

## Research Report

**COMMITTEE:** UN Habitat

**ISSUE:** *Urban development: How to limit atmospheric pollution?*

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# Urban development: How to limit atmospheric pollution?

## INTRODUCTION

Hey everyone!

My name is Marina Perez Barrera and I am 15 years old. I am in premiere, in the British section at the lycée international de Ferney-Voltaire.



Outside of MUN, I like playing volleyball, badminton and listening to music. I have been a part of Ferney's volleyball club's team for almost six years now and still love the sport!

I am very excited to be chairing the UN Habitat committee at FerMUN 2023 alongside Louis Arnoult Costafreda.

I have been in MUN for about a year now and have participated in three MUN conferences: FerMUN as a resolution admin in the WHO committee, MFGNU as the delegation of Vietnam at the Human Rights Council, and "The International" as the delegation of the UK in the ECOSOC committee.

I am thrilled to discuss the two very interesting issues presented in this committee! Today, air pollution is becoming one of the most significant environmental and health risks and it is mainly caused by urban activity, which is why adapting it in a more eco-friendly way can make a huge difference.

## KEY WORDS

**UN-Habitat - The United Nations Human Settlements Programme:** United Nations agency for human settlements. It is mandated by the UN General Assembly to promote socially and environmentally sustainable towns and cities to provide adequate shelter for all.

**WUF - World Urban Forum:** The first global conference on sustainable urbanization. It was established in 2001 by the United Nations to examine one of the most pressing issues facing the world today: rapid urbanization and its impact on communities, cities, economies, climate change, and policies.

**Urban development:** The social, cultural, economic, and physical development of cities and the underlying causes of these processes.

**Urbanization:** The concentration of human populations into discrete areas. This concentration leads to the transformation of land for residential, commercial, industrial and transportation purposes. It can include densely populated centers, as well as their adjacent peri-urban or suburban fringes.

**Atmospheric pollution:** (=air pollution) Contamination of the indoor or outdoor environment by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere.

**Sustainability:** Meeting the needs of the present without compromising the ability of future generations to meet their own needs.

## OVERVIEW

Urbanization has played a great part in the world’s history, particularly at the start of the Industrial Revolution when more people started to move to cities. Industrialization led to the creation of factories which caused a large number of workers to migrate closer to those factories in search of work and better opportunities. This engendered large concentrations of people in the same areas which led to the rapid growth of cities’ populations and thus the expansion of those cities.

Urbanization is a positive concept, it makes a country more developed and creates many opportunities (social, professional and educational) for people. However, poor urban planning and industries are becoming a major threat to air quality. Today, the WHO estimates that over half of the world’s urban population is exposed to air pollution levels at least 2.5 times higher than the safety standards. This is a major problem considering the dreadful consequences on the environment and people’s health.

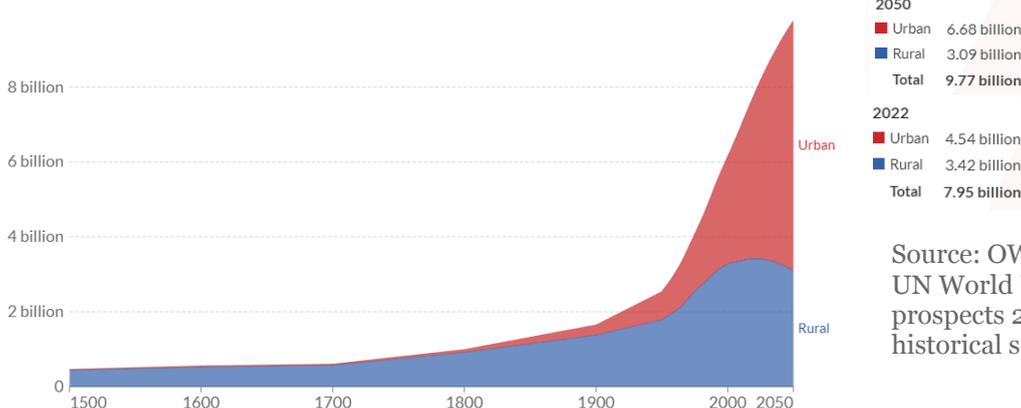
These massive levels of atmospheric pollution are mainly due to urban activity; cities account for 60-80% of energy consumption and generate up to 70% of man-made greenhouse gas emissions, so developing urban areas more sustainably is crucial to solving this pressing issue. It is very important to act quickly because it is estimated that in 2050, more than two out of three people will live in cities which will cause more pollution. On top of this, 95% of urban expansion over the next decades will take place in the developing world. These countries are less industrialized and have fewer resources, meaning it will be harder for them to ensure sustainable urban planning, making international cooperation crucial.

Urban and rural population projected to 2050, World, 1500 to 2050

Total urban and rural population, given as estimates to 2016, and UN projections to 2050. Projections are based on the UN World Urbanization Prospects and its median fertility scenario.



[Change country](#)  Relative



Source: OWID based on UN World Urbanization prospects 2018 and historical sources

## What is atmospheric pollution?

Air pollution is caused by solid and liquid particles and certain gases that are suspended in the air called air pollutants and greenhouse gases. They can come from human and natural activities. There are two types of air pollutants:

-Primary air pollutants: directly emitted into the atmosphere. (main ones):

- PM - Particulate matter (mixture of dust, smoke, dirt,...)
- SO<sub>2</sub> - Sulphur dioxide (combustion of fossil fuels rich in sulphur)
- NO<sub>x</sub> - Nitrogen (di)oxide (internal combustion of engines)
- CH<sub>4</sub> - Methane (sources: the energy sector, landfills, and agriculture)

-Secondary air pollutants: formed in the atmosphere. (main ones):

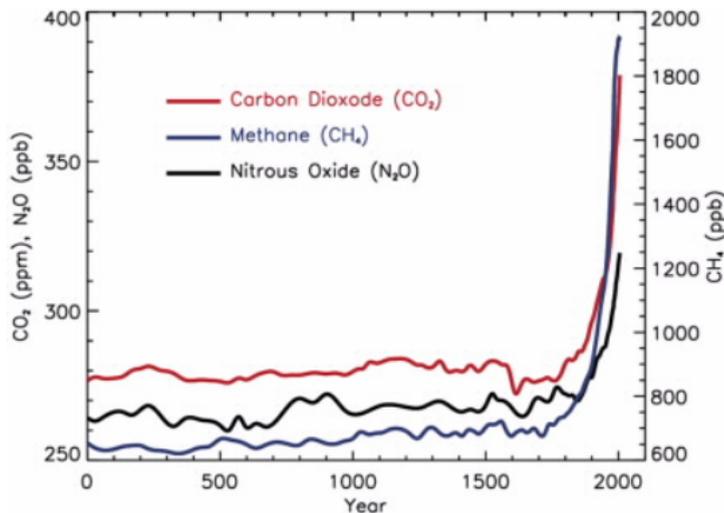
- PM - Particulate matter (mixture of dust, smoke, dirt,...)
- O<sub>3</sub> - (“Bad”) Ozone (reaction of previous pollutants)

Greenhouse gases and air pollutants are not the same. An air pollutant is a substance harming humans and other living organisms while greenhouse gases can absorb and trap heat causing global warming. The three most important greenhouse gases are:

- CO<sub>2</sub> - Carbon dioxide (burning of fossil fuels, decomposition,...)
- CH<sub>4</sub> - Methane (sources: the energy sector, landfills, and agriculture)
- N<sub>2</sub>O- Nitrous oxide (result from agricultural soil management activities)

(for a more in-depth explanation, read [this](#) article)

## The evolution of greenhouse gases throughout history



Source: A.C.S.

The main problem is that the levels of air pollution are continuing to increase resulting in terrible consequences that are only worsening with time. The main resulting problems are health issues and the deterioration of the environment.

## Health

Atmospheric pollution presents a significant health hazard, particularly among urban populations who have often been exposed to very high and dangerous air pollution concentrations. Air pollution causes and worsens many diseases, ranging from asthma to cancer, pulmonary illnesses, heart disease and even diabetes. The three biggest killers due to air pollution are stroke (2.2 million deaths per year), heart disease (2.0 million per year), and lung disease/cancer (1.7 million deaths per year). All of the above result in more or less 7 million deaths around the world every year.

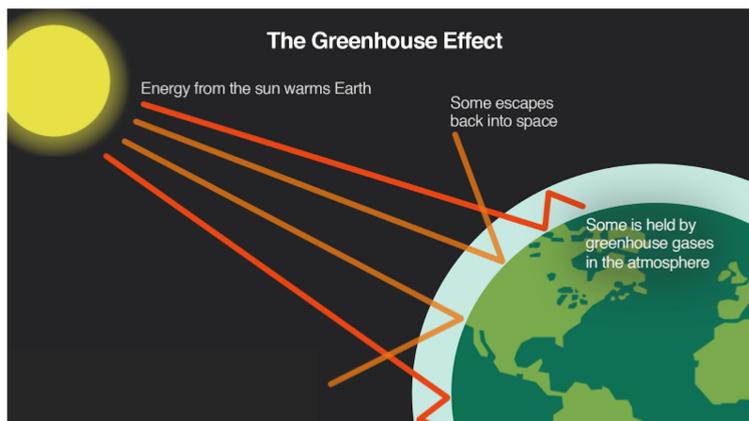
It represents a particularly severe hazard to children. Research from the United Nations Children's Fund (UNICEF) shows that breathing in an environment with high levels of air pollution can damage young children's brain tissue and cognitive development. Moreover, in 2016 alone, air pollution also caused 4.2 million premature deaths.

(To better understand how air pollution affects our system, watch [this](#) video)

## Environment

Atmospheric pollution is now considered to be the world's largest environmental threat mainly due to greenhouse gases that create a greenhouse effect, warming up the earth.

Diagram of the greenhouse effect



Source: The Environment monitor

## RELEVANT UN TREATIES AND EVENTS

25/09/2015

The SDGs or Sustainable Development Goals were adopted by the United Nations as a universal call to action to end poverty, protect the planet and ensure that by 2030 all people enjoy peace and prosperity.

→[GOAL 11](#): Sustainable Cities and Communities

12/12/2015

During the COP21, 196 parties signed the Paris agreement, a legally binding international treaty created to limit global warming to below 2 degrees Celsius above pre-industrial levels.

20/10/2016

The New Urban Agenda is an action-oriented document that mobilises the Member States and other key stakeholders to drive sustainable urban development at the local level.

## POSSIBLE SOLUTIONS

### 1. Make it easy to get around without a car

Today, the non-electric car is the most used vehicle in the world and it is also the one that emits the most CO<sub>2</sub>. More than 60% of all greenhouse gases emitted by transport in the EU are emitted by cars. This is a major issue, easily solvable through better urban planning. Creating more paths, sidewalks, bike lanes and bridges and promoting the use of public transport by creating more tramway tracks and bus stops are simple ways to facilitate and encourage people to stop using cars.

For example, in Copenhagen, there are nearly 5 times more bicycles than cars. This was achieved through the promotion of bike culture and the creation of safe amenities for bicycle users.

### 2. Promote cleaner energies

Burning fossil fuels emits about 33 billion tonnes (Gt) of CO<sub>2</sub> per year which means that switching fossil fuels to renewable energies is arguably the most important solution to fight air pollution. However, it is perhaps the most difficult to achieve since many countries are dependent on them. Countries must change their policies towards renewable energies so that urban areas can take advantage of natural resources to produce energy by installing solar or wind farms nearby.

On top of this, urban areas could put in place more EV (electric vehicle) charging stations to promote and facilitate the use of electric cars. For example, Amsterdam has planned to ban all gasoline and diesel vehicles by 2030 and has already made huge progress by installing the infrastructure necessary for electric vehicles.

### 3. Implementing green/smart architecture

Green and smart architecture are very important subjects when it comes to sustainable urban planning because they are considered the future of cities. First of all, developments like creating different level buildings allow the air to mix and circulate more freely reducing concentrated air pollution. Green and smart buildings are designed to embrace new technologies and use them to reduce their carbon footprint, at the same time maintaining the same level of comfort people are used to. This means that, for example, there are smart HVAC (heating, ventilation, and air conditioning) systems that keep an apartment at the right temperature without wasting any energy.

For example, The United Arab Emirates has created Masdar City, one of the most sustainable and eco-friendly urban areas in the world. Here, they use technological innovations to create a greener, more sustainable urban life.

(For more examples related to green technology, watch [this](#) video)

### 4. Plant more trees

Thanks to photosynthesis, trees have become a great natural filter for air pollution. A study by The Nature Conservancy (TNC) reported that the average reduction of particulate matter (PM) (a mixture of particles very present in air pollution and very dangerous for people's health) near a tree was between 7% and 24%. Trees can also form some sort of barrier to street-level air pollution and even create shade that cools localised areas.

## 5. Adapt agricultural practices

Agriculture is one of the most polluting sectors accounting for over 11% of all U.S. greenhouse gas emissions in 2020. The main sources of these emissions in most countries are concentrated animal feeding operations (CAFOs) and industrial crop production that can negatively affect air quality on farms and in surrounding communities.

Moreover, in some countries, fields and forests are “burnt” at the end of winter to manage the land for the new season. This is called the “smoking season”. This practice not only emits massive quantities of air pollution but also severely impacts the area’s environment, biodiversity and life quality of the surrounding populations. These kinds of practices have to change now because it is increasingly becoming a major threat to the surrounding urban areas.

## GUIDING QUESTIONS

- What are the main air pollution sources in your country?
- What percentage of your energy supply comes from renewable sources?
- What measures has your delegation already taken regarding this issue?
- How could you replace these air pollution sources while protecting the country’s long-term economy?
- How has atmospheric pollution affected your population and environment?
- How can you protect your population and environment from the effects of atmospheric pollution?

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## Solutions

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