



Sino-Swiss Cooperation on Air Pollution Source Apportionment for Better Air **Breaking down the dome**



Shangha, Chine. © Sergey Breev / Alamy

Country/Region
China

Clearing the air over Chinese cities by breaking down the components of pollution and finding the sources

The Chinese government urgently needs the support of scientific research and analysis to formulate more effective and sustainable air pollution control policies. This project supports the development of advanced air pollution source apportionment techniques to enable the Chinese government to design more effective air pollution control policies.

Air pollution is a major environmental threat to public health in China and other developing countries. The Chinese government has made strong efforts to abate air pollution at both the central and local levels. Despite significant improvements over the last decade, no Chinese city yet reaches the World Health Organization recommended annual average.

Theme

Climate change mitigation

Duration

01.05.2018 - 31.07.2023

Financial contribution of SDC

CHF 3,321,000

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Project Objectives

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.

Strategy

Taking the right measures to reduce air pollution requires a detailed knowledge on sources of pollution (source apportionment). Some pollutants are primary, meaning they are emitted directly from sources like cars or factories. Others are secondary, meaning they are formed in the air by chemical reactions between primary pollutants and other substances.

Building on the existing partnership between top research institutes of the two countries – the Paul Scherrer Institute, the Swiss Federal Institute of Technology in Zurich and the Institute of Earth Environment of the Chinese Academy of Sciences in Xi'an, China joined efforts to develop an innovative method to analyze in real-time the pollutants.

The introduction of state-of-the-art on-line measuring instruments from Switzerland improves analysis of the chemical compositions of the air pollutants, and their contribution to air pollution, as well as their toxicity to human health.

On such a basis, scientists are able to further identify the most dominating polluting sources, better understand their chemical reaction process during different meteorological conditions.

This scientific knowledge is precious to cities in China, in order to formulate more effective and targeted air pollution control policies, and to take emergency measures to reduce the pollution intensity under certain meteorological conditions.

The development of the methodology is done in cooperation with 6 pilot cities in China covering different regions and different polluting profiles, namely Beijing, Langfang, Shijiazhuang, Chongqing, Xi'an, Wuhan. This innovative approach can then be shared with other cities nationally and around the world.

Expected Outcomes

- Improved capacity of Chinese cities to apportion air pollutant sources accurately
- Better understanding of city air pollution profiles through dynamically updated and reliable air pollutant emission inventories
- More effective air pollution control policies based on the source apportionment results and the updated emission inventories
- Dissemination in China, regionally and globally of the knowledge and experience developed by the project

Partners

Paul Scherrer Institute (PSI)

Swiss Federal Institute of Technology in Zurich (ETH)

Swiss Federal Laboratories for Materials Science and Technology (Empa)

Institute of Earth Environment, Chinese Academy of Sciences (IEE)

Environmental Bureaus in Chinese pilot cities



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