



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:

Health of People, Health of Planet and Our Responsibility

Climate Change, Air Pollution and Health

Organized by the Pontifical Academy of Sciences

Casina Pio IV, Vatican City, 2-4 November 2017, Casina Pio IV

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-a-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.

Acknowledgements

We especially thank the global leaders who spoke at the workshop: Honorable Jerry Brown, Governor of California, Honorable Governor Alberto Rodríguez Saá, the Governor of San Luis, Argentina, Honorable Dr. Marcelo Mena, Minister of Environment of Chile, Honorable Kevin de León, President Pro Tempore of California Senate, and Honorable Scott Peters of the US house of representatives.

We also thank the contributions of the faith leaders: Rev Leith Anderson, President of the National Association for Evangelicals, USA; Rev Alastair Redfern, Bishop of Derby, UK; Rev Mitch Hescox, CEO of Evangelical Environmental Network, USA. We thank Dr. Jeremy Farrar, CEO of the Wellcome Trust for his contributions as a speaker and for thoughtful edits of the document.

We acknowledge the major contributions to the drafting of the declaration by Drs: Maria Neira (WHO), Andy Haines (London School of Hygiene and Tropical Medicine) and Jos Lelieveld (Max Planck Inst of Chemistry, Mainz). For a list of speakers and panelists at the symposium, please see the agenda of the meeting attached at the end of this document.

We are thankful to the sponsors of the workshop: Maria Neira of WHO; Drs Bess Marcus and Michael Pratt of Institute of Public Health at the University of California at San Diego; Drs Erminia Guarneri and Rauni King of the Miraglo Foundation.

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](#).

SIGNATORIES

Monsignor Marcelo Sánchez Sorondo (PAS Chancellor) Joachim von Braun (PAS President & UOB) Margaret Archer (PASS President) Veerabhadran Ramanathan (PAS & UCSD) Partha Dasgupta (PASS & CU) Peter Raven (PAS & President Emeritus, Missouri Botanical Garden) Jeffrey Sachs (UN SDSN) Edmund G. Brown Jr. (Governor of California) Kevin de León (President of the California State Senate) Alberto Rodríguez Saá (Gobernador de la Provincia de San Luis, República Argentina)

Scott Peters, Congressman (Member of the U.S. House of Representatives from California's 52nd district) Sir Andy Haines (London School of Hygiene and Tropical Medicine) Jos Lelieveld (Max Planck Institute for Chemistry, Germany) The Rev. Mitchell C. Hescox (President/CEO, The Evangelical Environmental Network) Leith Anderson (President, National Association of Evangelicals)

Bishop Alastair Redfern (Church of England)

Giuseppe card. Betori (Archbishop of Florence, Italy) Don Matteo Galloni (President, Comunità Amore e Libertà) Br Guy Consolmagno SJ (PAS & Specola Vaticana)

Msgr. Cesare Pasini (PAS & Prefect, Apostolic Vatican Library) Msgr. Roland Minnerath (PASS & Archbishop of Dijon)

Werner Arber (PAS, Nobel laureate in Physiology or Medicine) Yuan T. Lee (PAS, Nobel laureate in Chemistry) Paul J. Crutzen (PAS, Nobel laureate in Chemistry)

Gerhard Ertl (PAS, Nobel laureate in Chemistry)

Klaus von Klitzing (PAS, Nobel laureate in Physics, Director, Max-Planck-Institut FKF)

Aaron Ciechanover (PAS & Nobel laureate in Chemistry, TICC, The Rappaport Faculty of Medicine and Research Institute, Technion-Israel Institute of Technology)

Mario Molina (PAS & Nobel laureate in Chemistry) William Phillips (PAS & Nobel laureate in Physics, Joint Quantum Institute, National Institute of Standards and Technology and University of Maryland) Stephen Hawking (PAS) John (Hans Joachim) Schellnhuber (PAS, Potsdam Institute for Climate Impact Research, Germany) Ignacio Rodríguez Iturbe (PAS & Distinguished University Professor and TEES Distinguished Research Professor, Texas A&M University) Francis L. Delmonico (PAS) Ingo Potrykus (PAS) Antonio Battro (PAS) Michael Sela (PAS) Helen M. Blau (PAS & Donald E. and Delia B. Baxter Foundation Professor, Director, Baxter Laboratory for Stem Cell Biology, Stanford University School of Medicine)

Takashi Gojobori (PAS & National Institute of Genetics, Japan)

Lord Martin Rees (PAS) Albert Eschenmoser (PAS)

Sir Salvador Moncada (PAS & FRS, FMedSci Cancer Domain Director, School of Medical Sciences, Manchester Cancer Research Centre)

Yves Coppens (PAS)

Govind Swarup (PAS)

Suzanne Cory (PAS) Yuri Manin (PAS) Rafael Vicuña (PAS) Luis Caffarelli (PAS) Chintamani N.R. Rao (PAS)

Roald Sagdeev (PAS)

Wael Al-Delaimy (UCSD Institute for Public Health) Fonna Forman (UCSD Center on Global Justice) Erminia M Guarneri (President, Academy of Integrative Health and Medicine, Treasurer Miraglo Foundation) Howard Frumkin (University of Washington School of Public Health) Ulrich Pöschl (Max Planck Institute for Chemistry) Daniel M. Kammen (Professor of Energy, UC Berkeley) Nithya Ramanathan (Nexleaf Analytics) Marcelo M. Suárez-Orozco (UCLA Wasserman Dean & Distinguished Professor of Education)

Bess H. Marcus (Dean, Brown University School of Public Health)

Jonathan M. Samet (Dean, Colorado School of Public Health)

Glen G. Scorgie (Professor of Theology and Ethics, Bethel Seminary San Diego) Conrado Estol (Director, Heart and Brain Medicine -MECyC, Buenos Aires, Argentina)

Edward Maibach (George Mason University)

Lise Van Susteren (Advisory Board; Center for Health and the Global Environment; Harvard T.H. Chan School of Public Health)

Jeremy Farrar (Director, Wellcome Trust)

Rauni Prittinen King (Miraglo Foundation, San Diego, California)

Manuel Frávega (Organismo Provincial para el Desarrollo Sostenible de la Provincia de Buenos Aires, Argentina)

Qiyong Liu (Chief Scientist for Health and Climate Change in China)

Maria Neira (Director, Department of Public Health, Environmental and Social Determinants of Health, WHO) Leslie Parker (REIL) Emilio Chuvieco (Professor of Geography, Satellite Earth Observation, University of Alcalá, Spain) Antonella Litta (International Society of Doctors for the Environment – Isde)

Justin Farrell (Yale University, School of Forestry and Environmental Studies)

Philip J. Landrigan, MD, MSc, FAAP (President, Collegium Ramazzini)

Mark Miller MD, MPH (President, International Society for Children's Health and the Environment - ISCHE)

Pauline Mendola (President, American College of Epidemiology)

Jack Ende (President, American College of Physicians) Jeanne A. Conry (past President, American College of Obstetrics and Gynecology) Jesper Hallas (President, International Society for Pharmacoepidemiology)

Manolis Kogevinas, MD, PhD (President, International Society for Environmental Epidemiology - ISEE)

Debra Saliba, MD, MPH, AGSF (President, American Geriatrics Society) Peter Yellowlees MBBS, MD (Professor of Psychiatry, and Vice Chair for Faculty Development & President, American Telemedicine Association & Department of Psychiatry, UC Davis) Mark G. Lawrence (Managing Scientific Director, Institute for Advanced Sustainability Studies - IASS) Bradly Jacobs MD MPH (CEO and Executive Medical Director, BlueWave Medicine)

Virgilio Viana (Director General, Sustainable Amazon Foundation - FAS)

Bill McKibbin (co-founder 350.org) Kathleen Rogers (President, Earth Day Network) Georges C. Benjamin, MD (Executive Director, American Public Health Association) Saul Levin, M.D. (Chief Executive Officer; Medical Director, American Psychiatric Association) Robert Perkowitz (President, EcoAmerica) Gene Baur (President and Co-Founder, The Farm Sanctuary) Rabbi Arthur Waskow (Founder, Shalom Center) Bruce Friedrich (Director, The Good Food Institute) Sahar Alsahlani (CEO, Religions for Peace) Constance Hanson (Director, Christians Caring for Creation) Pierre-Yves Fux (Ambassador of Switzerland to the Holy See) Vittorio Hösle (PASS & Notre Dame) Stefano Zamagni (PASS) Lubomír Ml#och (PASS)

Vittorio Possenti (PASS) Rocco Buttiglione (PASS) John McEldowney (PASS) Pierpaolo Donati (PASS) Janne Haaland Matlary (PASS & University of Oslo) Juan José Llach (PASS) José T. Raga (PASS) Louis Sabourin (PASS) Gualserio Zamperini (Consul General in Tunis, Italy) Dario Nardella (Mayor of Florence, Italy) Saifallah Lasram (Mayor of Tunis, Tunisia) Leoluca Orlando (Mayor of Palermo, Italy) Janez Fajfar (Mayor of Bled, Slovenia) Nemanja Paji# (Mayor of Šabac, Serbia) Vladimir Joki# (Mayor of Kotor, Montenegro) Driss El Azami El Idrissi (Mayor of Fès, Morocco) Michelle Sol (Mayor of Nuevo Cuscatlán, El Salvador) Renato

Accorinti (Mayor of Messina, Italy) Luca Menesini (Mayor of Capannori, Italy) Gheorge Falca (Mayor of Arad, Romania) Giga Nikoleishvili (Deputy Mayor of Tbilisi, Georgia) Bojan Režun (Deputy Mayor of Idrija, Slovenia) Petar #akonovi# (Mayor's Advisor, Kotor, Montenegro) Laura Bocancios (Mayor's Chief of Staff, Arad, Romania) Eleftherios Papagiannakis (Deputy Mayor, Athens, Greece) Anna Paola Concia (Florence City Councillor, Italy) Fadhel Moussa (Member of the Constitutional Assembly, Tunis, Tunisia) Gregor Prezelj (Director of Municipal Administration of Idrija, Slovenia) Bojanab Mladenovi# (Mayor's Cabinet Delegate, Šabac, Serbia) Mika Annaken (Turku City Manager of Internal Affairs, Finland) Suzanna Ruta-Clarisse (Head of the Spatial Development Department, Nijmegen, Netherlands) Lorraine Spiteri (Malta Confederation of Women's Organisations, MCWO, Birgu Local Council) Zrinka Raguz (Mayor's Cabinet Delegate, Dubrovnik, Croatia) Katsunobu Kubo (Vice Chairperson, Kyoto City Assembly, Japan) Jovan Risti# (Delegate, Kotor, Montenegro) Emanuele Finardi (Milan, Italy)