



Pakistan has a rich mountain landscape, boasting some of the highest peaks and longest glaciers in the world.
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The Environmental Pollution in Pakistan

Research Report



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Introduction

According to the Air Quality Life Index (AQLI) released by the University of Chicago (AQLI, 2022), Pakistan currently ranks as the world's fourth most polluted country with 99 percent of its population living in areas where levels of pollution exceed even Pakistan's own air quality standard (Khalid, 2022). The two most populous cities in Pakistan, Karachi and Lahore, figure among the worst in the world for air quality (AQLI, 2022). As pollution levels continue to rise and the air quality degrades, the health of the population keeps degrading to alarming/concerning levels. In this sense, The elevated hazards of "ischemic heart disease, stroke, lung cancer, neonatal morbidity, lower respiratory infections, diabetes, chronic obstructive pulmonary disease, tuberculosis, and blindness" are linked to both indoor and outdoor air pollution (Ahmed et al., 2022), Pakistan's pollution exerts detrimental effects on health and poverty according to the International Growth Center (IGC). In disproportionately impoverished households, serious illnesses typically prompt the urge for medical assistance. However, noncommunicable diseases (NCDs), such as ischemic heart disease and stroke, are incurable and can only be prevented or managed throughout a person's life, thereby resulting in substantial medical expenses (Ahmed et al., 2022). Moreover, young children, particularly those in low-income households, are at a risk of malnutrition due to insufficient dietary intake. What's more, the inadequate sanitation, air quality, and drinking water further contribute to children's inability to properly absorb food, hindering their physical and mental development. As a whole, the evidence indicates that the nation's pollution contributes to an increase in deaths and disabilities, hence decreasing labour productivity, human capital, as well as scholastic and cognitive performance (Ahmed et al., 2022).

This report intends to delve deeper into the (domestic and foreign) factors that have contributed to the escalation of the nation's pollution crisis, as well as the international and domestic laws that govern pollution regulation, before concluding with recommendations for the government, NGOs and the industry on the prevention of further environmental damage.

International Law

The two primary sources of international law which regulate pollution are treaties – legally binding agreements between States or intergovernmental organisations – and customary international law, whose two essential elements consist of a) state practice and b) *opinio juris* (i.e. “a belief that this practice is rendered obligatory by the existence of a rule requiring it” (Greenwood, 2008). Typically, the provisions of the treaties determine the date of its coming into force. In cases when no such date is mentioned, the treaty comes into force for the states who have ratified the same i.e., expressed their consent to be bound by the same. When a treaty enters into force, only States that expressed their consent are actually bound by the treaty and not the states who have merely signed it. Furthermore, treaties are only effective to the extent they are implemented into national legislation by States.

In regard to customary law, many environmental activists and other observers believe that States are obligated not to cause transboundary harm (Pollution Issues, n.d.). The principle is also clearly stated within Principle 21 of the Stockholm Declaration (1972) and Principle 2 of the Rio Declaration (1992) (Pollution Issues, n.d.). Indeed, the Rio Declaration declares that States are prohibited from undertaking or allowing actions that will cause pollution/pollute in other nations (Pollution Issues, n.d.).

Another important principle is the precautionary principle included in Principle 15 of the Rio Declaration which focuses on circumstances where significant health, safety or environmental risks may be involved, even though scientific certainty is lacking (Pollution Issues, n.d.). Several countries consider the precautionary principle to be part of customary law, nevertheless, other countries question the legal status of this principle, such as the United States of America (Pollution Issues, n.d.). Furthermore, controversy exists regarding the definition and meaning of the precautionary principle, however, under any definition of the principle, questions regarding the level of risk warrant precautionary action and what level of precaution may or should be taken (Pollution Issues, n.d.).

In regard to treaties, multiple treaties, conventions and international frameworks relating to pollution exist. One important convention is the Stockholm Convention on Persistent Organic Pollutants (2001), which Pakistan ratified in 2008 and which requires an immediate ban on certain chemicals, severely restricts the use of some chemicals and provides for persistent organic pollutants to be disposed of and managed using environmentally sound methods (Pollution Issues, n.d.). In addition, the United Nations Framework Convention on Climate Change (UNFCCC) (1994) - to which Pakistan is a party, addresses the problem of climate change caused by an increased concentration of carbon in the atmosphere. The Article 3 of the UNFCCC contains principles to be followed by the parties, namely the principle of common but differentiated responsibilities and the afore-described precautionary principle. The principle of common but differentiated responsibility entails that parties to the convention shall protect the climate system for the benefit of present and future generations based on equity and in accordance with common but differentiated and respective capabilities, meaning that the developed parties should take the lead in combating climate change and the adverse effects thereof. In addition, Pakistan, as a non-annex I party, is responsible for developing, periodically updating, publishing and making available to the Conference of Parties national inventories of anthropogenic emissions (UNFCCC, 1994, Article 4). Furthermore, Pakistan holds responsibility for promoting and cooperating in the development application and diffusion, including the transfer of technologies, practices and processes that control, reduce or prevent anthropogenic emissions (UNFCCC, 1994, Article 4). In addition, the Pakistani ratification of both the Paris Agreement and the Kyoto Protocol entail its obligation to

mitigate and adapt to the effects of climate change and reduce emissions (United Nations Climate Change, n.d.). Another very important convention is the UN Convention on the Law of the Sea (1981) to which Pakistan is a party and which addresses maritime pollution.

Finally, relevant treaties regulating oil and nuclear pollution do indeed exist, such as the International Convention on Oil Preparedness, Response and Co-operation (1990), to which Pakistan is a contracting State and which provides a framework to facilitate international cooperation and mutual assistance in preparing for and responding to major oil pollution incidents (International Maritime Organization, n.d; International Maritime Organization, n.d.-a). Furthermore, a relevant treaty in regard to nuclear pollution is the International Convention on Nuclear Safety (1994), ratified by Pakistan, which is based on the parties' common interest to achieve higher levels of safety and aims to commit contracting parties operating land-based civil nuclear power plants to maintain a high level of safety by establishing fundamental safety principles (International Atomic Energy Agency, n.d.).

Overall, there are various sources of international law regulating all forms of pollution to which Pakistan is a party, as well as committed to fulfill the obligations entailed within them.

Domestic Legislations and Policies

The first significant legislation in the area of the environment was the 1983 Pakistan Environmental Protection Ordinance (PEPO), created as a result of the 1972 Stockholm Declaration. PEPO aimed to establish institutions at the federal and provincial level, for policy-making and implementation respectively. However, the ordinance lacked comprehensive provisions for the regulation of substances or pollution of any kind (Ahsan & Khawaja, 2013). Eventually, the Ordinance was replaced by the Pakistan Environmental Protection Act (PEPA) in 1997, and in 2012, Punjab and Balochistan adopted their own legislation on the basis of PEPA.

Notably, PEPA established the Pakistan Environmental Protection Council, tasked with the implementation of PEPA, along with formulating and implementing national policies, and approving standards within the scope of environmental protection. Within the Council, the Pakistan Environmental Protection Agency was also created, with the same implementation and recommendation powers, as well as the faculty to arrest individuals reasonably suspected of committing offences prohibited within PEPA.

As a result of the PEPA, subsequent regulations were created to implement the Act. The National Environmental Quality Standards Regulations of 2000 detail the limits for industry actors on levels of pollution, describing the process and standards for categorisation, self-monitoring and subsequent presentation of reports. The Industrial Pollution Charge Rules of 2001 are another example, as they set out the framework for calculation of the pollution charge for producers, and ensure reporting, payment, inspection and calculation of charges. The Federal Agency Review of Pakistan Environmental Protection of the Initial Environmental Examination and Environmental Impact Assessment Regulation of 2002 is another example. This set of regulations detail the applicability of environmental impact assessments and initial environmental examinations, as well as their respective procedures, detailing the preparation, review and submission of reports of projects estimated to have negative impacts on the environment. Although these are considered to be the most instrumental legislative efforts in the implementation of the PEPA, a number of regulations were created at the provincial level as well to ensure environmental and wildlife standards, regulate industrial contamination, etc.

Further acts were passed and implemented through Pakistan's legislative bodies. The National Disaster Management Act of 2010, which established the National Disaster Management Commission - tasked with coordinating state response to man-made or natural catastrophes, along with provincial and district Disaster Management Commissions and authorities. The Pakistan Council of Renewable Technologies Act of 2010 established the Pakistan Council of Renewable Energy Technologies, responsible for developing the acquisition and dissemination of renewable energy technologies. The Act details how the Council is expected to ensure cooperation at national and international level and liaise with the Pakistani government in developing the production of renewable energy technologies. The Alternative Energy Development Board Act of 2010 created the Alternative and Renewable Energy Development Board, tasked with the development of strategies and policies for the use of renewable energy, monitoring, certifying and evaluating renewable energy projects and products, and to establish an institute of renewable energy technologies.

As the area of the environment was a part of federal responsibility, the above-mentioned texts were federal measures. Following the 18th amendment of Pakistan's Constitution, several matters, including the environment and ecology, were made to be regulated at a provincial level. Thus, after

this amendment in 2010, matters regarding the environment are now subject to the jurisdiction of the provincial governments. Nonetheless, a number of acts continued to be created, with many having a specific view to climate change.

At the executive level, the National Climate Change Policy of 2012 was framed to identify vulnerabilities and their appropriate adaptation measures in areas of water, forestry, biodiversity, vulnerable ecosystems and disasters, all with a view of addressing challenges brought by climate change.

At the legislative level, the Global Change Impact Studies Centre Act of 2013 established the Global Change Impact Studies Centre tasked with studying the impact of climate change through project plans, international cooperation for this task, educational and information activities, and stimulating public awareness. Furthermore, The National Energy Efficiency and Conservation Act of 2016 created the National Energy Efficiency and Conservation Authority to serve as the main federal authority for the implementation of energy conservation programmes, enforce the provisions of the Act, prepare national energy conservation policy, conduct energy audits and research programmes. Finally, the Climate Change Act of 2017 established the Climate Change Council, the Climate Change Authority and the Climate Change Fund tasked with the coordination of mainstreaming climate change related concerns into governmental actors' decision-making process. At the time of its passing, the Act was novel as most countries did not have specialised climate change legislation, but was still criticised for a lack of research published on the matter and doubts on whether the funds would be used efficiently (Ebrahim, 2017).

Likewise, a relevant policy known as the Green Stimulus Package was launched by the government of Pakistan in 2020, with the focus of sustainable economic growth, and sought to quantify biodiversity protection. The case of Leghari v Pakistan is also relevant to note when discussing national legislation and policies. Leghari, a farmer, sued the national government for their failure to carry out the National Climate Change Policy of 2012 and the Framework for Implementation of Climate Change Policy. In 2015, an appellate court granted Leghari's claims stating no real progress with the implementation of the climate change policy. In 2018, a final order was issued where the court dissolved the Climate Change Commission, created a standing committee, and reaffirmed the importance of climate justice.

Causes of Pollution

The natural resources and ecosystems of Pakistan are under significant strain and pollution. The country's primary environmental issues include the depletion of finite resources, pollution of air and water, depletion of energy sources, deforestation, and inadequate waste management. Water sources have been polluted by agricultural and industrial runoff, while air quality in urban areas has been affected by manufacturing and vehicle emissions, which are both results of deforestation. Like other developing nations, Pakistan has placed a higher priority on achieving food self-sufficiency, meeting energy demands, and controlling population growth, rather than environmental protection. Consequently, the government has not given much attention to environmental and climate change concerns in policy-making (Khan, 2022).

With around 60% of its population living in rural areas, Pakistan is primarily an agricultural nation, and many rural inhabitants lack access to clean water and adequate sanitation facilities (Government Report, 2021). As a consequence, due to factors such as population growth, economic sector expansion, uncontrolled urbanization, inadequate waste management systems, and various others, environmental issues in Pakistan are deteriorating with each passing year.

Traffic and Poor Fuel Quality

In Pakistan, the traffic in urban areas has increased rapidly due to increase in purchasing power and car loan facility provided by banks. In recent years, the number of vehicles in Pakistan has greatly increased, rising from 680,000 in 1980 to 5.2 million in 2004, representing a total growth of 635% (Abedullah, 2006). Another serious issue is the high content of lead in gasoline, which presently is 0.35 g L⁻¹ (Abedullah, 2006). Different studies carried out by the Pakistan Medical and Dental Association and Aga Khan Medical Hospital have confirmed the presence of high concentration of lead levels in blood of school children, traffic police and adults, which is an absolute violation of Article 12 of ICESCR (Kadir et al., 2008). Meanwhile, among the international community, many countries of the region, including Bangladesh, China, India, Japan, the Philippines, Thailand, and almost all European countries have banned lead in gasoline (MECA, 2003).

Deforestation

Deforestation is the process of removing trees by humans for wood and fuel without replacing them. Deforestation in Pakistan is primarily caused by urbanization, a growing population, and the rapid expansion of cities. The destruction of forests not only affects the natural beauty of the land but also has a significant impact on the ecosystem, including the habitats of countless wildlife. Unfortunately, with the conversion of rural areas into urban centers, deforestation rates in Pakistan are high. Additionally, due to poverty and lack of resources, some people rely on trees for timber to keep warm during the winter months or build homes. However, regardless of the reason, deforestation poses a significant threat to the environment.

Neglect by Authorities

Like other low middle-income countries, Pakistan has poor environmental regulatory capacity. It also does not have a multisectoral, coherent understanding of environmental consequences of policy actions that have been taken in the past two decades (Butt, 2021). The most significant contributing

to the problem are the inadequate fuel emission standards and an urban growth model that heavily favours cars. Thus, it is not unexpected that a study conducted with the guidance of the FAO found that 43 percent of pollution in Pakistan is attributed to the transport sector. (FAO, 2019). Although the Punjab government officials frequently cite this report, they have not been effectively addressing the issue at hand. Instead, they have primarily been blaming crop burning in India or brick kilns for the pollution crisis, rather than focusing on investing in public transportation and reducing the number of vehicles on the roads. (FAO, 2019).

The situation is even more complexified as the responsibility for petroleum standards lies with the federal energy ministry rather than the provincial government. As a result, almost two-thirds of the diesel fuel used in Pakistan is refined domestically using outdated technologies that do not meet the cleaner Euro-5 fuel emission standards. This is why the transport sector has an alarmingly high contribution to air pollution in Punjab (Hameed, 2019). The World Health Organization's updated air quality guidelines suggest that Fine Particulate Matter (PM_{2.5}) should not exceed 15 micrograms per cubic meter within a 24-hour period. However, in Lahore, on an ordinary day in December, the PM_{2.5} levels typically range from 300 to 400 micrograms per cubic meter, which is over twenty times the recommended health guidelines (WHO, 2022).

In addition to governmental neglect, there is a lack of air quality monitoring and local level studies that hinders the availability of crucial evidence needed to implement effective policy interventions (Butt, 2021). The situation is exacerbated by road dust, secondary aerosols, particulate matter from the construction sector, and thermal energy power stations. Industrial interest groups wield significant influence over political circles, and due to their status as significant contributors to the country's exports and economic prosperity, they face minimal regulatory oversight. If the Pakistani government fails to address environmental pollution, particularly air pollution, and take meaningful actions to mitigate these issues, the consequences of pollution in Pakistan will become even more severe.

Recommendations

Based on the research and analysis, we list the following recommendations which can be done to improve environmental quality in Pakistan:

1. Pakistan should aim to honour ratified international agreements. GHRD encourages Pakistan to fulfil the obligations specified in:
 - a. Stockholm Convention on Persistent Organic Pollutants (2001),
 - b. United Nations Framework Convention on Climate Change (UNFCCC) (1994),
 - c. The Paris Agreement,
 - d. The Kyoto Protocol,
 - e. UN Convention on the Law of the Sea (1981),
 - f. International Convention on Oil Preparedness, Response and Co-operation (1990),
 - g. International Convention on Nuclear Safety (1994).

2. Pakistan should direct investment flows towards sustainable infrastructure.
 - a. One manner could be to encourage investment in traffic and transport to provide crucial health and environmental upgrades to the existing alternatives.

 - b. An effort should be made to provide affordable and better quality fuel to Pakistani consumers that produce less.

3. Pakistan should aim to reduce the current rate of deforestation through improved urban planning and environmental regulation.

4. Pakistan should enforce environmental regulation and law by increasing funding to the environmental protection authorities and improving cross-sector communication between government departments.

Conclusion

To summarise, the findings of this research report have shed light on the significant repercussions that result from Pakistan's failure to make environmental protection a domestic priority. The country's catastrophic environmental impact is the result of the exploitation of the nation's natural resources, the continued urbanisation of the nation, and the lack of regulation on the increase of environmental hazards such as waste management, traffic, and fuel quality. Domestic legislation and policies with the scope of environmental protection at the federal and provincial levels, as well as other policies concentrating on prospective planning and public awareness, were implemented. While certain measures have been taken in response to Pakistan's deteriorating environmental situation, in an effort to mitigate further damage, the federal government must do more to guarantee environmental regulations that are adhered to through sustainable infrastructure plans.

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