Statement of the Italian Association of Epidemiology (AIE) and the Italian Pediatric Respiratory Society (SIMRI) in support of the WHO's Second Global Conference on Air Pollution and Health - March 24-28, 2025 in Cartagena, Colombia

The global air pollution emergency is deeply interconnected with the climate crisis. Both phenomena are mainly human-driven due to the way human societies produce and use energy, transport people and goods, manage waste, and produce food. Both risk factors have global consequences since air pollution and greenhouse gas emissions, in particular, have no national border; in addition, within a country, they are not limited to a single area but ubiquitous, thereby affecting the entire population.

The year 2024 was the warmest on record (about 1.55°C above pre-industrial levels), continuing an uninterrupted global temperature increase in recent years. In the last two decades, such a rapidly changing climate has doubled exposure to extreme heat and heat waves in some southern and central areas of Europe. The 2024 Lancet Countdown shows that heat-related mortality has increased in 94% of the nearly 1,000 European regions monitored. However, fatal effects represent only the tip of the iceberg since heat-related hospital admissions, emergency visits, drug use, medical visits, and clinical signs and symptoms represent a possibly more significant attributable fraction, especially in more vulnerable population subgroups such as children. Children, mainly infants, are one of the groups most at risk due to the developing pulmonary system and airways, higher ventilation rates, but also limited thermoregulation capacity and higher vulnerability to infections. Furthermore, the rapidly warming climate is increasing pollen concentrations and extending the flowering season, thus amplifying the health risks for the allergic population. It is also enabling the spread of invasive species like ragweed into new areas with larger sensitive populations. Respiratory ill and allergic patients are most affected by pollens, with children being among the most vulnerable, mainly due to asthma exacerbations.

There is consistent evidence regarding the short and long-term effects of air pollution and acute climate-related risks, such as heat waves with multiple sensitivities in terms of cardiovascular, respiratory, renal, metabolic, mental and neurological diseases, and adverse pregnancy outcomes, grounded on large population-based studies on a variety of health measures (e.g. ambulance transport/call-outs, hospitalisation, emergency room presentations, incidence of cancer).

Evidence on specific vulnerable groups, such as children, is also growing for both air pollution and climate-related risks, with the developing respiratory and neurological systems being more vulnerable in the early stages of life.

There is also an additional risk deriving from interaction and synergies among exposures (e.g. heat, air pollution, pollens) in terms of exacerbations of chronic diseases, such as heart failure, asthma and chronic obstructive pulmonary disease. Air pollution is also worsening due to climate change, as far as some areas may encounter greater risk of peaks for some air pollutants, such as ozone.

Furthermore, local pollution peaks may be triggered by dust storms and wildfires favoured by land degradation and drought conditions in some areas (e.g. southern Europe, including Italy, Spain, Portugal and Greece), with short- and long-term consequences on cardiovascular and respiratory health.
Italy is a hot spot for climate change impacts, especially in terms of heat waves related effects as shown by the Lancet Countdown indicators for Italy, and a large part of the population is exposed to air pollution levels higher than the 2021 WHO Air Quality Guidelines, with impacts related to both acute and chronic health effects in vulnerable groups. Mitigation policies are needed, especially in sectors such as transport and energy industries and agriculture, but also in the health sector (e.g. in terms of production and transport of medical supplies and waste management) to fulfil both the EU Green Deal and the Air Quality goals for year 2030. Especially in urban planning, diet, and transport sectors it is urgent to prioritize policies that have multiple benefits, by promoting healthy lifestyle, and at the same time, mitigating emissions. In the long way to climate neutrality and substantial reduction in pollution levels, adaptation is crucial to counteract the unavoidable actual and future impacts on health and requires multisectoral actions and dedicated resources to strengthen population resilience and minimize impacts of air pollution heat waves and other extreme weather events. In this context, the Italian Adaptation Plan (approved in 2023), which includes heat-health preventive measures (e.g., energy-efficient buildings, heat warnings, and urban green spaces), provides the national framework for adaptation responses, but it urgently needs to be transferred into local actions.

Considering climate change scenarios with expected worsening in risks related to extreme weather events, prolonged pollen season, and air pollution, prevention measures are crucial to protect vulnerable populations, such as children, pregnant women, outdoor workers and patients with chronic diseases, based on high-quality research to minimize health impacts.

Scientific societies such as AIE and SIMRI have a fundamental role in promoting health at the centre of climate adaptation and mitigation policies and responses and in enhancing evidence on actions related to greater health co-benefits, such as active mobility and low-carbon diets.

Multisectoral collaborations among clinicians, epidemiologists, and environmental researchers—demonstrated through scientific society agreements and several projects funded within the Health, Environment, Biodiversity and Climate program of the Ministry of Health National Complementary Plan—along with the involvement of citizen representatives and stakeholders, should become standard practice in planning climate responses in the Country.

In line with WHO indications, AIE and SIMRI are intensely engaged in training new generations of clinicians and researchers, raising awareness, as well as in advocating for promoting research on the health effects of climate change and air pollution, and on mitigation solutions for population and health sector, thereby transferring knowledge into practice to set up new agreements on emission limits both to contain climate emergency and to improve global air quality.

Who we are

The Italian Society for Pediatric Respiratory Diseases (Società Italiana Malattie Respiratorie Infantili-SIMRI) is an Italian organization that brings together physicians, healthcare professionals, patient representatives and experts working in pediatric respiratory medicine. The mission of SIMRI is to ensure to all children a healthy lung health and promoting research, patient education and guidelines development in respiratory medicine.
The Italian Association of Epidemiology (Associazione Italiana di Epidemiologia - AIE) since 1977 aims to foster epidemiology within the National Health System through collaboration and research on etiological, occupational, environmental, clinical and comparative outcome research epidemiology to support prevention on risk factors and improve health care efficiency and quality. The mission of AIE is to ensure healthy living and working environments in all stages of life and an efficient and effective health care for all.
Education and advocacy are core actions in which both AIE and SIMRI are engaged. This position was developed and led by the Executive Boards of AIE and SIMRI, and by the joint AIE/SIMRI collaborative group, in collaboration with the AIE Environmental Epidemiology and Early Career Member Committees.

Conflict of interest statement

All authors declare no Conflict of Interest

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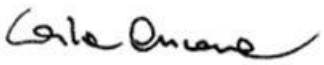
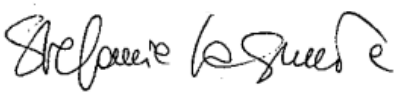


Rome, March 13, 2025

Stefania La Grutta, SIMRI President



Palermo, March 17, 2025