

# Responding to the Changing Energy World through Innovations

- Perspectives from a development financier

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# Outline of Presentation

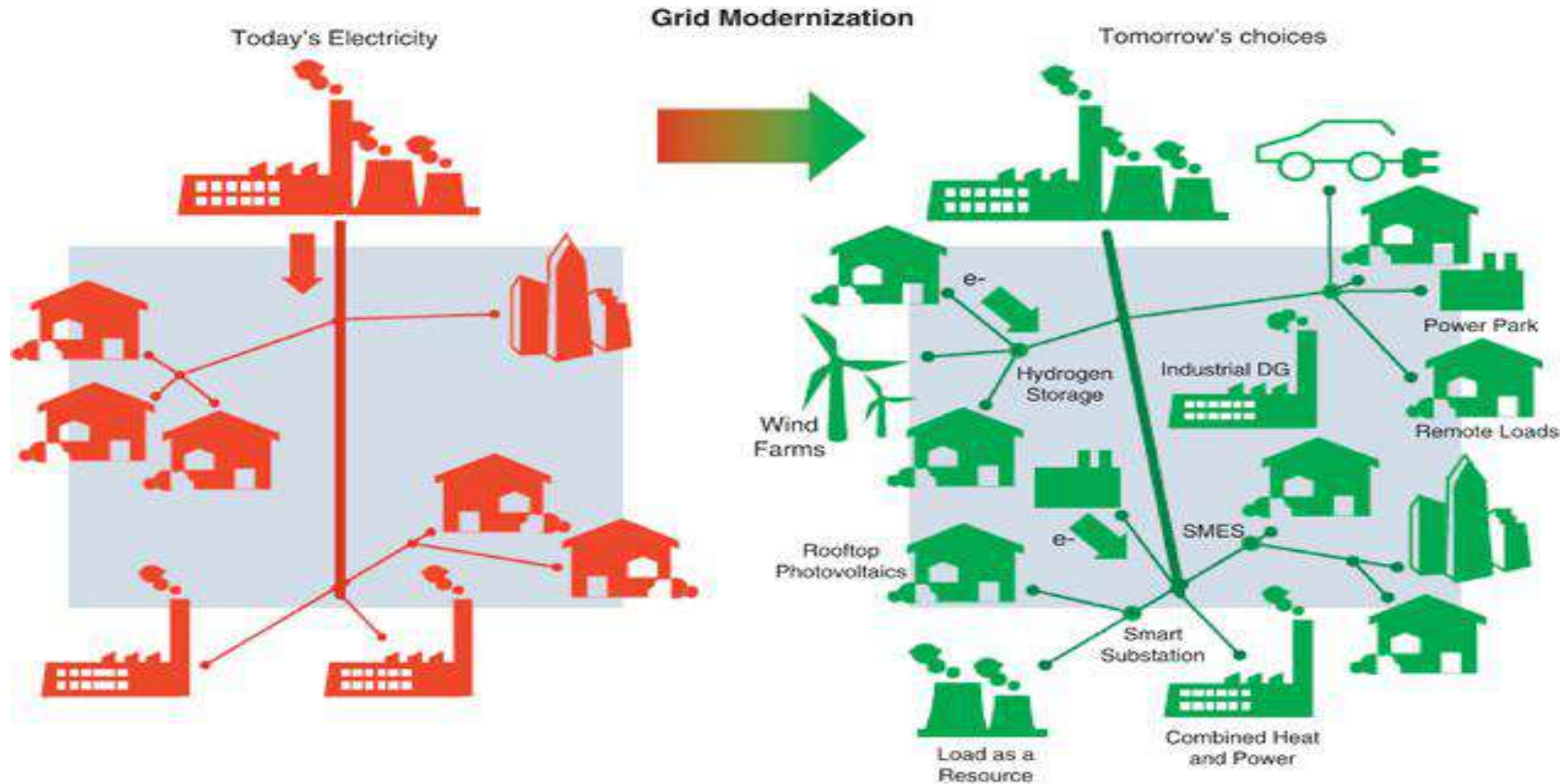
- What has changed, what will change in the energy systems, as seen by a development financier?
- Facing such changes, what should be responses from all stakeholders ?
- More specifically, what's Asian Development Bank's response?

# Energy Sector Financing

## Three decades of evolving priorities...

- 1990-2000 “ $a \cdot x + b = c$ ”
  - Developing large conventional power systems to support economic growth
  - Private sector investments through IPPs (BOT contracts, “take-or-pay”)
- 2000-2010 “ $a \cdot x + b \cdot y^2 = c$ ”
  - Economic growth vs. inclusive growth: poverty reduction is overarching goal
  - Investments prioritized in rural electrification by public sector concessional funding
- 2010-2020 “ $a \cdot x + b \cdot y^2 + c \cdot z^3 = d$ ”.
  - Paris Agreement: climate change mitigation
  - Sustainable Development Goal: towards universal clean energy access
  - Sustainable inclusive economic growth!

# Accordingly, energy systems also evolving.....

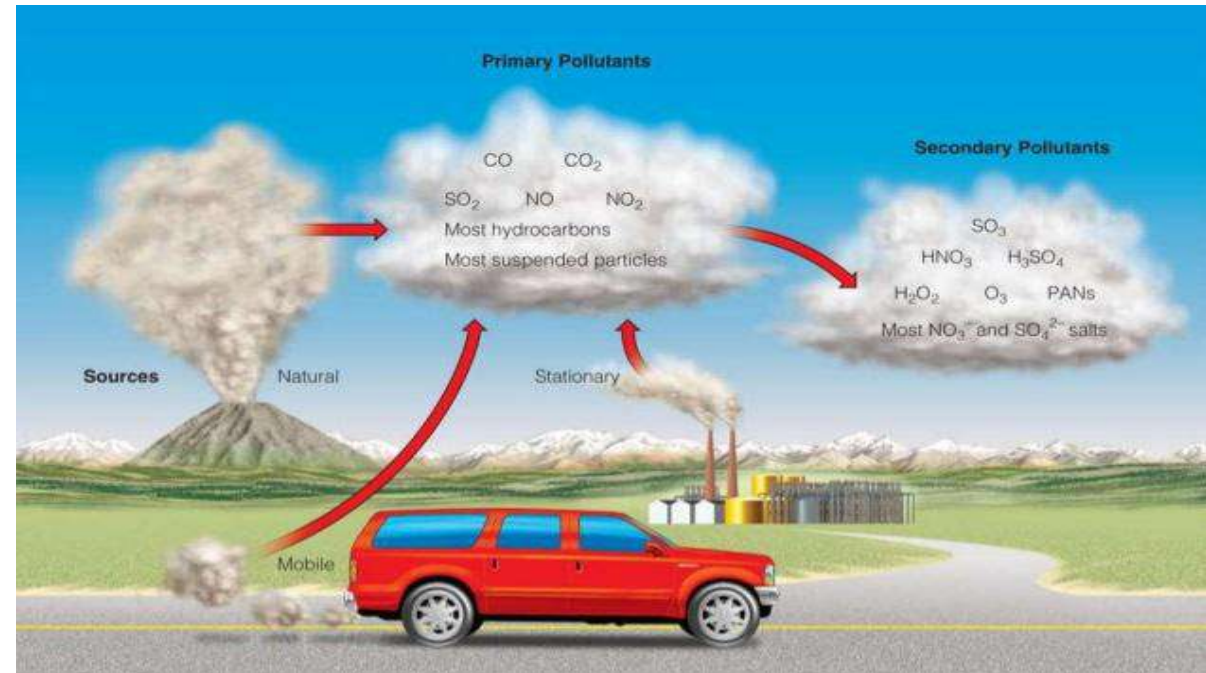


New energy systems in “7 Ds” ---  
deregulated, decentralized, distributed, decarbonized, diversified, democratized, digitalized.

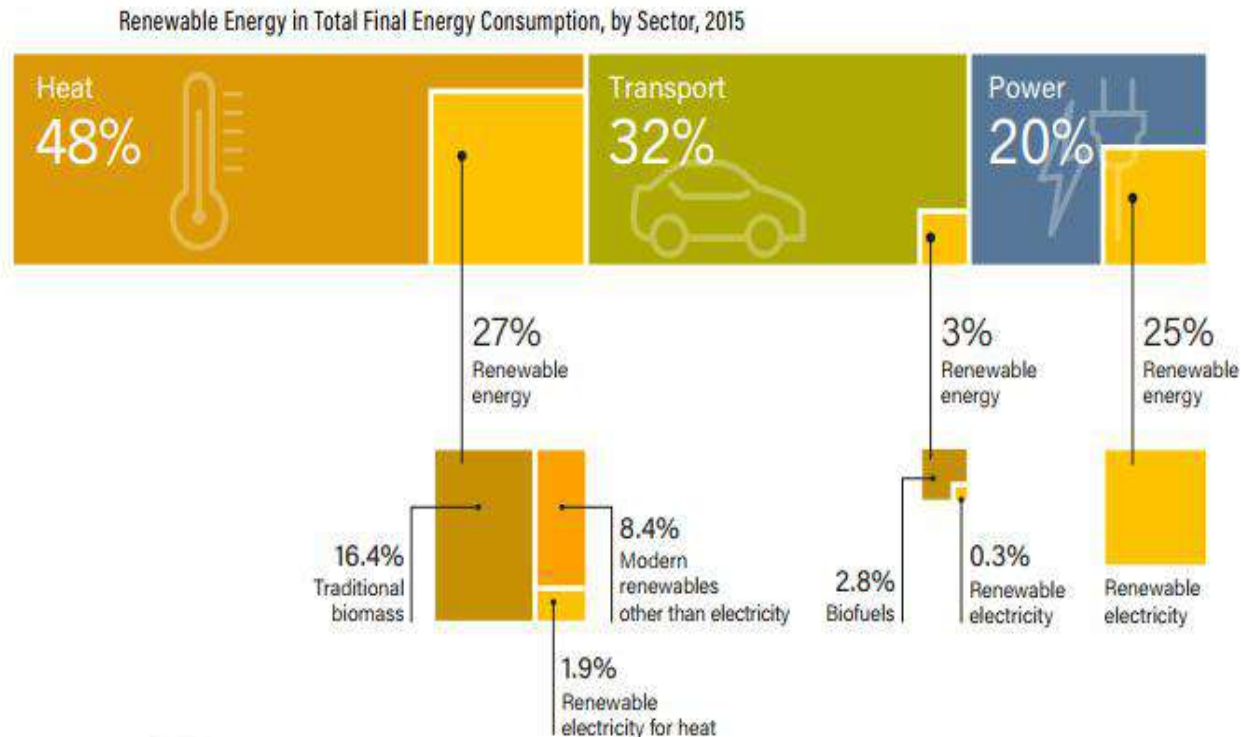
M:

## Energy is part of multi-sectoral complex issues

Energy is no longer an issue that can be addressed separately, but part of the problem with broader climate change issue and environmental sustainability issue – there is multisectoral linkage with transport, water, urban, health etc.



# R: Need for Re-electrification



Electrification means provision of electricity access to all households.

Re-electrification, which means to use electricity for cooking, heating, transport that are largely dependent on petroleum so far.

S:

## Say's Law "Rehabilitated" in Energy Sector

- Say's Law: "supply creates its own demand", not accepted by mainstream economists.
- Energy service suppliers will have to be creative in formulating technology & business options to create consumers' demand.



Facing the changes in the energy systems, what should be preparedness and responses from all stakeholders?

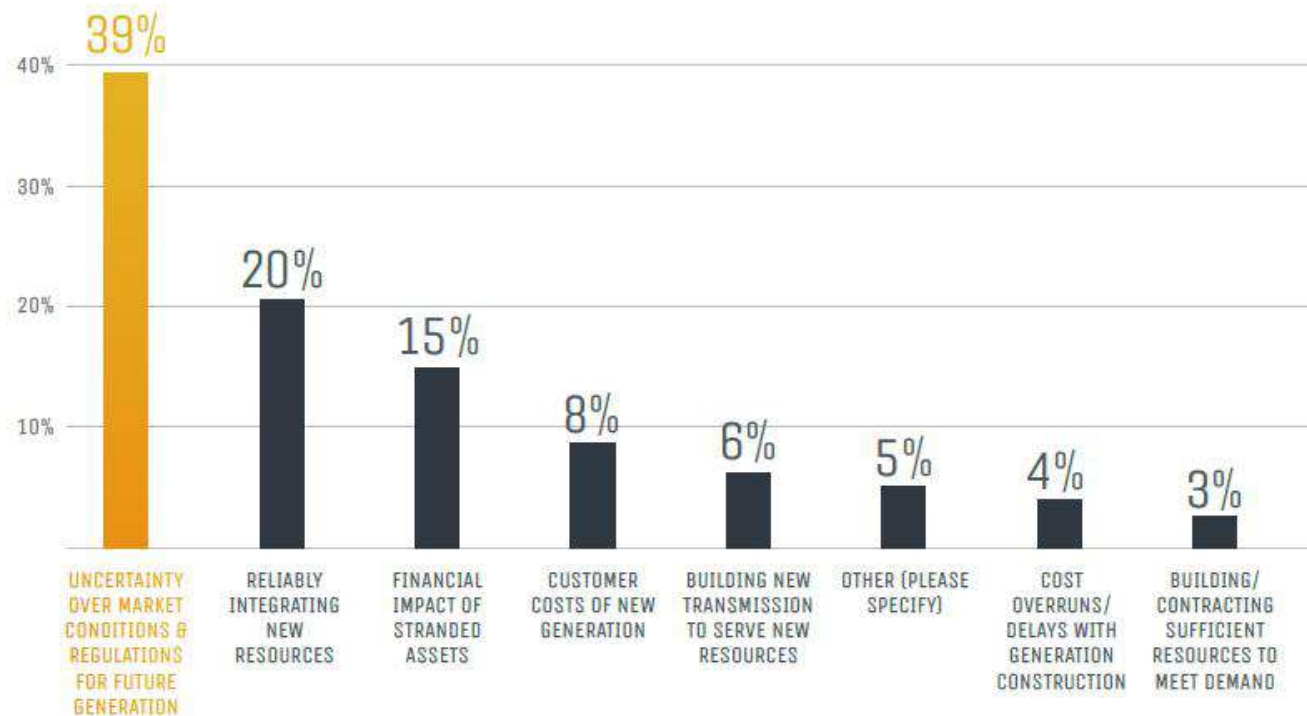






# Energy companies: Utilities are more concerned with intermittent regulations

WHAT'S THE SINGLE GREATEST CHALLENGE ASSOCIATED WITH YOUR CHANGING FUEL MIX?



According a recent survey in US with over 700 utilities, their greatest concern for the next 10 years is not the reliability issue with integrating renewable energy sources, but the uncertainty of regulations.

Source: US - State of the Electric Utility Survey, 2018

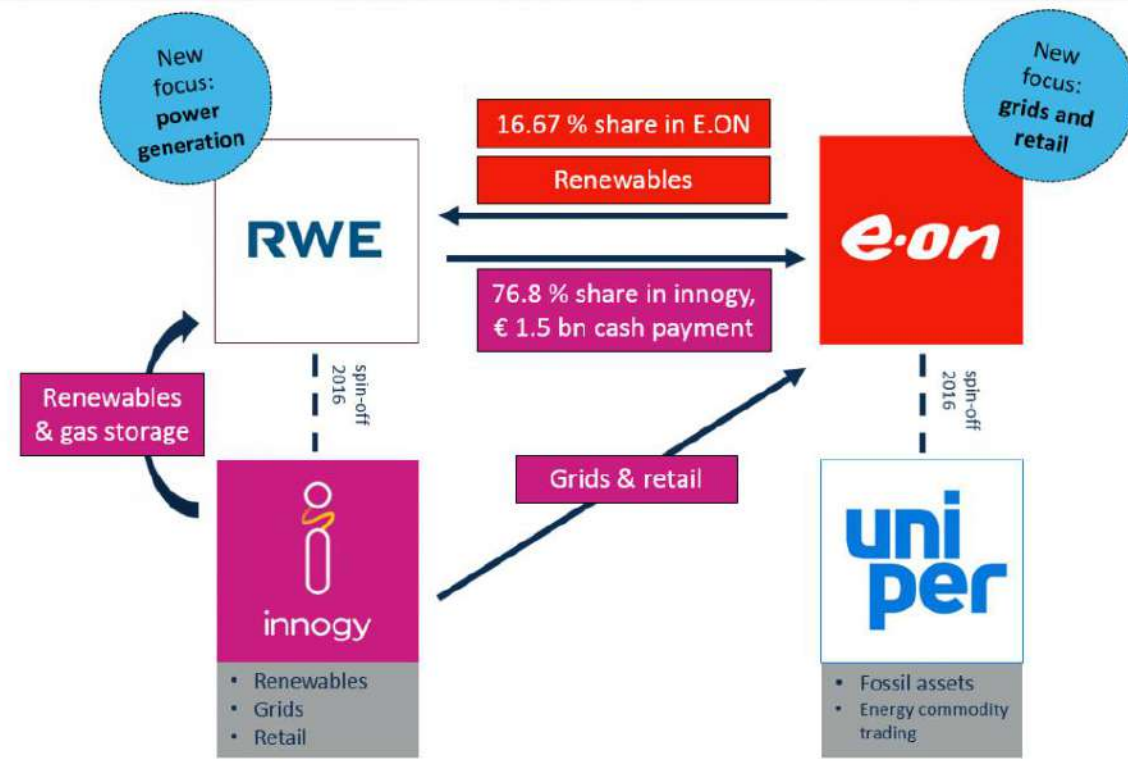
# Energy supply companies → Energy service providers

GDF SUEZ



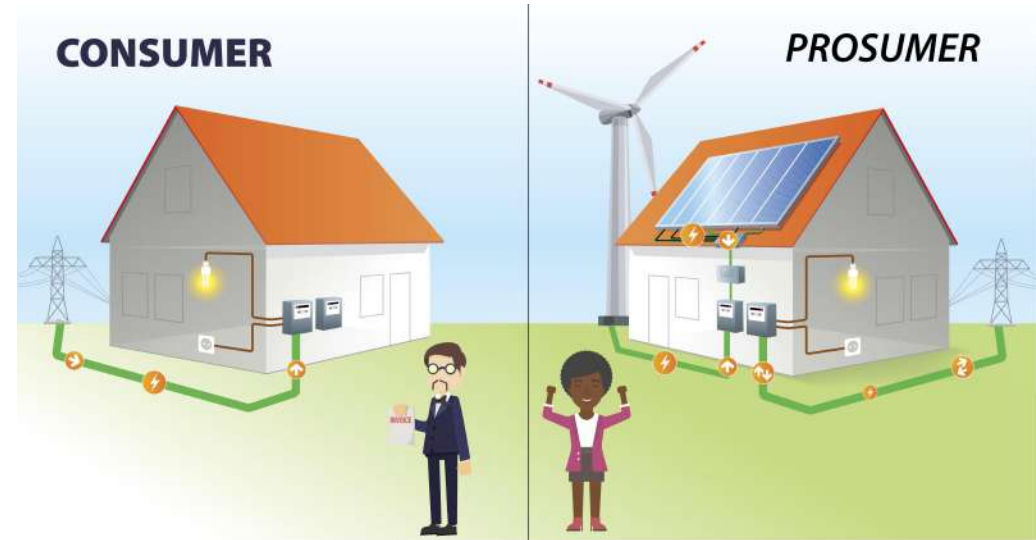
RWE and E.ON split up innogy:  
German power sector re-shuffle explained.

CLEAN  
ENERGY  
WIRE



# Energy Consumers → Efficient Prosumers

- Consumers with rooftop solar plus storage to meet their own energy demand.
- Sharing the surplus production with others using blockchain for safe transaction.
- Also, the AI technology will finally make energy efficiency part of our life



# The responses from Asian Development Bank

## STRATEGY 2030

**PROSPEROUS**  
**INCLUSIVE**  
**RESILIENT**  
**SUSTAINABLE**

ASIA AND THE PACIFIC



# ADB Strategy 2030: 7 Operational Priorities

## Energy Sector's Contributions

Operational Priorities	Energy Sector Contributions
Addressing Remaining Poverty and Reducing Inequalities	Clean energy for meeting basic needs (lighting and cooking); skills development and job creation with renewable energy; productive use of energy to generate income; solar home systems
Accelerating Progress in Gender Equality	Clean energy access relieves women for fuel collection which allows women more time to pursue income-generating activities
Tackling Climate Change, Building Disaster Resilience	Integrating climate change mitigation (GHG reduction) and adaptation into project design
Making Cities More Livable	Supporting smart electricity supply to cities, energy efficient buildings and electric vehicles, rooftop solar for household and commercial buildings
Promoting Rural Development and Food Security	ADB will support use of solar powered pumps for smart irrigation to replace diesel or electricity powered pumps
Strengthening Governance and Institutional Capacity	Promoting energy sector reforms and developing institutional capacity for renewable energy development
Fostering Regional Cooperation and Integration	Promoting energy connectivity (power interconnections, gas pipelines), and sharing best practices and technologies in renewable energy development

# ADB Energy Project Review: Strategic Considerations and Key Questions Asked

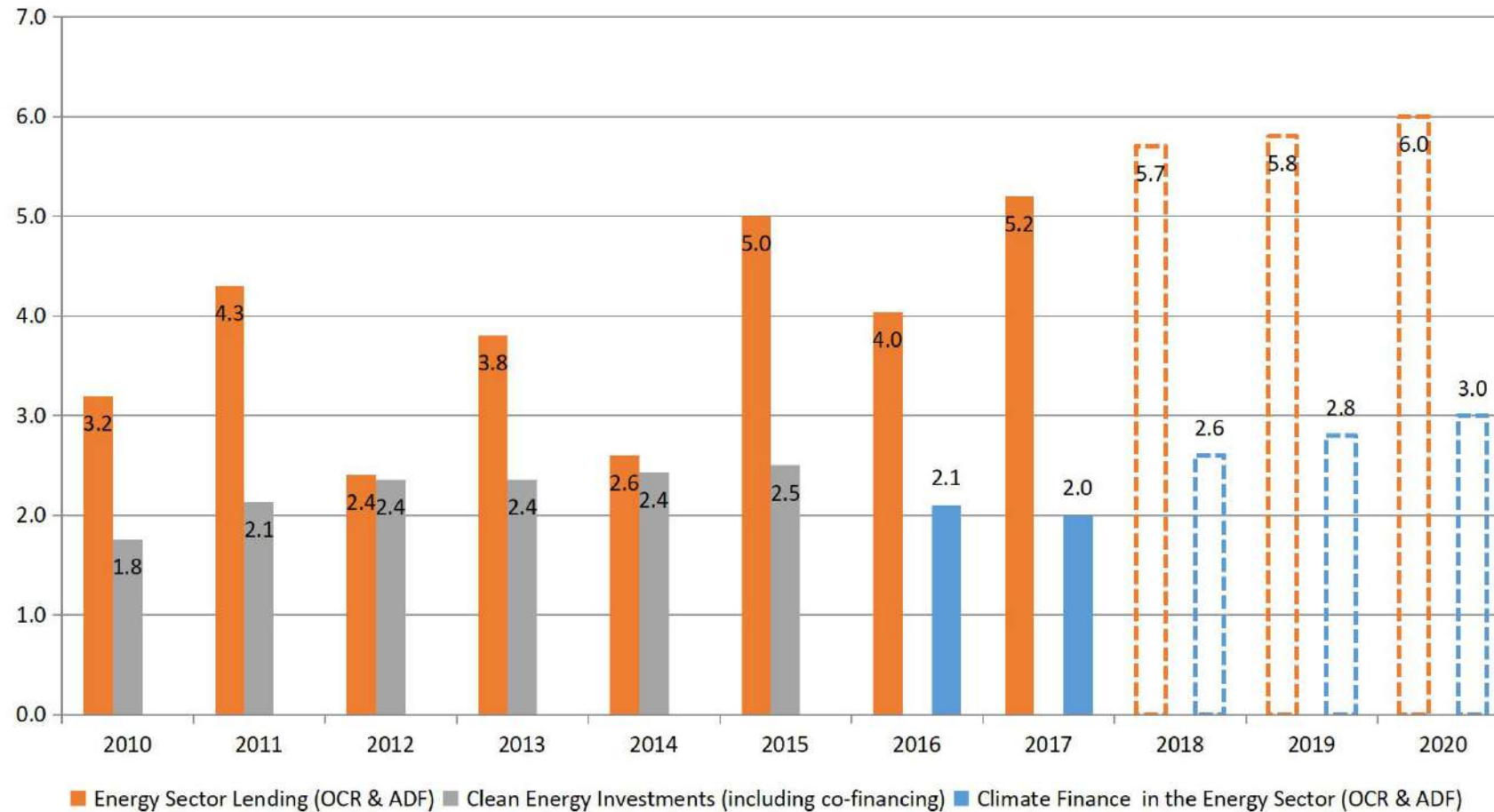
## **Three Strategic Considerations:**

- How the project will contribute to the achievement of SDG 7 (universal energy for all by 2030)?
- How the project is aligned with the country's Nationally Determined Contribution under Paris Agreement and helps them in achieving their targets (CO2 reduction in tons)?
- How the project contributes to climate financing (in \$)?

## **Three Key Questions Asked:**

- Does the project include new and/advance technologies?
- Does the project include new business models/approaches (e.g. cross sectoral)
- Does the project include innovative financing instruments?

# ADB Energy Sector Achievement and Target (US\$ billion)







Asia Development Bank Rooftop Project / 571 KW / Manila, Philippine