

International Assessment Report

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Pakistan's struggle to go green while CPEC coal power plants continue to grow



Executive Summary

China and Pakistan have a long-standing economic and political relation. Which has developed stronger with time, establishing China Pakistan Economic Corridor (CPEC) to honor both countries' economic relations with each other. This project is an important part of China's One Belt One Road Initiative and while it may provide economic opportunities, on a broader level it is damaging local climate security

(Ascensao et al., 2018).

The environment is directly aligned with CPEC as the projects have an impact on the country's air quality, climate change, noise pollution, and waste management (Asees, A, M. and Ali, Y., 2019). However, to meet Pakistan's energy shortages, Pakistan's previous Prime Minister, Nawaz Sharif agreed to construct coal-based power plants, neglecting the environmental cost. Pakistan's National Electric Power Regulatory Authority (NEPRA) expects that the coal power projects under CPEC will increase the country's coal-fired generation capacity to 20 percent by 2025. This particular development will hamper Pakistan's efforts to achieve Sustainable Development Goals (SDGs) 2030 and in procuring carbon credits.

Pakistan aims to produce 30% of its energy through renewable sources by 2030 (WWEA 2019). However, there is an immediate need to negotiate project deals with China or to introduce green energy sources to achieve the goal by 2030. Pakistan revised its Alternative and Renewable Energy policy in 2019 that aims to reduce carbon emissions by developing a sustainable, efficient, and competitive power market while promoting ARET technology and manufacturing capabilities (AEDB 2019). Despite that, it does not include CPEC coal projects that directly harm the environment which calls for effective strategies for favorable environmental sustainability (Ali et al., 2018). In order to protect Pakistan's environment, the dependency on fossil fuels must be reduced and the Kyoto protocol must be followed.

Pakistan must develop policies to maximize the share of renewable energy sources to mitigate the carbon emissions and energy crisis rather than harness indigenous coal for power production (Solangi et al., 2019). There are multiple ways to achieve clean production of energy, even if it involves coal projects. The first step has to be the reregulation of government and federal environmental agencies and secondly by using low carbon advanced technologies that can help achieve sustainable methods of coal energy production. To curb the immediate impact of coal power plants, a comprehensive management strategy must be initiated.

Summary of the Problem

Coal-fired energy has documented negative impacts on the environment and human health. In order to tackle climate change in Pakistan, the relevant Energy and Development Ministries in the country must cooperate with Federal ministers in revising and negotiating energy policies. There is an immediate concern that the operationalization of coal power plants under CPEC shall directly have an adverse effect on Pakistan's biodiversity, water, and air (Zhang et al.2017; Huang et al.2017). However, it is important to note that Beijing has time and again emphasized green development, but under CPEC there is a disconnect between coal power generation and green energy (Downs., E, 2019). China uses coal power plants based on sub-critical and supercritical technology but none of the plants use Ultra-supercritical technology which China itself has mastered and acquired in the 1990s from the West (Siddiqui 2018). Also, none of the coal power plants deploy Carbon Capture & Sequestration technologies, which allow CO₂ to be removed during emission and be stored in the ponds or grounds (Siddiqui 2018).

Policy Recommendations & Explanation

The China-Pakistan Economic Corridor (CPEC) coal-fired power plants, which were introduced in Pakistan to overcome energy shortages, have exacerbated environmental conditions. Consequently, the re-evaluation of environmental and production costs of current and prospective CPEC projects are crucial for Pakistan to secure a sustainable future.

The first and second recommendations highlight the significance of advanced technology (i.e. Carbon Capture and Storage (CCS) and ultra-supercritical technology) for continued utilisation of coal-fired power plants in Pakistan. Although the estimated cost to incorporate CCS technology in existing coal-fired power plants is \$53/tonne, the retrofitting of CCS reduces CO₂ emissions more than 36 times (Ishaque, 2017), thus demonstrating that the environmental benefits outweigh the actual cost. However, if the cost of retrofitting CCS and importing green technologies are considered high, the government of Pakistan should press for locally produced clean technology.

Funds from international organisations like the Asian Development Bank and the United Nations can help achieve this objective (Rashid et.al, 2020). Additionally, the involvement of local industries and professionals (researchers and scientists) can encourage the development of CCS technology locally. This is effortlessly achieved through expansion programmes, proposed by the government, which recruit knowledgeable professionals to exchange ideas on efficient CCS development. With local manufacturing firms offering their assistance and services (Huenteler et. al, 2016) Pakistan's economy will also experience positive growth.

Furthermore, the implementation of advanced technology that regulates air pollution such as Pressurised-Fluidised-Bed Combustion (PFBC) is crucial for the continued utilisation of coal-fired power plants. Current CPEC coal-fired power plants exploit outdated and inefficient technology (i.e. subcritical and supercritical) which are banned in many countries. Therefore, to safeguard healthy air quality standards in Pakistan, local government officials should engage in negotiations with China to incorporate ultra-supercritical technology - a technology that has been already mastered by China - into the existing coal-fired power plants (Siddiqui, 2018).

The third recommendation in the policy brief emphasizes the need for re-regulation of government and federal environmental agencies. For example, the alleged involvement of Pakistan Environmental Protection Agency (Pak-EPA) officials in irregular and corrupt practices such as issuing No Objection Certificates to industries in exchange for bribes have aggravated Pakistan's environmental conditions (Anwar, 2015). Although the 1997 Pakistan Environmental Protection Act enforces the conduct of Environmental Impact Assessments (EIA), the Pak-EPA displays insufficient or poor understanding of the EIA process resulting in obscure evaluations of CPEC coal-fired power plant projects (Baloch, 2018). Therefore, it is imperative that government officials be more selective in hiring competent experts to conduct EIAs to uphold integrity and maintain the quality of these assessments, consequently improving the environment.

Additionally, there are no stipulated legal conditions for Strategic Environmental Assessments (SEAs) to be performed for CPEC projects. SEA is a participatory and analytical approach to evaluate environmental implications in plans and policies while taking into consideration social and economic aspects. It is supposedly more efficient than EIAs as it cites recommendations that encompass environmental-related challenges. For instance, feedback and recommendations (i.e. impose carbon taxes) in the SEA from Rwanda's energy sector have been incorporated in the country's policies to lessen environmental issues (Seman et.al, 2015). Hence, it is appropriate to utilise the SEA in CPEC coal-fired power plant projects in Pakistan.

The final recommendation proposes that a central authority be appointed to supervise the implementation of recommendations outlined in EIAs and/or SEAs for CPEC coal-fired power plant projects. The selection committee should adhere to stringent requirements in the appointment process and include external representatives (i.e. representatives from International Governmental Organisations) to reduce bias and corruption, consequently alleviating environmental concerns in Pakistan while generating economic and social benefits.