# DEFORESTATION IN PAKISTAN: CPEC AN AUXILIARY EXACERBATION

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***Abstract***

*Deforestation is one of the primary reasons for environmental degradation in the World. Pakistan is among the ones most exposed to global climatic changes resulting primarily due to unchecked and uncontrolled deforestation. Though CPEC, and its associated projects with China promise a positive addition to the economic development of Pakistan, the environmental aspect of the project has been overlooked. It is a three tier project aimed to construct roads and highways on the Western, Eastern and Central routes. These routes are being (and are to be) developed by eradicating vast lands of cultivated farms, harvest fields and forests. Thus Pakistan's already deteriorating environment would be further stressed by massive deforestation occurring as CPEC progresses. Reforestation is the best possible alternative to deal with the emerging challenges.*

**Keywords:** *Climate Change, Deforestation, CPEC Routes, Pollution, Reforestation, Forest Roads*

## Introduction

The earth's climate is undergoing continuous changes causing serious weather fluctuations. These alterations are not simply limited to the changes in temperature and in the rainfall but also a number of new areas including the worst effects on quality of human life. Environmental experts outline a number of causes for the global climatic changes. One of the most significant is the colossal deforestation that has removed massive mountainous topographies having a prominent part in global climate change. Although it is generally assumed that one of the major reasons of global warming is the burning of fossil fuels but still the major impact that massive deforestation has in reinforcing greenhouse effect can't be ignored.[1]

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1 Christopher Mathews, "Deforestation Causes Global Warming," *Food and Culture Organisation (FAO) Newsroom*, September 4, 2006, http://www.fao.org/newsroom/en/ news/2006/ 1000385/index.html.

The South Asian region is one of the most vulnerable to the environmental changes. Because of the global climate change there is a continuous rise in global temperature. In several parts of South Asia the overall annual temperature has multiplied notably in the last few decades. For example, in the Western part of Afghanistan and southern part of Pakistan, from 1950-2010 there was a remarkable rise in the temperatures, approximately by 1.0°C to 3.0°C. A similar increase of around 1.0 to 1.5 degree was also recorded during this period in other parts of South Asia including the Southeast India, the western Sri Lanka, northern Pakistan, and eastern Nepal.[2]

Pakistan is more exposed to climate change than any other regional state due to its diverse ecosystem having coastline, arid zones, deserts, glaciers and mountains along with a continuously growing population and a persistently poor planning and mismanagement. Owing to climate change there is a steady temperature rise in Pakistan almost every year especially during summers.[3] Previously, during 2009-2010 Pakistan was on 29th position on the Climate Change Vulnerability Index (CCVI) devised by Maple Croft, but moved to 16th position in 2010-2011 which meant that Pakistan has become more exposed and vulnerable to climate-related changes.[4] In 2016, Pakistan moved to 7th position on the climate risk index.[5] Moreover, due to these sudden climate-change driven changes, Pakistan has suffered from massive floods in the last five years and earthquakes have been hitting different parts of the country almost annually.

CPEC – a multibillion dollar project is widely believed to be a game-changer for Pakistan; it is expected to usher into a new era of economic development for the country. The project was initially divided in to three stages. At the first stage, a road network or highway will connect Kashghar and Gawadar, whereas in the second phase rail network

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2 Muthukumara Mani, Sushenjit Bandyopadhyay, Shun Chonabayashi, Anil Markandya, and Thomas Mosier, "South Asia's Hotspots: The Impact of Temperature and Precipitation Changes on Living Standards*," World Bank Group,* (Washington D.C, January 2018), 3.

3 "Pakistan Sets April World Temperature Record," *Aljazeera*, May3, 2018, https://www.aljazeera.com/news/2018/05/pakistan-sets-april-world-temperature-record-180503084609942.html last accessed on 27 January 2021.

4 "Climate Change Disasters in Pakistan and its Consequences," *The News*, October 8, 2011, https://www.thenews.com.pk/ archive/print/325400-climate-change-disasters-in-pakistan-and-its-consequences.

5 David Eckstein, Vera Künzel, and Laura Schäfer, *Global Climate index 2018* (Briefing paper), Germanwatch, Federal Ministry of Economic Cooperation and Development, (Office Bonn, German Watch e.V, November 2017):13, https://germanwatch.org/sites/germanwatch.org/files/publication/20432.pdf.

connection will be established, and in the final stage, the route will be linked via an energy pipeline; the setting up of an oil refinery at Gwadar is also proposed. Moreover a cargo terminal, to facilitate logistics and transport is also a part of the proposed projects. For all such proposed roads and highway routes massive cutting down of trees, farms and cultivated lands will be needed.

This paper is an attempt to analyze the potential deforestation that may occur owing to the proposed CPEC highways and railway projects, and the impacts it will have on already deteriorating environmental profile of Pakistan. Towards the end, the article emphasizes the need of reforestation initiative to be run in parallel to the development projects.

The primary sources for the collection of data include reports of the Pakistan Economic Survey, forestry department of the government of Punjab, the Pakistan's official CPEC website, and finally, the Google Earth free source of satellite images, used for focusing on the motorway routes and the adjacent localities to locate green and cultivated areas. The secondary sources include items from newspapers, research articles and books on the subject.

## Deforestation in Pakistan

The forests are defined as the "lands of more than 0.5 hectares, with a tree canopy cover of more than 10 percent, which are not primarily under agricultural or urban land use. Forests are determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 meters in situ".[6] Indiscriminate cutting down of trees and shrubs is common among villagers and timber mafia; it is a known global practice - thus Deforestation is an international issue. In technical terms the process of deforestation is defined as the elimination of large standing trees as a result of which the land affected will thereafter be converted to a non-forest use. For example the land cleared by deforestation could be used for farms, or for urban use, or for ranches. It is important to mention here that most of the deforestation cases have occurred in the tropical rainforests areas.

In Pakistan, a very large area of dense forest was devastated by unchecked deforestation, reducing it to just 5.1 percent of the land area, nearly 4.5 m.ha. The forest covered area in Pakistan is far lower than the internationally maintained standard which is at least 25 percent. Moreover efforts at forestation especially in the hilly areas are almost

6 "On Definition of Forest and Forest Change," *Food and Culture Organisation (FAO)*, Forest Resource Assesment Program Working Paper #1, 2020,http://www.fao.org/3/ad665e/ad665e06.htm#TopOfPage, last accessed on 25 January 2021.

negligible;[7] instead it is in reverse direction. In this context the UNDP report for the year 2020 is alarming, which declares that there is a decline in the forest cover area of Pakistan which is less than 5 percent of the total land area; it continues at the rate of 1.5 percent every year.[8]

There are several reasons for the decline in forest covered area in Pakistan. It was once a wood sufficient country now facing a constant decline in wood production. This was largely due to the unavailability of electricity and dearth of renewable energy sources, especially gas and coal; in many hilly areas wood is used as the only easily accessible source of energy for communities. Other reasons are extreme poverty, and non-existence of proper control mechanisms because of which wood cutting continued without check. It is said that almost 90 percent of the people in the rural mountainous areas used wood for household - in winter for heating and in ordinary days for cooking. The low literacy rate along with poverty and underdeveloped status of people, with limited means of communications and transportation has multiplied the problem. Moreover, the demand for wood is much higher in proportion than its actual production**.** There is a big difference in the consumption and production of wood and this is eventually the real reason of deforestation in Pakistan. Despite of government measures, calling the cutting of the trees as illegal, there is a powerful timber mafia of rich people involved in the illegal cutting and selling of woods.[9]

The utmost victims of this tragedy were the conifer forests in the upper Punjab and the lower Himalayan region (the Galiyat, Murree and Patriata, including Azad Kashmir and Kaghan-Naran Valley). These forests were the natural barrier in interrupting the heavy humid monsoon approaching from the eastern side. These forests worked as a natural buffer and it was also interconnected with rainfall in the adjacent areas of Muzaffarabad, Balakot and Abbottabad, which ultimately are also essential for guaranteeing the continuous flow in the two life lines of Pakistan agriculture, the river Indus and Jhelum. Since forests act as a local humidity machine they are vital in synchronizing the water cycle with the climatic changes in the region. The conifer forests of this area actively

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7 Naila Nazir, and Salman Ahmed, "Forest Land Conversion Dynamics: A Case of Pakistan," *Environment, Development and Sustainability: A Multidisciplinary Approach to the Theory and Practice of Sustainable Development, Springer, vol. 20(1)* (February, 2018): 6, https://www.researchgate.net/publication/311243748_Forest_land_conversion_dynamics_a_case_of_Pakistan.

8 "Sustainable Forest Management to Secure Multiple Benefits in Pakistan's High Conservation Area," *United Nations Development Program*, https://www.pk.undp.org/content/pakistan/en/home/projects/sustainable-forest-management.html, last accessed on 25 January 2021.

9 Asif Saeed, "The Underlying Causes of Deforestation and Forest Degradation in Pakistan," (Paper, *XII World Forestry Congress*, Quebec City, 2003), http://www.fao.org/docrep/article/wfc/xii/0983-b1.htm.

absorbed the atmospheric carbon dioxide which is believed to be responsible for warming of environment.[10]

## The CPEC-Related Challenges

A more serious challenge to environment would be posed when heavy vehicle movement of large number of containers through Karakorum highway will begin. At present China's annual containers movement is approximately 225 billion from one part of world to other. Out of this, around 30 percent (70 Million containers) is with European nations and around 6 percent with Africa. Even if Pakistan gets 10 percent share of container flow to European nations, it would be around 70,000 containers annually,[11] which means approximately 190 containers daily would be passing through the CPEC route.

In order to construct the CPEC roads and highways tracks, colossal number of trees will be eliminated to clear the land. A closer look at the map of Punjab map shows that these highways are passing through cultivated farms and forest areas of the province which is the hub of cultivation activity in Punjab; same is the case with KPK. This entire route of the corridor is also home to diverse wild life. It must be noted here that the wild life, forests, and farms are the best source of controlling pollution, which is most likely to increase when the CPEC highways and rail tracks would actually become operational. Moreover, elimination of wild life and cutting down of trees will create number of health problems like smog, soil erosion and floods, as well as a scarcity of water resources.[12]

Although few studies focusing on existing routes are available, but these cannot be generalized for all the CPEC routes as certain routes, especially in Balochistan province are passing through barren and uncultivated lands. At the same time these studies are important and relatable to areas which are similar in habitat and climate. Here it must be pointed out that more severe effects on climate are expected when heavy traffic starts moving on these motorways and highways. There were three routes initially decided for the economic corridor. One is the Western route originating from Gwadar, that will pass through Turbat, Panjgur, Naag, Basima, Sohrab, Kalat, Quetta, Qila Saifullah, Zhob Dera Ismail Khan, Mianwali, Hasanabdal, and reach Islamabad. The second one is the Central

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10 Arshad Abbasi, "Deforestation and Drought," *The News*, May 25, 2006, https://www.thenews.com.pk/archive/print/7697-deforestation-and-drought

11 M. Tahir Masood, M. Farooq, and Syed Bashir Hussain, "Pakistan's Potential as a Transit Trade Corridor and Transportation Challenges," *Pakistan Business Review* (April 2016): 279.

12 Waqar Khan, "CPEC: An Environmental Disaster," *Global Village Space*, January 1, 2018, https://www.globalvillagespace.com/cpec-an-environmental-disaster/.

route that will originate from Gwadar, Quetta, and reach Dera Ismail Khan via Basima, Khuzdar, Sukkar, Rajanpur, Liya, Muzaffargarh, Bhakkar, Dera Ismail Khan. The proposed Eastern route will include Gwadar, Basima, Khuzdar, Sukkar, Rahim Yar Khan, Bhawalpur, Multan, Lahore/Faisalabad, Islamabad, and Mansehra".[13] It was decided that all the three routes will be developed and made operational for traffic. Punjab already has a modern highway setup but as part of the CPEC road networking it was decided that some existing roads will be extended or widened in addition to constructing new roads and highways.

The routes are designed to use the roads and motorways already constructed either by extension or expansion. Following is a list of Motorways that have to be managed by the National Highway authority:
M-1 - from Islamabad to Peshawar 154 Km long.
M-2 - from Lahore to Islamabad - 367 km long.
M-3 - from Pindi Bhattian to Faisalabad - 53 km long.
M-4 - planned from Faisalabad to Multan with a total length of 243 km.
M-5 - planned from Multan to D G Khan with a total length of 84 km.
M-6 - planned from D G Khan to Kakkar with total length of 467 km.
M-7 - planned from Kakkar to Karachi with a total length of 280 km.
M-8 - planned from Gawadar to Ratodero with a total length of 859 km.
M-9 - planned from Karachi to Hyderabad with the length of 136 km.[14]

As far as the Western route is concerned it is the very first route agreed upon and marked. Major portion of the proposed project is almost complete. It is a 1,153 km-long route consisting of four parts. The first is the 280km-long Brahma Bahtar-Yarik Motorway or the Hakla–DI Khan 4-tract Motorway, that starts from Hakla interchange on M1 and ends up at Yarik, DI Khan. The second part comprises the already existing N-50 National Highway between DI Khan and Quetta that passes through Zhob, and is being upgraded under the Asian Development Bank's National Highway Development Sector Investment Program. The third part includes 470 kms of upgrades to N-25 highway from Sorab to Hoshab near Turbat. The fourth and the last part is M-8 motorway between Hoshab and Gwadar that has also been built. The under-construction part of M-8 will continue all the way to Khuzdar creating an alternative route.[15] Although the initial part of Western route passes

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13 "Ahsan Reveals Three Routes of the Corridor," *Dawn,* May 15, 2015, https://www.dawn.com/news/1182074.

14 Pakistan Road Network, Logistics Capacity Assessment, http://dlca.logcluster.org/display/public/DLCA/2.3+Pakistan+Road+Network;jsessionid=FF1E973BE0583D42B15E228833B59ADE, last accessed on 11 March 2020.

15 Hassan Khawar, "CPEC: Western Route and Balochistan," *The Express Tribune*, March 16, 2018, https://tribune.com.pk/story/1658041/6-cpec-western-route-balochistan.

through Balochistan but it will not be crossing the green zones, forests or agricultural locality. Thus here the deforestation might not be an immediate challenge, but even then, the environmental pollution would definitely increase with the movement of large number of heavy vehicles. This pollution would ultimately condense the naked eye visibility and would further dangle floating elements if unremitting accumulation continues - this is dangerous for human life as the dust emissions are injurious to human health. Moreover, toxic chemical and construction material added to the roads like brake and oil leakages, motor oil and asbestos etc. are equally harmful for living creatures. Many chemicals, especially is case of frequently used roads, reach to the soil and atmosphere thus intoxicating the air in the surrounding areas.

Unlike the western route, the eastern and the central routes are passing through Punjab and KPK, which both have either dense forest cover or rich cultivated lands. For example, a portion of M2 to a part of M7 passes through Punjab, which is the hub of agricultural activity of Pakistan. Almost every part of the province is under cultivation. Punjab's recorded forested area is 1.66 million acres (excluding Linear Plantations), which constitutes 3.26 percent of the total area of the province.[16] It is important to mention here that assessments about the location of roads, its edifice, retaining, and mothballing are all interrelated and multifaceted since these involve a number of challenges. It is said that the roads constructed in the forests have significant impact on the surroundings, as it is a breach in the nature's system. A road in or through a forest is constructed by number of alterations including changes in the microclimate, soil erosions and even by removing the top soils. Moreover any road in a forest cannot be created without cutting large number of trees and bushes or without large-scale soil removal. It is estimated that nearly 30 percent of the landscape area in any forest land is directly or indirectly disturbed by any road construction. Not only that, the other living beings like animals are also effected due to road building, not mentioning here that a large number of wild animals are the victims of heavy traffic on the roads.[17]

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16 The major forest are irrigated plantations (comprises 25.6%), Riverain Forests (10.6%), Scrub Forest (40.7%), Range lands (12.2%), Desert (2.3%), and Coniferous forests (6.8%) and Mix Forest (Coniferous/Scrub) (1.8% )';"Atlas, Forest types R.M Circle 2014, GIS Lab: Development of Working Plan Circle Punjab Forest Department, Govt. of Punjab," *Punjab Forest Department* , https://fwf.punjab.gov.pk/system/files/RM%20Circle%20Part%201.pdf, last accessed on 27 January 2021.

17 "Forest Roads: A Synthesis of Scientific Information," *United States Department of Agriculture Forest Service Pacific Northwest Research Station*, General Technical Report PNW-GTR-509, May 2001, 1-5, https://www.fs.fed.us/pnw/pubs/gtr509.pdf.

The M3 route (Faisalabad to Pindi Bhattiyan) passes through the area that consists almost 90 percent of agricultural land and is mostly cultivated. The land is irrigated by canals and tube wells, so there are no natural forest trees; only Acacia, White Poplar, Mulberry, Maqrgosa and *Shesham* trees are there which are used for fuel and furniture purposes. The vast agricultural activity along the road is facilitated by the availability and abundance of ground water. Sugar cane, wheat, corn and rice are the commonly grown crops here. People are engaged in cultivation mainly for the domestic and commercial consumption as the cultivated land produces a high yield. Vegetables and seasonal fruits are also grown in this area. It is estimated that approximately 5.25 sq.km of agricultural land was lost during the construction of the present M3. Moreover, the vehicle movement caused increase in hydrocarbons, Carbon Mono Oxide, and Sulfur Oxide, with Nitrogen Oxide also present in the air. The increase in chemicals in the atmosphere is damaging not only for the humans but plants and wild animals alike. "Dust settles on leaves and can interfere with pollination and photosynthetic function. If the accumulation is significant, acidification of surface water can interfere with nutrient uptake by roots, thus affecting growth… while NOx, SO2 and ozone can all cause localized death of leaf tissue (leaf necrosis). Finally, plants can absorb toxic pollutants such as lead from the air, making the consumption of these plants hazardous."[18]

The M4 Motorway, the extension of M3, starts from the end point of existing Faisalabad-Pindi Bahtian M4 near Sargodha road Faisalabad. It passes through Faisalabad, Tobatek Singh and Khanewal. Most of the land of the road route is agricultural with a small commercial portion.[19] Some very important crops like Sugarcane, Fodder, Maize, Rice, Cotton, and Wheat are the major products of this region. Citrus and Guava orchards which are in abundance towards the northeastern side, are ultimately replaced by Mango towards southwestern end. The area is also rich in wood trees like Shisham and Kikar, while other species grown in the area are Eucalypts, semul (Bombax ceiba), Mulberry, Beri and Khajoor, Neem, Ber and Bakain.[20] In one of the studies, it was revealed that for the section

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18 Zia ur Rehman, "*Environmental impact Assessment of Faisalabad-Pindi Bhattian Motorway (M-3),"* Masters of Science Thesis, Stockholm: Royal Institute of Technology, 2007, 35-49.

19 "Environmental Impact Assessments (EIA), Project 48402: Faisalabad-Khanewal Motorway - Environmental Impact Assessment," *Asian Development Bank*, July 2015, https://www.adb.org/projects/documents/national-motorway-m4-gojra-shorkot-section-faisalabad-khanewal-motorway-jul-2015-eia.

20 Lamia Islam Khan, "Environmental Assessment of Faisal Abad- Khanewal-Motorway M4," (*Lahore University of Management Sciences*, 2014), 56-59, http://121.52.153.178:8080/xmlui/handle/123456789/13716 last accessed on March 11, 2020.

II of the M-4 52619 trees were cut from the agricultural fields on both sides of the motorway. In addition, the most adverse impact of the project was that it took out of production around 4794 acres of agricultural land.[21] It is also pertinent to mention that during the period (2013-18) 'there has been a record increase in construction and extension of motorway and highways throughout the country,[22] especially in Punjab. This is of importance since Punjab's contribution to the overall agricultural production of Pakistan is significant; if and when a vast area is affected due to development projects it would definitely have consequences for the country's agronomy.

Meanwhile, the most immediate impact of this deforestation was felt in both Punjab and KPK - both the provinces have been worse effected by smog in the last four years during winter. Expansive areas in Punjab were wrapped in a thick blanket of smog mainly due to an unrelenting dry bout and the growing levels of air pollution. The two motorways, the M1 and M3 were sometimes completely covered with dense fog.[23] Not only that, 'the levels of the dangerous particulates known as PM2.5, small enough to penetrate deep into the lungs and enter the bloodstream, had reached 1,077 micrograms per cubic meter, 30 times more than the government's designated safe limit'.[24] This has caused some serious health conditions in Punjab every winter including difficult breathing, eye-stinging and throat choking (especially in urban areas). Due to heavy smog in the urban areas and the resulting lack of visibility, the main highways were closed for traffic. An early contributor to this issue was a closely knitted network of roads and highways constructed in the last decade in Lahore and surroundings by cutting huge number of trees - around 395 trees worth Rs. 23,63,445, were cut down at the Sharqpur Forest Sub-Division. The Supreme Court of Pakistan declared that 'deforestation is not only a loss for public exchequer but also dangerous for climate change… it is taking toll on the lives of billions of people of the region and the world and is also against the provision of Pakistan Environmental Protection Act, 1997 and therefore, it must be considered a very heinous crime'.[25]

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21 "Environmental Impact Assessment, Project # 48402, 64-66.

22 "Several Road Projects Launched under CPEC," *The News* May 3, 2018, https://www.thenews.com.pk/print/311964-several-road-projects-launched-under-cpec/

23 Sehrish Wasif, "Air Pollution in Punjab is 20 Times the Safe Limit," *Express Tribune*, November 7, 2017, https://tribune.com.pk/story/1551724/air-pollution-punjab-20-times-safe-limit/

24 Mehreen Zahra Malik, "In Lahore, Pakistan, Smog Has Become a 'Fifth Season'," *New York Times* (New York), November 10, 2018, https://www.nytimes.com/2017/11/10/world/asia/lahore-smog-pakistan.html.

25 Terence J. Sigamony, "Deforestation Dangerous for Climate Change," *The Nation*, February 18, 2017.

Another giant road project under CPEC is the Karachi–Peshawar Motorway: 'A 6-lane access controlled Motorway having total length of 1,100 Km. It originates from Karachi through Motorway M-9 (136 Km) up to Hyderabad and from Hyderabad onwards the road follows a virgin alignment for 345 Km up to Sukkur. The Sukkur Multan section, 392 Km long essentially follows the Left Bank of River Indus. The Motorway from Multan to Khanewal and Abdul-Hakeem is designated as M-4 (101 Km)'.[26] 'Karachi ranks 135 out of 140 in the world's urban livability index. The index is evaluated on the basis of social infrastructure, housing, transportation, walkability, the green planning in the city and also the employment, according to the Economist Intelligence Unit (2010). The high levels of dangerous pollutants, such as fine and ultrafine PM[27] emitted from highly polluting vehicles (particularly trucks), cause significant health risks to urban populations. Fine PM is well documented to have a clear association with several serious public health effects (for example, significant increase in cardiovascular and pulmonary diseases that may result in death or permanent disability). Nearly 80 percent of premature deaths are being caused by high PM2.5 concentrations annually are in Karachi.

Although trucks represent a minor fraction of Pakistan's vehicle fleet, they are a major source of pollutants of local concern. As the number of registered vehicles increases in Pakistan, so does the level of air pollution in urban areas, particularly in densely populated metropolitan regions such as Karachi. Air pollution in Pakistan's cities is the worst in the South Asia. The concentrations of PM in Pakistan's cities are much higher than those experienced in the urban areas of countries like Bhutan, India, and Sri Lanka. In addition, while these countries have adopted a number of measures for reducing urban air pollution, Pakistan has yet to follow suit and is paying the costs of increasingly high outdoor air pollution'.[28] CPEC is believed to be a game changer for Pakistan in terms of economic development. But such claims usually fail to factor-in the impacts that such projects might have on non-traditional sectors of security. Environmental challenges are among such issues which are often overshadowed by the drive for benefits. The proposed CPEC routes that pass through KPK spread over to nearly 334.2 kms. The overall forest covered area of the route is around 582,900 ha. Important to mention here is that the

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26 "CPEC: China Pakistan Economic Corridor," Govt. of Pakistan, http://cpec.gov.pk/project-details/29, last accessed on January 26, 2021.

27 PM is particulate matter, PM1 is particulate matter of less than 1 micron and PM2.5 is particulate matter of less than 2.5 microns.

28 Ernesto Sánchez-Triana, Santiago Enriquez, Javaid Afzal, Akiko Nakagawa, and Asif Shuja Khan, "Cleaning Pakistan' Air: Policy Options to Cost the Outdoor Air Pollution," *World Bank* (Washington D.C., 2014)72-74. file:///C:/Users/Shaista/Downloads/CleaningPakistansAirPolicyOptionstoAddresstheCostofOutdoorAirPollution.pdf, last accessed on January 26, 2021.

cultivable area is almost 2,109,344 ha which will end up being taken over by the CPEC route.[29]

**Table 1: CPEC Route in KPK and the Area Covered**

| Districts | Route Length | Route | Main Cities |
|---|---|---|---|
| Kohistan | ≈ 134 km | Sazin, Barseen, Dasu, Komila, Leo, Pattan, Palas, Dhup, Dubair | Dasu, Pattan |
| Shangla | ≈ 26.7 km | Besham, Shung, Dandai | Besham |
| Battagram | ≈ 41.5 km | Thakot, Chanjal, Peshora, Battagram, Chappargram, Phagora | Thakot, Battagram |
| Mansehra | ≈ 59 km | Sharkah, Icherrian, Shinkiari, Shinai bala, Dhodhiyal, Hathimera, Mansehra | Shinkiari, Mansehra |
| Abbottabad | ≈ 42 km | Mast mera, Sajikot, Abbottabad, Khokar maira, Havelian, Irshad Nagar, Nowshera, Bhalder | Abbottabad, Havelian, Bhalder |
| Haripur | ≈ 31 km | Mohri, Shah Maqsood, Chak Shah Muhammad, South of Haripur and then Kot Najibullah, Khattar Town | Haripur |

**Source:** https://ideas.repec.org/p/ess/wpaper/id12846.html

The Karakoram Highway is a successful collaboration project with China, that was completed in 11 years. It links the Northern Areas of Pakistan with the main land: "from Hasan Abdal, the road winds through Haripur, Abbottabad, Mansehra, Batagram, Thakot, Besham, Pattan, Dassu, Sazin, Shatial, Chilas, Gilgit and Hunza, after which it crosses the Khunjerab Pass at an altitude of 4,733 meters, to reach the Chinese frontier".[30] The highway will be sharing the major burden of CPEC logistics. It is estimated that up to 100 trucks a day will pass though this highway after completion.[31]

The situation of food production in the province is already substandard. At present less than 2 percent of the land is under cultivation while around 1 percent is producing fruits and vegetables and some grain crops. Wheat, barley, potatoes and maize are the major agriculture products of this region. "Approximately 9 percent of the Northern Areas

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29 Mahmood A. Khwaja, Sumbul Saeed, and Maham Urooj, "Policy Brief #59: Preliminary Environmental Impact Assessment (EIA) Study of China-Pakistan Economic Corridor (CPEC) Northern Route Road Construction Activities in Khyber Pakhtunkhwa (KPK), Pakistan," January 2018, 9. https://ideas.repec.org/p/ess/wpaper/id12846.html last accessed on January 26, 2021.

30 "Northern Areas: State of Environment and Development," Government of Pakistan, Northern Areas Administration, International Union for Conservation of Nature Government of Pakistan 2003,https://cmsdata.iucn.org/downloads/nasoed.pdf, last accessed on March 11, 2020.

31 "CPEC and the Environment," *Daily Times*, November 9, 2017, https://dailytimes.com.pk/136059/cpec-and-the-environment/

are occupied by natural forests and scrub, and 22 percent by rangelands (primarily alpine pasture).[32] For the 59.1-kilometre Hasan Abdal to Havelian section of the six-lane E-35 highway, the project has deprived the area of over 2,000 fruit trees and 25,500 non-fruit or forest trees…moreover, the CPEC will rob the green belts from Haripur to Thakot town in Battagram district of 70,000 matured trees including orchards". [33] Most of the dense and natural forests in this region are located in the south-western part. It is in the "Diamir District, the southern parts of Gilgit District, the Punial area of Ghizar District and a few pockets of Baltistan District (e.g., Basho and Kharmang). The forests (both private and protected) cover some 281,600 hectares. This is equivalent to nearly 4 percent of the Northern Areas".[34] While in 'Mansehra and the surroundings, 13,784 trees measuring 200,000 cubic feet (cft) have already been cut down from the Oghi and Darband forest areas of Mansehra district, along with different areas in Battagram, Kohistan and Torghar districts. The felled species include pine, scrub and some fruit trees. In Siran forest division of Mansehra, which falls under the remit of conservator forest for Lower Hazara, a total of 10,075 trees measuring 199,040 cft were chopped down in 28 villages along the CPEC route. Further south, over 3,200 mature trees from Shimla Hills, Banda Sinjilya and Thanda Maira village have been chopped off."[35]

This is a serious situation. A giant portion of the forest cover has been cleared to accommodate the new economic project. It has disturbed the entire ecosystem of the region. Even though some parallel projects for plantation have been launched by the present government but the replacement of such loss cannot be achieved in short span of time. The damage already caused will have consequences on the regional environment for many years.

## Conclusion

Urban development is a continuous process. The roads are one essential feature for any urban development and are accepted as guarantors of economic progress. At the same time construction of roads also brings along a number of issues. In the South Asian region due to unceasing increase in population, the governments are facing a number of environmental challenges due to the growing demands for energy, fuel and electricity. Pakistan is facing severe energy crisis since last two decades. China Pakistan collaboration in the form of CPEC is a multibillion,

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32 "Northern Areas: State of Environment and Development."

33 In an EIA report prepared by the National Highway Authority (NHA) in 2015; Muhammad Sadaqat, "Cutting Down Trees for CPEC," Monthly *Herald*, May 4, 2017, http://herald.dawn.com/news/1153738

34 "Northern Areas: State of Environment and Development."

35 Muhammad Sadaqat, "Cutting Down Trees for CPEC."

multitask and multitier project and is expected to solve many energy problems of Pakistan. The six tracks highways along with the railways and pipe lines have been planned to connect Gwadar port to Chinese cities. The CPEC road network is designed to utilize the already existing highways along with the construction of many road projects. It is from here the challenges to the environment are erupting.

Pakistan is among the top 10 countries of the world where deforestation is on rise. A number of new environmental issues like increase in smog especially in Punjab every year is an alarming challenge. The percentage of air pollution is continuously increasing in Punjab and KPK due to the recently launched construction projects of roads and highways. Vast cultivated and forest-covered areas were cleared and thousands of trees were cut down for expansion and extension of roads, although some even before CPEC was launched. Now it is expected that with the new road network under CPEC, whenever it becomes operational, there will be incessant course of traffic on these roads and highways. The pollution index would further increase with excess of carbon dioxide, noise and land pollution.

The CPEC will definitely bring prosperity and growth to Pakistan but the need is to adopt a unified approach to deal with the multidimensional challenges of economic growth and development on one hand and environment on the other. As the WWF has pointed out in its recent report that opting a nature based solution is needed to deal with the challenges. There is a dire need of planning and management to meet the possible environmental damages occurring due to CPEC. It could initially be by reforestation. Since Pakistan has recently experienced heavy rains, conserving rainwater with a proper manageable storage system, by building small dams and by reviving natural waterways would definitely help to deal with the issue. In this context the government's drive to increase plantation throughout the country is yet a positive move.

In order to avoid further deforestation the remaining roads and highways must be constructed by avoiding densely forested and cultivated areas along the CPEC routes even if some additional construction cost is to be incurred. At least a double number of seed and trees should be planted along the road immediately after the completion of any project. In fact, a process of reforestation should be continued parallel to the deforestation. It would also be helpful if the remaining CPEC route roads are preferably constructed far away from the green areas such as the cultivated agricultural lands, forests - where large number of trees are at mature age and height, and the water resources. Moreover, since most part of the route in Punjab and KPK is passing through vegetable and fruit farms, re-vegetation projects should be immediately launched in alternative areas to avoid farmers' losses and of overall agricultural production. Deforestation without proper reforestation may cause large number of environmental problems, which can be handled by proper infrastructure development.

Both the parties to the CPEC must be agree to adopt, dovetail development projects with afforestation and implement such revamped initiatives at the earliest.