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The Profit-Environment Paradox: Analyzing the Impact of International Financial Institutions (IFIs) on the China-Pakistan Economic Corridor (CPEC) through the Lens of Green Criminology

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Abstract

Global recognition of human impact on environmental challenges was recognized for the first time in the UN Stockholm Declaration 1972. Since then environment laws have received widespread acclamation and branched out in various disciplines including law and economics. Consequently the concept of green criminology emerged in the early 1990s, which focused on the underlying causes of crimes which cause ecological damage and public health-safety hazards. Among the partners of green crimes, business corporations' direct contribution towards environmental hazards has been an area of study. However, there are other stakeholders that need to be taken into consideration while examining corporate environmental crimes such as Public International Organizations (PIOs). This paper will explore green criminology in the context of the China-Pakistan Economic Corridor (CPEC), critically assessing how the policies and practices of International Financial Institutions (IFIs) specifically the influence environmental outcomes. The paper will examine whether these institutions, through their financing and policy structures, contribute to environmental degradation in CPEC, or whether their efforts align with sustainable development objectives, offering a broader perspective on the profit-environment paradox. The paper also evaluates the alignment of CPEC with Sustainable Development Goals (SDGs) and questions IFI's influence exacerbates environmental harm or facilitates a more sustainable model of development. By examining these dynamics, the paper highlights the role of international financial institutions in both perpetuating and potentially mitigating environmental crimes within large-scale development initiatives.

Key Words: Green Criminology, China-Pakistan Economic Corridor (CPEC), International Financial Institutions (IFIs), Sustainable Development Goals (SDGs)

1. Introduction

Crime against environment is a vast area that has many facets. Exploitation of natural resources has global repercussions on mankind and eco-systems. This ultimately leads to polarization between regions and in areas where such crimes persist. This in turn strains the entire environment and gives rise to more criminals and ultimately depletes more resources. Green criminology focuses more on ecosystems and is non-human nature. Green Criminology as a field operates as a tool for studying, analyzing, and It aligns with Sustainable development goals and has an eco-centric perspective on corporate environmental crime such as pollution, biodiversity loss, deforestation, illegal dumping of

hazardous waste, species extinction and climate change. Ultimately, it looks at the impact of such activities on global landscape with focus on marginalized population and future generations. Thus, it examines questions concerning rights, justice, morals, victimization, criminality, and the use of administrative, civil and regulatory justice systems. In this context, The China-Pakistan Economic Corridor (CPEC) raises critical questions concerning governance structures, policy frameworks, and regional implications, particularly in areas such as transparency, accountability, and the socio-economic impacts on local communities.

1.1 Contextual Overview of CPEC

Since its launch in 2013, China Pakistan Economic Corridor (CPEC), conceived as a flagship project of China's Belt-Road Initiative (BRI) has emerged as a significant project in Pakistan. Widely regarded as a potential game-changer, this initiative has become a cornerstone for the country and the entire regions future development. For the past decade, Pakistan's government has maintained that CPEC's economic gains and GDP growth are expected to be unprecedented. Reopening of this ancient silk route will result in several bilateral and multilateral Investment and Trade opportunities for Pakistan not only in south and central Asia but also in Middle East, European Union and African states.

CPEC includes the construction of 3000km highways, railways, energy projects (coal, hydro, solar), and the development to improve regional connectivity by linking China's Xinjiang region to Pakistan's Gwadar Port, offering an alternative trade route to the Arabian Sea. This project also includes Special Economic Zones (SEZs) to promote industrial growth and job creation. The long term CPEC plan (2017–2030) is worth US \$ 62B. As anticipated by many this will be enough to change the current economic landscape of Pakistan by ending its energy crisis and attract Foreign Direct Investment (FDI).

1.2 The Profit-Environment Paradox: Environmental Harm vs. Economic Growth

Almost 36 percent of CPEC's funding is reserved for Infrastructure, transport and communication. Nonetheless CPEC faces several environmental concerns and social issues and scholars argue that the sole focus of environmental issues is not the technical aspects of new green technology but also how to incorporate international standards of governance, transparency and accountability. (De Jonge, 2017) Underlining government issues include forced land acquisition for CPEC project and instances where compensation for such acquisition has been insufficient. Transparency and accountability are essential elements of good governance.

Moreover, critics of the World Bank's involvement in CPEC highlight concerns over Pakistan's rising debt, such as the \$62 billion in loans from China, which could lead to a debt trap. Environmental degradation linked to CPEC projects, including coal-fired power plants and deforestation, has raised significant concerns, while human rights issues such as the displacement of Gwadar's local communities without proper compensation have also been highlighted. It's no surprise that World Bank report highlighted CPEC's lack of good governance, (Ruta et al., 2019) this report coupled with issues such as inadequate stakeholder engagement and the enforcement of environmental regulations significant concerns (Kardon, Kennedy, & Dutton, 2020).

Furthermore, the IMF has raised concerns about the sustainability of financing for such massive infrastructure initiatives, urging Pakistan to ensure the long-term viability of its energy sector through more comprehensive reforms. Recently, it has restricted Pakistan from creating new Special Economic Zones (SEZs) under CPEC as part of its fiscal conditions, aiming to support economic stability. To make matters worse this result in the imposition of a record Rs1.8 trillion in new taxes and the increase in electricity prices up to 51%. IMF condition will hit the ICT Model Industrial Zone, Islamabad, Industrial Park on PSM land, Mirpur Industrial Zone, Mohmand Marble City and Moqpondass Special Economic Zone Such conditionality highlights how the limited scope of IMF

reforms without addressing core issues like governance, public sector reforms, and systemic inefficiencies in sectors like taxation and SOEs are major points of contention.

The exploitation-environment Paradox in CPEC reflects a significant conflict between economic development and environmental sustainability. The \$62 billion project, while boosting Pakistan's infrastructure, has raised environmental concerns, including the pollution from coal-fired power plants and deforestation. Green criminology, as explored by White (2018), provides critical insights into these environmental harms, emphasizing the need for stronger governance and transparency. Research by Nawaz (2020) and Tariq (2021), further underscores how international financial institutions' policies, particularly those linked to CPEC, contribute to environmental degradation.

1.3 Significance of the study

The China-Pakistan Economic Corridor (CPEC), currently valued at \$65 billion, encompasses 38 projects worth an estimated \$28 billion that are already in progress. A substantial portion of this investment has been funded by global stakeholders, including prominent international organizations such as Chinese and American banks. However, CPEC has faced criticism for prioritizing economic growth while neglecting the environmental impacts of its developments. This study will focus on the negative consequences of CPEC policies on the communities directly affected by these infrastructure projects. It will closely examine the environmental and natural disasters that have been overshadowed by the revenue generated by CPEC. Adopting a green criminology perspective, this research will consider three key regions in Pakistan: the Gwadar Port Project, the Karakoram Highway Project, and the Coal Plant Projects. The study will argue that these projects have had a harmful impact on the environment, as demonstrated by previous green criminology research. Ultimately, this research will assess how CPEC's initiatives do not align with all of the Sustainable Development Goals (SDGs), particularly SDG 13 (Climate Action) and SDG 15 (Life on Land), which focuses on biodiversity. By addressing these concerns, the study will propose sustainable practices for the future development of CPEC projects to ensure both environmental protection and social justice.

2. Theoretical Framework and Environmental Impacts of CPEC

CPEC China Pakistan Economic Corridor, widely referred as a mega scale project promises to change the economic destiny of Pakistan. Nevertheless, such economic growth often comes at the cost of environment degradation. In order to understand the relationship between profit and environment paradox, a theoretical framework is required to view the relationship beyond traditional economics and looks at the environmental harm CPEC projects can cause. Green criminology offers such a lens, which unlike traditional criminology focuses on how human actions harm the natural world and why these actions are often unregulated. By applying green criminology to CPEC, this section will critically evaluate the role of international financial institutions like the IMF and World Bank in promoting development models that often ignore the environmental costs often leaving regulatory gaps that allow these harms to continue and contribute to a more holistic understanding of CPEC's environmental and social impacts.

2.1 Green Criminology and Environmental Harm

In his article, (Lynch, 2020) Michael J. Lynch refers to Rob White's framework, which categorizes environmental crimes into three types: "brown" (urban environmental harm), "white" (tech-related crimes), and "green" (wildlife harm). He further critiques these categories, emphasizing the need for clear justifications and comparisons with other definitions. Additionally, Lynch integrates Beirne and South's broader approach, focusing on the exploitation of ecosystems, corporate pollution, and resource monopolization. These are the issues often ignored due to institutional power. Lynch argues that human actions disrupt ecosystems, creating ecological disorganization and highlighting the importance of addressing both legal and extralegal environmental harms.

2.2 Green Criminology's Application to CPEC

In recent years, the emergence of China-Pakistan Economic Corridor (CPEC) has promised infrastructural development. Moreover, as a major financier of this project, China has a direct control over the political and economic destiny of Pakistan. As seen in the past, whenever, Pakistan has taken loans from Public International Institutions/Organizations for the betterment of the country, the results haven't been favorable. A direct consequence has been on country's ability to set its own macroeconomic policies and use of national treasure and reserves. In addition, financiers have focused on imposing austerity measures or conditionalities such as privatization of state-owned enterprises in order to recover their debt. In this context, CPEC financing is no different and major stakeholders including Chinese banks and some investment from World Bank and IMF has adopted similar practices. For instance, in 2019, Pakistan received a \$6 billion bailout from the IMF, agreeing to implement economic reforms including reducing fiscal deficits, improving tax collection, and privatizing state-owned enterprises. These reforms were aligned with the broader CPEC framework, which also emphasizes economic liberalization, deregulation, and the opening up of key sectors to foreign investment.

However, these conditionalities have raised concerns about Pakistan's sovereignty. Critics argue that the CPEC loans primarily benefit China, with Pakistan's national interests sometimes subordinated to Chinese political and economic goals. For example, China controls strategic infrastructure, including ports and railways, potentially undermining Pakistan's ability to independently manage its assets (Husain, 2019). Moreover, the environmental impacts of CPEC projects serve as a compelling example that sits well with Lynch's broader definition of green criminology. As observed, exploitation of resources is directly proportional to scarcity of resources is a central concept to the debate on sustainability. Therefore, as mentioned above sustainable development's goal SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action) are in contradiction with CPEC projects which rely on coal-fired power. CPEC projects carbon emission as suggested by some reports could add 18 million tons of CO₂ annually. Furthermore, depletion of water resources and contamination of air will be another issue that will arise from this project. Hence, this framework critiques the gaps in governance and accountability, connecting CPEC's environmental effects to wider dialogues on development and social equity, as explored by Brisman and South, (Brisman & South, 2019) who argue that sustainable development requires transparent governance to ensure environment justice.

3. The Role of International Financial Institutions

International financial institutions (IFIs) like the IMF and the World Bank play a significant role in shaping the economic policies of countries like Pakistan, often through loans and conditionalities. These institutions typically impose strict fiscal measures and austerity policies in exchange for financial aid, which can sometimes exacerbate economic inequalities and hinder long-term development (Ghosh, 2023). While the IMF and World Bank have not directly funded the China-Pakistan Economic Corridor (CPEC), their influence on Pakistan's broader economic environment indirectly impacts CPEC projects. On the other hand, Chinese banks, such as the China Development Bank and the Export-Import Bank of China, have provided substantial loans for infrastructure and energy projects under CPEC (Mahmood et al., 2024) This raises concerns about Pakistan's increasing debt burden and its ability to repay loans at commercial rates (Janjua, 2024).

"The World Bank and IMF utilize infrastructure projects as tools to ensure that developing countries remain dependent on Western capital, which has often resulted in the exploitation of natural resources and environmental degradation" (Petras & Veltmeyer, 2001)"

3.1 The IMF and World Bank: A Critique of Conditionalities and Global Influence

The IMF's primary role is to ensure global financial stability by offering loans to member countries facing balance-of-payments crises. However, loans from the IMF come with a set of conditions known as conditionality that require borrowing countries to adopt specific economic reforms. These often include privatization, trade liberalization, currency devaluation, and public spending cuts.

While these measures may restore fiscal balance in the short term, they often exacerbate poverty, inequality, and social unrest in developing countries (Wood, 2006). The political influence of wealthy nations in both the IMF and the World Bank has long been a source of criticism. The quota system, which determines voting power and financial contributions, disproportionately benefits rich countries. For example, the U.S. holds veto power in the IMF, while countries like China and India are grouped together with limited representation, further skewing the institutions' policies in favor of developed nations (Woods, 2006). Critics argue that this power imbalance prevents the IMF and World Bank from being truly representative of the needs of developing countries and weakens their legitimacy in global governance (Mikesell, 1994).

Furthermore, both institutions are often criticized for imposing economic policies that limit national sovereignty. For instance, under World Bank-imposed privatization reforms, countries like Mali were forced to privatize essential public services as a condition for debt relief. Despite reaching the HIPC completion point, Mali continued to face pressures to liberalize its economy, resulting in a 20% drop in cotton prices, devastating 3 million Malian farmers and undermining local economic independence (Mason & Asher, 1973; World Bank, 2008). Furthermore, Albert Hirschman's work highlights the tension between the IMF and World Bank's reforms, which prioritize market mechanisms over local social and economic considerations, as a reflection of broader political and economic power dynamics.

In recent years, both the IMF and World Bank have made efforts to respond to criticisms about their conditionality frameworks. The IMF has adjusted its focus somewhat, placing greater emphasis on social spending and debt relief in some of its programs. For example, in the aftermath of the global financial crisis, the IMF issued Special Drawing Rights (SDRs) to provide liquidity to its member countries. (Weiss & Nelson, 2021) Similarly, the World Bank has increased its focus on climate change and sustainable development, launching a Climate Change Action Plan in 2020 to invest \$100 billion over the next five years to help countries mitigate and adapt to the effects of climate change (World Bank, 2020).

Despite recent shifts in their policies, the IMF and World Bank, conditionalities attached to their financial assistance continue to raise concerns about national sovereignty and long-term economic stability. CPEC, while offering economic opportunities for Pakistan, comes with its own set of conditionalities and long-term debt obligations. According to a study, in 2016-17, the country spent US\$4.794 billion on external loan repayments. By the end of that fiscal year, government debt reached 69.1% of GDP. A World Bank study notes that each additional percentage point of debt above 64% slows growth by 2% annually (Saleem, 2020). Therefore, Pakistan should be mindful that CPEC cannot address the challenges faced by the economy on its own. Overcoming debt crisis has proven to be a tough challenge for many countries.

“Post-CPEC, China is outspending the United States in Pakistan by 8.4 times as opposed to only 0.68 times in 2002, the report said. While Chinese financing has mostly been in hard infrastructure sectors like energy and transport, US assistance in the same period has focused more on civil society, social infrastructure, education, etc”

3.2 Chinese Banks and Their Role in Financing CPEC

Chinese Financial Institutions have played a crucial role in financing CPEC as China leads with 75% share in total foreign loans. (Shair, Hassan, Ahmad, & Bashir) As such the China Development Bank (CDB), the Industrial and Commercial Bank of China (ICBC), and the China Export-Import Bank (China Exim Bank) have invested heavily in CPEC projects. According to CPEC's official website's report, “The total committed amount under CPEC of \$50 billion is divided into two broad categories: \$35bn is allocated for energy projects while \$15bn is for infrastructure, Gwadar development, industrial zones and mass transit schemes. Yet there is a point of concern is transparency and

accountability of these loans, as the official portal confirms that the conditionalities tied to these loans are not fully disclosed.

According to data from 2022, Pakistan has \$26.6 billion (€24.6 billion) worth of Chinese debt, more than any other country in the world (Janjua, H. 2024). Moreover, Pakistan had to request for a bailout package from the International Monetary Fund (IMF) worth \$7 billion September 2024 (International Monetary Fund 2024, July 12). This growing debt has raised questions about the sustainability of CPEC projects and their potential impact on Pakistan's economic sovereignty. Thus, critics argue that the austerity measures under Chinese loans might be the same or even worse as compared to the conditions attached to IMF and World Bank's loans. Calling it a Chinese "debt trap," many US lawmakers have repeatedly warned that they do not wish to see Pakistan repaying Chinese loans using money from the International Monetary Fund (IMF) (Waseem, S. A. A. 2024, August 6). According to Aid Data, a US-based international development research lab, "A substantial chunk of Chinese development financing under the China-Pakistan Economic Corridor (CPEC) consists of loans that are at or near commercial rates (around 3.7%- Safiya Aftab) as opposed to grants" (Alam, K. 2021). Critics argue that despite giving relief through its loans, China uses this debt to gain influence and push its own interests. With the high interest rates on these loans, Pakistan may struggle to repay them, which could make its financial situation even worse giving breathing space China leverages its debt for its interests and such high interest rates will exceed government of Pakistan's re-payment capacity for these loans. For instance, Pakistan has requested an additional \$1.4 billion loan from China shortly after China extended its existing \$4.3 billion facility for another three years. This is not the first time Pakistan has made such a request and it is likely due to uncertainties around some pipeline loans and ongoing financial challenges (ANI, 2024, October 27).

Furthermore, CPEC projects have been criticized for their lack of sufficient environmental safeguards, leading to concerns about deforestation, water depletion, and air pollution, particularly in coal-powered energy projects. The next chapter will further discuss the environmental and social implications of the CPEC projects funded by Chinese banks.

4. Green Criminology's Critique

Michael J. Lynch's (Lynch, 2020) criminology framework suggests that we should think of crime not just as individual wrongdoings but as bigger social harms that often go unnoticed because of problems in our systems and institutions. This way of thinking is especially helpful when looking at environmental crimes, like air pollution in Pakistan, which is made worse by industrial emissions and projects like the China-Pakistan Economic Corridor (CPEC). For example, Lahore regularly has dangerous levels of air pollution, mainly due to the rising number of coal-fired power plants and vehicles. These contribute to harmful particles and gases that seriously affect the city's air quality (The Nation 2024; Tribune, 2024 DAWN, 2024). Based on this, we can see similar issues in China and Taiwan, where environmental laws exist but are often not enforced properly. In China, environmental crimes are usually handled through administrative measures, not criminal law. In Taiwan, even with strong laws, violators tend to face only light penalties, making it hard to deter harmful actions.

Green criminology, as discussed in Criminal Justice and Environmental Crime, argues that environmental crimes should be treated as "crimes of strict liability." This means we need stronger laws and better international cooperation to protect the environment. This ties in with Lynch's point that environmental harm, like the pollution in Lahore, should be treated as a serious crime, requiring strict enforcement and stronger laws to protect ecosystems and public health.

4.1 Environmental Injustice and Accountability

Looking at CPEC projects, especially those funded by international financial institutions like the World Bank and the IMF, brings up important questions. What happens when economic growth is pursued at the cost of the environment? The reality is that environmental concerns take a back seat when it comes to mega infrastructure projects like CPEC as they are funded by these international

financial institutes. In their article, Zaman and Wajid (2019) argue that while CPEC may boost the economy in the short term, it could also cause long-term health and environmental problems. Other scholars in this area Ali (2020) warns that building CPEC in environmentally sensitive areas could lead to biodiversity loss, soil erosion, and water depletion, which would harm ecosystems for years. Similarly, Raza and Khan (2018) also point out that without proper environmental assessments, local ecosystems are exposed to destruction. Moreover, Elliott (Teo et al., 2019) adds that many CPEC projects bypass local environmental rules in the rush to develop. Seminal work by (Stiglitz, Rothe, and Muzzatti 2009) reiterates this argument stating that this kind of unchecked development often creates hidden environmental and social costs, especially in poorer countries.

From a green criminology perspective, such harmful practices need to be addressed. For instance, White argues that such practices by institutions like the IMF and World Bank, but these actions are rarely treated as crimes, even though they hurt both the environment and local communities. Green criminology challenges us to rethink what we mean by development. Can such projects be beneficial when they lead to serious damage in the long run? For example, In a 2022 report to the UN General Assembly, Marcos Orellana, the UN Special Rapporteur on Toxics and Human Rights, described the harmful environmental and health impacts suffered by Indigenous peoples due to industrial expansion, including mining, oil extraction, and agribusiness activities. Therefore, rightly so, Lynch and Stretesky (Lynch, Long, & Stretesky, 2019) argue that the economic policies backed by powerful institutions like the IMF and World Bank often lead to what can be called "crimes against nature," which are often ignored, even though their effects are devastating for both people and the planet.

In the end, we have to ask ourselves, can we continue to justify this kind of development? Green criminology pushes us to rethink what we really mean by "progress" when it harms both the environment and vulnerable people. The real question is not just whether we need infrastructure and economic growth, but whether we can achieve these goals without sacrificing the environment and the rights of local communities.

5. Case Studies of CPEC Projects

McCartney's article highlights the ideas of early development economists like Albert Hirschman, Walt Rostow, and Rosenstein-Rodan, whose thoughts on economic transformation are relevant to understanding CPEC. He points out that while CPEC is often seen as something new and unique for Pakistan, it is actually similar to past large infrastructure projects that changed economies in the past. McCartney also critiques the use of cost-benefit analysis (CBA) in evaluating such projects, suggesting that Hirschman's ideas on economic change might be more useful. This approach also connects with the views of economists like Amartya Sen and Jagdish Bhagwati, who believe that real economic change comes from big, structural shifts, not just small improvements. (Bhagwati, 2004) In this chapter, we will look at some key CPEC projects including Gwadar Port, the Karakoram Highway, and the Energy Projects to see how they might change Pakistan's economy and infrastructure, while also considering their environmental and social effects.

5.1 Gwadar Port

The port at Gwadar is often described as the 'crown jewel' of the China Pakistan Economic Corridor (CPEC) a part of China's ambitious Belt and Road Initiative (BRI) Located on the Arabian Sea in Balochistan, Pakistan, Gwadar Port is playing a key role in making CPEC possible. Even though CPEC has brought significant changes to Gwadar, but unfortunately, the fruits of this development are likely to be enjoyed by outsiders, not the local Balochi population. Some local groups have even referred to this situation as ecocide and genocide, arguing that the development is harming both the land and the people, while primarily benefiting foreign interests (Baloch Yakjehti Committee, 2024). The residents of Gwadar, who depend on fishing and agriculture, are already facing the consequences of deforestation and rising carbon emissions. A major factor in this problem is the destruction of mangroves along the coastline, which are vital for protecting the shore and absorbing carbon. According to the International Union for Conservation of Nature (IUCN, 2020), Pakistan has lost

60% of its mangrove forests since the 1980s, largely due to industrial and infrastructure development. This loss of mangroves has made the region more vulnerable to flooding and other climate-related events. Another significant contributor to the environmental damage is the 300 MW coal-fired power plant built as part of CPEC, which increases carbon emissions and worsens the climate crisis. The World Bank (2019) reports that coal-fired power plants release large amounts of CO₂, which accelerates global warming. As a result, Gwadar is experiencing more extreme weather events, including severe flooding. A report by World Weather Attribution (2022) found that rainfall in Balochistan is now 75% more intense due to climate change, making floods more frequent and severe. In addition, Sajid Aziz (2024) points out that the recent heavy rainfall in Gwadar triggered severe flooding, particularly in poorer neighborhoods, highlighting the vulnerability of local communities and the failure of development promises. The construction of infrastructure like the East Bay Expressway has further worsened the situation by disrupting natural drainage systems, making flooding even more dangerous (Baloch, Z.2023).

5.2 Karakoram Highway

The Karakoram Highway (KKH) is often called the "Eighth Wonder of the World" because it connects Pakistan with China through some of the toughest terrain on the planet. Stretching from Hasan Abdal in Pakistan to the Khunjerab Pass at the Chinese border, it passes through the stunning Gilgit-Baltistan region. This highway is vital for trade, but it faces many problems due to its location in such a challenging environment. It is often blocked by floods, landslides, and extreme weather, especially during the rainy season. For example, the Sost Dry Port in Gilgit-Baltistan is only open in summer because the road is cut off for long periods, making trade difficult.

Given the current scenario, much of the research suggests it is unlikely that the situation to get better as CPEC project is indirect conflict with SDG goals that focus on improving environment. KKH has been under maintenance and there are important safety measures that are being neglected. Therefore, in such volatile situation, CPEC projects raise serious environmental risks. One study suggests that debris that flows along KKH will increase and a section of the highway near the Ghez River is especially at risk and needs urgent attention. It is predicted that many of the CPEC projects will be completed by 2045, a year when the KKH will be at its most vulnerable.

Moreover, CPEC doesn't seem to account for the environmental damage it might cause, like deforestation and rising carbon emissions. The highway is expected to carry up to 7,000 trucks per day, which will release a lot of CO₂ and worsen global warming. According to the World Bank (2019), this increase in traffic will only add to the environmental risks in the already fragile region. (Sajid Aziz 2024) also points out that CPEC's construction of roads and the Gwadar port has led to deforestation and disruptions in the natural environment, making flooding and landslides along the KKH even worse. The China Environment Forum (2022) further highlights that with the increasing number of trucks on the KKH, the carbon emissions will rise dramatically, contributing to global warming and putting more pressure on the environment. All of this makes the region more vulnerable to climate-related disasters. So, while CPEC might bring economic growth, the environmental costs could be huge.

5.3 Energy Projects

CPEC projects such as construction of coal-fired power plants like the Sahiwal and Hubco plants has been criticized for emitting high levels of sulfur dioxide (SO₂), nitrogen oxides (NO_x), and particulate matter, which contribute to air pollution, smog, and respiratory illnesses (China Environment Forum, 2022). Additionally, the coal plants consume large amounts of water for cooling processes, which depletes already water-scarce regions and threatens local agriculture (Aziz, 2024). These coal projects are projected to significantly raise Pakistan's carbon footprint, undermining the country's international climate commitments by contributing to global warming (World Bank, 2019). While CPEC also includes hydropower projects such as the Dargai Hydroelectric Power Plant and the Mohmand Dam, these too present environmental concerns, including deforestation and habitat

loss. The construction of large dams and reservoirs threatens local ecosystems, leading to biodiversity loss and the displacement of species. The Mohmand Dam, for example, could disrupt riverine habitats and negatively impact the communities that rely on these resources (Yihong et al., 2023). Despite the potential of hydropower to offer a cleaner energy alternative and provide critical water resources, the environmental costs of both coal and hydropower projects under CPEC present significant sustainability challenges (Sibtain, Li, Bashir, & Azam, 2021). As Pakistan works toward a zero-carbon future, balancing the need for energy with environmental protection will be crucial for long-term development.

5.4 CPEC Projects: Ecocide and Genocide? A Green Criminology Take on Gwadar, KKH, and Energy Plants

CPEC's major infrastructure projects, like the Gwadar Port, Karakoram Highway (KKH), and energy plants, have sparked serious environmental and social concerns, which can be looked at through the lens of green criminology. These projects have caused major harm to the environment and local communities, leading some to argue that it's a form of ecocide (the destruction of ecosystems) and even genocide (where whole communities face destruction in terms of culture, livelihoods, and health). For example, in Gwadar, the destruction of mangroves (which protect the coastline and store carbon) and the harmful effects of a coal-fired power plant are putting local Baloch communities at risk of losing their homes and livelihoods. Similarly, the Karakoram Highway has led to deforestation, and the increasing number of trucks will contribute to more pollution and climate-related disasters. Energy projects, like the Sahiwal and Hubco coal plants, are making the air quality worse and adding to global warming, while also draining limited water resources. From a green criminology perspective, these projects show how corporations and the state prioritize profits over people and the planet, leaving the most vulnerable communities to bear the brunt of environmental destruction. To fix this, there needs to be a push for fairer, more sustainable development that involves local communities in decision-making and ensures that the environment is protected for future generations.

6. Green Criminology and the Sustainable Development Goals (SDGs)

Sustainability is a core principle in both green criminology and the SDGs. Green criminology critiques the unsustainable practices of industries that prioritize profit over long-term environmental well-being, advocating for more sustainable, eco-centric policies. However, it is particularly concerned with the exploitation of ecosystems and the social and environmental injustices that arise from it. It mainly focuses on structural causes of ecological harm and expands the concept of victimization to include not only humans but also ecosystems and non-human species (Sollund, 2015). For instance, the destruction of forests, oceans, and biodiversity is seen as a form of victimization that needs to be addressed. Green criminology emphasizes eco-justice and highlights the disproportionate impact of ecosystem exploitation on marginalized groups (e.g., Indigenous communities, poor rural populations) who are more likely to suffer from environmental harm. (Nurse, 2017) It examines how global power dynamics (e.g., multinational corporations, industrialized nations) contribute to ecosystem exploitation. Thus, green criminology provides a deeper critique of the systemic causes of ecosystem exploitation, particularly focusing on how economic and political power structures enable environmental harm (Sollund, 2015; Nurse, 2019). Therefore, Scholars White (White, 2013) and Lynch and Long (2022), argue that development projects must be scrutinized for their long-term ecological impact and social consequences.

On the contrary, SDGs, while less critical, provide a global framework for sustainable development, focusing on ecosystem protection, equity, and interdependence between people and the planet. SDGs are more pragmatic and policy-oriented. They aim to balance various interests (economic growth, environmental protection, social justice) and are designed to be accepted by a broad range of global stakeholders, including governments and corporations. Nevertheless, the SDGs, while more focused on human development, do emphasize the protection of the environment, life on land and sea (Goals 14 and 15), and the broader goal of "leaving no one behind." This reflects a shared concern with the rights and welfare of both human and non-human entities. The SDGs, as a framework for global

development, are built on the principle of sustainability, notably in Goal 12 (Responsible Consumption and Production), Goal 7 (Affordable and Clean Energy), and Goal 13 (Climate Action).

Moreover, both green criminology and SDGs focus on holistic approaches for dealing with these issues. For instance, green criminology advocates for a holistic approach to understanding environmental harms that integrates social, economic, and ecological dimensions. The SDGs also take a holistic approach to sustainable development, emphasizing the interconnectedness of poverty, inequality, health, education, climate change, and peace.

6.1 Alignment with SDGs

The aforementioned discussion will now be applied to CPEC projects, in order to understand if CPEC actually aligns with SDGs through the critical green criminological approach. Proponents of CPEC highlight the potential economic growth and energy security it promises, particularly through investments in renewable energy infrastructure like solar and hydropower, which could contribute to SDG 7 (Affordable and Clean Energy). Additionally, CPEC's development of roads, railways, and ports is expected to enhance regional trade, promote economic growth (SDGs 1 and 8), and improve infrastructure (SDG 9). The improvements in transportation could also benefit urban areas, supporting SDG 11 (Sustainable Cities and Communities).

While CPEC assures economic growth and energy security, critics like Aziz and Sibtain et al. argue that it may undermine key environmental SDGs. For instance, the construction of coal-fired power plants contributes to carbon emissions, conflicting with SDG 13 (Climate Action) and harming biodiversity (SDG 15). Similarly, hydropower projects, though renewable, risk violating SDG 14 (Life Below Water) and SDG 6 (Clean Water and Sanitation) by displacing communities and damaging ecosystems. These issues highlight the tension between economic development and environmental protection. Green criminology offers a critical lens, pointing out that development projects like CPEC can cause ecological damage and social harm. Scholars like Lynch and Long (2022) argue such projects often lead to ecological disorganization, while White (2008) and Pohja-Mykra (2016) emphasize the social costs, including displacement and the militarization of conservation. This critique calls for a more balanced approach that considers both environmental and social impacts.

Moreover, some critics suggest that the large-scale infrastructure and energy projects funded through these initiatives may end up exacerbating Pakistan's debt burden. These loans can contribute to a cycle of indebtedness, where short-term economic growth through infrastructure development could be overshadowed by long-term financial strain. Such financial challenges may undermine the broader goals of poverty reduction (SDG 1) and sustainable development (SDG 8). Furthermore, the IMF's role in ensuring that these loans align with poverty reduction and growth goals has been questioned, as the economic benefits of such projects are not always evenly distributed, particularly among marginalized communities. Therefore, CPEC's success will depend on balancing economic growth with sustainable practices, aligning with SDG 12 (Responsible Consumption and Production).

7. Conclusion

Unlike any other project, the CPEC has received unprecedented popularity since its launch in 2013. The general consensus is that it will be a game changer for Pakistan, due to its potential for economic development, offering benefits such as improved trade routes, energy access, and regional connectivity. However, such an ideal scenario is by no means guaranteed. CPEC's implementation has raised significant environmental and social concerns, including deforestation, loss of biodiversity, air pollution, and the displacement of local communities. Moreover, CPEC is in its early phases, and it is challenging to determine the project's overall impact on the society at large. The CPEC can not only mitigate some of the main barriers hindering Pakistan's economic development but also increase its already heavy external debt, Esteban, M.(Esteban, 2016). Even if China is offering financing through the CPEC to Pakistan in a volume and under conditions unmatched by other creditors, these

are loans, not grants, and, therefore, Pakistan will be expected to repay them. The exact value of China's loans for CPEC projects has not been disclosed, but they are significant. For example, \$11 billion allocated for infrastructure forms part of a \$35 billion investment in Pakistan's power sector. A notable example is the Thar coal project, where \$820 million of the \$2 billion funding comes from a syndicate of Chinese banks, including China Development Bank, Construction Bank of China, and Industrial and Commercial Bank of China. These loans highlight China's crucial role in financing CPEC but also raise concerns about Pakistan's growing debt and environmental and social risks (Chin, 2023; Reuters, 2023). Additionally, the World Bank and IMF, though not directly funding CPEC, both institutions have historically conditioned their loans on strict austerity measures, which critics argue exacerbate economic inequality and social unrest in borrowing countries (Chin, 2023). This can exacerbate issues as the IMF and World Bank have been criticized for imposing on countries like Pakistan, which often prioritize debt repayment over long-term development goals and social welfare (Ghosh, 2023).

Therefore, in order to address the environmental and social challenges of CPEC, several key actions are needed. First, Environmental Impact Assessments (EIAs) should be mandatory for all major projects to better understand and mitigate the harm caused by deforestation and habitat loss (Carrabine, Cox, & Hall, 2014). Shifting from coal to renewable energy like solar and wind would not only reduce carbon emissions but also align CPEC with SDG 13 (Climate Action). It's also important to involve local communities more in decision-making, ensuring they benefit from development and are not displaced, addressing issues of inequality (SDG 10). Finally, enforcing environmental laws more strictly will help prevent further ecological damage and ensure developers are held accountable for any harm caused. As Wangari Maathai once said, "It's the little things citizens do. That's what will make the difference. My little thing is planting trees." By taking these steps, CPEC can be both an economic success and a model for sustainable, inclusive development.

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