

# Opportunities and Challenges for Belt and Road Overseas Investment in the Power Sector under the Paris Agreement

## - Vietnam, Indonesia and Pakistan Case Studies

Greenovation Hub

### Background

#### Promoting a “Belt and Road” Initiative in Line with the Paris Agreement

The 2030 Agenda for Sustainable Development and the Paris Agreement call for a paradigm shift in low-carbon development goals. The “Belt and Road” Initiative (BRI), launched by China in 2013, could play a key role in promoting the implementation of the SDGs and the Paris Agreement. To promote BRI investments that align with the emissions pathway needed to achieve the Paris Agreement, this study assesses the demand for energy transition in selected Asian developing countries, establishes a baseline for power investments based on NDC targets, and provides recommendations for policy makers and investors to promote China’s cooperation with other developing countries under the BRI to implement the Paris Agreement.

This study analyzes the current power development of Vietnam, Pakistan and Indonesia, and their power development under their NDC target scenarios and under enhanced low-carbon scenarios. By analyzing the investment in renewables and energy efficiency needed to meet these countries’ NDC and low-carbon scenarios, the study explores opportunities and challenges for greening BRI power investments. Vietnam, Pakistan and Indonesia were selected based on their high vulnerability to climate change impacts and increasing energy demand.

### Vietnam

#### Vietnam’s NDC target

- Unconditional contribution: 8% GHG emission reduction by 2030 compared to BAU with domestic resources
- Conditional contribution: 25% GHG emission reduction by 2030 compared to BAU with international support

#### Opportunities for enhanced low-carbon transition

1. Increasing end-user’s energy efficiency
2. Improving renewable energy generation technology with declining investment costs

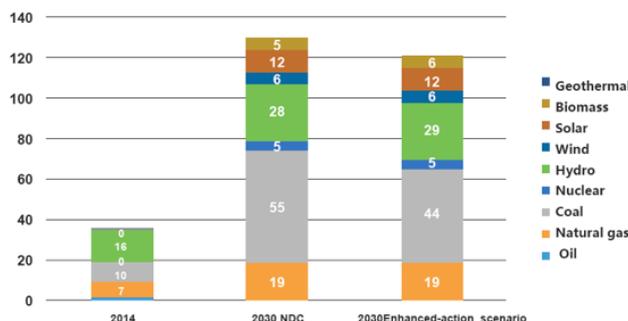


Figure: Vietnam power generation structure (GW) under the NDC and enhanced low carbon action scenarios 2014-2030

In the enhanced action scenario, based on Asian Development Bank data:

- Vietnam would reduce its carbon emissions by 35 million tons compared to the NDC scenario.
- New coal power investments would be reduced by 18 billion US dollars in the enhanced low-carbon transition scenario.
- Renewable energy development would require an additional \$5 billion investment.

### Indonesia

#### Indonesia’s NDC targets

- Unconditional target: 29% emission reduction by 2030 compared with the BAU scenario
- Conditional target: 41% Emission reduction by 2030 compared with the BAU scenario with international support



Figure: Power generation structure in Indonesia’s NDC scenario in 2030 (%)

## Opportunities for enhanced low-carbon transition

1. Improving the technical level of coal-fired power plants: According to IEA estimates, a 7.5 GW net reduction in coal capacity could be achieved.
2. Developing renewable energy: According to IRENA estimates, 107 MtCO<sub>2e</sub> could be reduced in the power sector per year by 2030.

## Pakistan

### Pakistan's NDC targets

- With 40 billion US dollars of international support in place, the GHG emissions would be reduced by 20% from the baseline scenario by 2030.

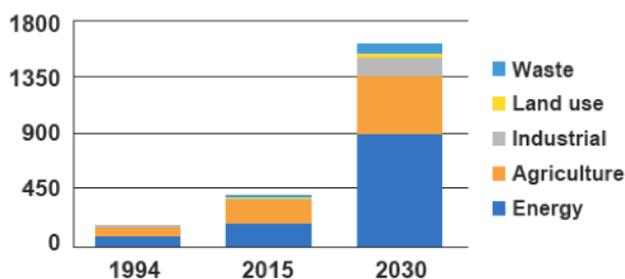


Figure: Carbon emissions of Pakistan by sector in 2030 under the NDC scenario (MtCO<sub>2e</sub>)

**The China-Pakistan Economic Corridor (CPEC)** is a flagship project of the BRI. The 13.8 GW of “early-harvest” power projects put into operation and planned by CPEC are dominated by hydro and coal projects, with some solar and wind. Unless existing units are phased out in the future, the 25GW generation capacity increase target by 2025 in Pakistan Vision 2025 will be contributed primarily by CPEC projects.

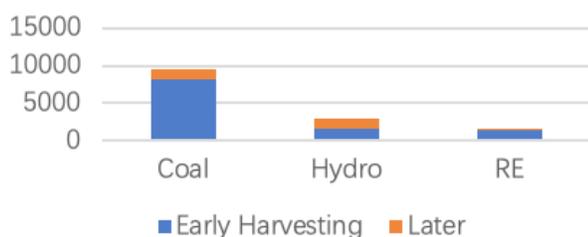


Figure: CPEC power projects (MW)

### Risks of CPEC energy investments

1. Coal plants locking Pakistan on a high-carbon emission pathway
2. Potential financial and reputational losses for existing sub-critical coal power plants due to possible retrofitting with CCS and strengthened climate and environmental standards
3. Dependence on imported fuels not improved, as some coal power plants still use imported coal
4. Increased conflicts between water and energy

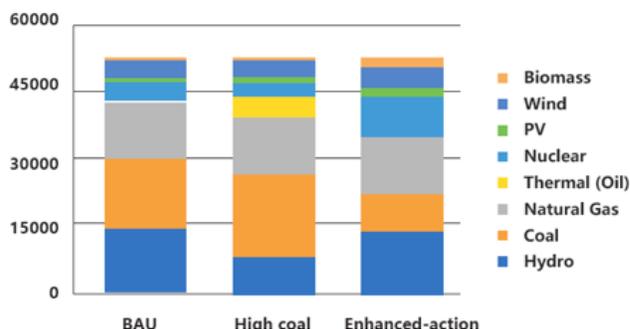


Figure: Comparison of power generation mix in Pakistan in 2030 including CPEC projects

## Opportunities for enhanced low-carbon transition

1. Adopting energy efficient technologies in power generation and end-use energy consumption
2. Stopping construction of new coal power projects
3. Vigorously developing renewable energy

By 2030, a reduction in annual emissions of 33.8 MtCO<sub>2e</sub> could be achieved under the above development path.

## Recommendations for greening “Belt and Road” power investments

1. Use NDCs as a baseline in guiding the decision-making of BRI power investments.
2. Identify and manage the impacts of climate change on power infrastructure in host countries and incorporate them into the feasibility assessment.
3. Focus on renewable energy projects to help diversify host countries’ power supply and strengthen energy security.
4. Take a stricter and more cautious approach towards coal investment, and limit construction of coal power. Where coal power is built, ensure that only very efficient, low emissions technology is used, including CCS.
5. Promote investment in energy efficiency, which has significant environmental and climate co-benefits.
6. Develop smart grids and regional grid connectivity in Vietnam, Indonesia and Pakistan based on their national situations, and build high-voltage power grid for clean energy transmission.



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