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Swiss Agency for Development  
and Cooperation SDC

# The SDC's engagement for **clean air for all**





# Why air pollution is a key issue?

## Threatening health and sustainable development

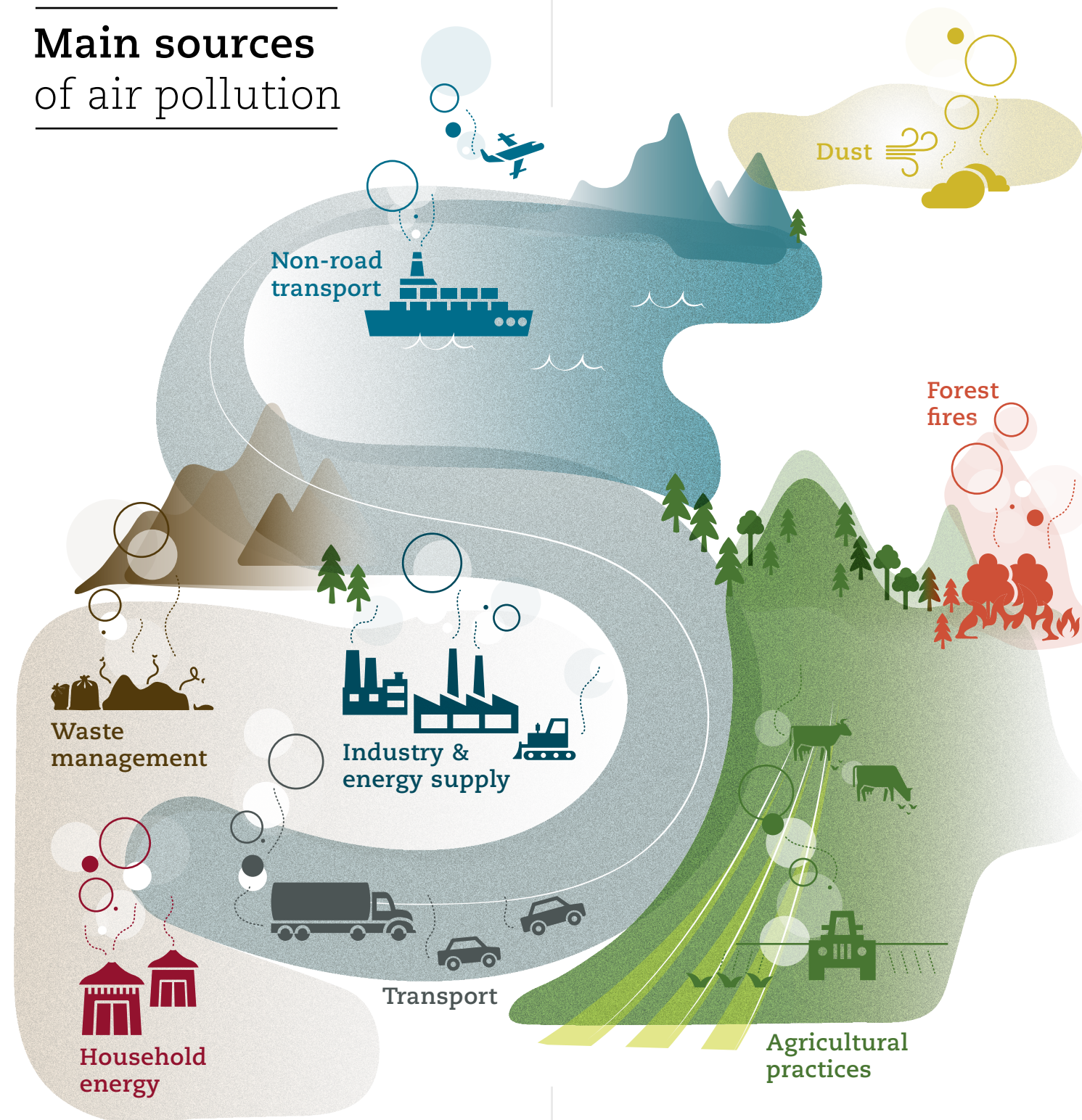
As a major threat to health, the climate and the environment, air pollution knows no borders, and improving air quality calls for sustained and coordinated government action at all levels. The combined effects of ambient (outdoor) and household (indoor) air pollution cause about 7 million premature deaths every year (WHO 2021), largely as a result of increased mortality from strokes, heart disease, chronic obstructive pulmonary disease, lung cancer and acute respiratory infections. In fact, 9 out of 10 people breathe air with air pollutants whose levels exceed WHO guidelines, with low- and middle-income countries most exposed (WHO 2021). After a systematic review of the accumulated evidence showed damages at even lower concentrations than previously documented, the World Health Organization (WHO) adjusted most of its Air Quality Guidelines downward, warning that levels exceeding those specified in the guidelines entail significant health risks.<sup>1</sup> Meeting these guidelines could save millions of lives.

The main outdoor pollution sources include fuel combustion from vehicles; heat and power generation; residential energy for cooking, heating and lighting; industrial activities; and agricultural and waste burning (WHO 2021). In low- and middle-income countries, indoor air pollution occurs mainly as a result of cooking practices that burn dung, wood and coal in inefficient stoves. Burning kerosene in simple wick lamps also produces significant emissions of fine particles and other pollutants (WHO 2021).

## Hitting vulnerable groups the hardest

Air pollution is a threat to health in all countries, but it hits people in low- and middle-income countries, women and vulnerable populations the hardest. Women – and especially pregnant women – who are traditionally responsible for cooking in low- and middle-income countries are particularly exposed to indoor air pollution, as are their children. The exposure to high levels of air pollution over time may be linked to adverse pregnancy outcomes such as reduced birth weight or preterm birth. Air pollution can cause greater damage to children's lungs, which are still growing, than to adults'. People with low income also tend to be more exposed to pollution sources and to have less access to healthcare when confronted with air pollution-related health issues.

## Main sources of air pollution



## Impacting the climate

Air pollution and climate change are so closely linked that addressing one issue can affect the other (IPCC 2021). They share many of the same causes, in particular the burning of fossil fuels, which accounts for around two thirds of outdoor air pollution. Decarbonising energy, transport and industry is therefore not only key for climate change mitigation but also for improving air quality. But these efforts will not be enough to eliminate air pollution: additional measures in agriculture, household energy, waste management and transport are needed, as are measures to reduce forest fires. Beyond the immediate benefits to human health, such measures also protect the climate by reducing the emissions of short-lived climate pollutants such as black carbon or methane.

## Endangering food security

In addition to their detrimental health effects, air pollutants reduce photosynthesis in plants, disrupting their growth and reducing their resilience to diseases. This not only negatively affects plant biodiversity and forest ecosystems but also threatens global food security. Tropospheric ozone causes an estimated loss of over 50 million tonnes of staple food crops per year (Climate and Clean Air Coalition 2020). Low- and middle-income countries are particularly affected by indirect effects such as the aggravation of food shortages.

## Driving up costs

The economic costs of air pollution are staggering. As the leading environmental risk to health, air pollution cost the world an estimated USD 8.1 trillion in 2019, the equivalent of 6.1% of global GDP (World Bank 2021). The costs of action have been shown to be far lower than the costs of inaction, with regional and global analyses showing that improving air quality is extremely cost-effective, with benefits exceeding costs in some cases by a factor of 30 (UNEP 2021).

## Undercutting the 2030 Agenda

Tackling ambient and household air pollution is crucial to achieving the Sustainable Development Goals (SDGs). Action is necessary across many sectors, and strategies that integrate climate, air quality and development goals achieve multiple benefits (IPCC 2021).

<sup>1</sup> WHO global air quality guidelines (2021): particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide: executive summary.



# Clean air measures can help achieve the Sustainable Development Goals by:



Source: Adapted from Climate & Clean Air Coalition 2017

# The SDC's long-standing commitment to clean air

The SDC has been sharing Switzerland's experience in air quality management and supporting efforts to tackle air pollution in its partner countries in close collaboration with the Swiss Federal Office for the Environment and other leading Swiss actors in the field for nearly 30 years. The SDC's engagement has ranged from laying the foundations for air quality monitoring, national and city clean air action plans and awareness-raising in Central America, Bolivia, Ecuador and Peru to introducing new energy efficiency measures and fuel switching in micro and small enterprises – such as bangles production in India and brick production in South Asia, Africa and Latin America. Reducing air pollution in the transport sector through diesel particle filters and the introduction of norms and standards for vehicle emissions and fuel quality, mainly through the reduction of sulphur content, has been another key focus, from

Latin America to China. While projects were initially designed from a clean air policy perspective, in recent years the focus has expanded to designing projects that tackle air pollution and climate change in an integrated manner.

Despite progress in recent years, reducing air pollution continues to pose complex and persistent challenges, and meeting the recently revised World Health Organization Air Quality Guidelines will require substantial effort. Committed to accelerating progress towards achieving the 2030 Agenda for Sustainable Development and the Sustainable Development Goals as well as the Paris Agreement, the SDC supports partners around the world in tackling climate change and in improving air quality while reducing poverty, improving health and protecting the environment.

## Switzerland's pioneering role in air quality control

Air quality in Switzerland has improved significantly over the past 40 years, notably in ways that also mitigate climate change (FOEN 2021). Forty years ago, sulphur dioxide exceeded its long-term limit value by many times, nitrogen oxides by a factor of three, and particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>) by a factor of two. Thanks to the introduction of diesel particle filter regulations in diesel engines, black carbon concentrations along busy roads decreased by an impressive 85% between 2000 and 2020. Carbon monoxide levels have also decreased significantly. Switzerland was an early mover in setting car emission limits that could only be achieved with a catalytic converter and diesel particle filter, and in setting the NO<sub>x</sub> emission limits for combustion plants so low that they could only be achieved with low-NO<sub>x</sub> technology.

Air pollution in Switzerland is assessed on the basis of the concentration limit values defined in the Ordinance on Air Pollution Control and is monitored by 16 national and about 80 additional cantonal and municipal monitoring stations.

Cooperation with leading Swiss scientific institutions supported these developments and this pioneering action. The world-renowned Paul Scherrer Institute with its Laboratory for Atmospheric Chemistry focuses on research in gas phase and aerosol chemistry and physics, and conducts smog chamber studies. The Swiss Tropical and Public Health Institute conducts policy studies on public health risks and impacts of air pollution, and the Swiss Federal Laboratories for Materials Science and Technology conducts research on fine dust. Switzerland can also draw on the experience of its private sector, particularly that of suppliers of low-to zero-emission solutions and exhaust aftertreatment systems. The Swiss-based VERT® Association brings together private sector partners and promotes the best available technologies for the reduction of emissions from internal combustion engines, with a focus on particulate matter.

Based on this experience, Switzerland strongly supports international cooperation under the United Nations Economic Commission for Europe Convention on Long-range Transboundary Air Pollution and its 7 protocols to reduce various air pollutants.

# Current SDC support for clean air

## Projects and initiatives

### Global Alliance on Health and Pollution

The *Global Alliance on Health and Pollution* brings stakeholders together to generate evidence for awareness-raising work and to curb toxic pollution of air, water and soil in low- and middle-income countries in order to reduce the harmful effects on public health.

CHF 1.67m Current phase: 2018–2023

### Climate and Clean Air Coalition

The multi-stakeholder *Climate & Clean Air Coalition* (CCAC) brings together more than 70 countries and 80 international organisations and NGOs to support action to tackle climate change and air pollution. The Coalition advocates for greater action and ambition on reducing short-lived climate pollutants at the global, regional and national levels, brings partners together to identify solutions and to share experiences and best practices, and provides technical assistance to low- and middle-income countries in Africa, Asia and Latin America.

CHF 8m Current phase: 2022–2025

### Air Pollution Impact on Health, Mongolia

This project supports the reduction of air pollution risks to maternal and child health in the most polluted areas of Ulaanbaatar and one provincial centre. It establishes urgently needed evidence and gathers information on air pollution and its health impacts; pilots and improves risk reduction measures such as the installation of advanced ventilation systems in kindergartens; and advocates for leveraging investment from government and development partners for scaling up.

CHF 4.9m Current phase: 2018–2022

### Clean Air China

Through a Sino-Swiss research team, the *Clean Air China* project supports the development of real-time air pollution source apportionment techniques to be implemented in Beijing, Shijiazhuang, Langfang, Xi'an, Wuhan and Chongqing to enable more effective air pollution control policies that benefit public health, the global climate and the environment. The knowledge and experience gained is disseminated regionally and globally.

CHF 3.2m Current phase: 2018–2022

### Climate and Clean Air in Latin American Cities

The *Climate and Clean Air in Latin American Cities* (CALAC+) project works for healthier and more sustainable cities by fostering a shift towards soot-free and low-carbon urban transport and non-road mobile machinery in Chile, Colombia, Mexico and Peru. The project supports normative and technological changes through regional cooperation, building on Swiss expertise, and sharing experiences at the global level.

CHF 3.2m Current phase: 2021–2025

### Air Quality Management Plan, Cúcuta, Colombia

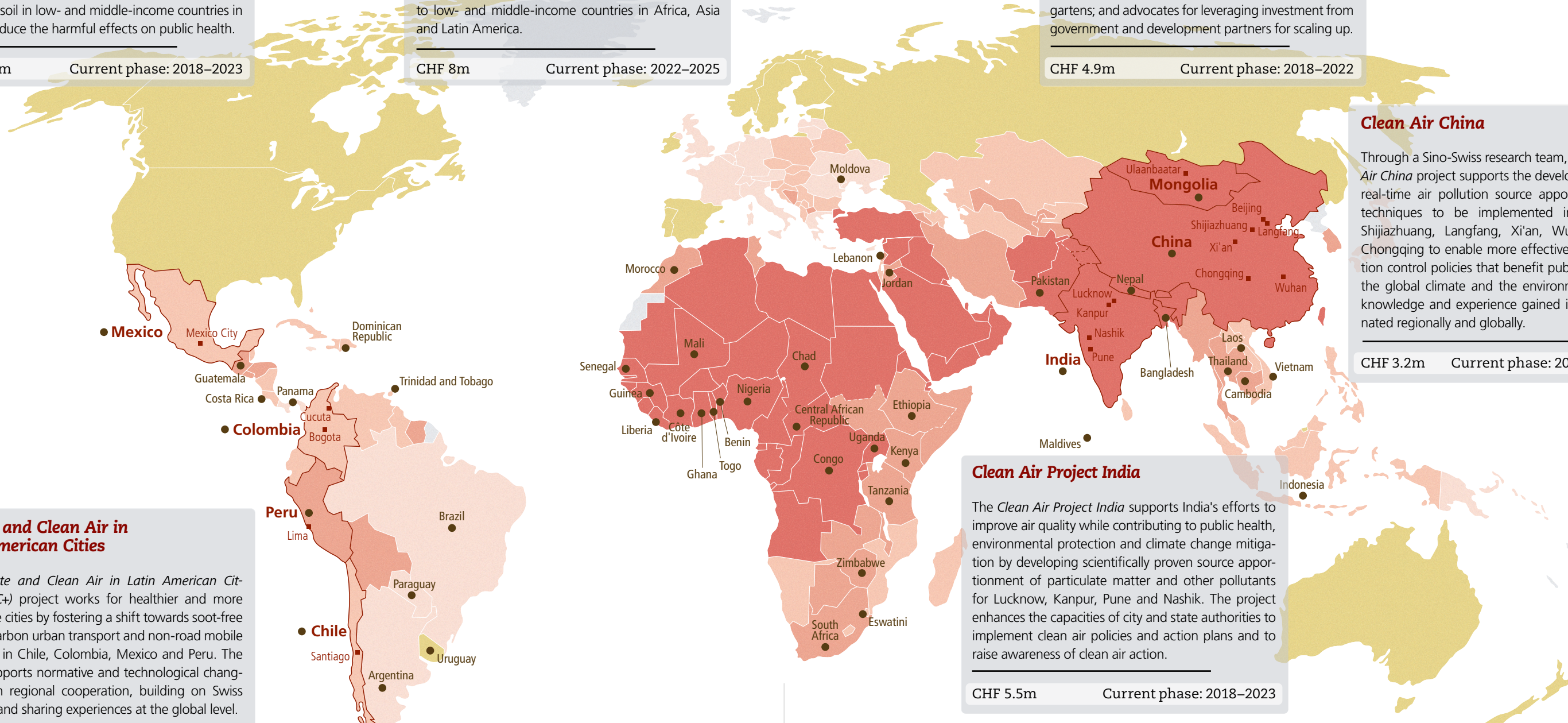
The SDC supports an inter-institutional effort to develop an *Air Quality Management Plan* for the city of Cúcuta, Colombia, and its metropolitan region.

CHF 150,000 Current phase: 2020–2022

### Clean Air Project India

The *Clean Air Project India* supports India's efforts to improve air quality while contributing to public health, environmental protection and climate change mitigation by developing scientifically proven source apportionment of particulate matter and other pollutants for Lucknow, Kanpur, Pune and Nashik. The project enhances the capacities of city and state authorities to implement clean air policies and action plans and to raise awareness of clean air action.

CHF 5.5m Current phase: 2018–2023



Annual mean levels of fine particulate matter (PM<sub>2.5</sub>) in cities

- 35–100 µg/m<sup>3</sup>
- 25–35
- 15–25
- 10–15
- Less than 10
- Not applicable or available

Source: SDG Indicator 11.6.2 Concentrations of fine particulate matter (PM<sub>2.5</sub>) (who.int)

The World Health Organization has lowered the maximum acceptable annual average exposure to PM<sub>2.5</sub> from 10 micrograms per cubic metre to 5 micrograms per cubic metre. (who.int)

Country

City SDC Projects

● Countries supported by the Climate & Clean Air Coalition (CCAC)

Apart from targeted clean air projects, some SDC projects and initiatives indirectly reduce air pollution by promoting renewable energy and energy efficiency or by preventing forest fires.

The boundaries and names shown, as well as the designations used on this map do not imply official endorsement or acceptance by Switzerland.

Map produced by Zoi Environment Network, March 2022



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