
Climate havoc in Karachi: need of Communication

Azhar Ahmed*M.S Research Scholar, Department of Mass Communication, University of Karachi*Email: azharahmad343@gmail.comORCID: <https://orcid.org/0000-0002-5634-0333>**Laeq Ahmed***PhD Scholar, University of Karachi, Karachi*Email: laeqahmad202@gmail.comORCID: <https://orcid.org/0000-0002-7040-767X>**Abstract**

Over the past few decades, one of the extreme global threats include climate change, which cannot be avoided at all. In fact, considerable advancements have been achieved in the study of climate change and vulnerability to natural disasters while working on SDGs plan. Pakistan is also facing the challenge to overcome severe disasters caused by climate change; increasing and decreasing in temperature simultaneously, urban flooding, heat waves, melting of glaciers, raining and increased drought situations all over the country but specifically Karachi. Climate change disastrously effected our society, economy, and ecology. This research paper articulates the reasons behind climate havoc in Karachi city. Furthermore, discuss the ways to come over from the alerts to future havocs. At the conclusion side, the paper dealt with the government policies, and media coverage regarding climate hazards specifically the communicative content on environmental health to support in development and betterment of the city.

Keywords:

Karachi, Climate Havoc, Communication, Development, Heat Waves.

Introduction:

Climate hazards have become an unavoidable reality in the city. A variety of natural disasters has thrown Karachi into a state of chaos, which is also affecting its people and economy. Climate hazards in Karachi requires more attention from the federal and provincial governments. The vulnerability studies showed that climate change had played a significant role in increasing heat stress levels, water shortage risk and air pollution levels since 1980s. On top of this rapid urbanization was also highlighted to be one of the causes for increase in climate hazard exposure. Climate changes have brought catastrophic results for the whole country. Because of rapid urbanization, a large number of population is still going to face extreme weather patterns and heat waves as well as crippling rainfall. Since, Karachi city is located in one of the most vulnerable places in

Pakistan; this place will be more affected by increase in temperature and climatic hazards that bring consequences from threats such as global warming and super cyclones.

Climate change is a fabricated phenomenon and for the first time in history, it has become clear what the consequences of global warming are going to be in the near future. Global warming has brought new challenges and risks that were not predicted earlier. Now we are witnessing an increase in risks from weather disasters as well as a rise in temperature levels by two degrees Celsius in Karachi city.

The biggest threat for human in today's history is neither WW3 neither Global recession nor pandemic, it is climate change because economic recession can be tackled by good policies the war will end with peaceful pacts and may be pandemic can be cured by vaccine but when the climate is not good, the world will not survive, so how will man live? The threat of climate change is most dangerous in the world. The leaders from worldwide are meeting and signing accords and making policies. Millions of people are pressurizing their government. Yet there is no significant change in climate. Still, this sword is hanging over our heads. What are the reasons? Why the world has come to this point? And what are the procedures to improve climate?

From 1950, CO₂ in our atmosphere is increasing constantly and has not stopped yet. Scientists say that, 95% reasons for the climate change are human activities. We burn a lot of fossil fuel including coal & oil to power our homes, to light up bulbs, to run factories, or vehicles. Due to which CO₂ level has increased gradually.

Another reason is population. In just 70 years' population have increased by 3% and human reliance for food is mostly associated with animals. We eat their meat; drink their milk so the more human, the more animals, the more methane gas and methane gas stuck in atmosphere. All gases stuck at atmosphere and traps sunlight eventually increasing earth's temperature. This is known to be greenhouse effect. Rising earth, temperature rapidly is a problem. According to UN, since 1800 until now temperature has only increased by 1°. Till 2100, the temperature will rise to 1.5° or 2°, atmosphere had 0.03% of CO₂ which have increased to 0.04%

Climate hazards and impacts in Pakistan: Climate change is affecting the entire world. It is becoming more evident that climate change is already happening, with projections predicting its impacts will continue to grow. It has been estimated that Pakistan is one of the most vulnerable countries around the world to climate change. Because we are located in a tropical region, our country is particularly vulnerable to the negative effects of global warming. The situation, which Pakistan has faced in monsoon of

2022, was quite hazardous. Hundreds of thousand people faced havoc and disaster by climate change; about 15,000 deaths or injuries, submerged almost a third of the country, and caused 8 million people to flee their homes. More than 4 million acres of agricultural land, over 2 million dwellings, 13,000 kilometers of roadways, and 439 bridges were all destroyed or damaged. As a direct result of these disasters, an estimated 9 million more people may become poor (UNDP, 2023). According to data from the climate change ministry, the federal and provincial governments invest six to ten billion dollars each year to address climate change-related problems such storms, cyclones, heat waves, floods, and glacier melting. (The News, Jan 31, 2022)

In regards, current Information Minister of Pakistan tweeted that Islamic Development Bank pledged to donate \$4.2 billion, the World Bank to \$2 billion, the Asian Development Bank to \$1.5 billion. While, the European Union had pledged \$93 million, Germany \$88 million, China \$100 million, and Japan \$77 million. In addition to the \$100 million already promised to Pakistan, the United States announced another \$100 million. The ambassador for Saudi Arabia announced a \$1 billion donation, while further more. (Keaten & Ahmed, 2023)

Climate change has been progressing at an alarming rate with the global average temperature increasing since 1950, when the Earth's average temperature was 14°C. In the last two decades (1995–2010), this increase in temperature has been twice as fast as during the previous decade (1980–93). In some regions of Pakistan, temperatures have risen by as much as 5°C (10°F) per decade. These rapid changes are expected to continue for many years to come, with little indication of a slowdown. Such rapid climate changes can cause extreme weather events such as heat waves and droughts, frequent floods, and rising sea levels and coastal erosion that threaten ecosystems and livelihoods.

Pakistan is in top 20 countries, which will suffer the most from climate change. Still now, 50% of Pakistan's population is associated with agriculture and textile industry, provides most employments to Pakistanis. Both industries use water vastly. When climate will not be good, so the production will be effected. This year mango was produced 60% less comparatively and the situation will worsen year by year. When there will be no food production, the food insecurity will increase. This will bring people to streets, which will lead to condition as national security threat.

Speaking of further adverse effects, the heat wave is increasing every year in Pakistan. However, around the world, along with heat, the cold is also increasing. After Arctic and Antarctic region, the most glaciers are in the Himalayas. When they will start to melt, flash floods will come all over

Pakistan. When the flash flood will come, agriculture will be destroyed and when all that water goes into the sea, the sea level will rise and due to these coastal cities around the world are under threat. Miami and Osaka may not be existing until 2080; Venice may not exist in 2050 or 2060.

When it comes to the migration, along with human migration. Obviously, when a person does not get food and drink, he will move from one place to another. However, at the same time, animals and birds will start migrating too and when they will migrate it would disturb the whole eco-system? At the same time, when the world's ecology and eco-system is disturbed, food insecurity will increase all over the world, which may lead to wars.

The Paris Accords: To avoid all these threats, global leaders meet in Paris in 2016. A treaty has been signed called "The Paris Accords". Their goal was to keep the world's temperature between 1 to 2% by 2100. After four years of the Paris Accords, World's CO₂ emissions raised faster and higher as many countries did not take it seriously. America, which is the world's largest polluter, gets exit from "The Paris Accords" during the Trump administration. Russia and China, where there are many factories, set targets to lower their carbon emissions so low that they are accused of not taking it seriously. Poland and Turkey started to install coal-fired power plants in their countries, which was again against "The Paris Accords". On the contrary, Pakistan has taken a pledge to reduce CO₂ emissions by 300%. The billion-tree tsunami was also part of the same plan. However, we miss tons of drinkable water due to mismanagement, lack of dams, lack of reservoirs and due to inter fights and political stress we put these problems aside. We need to install renewable energy plant for overcoming import bills and the reliability on non-renewable energy resources like coal and fossil fuels. There is so much sunshine in Pakistan. Therefore, we can also install solar plants on government level like India, Gambia and Morocco did. We can utilize Badin (a district of Sindh province) for installing wind turbines, as that region is very windy. We need to aware people, educate people, convince people that we have to fight this war in our lives ourselves.

Literature Review

The average increase in temperature until 2022 compared to pre-industrial times is 1.2 degrees. All the changes that we are seeing around us is because of 1.2-degree increase. If the average increase in temperature goes up to 2-4 degrees, things will get ever worse. Many countries will become uninhabitable. But, if it gets to a 4-8 degree change then the real apocalypse will begin. Many regions will become unlivable. There will be heat waves after heat waves and many coastal cities will be underwater.

(M. Peters. 2021) As a result of human-caused greenhouse gas emissions, one aspect of climate change known as global warming eventually leads to significant changes in weather patterns. (Vogel et al. 2019) Nationwide widespread deforestation worsens climate change. Since the last 59 years, the mean temperature has increased 2.25°C overall. The average temperature is rising by 0.38°C every decade, which is ten times faster than the average temperature increase worldwide. The intensity of temperature from 1947 to 1975 has less growth than the time 1976–2005. (Sajjad, S. 2009)

In the middle and lower Indus basin valley, Karachi was found to be warming at a rate of 0.33 °C each decade. Because of the massive yearly expansion of 6.5% in industrial zones, Karachi saw large CO₂ emissions along with other air pollutants. Sen.'s slope estimator indicated a significant increase in annual maximum temperature of 0.15°C every decade in Karachi. (Khan, F. 2022) Thousands of people have recently perished in Pakistan because of heatstroke and floods; it is crucial to be aware of variations during the chosen period and to forecast them while planning and preparing. (Vambol et al. 2022) The Indus Delta is distinguished by scorching heat and prolonged summer season. The largest city in Pakistan and the capital of Sindh province, Karachi is located in the southeast of Pakistan, close to the Arabian Sea. Along with the Arabian Sea shore, it includes a significant port (Port Qasim) and industrial region. In the entire country, Karachi's climate is markedly distinct. Karachi's location on the coast gives it a comparatively mild climate that is predominantly arid to hyper-arid. (Nadeem et al., 2022). The weather of Karachi city has been changed from the last decade and green spaces in Karachi is constantly being eliminated by uncontrolled urbanization. At NDVI (Normalized Difference Vegetation Index) > 0.3, Karachi's green space area climbed from 6.30% in January 2014 to 11.28% in January 2021. The idea of integrating wild grass and bushes in the study is excluded since these figures of NDVI more than 0.3 imply sparse or moderate vegetation. Only a 5% rise over an eight-year timeframe underscores the need for immediate action to enhance Karachi's UGS supply and quality. (Zia et al. 2022)

In order to achieve urban contrition, high-rise development is now required. Despite already having two of the country's highest structures, Karachi, Pakistan's most populous and significant industrial metropolis, is expected to soon see the construction of additional high-rise skyscrapers. The expected seismic risk recall necessitates a revision of their design standards. (Zahra and Zehra. 2012) on the other hands, the concrete material being used in the buildings absorbs heat in a day and release it in

night, resulting in high temperature at night. When miles of concrete walls, walkways, streets, and rooftops exacerbate the effect of rising temperatures in cities, the phenomenon is known as Urban Heat Islands. According to the Environmental Protection Agency, concrete surfaces can raise the temperature in cities by up to 22°F when combined with the heat produced by car engines. (Beiser, V. 2019)

Climate chaos is also a result of the growing population. Other causes, such as the increase of urbanization and economic growth, have accelerated resource consumption, and a rise in the rate of global garbage production has been noted. (Ngoc and Schnitzer 2009.) Consequently, environmental concerns associated with waste management become more serious. One of the most pressing concerns confronting responsible authorities in developing countries is the sustainable management of municipal solid garbage. About 30.8 million tons of MSW are produced annually in Pakistan, and 170 dumpsites are needed to dispose of it. (Korai, et al. 2020) At the meantime, Karachi lacks a properly designed disposal system for dumping of municipal solid waste, and the only viable landfilling locations are open dumping grounds. (Zuberi and Ali. 2015) An estimated 187 m³/tonne DM (dry mass) of landfill gas with an average methane concentration ranging from 57.1% might be produced in Karachi from the solid waste that is disposed in dumpsites, according to calculations. Moreover, Karachi is contributing about 3.9 million tons CO₂-eq. methane emissions (with specific methane potential of 1.8 tCO₂-eq. /tonne DM disposed). (Sohoo et al. 2022)

Combinations of genetic, environmental, and behavioral factors, the majority of which are still unknown, are the root causes of complex illnesses including some congenital abnormalities and several illnesses with adult onset. (Nature et al. 2022) Climate havocs welcomed contaminated food and water supply results in the increasing of diseases. A recent spike in cholera cases has been documented in Karachi in 2022. The Sindh health department's Dr. Asif Saeed, who is in charge of monitoring contagious diseases, has confirmed 129 cases of cholera that have been reported from six public and private institutions. In addition, he provided a breakdown of these occurrences, noting that five occurrences were recorded in January 2022, 14 in February 54 in March, and 56 in April. (Khan et al. 2022)

Major climatic catastrophes like heat waves happen all throughout the world. To lower the frequency of morbidity and fatalities brought along by rising temperatures (heat waves) in Karachi, it is crucial to pay a lot of attention to the infrastructure in high-vulnerability areas and provide additional protection to the elderly. Moreover, the popularity of indoor

conditioning facilities is another efficient method for lowering dangers. (Wu et al. 2022)

In 2020, Karachi has faced a record rainfall in one day than the past 92 years. When streets turned out into rivers, over 30 people died by drowning or were electrocuted. In fact, entire settlements were washed out. (Hasan, A. 2020) In the second spell of monsoon rains in 2022, which began on July 24, the city received 348 millimeters of rain, more than a summer's worth in a single day. Karachi's monsoon this year claimed the lives of 45 individuals in just the month of July. Primarily because of drowning and electrocution in manholes filled to the brim with clogged drains. While, the residents of Karachi suffered greatly as sewage and rainwater combined and entered into their homes. (Report, 2022) According to the Provincial Disaster Management Authority Sindh, the statistics of damages and loss in 2022 by monsoon and flood in Sindh is unimaginable. 801 total deaths, total affected population is more than 12 million, about 800 thousand houses have been damaged, more than four hundred thousand livestock lost and 3.78--million-crop area is affected. (Daily Situation Report, Dec. 2022)

Thus, the current situation of Karachi city is alarming in a sense of climate havocs. United Nations set up seventeen goals to overcome climate havocs globally. Which are further taken by Pakistan to achieve betterment on climate change damage.

SDGs plan and Pakistan

The SDGs are a clarion call for the globe to shift its course towards socioeconomic development that is more sustainable. The SDGs symbolize a promise to complete what has been begun. The SDGs are interconnected, and each one's accomplishment has an impact on the others. For example, how we manage our natural resources will ultimately have an impact on climate change and improving health will contribute to the eradication of poverty. Overall, it represents the best opportunity to raise living standards for humankind's future generations. There are such seventeen "Sustainable Development Goals" to accomplish until 2030 by United Nations (2016) describes as put an end to poverty in all its manifestations worldwide. Achieve food security, increase nutritional health, and advance sustainable agriculture to end world hunger. Assure everyone's wellness and promote it at all ages. Make sure all students have access to high quality, inclusive education, and encourage possibilities for lifelong learning. Achieve equality for women and provide all women and girls more empowerment. Make sure that everyone has access to water and is managed sustainably. Make ensuring that everyone has access to

modern, affordable, dependable, and sustainable source of energy. Building resilient infrastructure, promoting inclusive and sustainable growth of industries, and encouraging innovation will all help to achieve sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all. Lessen inequality both within and across nations. Make urban areas and habitations inclusive, secure, robust, and sustainable. Ensure sustainable patterns of production and consumption. Immediately tackle climate change and its effects. For sustainable development, protect and responsibly use the oceans, seas, and marine resources. Climate change disastrously effected our society, economy, and ecology. Protecting, restoring, and fostering sustainable use of terrestrial ecosystems, managing forests sustainably, battling desertification, halting and reversing land degradation, and promoting biodiversity conservation. Promote inclusive and peaceful societies for sustainable development, ensure that everyone has access to justice, and create inclusive institutions at all levels. Strengthen implementation strategies and rekindle the international collaboration for sustainable development.

In February 2016, Pakistan became the first nation to include the SDGs in its national development plan. By incorporating these objectives into national policies and tactics, the country made considerable progress. A national framework for SDGs was created in 2018 to priorities and localize SDGs. Now, a strong emphasis is placed on maintaining fairness, strengthening organizations, and establishing transparency at all levels. (Ministry of Planning, 2018) Pakistan has established monitoring and assessment procedures, which are essential for assisting SDG implementation, by creating federal and provincial SDG units. Pakistan has made advances in a number of areas, including the reduction of poverty and child stunting, an improvement in transparency and accountability and the promotion of gender equality and women's empowerment. At both federal and provincial levels, assistance units have been set up to enhance the vertical and horizontal coordination between the various tiers of government. Since not all objectives can be achieved simultaneously, the National Economic Council's (NEC) Structure is intended to direct provinces in choosing their development priorities based on regional needs. The most particular situations to peace, justice, strong institutions, decent work, economic growth, and quality education have been adopted in Pakistan. Enhancing corporate efficiency and raising environmental standards generally. The execution of sustainable development goals continues to face numerous difficulties, with a lack of funding serving as the root of all issues. The National Sanitation Policy of

2006 and the National Water Policy of 2018 guide improvements in water and sanitation. Additionally, there is an 8% increase in access to electricity. The use of clean fuels has increased by 11%, which is good for sustainability of the environment and human health. Climate change presents Pakistan with a significant challenge. Due to the conclusion of the Billion Tree plantation push, Pakistan has surpassed its goal and scaled up the initiative. (Government of Pakistan, 2019)

Understanding the situation of Karachi, many non-governmental organizations along with Government bodies and private sectors are working on SDGs on different platform to provide awareness and ways to overcome regarding issues. Sessions have been conducting by intellectuals on educational institutes to aware the students and to make a chain to further proceed.

Reasons behind climate havoc in Karachi city:

Karachi, once a little fishing town, has grown into Pakistan's largest commercial and industrial hub, accounting for approximately half of the nation's tax revenue. People all around the country come for employment and better lifestyle. The estimated population was around 30 million (Qureshi, S. 2010) but according to non-governmental statistics, it is somehow more than that. The city ranked at 12th with about 17 million of population in 2022 according to UN ranking. (TRT World, 2021) As population increases, residential and commercial areas also increase.

Concretization of city and uses of artificial cooling appliances: Climate change situation in Karachi has many reasons behind. One of the main and serious reasons of urban flooding in Karachi is the city's heavy concretization as discussed before. Concrete buildings are built under the phenomena of urbanization and increasing population. As public and open places disappear and are replaced by concrete, water begins to build up. Water seeps through the earth and infiltration beds created by open areas. When open areas are already covered, the blockage of water absorption resulting in urban flood. On the other hands, concrete absorption of heat results in high temperature in night within a room, resulting in adaptation of cooling appliances like air conditioner and others to cooler down the temperature. The outer of these appliances exhaling the gas harmful for atmosphere and creating heat in a wave all around in air. (BBC News, 2021)

Deforestation: Nature serves humans a better lifestyle than anything else. Furthermore, it is an absolute harm to eliminate nature for modernization and urbanization. Trees cooler down the temperature by absorbing carbon dioxide gases from the atmosphere and releasing fresh oxygen to inhale by

humans. When there are no trees the uprising heat waves always hit in summers. According to numerous environmental organizations, planting trees will prevent global warming. As a result, extensive reforestation initiatives are being carried out globally. We can stop climate havoc if we just plant sufficient trees. Moreover, we will not even need to make significant lifestyle changes. It's a scientific hypothesis that: In July 2019, a Swiss university study gained attention when it claimed that 900 million hectares of land are accessible for reforestation globally and that doing so would offset two-thirds of the CO₂ emissions brought on by human activities. (DW, 2022)

According to Ahmed, (2020) Karachi is facing the same situation. In fact, having green land in a fewer part makes the atmosphere somehow better. Green land phenomenon is based on grasses here while it is actually the bunches of trees as forest. Trees were felled for a number of large-scale projects in Karachi, but the administration neglected to plant new trees after the projects were finished. Construction has increased as our population has increased. If this attitude continues, we will not have any more trees here anytime soon. International standards specify that at least 25% of a city should be set aside for plantation. Karachi, on the other hand, has only 6% of green space. Green spaces have dropped by 4%, while the urban extent in the urban core has increased by 8% during 2005 and 2017. Karachi's urban environment and infrastructure have not managed to keep up with its expansion, according to the World Bank report.

Solid garbage production: In Karachi, garbage increased from 2000 tonnes per day before 1974 to 6000 tonnes in 2001. It increased dramatically from 6,000 tonnes per day in 2005 to an astounding 12,000 tonnes per day now. The recent development in fast-food chains, growing urbanization, changing lifestyles, and economic activity in Karachi have all contributed to a change in the rate at which solid trash is produced. In Karachi, the City District Government is in charge of treating and disposing of rubbish, while Town Administrators are in charge of waste collection and transportation (CDGK) two cantonment boards, the Karachi Metropolitan Corporation (KMC) and the District Municipal Corporation, are subordinate to the CDGK (DMC). (Wasim, S. 2021.) Due to the mismanagement of related departments, garbage dump is not done properly, resulting in air pollution and spread in several diseases.

Inadequate drainage system and encroachment: Only two dumpsites exist in Karachi, a sizable city, and they are more than 40 kilometers from the eastern edge of the city. Due to the high time and financial expenses of using them, trash was not getting to dump as much. In the meantime, the

recycling market expanded, particularly in the unorganized sector. Vendors pay KMC employees to refrain from picking up trash so that recyclables can be gathered. Then, non-recyclable material is disposed of beside natural drainage channels into the gutter (nala) or at numerous unofficial dumping locations. The drainage channels that are accessible are in poor shape. There are encroachments with garbage-filled channels and shanties where residents live in tiny homes and discharge all of their sewage into the sewage channel. In order to clean up all the sewage-contaminated water in Karachi and discharge it into the sea, the government established the billion-rupee S-3 project in addition to the water project K-4. A new sewage treatment facility was to be built in Korangi; the three existing facilities had a combined sewage treatment capacity of 150 MGD, with the Mahmoudabad facility being totally shut down because of settlement. Others experienced the same. There is no normal sewage treatment system in the city, thus storm water drains must be encroached upon and filled with trash. (Aziz, 2022) Due to the majority of the drainage canals being blocked, there are no facilities for flood defenses other than the Malir river barrier. There are no designated floodwater spaces in Karachi.

Karachi beaches contamination: Karachi city is gifted with seashores but cursed by people spread of contamination and garbage all around the sea beaches. Plastics are the major issue faced by the world to eliminate. Urban trash is dumped into the sea in Karachi in order to restore land. The majority of solid trash is made up of plastic, which is bad for marine life. Around 10,000 industrial plants in Karachi create 80 million gallons per day of harmful metals and chemicals that are dumped into the ocean directly. (Guriro, 2017)

Government policies, and media coverage regarding climate hazards specifically the communicative content on environmental health to support in development and betterment of the city need to be prominent to come over from the alerts to future havocs.

Recommendations:

Try to reduce the carbon footprint as much as an individual can. Plant trees, carpool to work or use public transport. Try to minimize the use of single-use plastic; the plastic that is used only once and thrown away. It will definitely create a difference but it will not be enough.

The second most important thing that will have the most impact to bring the attention of our leaders and policy makers to the carbon footprint. Even as much as one policy can create a lot of difference.

The industries that create the most greenhouse gases are energy, construction, and transportation and food industries. We know that these industries cannot be shut down. However, we can at least incentivize sustainable production and penalize excessive pollution.

The media plays a significant role in the dissemination of information about weather forecasting. It is recommended to disseminate weather reports and data via mass media so that individuals and institutions can use them to lessen physical and biological losses, losses brought on by weather, and to improve social benefits such as the preservation of life and property, the promotion of public health and safety, and the advancement of economic wellbeing and quality of life.

Social media may also be utilized as an extra means of swiftly sharing information on watches or warnings for severe weather. Social media platforms are excellent for informing the public about extreme weather.

To ensure that people may live and develop healthily, the infrastructure in these cities must be updated and ecologically friendly practices must be employed. This is due to urbanization, a growing population, and changes in the local climate.

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