

DECLARATION

OUR PLANET, OUR HEALTH, OUR RESPONSIBILITY

Veerabhadran Ramanathan (PAS & UCSD) **Monsignor Marcelo Sánchez Sorondo** (PAS Chancellor) **Partha Dasgupta** (PAS & CU) **Peter Raven** (PAS & MBC) **Joachim von Braun** (PAS President & UOB) **Jeffrey Sachs** (UN SDSN) *



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

* UCSD: University of California at San Diego; CU: Cambridge University; MBC: Missouri Botanical Garden; UOB: University of Bonn; UN SDSN: United Nations Sustainable Development Solutions Network.



Some forms of pollution are part of people's daily experience. Exposure to atmospheric pollutants produces a broad spectrum of health hazards, especially for the poor, and causes millions of premature deaths. People take sick, for example, from breathing high levels of smoke from fuels used in cooking or heating. There is also pollution that affects everyone, caused by transport, industrial fumes, substances which contribute to the acidification of soil and water, fertilizers, insecticides, fungicides, herbicides and agrottoxins in general. Technology, which, linked to business interests, is presented as the only way of solving these problems, in fact proves incapable of seeing the mysterious network of relations between things and so sometimes solves one problem only to create others.

*O God of the poor,
Help us to rescue the abandoned and forgotten of this earth,
So, precious in your eyes. Bring healing to our lives,
That we may protect the world and not prey on it,
That we may sow beauty, not pollution and destruction.*

Pope Francis, Laudato si'

Declaration

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 contribute 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 hydrofluorocarbons;***
- 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.

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 Hescoc, 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.

Summary of data presented at the workshop

Veerabhadran Ramanathan (PAS & UCSD), Marcelo Sánchez Sorondo (PAS Chancellor), Partha Dasgupta (PASS & CU), Peter Raven (PAS & MBC), Joachim von Braun (PAS President & UOB), Jeffrey Sachs (UN SDSN), Maria Neira (WHO), Andy Haines (London School of Hygiene and Tropical Medicine) and Jos Lelieveld (Max Planck Inst).

Several recent developments set the stage for the findings described in the declaration: The Paris agreement to limit climate change below 2°C; the pioneering studies by WHO and the LANCET commission on the linkages between air pollution, climate altering pollution and public health; and the series of meetings held by the Pontifical Academy of Sciences and the Pontifical Academy of Social Sciences on climate change, sustainability, and impacts on social systems including the poor. The supporting references to back the data described below are given in the Reference Section. These studies provide the data given in the impacts statements below and elsewhere in the text.

Health and Ecosystem Impacts of Air pollution

Air pollution from anthropogenic activities is a complex mixture of particles and gases, including many that are harmful to human and ecosystem health. Air pollution particles consist of sulfates, nitrates, black carbon, organics and others. These particles are emitted outdoors as well as indoors.

- Avoidable environmental risk factors cause almost 13 million deaths every year, approximately a quarter of the global burden of disease (WHO Reports). Air pollution alone causes approximately 6.5 million deaths a year, or one in eight of all deaths, placing it among the top global health risks.
- The increased pressures on the essential environmental determinants of health, such as clean air, safe water, and adequate food and nutrition threatens to undermine gains in health and development, and may exacerbate migration and increase social and political tensions in the absence of strong measures to cut carbon emissions and protect populations.
- A more sustainable and equitable resource consumption, climate stabilization and protection of biodiversity and ecosystems services can in turn bring massive health benefits and drive a healthy transformation (LANCET Commission Report and others).
- The dramatic mortality caused by exposure to Air Pollution calls for a strengthening of primary prevention. The health sector at large need to show leadership and assume its obligation in shaping a healthy and sustainable future.

The impacts of air pollution on human health include cardiovascular and cerebrovascular diseases, leading to heart attacks and strokes, and lung cancer. About 7 billion of us live in areas that regularly exceed the WHO's threshold for safe levels of air pollution.

- Exposure to air pollution causes about 6.5 million premature deaths every year from lower respiratory infections, lung cancer, heart disease, stroke and chronic obstructive pulmonary disease.
- Respiratory diseases including pneumonia in children are a major cause of death. Such respiratory diseases are strongly linked with air pollution.
- Inhalation of air pollution leads to about 167 million disability-adjusted life years lost.
- There is now emerging evidence for air pollution related impairment of cognitive function⁴.

The ecosystem impacts of fine particles like nitrates and sulfates include acid rain, eutrophication of rivers and lakes; ozone destroys over 100 million tons of crops per year⁶. In addition, air pollution also has major climate impacts described next.

Health and Ecosystem Impacts of Climate Altering Pollution

Climate warming is caused by the emission of the long-lived greenhouse gases carbon dioxide, nitrous oxide and chlorofluorocarbons; together with the short-lived climate pollutants (methane, hydrofluorocarbons and tropospheric ozone which are gases and black carbon particles). At the same time, other air pollution particles such as sulfates, nitrates and organics cause cooling of climate. Black carbon and other particles cause major regional climate effects such as droughts, disrupting global weather patterns, melting of mountain glaciers and retreat of sea ice. Continued emissions of carbon dioxide and short-lived climate pollutants at the current rate are projected to lead to the following health and ecosystem impacts.⁶⁻¹⁵

- Intense heat waves combining very high temperatures and humidity at levels that rarely occur now. The period from 2000 to 2016 witnessed 125 million additional people being exposed to heat waves. Such humid heat waves are projected to be regular phenomena when global warming exceeds 4°C.
- Can expose over 70% of the population, about 7 billion people by 2100, to potentially deadly heat by the 4th quarter of this century. About 30 % of the world population is exposed today for 20 days a year -with unmitigated emissions ~70 % will be and for much longer periods.
- By 2050 several hundred million people at temperate latitudes may become exposed to vector borne diseases such as chikungunya and dengue fever, as the habitat suitability of the mosquitoes, previously confined to the tropics, is progressing poleward.
- From 2000 to now, frequency of weather related disasters increased by 46%. Beyond 2050, expose most are as to intense storms, floods and waterborne diseases.
- Climate change related extreme weather, such as heat waves, floods and fires can have widespread impacts on mental health as well as effects on physical health.

About a quarter to half of people subject to extreme weather disaster are at risk of negative impacts on mental health.

- Expose billions of poor to mass displacement and migration;
- Carbon dioxide increase leads to acidification, decreasing the pH of the oceans, which together with the warming threatens the extinction of many species in the ocean, including marine organisms that produce calcium carbonate skeletons, and disturbs ecosystems through multiple pathways.
- Expose by 2100 an additional fifth of all species to extinction, perhaps with the huge number that is likely to disappear because of habitat destruction and other causes leading to the extinction of more than half of all species on earth during this century. Of the estimated 12 million species other than bacteria on earth, we have described and named only about 2 million, so that the great majority will disappear unknown – a great sin against future generations.
- Climate change destabilizes the world food system. It is projected that climate change will reduce global crop production by 9% in the 2030s and by 23% in the 2050s at a time when world population and food demand are still increasing. By the fourth quarter of this century, subject about 30% to 44% of the land area to moderate to severe droughts and the impacts on crop production are likely to be catastrophic.
- Widespread retreat of forests because of droughts and fires, thus reducing the uptake of carbon by forests and amplifying the overall warming. Tropical forests are now releasing carbon to the air instead of sequestering it in their biomass. At the same time, poor rural households in developing countries depending on fuel wood collection spend increased time for it and use harmful household energy technologies, with consequences of a large indoor air pollution affecting the poorest people.
- At an overall 4°C to 6°C rise in temperature, warming of the oceans and melting of Greenland and west Antarctic glaciers can drive two or more meters of sea level rise by 2100 and more than 50 meters subsequently if all polar and continental ice is melted. During the Eemian interglacial 130,000 years ago the planet was warmer by about 1°C and sea level rose by 6 meters.
- There is at least a 20% probability for climate change to exceed 5°C by 2100, a level that would pose existential threats to *Homo sapiens* and the great majority of other species in the following centuries. The last time the planet was this warm was about 30 million years ago and it was ice free even in the Antarctic.

Need for Integrated Solutions

In view of the impacts listed above, we declare:

That fossil fuels have become an outdated energy source. Renewable fuel sources should replace the burning of non-renewable solid biomass fuels.

The impacts of these fuel sources on the health of humans and that of the ecosystem along with the impacts

on most species require us to declare them as hazardous chemicals.

Fossil fuels have served society well, but the time has come to phase them out as soon as possible. We here advocate an integrated strategy of eliminating them to mitigate both air pollution and climate altering pollution.

The need for integrated solutions to mitigate both air pollutants and climate altering pollutants, could be an effective rallying point for mitigation measures. In a series of meetings held at the Casina Pio IV in the Vatican, the Pontifical Academy of Sciences and the Pontifical Academy of Social Sciences concluded¹⁶⁻¹⁷ that technical solutions can only be implemented in time if there are societal changes in attitude driven by moral and ethical values that make them seem necessary to the majority of people.

Climate change is an urgent problem. It requires urgent solutions. While most policy actions to mitigate climate change focus on central values such as 2°C and 4°C, 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^{18,19}.

It Is Still Not Too Late: Candidate Solutions

We should act swiftly to avoid the most catastrophic outcomes. Both air pollution and climate pollution can be drastically reduced in time by pulling on three levers to bend the emission curves of pollutants^{19,20}: i) The carbon lever to make the planet carbon neutral; This includes provision of carbon-neutral as well as air pollution neutral energy sources (clean energy) to the poorest three billion. ii) The short-lived climate pollutant lever to cut warming trends during the next 3 decades by half; and iii) The Atmospheric Carbon Extraction lever to extract some or most of the one trillion tons of manmade carbon dioxide that is already in the air. We have already emitted enough pollutants to warm the climate to dangerous levels (warming by 1.5°C or more) and to limit further warming, we need to pull on these levers now and achieve carbon neutrality by 2050 and reduce the short-lived climate pollutants to the maximum extent possible with current technologies before 2050. While technical solutions such as the three levers approach, top-down policies, governance and market instruments are essential components of a mitigation strategy, societal transformation will also be necessary to catalyze mitigation actions in time.

Societal transformation is also required to recognize both the intra-generational and inter-generational ethical issues of the climate change problem as well as our responsibility to protect nature and people for the long run. About 50% to 60% of the climate forcing arises from the activities of the wealthiest one billion of us; about 35% to 45% is generated by the middle and low income 3 billion; and 5% to 10% by the poorest three billion of us, who are still relying on burning biomass and solid coal to meet basic energy needs such as cooking. The entire human population and all species will be severely affected by unchecked climate change. The poorest will suffer the worst consequences of climate change. Health systems need strengthening and more focused on the poor under the

increased climate stress and risks. To achieve global sustainability and the social justice necessary to bring about the necessary social transformation, we call for:

An alliance between scientists, policy makers, health professionals and faith/spiritual leaders which can have a transformational impact on the needed societal transformation, following the model of Laudato si' and the good

practices of Pope Francis. There is time to avoid the more catastrophic impacts of our activities if we work together in a spirit of love and charity, resolved to avoid the unjust consequences of our unsustainable actions on our fellow human beings now and in the future.

References

The quantitative estimates given in the declaration are obtained from these references.

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Programme

THURSDAY 2 NOVEMBER 2017

Words of Welcome

- 9:00 **Prof. Joachim von Braun** | President, PAS
9:05 **H.E. Msgr. Marcelo Sánchez Sorondo** | Chancellor, PAS

I. Broader Context | Chair: **Prof. Hans Joachim Schellnhuber** | PAS

- 9:30 ***Complexity of Life and its Dependence on the Environment***
Prof. Werner Arber | Former President, PAS
- 9:50 Discussion
- 10:10 ***How Do Our Actions Undermine Nature?***
Prof. Partha Dasgupta | PASS
- 10:30 Discussion
- 10:50 Coffee Break
- 11:20 ***Climate Change, Air Pollution and Health***
Prof. V. (Ram) Ramanathan | PAS
- 11:40 Discussion
- 12:00 ***Climate Change, Air Pollution and Health: WMO and Lancet Assessment***
Prof. Maria Neira | WHO
- 12:20 Discussion
- 12:40 Lunch at the Casina Pio IV

II. Air Pollution, Climate Change and Public Health: Linkages | Chair: **Prof. Partha Dasgupta** | PASS

- 14:10 ***Air and Climate Pollution Sources***
Prof. Jos Lelieveld | Director, Max Planck Institute for Chemistry
- 14:30 Discussion
- 14:50 ***Climate Change Extremes, Tipping Points and Health Risks***
Prof. Hans Joachim Schellnhuber | PAS
- 15:10 Discussion
- 15:30 ***Air Pollution: Adverse Effects and Disease Burden***
Prof. Jonathan Samet | Dean, Colorado School of Public Health
- 15:50 Discussion
- 16:10 ***Climate Change and Disease***
Prof. Liu Qiyong | Center for Disease Control, China
- 16:30 Discussion
- 16:50 Coffee Break

III. Air Pollution, Climate Change and Planetary Health: Linkages | Chair: **Prof. Joachim von Braun** | President, PAS

- 17:20** *Sustaining Life: Human Health-Planetary Health Linkages*
Prof. Howard Frumkin | Professor of Environmental Health Sciences, University of Washington School of Public Health
- 17:40** Discussion
- 18:00** *Biodiversity and Extinction*
Prof. Peter Raven | PAS
- 18:20** Discussion
- 18:40** *Air Pollution, Oxidative Stress and Public Health in the Anthropocene*
Prof. Ulrich Pöschl | Director, Max Planck Institute for Chemistry
- 19:00** Discussion

Global Leadership Session I | Chair: **H.E. Msgr. Marcelo Sánchez Sorondo** | Chancellor PAS

- 19:20** *The Government's Initiatives to Mitigate or Eradicate the Negative Consequences of Climate Change*
Hon. Alberto José Rodríguez Saá | Governor of San Luis, Argentina
- 19:40** Discussion
- 20:00** *The Chilean Government's Initiatives to Mitigate or Eradicate the Negative Consequences of Climate Change*
Dr. Marcelo Mena Carrasco | Minister of the Environment, Chile
- 20:15** Discussion
- 20:30** Dinner at the Casina Pio IV

FRIDAY 3 NOVEMBER 2017 | OUR RESPONSIBILITY: SOLUTIONS

III. Air Pollution, Climate Change and Planetary Health: Linkages | Continued

- 9:00** *Air Pollution and Cardiovascular Disease: A Proven Causality*
Dr. Conrado Estol | Director, Stroke Unit, Guemes Clinic, University of Buenos Aires School of Medicine
- 9:20** Discussion

IV. Overarching Solutions | Chair: **Prof. Marcelo Suárez-Orozco** | Wasserman Dean, UCLA

- 9:40** *Ensuring Food Security for Everyone*
Prof. Joachim von Braun | President, PAS
- 10:00** Discussion
- 10:20** *Sustainable Development Goals and Health*
Prof. Jeffrey Sachs | Director of the Earth Institute, Columbia University
- 10:40** Discussion
- 11:00** Coffee Break
- 11:30** *Challenges and Opportunities for a Sustainable Planet*
Prof. Yuan-Tseh Lee | PAS
- 11:50** Discussion
- 12:10** *Sustaining Fresh Water*
Prof. Ignacio Rodríguez-Iturbe | PAS
- 12:30** Discussion

12:50 ***Ten Solutions for Carbon Neutrality and Climate Stability***
Prof. V. (Ram) Ramanathan | PAS

13:10 Discussion

13:30 Lunch at the Casina Pio IV

V. Societal Transformation Solutions | Chair: **Yuan-Tseh Lee** | PAS

14:45 ***Reducing Risks to Health***
Sir Andrew Haines | Epidemiologist; London School of Hygiene and Tropical Medicine

15:05 Discussion

15:20 ***Healthy People, Healthy Planet***
Prof. Erminia Guarneri | Cardiologist and President of the Academy of Integrative Health & Medicine

15:40 Discussion

VI. Poor and Other Vulnerable Populations | Chair: **Ignacio Rodríguez-Iturbe** | PAS

15:55 ***Environmental and Climate Justice***
Prof. Fonna Forman | Co-Director, Center for Global Justice, University of California at San Diego

16:15 Discussion

16:30 ***Migration and Displacement: PAS-UCLA Report***
Prof. Marcelo Suárez-Orozco | Distinguished Professor of Education, and Wasserman Dean, School of Education, UCLA

16:50 Discussion

17:05 ***Climate Disruption Denial and Prostitution Harm Denial***
Dr. Melissa Farley | Executive Director Prostitution Research & Education, USA

17:10 ***Climate, Refugees, and Health in the Middle East***
Prof. Wael Al Delaimy | Professor, Institute of Public Health, University of California at San Diego

17:30 Discussion

17:45 ***Energy Access for the Poor: Scalable Solution***
Prof. Dan Kammen | Distinguished Professor of Energy at the University of California, Berkeley

18:05 Discussion

18:20 Coffee Break

18:40 ***Climate/Health Financing Using Wireless Technologies for the Bottom Three Billion***
Prof. Nithya Ramanathan | Mobile Technology for Health and Environment Impact Studies; President of Nexleaf Analytics (Los Angeles)

19:00 Discussion

Global Leadership Session II: Call to Action | Chair: **V. (Ram) Ramanathan** | PAS

19:15 ***California as a Living Laboratory***
Senator Kevin de León | President pro Tempore of the California State Senate

19:40 Discussion

20:00 Dinner at the Casina Pio IV

VII. Call to Action from Global Leaders | Chair: **Prof. Maria Neira** | Director WHO

- 9:00** **Keynote Speaker: Honorable Jerry Brown** | Governor of California
- 9:30** **Congressman Scott Peters** | US House of Representatives
- 9:40** **Dr. Francesco La Camera** | Direttore Generale per gli Affari Generali, Ministero dell'Ambiente e della Tutela del Territorio e del Mare, Italy
- 9:50** **Prof. Virgilio Viana** | Superintendent-General of the Amazonas Sustainable Foundation, Manaus, Brazil
- 10:00** **Panel Discussion**
- 10:10** **General Discussion**
- 10:30** **Coffee Break**

VIII. Call to Action from Civic Society | Chair: **Prof. Bess Marcus** | Dean of School of Public Health, Brown University

- 11:00** ***Caring For Creation: The Evangelical's Guide to Climate Change & a Healthy Environment***
Rev. Mitchell C. Hescox | President/CEO; Evangelical Environmental Network
- 11:10** **Prof. Jeremy Farrar** | CEO, Wellcome Trust
- 11:30** **Prof. Edward Maibach** | University Professor, George Mason University
- 11:40** **Prof. Lize Van Susteren** | Psychiatrist, Advisor, Harvard Center for Health and Global Environment

IX. Call to Action from Faith Leaders

- 11:50** Chair and Introduction to "Laudato Si'": **H.E. Msgr. Marcelo Sánchez Sorondo** | Chancellor, PAS
- 12:00** **Rt. Rev. Alastair Redfern** | Bishop of Derby, UK
Rev. Dr. Leith Anderson | National Association of Evangelicals (USA)
- 12:30** **General Discussion**
- 13:00** ***Meeting Summary and Declaration***
Prof. V. Ramanathan, H.E. Msgr. Marcelo Sánchez Sorondo, Prof. Partha Dasgupta, Prof. Jeffrey Sachs
- 13:30** **Lunch at the Casina Pio IV**

List of Participants

Speakers

Prof. Wael Al Delaimy | Professor, Institute of Public Health, University of California at San Diego

Rev. Dr. Leith Anderson | National Association of Evangelicals, USA

Prof. Werner Arber | PAS

Prof. Joachim von Braun | President, PAS

Honorable Jerry Brown | Governor of California

Prof. Partha Dasgupta | PASS

Dr. Conrado Estol | Director, Stroke Unit, Guemes Clinic, University of Buenos Aires School of Medicine

Dr. Melissa Farley | Executive Director Prostitution Research & Education, USA

Prof. Jeremy Farrar | CEO, Wellcome Trust

Prof. Fonna Forman | Co-Director, Center for Global Justice, University of California at San Diego

Prof. Howard Frumkin | Professor of Environmental Health Sciences, University of Washington School of Public Health

Prof. Erminia Guarneri | Cardiologist and President of the Academy of Integrative Health & Medicine

Sir Andrew Haines | Epidemiologist; London School of Hygiene and Tropical Medicine

Prof. Mitchell C. Hescox | President/CEO; Evangelical Environmental Network

Prof. Dan Kammen | Distinguished Professor of Energy at the University of California, Berkeley

Prof. Yuan-Tseh Lee | PAS

Prof. Jos Lelieveld | Director, Max Planck Institute for Chemistry

Senator Kevin de León | President pro Tempore of the California State Senate

Prof. Edward Maibach | University Professor, George Mason University

Dr. Marcelo Mena Carrasco | Minister of the Environment, Chile

Prof. Maria Neira | WHO

Prof. Scott Peters | US House of Representatives

Prof. Ulrich Pöschl | Director, Max Planck Institute for Chemistry

Prof. Liu Qiyong | Center for Disease Control, China

Prof. Nithya Ramanathan | Mobile Technology for Health and Environment Impact Studies; President of Nexleaf Analytics, Los Angeles

Prof. V. (Ram) Ramanathan | PAS

Prof. Peter Raven | PAS

Rt. Rev. Alastair Redfern | Bishop of Derby, UK

Prof. Ignacio Rodríguez-Iturbe | PAS

Hon. Alberto José Rodríguez Saá | Governor of San Luis, Argentina

Prof. Jeffrey Sachs | Director of the Earth Institute, Columbia University

Prof. Jonathan Samet | Dean, Colorado School of Public Health

H.E. Msgr. Marcelo Sánchez Sorondo | Chancellor, PAS

Prof. Hans Joachim Schellnhuber | PAS

Prof. Marcelo Suárez-Orozco | Distinguished Professor of Education, and Wasserman Dean, School of Education, UCLA

Prof. Lize Van Susteren | Psychiatrist, Advisor Harvard Center for Health and Global Environment

Prof. Virgilio Viana | Superintendent-General of the Amazonas Sustainable Foundation, Manaus, Brazil

Observers

Doaa Abdel-Motaal

Charleen Anderson

Silvia Arber

Diarmid Campbell Lendrun

Emilio Chuvieco

Francis Delmonico

Justin Farrell

Manuel Frávega

Lynn Gorguze

Rauni Prittinen King

Leslie Lipper

Antonella Litta

Marina Maiero

Bess Marcus

Collette Mitchell

Leslie Parker

Mary Ann Pintar

Michael Pratt

Dan Reeves

Glen G. Scorgie

Cindy Swift

Phil Swift



