

Planning the urban future particularly important in poor, polluted cities

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The capital of Burkina Faso, Ouagadougou, is not only one of the fastest growing cities in the world, it is also extremely polluted. Researchers from the University of Gothenburg, Sweden, have shown that the city climate contributes to the high pollution levels. However, increased knowledge about the city could turn bad into good.

'The air quality in Ouagadougou is very bad. The biggest problem is the extreme levels of dust in the air – they are often more than 100 times higher than in Sweden. Yet the vulnerability to air pollution varies greatly between the rich and the poor,' says Jenny Lindén at the Department of Earth Sciences, University of Gothenburg.

When the world's population grows, the most rapid increase is found in the poorest cities, and this has an enormous effect on the environment and also a strong effect on the urban climate and air quality. The population of Ouagadougou, which borders the Sahara Desert in western Africa and is growing faster than any other [city](#), will grow from today's about 2 million people to 3.4 million in 2020.

The World Health Organisation has indicated that the most important cause of death in Burkina Faso is respiratory problems, which are strongly linked to air pollution. Respiratory problems cause 20 percent of all deaths, and the already high levels of air pollution will increase even further as the population keeps growing.

The pollution in Ouagadougou is mainly due to dust from the many

unpaved roads in the city and from the Sahara Desert. The larger number of old and poorly maintained cars and mopeds are of course also problematic, along with the fact that three out of four households cook their food over an open fire. This means that the wealthiest people in the city are less exposed to pollution since they live in neighbourhoods with paved roads and have better vehicles and cleaner ways to cook food. Ouagadougou shares this situation with a large number of other cities. In fact, the phenomenon is rather normal among very poor cities around the world.

Jenny Lindén also shows that Ouagadougou has its own city climate with considerably lower temperatures at night in vegetated areas – a result that could imply reduced nocturnal heat stress if considered in urban planning.

'In addition, the air above Ouagadougou tends to form in very stable layers, especially in the evening. This implies low wind speeds and limited air exchange between areas, which in turn means that the emissions from the city gets trapped. The atmospheric stability is not easily changed, but it is nevertheless important information since it means that pollutants emitted in the evening remains in the city.'

The results of Jenny Lindén's studies can be used to design strategies to improve the [air quality](#) for the vulnerable urban population in the world's poorest countries. The doctoral thesis Urban [Climate](#) and [Air Pollution](#) in Ouagadougou, Burkina Faso was presented and defended on 27 May.

Provided by University of Gothenburg

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