

ENERGY TRANSITION FOR BETTER AIR QUALITY: A PUBLIC HEALTH ISSUE

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Woman cooking indoors on a wood stove

Dr. Maria P. Neira is a Spanish physician who specializes in endocrinology, metabolic disorders and public health. She started her medical career as a doctor with Médecins Sans Frontières (Doctors Without Borders), working in refugee camps in El Salvador and Honduras. Her career then took her to Africa, including a stint in Rwanda with the United Nations Development Program. She joined the WHO in 1993, serving as Coordinator of the Global Task Force on Cholera Control until 1998, when she was appointed Director of the Department of Disease Control and Prevention (1999-2002). From 2002-2005 she was Head of the Spanish Food Safety Agency as well as Vice-Minister of Health and Consumer Affairs. Since 2005 she has headed the WHO's Department of Public Health, Environmental and Social Determinants of Health, steering its policy on environmental health. Dr. Neira was awarded the national order of merit by the government of France as well as the "extraordinary woman" award by the queen of Spain. In 2019 she was named among the 100 most influential people for health and climate change policy.

The World Health Organization is a specialized agency of the United Nations concerned with international public health. Problems raised by indoor air quality are at the heart of its mission and action. Causing over 3.3 million deaths every year, domestic air pollution is particularly prevalent in regions where income is low or modest, as households will often use highly polluting energy sources for heating and cooking. It is estimated that over half of the world's population uses sources of energy for heating and cooking whose fumes are toxic to human health and the environment. Soot particle pollution is extremely toxic for the airways and is something that women and children are particularly exposed to. Indoor air pollution is responsible for serious illnesses like pneumonia and heart disease. There are innumerable political and economic obstacles to energy transition in such regions. It is essential to initiate dialogue and cooperation between politicians and public health specialists to alert public opinion to the relationship between air quality and climate change and to enact public health policies that will anticipate and prevent pollution rather than remedy it subsequently. It is equally essential to stress the importance of cooperation between public health actors and those sectors of the economy that generate the most pollution, in order to bring about meaningful changes in public health.

What is the WHO's role in relation to air quality issues, particularly in the home?

Maria P. Neira: The WHO is a specialized agency of the United Nations concerned with international public health. Problems raised by indoor air quality are central to its mission and action. The WHO distinguishes between two concepts in terms of indoor air quality: 'domestic air pollution', caused mostly by fuels used in the home; and 'indoor air pollution', which includes domestic air pollution as well as other sources of pollution such as lead, asbestos, radon, molds and so.

The WHO bolsters national and regional capacities for combating indoor air pollution by providing tools to help prevent and anticipate this form of pollution, and by providing information on the relationship between domestic fuels and public health.

The WHO has published domestic air quality guidelines intended to provide advice about minimizing health risks. The guidelines provide technical assistance for organizing interventions and assessments centered on domestic fuel. They also offer advice about existing schemes to encourage rapid and lasting take-up of low-emission technologies and fuels by households. The WHO has produced the Clean Household Energy Solutions Toolkit (CHEST) to help promote implementation of these guidelines and associated public policies. Other tools include a guide outlining the acceptable and recommended daily and annual concentration levels for various categories of indoor pollutants.

Beyond such actions, the WHO leads the way among international institutions in matters of health, energy and climate. The organization seeks to highlight to governments, international cooperation agencies and the general public the importance of switching to less polluting types of domestic fuels and the impacts that indoor air pollution has on people's health, in particular for women and children. For the WHO, one of the major challenges lies in persuading countries to set in motion ambitious energy transition plans. In October 2018, in collaboration with the UN Environment Program, the World Meteorological Organization, the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC), the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC) and the United Nations Economic Commission for Europe (UNECE), it organized the first WHO Global Conference on Air Pollution and Health. The conference focused on air quality, fighting climate change and saving lives. The WHO's lobbying efforts targeting major international bodies and forums are supported and relayed by its partners, such as the Climate and Clean

Air Coalition. The pressure exerted is beginning to gain momentum, with an increasing number of international conferences, working groups and alliances focused on air quality. These include the World Health Assembly¹, the Global Platform on Air Quality and Health² and so on.

Which regions are most exposed or most vulnerable to indoor air pollution problems?

M. P. N.: Countries in Africa and Asia are disproportionately affected by indoor air quality problems for reasons that are essentially economic. For the most part, these are countries with lower or intermediate income in which households have no choice but to heat and cook using very polluting fuels.

Close to half of the world's population, some 3 billion people living mostly in rural areas, still have no access to clean fuels and technologies for cooking, heating and lighting. They rely on wood, agricultural by-products, animal manure, coal and charcoal, use kerosene in open fireplaces and generally have very inefficient cooking facilities. The fuels and cooking methods used lead to a high pollutant concentration within dwellings, which can be very harmful to health, particularly in the case of soot particulates that can penetrate deep into the lungs. Particulate concentration in smoke from domestic cooking can reach levels 100 times higher than acceptable limits. Women and children, who spend the most time at home, are especially at risk.

In 2016, 3.8 million people died from causes related to indoor air pollution. In poorly ventilated homes, particulate concentration in smoke from domestic cooking can reach levels 100 times higher than acceptable limits

What consequences do these practices have on health?

M. P. N.: In 2016, 3.8 million people died from causes related to indoor air pollution. The most common illnesses are pneumonia, ischemic cardiomyopathy, chronic obstructive bronchopneumopathy, cardiovascular strokes and lung cancers. More generally speaking, particulates and other pollutants in domestic smoke emissions provoke inflammation in airways and lungs that leads to impaired immune responses and a reduced oxygen-carrying capacity of the blood. Additional data³ points to the existence of a relationship between domestic air pollution and a wide range of ailments such as tuberculosis, cataracts and nasopharyngeal and laryngeal cancers. Indoor air pollution can also have consequences such as low birth weight for newborns.

1 <https://www.who.int/fr/news-room/fact-sheets/detail/household-air-pollution-and-health>

2 <https://www.who.int/airpollution/global-platform/en/>

3 https://www.who.int/phe/health_topics/outdoorair/databases/en/



Access to non-polluting fuels for cooking and heating is a major challenge for half the world's population

How would you rate air quality compared to other public health challenges (food, lack of exercise, etc.)?

M. P. N.: From a public health perspective, attempting to compare causes of death is always problematic. No death should ever be taken lightly. Having said this, it is still important to point out that air pollution is a bigger killer than HIV, malaria and tuberculosis combined; over 7 million deaths each year if you combine indoor and outdoor air pollution, which is almost as many as tobacco. The most frightening aspect is that these deaths have an anthropic origin: we humans deteriorate the quality of the air that we breathe. Urgent action is needed.

These [political and economic] obstacles can only be overcome once governments acknowledge that indoor air quality is a major public health issue

What are the economic and legislative hurdles that emerging economies in particular have to face? What levers can be used to overcome them?

M. P. N.: The problem is twofold: economic and political. Firstly, economic, because electricity and clean fuels, such as liquefied petroleum gas, biogas and natural gas, are all expensive. Secondly, political, because the legislation in some countries with low and intermediate income does not require electrification for rural communities. The challenge in these cases is to encourage governments to take the necessary political decisions, invest in non-polluting energy sources and roll out investment plans for electricity grids to serve rural areas. These obstacles can only be overcome once governments acknowledge that indoor air quality is a major public health issue and once the health risks associated with certain cooking and heating practices are fully factored in.

This is why it is so important to create dialogue opportunities via programs like the Transport, Health and

Environment Pan-European Program⁴ that is co-sponsored by the WHO. Initiatives such as these facilitate the design of regional cooperation models between member states in a number of sectors, seeking to limit air pollution and other health-risk factors in the transportation sector and develop tools to assess the health benefits of adopted measures. The Convention on Long-Range Transboundary Air Pollution (CLRTAP)⁵ is yet another example of an international framework through which signatory parties put in place policies and strategies to cut atmospheric pollutant emissions. The Convention specifically recognizes the need for cooperation and transparency in inter-state communications.

The need to raise awareness is just as critical in industrialized countries. For instance, Swedes are extremely sensitive to environmental and climate issues, but their culture and traditions encourage them to continue burning wood in open fireplaces, which generates smoke that is highly toxic and polluting. The biggest challenge centers on the need to alter people's social behavior patterns. In the United Kingdom, the latest air pollution plan clearly sets out to tackle this problem by presenting open fireplaces as major sources of air pollution.

What do you think about new technologies that let people measure, or even treat the quality of their indoor air?

M. P. N.: We don't think that remediation is the answer. What is needed is prevention, avoiding the air becoming polluted in the first place. It's not enough to treat the symptoms, you need to identify the root causes behind pollution and poor air quality, such as transportation, fuel, industry, waste incineration and so on, then take these on directly. There can be no justifying the unjustifiable.

It is more important than ever that people realize and understand that to combat climate change is also to promote better public health

New technologies for improving air quality, such as indoor air purifiers, can have a preventive role in reducing the concentrations of certain pollutants, particularly for those most vulnerable. But data on possible health benefits remains incomplete.

Another possibility revolves around sensor technologies to measure air quality. These technologies can alert people and help raise awareness about the importance of indoor air quality. However, they are not solutions that can reduce pollution in the long run.

Can highlighting links between air quality and climate change be used to raise awareness?

M. P. N.: The link between climate change and air quality is extremely important. Black carbon (soot particulates) and methane emitted by inefficient cooking stoves are highly polluting and contribute to the climate emergency. It is more important than ever that people realize and understand that to combat climate change is also to promote better public health. Our studies show that the causes of these two issues are 70% linked, they overlap. It is truly a public health war that must be fought. Just like the destruction of biodiversity, the melting of icecaps etc., air quality is a global public health issue. The most recent major international gathering in New York during the 2019 Climate Action Summit, on September 23, was an opportunity for the WHO to highlight to the public the links between air quality and climate change, and to continue to push for a coherent international roadmap on this topic.

⁴ <https://solidarites-sante.gouv.fr/sante-et-environnement/activites-humaines/article/programme-paneuropeen-sur-les-transport-la-sante-et-l-environnement>

⁵ International convention set up under the aegis of the United Nations on November 17, 1979. Signatories include states that are members of the United Nations Economic Commission for Europe (UNECE), states that have consultative status with this commission, and regional economic integration organizations empowered to negotiate, sign and apply international agreements in domains covered by the convention, at the UN office in Geneva.