

7TH INTERNATIONAL FORUM ON ENERGY FOR SUSTAINABLE DEVELOPMENT
Baku, Azerbaijan - (18-21 OCTOBER 2016)

INTERNATIONAL CONFERENCE ON RENEWABLE ENERGY / REGIONAL SEMINAR ON:
«Enabling Policies to Promote Financing Renewable Energy Investments»
19-20 October 2016

Economic And Social Commission For Western Asia



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Renewable Energy Policies Case Study For Jordan

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Country Brief : Jordan

MIDDLE EAST



GDP: 33.68 billion US\$
GDP per capita: 4800 US\$

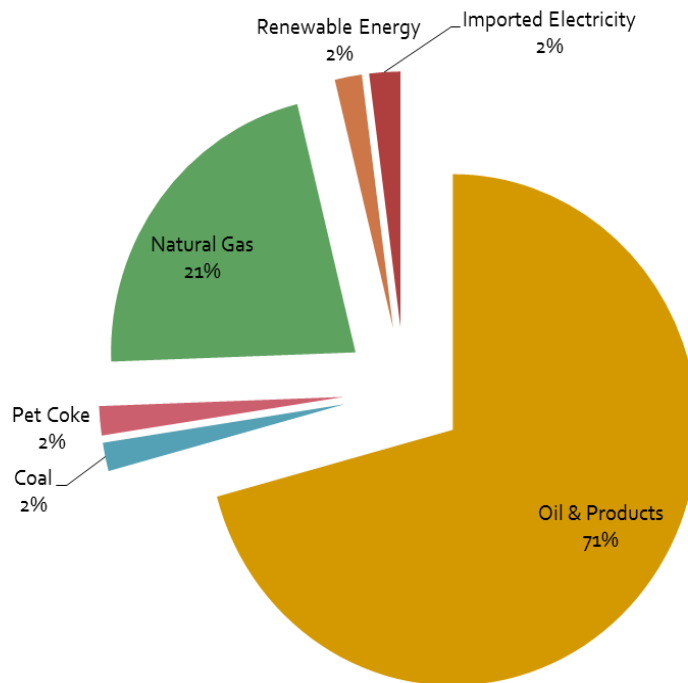
Area: 89,342 sq km
Population: 6.5 + 2.5 million refugees

**High dependence on imported
energy:** 97% in 2015
High cost: 17% of GDP

No commercial energy sources: less
than 97 thousand toe
**Vast oil shale reserves & RE
resources:** 70 billion tons and
unlimited solar & wind

Energy Sector Characteristics

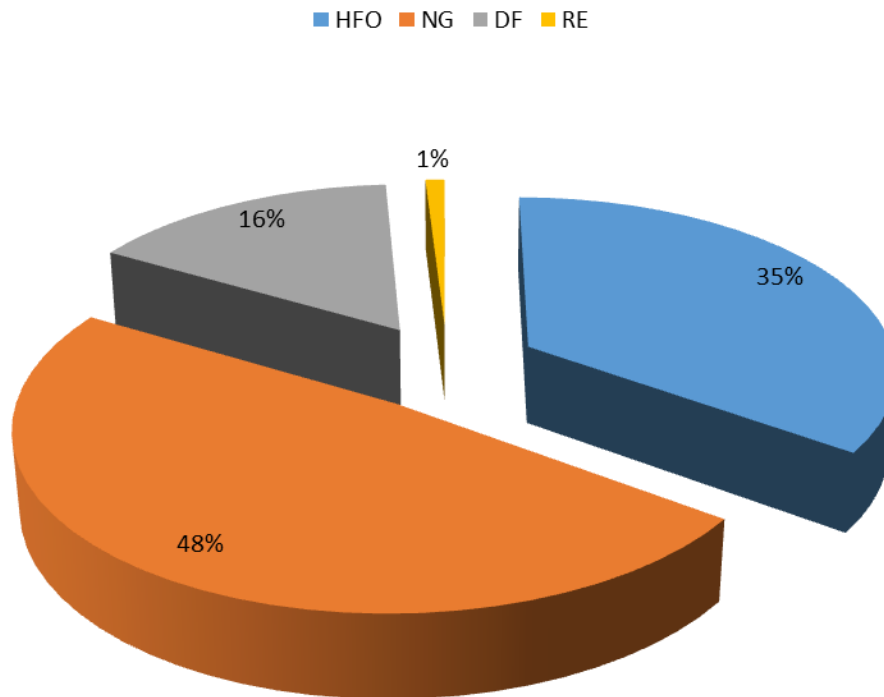
Energy Mix in 2015 (8.95 million toe)



Transportation 48%
Households 22%
Industry 17%
Others 13%

Power Generation
Consume large fraction
of Final Energy (~44%)

Power Generation According to Source 2015



Peak Load 3300 MW

Generated Power
16,173 GWh

Households	43%
Industry	25%
Commercial	15%
Water Pumping	15%
Street Lighting	2%

RE Potential

Solar and Wind

- Solar energy: high solar intensity (5-7 kW/m²-day) and 3000 hrs per year
- Good wind speeds (6-8 m/s) in different regions, estimated potential of 1000 GWh

RE Potential

Other RE Applications

- Geothermal: relatively low temperatures that are suitable for heating and cooling but not power generation
- Bio-mass: mainly municipal solid waste and some cattle/poultry farming, with estimated potential of up to 60 MW and small scale heating/cooling systems
- Hydropower: mainly the Red-Dead canal (400-800 MW) and some mini-hydro projects (30 MW)
- Other applications: solar energy for simple drying, heating and cooling

Current and Prior RE Policy Status

Current Energy Policy

- REEEL approved and enacted in 2012
- By-Laws, directives and instructions which enabled private sector to participate in power generation
- RE price cap
- Preference to RE

Current and Prior RE Policy Status

Private Sector Participation in RE Projects

- Net metering: on site, allowed to generate average consumption of last 12 months
- Wheeling: produce its own use, at a location other than that where electric power consumed
- Direct Proposals: submit direct proposal to MEMR for developing large-scale RE project
- EPC: public investment projects financed through foreign aids

RE Policy Analysis

- Doors for investors and developers to use RE sources and connect to the national and/or distribution grids
- Energy and electricity prices used to be below international levels, but recently the GoJ has used energy and electricity pricing policy extensively in its development efforts
- RE sources are given priority for power generation, other applications still limited

RE Policy Analysis

- RE market is growing particularly for central and distributed PV systems
- Penetration of other types and applications of RE systems are very limited
- Intended Nationally Determined Contribution (INDC) contains 70 projects, most of these related to RE and EE
- 14% reduction of GHG emissions in 2030, provided that financial sources are available (donor-driven)
- There is no special RE strategy in Jordan

Policy Design Considerations

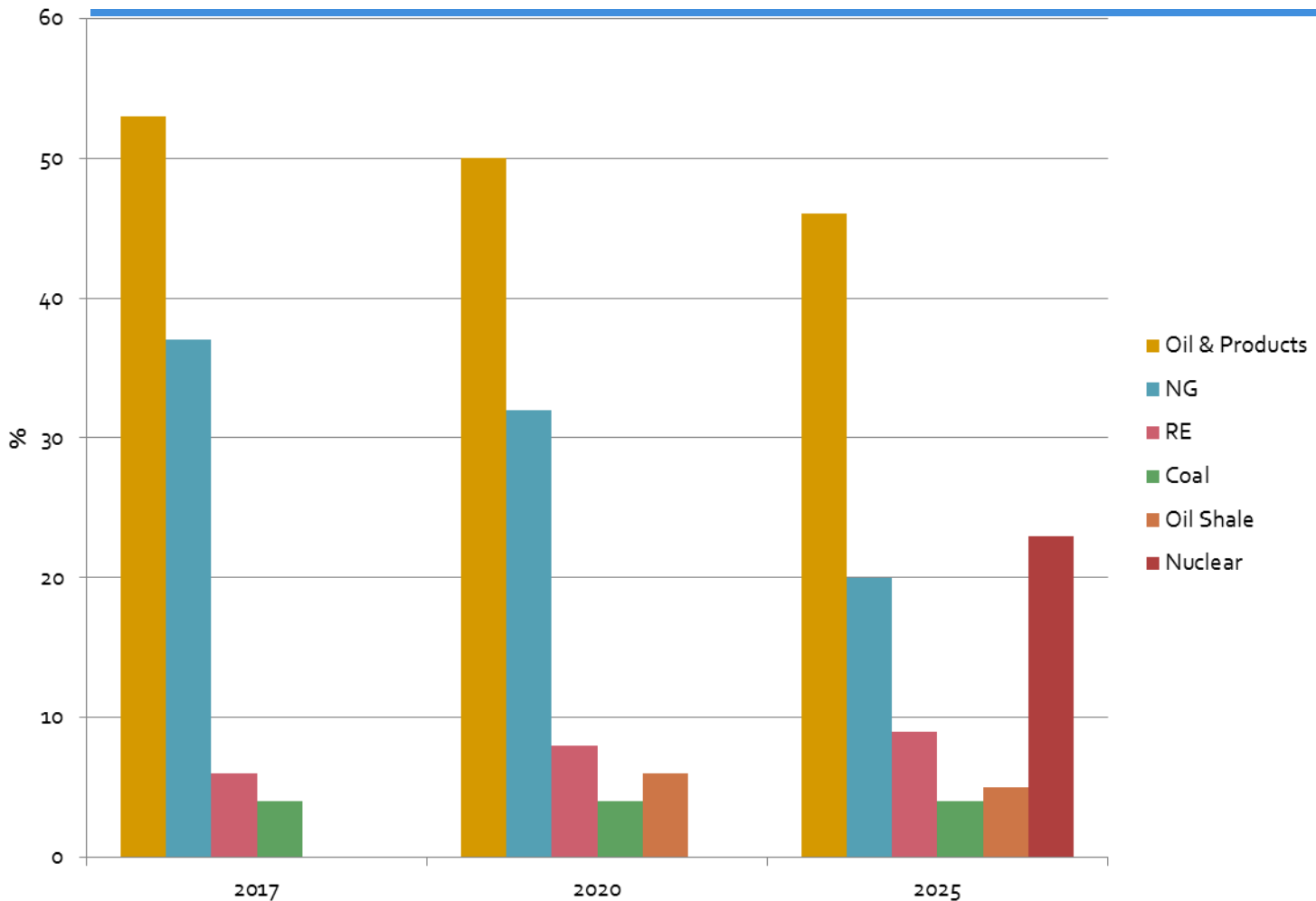
New Energy Strategy 2016-2025

Aiming to:

- achieving energy security and sustainable supply
- increasing the sharing ratio of indigenous sources in the national energy mix
- reduce dependence on imported energy
- eliminating the cost of energy bill and its burden on the economy.

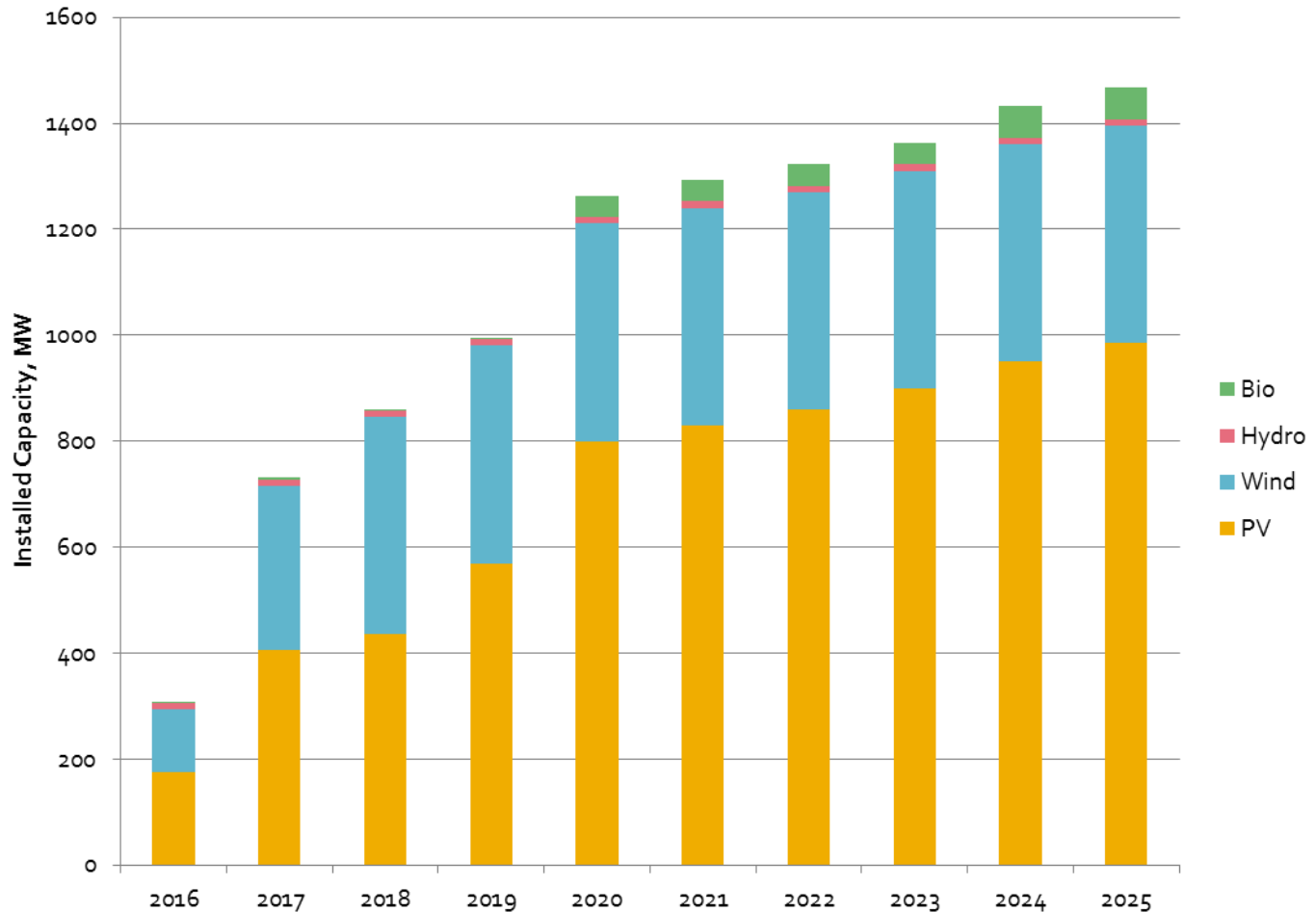
Policy Design Considerations

Forecasted Energy Mix 2017-2025



Policy Design Considerations

Planned RE Capacity 2016-2025



Barriers/Challenges

- Lack of incentives and financial resources to support RE projects.
- Lack of know-how of RE technologies and inefficient management of RE affairs.
- Lack of political will and inefficient implementation of RE regulations.
- Lack of applied research, inadequate studying and training curricula related to RE
- Poor dissemination of technologies and a small market.

Conclusions & Recommendations

- Urgent need to develop a national renewable energy action plan
- Electricity Distributors should be critically reviewed to ensure they have the right incentives to promote private RE
- review of the structure of the electricity tariff to promote a sustainable & competitive environment for private RE
- Availability of grid load flow studies, which would identify the critical areas and connection points
- Review existing bureaucratic procedures
- Renewable Energy and Energy Efficiency Fund should be fully operational and establish coordination with international funding facilities
- Encourage public-private partnership in RE projects

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