

INTRODUCTION

Nicolas Renard - Director of Foresight, Veolia Institute



Although invisible, air pollution is one of the world's main environmental risks. Its global human cost is jaw-dropping: with 8 million premature deaths annually, it is the fourth largest mortality risk on the planet. While it is necessary to act to protect outdoor air quality, looking after indoor air is equally vital. Why? Because we spend most of our lives in buildings and almost half

of the 8 million deaths due to poor air quality are caused by indoor pollution.

Many people are unaware that indoor air is generally more polluted than outdoor air. What lies behind this paradox? In addition to any pollution in the outdoor air, you also have to consider pollution from products used indoors for cleaning or cooking, contaminants emanating from paints, walls, floor coverings, and so on. The list of known indoor pollutants is seemingly endless: xylenes, benzene, volatile organic compounds, formaldehyde, ozone, particulates, allergens, etc. Another paradox: we're more exposed to pollutants underground in the metro than we are at street level when traveling on foot or by car. Whether in Barcelona, Hong Kong, Mexico City, Istanbul or Santiago, someone making a journey by metro will inhale more particulates than if they travel by bus or on foot.

And yet, the crux of the matter lies elsewhere. Three billion people, 40% of the world's population, still lack access to clean fuels and technologies for cooking, heating and lighting. In terms of public health, the priority is to provide access to clean household energy for all. There are two types of hurdles to overcome: economic, because clean energies and technologies are more expensive; and political, because, in some countries, providing electricity in villages is not legally required.

The bitter arithmetic of poor air quality and the deaths it causes should not blind us to recent advances. In developed economies, governments and businesses alike have fully taken on board the problem of emissions from industries, which has led to massive falls in pollution. Progress is also evident in terms of lower emissions and petrol consumption by private cars (albeit partial offset by rising traffic volumes), and the promising rise of electric vehicles.

Today, air pollution is a more potent killer than tobacco, with one major difference – people can stop smoking but they cannot stop breathing polluted air. All around the world, combating this form of pollution has become a major issue in terms of public health and quality of life. The task is vast, even immense, when you consider that three-quarters of the global population breathe indoor or outdoor air that fails to meet WHO recommendations. This is why efforts need to focus initially on those who are most exposed and vulnerable, especially children. The first step in this battle involves measuring indoor air quality, thus making the invisible visible and identifying where problems that need addressing are located. Every building is unique in terms of its structure and equipment, and depending on whether it is purely residential or used for other purposes. Once the sources of indoor air pollution are identified, they must be neutralized. In parallel, it is necessary to improve airflow in the building, using a high-tech process, perhaps AI-based, or a low-tech one such as phytoremediation. At the same time, it has to be remembered that outdoor air quality is a key driver for better indoor air quality. In the long run, the real solution lies in generalized pollution prevention.

Effective solutions exist to ensure that the right to breathe healthy air becomes a reality for all

Just like the oceans, the air is a common good that knows no frontiers. It is open to everybody and many can be tempted to release their pollutants in it. As is also the case for oceans, air protection is hampered by an absence of governance. Who does air belong to? Which body is responsible for safeguarding air quality? Which

standards apply? Although ambitious action plans exist to tackle outdoor air quality, indoor air quality is a major blind spot in environmental policies. Very few countries have enacted regulations in this field. But times are changing and this insidious and poorly understood form of pollution is subject to increasing attention. Sales of home air purifiers are skyrocketing in the polluted cities of many emerging economies, China has launched an ambitious Blue Sky plan, schools are beginning to fit sensors, and so on. And as regulations are enacted, litigation is also becoming more common. Lawsuits have been filed against governments, cities and schools, challenging them on the basis of their incapacity to remedy poor air quality.

Purifying the air means protecting the present and the future. In this, as in every other environmental field, nothing is set in stone: effective solutions exist to ensure that the right to breathe healthy air becomes a reality for all.