



Pakistan's quest for coal-based energy under the China-Pakistan Economic Corridor (CPEC): implications for the environment

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Dear Editor

Pakistan is one of the central countries in China's grand Belt and Road Initiative (BRI) where the latter is investing over US\$ 46 billion in China-Pakistan Economic Corridor (CPEC): an aggregate of projects aimed at building energy and communication infrastructure and developing industrial zones. Of this, \$34 billion has been allocated for projects in the energy sector comprising coal, hydro, wind, and solar. Like CPEC projects in other sectors such as transport infrastructure and industrialization, the Pakistani government is very optimistic about projects in the energy sector. It is expected that CPEC "energy projects will serve as a backbone of the energy strategy to overcome power crisis in Pakistan" (Government of Pakistan 2014, p. 61). Another important feature of energy projects under the CPEC, as envisioned by the Government, is "to improve the energy mix with a larger share of coal, hydel and renewable energy sources" (Government of Pakistan 2014, p. 70). According to policy documents, the country has "an enormous amount of untapped coal reserves (around 186 billion tons)" (Government of Pakistan 2014, p. 61) and the government aims to increase domestic coal production from 4.5 to 60 million tons annually. Thus, to reduce its reliance on imported fuel, the government is looking to explore cheap indigenous sources of energy, particularly coal.

International observers and commentators also assert that CPEC would enable Pakistan to get rid of the energy shortfall. According to Kugelman (2017, p. 16), CPEC "could conceivably zero out the country's energy shortfall, which ranges from 5,000 to 7,000 megawatts (MW)". The author states that "imported petroleum products account for a whopping 90% of

Pakistan's fuel consumption", thus CPEC would considerably improve cheaper energy mix for a country of over 200 million people (2017, p. 23). As mentioned earlier, capitalizing on indigenous energy resources could enable Pakistan to reduce overall dependence on imported oil from the Middle East which costs heavily to national kitty.

There are a total of 19 projects in the energy sector consisting of building new power plants as well as upgrading transmission lines keeping in view future energy demand. Going into the detailed list of the projects, although there is a mix of coal, hydel, solar and wind, majority of the projects are coal-based (CPEC Secretariat 2018). There are only three hydro projects with a total capacity of about 2700 MW. Similarly, while there are several renewable energy projects, most of these are not of significant potential except Quaid-e-Azam Solar Park in Bahawalpur, Punjab, which has a capacity of 1000 MW. In contrast, there are 10 coal-based energy projects with estimated capacity of 8880 MW (CPEC Secretariat 2018).

Although a cheap source of energy production, coal-based energy plants have severe environmental implications. In her book, Economy (2010) asserts that while China has made tremendous progress in terms of economic development over the last few decades, it also has detrimental impact on the environment largely on account of unprecedented coal-based energy production. The author states that China is the world largest coal producer as it accounts for nearly half of global consumption and is the largest source of carbon emissions. Consequently, China has six of the ten most polluted cities in the world, its largest five rivers are not suitable for human contact, air quality in many big cities fails to meet international health standards, and about 300,000 people die annually prematurely as a result of air pollution (Economy 2010). The author claims that coal is primarily responsible for the degradation of air quality and overall environmental hazard.

Keeping in view this, although CPEC-related power projects will reduce the supply-demand gap in the country, these could also have quite harmful effects on the environment in the long run. There are concerns about the

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carbon dioxide (CO₂) emissions associated with coal-based thermal power projects. The Government of Pakistan has stated in policy documents that in collaboration with its Chinese partners, it would ensure to make CPEC environmentally sustainable. Both Pakistani and Chinese officials stated during interviews that they have committed to adopting clean coal combustion technologies that conform to international standards. The Chinese Deputy Chief of Mission (DCM) in Pakistan stated that the latest technology used in coal plants in the United States (US) and Europe is being brought to Pakistan (personal communication, September 14, 2017). Similarly, the Deputy Director of CPEC at the Ministry of Planning, Development and Reform (PDR) asserted that Pakistan is conscious of the environmental repercussions of coal-based energy stations; consistent efforts are underway to minimize the cost to the environment by importing the latest technology for coal power plants to reduce carbon dioxide and other gas emissions (personal communication, September 7, 2017). However, while interacting with a number of academics and civil society representatives in Pakistan, genuine concerns were raised about coal-based power plants having serious environmental implications for the country. Thus, while there are high hopes associated with huge investments in the energy sector, a paradigm shift towards coal-fired power plants could have serious long-term environmental implications for Pakistan as the country is already quite vulnerable to climate-induced hazards (Isran 2017; Saleem 2017; Zaman 2016). According to the Global Climate Risk Index of 2017, which ranks countries based on impacts of extreme weather events both in terms of fatalities as well as economic losses, Pakistan is among the 10 most affected countries (Kreft et al. 2017).

In view of this, rather than investing substantially in coal-based power plants which have serious environmental implications, Pakistan should focus more on renewable energy as the country has significant potential. It has been stated that Pakistan has “a total renewable energy potential of about 167.7 GW, which is more than enough to meet the total electricity demand of the country” (Rafique and Rehman 2017, p. 156). Thus, it is time to make relevant policies and establish necessary infrastructure to fully utilize latest technology to exploit the maximum potential of the country’s renewable energy. In its latest report titled “Global Trends in Renewable Energy Investment 2017,” the United Nations Environment Program (UNEP) has observed that all investments in renewables totaled US\$ 241.6 billion in 2016 (excluding large hydro) (UNEP 2017). The report further adds that a total of 138.5 GW energy was added to global power capacity in 2016, up to 9% from the 127.5 GW added the year before. It also pointed out that for the first time, more than half of all added power generation capacity came from

renewables (UNEP 2017). In contrast to such global trends, Pakistan is perhaps moving in the opposite direction by investing in coal-based energy plants instead of focusing on renewables. Despite huge potential of renewable sources of energy in the country, Pakistan’s total share of the energy mix is less than 1% from the renewables (Sheikh 2010). Hence, following global trends for environmentally safe and secure future, Pakistan must fully exploit the country’s potential in renewable energy resources.

Pakistan must think of coal only as a short-term solution coupled with the use of latest technology and stringent policies so that negative environmental implications are minimized as much as possible. To this end, the government must ensure to take remedial measures for mitigating the negative implications for human as well as local flora and fauna caused by coal-based power plants. One such initiative could be to have a joint team of experts from China and Pakistan who would specifically focus on “monitoring, planning, and managing the environmental risks and biodiversity-related issues” to minimize the ecological cost of CPEC-related infrastructure developments (Nabi et al. 2018, p. 3209). Similarly, for the conservation of biodiversity in areas where power plants are being built, geographical mapping is vital and multiple stakeholders including the civil society should be involved in different phases of the projects so that all stakeholders are fully on board about the expected outcomes and implications (Nabi et al. 2017). In addition, extensive afforestation initiatives need to be spearheaded by the government with the active participation of the private sector. Afforestation could play a considerable role in countering adverse environmental repercussions. In the current age of information technology, no government and organization can remain oblivious to the fact that latest tools of information and communication technology (ICT) play a vital role in the dissemination of knowledge and information creating awareness about social, political, and ecological issues. To this end, relevant android-based APPs could also be very helpful in providing quick updates about the prevalence of gaseous hazards and other particulars at a given place and time. In the light of this, local residents and visitors could be cautioned about the prevalence of such environmental hazards and be advised to adopt preventive measures including wearing protective masks etc. Also, following the examples of other countries, the government could announce temporary vacation in areas most affected by smog and pollutants to avoid unnecessary exposure to environmental hazards. As explained earlier, Pakistan’s vulnerability to a number of natural hazards is beyond any doubt and the country must follow sustainable development policies with green technologies to avoid further harm to its valued environment. While coal could be a cheap and readily available source of energy, minimizing its environmental cost requires adopting substantial policy measures and its strict implementation at various levels.

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