attracting sustainable investments in RES and EE; and (4) supporting the UfM Renewable Energy and Energy Efficiency Platform (UfM REEE).

1.1.1. Assessing EE and RES strategies and policies

This workstream gathers all meetMED activities aimed at supporting policy makers to develop and implement EE and RES policies in the Mediterranean region. Its main outcome is the creation of a regional network of experts (meetMED REN) coming from 13 Mediterranean countries in order to support national governments in the implementation of EE and RE policies enhancing national programmes and frameworks in the region. The REN is composed of two regional taskforces with a special focus on energy efficiency respectively in the building and appliances sectors, which are responsible for elaborating country policy briefs and regional reports on the status of EE in buildings and in appliances in each of their countries. Another taskforce on RE and EE policies and strategies has been created in order to draft the country policy papers, which are at basis for this report. Based on the work and data collected by the REN, dedicated workshops on “EE and RE Strategies and Policies”, “EE in Buildings” and “EE in Appliances” have been organised. Furthermore, this workstream focuses on updating the existing monitoring tools for energy

and climate policies as well as on developing a database collecting the existing measures to implement RES and EE regulations. This database will measure the progress of the policies and regulations in the Mediterranean region and build upon the existing data and indicators of the MEDENER Observatory as well as of the EU-ODYSSEE-MURE, RCREEE AFEX and CLIMASOUTH EU-funded projects. A specific task force on EE and RES monitoring has been, then, established to create tools based on a set of RE, EE and climate indicators, shared at regional level, in order to monitor national action plans on EE (NEEAPs) and RE (NREAPs) as well as to ease bench-marking of the energy and climate related policies and measures at regional level. All the developed tools will made available to the National Agencies for EE and RE in the Mediterranean region.

1.1.2. Advancing Vocational Training and Public Awareness

Following a market investigation on the existing national/regional infrastructures for EE and RES professional training, trans-national technical and vocational training packages have been developed on the following three specific topics:

- **Sustainable energy design toolkit for public authorities.**
  This toolkit consists of guidelines for public authorities on the use of sustainable energy design and financing tools. It also aims to develop guidelines for improving multi-level governance in the field of sustainable energy planning in the Mediterranean region and for better adapting the EU legislation to local contexts in the Mediterranean countries.

- **Energy audits in industrial Small Medium Enterprises (SMEs).**
  This package outlines all the necessary steps required for a thorough energy audit, taking into account the particularities and the specific requirements of SMEs and technical information concerning energy efficiency measures in industrial horizontal processes.

- **Integration of EE and RE measures in buildings.**
  For EE, this includes information concerning both the structural components of the buildings and the electromechanical equipment as well as more behavioural aspects. For RE, this includes mainly information concerning photovoltaic systems and solar thermal systems as well as the use of micro-grids.

Based on the training packages described above, three corresponding training courses will be organised for local stakeholders, public authorities and market players in order to be available for future implementation by market-oriented actors.

1.1.3. REEE Sustainable Growth and Investments

This workstream addresses policy and regulatory risks and barriers for financing EE and RES in the Mediterranean countries. The information is gathered in several meetMED Investment Country Reports (MICR) focusing on the investment climate for the energy sector, its market structure and an effective legislative framework for investments in EE and RES. National and regional consultations with key stakeholders will help identifying current and potential markets for RE and EE products and services as well as the parts of the value chains with a high potential for creating local value in the respective countries. After assessing the potential of the local manufacturing, a series of consultations and workshops is expected to contribute to defining possible support to industrial associations, eventually created at the national or Mediterranean level. This may serve also to promote local production of components of the RE and EE systems. Besides, national and regional tools shall assess the socio-economic effects of RE and EE related projects - especially in terms of local jobs and value creation- in order to elaborate practice-oriented recommendations for decision-makers and international partners on the most effective measures to make RE and EE beneficial in both social and economic terms.

1.1.4. meetMED for the UfM REEE Platform

The UfM REEE Platform aims to promote the gradual development of EE and RE measures for socio-economic development to ensure that all citizens and firms in the region have access to secure, modern and affordable energy supply as well as to support climate adaptation and mitigation measures in the Euro-Mediterranean region. This meetMED workstream supports the UfM REEE Platform, in so far as it entails an efficient dissemination campaign about the importance of the energy transition not only to save energy and reduce carbon emissions, but also to make energy accessible to households and companies at affordable prices, create new jobs, and ensure shared prosperity in the Mediterranean region, where energy demand is expected to grow significantly. In order to do so, several meetings, events and specialised studies have been prepared. In particular, the High-Level Policy Dialogue focus-

es on the regional promotion of RE and EE and aims to develop a concept note on how to build strong partnerships among financial institutions in the Maghreb, Mashreq and the European Union in order to fight climate change through the major deployment of RE. In parallel, two MEDENER International Conferences have been organised to analyse specific topics related to the acceleration of the energy transition in the Mediterranean region. The first MEDENER International Conference was organised on 4 October 2018 in Amman and the second one is taking place in Rhodes on 26 September 2019.

1.2. Methodology and Approach of this Report on EE and RES Policies and Strategies

The objective of this report is to provide a general overview of the situation in the target countries and to contribute to an acceleration of the energy transition in the region through regional cooperation. The report analyses the energy efficiency and renewable energy strategies and policies implemented in the Southern and Eastern Mediterranean countries and identifies recommendations that can help promote EE and RE implementation in the region. It was developed by the meetMED Regional Expert Network (REN) appointed by the meetMED partners.

1.2.1. Country Policy Papers

To evaluate the situation in the targeted countries, the meetMED REN experts were asked to complete Country Policy Papers that summarize the EE and RE policies and strategies implemented in each of their countries and identify the main existing incentives and barriers to the development of EE and RE markets. The Country Policy Papers also include examples of successful projects, in terms of both energy efficiency and renewable energy. Despite this report focuses on the situation in the SEMCs, every meetMED partner prepared its own country report. In total, the REN experts prepared 13 Country Policy Papers: Algeria, Egypt, France, Greece, Italy, Jordan, Lebanon, Libya, Morocco, Palestine, Portugal, Spain and Tunisia.

[See *'Country Summaries'* – Page 75]

1.2.2. Workshop on EE and RE Strategies and Policies

The Country Policy Papers on EE and RE strategies and policies were presented and discussed at the meetMED workshop on EE and RE Strategies and Policies that took place on October 3rd, 2018 at the premises of the Royal Scientific Society/ Jordanian National Energy Research Center (RSS/NERC) in Amman, Jordan. Organised by the Portuguese Energy Agency (ADENE), the Lebanese Association for Energy Saving and for Environment (ALMEE) and RCREEE, in cooperation with NERC, the meeting brought together for the first time the meetMED REN, which is composed by energy experts from all the countries involved in the Project. The workshop gathered 21 experts coming from 11 countries of the Euro-Mediterranean region - Egypt, France, Greece, Italy, Jordan, Lebanon, Libya, Palestine, Portugal, Spain and Tunisia - as well as representatives of MEDENER and RCREEE. During the first part of the workshop, the REN experts presented the country policy papers, as well as the case studies implemented in their countries. In addition, the session included a roundtable on the “Move towards clean, secure and efficient power in the Mediterranean region”, where participants debated on the main barriers to the energy transition. Furthermore, the discussion helped outline the content of this report. The second part of the workshop, organised in collaboration with ADEME, was dedicated to monitoring tools and successful case studies. It included a roundtable on the “Challenges, opportunities and lessons learnt on monitoring public policies through indicators”, where participants debated on the benefits of the monitoring tools as well as on the barriers to their implementation.

2. Overview of the meetMED Target Countries

The Southern and Eastern Mediterranean countries (SEMCs) have been struggling with serious socio-economic challenges and frail regulatory frameworks. In addition, the high geopolitical risks were heightened as a result of the recent infra-regional conflicts that have taken place in the region. Although the rate of GDP growth still remains positive, in per-capita terms, in some of the countries, it has almost stagnated due to a significant demographic growth. Table 3 provides the main socio-economic data and indicators for the targeted countries.

Table 3: SEMCs Socio-Economic Numbers.

	Unit	Algeria	Egypt	Jordan	Lebanon	Libya	Morocco	Palestine	Tunisia
Population (2016)	Thousands	40,606.05	95,688.68	9,455.80	6,006.67	6,293.25	35,276.79	4.816,00	11,403.25
GDP (2016)	Million USD	160,129.87	332,927.83	38,654.73	49,598.83	32,257.17	103,606.32	13,269.7	42,062.55
GDP per capita current US $ (2016)	USD / capita	3,943.50	3,479.28	4,087.94	8,571.13	4,166.63	2,892.78	2,922.9	3,666.36

Source: World Bank; Palestinian Central Bureau of Statistics.

Despite these socio-economic barriers, energy demand in these countries has been rapidly increasing in the last decades. This is the result not only of a growing population but also of a change in behaviour patterns. Despite their huge potential for RE exploitation, these countries still depend on fossil fuels, such as oil and natural gas, to guarantee their needs. Table 4 presents the main energy data and indicators for the targeted countries.

Table 4: SEMCs energy numbers.

	Unit	Algeria	Egypt	Jordan	Lebanon	Libya	Morocco	Palestine	Tunisia
Total Primary Energy Supply (2016)	Mtoe	53.749	86.172	8.975	7.778	15.070	19.694	1.899	10.999
TPES/population (2016)	toe/capita	1.00	0.90	0.95	1.29	2.39	0.55	-	0.96
Total Final Consumption (2016)	Mtoe	37.787	58.049	6.080	4.986	9.964	15.508	1.674	7.997
Total electricity consumption (2016)	TWh	60	171	18	17	29	32	5.289	17
Energy Intensity TPES/ GDP PPP (2016)	toe/ thousand 2005 USD	0.100	0.090	0.120	0.100	0.340	0.080	6.0 MJ/ USD	0.090

Source: Palestinian Central Bureau of Statistics, IEA.

The Country Summaries on chapter 6 of the report indicate the total primary energy consumption per source and the total final energy consumption per sector.

2.1. National Energy Strategies

Energy efficiency and renewable energy strategies and policies are key to the sustainable development of every country. The existence of policy frameworks is essential to promote the development of the energy sector in these countries, since they concern energy planning, the development of a regulatory framework and the creation of financial incentives. Most meetMED target countries have been working hard on these topics and managed to put in place national energy strategies, national energy efficiency and renewable energy action plans, as well as investment funds to help promote the dissemination of good practices. Despite the existence of government commitment as well as of regulatory and institutional frameworks, the implementation of these programmes is evolving slowly in these countries.

Energy efficiency measures and renewable energy penetration are easier to promote and implement when a national energy strategy establishes the targets that should be reached. National energy strategies are built to promote sustainability, by guaranteeing resources security, reducing dependence from fossil fuels and increasing energy efficiency. Based on the information from the Country Policy Papers, most of the meetMED target countries have adopted national energy strategies. In fact, only Libya has no national energy strategy in place.

Table 5: SEMCs National Strategies.

	EE National Energy Strategy	RE National Energy Strategy
Algeria	Algerian Program for the Development of New and Renewable Energies and Energy Efficiency-2030	Algerian Program for the Development of New and Renewable Energies and Energy Efficiency-2030
Egypt	Sustainable Development Strategy: Egypt Vision 2030	National RE Strategies 2022 & 2035
Jordan	National Energy Strategy 2020	National Energy Strategy 2020 & Master Strategy for Energy Sector 2015-2025
Lebanon	Policy Paper for the Electricity Sector 2010	Policy Paper for the Electricity Sector 2010 and Updated policy paper for the electricity sector 2019
Libya	Not Existing	National RE strategy (2019-2030)
Morocco	National Energy Strategy 2030	National Energy Strategy 2030
Palestine	National Energy Efficiency Action Plan 2012-2020	Overall Renewable Energy Strategy 2012-2020 National Renewable Energy Action Plan 2018-2030
Tunisia	Energy transition strategy horizon 2030	Tunisian solar plan 2030

Regarding Energy Efficiency, some countries have more ambitious targets than others, according to the different progress made in the energy sector in the different countries. It is also important to note that, in some cases, targets are set for specific sectors, thus having different levels of details. Jordan and Tunisia are the countries with the most ambitious targets. While the Jordanian strategy aims to reduce energy consumption by 20% in 2020 and by 18% in 2030, Tunisia is committed to reduce energy consumption by 17% in 2020 and 30% by 2030. Conversely, Algeria, Morocco and Palestine have the lowest targets: 9% reduction by 2030 for Algeria, 5% by 2020 and 20% by 2030 for Morocco, and 5% by 2020 for Palestine. With respect to Lebanon, its NEEAP seeks to achieve savings for around 5% of the total Lebanese electric power demand by 2020.

Table 6: SEMCs Energy Efficiency National Targets.

	Algeria	Egypt	Jordan	Lebanon	Libya	Morocco	Palestine	Tunisia
2020	5 Mtoe	-	20%	5%	-	5%	5%	17%
2030	9%	18%	18%	-	-	20%	-	30%

As for the RE national targets, some countries have more ambitious goals than others. Egypt and Morocco are the countries with the most ambitious targets. While the Egyptian strategy aims at reaching a 20% RE installed capacity by 2022 and a 42% share of RE in energy production by 2035, Morocco seeks to reach 42% share by 2020 and a 52% share by 2030. Conversely, Jordan, Libya and Palestine have the lowest targets: 5% target by 2020 for Libya and 10% RE share by 2020 for both Jordan and Palestine. Tunisia aims to increase the share of renewable energies in electricity generation from 3% in 2016 to 30% in 2030, corresponding to an increase of installed capacity from 250 MW in 2016 to 3.800 MW in 2030. Algeria has a 27 % target for RE share in electricity generation by 2030. Lebanon has set a target of 12% of renewable energy in electric and thermal supply by 2020 and of 30% of the electricity consumed in 2030.

Table 7: SEMCs Renewable Energy National Targets (electricity generation).

	2020	2022	2025	2030	2035
Algeria	-	-	-	27%	-
Egypt	-	20%	-	30%	42%
Jordan	10%	-	20%	-	-
Lebanon	12% [1)]	-	-	30%	-
Libya	5%	-	-	20%	-
Morocco	42%	-	-	52%	-
Palestine	10%	-	-	12%	-
Tunisia	12%	22%	-	30%	-

1) RE share in electricity and thermal energy

2.2. Energy Efficiency

2.2.1. National Energy Efficiency Action Plans

To decrease energy consumption levels in the target countries, it is important to implement specific plans or programmes, such as the National Energy Efficiency Action Plans (NEEAPs). A NEEAP is a tool that promotes stakeholders' engagement and contributes to the development of a framework for the energy sector. It establishes indicative energy savings targets for each of the different countries, as well as policies and measures that should be implemented to overcome barriers and help reach these goals. Among others, the NEEAPs depend on the strategic development of the countries, meaning that they can differ significantly one from the other. Nevertheless, NEEAPs from different countries can be used as a reference for their region providing an overview of its energy efficiency situation. While some countries, i.e. Libya, have no EE action plans in place, most of the meetMED targeted countries have already implemented them and are currently developing/implementing their second one.

Table 8: SEMCs Energy Efficiency National Action Plans (excluding Libya for lack of plan).

	EE Action Plan	Target Sectors	Status
Algeria	Algerian Program for the Development of New and Renewable Energies and Energy Efficiency 2030	Buildings, Industry, Transport	Approved and adopted by the government in February 2015
Egypt	2nd NEEAP 2018-2021	Macro, Residential, Tertiary	Adopted
Jordan	2nd NEEAP 2017-2020	Macro, Residential, Industrial, Water Pumping, Street Lighting, Commercial and Services	Under implementation
Lebanon	2nd NEEAP 2016-2020	Power, Building, Industry &Agriculture, Public	Under implementation
Morocco	National Energy Efficiency Strategy 2030	Macro, Tertiary, Residential, Industry, Transports, Agriculture	Under implementation
Palestine	2nd NEEAP 2020-2030	Industry, Residential, Commercial and Services, Agriculture, Water Pumping, Distribution network losses	Foreseen
Tunisia	The action plan to accelerate Energy Efficiency Programmes - EE Strategy horizon 2050	Residential, Tertiary, Industry, Transports, Agriculture	Under final stage of approval - Under implementation

2.2.2. Regulatory Framework

Regulatory frameworks are vital for the implementation of energy efficiency measures. They establish guidelines on technical issues for different sectors but can also be used to create funds, essential to the development of EE policies.

Cross Sectoral

The different economic sectors can benefit from specific type of energy efficiency policies. However, there are broader measures that can be implemented to increase energy efficiency in all sectors. For example, some of the targeted countries, like Jordan, Egypt, Morocco and Tunisia, have been developing an Energy Service Companies (ESCOs) market, providing the population with professional solutions for -among other - energy savings, retrofitting, energy conservation. The existence of this type of technical knowledge is very important for a wider and larger implementation of energy efficiency measures. Lebanon and Palestine are also planning on developing an ESCO market in their countries. These ESCOs are still Energy Services Companies and not Energy Services Co-Financing Companies acting under Energy Performance Contracts (EPC). Jordan, for example, is already working on implementing EPC, an agreement between ESCOs and the clients on the share of the energy savings and its inherent risks as a result of the implementation of energy efficiency measures.

The region was previously characterized by the existence of strong energy subsidies that kept energy prices low for consumers, acting as a barrier to the success of energy efficiency projects in all economic sectors. Nonetheless, most Arab countries are adopting strategies and reforms to reduce energy subsidies in order to achieve energy security and reduce budget deficits. Lebanon has eliminated subsidies for petroleum products and natural gas, but it still maintains subsidies for the electricity sector. Jordan discontinued fuel subsidies in 2012, with exception of LPG, and implemented an Automatic Electricity Tariff Adjustment Mechanism in 2017. In Morocco, only LPG subsidies remain. Despite some efforts, the products are still subsidized in Algeria, Egypt and Tunisia. Egypt will totally remove subsidies by 2022. In Libya, instead, the electricity prices are supported twice since, besides the tariff, also the fuel used in the power plants is subsidized.

Buildings

The building sector is one of the largest energy consumers of the Southern Eastern Mediterranean countries (SEMCs). Due to the demographic growth and growing urbanization, this sector is one of the main targets of the implemented energy efficiency measures.

These consumption levels can be reduced by implementing measures, such as the development of building codes, the implementation of insulation standards or the creation of EE labelling systems for buildings. All eight countries have implemented policies to promote energy efficiency in this sector. Algeria, Egypt, Jordan, Morocco, Palestine and Tunisia are the countries with the most advanced regulatory frameworks, since they have been taking action on several aspects of the sector.

Energy efficiency measures are more efficient when implemented at an early stage of a building project. While the energy consumption levels of appliances and other equipment can be addressed at a later stage with specific policies and programmes, the energy load for space heating and cooling, for example, is easier to be tackled in the design and construction phases of the project. Therefore, it is important to implement energy building codes (EBC) that consist in energy efficiency minimum standards for the design, construction and renovation of residential and commercial buildings, while establishing the baseline for the envelope of the buildings, systems and equipment. Except for Libya, every country is developing or has already developed its Energy Efficiency Building Codes (EEBC) for the building envelope. However, only in Algeria, Egypt, Jordan, Morocco and Tunisia, its implementation is mandatory. EEBC for systems, namely HVAC, and for lighting are still at early stages in most countries but are already implemented in Jordan and Tunisia. Egypt, Jordan, Lebanon, Palestine and Tunisia have also implemented green building guidelines.

Every country has been working on thermal insulation, and the majority has developed standards for thermal performance of buildings. Libya still has not developed these types of standards, but its private sector is working on improving construction materials that can provide buildings with good thermal insulation.

Energy performance labelling systems for buildings are also a good way to pro-

mote energy efficiency since they provide useful insights on what can be done to reduce energy consumption. Unfortunately, these types of systems have not been implemented in most of the countries. However, some countries have already adopted initiatives to classify buildings based on its energy efficiency levels. Egypt, for example, has adopted the "Leadership in Energy & Environmental Design" (LEED) methodology and has currently certified 21 buildings. Egypt also developed the Green Star Hotel initiative, a national green certification and capacity-building program that offers an opportunity for hotels operating in Egypt to be internationally recognized for raising their environmental performance and social standards while reducing their operational costs. Lebanon has been working with the TSBC software, a compliance tool that performs an energy efficiency evaluation of the buildings envelop but is already planning the implementation of energy performance certificates by 2020. LEED and BREAM are the main implemented certification schemes in Lebanon, but the number of certified buildings is still very low. Lebanon also implemented, on the one side, GRASS, a Mediterranean Green Building Rating system that, so far, has certified more than 30 buildings and trained more than 50 assessors and, on the other side, the ARZ Building Rating System, a system designed to measure to what extent the existing commercial buildings are consuming the right amount of energy and water, while having a low impact upon the environment. In addition, this rating system stimulates building owners and facility managers to achieve ever-higher certification levels to attract discerning tenants and clients. A big part of the total energy consumption of residential buildings is related to appliances. Therefore, it is important to adopt mandatory Minimum Energy Performance Standards (MEPS) in order to guarantee the use of efficient equipment. The countries have been working on the implementation of these standards, namely for refrigeration and air conditioning. For refrigeration, while Morocco and Lebanon are currently developing performance standards, Algeria, Egypt, Jordan and Tunisia already implemented mandatory standards. For air conditioning, Lebanon is still developing these standards, but Algeria, Egypt, Jordan, Morocco and Tunisia have already implemented mandatory standards. Labelling standards for appliances are very important and should be implemented in order to promote the use of energy efficient equipment. While Lebanon has developed draft labelling standards for refrigerators and air conditioning, Algeria, Egypt, Jordan, Morocco and Tunisia already have mandatory labelling standards in place for these systems. Libya and Palestine are still lagging behind when it comes to MEPS and labelling standards.

It is also extremely important to promote energy efficiency in lighting since it is one of the areas with the highest consumption levels. Some of the targeted countries, like Algeria, Egypt, Jordan, Libya, Morocco, Palestine and Tunisia have already adopted policies to promote energy savings in lighting, such as measures to phase out inefficient technologies and to promote the use of low energy consumption lamps. Lebanon is planning to ban importation of incandescent lamps and to develop and set-up a multi-level plan for the management of public lighting. Algeria, Egypt, Jordan, Libya, Lebanon and Tunisia also have in place MEPS for lighting equipment. Regarding labelling standards for lighting, Algeria, Egypt, Jordan and Tunisia have mandatory standards in place. Lebanon has a mandatory standard for CFL only.

Table 9: Regulatory Framework - Buildings

Sector	Measures	Algeria	Egypt	Jordan	Lebanon	Libya	Morocco	Palestine	Tunisia
RESIDENTIAL	Global energy performance of building	Existing	Existing	Existing	Existing	Not Existing	Existing	Existing	Existing
	Climate zoning criteria	Existing	Existing	Existing	Existing	Existing	Existing	Existing	Existing
	Energy performance requirements for materials	Existing	Existing	Existing	Planned	Not Existing	Existing	Existing	Existing
	Utilization of high-performance window and glazing (existing)	Existing	Not Existing	Existing	Not Existing	Not Existing	Existing	Existing	Existing
	Thermal insulation to exterior walls and roofs	Existing	Existing	Existing	Planned	Existing	Existing	Existing	Existing
	Passive heating and cooling requirements in building design	Existing	Existing	Existing	Not Existing	Not Existing	Existing	Not Existing	Existing
	Promotion of RES	Existing	Existing	Existing	Existing	Planned	Existing	Existing	Existing
	Energy audits	Existing	Not Existing	Not Existing	Planned	Not Existing	Planned	Existing	Existing
	Local production of EE materials/equipment's	Existing	Existing	Existing	Not Existing	Not Existing	Not Existing	Not Existing	Existing
	Energy performance labelling for building	Planned	Existing	Not Existing	Planned	Planned	Existing	Not Existing	Planned

Existing
Planned
Not Existing

Transports

The transport sector is the most energy-consuming sector in the eight countries under examination, since in some countries it amounts to around 70% of the total final energy consumption. This comes as a result of a growing urbanization and an increase in living conditions. Therefore, improving EE in the transport sector is essential not only because it is the most energy-consuming one but also because it is the main responsible for air pollution. The consumption levels can be reduced – inter alia- through the development of

urban transports initiatives, the promotion of electric vehicles and the creation of vehicles labelling systems. All eight countries have implemented policies to promote energy efficiency in the sector. Jordan and Tunisia are the countries with the broader regulatory framework for the transport sector.

The urban transport sector has tremendous potential for improvement. Urban planning and urban initiatives can result in a very significant reduction in energy consumption levels, while contributing, at the same time, to the economic development, to improving living conditions and decreasing GHG emissions. Except for Palestine, all countries have been working on promoting the use of urban transportation. Libya, for example, banned vehicles with more than five years and it is working on policies to encourage investments in public transports. Morocco's NEEAP also includes measures that promote the organization and use of public transport as well as the application of EE regulations in vehicles. Some of these measures include scrappage schemes for old trucks and taxis, the introduction of compulsory technical inspections and tax incentives to promote low fuel consumption vehicles, the creation of emission limit standards and the dissemination of energy audits for commercial vehicles. Other countries are promoting public transport use through the creation of new alternatives. While Algeria is developing its metro line and implementing tramways in some cities, Egypt is already constructing the third metro line in Cairo and Jordan developed an initiative that increased the number of buses in Amman. Morocco is already working on the labelling of vehicles, which is a good tool to help drivers choose cars with low fuel consumption. Despite its benefits, this type of measure is still not implemented in any of the target countries. Tunisia has also started planning its implementation. On alternative vehicles, Algeria made the use of LPG fuel mandatory for public administration fleets. Electric vehicles are also a good alternative to conventional cars. Besides its economic benefits, they also contribute to a significant reduction of GHG emissions. Jordan and Palestine took the first steps to promote electric vehicles in the region. Jordan, for example, has already implemented benefits for the acquisition of alternative vehicles: a 100% tax exemption for electric vehicles and a 30% exemption for hybrid vehicles.

Table 10: Regulatory Framework - Transports

Sector	Measures	Algeria	Egypt	Jordan	Lebanon	Libya	Morocco	Palestine	Tunisia
TRANSPORT	Urban transport initiatives	Existing	Existing	Existing	Existing	Existing	Existing	Not Existing	Existing
	Intercity transport initiatives	Existing	Existing	Planned	Not Existing	Existing	Planned	Planned	Not Existing
	Promotion of intermodality	Existing	Not Existing	Not Existing	Not Existing	Not Existing	Existing	Not Existing	Not Existing
	Energy labelling of vehicles (cars, buses...)	Not Existing	Not Existing	Not Existing	Not Existing	Not Existing	Existing	Not Existing	Planned
	Introduction of electric vehicles	Not Existing	Existing	Existing	Existing	Not Existing	Planned	Existing	Planned
	Introduction of hybrid vehicles	Not Existing	Planned	Existing	Existing	Not Existing	Not Existing	Existing	Not Existing
	Introduction of gas methane vehicles	Existing	Planned	Not Existing	Not Existing	Not Existing	Not Existing	Not Existing	Existing
	Urban transport planning	Existing	Existing	Existing	Not Existing	Not Existing	Existing	Planned	Existing

Existing
Planned
Not Existing

Industry

Regarding the industry sector, the final energy consumption levels vary from country to country, depending on the different results achieved in the sector. The petrochemical industry is the largest industry in the region, despite the presence of energy importing countries that invest more in other industries, i.e. in Lebanon the major industries are banking, food processing and cement. The industry sector is very competitive in the region and, therefore, most of the times, investments in energy efficiency do not represent a priority compared to, for example, increases in productive capacity. In addition, there are not many energy efficiency services providers with the necessary competences to identify savings opportunities. There is clearly a need to develop policies to encourage energy efficiency in the sector because, besides energy savings, policies can contribute to reducing pollution levels and even improve productivity and cost-effectiveness. Mandatory energy audits, energy consumption reporting, and the assignment of energy managers are examples of measures that can help reduce energy consumption in the industrial sector.

Apart from Libya, every country implemented or is implementing measures to promote the use of efficient equipment and to increase energy efficiency in production processes. Tunisia is the country with the most comprehensive set of policies for the industrial sector. Regarding the assignment of energy managers, in Egypt, facilities that have a contracted demand over 500 kW must appoint officials to improve the power usage efficiency and keep a power

register. In Tunisia existing industries that consume over 800 toe/year are also required to have dedicated energy managers and annual energy reporting. Algeria, Egypt, Jordan, Morocco and Tunisia have already in place mandatory energy audits for high-consumption industries. While Algeria targets industries that consume over 2000 toe/year and Tunisia industries that consume over 800 toe/year, Lebanon plans to enforce energy audits for industries with an over 400 toe/year energy consumption.

The energy consumption levels in the industry sector can also be reduced, for example, through optimization processes and through the implementation of technologies, such as cogeneration and trigeneration technologies. Morocco has developed an agreement that focuses on the assessment of the current energy consumption in the industrial sector and on the optimization of the energy consumption of audited companies. Jordan and Palestine also implemented bylaws on regulating procedures and means of conserving energy and improving their efficiency, as well as on provisions and conditions of exempting systems of renewable energy sources, their devices and equipment. Tunisia has implemented several measures to improve efficiency in the sector, such as industrial studies on energy efficiency and innovative technologies. The Lebanese NEEAP plans to promote energy efficiency in 800 industries by implementing specific measures, such as the use of highly efficient motors, heat recovery systems, cogeneration and the improvement of boilers and cooling systems. Algeria is planning to implement labelling systems for industrial equipment, particularly on electric motors.

Table 11: Regulatory Framework - Industry

Sector	Measures	Algeria	Egypt	Jordan	Lebanon	Libya	Morocco	Palestine	Tunisia
INDUSTRY	Improvement equipment and process efficiency in industry	Not Existing	Existing	Existing	Planned	Not Existing	Existing	Existing	Existing
	Energy Audits	Existing	Existing	Existing	Planned	Not Existing	Existing	Existing	Existing

Existing
Planned
Not Existing

Commercial and Public Services

The commercial sector is very important in the region, being crucial to the economic development of the countries. Despite its importance, its players are not financially nor technically prepared to implement energy efficiency measures. The consumption levels can be decreased through the implementation of regulations that promote the use of efficient equipment, the improvement of processes and the execution of mandatory energy audits. Additionally, the dissemination of information is vital to raise awareness on the subject.

Some of the countries have in place measures to promote energy efficiency in the sector. Jordan, besides having a private sector that offers energy efficiency services, has a program that supports energy audit studies and their implementation in public buildings. Other countries, like Algeria, Egypt, Palestine and Tunisia, also execute energy audits in the public buildings. Furthermore, Algeria has implemented measures to promote EE in the public services, such as the diffusion of high-performance public lighting in local municipalities, the use of renewable energies for public lighting, the electrification of isolated areas, especially for the southern and steppe regions, and the obligation of utilising LPG fuel for fleets of vehicles belonging to the public administrations. Lebanon is planning to apply measures to improve equipment and the efficiency of the processes in the services sector, such as the use of energy efficient equipment based on minimum energy performance standards, the use of green lighting, dimmers and motion sensors on lights and the promotion of behavioural changes and awareness. Lebanon´s NEEAP also foresees energy audits for 200 public buildings, like hospitals, schools and administrative buildings.

Table 12: Regulatory Framework - Commercial and Public Services

Sector	Measures	Algeria	Egypt	Jordan	Lebanon	Libya	Morocco	Palestine	Tunisia
COMMERCIAL AND PUBLIC SERVICES	Improvement equipment and process efficiency in public services								
	Improvement equipment and process efficiency in services								
	Energy Audits								

Existing
Planned
Not Existing

Agriculture and Forestry

Some countries have also in place measures to improve energy efficiency in the agriculture sector. Algeria, Egypt, Morocco and Palestine have been working on solar pumping projects in order to reduce energy consumption from diesel generators. In order to help reduce energy costs and carbon footprint in the agricultural sector, Morocco also developed programmes for the optimization of energy performances of farms, aiming at helping farmers to reduce their energy bills through an analysis of their energy consumption levels and the use of renewable energy. This program also aims at assessing the potential for energy savings and renewable energy production, at increasing its competitiveness through the reduction of the energy bill, and at protecting the environment through a reduction on GHG emissions. Lebanon is also planning to act on the agriculture sector by installing variable speed drives on 100 irrigation pumps. Jordan has also initiated an EU-funded program to supply 300 water pumps in small farms with electricity using solar energy and replacing old and inefficient pumps with efficient ones.

Table 13: Regulatory Framework - Agriculture and Forestry

Sector	Measures	Algeria	Egypt	Jordan	Lebanon	Libya	Morocco	Palestine	Tunisia
AGRICULTURE AND FORESTRY	Improvement equipment and process efficiency in the agriculture								

Existing
Planned
Not Existing

2.2.2.1. Supporting Schemes

The implementation of energy efficiency measures deeply depends on the existence of supporting schemes. The absence of these incentives is one of the biggest obstacles to a successful implementation of energy efficiency measures and, consequently, in the reduction of the energy consumption. Besides this lack of incentives, other factors like the high costs associated to EE measures and the low awareness levels on energy savings benefits, also hinder investments from both the private and public sector. EE funds and fiscal incentives are the main incentives that can boost investments in energy efficiency measures. Several SEMCs have already implemented different types of schemes to promote EE investments.

Table 14: Energy Efficiency - Financial Incentives

Incentives	Algeria	Egypt	Jordan	Lebanon	Libya	Morocco	Palestine	Tunisia
Loans, Grants & Subsidies								
Fiscal								

Existing

Not Existing

Energy efficiency funds facilitate investment in EE initiatives promoting, among others, energy savings, renewable energy technologies, awareness raising campaigns and encouraging market competitiveness. These funds can provide loans, grants or subsidies to the petitioner. Algeria, Egypt, Jordan, Lebanon, Morocco, Palestine and Tunisia have mechanisms in place to award entities with loans, grants and subsidies to invest in energy efficiency projects.

Table 15 : SEMCs – EE Loans, Grants & Subsidies

Incentives	Country	Designation	Status/Comments
LOANS, GRANTS &SUBSIDIES	**Algeria**	National Fund for energy management, renewable energies and cogeneration (FNMEERC)	• The granting of unpaid loans to energy-efficient investments not included in the energy management program • The granting of guarantees for borrowings from banks or financial institutions • Allocations for the pre-financing of the acquisition of appliances and equipment related to energy efficiency
	Egypt	Green Environment Financing Facility (GEFF)	With a EUR 140 million investment, the fund includes: • Grants loans of up to USD5 million to private entrepreneurs and enterprises • Low-interest loans with five-year flexible payment plans • Investment incentive grants of 10%-15% of the value of the loan
		EgyptSEFF	EgyptSEFF had a USD30 million loan from the European Bank for Reconstruction and Development (EBRD) that was managed by the National Bank of Egypt. Under this program, EgyptSEFF provided credit lines for EE and RE projects in Egypt.
		Revolving fund	Promotes the dissemination and application of cleaner production and energy efficiency to increase the productivity of Egyptian industry. A cooperation agreement was signed in February 2005 between the Egyptian Environmental Affairs Agency, the Federation of Egyptian Industries and the National Bank of Egypt to establish a revolving fund for the Office of Environmental commitment to invest in new equipment.
		Egypt-PV	Egypt-PV is a project financed by the UNDP for the small and medium PV systems and it provides technical support for the projects, in addition to financial support up to 25% of the system cost with a maximum of 250 USD/ KWp and maximum amount of USD 250,000 per project.
	Jordan	Jordan Renewable Energy and Energy Efficiency Fund (JREEEF)	The Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) was created to facilitate investments in various sources of renewable energy in various sectors, such as residential, educational (schools), health (hospitals) as well as private, public, industrial and service sectors: • RE/EE subsidy • Interest Subsidy • Loan Guarantee
	Lebanon	National Energy Efficiency and Renewable Energy Action (NEEREA)	NEEREA is an ongoing financing mechanism that was initiated by the Banque du Liban (BDL) in collaboration with the Ministry of Energy and Water (MEW) and LCEC. It was created to finance private projects where RE is key. These projects may vary from existing buildings, new buildings, industrial projects, or agricultural ones. NEEREA offers soft loans with a grace period and very low interest rate. It allows private sector entities (individuals, SMEs, or corporate bodies) to apply for subsidized loans for any type of EE and/or RE projects. Loans are available to all subsidized (industrial, agricultural, tourism, information technology, and research) and non-subsidized sectors (residential, commercial, non-profit organizations).
		Lebanon Energy Efficiency and Renewable Energy Finance Facility (LEEREFF)	Financing for sustainable energy projects in the business sector (services and industry). Individual households and public sector are not eligible. EIB will contribute with EUR 50 million and the AFD with EUR 30 million.
		European Bank for Reconstruction and Development (EBRD)	Lebanon became an EBRD member in 2017 and, so far, has received approximately EUR 4 million investment for two projects. EBRD products include loans, equities and guarantees. The bank will extend its Green Economy Financing Facility (GEFF) to Lebanon for financing EE, RE and RES efficiency sub-projects. At the regional level, under the European Fund for Sustainable Development (EFSD Guarantee) and within the EIP, the EBRD will support three Guarantee Tools: • Energy Efficiency and Sustainable Cities in EU Neighbourhood; • Boosting investments in renewable energy; • Sustainable Logistics and Interconnectivity Guarantee (SLIG).

Incentives	Country	Designation	Status/Comments
LOANS, GRANTS &SUBSIDIES	Morocco	MORSEFF	MORSEFF is the sustainable energy financing line for Moroccan private companies. It has been developed by EBRD, in cooperation with the EIB and the French Development Agency.
	Palestine	Sustainable use of Natural Resources and Energy Finance (SUNREF PALESTINE)	USD33 million to cover green loans for EE/RE and environment projects in the private sector.
		Revolving Fund	Free energy audits for public institutions/facilities and investment implementation cover.
	Tunisia	Energy Transition Fund (FTE)	Financing renewable energy, energy efficiency and fuel substitution initiatives.
		SUNREF Tunisia	This green financing scheme has become an integral part of the environmental context of energy transition, encouraging local financial institutions to provide financing for projects to protect the environment and improve energy efficiency in Tunisia's business sector.

Fiscal incentives are a good alternative to promote energy efficiency in the countries under consideration. These types of incentives can include, for example, tax credits, tax reductions and tax exemptions, that reduce the overall costs of the EE projects and/or equipment. Egypt, Jordan, Libya, Morocco and Tunisia have implemented tax benefits for EE investments.

Table 16: SEMCs - EE Fiscal Incentives

Incentives	Country	Designation	Status/Comments
FISCAL	Algeria	Tax/Custom duty Exemption Tax reduction	• Exemption of the car sticker for LPG vehicles, which is otherwise mandatory annually for all types of vehicles • Reduced tariff rates for the import of LPG kits and solar water heater (panel) as well as photovoltaic panels
	Egypt	Tax/Custom duty Exemption	Exemption from customs duties for EE equipment.
	Jordan	Tax/Custom duty Exemption	Exemption from sales tax and customs duties for EE Equipment
	Lebanon	Tax/Custom duty Exemption	Tax exemptions and tax reductions for electric and hybrid vehicles are tackled by law 79/2018.
	Libya	Tax/Custom duty Exemption	5% Customs duty for compact fluorescent lamps
	Morocco	Tax Suppression	Suppression of VAT on solar pumping and 10% reduction of tax duties on SWH
	Palestine	Tax/Custom duty Exemption	Exemption from customs duties for EE equipment
	Tunisia	Tax/Custom duty Exemption	Exemption from VAT and reduction of customs duty for EE equipment

From the tables above, it is possible to see that the countries already have in place a wide set of financial incentives that contribute to the development of the energy efficiency sector in the region. Loans, grants and subsidies are the most common incentives and are available in all countries, except Libya.

2.2.3. Challenges and Opportunities

The SEMCs face some challenges with respect to the dissemination and implementation of EE measures. These challenges can relate to the low enforcement, implementation and monitoring of the programmes but can also be related to investors and consumers behaviours.

Based on the information collected from the Country Policy Papers, the main barriers for these countries include both governmental and technical barriers. Among the governmental ones, besides a lack of institutional coordination among different agencies or ministries, which hinders the decision-making processes, barriers include the poor enforcement of regulatory policies such as EBC, and insufficient financing solutions. Among the technical barriers, the low capacity for manufacturing or servicing EE products, the lack of accredited equipment testing laboratories and the low capacity from the private sector to develop EE projects, also contribute to the slow development of EE in the energy sector. The lack of awareness from the population and investors on these issues is also something that must be dealt with in order to increase EE in the countries. Furthermore, the shortage of energy statistics is also a big issue in the region since the existence of up-to-date information is essential to analyse the implementation of the action plans, to identify successful measures and to promote energy efficiency. Table 17 presents the main barriers identified by the meetMED REN experts:

Table 17: SEMCs - Barriers for EE development

Algeria	• Relatively low energy prices that do not encourage energy efficiency • The lack of energy-efficient technologies on the local market • Lack of a local industry of high-performance equipment and materials • Absence of energy service companies • The control of energy efficiency in the various sectors of activity (building, appliances, vehicles, energy audit, etc.) is not practiced due to the absence of organizations and laboratories mandated for this mission
Egypt	• Lack of institutional coordination among different agencies or ministries • Limited state and private investment in EE construction initiatives • Low capacity for manufacturing or servicing EE products
Jordan	• Lack of awareness • Lack of obligatory regulations • Donors overlapping • Lack of monitoring and evaluation for previous initiatives/projects
Lebanon	• Lack of institutional coordination among different agencies or ministries • Lebanon lacks a public institution with strong technical capacity, mandate and dedicated resources • The Lebanese electricity system remains in a "legal vacuum" with heavily subsidized electricity prices and relatively weak regulatory framework
Libya	• No effective regulatory and institutional framework • With the lowest diesel and gasoline prices in the region and one of the lowest electricity prices, Libya needs to implement significant subsidy reform in its energy sector • Furthermore, Libya has no long-term EE strategy and its NEEAP (2014-2016) is no longer taken into consideration. Developing and implementing and effective NEEAP would be a vital move to create a sound and comprehensive EE policy and program framework to achieve EE goals.
Morocco	• Lack of an integrated approach for alternative energy deployment • Lack of information and data is still hindering the access of different social segments and utilities to this green knowledge, which is urgently required for answering different issues of EE and RE in Morocco • Innovative financial schemes must be implemented to support the deployment of EE and RE technologies • Lack of R&D
Palestine	• Lack of Awareness • Lack of Financing • Lack of obligatory regulations • Donors Overlapping • Lack of Monitoring and Evaluation for previous initiatives/projects • Innovative financial schemes must be implemented to support the deployment of EE and RE technologies
Tunisia	• Regulatory framework related to electricity sector • Financing and credit guarantees

Table 18 shows how the different countries classified themselves regarding some of the main barriers identified before:

Table 18: SEMCs Classification

	Algeria	Egypt	Jordan	Lebanon	Libya	Morocco	Palestine	Tunisia
Enforcement of regulation	Low	High	Low	Low	Very low	High	Low	Medium
Public Awareness	Medium	Medium	Medium	High	Very low	High	High	High
Maturity of the market	Medium	Medium	Medium	High	Very low	Medium	Medium	Medium
Industrial development	Medium	Medium	Low	Low	Low	Medium	Low	Medium
Capacity of public stakeholders	Medium	Medium	Medium	Low	Medium	High	Medium	Medium
Capacity of private stakeholders	Low	Medium	Medium	Medium	Medium	High	Medium	Medium
Political weight for EE	Medium	Medium	Low	Low	Very high	High	Low	High
Market size for EE	Low	Medium	High	High	Very high	High	High	High

Very low
Low
Medium
High
Very high

2.2.4. Implemented Projects

The boxes below contain examples of successful EE projects implemented in both the SEMCs and the meetMED European partner countries. These projects are examples of good practices that can be implemented in the countries in order to meet the challenges identified in the previous section.

A successful project for the dissemination of information is the “Energy Resource Centres” implemented in France. This project, described in Box 1, is a good practice to raise awareness and to promote the dissemination of EE benefits, one of the main barriers for EE development in the region.

Box 1: Energy Resource Centres, France

Energy Resource Centres

Country: France

Year of Implementation: 2001

In order to raise awareness and inform the public on EE measures and energy support schemes for RE, the “Energy Resource Centres” (Espaces Info Énergie) recently converted into a network of Energy Information Points (PRIS) consisting of 250 EIE of 450 advisors at the end of 2017. Their role has been strengthened by the deployment of the law and it is now defined as a public service for energy performance of housing.

Regional cooperation is also crucial to promote EE development in the region since knowledge and experiences exchange can facilitate the implementation of EE projects. Some initiatives that promote the cooperation among countries already exist. A good example is the MINARET project (Box 2) involving Jordan, Lebanon and Tunisia, that intends to address the unique sustainability challenges and opportunities of the MENA region by increasing local and regional sustainability capacities using the synergies between renewable energy technology and efficiency, water management, and food security.

Box 2: MINARET, Jordan, Lebanon and Tunisia

MINARET

Country: Jordan, Lebanon and Tunisia

Year of Implementation: 2016

The overall objective of the project is to strengthen regional cooperation within the MENA region through implementing the NEXUS approach integrated with renewable energy technologies at the municipality level to mitigate climate change impacts and combat poverty.

Regarding EE in the building sector, as mentioned before, energy performance labelling systems are a good way to promote EE since they provide useful insights on what can be done to reduce energy consumption. Unfortunately, these types of systems have not been implemented in most of the countries. Portugal has a national energy labelling system (Box 3) for the buildings sector that allows a comparison on the energy performance levels between buildings and that is a good example of what can be implemented in the region.

Box 3: Energy Certification of Buildings, Portugal

Energy Certification of Buildings

Country: Portugal

Year of Implementation: 2006

Standardized way to evaluate and compare energy performance of buildings. The system already allowed the emission of 1.320.000 certificates in 10 years and identified over 2.000.000 improvement measures.

Energy labelling for appliances is also important since it provides citizens with tools to choose more efficient equipment, contributing to a reduction in

energy consumption in households. Tunisia, for example, has already implemented an energy labelling program for domestic appliances (Box 4).

Box 4: Energy labeling program for domestic appliances, TUNISIA

Energy labelling program for domestic appliances

Country: Tunisia

Year of Implementation: 2004

The program resulted in real savings of the electricity demand by promoting energy efficient devices, i.e. obligation of displaying the energetic performances and fixing the minimum thresholds of performances "MEPS" by decree law. This program allowed the establishment of an operational laboratory for testing the energy performance of domestic refrigeration equipment, the Technical Centre of Mechanical and Electrical Industries "CETIME", an energy classification label (numerical classification - in Arabic), a law prohibiting the lowest performing energy classes. In addition, this program has been duplicated for all household appliances.

Financial incentives are also very important to promote EE development in the region as some of the countries identified the lack of incentives as a challenge for the dissemination of EE practices. There are several mechanisms that are a good example that could be implemented in the countries. During the "EE and RE Strategies and Policies" workshop on 3 October 2018 in Jordan, Italy presented the ECOBONUS system (Box 5), which is a tax deduction mechanism focusing on the renovation of existing buildings.

Box 5: ECOBONUS, Italy

ECOBONUS

Country: Italy

Year of Implementation: 2007

This mechanism addressed the energy renovation of existing residential buildings.

In 2018, the Budget Law has further developed the incentives system by adding new deduction rates as appropriate, new interventions and new technical and performance conditions, as well as significant changes to credit transfer, which was extended to all taxpayers and for any project.

Since 2007, there have been over 3.3 million of incentivized actions, with total savings equal to 1.31 Mtoe/year.

2.3. Renewable Energy

2.3.1. National Renewable Energy Action Plans

To increase renewable energy penetration in the targeted countries, it is important to implement specific plans or programmes, such as the National Renewable Energy Action Plans (NREAPs). A NREAP is a detailed report that outlines commitments and initiatives to develop renewable energy in the countries and, thus, promote stakeholders' engagement and contribute to developing the framework of the energy sector. It establishes overall targets for RE penetration, as well as specific targets per technology. It also defines policies and measures that should be implemented to overcome barriers and help reach these goals. The NREAPs also depend on the strategic development of the countries and therefore differ significantly one from the other. However, they provide an overview on the RE scenarios of the region. Some countries have no specific action plans to reach the targets set in their national strategies. In some cases, like Morocco, the energy strategy is itself an action plan.

Table 19: SEMCs Renewable Energy National Action Plans

	RE Action Plan	Target Sectors	Status
Algeria	Algerian Program for the Development of New and Renewable Energies and Energy Efficiency 2030	Biomass, geothermal, solar and wind	Under implementation
Egypt	National RE Strategy 2022 & 2035	Solar, hydro, wind	Under implementation
Jordan	"Master Strategy for Energy Sector 2015-2025" NREAP	–	Under finalisation
Lebanon	National Renewable Energy Action Plan 2016-2020	Biomass, geothermal, hydro, solar and wind	Under implementation
Libya	National Plan for developing RE in Libya (2019-2030)	Solar and wind	–
Morocco	National Energy Strategy 2030	Biomass, solar and wind	Under implementation
Palestine	National Renewable Energy Action Plan 2018 - 2030	Biomass, solar and wind	Under implementation
Tunisia	Tunisian solar plan horizon 2030	Solar and wind	On going

2.3.2. Regulatory Framework

Despite the evolution in RE technologies, namely their cost effectiveness, their penetration in the SEMCs is still low compared to other regions in the world. This comes as a result of the low implementation rates of both strategies and action plans, which means that it is crucial to put in place measures, policies and incentives that promote investments and the deployment of RE projects.

Based on the Country Policy Papers, every country has already implemented regulatory frameworks for RE. Solar technologies are the most developed in the region, for both utility scale PV and small-scale PV. Wind technology is the second most common in the region, mostly for large plants. Egypt, Morocco and Tunisia strongly contribute to the demand of such technologies, due to its huge potential in both solar and wind resources and in its RE incentive schemes. RE penetration is deeply affected by a lack of policies and strong regulatory frameworks, by environmental and social risks, by a shortage of supporting schemes and due to political reasons, as in Palestine.

2.3.2.1. Supporting Schemes

The development of a RE market in the SEMCs deeply depends on the existence of supporting schemes. The lack of these schemes, associated with low awareness of the benefits of RE use, are some of the obstacles for the dissemination of these technologies in the region. Therefore, the existence of funds, fiscal incentives and tender procedures are crucial to boost the development of RE projects. In Table 15, it is possible to find the types of incentives existing in the countries.

Table 20: Renewable Energy - Financial Incentives

Incentives	Algeria	Egypt	Jordan	Lebanon	Libya	Morocco	Palestine	Tunisia
Loans, Grants & Subsidies								
Fiscal								
Net-metering								
Bidding processes								

Existing

Not Existing

Renewable energy funds facilitate investments in RE projects promoting clean energy production and encouraging market competitiveness. These funds can provide loans, grants or subsidies to the petitioner.

Algeria, Egypt, Jordan, Lebanon, Morocco, Palestine and Tunisia put in place mechanisms to award entities with loans, grants or subsidies to invest in RE projects.

Table 21: SEMCs – RE Loans, Grants and Subsidies

Incentives	Country	Designation	Status/Comments
LOANS, GRANTS & SUBSIDIES	**Algeria**	National Fund for energy management, renewable energies and cogeneration (FNMEERC)	• Financing actions and projects including the promotion of renewable energies and cogeneration • Pre-financing of actions under the promotion of renewable energies and cogeneration
	Egypt	Egypt Sustainable Energy Financing Facility (EgyptSEFF)	The credit line offers an attractive financing package, consisting of commercial loans with a repayment period of up to five years, free technical assistance and investment incentive grants (depending on the loan and project conditions). The credit line has been developed by the European Bank for Reconstruction and Development (EBRD) and is available to clients in Egypt through the National Bank of Egypt (NBE).
	Jordan	Jordan Renewable Energy and Energy Efficiency Fund (JREEEF)	The Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) was created to facilitate investments in various RES in different sectors, such as residential, educational (schools), health (hospitals) as well as private, public, industrial and services sectors: • RE/EE subsidy • Interest Subsidy • Loan Guarantee
	Lebanon	National Energy Efficiency and Renewable Energy Action (NEEREA)	NEEREA is an ongoing financing mechanism that was initiated by BDL in collaboration with MEW and LCEC. NEEREA was created to finance private projects where RE is the key. These projects may vary from existing buildings, new buildings, industrial projects, or agricultural ones. It offers soft loans with a grace period and very low interest rate. NEEREA allows private sector entities (individuals, SMEs, or corporate bodies) to apply for subsidized loans for any type of EE and/or RE projects. Loans are available to all subsidized (industrial, agricultural, tourism, information technology, and research) and non-subsidized sectors (residential, commercial, non-profit organizations).
	Morocco	MORSEFF	Sustainable energy financing line for Moroccan private companies, which has been developed by the European Bank for Reconstruction and Development (EBRD), in cooperation with the European Investment Bank (EIB).
		Société d'Investissements Énergétiques (SIE)	SIE represents the financial arm of the State participating in the execution of the energy mix by 2020. It operates in both investments and the development of RE and EE projects.

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Incentives	Country	Designation	Status/Comments
LOANS, GRANTS & SUBSIDIES	Palestine	Sustainable use of Natural Resources and Energy Finance (SUNREF PALESTINE)	USD 33 million to cover green loans for EE/RE and environment projects in the private sector
		Incentive contract package for renewable energy technologies	It is a crucial tool in the framework of the Palestinian Investment Encouragement law over regional legislations, which gives a competitive advantage to investors in order to invest in Palestine. Indeed, this contract can be granted to support strategic projects, geographic location or named sector to generate jobs, technology transfer or implement international standards to protect the environment or generate energy from alternative resources.
	Tunisia	Energy Transition Fund (FTE)	Financing RE, EE and fuel substitution initiatives
		SUNREF Tunisia	This green financing scheme has become an integral part of the environmental context for the energy transition, encouraging local financial institutions to provide funding for projects aiming at protecting the environment and improve EE in the Tunisian business sector.
		Tunisian investment fund (FTI)	• Disbursing investment grants • Subscribing to mutual investments and developing funds and by creating start-up and development funds in each region and priority sectors.
		ANME/KfW program	PV connected to the grid program designed for public establishments (about 200 establishments)

Fiscal incentives are a good alternative to promote RE in the countries. These types of incentives can include, for example, tax credits, tax reductions and tax exemptions, and are best used as a complement to support the development of RE projects. Egypt, Jordan and Palestine have implemented tax benefits for RE investments.

Table 22: SEMCs – RE Fiscal Incentives

Incentives	Country	Designation	Status/Comments
FISCAL	Egypt	Tax/ Custom duty Reduction on all RE/EE imports	Reduction from customs duty to be 2% instead of 5%, and VAT to be 5% instead of 14%. Investors must acquire a certificate from NREA verifying that imported equipment is to be used for RE projects.
	Jordan	Tax/ Custom duty Exemption on all RE/EE imports	RE & EE equipment is exempted from custom duties and sales tax (incl. products needed for manufacture, spare parts, and measurements).
	Lebanon	Tax exemption	PV panels are exempted from custom duties
	Palestine	Tax/ Custom duty Exemption on all RE imports	RE equipment is exempted from custom duties and sales income tax (for PV projects, 0% tax for the first 7 years of the project, 5% for the following 5 years and 10% for the following 3 years for large scale PV projects); income tax exemption extended for 1, 2 and 3 years for any industry installing respectively 20 kW, 30kW or above 40 kW for any registered project under the Palestinian Investment Promotion Agency.
	Tunisia	Tax/ Custom duty Exemption on all RE/EE imports	Tax privilege for RE equipment that has no something similar manufactured locally

Net metering financing schemes are also used to encourage the installation of small-scale RE technologies for self-consumption. This mechanism allows prosumers to feed the excess of electricity generated into the grid and contribute to providing long-term guarantee of low electricity bills, which are particularly attractive in countries with high electricity tariffs. Net metering is more effective in markets with unsubsidized electricity prices due to the wide gap between investment costs and the potential of the electricity savings. While Jordan, Lebanon, Palestine, Tunisia and Morocco have already implemented this mechanism, Egypt is still implementing it. Conversely, Jordan and Tunisia have implemented simpler schemes that are more appealing for investments in smaller systems. Egypt then, has designed a complicated scheme, which is more suitable for the electricity consumers in the highest tariff slot under the low-voltage grid.

Table 23: SEMcs – RE Net-metering

Incentives	Country	Designation	Status/Comments
NET-METERING	**Egypt**	Net- Metering	Egypt adopted a net metering policy at the beginning of 2013 and is now in the process of implementing it. Although this policy stopped operating due to introduction of the FIT program, it is still in force and open for applications. The policy applies to solar PV projects connected to the low voltage grid. The scheme has a very complicated design where the prosumers can only offset electricity consumed in the highest tariff bracket for each month. Since no installation limit has been specified, customers can connect to a system that produces more electricity than they consume.
	Jordan	Renewable Energy and Energy Efficiency Law No. 13 (REEL)	The surplus electricity fed into the grid is credited for later consumption. This credited excess electricity can be used to offset electricity used at other times, when there is little or no PV electricity production. The law also allows for the electricity to be generated on a different location than the one where the consumer is located, which is referred to as "energy wheeling". In case of any excess electricity at the end of the month, this surplus is transferred to the next month. At the end of the year, potential surplus can either be sold at a price per kWh or be transferred to the next year.
	Lebanon	Net-metering	The consumers pay the difference between electricity produced and consumed. If the generation is higher than the consumption, then the final bill is zero. However, the implementation of this mechanism is still very low.
	Morocco	RE auto-producer	Morocco is the only country with a functioning, large-scale, grid connected RE auto-producer. Auto-producers were established as a result of a specific investment program designed by the utility operator ONE in 2006. It guaranteed the purchase of excess electricity at a preferential rate until 2012, when the program ended and auto-producers became no longer eligible to benefit from these incentives.
	Palestine	Net- Metering	Mechanism implemented on the industrial and commercial sector to cover 100% of their electricity consumption up to 1 MW.
	Tunisia	Net- Metering	Net metering conditions depend on the grid level the prosumer is connected to. For actors connected to a low-voltage grid, no monetary transfer is ever needed since any net excess electricity at the end of the billing period is rolled over to the next period. Actors connected to the medium- or high-voltage grid, are allowed to produce and sell surplus electricity as long as it is limited to 30% of the annual production.

In the past few years bidding processes, such as auctions and tendering schemes, have also contributed to an increase in the penetration of RE in the countries. These types of incentives can either refer to installed capacity or electricity production. The tender is competitive if the total cumulated capacity or electricity production that is being offered in the bids exceeds the capacity or electricity production that is being tendered. These characteristics can also be limited by the available budget for public financial support. The support that is granted to the winning bids can take several forms (FIT, FIP, capacity payments, certificate prices or investment grants). Countries, like Egypt, Jordan, Lebanon and Libya, have already implemented this type of incentives. There are also direct proposals that allow developers to submit unsolicited bids to the government. This process is usually faster than competitive biddings since it involves less preliminary work from governments.

Table 24: SEMCs – RE Bidding processes

Incentives	Country	Designation	Status/Comments
BIDDING PROCESSES	Algeria	Tenders	Tendering procedures to produce energy from RES or cogeneration and their integration into the national electricity supply system
	Egypt	IPP Public Competitive Bidding	Announced tenders for private development of wind farms (250 MW) and solar (1000 MW PV & 100 MW CSP) in 2013 & 2015.
		Direct Proposals	A deal was sealed in 2015 with Siemens for deploying large wind projects for up to 2000 MW in the Gulf of Suez and West Nile. The deal includes setting up a blade factory in Egypt to serve both domestic and regional markets. Direct proposals for 750 MW wind & 600 MW PV.
	Jordan	IPP Public Competitive Bidding	Announced tenders for private development of solar plants.
		Direct proposals	The first round of direct proposals was open to several RES such as wind, solar, waste and geothermal. The second round was restricted to wind and solar. The first round involved a standard flat rate feed-in tariff, while the second round saw a shift to a tender scheme under which the project that is technically viable and offers the lowest feed-in rate will be chosen.
	Lebanon	IPP Public Competitive Bidding	Request for proposals based on the national objectives set in the NREAP 2016-2020 targeting the private sector: • The objective of the request for proposals is to promote RE through power purchase agreements; • The private sector entity will finance, develop, acquire land, design, build, own, operate, and maintain the RE plant. The RE farm will deliver electricity to the network/grid; • The network will purchase the electrical energy for a period of 20 years subject to terms and conditions defined in the PPA; • Bidder shall submit unit price for each kilowatt-hour of electricity in USD, annual amount of minimum, average and maximum kilowatt-hours delivered to the grid, date of full operation of the RE plant, and other requested information.
	Libya	IPP Public Competitive Bidding	Announced tenders for private development of wind farms (120 MW) and solar (50 MW)
	Morocco	IPP Public Competitive Bidding	Announced tenders for private development of wind farms (1200 MW) and solar (510 MW)
	Palestine	Direct Proposals/ Competitive biddings	More than 15 temporary licences have been issued for the private sector through direct offers with capacities of 1 to 5 MW, 5 of them already in operation with signing PPAs. The preparation of the competitive biddings documents is ongoing and within this year (2019), 3 biddings will be launched.
	Tunisia	IPP Public Competitive Bidding	Tender for 1000 MW publish in 2018. Developers shortlisted by end of 2018

From the tables above, it is possible to conclude that the countries already have in place a wide set of supporting schemes that contribute to increasing the penetration of RE in the region. Loans, grants, subsidies and fiscal incentives are available in all countries, except Libya. Despite their differences, net-metering schemes are also implemented everywhere in the region, except for Libya and bidding processes are the most common and effective schemes. Jordan followed by Palestine has shown great commitment on RE by focusing on successful implementation of the direct proposal schemes and net metering schemes for the development of distributed RE projects. Feed-in-tariffs were once an important incentive for RE promotion, but nowadays they have been widely replaced by net-metering and bidding schemes. Some countries, like Egypt, also implemented sovereign guarantees.

2.3.3. Challenges and Opportunities

Despite their huge potential, SEMCs face some challenges when it comes to the development of RE projects.

The biggest obstacle is the insufficient enforcement of the existing regulatory frameworks and, therefore, the poor implementation of the energy strategies (when existing). There are also technical obstacles that hinder the development of these technologies. RE integration into the grid is one of the main issues since the grids are not prepared to deal with RE unpredictability that can seriously affect energy security. The lack of energy exchange and interconnection between countries as well as the absence of an electricity market and the difficulties in energy storage are also barriers to RE deployment.

The shortage of financial incentives is one of the main barriers in these countries. The lack of energy statistics and information is also a big issue in the region as data availability is fundamental to promote RE. In order to further deploy these technologies in the region, people's awareness on these issues must be increased. Local capacity and local industrialisation are also challenging, besides the current capital investment costs and the political stability in certain countries. Long, complicated and bureaucratic administrative procedures are also a crucial challenge in the region since they limit private sector involvement. Clear definition of responsibilities is also a big issue in the region. Table 25 presents the main barriers identified by the meetMED REN experts:

Table 25: SEMCs - Barriers for RE development

Algeria	• Low price of conventional energy; • Difficulties related to the financing of REprojects; • Insufficient industrial integration capacity; • Lack of national expertise for the realization of RE projects; • Lack of R&D and insufficient technical knowledge in the RE field.
Egypt	• Surplus of Generated Electricity;
Jordan	• Grid Capacity Constraints; • Surplus of Generated Electricity; • Lack of storage; • Lack of awareness; • Lack of long-term plans; • Frequent change in regulations.
Lebanon	• The lack of a regulatory body is a major barrier to effective implementation of the action plan in terms of new investments; • Insufficiency of effective policies, regulations and standards that preclude new technologies; • Lack of resources, since the use of new technologies requires the existence of supporting infrastructure. The major infrastructure constraint for RE electrical generation is the Lebanese electrical grid. This power network needs to be deeply restructured for an efficient penetration of RE generation; • Economic barriers, including high subsidies on electricity (that make the payback period of RE applications too high for end users), insufficient of preferential taxation for RE&EE equipment, and absence of sustainable revolving funds and instruments to promote RE&EE investment.
Libya	• Absence of effective policies, regulations and standards; • The electricity is highly subsidized and there is no clear policy regarding the restructuration of electricity sector; • Absence of a specific regulatory framework promoting RE deployment and private sector involvement; • Political instability; • Lack of incentives and investment mechanisms to promote RE sector.
Morocco	• Lack of an integrated approach for alternative energy deployment in the country; • Grid capacity and infrastructure to support the intermittent nature of renewables, which can affect energy security and widen the gap between supply and demand, and lead to increasing energy imports; • Low share of decentralized applications, such as SWH and PV applications as regulatory framework favours large scale RE production; • Absence of financial support for small and medium-sized RE projects.
Palestine	• Grid Capacity Constraints; • Surplus of generated electricity; • Lack of storage; • Lack of awareness; • Lack of long-term plans; • Lack of financing support; • Regulations follow up; • Political instability.
Tunisia	• Grid capacity and infrastructure to support the intermittent nature of RE, which can affect energy security; • Slow procedures for granting agreements; • Lack of financial support for big projects.

2.3.4. Implemented Projects

The boxes below show two examples of successful RE projects implemented not only in the SEMCs but also in the meetMED European partner countries. These projects are examples of bestpractices that can be implemented in the countries in order to meet the challenges identified above.

RE grid integration is a big challenge for the success of RE technologies in the region. It is therefore important to control the electricity generated from these technologies. Spain created the first center in the world for the management of the electricity generation, the Control Centre of Renewable Energies (Box 1).

Box 1: Control Centre of Renewable Energies (CECRE), Spain

Country: Spain
Year of Implementation: 2006
Pioneering initiative set up by REE (Transmission System Operator). It is the first centre in the world for controlling and managing the electricity generation obtained from RE producers.

Supporting schemes are also very important to promote RE development in the region as some of the countries identified the lack of incentives as a challenge for the penetration of RE. During the "EE and RE Strategies and Policies" workshop held on October 3rd, 2018 in Jordan, Tunisia presented the PROSOL-ELEC program (Box 2), which is aimed at developing the national solar thermal market through loans.

Box 2: PROSOL-ELEC, Tunisia

Country: Tunisia
Year of Implementation: 2010
The PROSOL-ELEC program has started in 2010 and experienced an exponential rate of completion thanks to the intelligent and attractive financing mechanism jointly set up by the four main players: ANME, STEG, lending bank and supplier, reaching a 60MW total installed capacity in low voltage. This program has created a group of suppliers and installers of more than 200 approved companies and more than 5000 direct and indirect currently active jobs.

Grid capacity constraints are one of the biggest challenges regarding RE production due to its nature. It is therefore important to explore ways to storage energy and Morocco, for instance, has implemented the first storage initiative in the region aiming to increase RE share in the energy mix (Box 3).

Box 3: STEP, Morocco

Country: Morocco

Year of Implementation: 2018

In order to improve operating technical and economic conditions of the production and transport network, the National Electricity Bureau developed a program for sites identification, study and installation of Pumped Energy Transfer Stations (STEP) aiming to include them in its network. This system will allow Morocco to smooth out fluctuations of energy production from wind and solar sources and quickly meet the possible consumption peaks. The objective of the National Electricity Bureau is to build up a balanced energy portfolio since the relation between STEP and RE offers stability in the network supply.

3. Policy Recommendations

The analysis of the Country Policy Papers highlights a clear need to improve the implementation of EE RE strategies and policies at a national level in the meetMED target countries.

3.1. Energy Efficiency

Besides regional cooperation, there are other recommendations that can be implemented to improve EE levels in the different economic sectors.

Cross Sectoral Recommendations:

> Implementation of strategies and action plans. The existence of energy strategies and well-defined and time-detailed action plans is crucial to the development of the EE market as they set the targets and pave the way to its accomplishment by identifying effective policies and measures. However, these plans must be enforced, followed-up, evaluated, updated and adapted on a regular basis in order to achieve their goals.

> Assign responsibilities for the implementation of action plans. Each country should identify at least an institution to be responsible for the execution of the action plans. These responsibilities should be clear in order to avoid impasses in the implementation of the measures.

> Strengthen policy monitoring for decision making / Establish and improve data collection procedures. Data collection and its subsequent analysis is very important to evaluate the effectiveness of the implemented measures, allowing the monitoring and evaluation of the evolution of the energy sector in the countries. This data collection should also be done at the regional level in order to guarantee that the information is comparable between the countries and, thus, having a general overview of the region, by establishing common data collection frameworks and benchmarks. At the same time, the countries should also develop Energy Efficiency Indicators (EEI) at the national level. It is also very important to clarify roles and responsibilities when it comes to monitoring information.

> Create more financial incentives. The shortage of financial incentives is one of the main barriers to the dissemination of efficient practices in the different economic sectors. The countries should therefore put in place programmes to incentivise energy efficiency, by establishing funds and fiscal incentives as well as by creating credit lines and green finance instruments, exclusively dedicated to promoting positive environmental externalities.

> Energy prices reform. Although efforts have been made to reduce energy subsidies, EE development in the region is hindered by low energy prices. A reform of the structure of energy prices is crucial since the higher the local energy prices, the higher are the values of the energy savings and, therefore, the easier is to finance investments (shorter payback periods with high energy prices).

> Capacity development. Training and capacity building is essential to the development of an EE market. The countries should therefore invest in training programmes and in knowledge and experience exchange at the regional and international level, in order to enhance capacity in these areas.

> Raise awareness/Develop studies on EE benefits. As described before, the lack of awareness on EE benefits is also one of the biggest obstacles to the dissemination of good practices. It is therefore necessary to develop awareness-raising campaigns for the different economic sectors and the different players of the energy sector, including decision makers. In addition, studies could be done to emphasise the messages and positive results of EE measures.

Buildings:

> Establish and enforce the implementation of EE Building Codes (EEBC). In order to minimize energy consumption levels in the building sector, it is important to enforce the existing EEBC since its implementation is not mandatory in every country. The development of a specific roadmap is a good way to promote this enforcement. EEBCs for building systems, namely HVAC and lighting, are also very important and mostly not existing or implemented in the target countries.

> Improve the energy efficiency levels of existing buildings. The countries should also implement measures to improve EE in existing buildings. Some examples are the implementation of good insulation standards, new heating and cooling systems and also solar water heating systems. The creation of incentives can boost the implementation of these measures.

> Establish and enforce the implementation of MEPS in appliances. In order to minimize energy consumption levels, it is important to establish minimum standards for appliances most-commonly used in households and businesses. As described before, several countries have already developed these standards, but their implementation is not mandatory in many of them. To maximize their benefits, the countries should enforce and monitor the implementation of these standards. Energy labelling should also be promoted.

> Phase-out of inefficient products and systems. The countries should reduce the use (manufacturing, importation and sale) of inefficient products, such as incandescent bulbs. In this case, the phase-out process should take into consideration provisions for the management of used lamps as well as incentives to reduce the costs of efficient lighting. The countries should also promote the implementation of highly efficient lighting in the streets.

Transport:

> Promote efficiency in the transport system. The countries should promote public transport development, through improvements in public transport infrastructure and the creation of new alternatives.

> Promote light duty vehicle fleet renewal. Light duty vehicle fleets should be renewed rapidly. Implementing bans on old vehicles, reforming fuel prices, creating tax benefits for fuel-efficient vehicles and improving infrastructures for more efficient vehicles are some of the measures that can be implemented to encourage a rapid fleet renewal.

> Establish vehicle fuel-efficiency standards. The countries should implement mandatory fuel-efficiency standards for road vehicles.

> Promote electric mobility. Electric vehicles are a good and cleaner alternative to conventional vehicles and should be promoted.

> Promote EE in mobility. Driving behaviours have a direct effect on the efficiency of a vehicle. The countries should therefore promote eco-driving in order to increase efficiency in vehicles operation. A good initiative would be to include the eco-driving concept in drivers training. Other examples are the promotion of shared mobility and the implementation of fleet management systems.

Industry:

> Implement energy management conventions. The countries should establish the implementation of mandatory energy management norms (ISO 50001 or equivalent) as well as, where still necessary, assess energy saving opportunities and report on their progress periodically.

> Implement high-efficiency industrial equipment and systems. Industrial equipment and systems, such as electric motors, compressors, pumps and boilers, should have minimum energy performance standards. Introduction of cogeneration and trigeneration technologies is also essential.

> Introducing local efficient industry. The creation of local efficient industries is also important, since it results in the introduction of efficient equipment.

Table 26: Policy recommendations for the improved implementation of EE strategies and policies

Sector	Institutions	Market	General public
CROSS SECTORAL	• Define responsibilities for enforcement; • Strengthen monitoring; • Financial incentives and/or price reform.	• Building capacity of public authorities (leading by example); • Building capacity of market players (energy managers and auditors); • Demonstration projects.	• Raising awareness on the benefits of reaching the EE targets as well as on the means to achieve them; • Raising awareness on demonstration projects.
BUILDINGS	• Mandatory enforcement of EEBC; • Programmes to improve the efficiency of existing buildings; • Green Building programmes.	• Promote MEPS for building materials/equipment; • Phasing-out of inefficient building materials/equipment.	• Raising awareness on labelling of buildings
TRANSPORT	• Promote transport system efficiency (public services etc.); • Promote light duty fleet renewal; • Establish fuel efficiency standards.		• Raising awareness and promote eco-driving
INDUSTRY	• Mandatory energy management norms (ISO 5001 conventions)	• Building capacity for energy auditors; • Promotion of highly efficient industrial equipment and systems.	• Raising awareness on energy efficient industry

3.2. Renewable Energy

The following paragraphs introduce recommendations that can be implemented to improve renewable energy penetration in the region.

> Definition, implementation and enforcement of renewable energy national strategies and action plans. The existence of a RE strategy and a well-defined action plan is crucial to the implementation of a renewable energy market: Strategies and action plans are extremely useful as they set targets, are technology-focused, and pave the way to the establishment of the RE market by identifying effective policies and measures. These plans should be updated and adapted on a regular basis.

> Assign responsibilities for the implementation of action plans. Each country should identify a sole institution to be responsible for the execution of the action plans. These responsibilities should be clear in order to avoid impasses in the implementation of the measures.

> Establish an effective regulatory framework. As described before, most of the countries have not in place effective regulatory frameworks to promote RE and private sector investments. The implementation of policies facilitates the dissemination of the use of new technologies.

> Define a national plan for renewable energy equipment manufacturing. The existence of a national strategy for RE component manufacturing is key to help the countries reach their targets.

> Create more financial incentives. The lack of financial incentives is one of the main barriers to the dissemination of RE technologies. The countries should, therefore, provide alternatives to invest in these technologies, such as low-interest loans and net-metering mechanisms, credit lines and fiscal benefits. Different types of incentives are more appropriate for certain economic sectors, and this should be taken into consideration.

> Energy prices reform. Although efforts have been made to reduce energy subsidies, energy prices are still low, thus hindering RE development in the region. Reforming the structure of energy prices is crucial since the higher the local energy prices, the higher are the values of the energy savings and, therefore, the easier is to finance investments (shorter payback periods with high energy prices).

> Invest in research and development. The countries should implement R&D programmes to ensure the existence of a competitive RE sector.

> Capacity development. Training and capacity building is essential to the development of a market for RES. The countries should therefore invest in training programmes and in knowledge and experience exchange, at the regional and international level, in order to improve knowledge in these areas.

> Raise awareness/Develop studies on renewable energy benefits. The lack of awareness on RE technologies and their benefits is an obstacle to their dissemination in the region. It is therefore necessary to develop awareness-raising campaigns to help develop the local RE market. These campaigns should include information on the potential of RES in the region in order to demonstrate their positive impacts in the economy of the countries.

> Network improvement. Grid reinforcement, interconnection and the creation of a regional electricity market will also contribute to the promotion of RES in the region. Energy storage is also a solution to increase RE grid integration.

Table 27: Policy recommendations for the improved implementation of RE strategies and policies

Level	Institutional	Market	General public
RENEWABLE ENERGY	• Define responsibilities for enforcement of NEEAP; • Regulatory stability; • Financial incentives and/or price reform.	• Building capacity of public authorities (leading by example); • Building capacity of market players; • Demonstration projects.	• Raising awareness on the benefits of reaching the RE targets and the means to achieve them; • Raising awareness on the demonstration projects.

3.3. Regional Cooperation

Regional cooperation and knowledge sharing among countries is an essential complement to strengthen the national tools that support EE and RE. Flexible and responsive regional cooperation could be established in task forces/technical platforms with a focus on: (i) promoting implementation and monitoring of EE RE national measures; (ii) dissemination and awareness raising of EE RE measures among stakeholders and the general public; (iii) prudent proposals for short term harmonization to overcome differences in regulation among individual countries.

In particular, regional cooperation could focus on the following four axes:

> **Monitoring and benchmarking at regional level:** together with national policy monitoring and existing international and regional benchmarks, an established practice to monitor and benchmark at the regional level could enhance implementation through better definition of priorities, fields for cooperation and decision making. Building a common understanding of trends and evolutions could help countries to define their position in the international arena. It also contributes to establish ambitions, scenarios and common visions on trends in order to set comparative advantages for the countries and prospective strategies in line with the international sustainable development agenda while addressing climate change challenges;

> **Capacity-building** of public authorities, market players, energy managers, energy auditors, technicians

> **Cross sectoral and multi-stakeholder dialogue at regional level** for better coordination and efficiency (technical and financial partners, ministries and public institutions, public and private sectors, experts, etc): better understanding and knowledge of related sectors and other policies, as well as involvement of all concerned stakeholders in the dialogue could open new opportunities both at national, regional and international levels. The regional level is a key bridge to have better coordination, synergies, mutual understanding and finally actions that thwart natural competition between stakeholders and organizations;

> **Raise awareness and dissemination of methods, tools, good practices:** communication on EE and RE benefits shall be strengthened by addressing different targets, national and local decision-makers, private sector and civil society, including the simple citizens. The role of regional networks could be to develop strategies for better dissemination, awareness raising and communication on these dedicated topics providing guidelines, studies and tools.

4. Conclusions

Based on the information presented in the previous chapters, it is possible to conclude that the SEMCs involved in the meetMED project have been working on improving their EE and RE sectors, having in place long-term national energy strategies that set ambitious targets for energy savings and RE penetration.

Despite being an emerging sector in the region, the countries have been implementing action plans and regulatory frameworks that promote the development of EE projects. While Egypt, Jordan, Lebanon and Tunisia are the countries with the stronger regulatory frameworks, Libya is evolving at a slower pace. Despite this progress, many countries need to improve the enforcement of their EE policies and there are still actions that can be taken in order to improve EE in the different economic sectors. First, in order to avoid obstacles or uncertainties, it is crucial to have a clear understanding on which entities are responsible for the implementation of the action plans. It is also important to establish data collection procedures at the regional level, in order to evaluate the effectiveness of the implemented measures and to have an overview of the overall situation in the region. Furthermore, the existence of financial incentives and the reduction of subsidies on energy prices are crucial to the development of EE projects as they represent a huge barrier to the economic viability of EE projects. The countries are already working on reducing these subsidies that undermine efforts to mitigate global climate change and local environmental degradation.

According to the collected data, the building sector is the sector that has implemented EE measures the most compared to other sectors, including policies targeting the building envelope and appliances efficiency. However, this sector has still a lot of potential for improvement, such as the establishment, where still necessary, and the enforcement of mandatory minimum energy performance standards, both for buildings and appliances. Phase-out procedures for inefficient lighting products is also important since lighting has a big influence in energy consumption. The transport sector is one most energy-consuming sectors at the regional level, thus it is crucial to promote efficiency also in this sector. Few countries include transportation reforms in their national energy strategies, such as tax and customs reduction on hybrid cars, the promotion of public transport and the development of emission standards

for vehicles. Concerning the industry sector, it is important to promote energy management procedures and the use of highly efficient equipment, since several countries still have no comprehensive industrial EE policies in place.

The RE sector is more advanced since the countries have been allocating more importance to its development. Egypt, Jordan, Morocco and Palestine are the countries with the most advanced regulatory frameworks for RE. However, it is possible to conclude that, despite the countries' potential and the existence of strategies and action plans, the current regulatory frameworks can still be improved by increasing the commitment of government authorities to pursing RE and enforcing the policies in place. It is therefore important to establish responsibilities for the implementation of the action plans. Additionally, there are technical difficulties that hinder the implementation of RES in these countries, namely regarding grid capacity constraints. Implementing financial incentives, such as net-metering policies and tenders, is a good way to promote the development of the market. Investment in R&D and in capacity building is also crucial to create a strong RE market.

The challenges to the implementation of the energy transition in meetMED countries require immediate action at the institutional level, meaning a solid commitment to enforce together with regulatory stability.

The implementation of EE and RE measures requires the creation of a market supply of materials, equipment and services as well as the creation of a demand by the general public, changing their behaviour and adapting to the shared need for the energy transition and climate mitigation. Overall, raising people's awareness of both EE and RE benefits should be one of the main goals for all the SEMCs since the lack of knowledge is a clear barrier to the dissemination of good practices.

The meetMED target countries and regional cooperation should then concentrate their renewed efforts on these areas, eventually around a flexible and responsive regional platform that could direct the regional dialogue among the interested countries, build the capacity of market players and raise the awareness of the general public.

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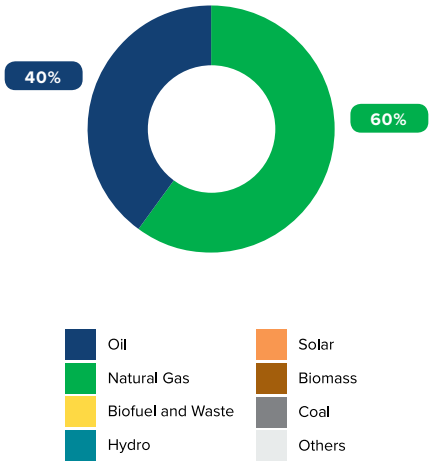
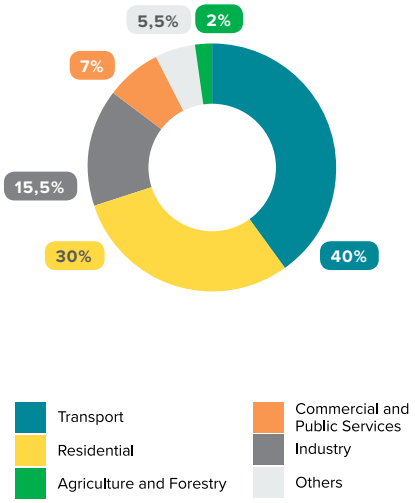
ALGERIA

Total Primary Energy Consumption (2017)



Total Final Energy Consumption (2017)



Energy Efficiency

National Strategy

Program for the Development of New and Renewable Energies and Energy Efficiency 2030

9% for 2030

Program for the Development of New and Renewable Energies and Energy Efficiency 2030

Regulatory Framework

Buildings - EEBC not mandatory. MEPS and Labelling for appliances mandatory

Transports - Urban transport initiatives and promotion of alternative vehicles

Industry - Mandatory energy audits

Supporting Schemes

Loans, Grants & Subsidies

Fiscal incentives

Renewable Energy

National Strategy

Program for the Development of New and Renewable Energies and Energy Efficiency 2030

27% for 2030

Program for the Development of New and Renewable Energies and Energy Efficiency 2030

Regulatory Framework

Policies to promote RE Generation (focus on solar, wind and biomass energy)

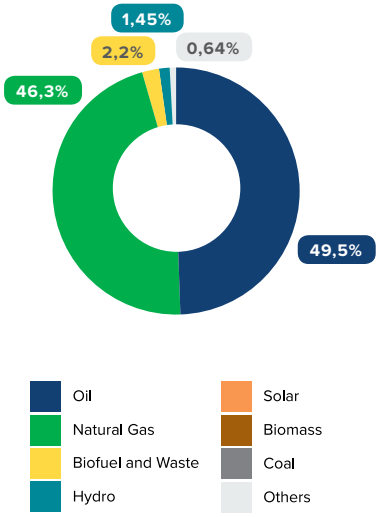
Supporting Schemes

Loans, Grants & Subsidies

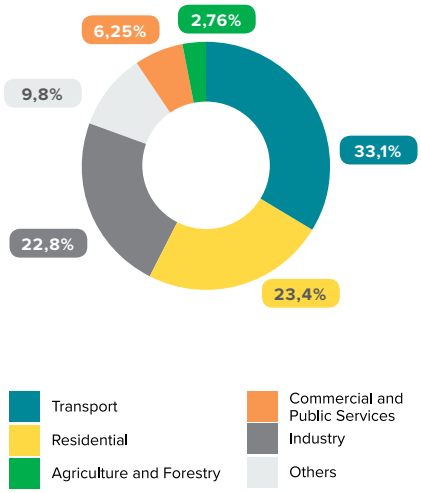
Bidding Processes

EGYPT

Total Primary Energy Consumption (2017)



Total Final Energy Consumption (2017)



Energy Efficiency

National Strategy and Action Plans

Sustainable Development Strategy: Egypt Vision 2030

18% for 2030

2nd NEEAP 2018-2021

Regulatory Framework

Cross sectoral - Developing an ESCO market

Buildings - Mandatory EEBC and MEPS and Labelling for appliances

Transports - Urban transport initiatives

Industry - Mandatory energy audits

Supporting Schemes

Loans, Grants & Subsidies

Fiscal incentives

Renewable Energy

National Strategy

National RE Strategy 2022 & 2035

20% for 2022 | 42% for 2035

National RE Strategy 2022 & 2035

Regulatory Framework

Strong investment in solar and wind energy

Supporting Schemes

Loans, Grants & Subsidies

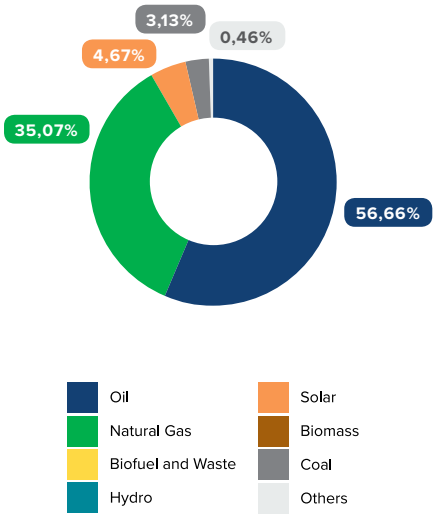
Fiscal incentives

Ne-metering

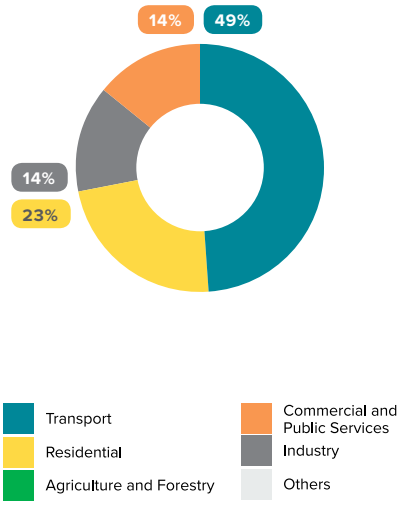
Bidding Processes

JORDAN

Total Primary Energy Consumption (2017)



Total Final Energy Consumption (2017)



Energy Efficiency

National Strategy

National Energy Strategy 2020

20% for 2020| 18% for 2030

2nd NEEAP 2017-2020

Regulatory Framework

Cross sectoral - ESCO market

Buildings - Mandatory EEBC and MEPS and Labelling for appliances

Transports - Introduction of electric vehicles

Industry - Mandatory energy audits

Supporting Schemes

Loans, Grants & Subsidies

Fiscal incentives

Renewable Energy

National Strategy

National Energy Strategy 2020 & Master Strategy
for Energy Sector 2015-2025

10% for 2020 | 20% for 2025

Master Strategy for Energy Sector 2015-2025

Regulatory Framework

Policies to promote RE Generation (focus on solar and wind energy)

Supporting Schemes

Loans, Grants & Subsidies

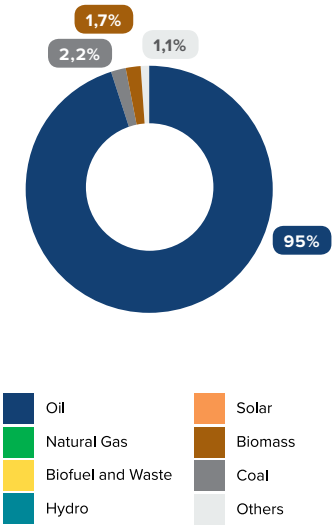
Fiscal incentives

Ne-metering

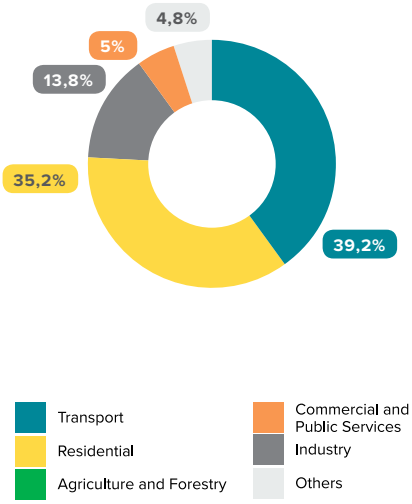
Bidding Processes

LEBANON

Total Primary Energy Consumption (2017)



Total Final Energy Consumption (2017)



Energy Efficiency

National Strategy

Policy Paper for the Electricity Sector 2010

5 % for 2020

2nd NEEAP 2016-2020

Regulatory Framework

Cross sectoral - reduced energy subsidies (still existing for the electricity sector)

Buildings - developping EEBC, MEPS and Labelling for appliances

Transports - Urban transport initiatives

Industry - energy audits not mandatory

Supporting Schemes

Loans, Grants & Subsidies

Renewable Energy

National Strategy

Policy Paper for Electricity Sector 2010

12% for 2020 (share in electricity and thermal energy)
30% of total electricity consumption in 2030

NREAP 2016-2020

Regulatory Framework

RE development dependent on the private sector

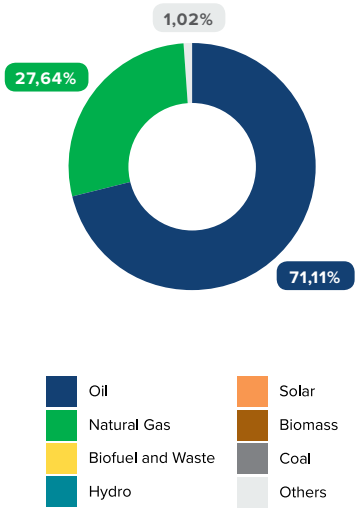
Supporting Schemes

Ne-metering

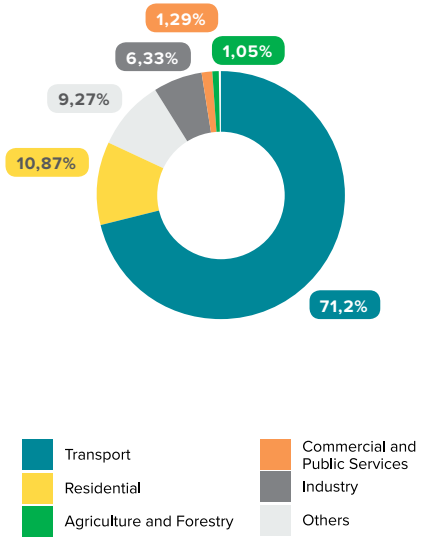
Bidding Processes

LIBYA

Total Primary Energy Consumption (2017)



Total Final Energy Consumption (2017)



Energy Efficiency

National Strategy

No national strategy in place

-

No action plan in place

Regulatory Framework

Cross sectoral - highly subsidized energy prices. Weak regulatory framework for EE development

Buildings - EEBC inexistent. Initiatives to promote energy savings in lighting

Transports: Urban transport initiatives

Supporting Schemes

Fiscal incentives

Renewable Energy

National Strategy

National RE strategy (2019-2030)

5% for 2020 | 20% for 2030

National Plan for developing RE in Libya (2019-2030)

Regulatory Framework

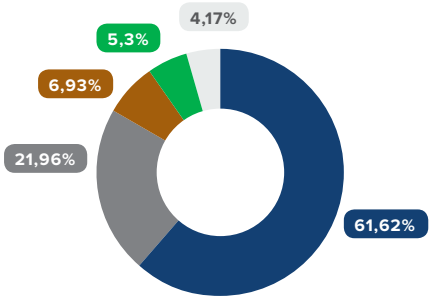
Focus on solar and wind energy. RE penetration is still low.

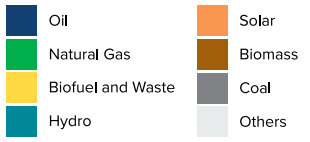
Supporting Schemes

Bidding Processes

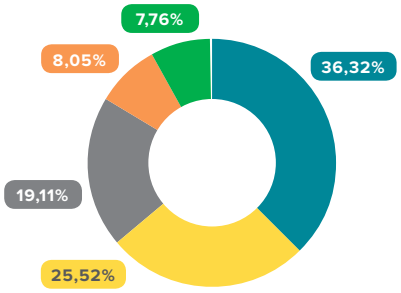
MOROCCO

Total Primary Energy Consumption (2017)





Total Final Energy Consumption (2017)



Energy Efficiency

National Strategy

National Energy Strategy 2030

5% for 2020 | 20 % for 2030

National Energy Efficiency Strategy 2030

Regulatory Framework

Cross sectoral - Developing an ESCO market

Buildings - Mandatory EEBC and MEPS and Labelling for appliances

Transports - Urban transport initiatives and working on the labelling of vehicles

Industry - Mandatory energy audits

Supporting Schemes

Loans, Grants & Subsidies

Fiscal incentives

Renewable Energy

National Strategy

National Energy Strategy 2030

42% for 2020 | 52% for 2030

National Energy Strategy 2030

Regulatory Framework

Strong investment in solar and wind energy

Supporting Schemes

Loans, Grants & Subsidies

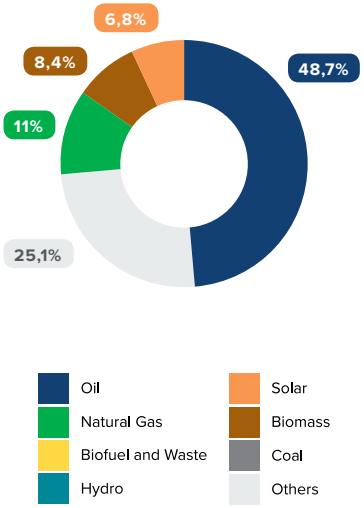
Fiscal incentives

Ne-metering

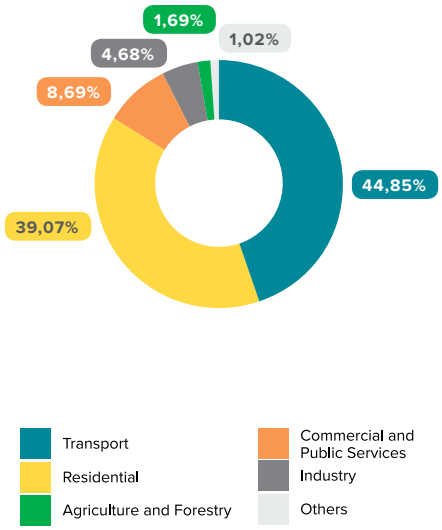
Bidding Processes

PALESTINE

Total Primary Energy Consumption (2017)



Total Final Energy Consumption (2017)



Energy Efficiency

National Strategy

National Energy Efficiency Action Plan 2012-2020

5% for 2020

2nd NEEAP 2020-2030

Regulatory Framework

Buildings - EEBC existente but not mandatory. MEPS and Labelling for appliances not existent.

Transports: introduction of alternative vehicles

Industry: energy audits (not mandatory)

Supporting Schemes

Loans, Grants & Subsidies

Renewable Energy

National Strategy

National Renewable Energy Action Plan 2018-2030

10% for 2020 | 12% 2030

National Renewable Energy Action Plan 2018 - 2030

Regulatory Framework

Policies to promote RE Generation (focus on solar, wind and biomass)

Supporting Schemes

Loans, Grants & Subsidies

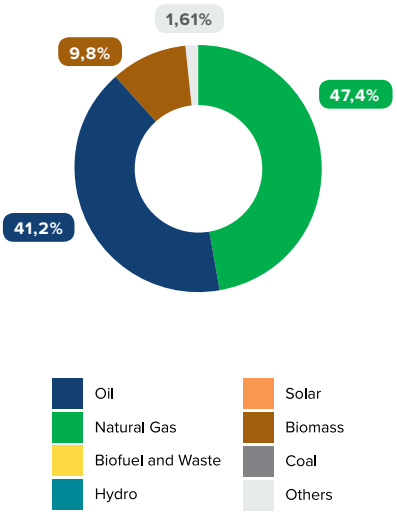
Fiscal incentives

Ne-metering

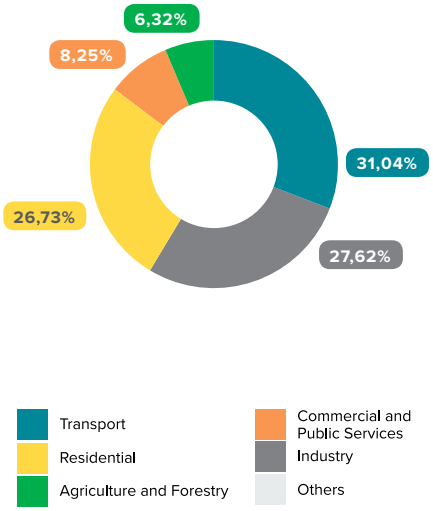
Bidding Processes

TUNISIA

Total Primary Energy Consumption (2017)



Total Final Energy Consumption (2017)



Energy Efficiency

National Strategy

Energy transition strategy horizon 2030

17% for 2020 | 30% for 2030

EE Strategy horizon 2050

Regulatory Framework

Cross sectoral - Developing an ESCO market

Buildings - Mandatory EEBC and MEPS and Labelling for appliances

Transports - Urban transport initiatives and energy labelling of vehicles (planned)

Industry - Mandatory energy audits and studies on energy efficiency and innovative technologies

Supporting Schemes

Loans, Grants & Subsidies

Fiscal incentives

Renewable Energy

National Strategy

Tunisian solar plan 2030

12% for 2020 |30% for 2030

Tunisian solar plan horizon 2030

Regulatory Framework

Policies to promote RE Generation (focus on solar and wind energy)

Supporting Schemes

Loans, Grants & Subsidies

Fiscal incentives

Ne-metering

Bidding Processes

This publication is a product of the meetMED (Mitigation Enabling Energy Transition in the Mediterranean region) project which is funded by the European Union and jointly implemented by the Mediterranean Association of the National Agencies for Energy Management (MEDENER) and the Regional Centre for Renewable Energy and Energy Efficiency (RCREEE). The conclusions of this report result from the analysis of the Country Policy Papers prepared by the meetMED Regional Expert Network (REN) – a network composed by experts coming from 13 Mediterranean countries – the aim of which is to support national governments in the implementation of EE and RE policies enhancing national programmes and frameworks in the region. Since 2012, the eight target countries (Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Palestine and Tunisia) have improved their energy efficiency and renewable energy sectors, having put in place long-term national energy strategies that set ambitious targets for energy savings and renewable energy penetration. Nevertheless, several challenges still hinder the development of EE and RE, particularly related to governmental, technical or information aspects. This report identifies a set of recommendations that can be implemented to promote the development of both sectors. Awareness of the population for EE and RE benefits should be one of the main objectives of the countries since the lack of knowledge is a clear barrier to the dissemination of good practices. Regional cooperation should be encouraged to facilitate the energy transition in the Southern and Eastern Mediterranean Countries (SEMCs) – cooperation will accelerate the implementation of common measures and help overcome shared barriers.

www.meetmed.org

info@meetmed.org @meetmed1

meetMED Secretariat - c/o MEDENER
Rue de Namur 72, 1000 Bruxelles