the Pontifical Academy of Sciences

Declaration of the Health of People, Health of Planet and Our Responsibility Climate Change, Air Pollution and Health Workshop

This declaration is based on the data and concepts presented at the workshop

Statement of the Problem

With unchecked climate change and air pollution, the very fabric of life on Earth, including that of humans, is at grave risk. We propose scalable solutions to avoid such catastrophic changes. There is less than a decade to put these solutions in place to preserve our quality of life for generations to come. The time to act is now.

We human beings are creating a new and dangerous phase of Earth's history that has been termed the Anthropocene. The term refers to the immense effects of human activity on all aspects of the Earth's physical systems and on life on the planet. We are dangerously warming the planet, leaving behind the climate in which civilization developed. With accelerating climate change, we put ourselves at grave risk of massive crop failures, new and re-emerging infectious diseases, heat extremes, droughts, mega-storms, floods and sharply rising sea levels. The economic activities that contribute to global warming are also wreaking other profound damages, including air and water pollution, deforestation, and massive land degradation, causing a rate of species extinction unprecedented for the past 65 million years, and a dire threat to human health through increases in heart disease, stroke, pulmonary disease, mental health, infections and cancer. Climate change threatens to exacerbate the current unprecedented flow of displacement of people and add to human misery by stoking violence and conflict.

The poorest of the planet, who are still relying on 19th century technologies to meet basic needs such as cooking and heating, are bearing a heavy brunt of the damages caused by the economic activities of the rich. The rich too are bearing heavy costs of increased flooding, mega-storms, heat extremes, droughts and major forest fires. Climate change and air pollution strike down the rich and poor alike.

Principal Findings

- Burning of fossil fuels and solid biomass release hazardous chemicals to the air.
- Climate change caused by fossil fuels and other human activities poses an existential threat to Homo sapiens and contributes to mass extinction of species. In addition, air pollution caused by the same activities is a major cause of premature death globally.

Supporting data are summarized in the attached background section. Climate change and air pollution are closely interlinked because emissions of air pollutants and climate-altering greenhouse gases and other pollutants arise largely from humanity's use of fossil fuels and biomass fuels, with additional contributions from agriculture and land-use change. This interlinkage multiplies the costs arising from our current dangerous trajectory, yet it can also amplify the benefits of a rapid transition to sustainable energy and land use. An integrated plan to drastically reduce climate change and air pollution is essential.

- Regions that have reduced air pollution have achieved marked improvements in human health as a result.

We have already emitted enough pollutants to warm the climate to dangerous levels (warming by 1.5°C or more). The warming as well as the droughts caused by climate change, combined with the unsustainable use of aquifers and surface water, pose grave threats to availability of fresh water and food security. By moving rapidly to a zero-carbon energy system – replacing coal, oil and gas with wind, solar, geothermal and other zero-carbon energy sources, drastically reducing emissions of all other climate altering pollutants and by adopting sustainable land use practices, humanity can prevent catastrophic climate change, while cutting the huge disease burden caused by air pollution and climate change.

- We advocate a mitigation approach that factors in the low probability-high impact warming projections such as the one in twenty chances of a 6°C warming by 2100.

Proposed Solutions

We declare that governments and other stakeholders should urgently undertake the scalable and practical solutions listed below:

1. Health must be central to policies that stabilize climate change below dangerous levels, drive zero-carbon as well as zero-air pollution and prevent ecosystem disruptions.

2. All nations should implement with urgency the global commitments made in Agenda 2030 (including the Sustainable Development Goals) and the Paris Climate Agreement.

3. Decarbonize the energy system as early as possible and no later than mid-century, shifting from coal, oil and gas to wind, solar, geothermal and other zero-carbon energy sources;

4. The rich not only expeditiously shift to safe energy and land use practices, but also provide financing to the poor for the costs of adapting to climate change;

5. Rapidly reduce hazardous air pollutants, including the short-lived climate pollutants methane, ozone, black carbon, and hydro fluorocarbons;

6. End deforestation and degradation and restore degraded lands to protect biodiversity, reduce carbon emissions and to absorb atmospheric carbon into natural sinks;

7. In order to accelerate decarbonization there should be effective carbon pricing informed by estimates of the social cost of carbon, including the health effects of air pollution;

8. Promote research and development of technologies to remove carbon dioxide directly from the atmosphere for deployment if necessary;

9. Forge collaboration between health and climate sciences to create a powerful alliance for sustainability;

10. Promote behavioral changes beneficial for human health and protective of the environment such as increased consumption of plant-based diets;

11. Educate and empower the young to become the leaders of sustainable development;

12. Promote an alliance with society that brings together scientists, policy makers, healthcare providers, faith/spiritual leaders, communities and foundations to foster the societal transformation necessary to achieve our goals in the spirit of Pope Francis's encyclical *Laudato Si'.*

To implement these 12 solutions, we call on health professionals to: engage, educate and advocate for climate mitigation and undertake preventive public health actions vis-à-vis air pollution and climate change; inform the public of the high health risks of air pollution and climate change. The health sector should assume its obligation in shaping a healthy future. We call for a substantial improvement in energy efficiency; and electrification of the global vehicle fleet and all other downstream uses of fossil fuels. Ensure clean energy benefits also protect society's most vulnerable communities. There are numerous living laboratories including tens of cities, many universities, Chile, California and Sweden, who have embarked on a pathway to cut both air

pollution and climate change. These thriving models have already created 8 million jobs in a low carbon economy, enhanced the wellbeing of their citizens and shown that such measures can both sustain economic growth and deliver tangible health benefits for their citizens.

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End of Declaration

What follows is a summary of the data and concepts on air pollution and climate change as described at the workshop; the last IPCC report published in 2013; and the new data that were published since 2013, including several reports by the LANCET commissions and WHO.

The full declaration with author names can be found here.