

**7<sup>TH</sup> 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\$

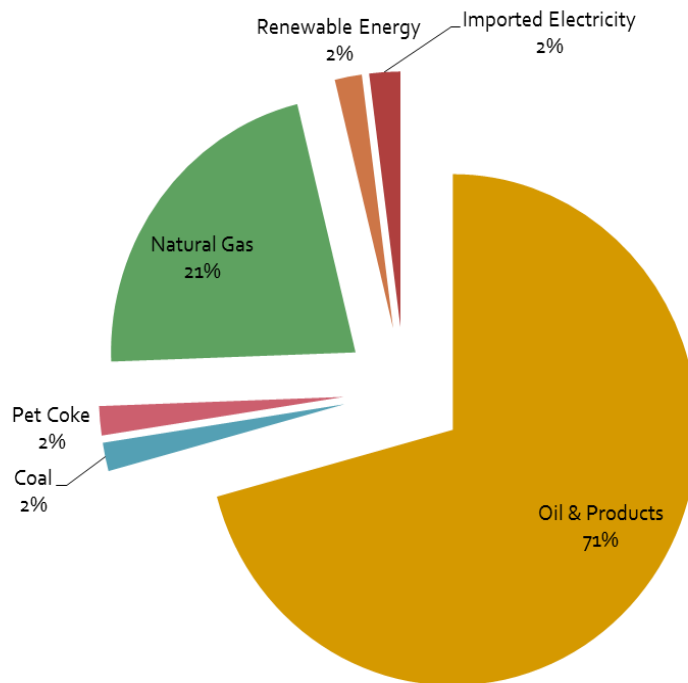
**Area:** 89,342 sq km  
**Population:** 6.5 + 2.5 million refugees

**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

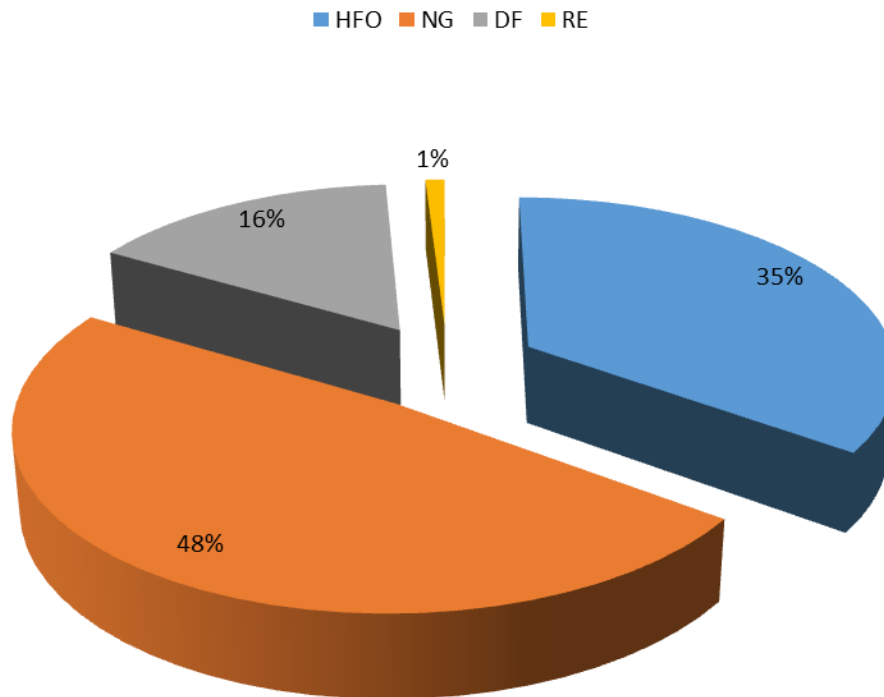
## Energy Mix in 2015 (8.95 million toe)



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

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- Solar energy: high solar intensity (5-7 kW/m<sup>2</sup>-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

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- 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

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- 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

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- 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

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- 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

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- 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

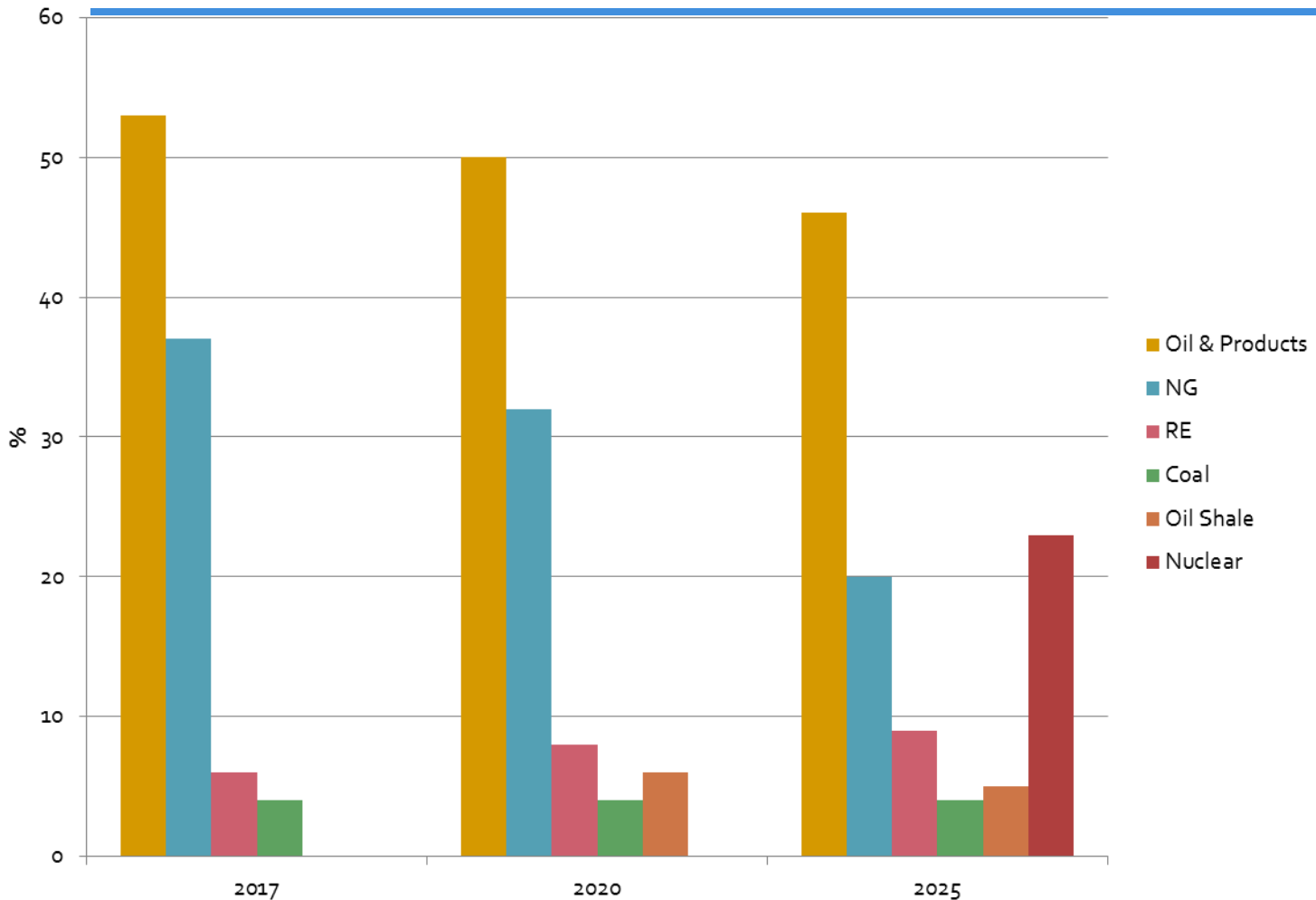
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### **Aiming to:**

- 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.

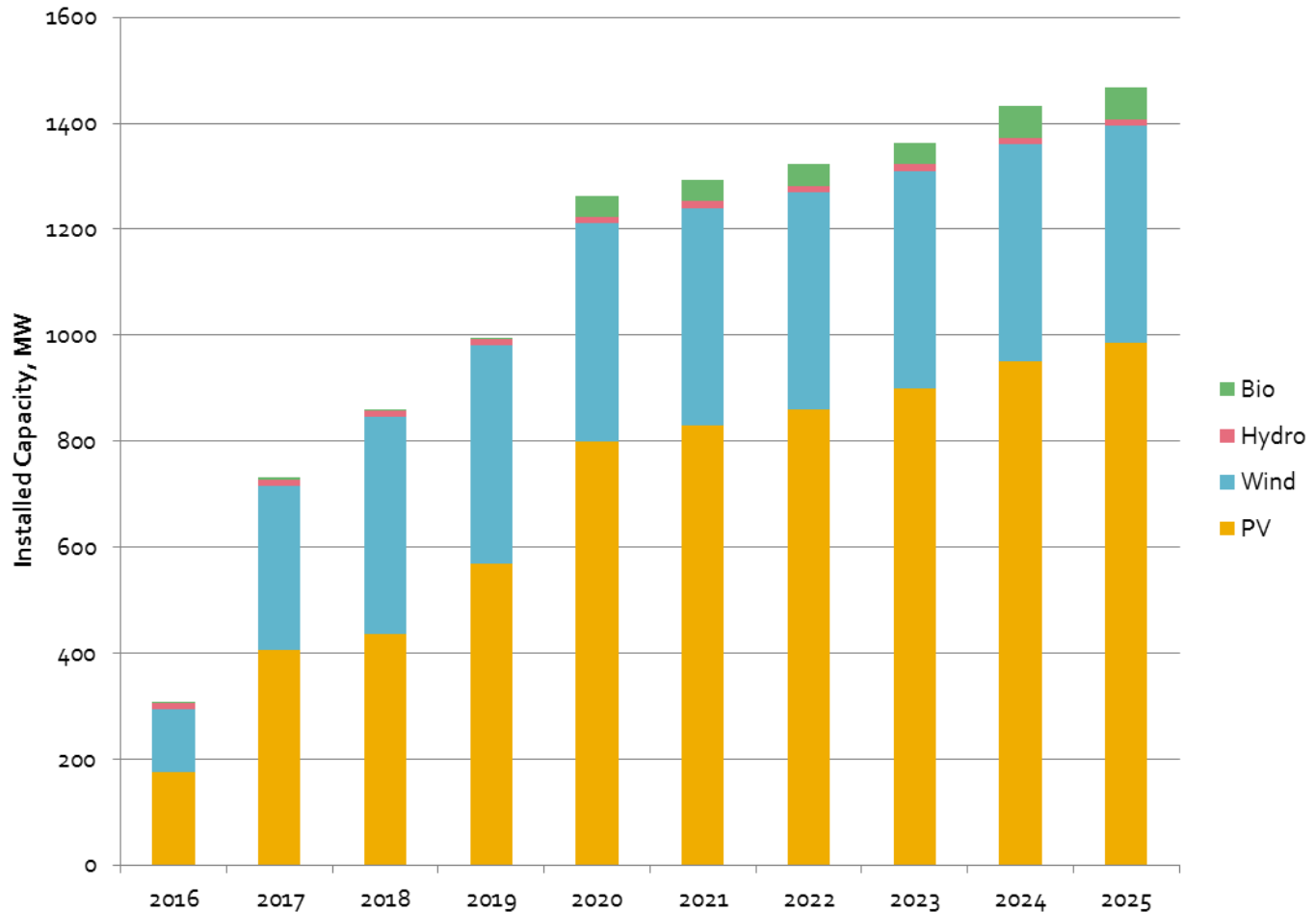
# Policy Design Considerations

## Forecasted Energy Mix 2017-2025



# Policy Design Considerations

## Planned RE Capacity 2016-2025



# Barriers/Challenges

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- 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

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- 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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