

*United Nations Environmental
Programme*

*Improving Air Quality
as a Measure to
Protect Environmental
and Human Health*

Director: Galilea Gutiérrez Cabañas

Moderator: Victoria Abril González González

INTRODUCTION

The United Nations Environment Programme is the leading global environmental authority. The UNEP sets the global environmental agenda, which involves the politics and policies regarding environmental issues that have been developing rapidly overtime. It also promotes the implementation of the environmental factor of sustainable development within the United Nations system making it a topic in which individuals and organizations should be involved equally. Finally, it encourages other organizations to work with different communities so that these can be inspired and informed to share their knowledge for other nations to improve their quality of life. (United Nations Environment Programme).

Clean air is fundamental to healthy human life, as many other resources such as clean water, yet the vast majority of the world's population lives in places where they are exposed to poor air quality. 6.5 million deaths have been estimated and associated with exposure to air pollution in 2012. This currently has the potential to get significantly worse, as population growth, economic growth and urbanization keep even more people into increasingly polluted cities. Currently, individuals are the first ones that are encouraged to demand their rights for clean air; therefore, the UN also asks for the citizens to begin to take action to fulfill the accomplishment of their rights(Andrews, 2017).

Air pollution comes from many sources which include furnishings from cookstoves and kerosene lamps to coal-fired power plants, vehicle emissions, industrial furnaces, wildfires, and sand and dust storms. The problem is most severe in urban areas, particularly in Africa and Asia (United Nations Environment Programme). However, also many european cities suffer from air pollution and exceed both the guidelines suggested by the WHO and the European standards recommended by the Air Quality Directive which are both one of the most relevant organizations concerned about this issue (Thunis et al., 2017). In low and middle income countries, 98% of cities with more than 100,000 inhabitants fail to meet the World Health Organization's air quality guidelines (United Nations Environment Programme). Air pollution also damages the health of many individuals, including children, threatening their future since citizens are damagingly their environment .This people suffer from distinct health problems such as cancer, respiratory and cardiovascular issues that affect their lifestyle (National Institute of Environmental Health Sciences, 2018).

Short-lived climate pollutants, including black carbon, methane, and ozone, contribute to the climate change crisis, as well as towards a significant proportion of air-pollution related deaths and diseases. Lowering short-lived climate pollutants can reduce disease, contribute to food security, improve diets and increase physical activity. (United Nations Environment Programme, 2018).

In UN Environment people join to work around the world to tackle air pollution, by supporting cleaner fuels and vehicles, inspiring individuals and city leaders to act, strengthening laws and institutions, and developing affordable technologies to monitor air quality; including work on human rights and environment by working with media to improve coverage of rights issues and by calling on the private sector to expand the awareness of them.

HISTORY OF THE PROBLEM

Air pollution, particularly in cities, is not a new problem. Years back, some events made society aware that the world was changing as new technologies were being introduced, and later being improved. Looking back in history, the world suffered from several environmental air disasters that alarmed the citizens where these phenomenons happened. For example, The Great London Smog of 1952 was one of the most alarming events regarding air pollution. It resulted in around 4,000 extra deaths in the city, and it was an important event which started raising awareness on air pollution, causing the introduction of the Clean Air Acts of 1956 and 1968. This was an event that severely impacted the citizens, however, it was not the only one. The New York City third major smog of 1966 took place in the United States, causing major an environmental disaster with severe public health effects. (Enviropedia.org). After these major events, the Clean Air Act was established in 1970: creating requirements for national emissions standards, and the Environmental Protection Agency (EPA) to enforce them (Kovarik).

The worldwide extraction of materials since 1970 has had an important role regarding events involving the contamination of the air we breath. Since 1970, there has been a dramatic increase in the use of fossil fuels, metals and other materials that will not only intensify air pollution, but will advance climate change, reduce biodiversity and ultimately lead to the depletion of natural resources, causing worrying shortages of critical materials and heightening the risk of local conflicts.

(O'Brien-Malone, 2016). The extraction in excess of materials causes many environmental impacts such as "acidification and eutrophication of the world's soils and water bodies, soil erosion and greater amounts of waste and pollution" (UNEP & International Resource Panel, 2016), only if the demand increases by 2050.

One of the most relevant issues that requires research and results in a diverse series of consequences are the greenhouse gas emissions. Levels of atmospheric carbon dioxide have increased since the Industrial Revolution. The primary causes for it are deforestation and the burning of fossil fuels such as coal. As carbon dioxide levels have risen, so have its effects on air pollution (Dinesen, 2018). According to a 2014 EPA study, carbon dioxide was accountable for 81% of the United States' total greenhouse gas emissions, additionally, methane was also responsible for it up to 11%. Another class of greenhouse gases, hydrofluorocarbons (HFCs), are thousands of times more powerful than carbon dioxide in their ability to trap heat. In October 2016, more than 140 countries reached an agreement (Kigali Amendment) to reduce the use of these chemicals and find greener alternatives over time. (Mackenzie, 2018). Vehicles are also a major pollution contributor, producing significant amounts of nitrogen oxides, carbon monoxide, and other pollution. With the increase of transportation in the last 200 years, millions of automobiles have contributed with more than half carbon monoxide and nitrogen oxides, and almost a quarter of the hydrocarbons emitted into our air (Union of Concerned Scientists, 2014).

Regarding air pollution and developing societies, a question that has brought reflection into this issue is: Does development mean pollution? Since the stages of the Industrial Revolution in the late 1800's there's been a fast increase of air contamination. In developed countries such as China, the air pollution is "equivalent to smoking two to three packs of cigarettes a day" (Rowell & Rossman, 2015). Therefore, the air quality affects the lifestyle of citizens; they have to be careful and obey the health measurements to reduce the impact of those factors on their health. During the development of many countries, little attention to the measuring of the emissions of factories and fossil-fuel burning vehicles and also no penalties to the emissions overcoming the limits, have promoted the creation of many events that have killed thousands. If there is not a protocol that measures harmful emissions as cities keep growing, contamination will continue to intensify (Rowell & Rossman, 2015). The unmeasured growing of air pollution causes many illnesses for humans

but also affects the environment due to the fact that smog creates a thin line in the sky that reflects all the light from cities. “Excessive use of light emitting sources also causes increase in the production of greenhouse gases” (Help Save Nature, 2017). As a result, many animals lose their natural cycle of day and night because they cannot longer identify between the stages of the day.

Therefore, not only the health of the world’s society is being affected, but the environment has been responding in a much more alarming way, greenhouse gas emissions, the development of industries, including the continuous worldwide extraction of materials have contributed greatly to the poisoning of air. The intensification of air pollution will continue to be history not until the society finds a way to control it.

CURRENT SITUATION

Air Pollution, nowadays, is a threat to the health of humans and to the maintenance of the environment’s biodiversity. However, organizations working in order to promote actions involving the environment and how the society can take action. Climate & Clean Air Coalition, is a global effort that unites governments, civil society and private sector, acting as a catalyst to create, implement and share immediate solutions addressing near-term climate change to improve people’s lives rapidly, and to ensure sustainable development for future generations. (Climate & Clean Air Coalition) It also serves as a forum for assessing progress in addressing the challenge of short-lived climate pollutants and for mobilizing resources to accelerate action.

Motor vehicles emit pollutants, such as carbon dioxide, that contribute to global climate change. Transportation, which includes freight, trains, and airplanes, accounts for around 30% of all heat-trapping gas emissions. The increase of poor air quality is directly linked to heart and exacerbates cardiovascular diseases, respiratory diseases, adverse pregnancy outcomes, and death. (Environmental Health Sciences, 2018) China’s harmful factories have been closed and green policies have been implemented to regulate pollutant emissions, focusing in development of sustainable energies.

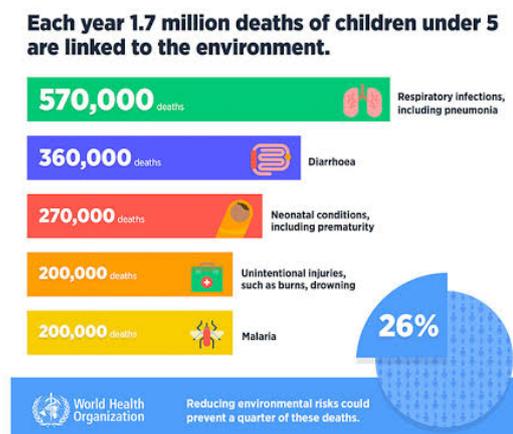
India, in similar conditions, applied the National Clean Air program due to high levels of air pollution. India’s government says that “strengthen the air quality

monitoring network, focus on rural areas and monitor indoor air pollution. It also pushes for indigenous studies to understand health impacts of air pollution” (Aggarwal, 2018). Is important to have the interest of the population alive in order for the progress to be faster. Iran is under similar conditions. The Islamic Republic has “imposed heavy import duties and a lot of red-tape and, limiting the import of new vehicles and machinery.” (Radio Farda, 2017).

Nigeria’s “Agricultural culture, telecoms and oil are all driving this economic growth(...)” ,said by the World Bank (Parke, 2016). causing for Nigeria to be the number one city in the world with the fastest growth of air pollution. Culture and lifestyle also influence the air quality of certain regions “for example, Niger, Nigeria, and Cameroon, with high proportions of the population burning solid fuels at home and may also engage in open burning of agricultural lands or forests.” (State of Global Air, 2018).

Impact on Human Health

Urban air pollution, established by UN WHO, “is considered as the major environmental risk factor in the progression of some diseases such as asthma, lung cancer, Alzheimer's and Parkinson's diseases, psychological complications, autism, fetal growth, etc” (Ghorani-Azam, Riahi-Zanjani & Balali-Mood, 2016). Small particles found in smoke, dust and other haze that ramble in wind currents. Long exposure to the low air quality is a mortal threat for humans since... “Around 1 million children under the age of 5 die due to high levels of pollutants that cause pneumonia, other respiratory infections and lung damage.” (Almendrala, 2018). WHO graphs and compares the many types of Children’s deaths that indeed are highly linked to the damage in the environment. Respiratory problems being the first.



(WHO, 2017)

Multifarious nations, which are affected by air pollution, have been taking action in order for citizens to be part of the progress to prevent further development of Air Pollution. Then again, air pollution is also affected by the lifestyle of many citizens within the affected countries, the burning of fuels for transportation, burning of agricultural fields, massive numbers of stocks, the use of fertilizers and low quality products causing the acceleration of life expectancy of multiple living organisms.

UN ACTIONS

Sustainable Development Goals (SDGs)

There are 17 Sustainable Development Goals. In these goals, the UNEP has proposed to “action in four areas: building the knowledge base; monitoring and reporting; institutional capacity strengthening and global leadership and coordination.” (Dora, 2017). This influenced in the development of the 17 sustainable goals, such as eradicating poverty in any aspect, improving access to sustainable energies, amongst others. In 2015, the creation of these goals took in consideration air pollution as a deadly threat for humans and their environment. These goals are set to be accomplished by 2030.

“The Sustainable Development Goals (SDGs) of the 2030 Agenda, adopted at a UN summit last year, call for substantially reducing the number of deaths and illnesses from air pollution.” (UN News, 2016). The Sustainable Development Goals seeks for a better air quality for citizens of the world that are exposed to high levels of air pollution (92% of population) improve the public health systems. Discussed different approaches for implementing effective measures against industrial air pollution, to secure that industries will not fail and the government will not fail industries. If the SDG would be a success or at least advance in a large amount “1.49 billion more people will breathe clean air, 480,000 km (or around 30%) of the world’s coastlines will be clean, and USD 18.6 billion for research and development and innovative programmes to combat pollution” (Dora, 2017). By far (2017) there has been development in certain areas:

- Technology – The monitoring of air quality and low-cost personal sensors also

are becoming commonplace in many different cities that are affected by the issue. Cities in Africa still to develop further the monitoring the advancement of these technologies..

- Public awareness – The promotion on how does air pollution affects the environment and human health had “impacted and mobilized public opinion” (Dora, 2017). Therefore, the spread of awareness has created a sense of unconformity with non-renewable sources and different lifestyles among individuals.
- Policy action – The existence of policies actions, develops a better view on what does the different organizations want to achieve such as the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC), and increasingly, for urban leaders. “For example, Madrid, Paris, Madrid, Athens and Mexico City recently committed to phase out diesel cars and vans by 2025” (Dora, 2017). This is a significant purpose due to the fact that many cities such as Mexico City, has been developing programs where due to their population size, they control the circulation of cars within the city by the program “Hoy No Circula”. This is one of many examples where the development of many policies in governments helps to reduce the increase of air pollution.

POSSIBLE SOLUTIONS

1. Enforcement of the development of more advanced sensors, analytics and communication tools for the continuous monitoring of the air’s quality.
2. Standards of air from different organizations such as WHO should be enforced and the strengthening of the accomplishment of them should be checked due to the fact that there might be not be a complete guidance to meet them.
3. Address health outcomes of poor air quality with the involvement of compromised communities/cities under alarming levels of air contamination.
4. Raise awareness through campaigns and advocacy, while recommending the acceleration to the transition away from coal and towards clean energy sources, like solar and wind.

5. International cooperation and organizations' clean air acts and directives to reduce air pollution (such as from the European Union, United Nations (UN), and environmental programs) should be reviewed, enforced and therefore their application should be strengthened.

BIBLIOGRAPHY

- About UN Environment. (n.d.). In *United Nations Environment Programme*. Retrieved from <https://www.unenvironment.org/about-un-environment>
- About Climate and clean air coalition. (n.d.). In *Climate & Clean Air Coalition*. Retrieved from <http://www.ccacoalition.org/en/content/about>
- Air Pollution. (2018). In *National Institute of Environmental Health Sciences*. Retrieved from <https://www.niehs.nih.gov/health/topics/agents/air-pollution/index.cfm>
- Aggarwal, M. Experts feel that India's action plan to tackle air pollution could lose wind before take off. (2018). In *Mongabay*. Retrieved from <https://india.mongabay.com/2018/04/30/experts-feel-indias-action-plan-to-tackle-air-pollution-losing-wind-before-take-off/>
- Air Pollution. (2018). In *National Institute of Environmental Health Sciences*. Retrieved from <https://www.niehs.nih.gov/health/topics/agents/air-pollution/index.cfm>
- Almendrala, A. The Effects Of Air Pollution On Human Health. (2018). In *The Huffington Post*. Retrieved from https://www.huffingtonpost.com.mx/entry/what-air-pollution-does-to-your-body_us_5a1a7f47e4b064948074da5f
- Andrews, A. The right to breathe clean air. (2017). In *United Nations Environment Programme*. Retrieved from <https://www.unenvironment.org/news-and-stories/story/right-breathe-clean-air>
- Cars, Trucks, and Air Pollution. (2014). In *Union of Concerned Scientists*. Retrieved from <https://www.ucsusa.org/clean-vehicles/vehicles-air-pollution-and-human-health/cars-trucks-air-pollution#.WybjMS3mF-U>
- Causes of Light Pollution. (2017). In *Help Save Nature*. Retrieved from <https://helpsave-nature.com/causes-of-light-pollution>
- Dinesen, C. The Effects of Carbon Dioxide on Air Pollution. (2018). In *Sciencing*. Retrieved from <https://sciencing.com/list-5921485-effects-carbon-dioxide-air-pollution.html>
- Dora, C. Health & Sustainable Development Goals. (2017). In WHO. [PDF]. Retrieved from <http://www.who.int/sustainable-development/Factsheet-AirQuality-190517.pdf>
- Ghorani-Azam, A., Riahi-Zanjani B. & Balali-Mood, M. Effects of air pollution on human health and practical measures for prevention in Iran. (2016). In *PubMed*. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/27904610>
- Heavy Air Pollution Closes Schools In Major Iranian Cities. (2017). In *Radio Farda*. Retrieved from <https://en.radiofarda.com/a/iran-air-pollution-closes-schools/28930986.html>
- History of Air Pollution. (n.d.). In *Enviropedia.org*. Retrieved from http://www.enviropedia.org.uk/Air_Quality/History.php

- Improving Air Quality. (2018). In *United Nations Environment Programme*. Retrieved from [https:// www.unenvironment.org/regions/north-america/regional-initiatives/improving-air-quality](https://www.unenvironment.org/regions/north-america/regional-initiatives/improving-air-quality)
- Kovarik, B. Air Pollution. (n.d.) In *Environmental history Timeline*. Retrieved from <http://environmentalhistory.org/about/airpollution/>
- O'Brien-Malone, M. Worldwide Extraction of Materials Triples in Four Decades, Intensifying Climate Change and Air Pollution. (2016). In *United Nations Environment Programme*. Retrieved from <https://www.unenvironment.org/news-and-stories/press-release/worldwide-extraction-materials-triples-four-decades-intensifying>
- Parke, P. Dirtied by success? Nigeria is home to city with worst PM10 levels. (2016). In *CNN World*. Retrieved from <https://edition-m.cnn.com/2016/05/31/africa/nigeria-cities-pollution/index.html>
- Rowell, E., Rossman, J. A brief history of air pollution. (2015). In *The Week*. Retrieved from <http://theweek.com/articles/586863/brief-history-air-pollution>
- Thunis, P., Degraeuwe, B., Peduzzi, E., Pisoni, E., Trombetti, M., Vignati, E. ... Pernitgotti, D. Urban. PM2.5 Atlas: Air Quality in European cities. (2017). In European Commission. Retrieved from <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/urban-pm25-atlas-air-quality-european-cities>
- UNEP & International Resource Panel. Worldwide Extraction of Materials Triples in Four Decades, Intensifying Climate Change and Air Pollution. (2016). In *Connect 4 Climate*. Retrieved from <https://www.connect4climate.org/article/extraction-materials-triples-intensifying-climate-change-and-air-pollution>
- Vast majority of world – 6.76 billion people – living with excessive air pollution – UN report. (2016). In UN News. Retrieved from <https://news.un.org/en/story/2016/09/541182-vast-majority-world-676-billion-people-living-excessive-air-pollution-un-report>
- What is the current state of air quality around the world? (2018). In *State of Global Air*. Retrieved from <https://www.stateofglobalair.org/air/current>