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Mitigation Enabling Energy Transition in the MEDiterranean region

# Unlocking sustainable investments in the energy markets

Yosra Assaker

Senior Energy Specialist, World Bank

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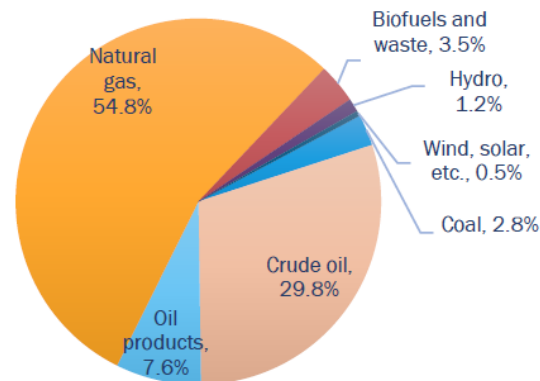
- Energy transition, moving from *Why* and *What* .. to *How*
- The energy transition funding needs – *insights from Egypt Country Climate and Development Report (CCDR)*
- Energy transition is an opportunity not a threat
- Who will finance the Energy transition, what do financiers want to see?

# Energy transition, Moving from *What* and *Why* .. to *How*

## Lessons from Egypt Country Climate and Development Report (CCDR)

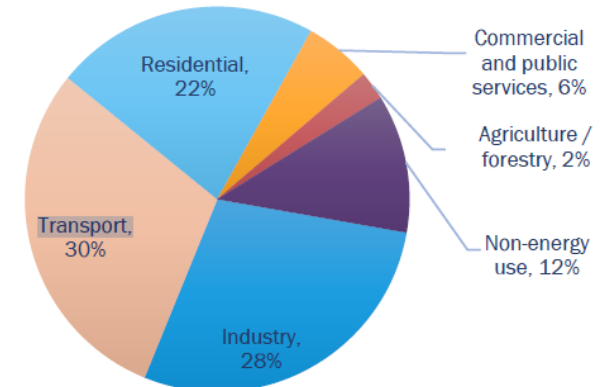
- Fossils account for 95% of primary energy supply.
- Transport, industry and Residential account for 80% of the Demand.
- Emission abatement requires more RE, EE, E-mobility and more expensive technologies for the hard-to-abate sectors; e.g use of Low Carbon Hydrogen (LCH), Carbon Capture and Storage (CCS) and others.

Figure 8. Egypt's Primary Energy Supply by source (percent), 2019



Source: IEA statistical data, 2019

Figure 9. Final Sectoral Energy consumption by sector (percent), 2019



Source: IEA statistical data, 2019

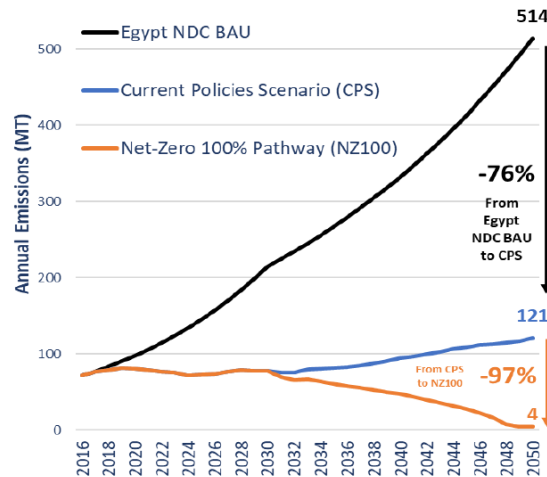
- MENA region does not contribute much to global emissions, yet decarbonization in developing economies will have a significant role in climate action.
- Energy transition and carbon footprint will be a determinant factor for goods and services **access to global markets**.

# How can Energy Transition be realized?

Large funding needs are required for implementing **current policies** and furthermore towards **net Zero emissions**

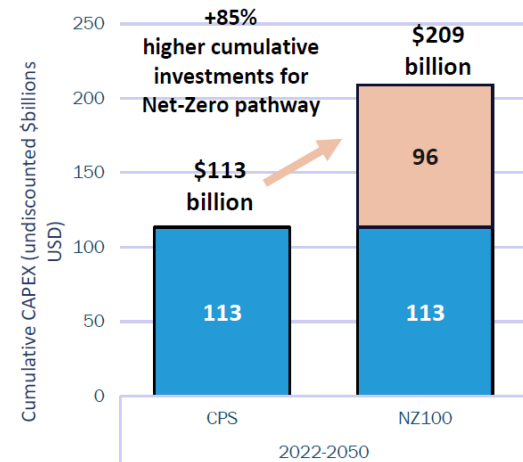
- The government current policies will reduce the emissions by 76%, requiring **\$113bn** investments.
- Further policies towards 97% emission reduction will raise the investments needs to **\$209bn**.

Figure 13. Annual Power sector emissions 2016-2050



Source: World Bank Team calculations.

Figure 14. Cumulative Investments Requirements by scenario



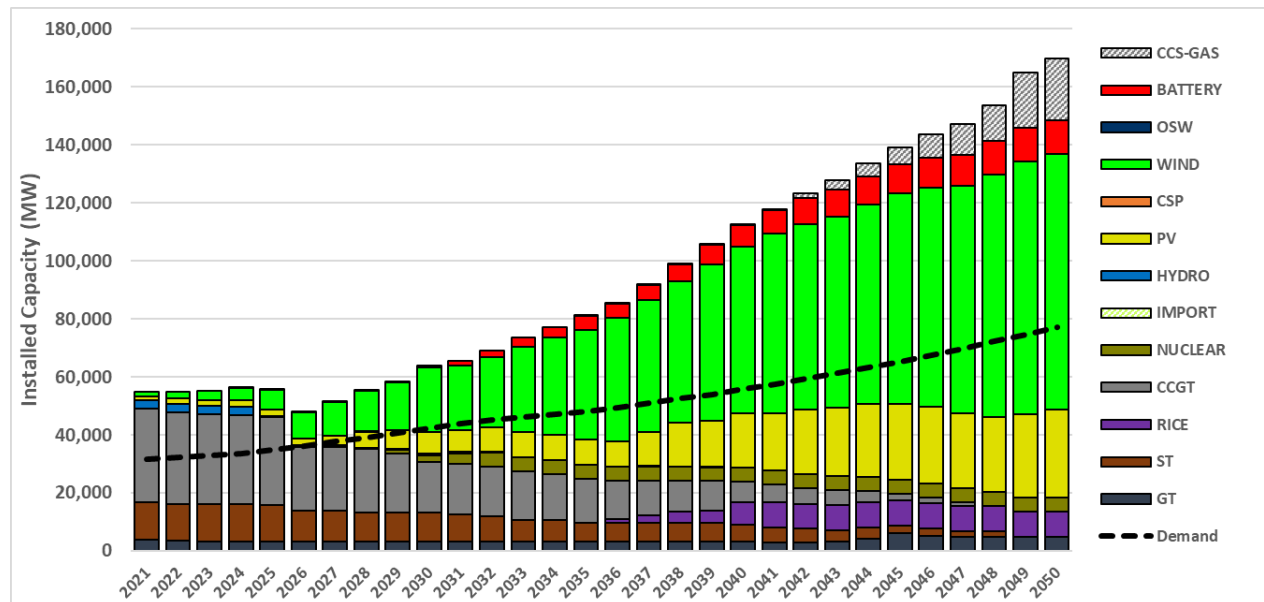
Source: World Bank Team calculations

# According to CCDR modelling, decarbonization of the electricity system will require an accelerated shift from fossil fuel towards a mix of clean energy

*The Government has not announced its updated energy strategy yet. However, it's expected to have increased RE targets*

- Greening the power system means increasing the share of cleaner technologies starting with the exploitation of the immense RE resources Egypt is endowed with.
- **Batteries and pumped storage** will be required to ensure renewables integration
- **Gas** will still be needed combined with carbon capture and storage (**CCS**)
- In the CCDR scenario, RE share in the **capacity mix** could reach **48% by 2030** with solar and wind representing 12% and 35% respectively.
- In 2035, RE capacity share will increase to **61%**

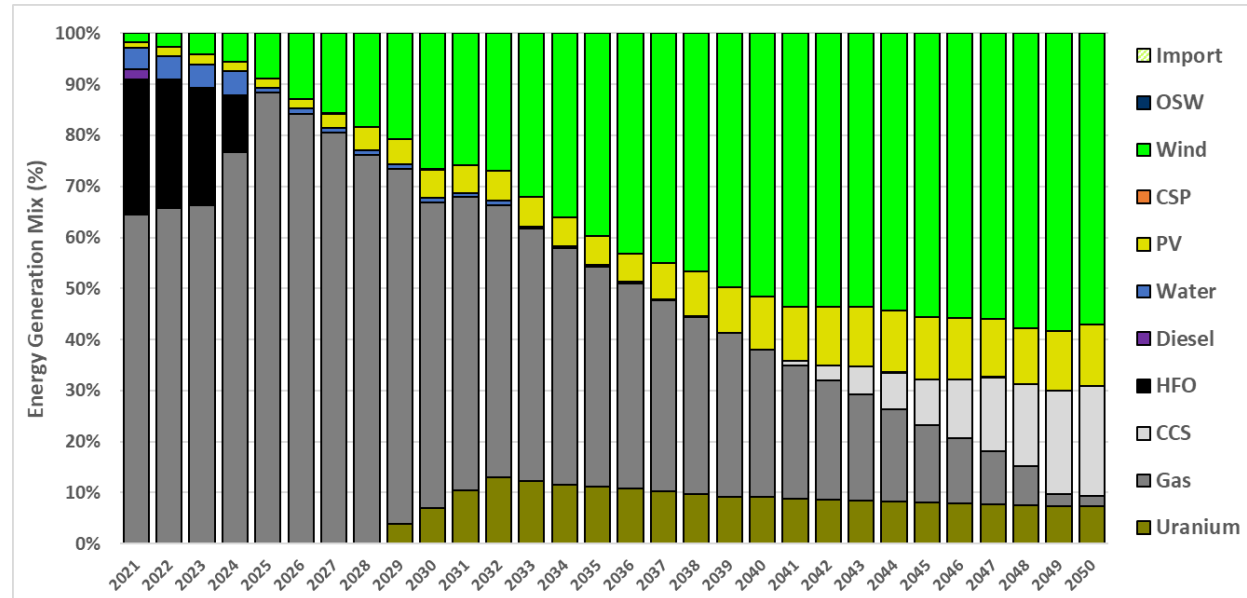
### Installed Capacity (MW)



# According to CCDR modelling, decarbonization of the electricity system will require an accelerated shift from fossil fuel towards a mix of clean energy

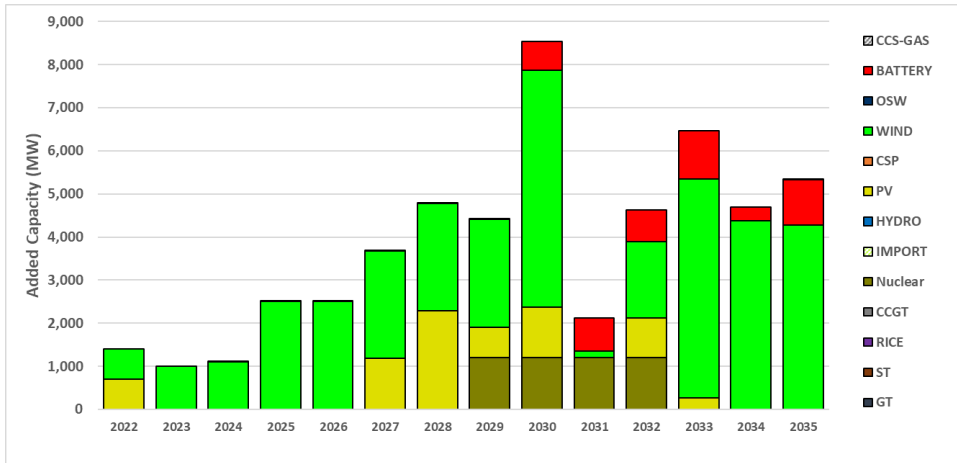
- In 2030, RE would represent 33% share in the energy **generation mix** and 46% in 2035.
- **Fossil fuels** will continue to play a critical role in the transition, but its mix **should decline quickly** from 93% in 2021 to 60% in 2030, 43% in 2035 and 2% in 2050.
- Uranium will contribute to a quasi steady 7% in the energy mix
- CCS will need to be added in a full decarbonization scenario from 2041
- As a result, the grid emission factor will drop from 0.38 tCO<sub>2</sub>/MWh in 2021 to 0.01 tCO<sub>2</sub>/MWh in 2050 reaching near zero full decarbonization (NZ100).

### Generation Mix (%)

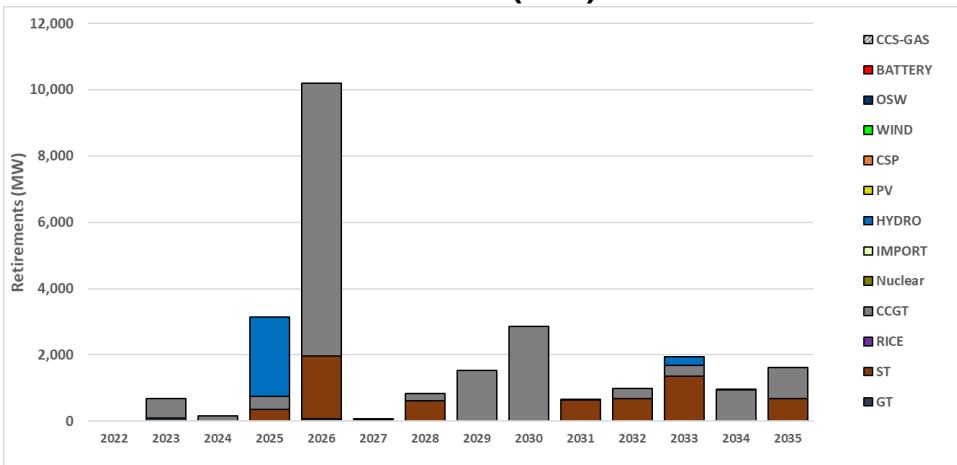


# Increasing the share of clean energy will go along with scheduled and economic retirement of fossil fuel-based generation fleet

## Incremental (New) Capacity (MW)



## Retirements (MW)



- According to Bank’s Electricity Planning Model (EPM), power sector decarbonization require gradual phase-out of thermal plants and increase of RE in the energy mix.

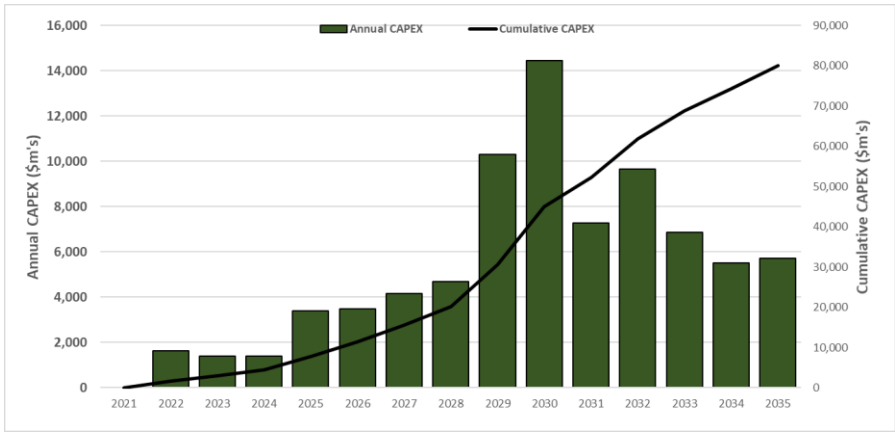
- From 2022-2035, 53,141 MW new capacity to be added including 7,215 MW of solar, 36,457 MW wind, 4,800 MW nuclear and 4,659 MW battery.

- No new fossil fuel power plants are expected to be built by 2035. However, for system operation new GT and reciprocating ICE could be added from 2036-2045 for 13,649 MW which represents 8% of cumulative added capacity by 2050. At the same time, 25,578 MW thermal power plant should be retired in 2022-2035.

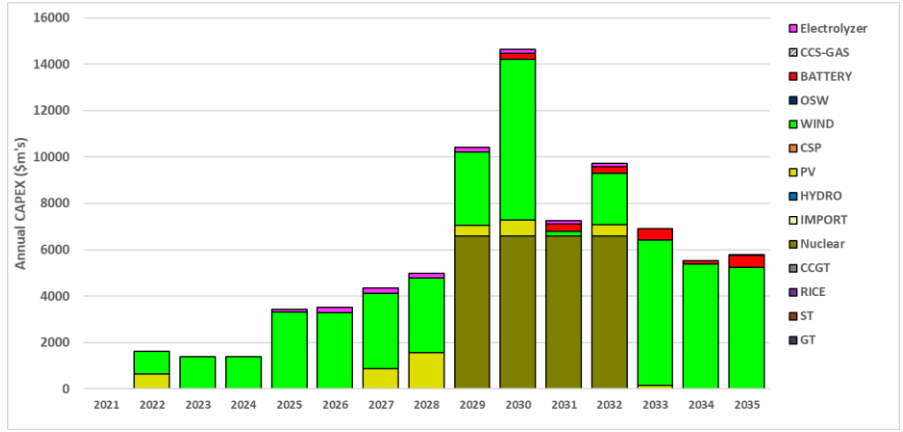
- The estimate compounds the deployment of energy efficiency and its impact on electricity demand

# For realization of this energy transition, massive investments are required

## Annual and Cumulative Investment Costs (million USD)



## Annual Investment Costs by Technology (million USD)




- Realizing energy transition will require an investment of \$45 billion by 2030 and \$80 billion by 2035. The total investment by 2050 was estimated at \$211 billion.

- Cumulative investments in wind generation alone will be around \$46 billion against close to \$5 billion for solar by 2035.
- Battery storage will require about \$2 billion investment and electrolyzers \$1.5 billion by 2035.



## The private sector role will be critical to mobilize required investments, Regulatory enablers are required

- As per the current investment outlook and the choices made by the government of Egypt, the majority of **investment in new generation assets will need to be made by the private sector**
  - **The public ownership policy paper issued in March 2022** identified energy and mining as sectors in which the state will minimize its ownership
  - Public resources should be used to unlock private capital in the energy sector while the Government will also need to mobilize climate finance, concessional finance as well as guarantee schemes
- 
- Egypt's Energy transition and decarbonization should start with a holistic plan considering: RE development, retirement of thermal power plants, EE, economic valuation of underlining investments, book values of thermal generation assets, value of export of saved gas , economic competitiveness, and just transition
  - The regulatory framework needs to be adapted to the new reality with more clarity on business-to-business supply contracts, integration charges/fees, etc.

## What do the financiers want to see?

- Transparency and disclosure of data to allow :
  - sound scientific research on policy options to inform strategic decisions.of the government
  - Credible market assessments for the investors to enable sound business planning.
- Country strategies shaping the sector outlook; including:
  - Credibility in strategies implementation with relevant timelines
  - Clarity on government priorities and timeframes (e.g CNG Vs. Battery Evs).
  - Consistency and alignment with other strategies and other sectors. e.g Coordination between energy- transport- trade and Industry- local authority regarding e-mobility.
- Policy signals regarding enabling environment for investors, and role of private sector Vs. role of government. (e.g single buyer model for RE Vs. B2B)

## What do the financiers want to see?

- Clear and consistent country targets to maximize benefiting from concessional financing.
- Diversified financing tools and business models to fit different needs.
- Clarity and predictability on the business environment to gain the investor and consumer trust, e.g:
  - Transparency on development of tariff.
  - Stability on licensing and operating regulations
  - Considering the economic models of investors when assessing any regulatory / tariff change.
  - Balancing the interests of different stakeholders.
- Active and continuous engagement with stakeholders.
  - Feedback on service providers.
  - Market sounding and hearing sessions on change of regulations.

# Contact us!



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**Together We Switch to Clean Energy**

For any inquiries or comments,  
please don't hesitate to contact  
us



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