BUSINESSMED
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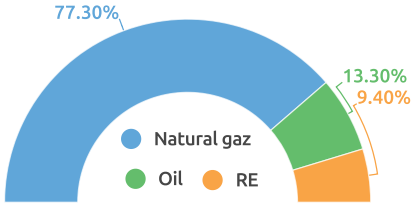
FACT SHEET #2 ON EDUCATION AND R&D ENERGY TECHNOLOGIES

EGYPT

Electricity Market

Market structure

The transmission and distribution of electricity are carried out by one vertically integrated company, Egyptian Electricity Holding Company (EEHC). Generation is open to private sector (IPP)



Electricity Mix as of 2019 (IEA source)

Capacity installed

38,857 MW

Market size

Capacity installed of RE	Objectives and strategy for RE	Available Technologies
6000 MW 2832MW from hydro, 1375MW from wind, 1587 MW from PV, 140MW from CSP 11.5 MW from biomass	**20% by 2022** **42% by 2035**	WIND, PV, HYDRO, CSP

Financing schemes

Multilateral Banks financing scheme

- Egypt Sustainable Energy Financing Facility (EgyptSEFF)
- Green Economy Financing Facility (GEFF) for Egypt promoted by EBRD

Government loan schemes

N/A

Existent funding dedicated to R&D & applied to RE

The Science and Technological Development Fund

Agency in charge of RE

Ministry of Electricity and Renewable Energy
New and Renewable Energy Authority

Existent organizations in charge of RE R&D

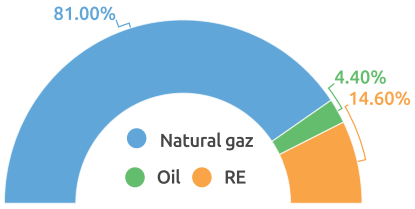
أكاديمية البحث العلمي والتكنولوجي
Academy of Scientific Research & Technology

JORDAN

Electricity Market

Market structure

A single buyer model where the power generation and distribution are privatized sectors while transmission is held by the NEPCO, the single state-owned transmission system operator and the only authorized energy off-taker.



Electricity Mix as of 2019 (IEA source)

Capacity installed

5,236.4 MW

Market size

Capacity installed of RE	Objectives and strategy for RE	Available Technologies
6000 MW	10% by 2020 2,000 MW from wind & solar by 2020	WIND, PV, CSP

Financing schemes

Multilateral Banks financing scheme

- SUNREF by AFD
- GEFF-Jordan by EBRD

Government loan schemes

Jordan renewable energy & energy efficiency fund (JEEEF)

Existent funding dedicated to R&D & applied to RE

N/A

Agency in charge of RE

Energy and Minerals Regulatory Commission (EMRC)

Existent organizations in charge of RE R&D

الجمعيّة العلميّة الملكيّة
Royal Scientific Society

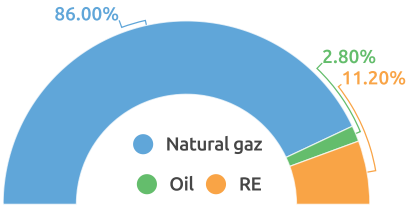
المركز الوطني لبحوث الطاقة
National Energy Research Centre

MALTA

Electricity Market

Market structure

The generation, distribution and supply of electricity are carried out by one vertically integrated company, Enemalta



Electricity Mix as of 2019 (IEA source)

Capacity installed

540 MW

Market size

Capacity installed of RE	Objectives and strategy for RE	Available Technologies
112 MW PV	10% by 2020 achieved 11.2%	SWH, PV, WASTE TO ENERGY

Financing schemes

Multilateral Banks financing scheme

- European Structural and Investment Fund for Energy Efficiency and Renewable Energy by EIB

Government loan schemes

N/A

Existent funding dedicated to R&D & applied to RE

- Horizon 2020 Fusion Program
- Horizon Europe Energy and Water Support scheme

Agency in charge of RE

REGULATOR FOR ENERGY & WATER SERVICES

Existent organizations in charge of RE R&D

Xjenza

The Malta Council for Science & Technology

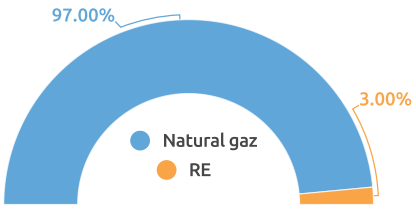
UM

TUNISIA

Electricity Market

Market structure

A single buyer model where the power generation is privatized while transmission and distribution is held by the STEG, the single state owned transmission system operator and the only authorized energy off-taker



Electricity Mix as of 2019 (IEA source)

Capacity installed

5,467 MW

Market size

Capacity installed of RE	Objectives and strategy for RE	Available Technologies
360 MW including 60MW from hydro	**30% by 2030**	SWH, PV, WIND, HYDRO

Financing schemes

Multilateral Banks financing scheme

- European Structural and Investment Fund for Energy Efficiency and Renewable Energy by EIB

Government loan schemes

N/A

Existent funding dedicated to R&D & applied to RE

- Horizon 2020 Fusion Program
- Horizon Europe Energy and Water Support scheme

Agency in charge of RE

الوكالة الوطنية للتحكم في الطاقة
ANME

Existent organizations in charge of RE R&D

CRTEn Centre de Recherches et des Technologies de l'Energie

+ Research Labs within engineering schools

Education programs and Skills Gap Analysis

EGYPT

- Most public and private universities dedicated green energy undergraduate/postgraduate programs.
- REMENA master program in partnership with Kassel University in Germany and Cairo University in Egypt. Upon successful graduation the student will be granted a Master of Science (M.Sc.) double degree.
- Numerous TVET programs with a focus on the maintenance and installation of solar technology.
- A good example of the collaboration between the industry/private sector and R&D in Malta is RE Energy Alliance-Made in Egypt.

JORDAN

- About fifteen universities are offering courses related to energy and/or RE in their study plans for various engineering disciplines as mandatory or elective courses.
- One of the main flagship education programs is the Renewable Energy Master at the University of Jordan launched by the now-called Water, Energy and Environment Centre back in 2012.

MALTA

- Undergraduate and postgraduate programs related to energy are offered by the University of Malta.
- The main flagship programme with a focus on clean technologies is the one-year Master of Science in Sustainable Energy.
- The curriculum review is systematic and is based on a survey addressed to different stakeholders including the private sector and industries.
- The University of Malta offers short technical courses to installers providing important link to have qualified and eligible installers for PV and SWH.
- A good example of the collaboration between the industry/private sector and R&D in Malta is the SolAqua project implemented by the University of Malta.

TUNISIA

- Almost all engineering schools in Tunisia offer electrical engineering diploma with one or two teaching modules in renewable energy or energy efficiency.
- The only engineering school that has a dedicated energy engineering diploma is ENIM in the city of Monastir.
- The engineering schools of Tunis (ENIT) and Monastir (ENIM) offer international master programmes taught in English in collaboration with other foreign universities.
- Any professional master must include professionals from the private sector as required by the Ministry of Higher education.

KNOWLEDGE TRANSFER

- Egypt and Jordan are good examples of how well-streamed procedures and PPP schemes can accelerate project implementation and transform policies to real projects.
- Malta and Tunisia are good examples of how SMEs can install their own RE systems to generate electricity for their own use.
- Organize regional forums where best practices are shared and information is disseminated.
- The role of the BSOs is very critical as they are the bridge between the private and public sector.

EDUCATION PROGRAMMES

- Systematic review of high education programmes is important in matching market needs with universities' curriculum. The feedback of the private sector and other stakeholders is to be considered.
- Promote technical education programs applied to RE in the installation and maintenance of RE power plants, to ensure that the local market has the right skills and capabilities when power plants are operating.
- Promote regional education programs similar to the REMENA master program between Egypt, Tunisia and Germany. Funds however should be sought to enable international mobility of students and professors from the different countries.

COOPERATION PRIVATE SECTOR & RESEARCH ORGANIZATIONS

- Clusters can foster innovation by collectively cooperating and competing in a fruitful way, as they a setting where multiple stakeholders including researchers and industry can collaborate to produce local products or RE components.
- International and inter-sectorial cooperation is a catalyst of innovation and a powerful tool to develop goal-oriented and streamlined R&D programmes in the complex landscape of innovation.

RESEARCH & DEVELOPMENT

- Governments particularly in the MENA region should put in place policies and instruments to promote technological innovation customised to bolster the unique capacity development needs in a country.
- The relevance of having a governance structure to interconnect all innovation related fields and align technical expertise, innovation stakeholders and national plans is of a paramount importance.
- Public-private partnerships for knowledge infrastructure are a widely used innovation policy instrument.
- The exchange of information among researchers, policy makers and main market actors in the region.

Final word about the role of BSOs

The role of BSOs is crucial in bringing to the attention of policy makers and investors the needs for innovative technological solutions, for RET use and also economic proposer of SMEs. This report encourages partnerships with BSOs when formulating RE policies, innovation policies and programs.

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