



THE PONTIFICAL
ACADEMY
OF SCIENCES



THE PONTIFICAL
ACADEMY OF SOCIAL
SCIENCES

JOINT SUMMIT ON

FROM CLIMATE CRISIS TO CLIMATE RESILIENCE

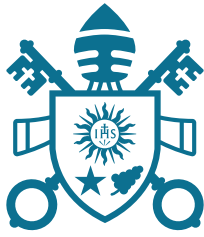
*A Vatican 3-day Summit for bending the curve
and bouncing forward to climate resilience*



15-17 May 2024
Casina Pio IV, Vatican City

Organized by

Marcelo Suárez-Orozco PASS Council Member; Chancellor of the University of Massachusetts at Boston, USA
Veerabhadran Ramanathan PAS Council Member; University of California at San Diego and Cornell University, USA



Eight years have passed since I published the Encyclical Letter Laudato Si', when I wanted to share with all of you, my brothers and sisters of our suffering planet, my heartfelt concerns about the care of our common home. Yet, with the passage of time, I have realized that our responses have not been adequate, while the world in which we live is collapsing and may be nearing the breaking point. In addition to this possibility, it is indubitable that the impact of climate change will increasingly prejudice the lives and families of many persons. We will feel its effects in the areas of healthcare, sources of employment, access to resources, housing, forced migrations, etc.

This is a global social issue and one intimately related to the dignity of human life. The Bishops of the United States have expressed very well this social meaning of our concern about climate change, which goes beyond a merely ecological approach, because "our care for one another and our care for the earth are intimately bound together. Climate change is one of the principal challenges facing society and the global community. The effects of climate change are borne by the most vulnerable people, whether at home or around the world". In a few words, the Bishops assembled for the Synod for Amazonia said the same thing: "Attacks on nature have consequences for people's lives". And to express bluntly that this is no longer a secondary or ideological question, but a drama that harms us all, the African bishops stated that climate change makes manifest "a tragic and striking example of structural sin".

The Holy Father Pope Francis, *Laudate Deum*

Concept Note

The Climate Crisis is upon us. It will get a lot worse over the next few decades as the planetary heating shoots past 1.5°C by the early 2030s. The warming curve is likely to bend around the latter half of this century in response to global-scale actions to mitigate emissions of heat-trapping pollutants. We no longer have the luxury of relying just on mitigation of emissions. We need to embark on building climate resilience so that people can bend the emissions curve, survive the climate crisis, and bounce forward to a safer, healthier, more equitable, and sustainable world.

The Vatican, through the Pontifical Academy of Sciences, formed a new initiative on Climate Resilience in 2022 and brought researchers, policymakers, and faith leaders together to understand the scientific and societal challenges of climate change and recommend solutions for resilient people and resilient ecosystems. The Climate Resilience concept adopted for organizing this summit follows these recommendations. To enhance climate resilience, it is imperative that we base our efforts on a three-pronged strategy: first, mitigation efforts to diminish climate risks; second, adaptation strategies to cope with inevitable risks; and third, societal transformation that fosters ongoing mitigation and adaptation measures. Climate re-

silience is intricately connected to a trio of critical environmental challenges that demand immediate action: Climate Change, Biodiversity Loss, and Global Inequality. Therefore, in orchestrating this summit, our focus, though primarily on climate change, encompasses presenting solutions that simultaneously tackle issues related to biodiversity and inequality.

Climate Resilience requires cross-disciplinary partnerships among researchers, engineers, and entrepreneurs and trans-disciplinary partnerships between science and community leaders, including faith leaders, NGOs, and the public. Mayors and Governors form the core of such transdisciplinary partnerships.

A significant outcome of the Summit will be a Planetary Climate Resilience protocol with all participants as cosignatories. This protocol, to be fashioned along the lines of the Montreal Protocol, will provide the guidelines for making everyone climate resilient. The protocol will be submitted to UNFCCC to take it forward to all nations. When the warming crosses the 1.5°C threshold by 2030, the protocol can be amended to include stringent regulations to bend the emissions curve drastically and increase spending on adaptation measures.

DAYS I AND III CROSS-DISCIPLINARY EXPERTS SUMMIT (May 15 and May 17)

From Climate Crisis to Climate Resilience Organizing Themes Water / Air / Food/ Energy

The four organizing themes will focus on climate change's impacts on human health, including mental health and disparate effects on wellness and well-being, fully recognizing human health is closely linked with ecosystem health and ecological sustainability. The focus will be on the latest natural and social science evidence regarding impacts and best practices in four domains: WATER, AIR, FOOD, and ENERGY, with special attention to vulnerable, underserved populations.

DAY II TRANS-DISCIPLINARY EXEMPLARS SUMMIT OF MAYORS AND GOVERNORS (May 16)

From Climate Crisis to Climate Resilience by Best Practices and Urgent Needs

Global Roundtable of Mayors and Governors: Addressing Climate Resilience from the Perspective of Cities, Provinces, and States

Objective: The Global Roundtable assembles a diverse group of mayors and governors from around the world to discuss and showcase innovative solutions for climate resilience in the domains of Water, Air, Food, and Energy, with a focus on governance and human health. Participants are selected based

on their geographic representation, vulnerability, scalability of practices, and engagement in scaling up solutions.

The Roundtable will be conducted as a series of panel discussions and interactive sessions. Each mayor or governor will present their city's (or state's) accomplishments and challenges in one of the focus domains, emphasizing scalability and innovation. Subsequent discussions will explore common themes, lessons learned, and potential collaboration opportunities.

Outcomes:

Knowledge Exchange: Mayors and governors exchange experiences, insights, and successful strategies for addressing climate resilience, health, poverty, and forced migrations.

Best Practice Showcasing: Innovative and scalable solutions are shared, inspiring other cities and states to implement similar approaches.

Collaboration Opportunities: Participants identify potential collaborations for joint projects, knowledge sharing, and capacity-building efforts.

Policy Influence: The Round Table outcomes contribute to policy discussions at local, national, and international levels, influencing climate-related initiatives.

Global Awareness: The event generates awareness and media coverage, highlighting the critical role of government leaders in addressing climate challenges.

By bringing together mayors and governors representing diverse regions and with local expertise, the Global Roundtable aims to foster a dynamic platform for collaboration, knowledge sharing, and collective action to pursue climate resilience and sustainable development.

Programme

DAY 1 | WEDNESDAY, MAY 15, 2024

9:00-9:30 *Word of Welcome*
Cardinal Peter K.A. Turkson PAS & PASS Chancellor
Sr Helen Alford PASS President
Joachim von Braun PAS President

SESSION I – SETTING THE STAGE

Chair: **Mohamed Hassan** PAS

9:30-09:45 *Climate Crisis: UN's IPCC Perspective*
Hoesung Lee IPCC Chair – 2023

9:45-10:00 *Climate Resilience: MAST Strategy | PAS/PASS Initiative*
Veerabhadran Ramanathan PAS Council; UC San Diego & Cornell

10:00-10:15 *Catastrophic Migrations: MAST Strategy*
Marcelo Suárez-Orozco PASS Council & UMass Boston
& **Judit Senarriaga-Esteve** UMass Boston & Spain

10:15-10:30 *Governing in the Age of Climate Change*
Hon. Governor Maura Healey Commonwealth of Massachusetts

10:30-10:40 *Chair Perspective*
Mohamed Hassan

10:40-11:10 Commentators (10 mins each)
H.E. Dr. Wilber K. Ottichilo EGH Governor, Vihiga County, Kenya
Hon. Roberto Gualtieri Mayor of Rome
Hon. Ricardo Nunes Mayor of Sao Paolo

11:10-11:40 Coffee Break

SESSION II – WATER

Co-Chairs: **Paul Kirshen** UMass Boston, USA
& **Sunita Narain** Center for Science & Environment, New Delhi

11:40-11:50 *Science/Societal Issues with Water*
Sunita Narain

11:50-12:05 *Floods*
Joyce Kimutai Kenya

12:05-12:20 *Droughts*
Kenneth Strzepek Massachusetts Institute of Technology

12:20-12:35 *Sponge Planet*
Kongjian Yu Peking University

12:35-12:50 *Water, Agriculture*
Jean Jacques Muhinda AGRA, East Africa

12:50-13:00 *Synthesis & Next Steps*
Paul Kirshen

13:00-15:00 Buffet Lunch

SESSION III – AIRChair: **Hoesung Lee** IPCC

15:00-15:15 *Air Quality- Health Effects*
Jos Lelieveld Max Planck

15:15-15:30 *Bending the Emissions Curve*
Gabrielle Dreyfus Georgetown University

15:30-15:45 *Methane-Climate Leaks*
Örjan Gustafsson PAS, Stockholm University, Sweden

15:45-16:00 *Pathways to a Healthy Net Zero Future*
Andrew Haines Lancet Commission, London

16:00-16:15 *Nature Based Solutions*
Virgilio Viana PASS, Brazil

16:15-16:30 *Human Rights Issues*
Romina Picolotti IGSD-USA & Argentina

16:30-17:00 Open Discussion

17:00-17:20 Coffee Break

SESSION IV – FOODChair: **Joachim von Braun** PAS

17:20-17:35 *Energy and Food Security*
Chien-Te Fan National Tsing Hua University, Taiwan

17:35-17:50 *Agri-food Economics*
David Laborde FAO (UN)

17:50-18:00 Open Discussion

18:00-18:10 *Synthesis & Next Steps*
Joachim von Braun

18:10-18:40 Open Discussion

SESSION V – ENERGYCo-Chairs: **Cheikh Mbow** Senegal
& **Governor Maura Healey** Commonwealth of Massachusetts

18:40-18:55 *Clean, Affordable Energy Transition*
Dan Esty Yale University

18:55-19:10 *Accelerating the Energy Transition: Scale, Business Models, Supply Chains*
Arunabha Ghosh Founder-CEO, Council on Energy, Environment and Water, India

19:10-19:25 *Pathway to Net-Zero Emissions*
Wen-Chen Shih Deputy Minister of the Ministry of Environment, Taiwan

19:25-19:40 *Protecting People and Nature: California Adapting to Climate Change*
Wade Crowfoot Secretary Natural Resources Agency, California

19:40-20:10 Commentators (10 minutes each)
Kristina Costa The White House
Chief Melissa Hoffer Commonwealth of Massachusetts
H.E. Dr. Wilber K. Ottichilo EGH Governor, Vihiga County, Kenya

20:10 Buffet Dinner Casina Pio IV

DAY 2 | THURSDAY, MAY 16, 2024

Synod Hall | Mayors and Governors Summit

8:45 Meeting point in front of the Synod Hall to go together to the Apostolic Palace for the Papal Audience in the Clementine Hall

10:00-11:30 Audience with the Holy Father, Clementine Hall

11:30-11:45 *Word of Welcome*

Cardinal Peter K.A. Turkson PAS & PASS Chancellor

Sr Helen Alford PASS President

Joachim von Braun PAS President

SESSION VI – CLIMATE RESILIENCE LEADERSHIP

Chair: **Hon. Deanne Criswell** FEMA Administrator, USA

11:45-12:00 *How do we Adapt to the Climate Crisis?*

Hon. Ana María (Anne) Hidalgo Mayor of Paris

12:00-12:15 *The Gold Standard – Climate Leadership in the Golden State*

Hon. Governor Gavin Newsom State of California

12:15-12:30 *Climate Leadership in Brazil*

Hon. Jäder Barbalho Filho Minister of Cities

12:30-12:45 *Chair's Remarks*

Hon. Deanne Criswell

12:45-14:00 Lunch at the Synod with Breakout Groups of Mayors and Governors: maximum of 4, chaired by Cardinal Turkson, Governor Kathy Hochul, Mayor Anne Hidalgo, Mayor Henriette Reker

Luncheon Breakout Groups

BG-1: Chair: **Cardinal Peter K.A. Turkson** PAS/PASS Chancellor

BG-2: Chair: **Climate Chief Melissa Hoffer** Massachusetts

BG-3: Chair: **Mayor Anne Hidalgo** Paris

BG-4: Chair: **Mayor Henriette Reker** Cologne

SESSION VII – IN THE FRONT LINES: CLIMATE HOTSPOTS

Chair: **Gina McCarthy** Former White House Climate Advisor

14:00-16:00 *In the Front Lines* Mayors & Governors (10 mts each)

Hon. María José Catalá Mayor, Valencia

Hon. Takeharu Yamanaka Mayor, Yokohama

Mayor Haris Doukas Athens

Hon. Henriette Reker Mayor, Cologne

Hon. Ricardo Nunes Mayor, Sao Paulo

Hon. Matteo Lepore Mayor, Bologna

Hon. Dario Nardella Mayor, Florence

Hon. Wen-Chen Shih Deputy Minister, Taiwan

Hon. Raúl Jalil Governor, Catamarca

Hon. Renzo Caramaschi Mayor, Bolzano

Hon. Giuseppe Sala Mayor, Milano

Chair's Remarks (10 mins)

Gina McCarthy

SESSION VIII – BEST PRACTICE IN GOVERNANCE

Co-Chairs: **Michael Berkowitz** Executive Director, Climate Resilience Academy, University of Miami
& **Gina McCarthy** Former White House Climate Advisor

16:00-16:15 *Governance in the Age of Climate Change*
Hon. Sadiq Khan Mayor of London

16:15-16:30 *Climate Leadership in Santiago de Chile*
Hon. Governor Claudio Orrego Santiago Metropolitan Region

16:30-16:45 *Climate Leadership in the Empire State: Building Resiliency for All*
Hon. Governor Kathy Hochul New York State

16:45-17:00 *Climate Leadership in Rome*
Hon. Roberto Gualtieri Mayor, Rome

17:00-17:15 *Governance, Energy*
Hon. Michelle Wu Mayor of Boston

17:15-17:30 *Governance, Water*
Hon. Luigi Brugnaro Mayor of Venice

17:30-19:00 *Highlights and Way Forward*
Co-Chairs: **Marcelo Suárez-Orozco** PASS
& **Veerabhadran Ramanathan** PAS

Planetary-Protocol for Climate-Change Resilience (30 mts)
Open Discussion

Follow Up on Sub-Regional Summits (15 mts)

Hon. Governor Maura Healey
Veerabhadran Ramanathan
& **Marcelo Suárez-Orozco**

Breakout Group Summaries and Proposals from All Mayors and Governors for Next Steps
(50 mts)

19:00 End of the Day – Participants are free to make their own dinner plans

Governors and Mayors who remain in Rome will have the morning free on Day III; they are invited to return to the Casina, and at the end of the afternoon session (8:00 p.m. approx.), for a buffet dinner.

DAY 3 | FRIDAY, MAY 17, 2024

SESSION IX – SOCIAL TIPPING POINTS: FORCED MIGRATIONS

Co-Chairs: **Marcelo Suárez-Orozco** [PASS Council & UMass Boston](#)
& **Sr Helen Alford** [PASS President](#)

- 9:00-9:15** *Climate Migration and Integration*
Mary Waters [Harvard](#)
- 9:15-9:30** *The Effects of Climate Change on Children*
Carola Suárez-Orozco [Harvard, US/Switzerland](#)
- 9:30-9:45** *Santuario Frontera: A Sanctuary for Climate Migrants at the US-Mexico Border*
Fonna Forman [University of California San Diego](#)
- 9:45-10:35** Commentators (10 minutes each): From the Mayors/Governors, NGOs, Private Sector
- 10:35-10:55** Coffee break

SESSION X – SOCIAL TIPPING POINTS: ETHICS AND EQUITY

Co-Chairs: **Vittorio Höhle** [PASS](#)
& **Hon. Roberto Andrés Gallardo** [President COPAJU & Instituto Bartolomé de las Casas](#)

- 10:55-11:05** *Ethics and Climate Change*
Vittorio Höhle [PASS](#)
- 11:05-11:20** *Children and Women*
Dr. Soumya Swaminathan [Chairperson, MSSRF, Chennai](#)
- 11:20-11:30** *Climate Change: The Franciscan Doctrine*
Judge Roberto Andrés Gallardo [President COPAJU & Instituto Bartolomé de las Casas, Argentina](#)
- 11:30-11:45** *Transformation Policies for Climate Change: Why Mitigation and Adaptation Policies, although Necessary, are not Sufficient*
Stefano Zamagni [PASS](#)
- 11:45-12:00** *Legal Significance of the Ethical and Scientific Foundations of Laudato Si', Fratelli Tutti and Laudate Deum*
Justice Antonio Herman Benjamin [Chief Justice-Elect of the National High Court of Brazil \(STJ\)](#)
- 12:00-12:10** **Chief Raoni Metuktire** [Kayapó people, Brazilian Amazonia](#)
- 12:00-12:35** Open Discussion
- 12:35-14:35** Buffet Lunch

SESSION XI – FINANCING RESILIENCY

Co-Chairs: **Virgilio Viana** [PAS Director General of the Amazonas Sustainability Foundation, Brazil](#)
& **Hon. Michelle Wu** [Mayor of Boston](#)

- 14:35-14:40** *Climate Finance*
Craig Cogut [Pegasus](#)
- 14:50-15:05** *Green Jobs for a Just Transition*
Tracy Palandjian [CEO, Social, Finance](#)
- 15:05-15:20** *Philanthropy*
Jim & Cathy Stone [James M. & Cathleen D. Stone Foundation](#)
- 15:20-15:35** *Climate and the Private Sector*
Dr. Andrew Forrest [Fortescue, Australia](#)
- 15:35-15:50** Open Discussion
- 15:50-16:10** Coffee break

SESSION XII – VOICES OF THE YOUTH

- 16:10-17:00** Eight Youths from around the world

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| 17:00-17:15 | Discussion led by Carla Rinaldi President, Fondazione Reggio Children - Centro Loris Malaguzzi |
| 17:15-17:30 | <i>Propelling Climate Literacy</i> Maryanne Wolf PAS, UCLA |
| SESSION XIII – ROLE OF SCIENCES IN REDUCING CLIMATE RISKS & ENHANCING CLIMATE RESILIENCE | |
| Chairs: Jane Lubchenco PAS & Örjan Gustafsson PAS | |
| 17:30-17:45 | <i>Carbon Dioxide Removal and Agricultural Resilience</i> Benjamin Houlton Cornell University |
| 17:45-18:00 | <i>Tenure and Indigenous Peoples</i> Justin Farrell PASS |
| 18:00-18:15 | <i>Transformational Education</i> Christina Christie University of California Los Angeles |
| 18:15-18:35 | <i>Chair's perspectives</i> Jane Lubchenco & Örjan Gustafsson |
| SESSION XIV – CONFERENCE WRAP-UP – PUBLIC HEALTH | |
| Chairs: Jeremy Farrar Chief Scientist, WHO & Cardinal Peter K.A. Turkson PAS & PASS Chancellor | |
| 18:35-18:40 | <i>Introductory Video</i> Dr. Vanessa Kerry CEO Seed Global Health, Special Envoy for Climate Change & Health, WHO |
| 18:40-18:55 | <i>Climate Change and Population Health</i> Maddalena Ferranna & David Bloom University of Southern California/Italy & Harvard |
| 18:55-19:10 | <i>Medicine in the Age of Climate Change</i> Maria Neira Director of the Department of Environment, Climate Change and Health, WHO |
| 19:10-19:25 | <i>The Application of Science to Health</i> Avak Kahvejian Flagship Pioneering, Massachusetts |
| 19:25-19:40 | <i>Changing the Narrative to Health for Urgent Climate Actions: Chairs' Perspective</i> Jeremy Farrar |
| 19:40-20:00 | Open Discussion |
| 20:00-20:15 | Closing Remarks by Cardinal Turkson & PAS & PASS Presidents |
| 20:15 | Buffet Dinner Casina Pio IV End of Summit |

Acknowledgments

Organizing a Summit of this scale is an immense undertaking that requires the collaboration and commitment of multiple individuals and organizations. We extend our deepest gratitude to the University of Massachusetts Foundation under the leadership of its CEO, Mr. James R. Julian. Mr. Julian's unwavering support has been pivotal in planning and executing the Summit.

We are also thankful to the MacArthur Foundation, led by its President, John Palfrey. Their timely financial contributions were crucial in the formative stages of the Summit, helping to transform our ambitious vision into reality. The Boston Foundation, with President Lee Pelton at the helm, also played a critical role by providing financial support when it was most needed.

These contributions, both in terms of resources, wise counsel, and trust, were generous and a testament to the faith these organizations have in our collective goals. As we reflect on the journey of bringing this Summit to fruition, we recognize that it truly does take a village, and we are fortunate to have such dedicated and visionary partners in this endeavor.

CONCEPTUAL FRAMEWORK FOR DAY-1 From Climate Crisis to Climate Resilience Comparative and Interdisciplinary Perspectives¹

Water – Mitigate flood and drought impacts on agriculture and human consumption; Protect the vulnerable with water systems and ensure clean water access; Govern water resources fairly and holistically. Address ethical aspects of water management.

Research priorities should encompass flood and drought mitigation strategies for agriculture and human consumption. Focus on coastal areas; innovations in sustainable flood management, forecasting, and responses are to be examined. For droughts, efficient irrigation, resilient crops, and water-efficient farming are key.

Ensure clean water access with advanced protection methods. Safeguard water sources, address pollution, and employ watershed management and proven interventions. Integrating local and indigenous knowledge to water management. Special attention should be paid to marginalized communities facing water inequalities. Gender-focused approaches to how water access affects women and marginalized groups in low-income countries.

Best approaches to the coordination of water and land management. Best practices in governance structures and policies for equitable resource distribution. Balancing demands across sectors requiring collaborative, participatory approaches, and cross-boundary cooperation.

Promote interdisciplinary collaboration spanning hydrology, engineering, environment, law, social sciences, economics, and ethics.

Ethical considerations involve water as a human right, equitable access, and long-term impacts. Ethical frameworks guide decisions during scarcity, conflicts, and environmental justice issues.

Attention also needs to be paid to land-sea interactions under climate stress, as well as the worrisome indications of high temperature increase in

the deep sea, reduced ocean circulation and reduced oxygen in deep sea.

Air – Mitigating millions of premature deaths caused by air pollution from fossil fuels is paramount. Addressing the impacts of fires and droughts on air quality, health, and climate trauma is crucial. Key research areas would encompass understanding pollutant sources, composition, and their environmental consequences.

Establishing links between air pollution and health, *inter alia*, respiratory, and cardiovascular diseases, mental health, as well as effects on ecosystems. Developing and transferring cleaner energy technologies, enhancing emission control measures, and enforcing stricter regulations to curb harmful pollutants like particulate matter (PM_{2.5}), nitrogen oxides (NO_x), sulfur dioxide (SO₂), and volatile organic compounds (VOCs) are essential endeavors.

Quantifying the health burden of air pollution through health impact assessments and epidemiological studies provides valuable evidence for policymaking. Special attention to marginalized communities facing air pollutants and unsafe air conditions.

Examine the intricate interactions between wildfires, droughts, air quality, and climate change and their impacts on people's physical and mental health should be a central focus. This includes examining the emissions of pollutants like particulate matter and carbon monoxide from wildfires and the impact on public health.

Additionally, studying drought-induced dust emissions and their contribution to heat stress. Furthermore, exploring the psychological and emotional toll, known as "climate trauma," resulting from extreme events like fires and droughts, is an emerging area of research that delves into the mental health impacts of climate-related disasters.

Advancements in air quality monitoring networks and modeling play a pivotal role. Innovating real-time data collection methods to monitor pollutant concentrations, sources, and dispersion patterns enables timely responses to deteriorating air quality. Numerical models that simulate atmospheric processes, pollutant transport, and chemical reactions are valuable tools for understanding pollution trends, predicting future scenarios, and evaluating the effectiveness of mitigation strategies.

Developing robust policy frameworks and technological innovations for air quality management

¹ Advisory Committee Members: Mohamed Hassan (PAS Council; President, World Academy of Sciences; Sudan); Vittorio Hösle (PASS; founding Director of the Notre Dame Institute for Advanced Study, Univ of Notre Dame); Justin Farrell (PASS; Yale University); Jeremy Farrar (Chief Scientist, WHO); Sunita Narain (Dir. General, Center for Science and Environment, India); Romina Picolotti (Argentina; Former Env Minister); Joyce Kimutai (Ministry of Env and Forestry, Kenya & Univ of Cape Town, South Africa); Cathy Stone (President, The James M. and Cathleen D. Stone Foundation); Prof. Cheikh Mbow, Directeur Général Centre de Suivi Écologique, Dakar, Senegal.

is essential. This includes establishing air quality standards, setting emission reduction targets, and implementing incentive programs to encourage the adoption of cleaner technologies such as electric vehicles and renewable energy sources. Urban planning strategies that prioritize green spaces, sustainable transportation, and energy-efficient buildings contribute significantly to improved air quality and reduced heat stress.

Communications efforts extend to public awareness campaigns and education initiatives to inform communities about the health risks associated with poor air quality and to emphasize the importance of reducing emissions. Behavioral changes campaigns, education programs, citizen science projects, and outreach initiatives all contribute to enhancing understanding of air quality issues and garnering support for clean air policies.

Food – Nature-based, and science evidence-based solutions including solutions and agroforestry offer vital strategies for safeguarding food security amidst droughts, floods, and heat stress.

Optimal practices within sustainable development and humanity's well-being are imperative. Key subjects to examine encompass groundbreaking agroforestry advancements to fortify food security. The adept management of diverse produce (fruits, nuts, fodder, timber) and ecosystem services (soil conservation, water retention, carbon sequestration).

Enhancing soil health and conservation is pivotal. Areas to examine, *inter alia*, best practices to reduce tillage, cover cropping, and organic matter integration; bolstering soil structure, fertility, and water retention. Best approaches to foster resilient soils capable of weathering extreme conditions and nurturing plant growth.

Best approaches to embracing climate-resilient crop varieties through breeding and biotechnology to ensure consistent yields. Protecting crop diversity, rotation, intercropping, and sustainably enhancing polyculture systems that bolster pest and disease management, reducing climate-related vulnerabilities should be examined for best practices and scalability.

Water-efficient agriculture involving a spectrum of sustainable irrigation techniques such as solar drip systems should be examined.

Integrating local and indigenous knowledge into agricultural practices, instrumental for resource management and climate adaptation, should be

a priority. Best approaches to implementing integrated pest management practices and encouraging natural predators to uphold crop health should be examined.

Elevating awareness, sharing knowledge, and training farmers, extension workers, and policymakers on sustainable agricultural practices and climate-smart strategies reinforce the adoption of best practices.

Capacity building and education are pivotal steps toward a resilient and sustainable agricultural future. Special attention to marginalized communities facing food inequalities will be a sharp focus of the work. Gender-focused approaches shall define how women and marginalized groups in low-income countries can be empowered in their food systems.

Energy – The work on this domain will be focused on low-income countries and affordable access to clean energy for the poorest three billion people on earth. Here the focus could be on new research and promising translational approaches in the field of energy in low-income countries and providing affordable access to clean energy for the poorest populations on Earth. Focus would include gender and social inclusion; Gender-sensitive research exploring how energy access affects women and marginalized groups in low-income countries. Understanding the unique energy needs and roles of women in households and communities is crucial for designing inclusive energy solutions that empower and uplift these groups. Integrating local and indigenous knowledges *qua* energy should be incorporated.

Areas of concern would include new approaches to developing and scaling up off-grid and mini-grid energy solutions.

Focus on decentralized systems that provide clean and reliable energy access to remote and underserved communities, reducing their dependence on traditional and polluting energy sources like kerosene and biomass; technological advancements, business models, financing mechanisms, and policy frameworks that support the deployment of off-grid and mini-grid systems.

Renewable Energy Technologies, *seriatim*, approaches to renewable energy technologies, such as solar, wind, hydro, etc. Novel approaches to affordable and efficient energy solutions tailored to the specific needs and contexts of low-income countries. Scholarly work aimed to improve the

performance, affordability, and accessibility of new sustainable technologies and viable options for the poorest populations. New approaches to adapting and localizing clean energy technologies to suit the specific needs and conditions of low-income populations, resource availability, climate, and cultural preferences. Best strategies for improving energy efficiency and promoting energy conservation practices in low-income settings.

Innovative Financing Models, *seriatim*, financing models that make clean energy solutions affordable for low-income communities, microfinance, pay-as-you-go systems, community-based financing, and public-private partnerships. The role of the donor sector in financing novel, sustainable solutions.

Policy and Regulatory Frameworks; The development of effective policy and regulatory frameworks promoting clean energy access; challenges and opportunities for creating and enabling regulatory environments that support the deployment of clean energy technologies, public-private partnerships, and the role of private sector in equitable energy distribution. **Capacity Building and Local Empowerment;** building local capacity and empowering communities to take an active role in adopting, maintaining, and benefiting from clean energy technologies.

Proven education, training, and local entrepreneurship opportunities related to energy services and technology maintenance.

Data Collection and Monitoring; Robust data collection and monitoring systems for assessing the impact of clean energy interventions on poverty reduction, health, education, and overall well-being.

CONCEPTUAL FRAMEWORK FOR DAY-II A Colloquy of Mayors and Governors

Criteria for Including Mayors and Governors:

Geographic Diversity: Mayors and governors from diverse continents, including Africa, Americas, Asia, Europe, and other regions, are invited to ensure a broad representation of global perspectives.

Vulnerability: The Roundtable includes representatives from cities and states that are particularly vulnerable to climate change impacts, such as rising sea levels, extreme weather events, or resource scarcity.

Innovative Best Practices: Mayors and governors leading cities and states with innovative best prac-

tices related to climate resilience and sustainability are invited. These practices should be demonstrably effective and have the potential for scalability in similar contexts.

Scalability: Participants are selected from cities and states that are actively engaged in scaling up solutions for climate resilience. Their efforts should showcase the potential for replicability and adaptation in other urban, rural and coastal settings.

Roundtable Discussion Areas

Water Resilience: Mayors and governors present strategies to mitigate flood and drought impacts, protect water sources, ensure clean water access, and promote equitable water distribution in their respective cities.

Air Quality and Pollution: Participants discuss innovative measures for reducing air pollution, promoting clean air initiatives, and implementing effective policies to improve urban air quality.

Sustainable Food Systems: Mayors and governors share approaches to ensure food security through sustainable agriculture, urban farming, local sourcing, and innovative distribution networks.

Clean Energy Transition: Participants showcase efforts to transition to clean and renewable energy sources, promote energy efficiency, and enhance energy access while reducing carbon emissions.

Forced Migrations and Climate Resilience: Mayors and governors address the challenges of forced migrations due to climate change, sharing insights on strategies for accommodating and supporting climate-induced migrants.

CONCEPTUAL FRAMEWORK FOR DAY-III

Social Tipping Points: Case Studies on Poverty and Forced Human Migration

Scholars in the Health Sciences, Social Sciences, Political Sciences, Law & Administration of Justice, as well as the field of Ethics, Philanthropy and others will engage on interdisciplinary work showcasing conceptual, empirical, and translational problems as well best approaches to and solutions to mitigate the impact of climate change on vulnerable populations. Said scholar with expertise in policy analysis, governance, international relations, and political economy, capable of shedding light on the political dimensions of addressing climate change and poverty with a focus on scalable solutions; Others specializing in environmental law, human

rights law, international law, immigration and refugee law and policy advocacy, shall provide legal perspectives on climate change mitigation, adaptation, and poverty alleviation. Ethicists and philanthropists will add their voices to multivocal perspectives on adaption and societal transformation to achieve climate resilience. The Sessions will also serve to foster research collaborations moving forward. Collaboration could focus on research translational work on the complex interactions between climate change health, climate and change and mass migrations, climate change and inequality; develop case studies, conduct comparative analyses, and propose policy recommendations. Future collaboration might focus on: *Policy and Advocacy Initiatives*: Develop policy briefs, white papers, and advocacy campaigns aimed at influencing policymakers, international organizations, and civil society to prioritize climate-resilient poverty reduction strategies; *Publication and Outreach*: Collaborate on academic articles, book chapters, and op-eds that highlight the linkages between climate change and poverty from different disciplinary perspectives. Engage in public outreach through media, blogs, and social media platforms.

Outcomes:

Cross-disciplinary Understandings: Gain a deeper understanding of the complex interactions be-

tween climate change, health, and forced migrations from social, political, and legal dimensions.

Develop Innovative Solutions: Develop innovative approaches, strategies, and policy recommendations that integrate social, political, ethical, philanthropic, and legal insights to mitigate climate change-related challenges.

Academic Contributions: Contribute to academic literature with interdisciplinary research outputs that enrich the understanding of climate-human adaptation linkages.

Policy Influence: Advocate for evidence-based policy changes and actions by disseminating research findings and recommendations to policymakers, NGOs, and international bodies.

Public Awareness: Raise public awareness about the intersection of climate change and poverty through various communication channels, fostering informed public discourse.

By bringing together scholars and practitioners from diverse disciplines, these sessions will offer a comprehensive and holistic perspective on the multifaceted challenges of climate change paving the way for innovative solutions and impactful policy interventions.

List of Participants



ALFORD Sr Helen
PASS President, Vice Rector of the Pontifical University of St Thomas (Angelicum), Rome



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Mayor of Valencia



BARBALHO FILHO Jäder
Minister of Cities



CHAR CHALJUB Alejandro
Mayor of Barranquilla, Columbia



BENJAMIN Antonio Herman
Chief Justice-Elect of the National High Court of Brazil (STJ)



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Pegasus Capital Advisors LP



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Clarence James Gamble Professor of Economics and Demography at the Harvard T.H. Chan School of Public Health



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Deputy Assistant to the President and Deputy for Clean Energy Innovation and Implementation, The White House



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Mayor of Venezia



CRISWELL Deanne
FEMA Administrator, USA



CARAMASCHI Renzo
Mayor of Bolzano



CROWFOOT Wade
Natural Resources Agency, California



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Responsabile degli Affari Regolatori e Istituzionali della Divisione Rest of The World di ENEL



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DOUKAS Haris
Mayor of Athens



FROST RASMUSSEN Jesper
Mayor of Esbjerg, Denmark



DREYFUS Gabrielle
Georgetown University



GALLARDO Roberto
President COPAJU & Instituto Bartolomé de las Casas



ESTY Daniel
Yale University



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Founder-CEO, Council on Energy, Environment and Water, India



FAN Chien-Te
National Tsing Hua University, Taiwan



GUALTIERI Roberto
Mayor of Rome



FARRAR Jeremy
Chief Scientist, World Health Organization



GUSTAFSSON Örjan
PAS Academician; Stockholm University, Dept. of Environmental Science and the Bolin Centre for Climate Research



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PAS Academician



FORMAN Fonna
University of California San Diego



HEALEY Maura
Governor, Commonwealth of Massachusetts



FOROUZANDEH DEHKORDI Lotfollah
First Deputy, Mayor's Office of Tehran



HIDALGO Ana Maria
Mayor of Paris



FORREST Andrew
Mining Industry, Australia



HOCHUL Kathy
Governor, New York State



HOFFER Melissa
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Governor of Catamarca



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Head of Division, Food and nutrition security



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IPCC Chair – 2023



HOULTON Benjamin
Cornell University



LEE Matthew
Ambassador of Taiwan to the Holy See



KAHVEJIAN Avak
Flagship Pioneering, Massachusetts



LELIEVELD Jos
Max Planck Institute



KALISH Andrew
Senior Vice President, Handshake)



LÉNA Pierre
PAS Academician



KERRY Vanessa
Co-founder and CEO, Seed Global Health (Seed)



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Mayor of Bologna



KHAN Sadiq
Mayor of London



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MBOW Cheikh
Directeur General, Centre de Suivi Ecologique



KIRSHEN Paul
University of Massachusetts Boston



McCARTHY Gina
Former White House Climate Advisor



MEEHAN Martin T.
President of the University of Massachusetts



METUKTIRE Raoni
Kayapó people, Brazilian Amazonia



MOHN Brigitte
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MUHINDA Jean Jacques
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NARAIN Sunita
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Mayor of Florence



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Director of the Department of Environment,
Climate Change and Health, WHO



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Governor of California



NUNES Ricardo
Mayor of Sao Paulo



ORREGO Claudio
Governor of Santiago Metropolitan Region



OTTICHILO Wilber
Governor of Vihiga County, Kenya



PALANDJIAN Tracy
CEO, Social Finance



PASSALACQUA Hugo Mario
Governor of Misiones



PICOLOTTI Romina
IGSD-USA & Argentina



**RAMANATHAN
Veerabhadran**
PAS Academician



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Mayor of Cologne



RINALDI Carla
President, Fondazione Reggio
Children - Centro Loris Malaguzzi



SALA Giuseppe
Mayor of Milano



SÁNCHEZ SORONDO Marcelo
PAS/PAS Former Chancellor



SENARRIAGA-ESTEVE Judit
UMass Boston



SHIH Wen-Chen
Deputy Minister of the Ministry
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VIANA Virgilio
PASS Academician



STONE Cathleen
James M. & Cathleen D. Stone Foundation



VON BRAUN Joachim
PAS President



STONE James
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SWAMINATHAN Soumya
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YAMANAKA Takeharu
Mayor of Yokohama



SWEENEY Timothy
President & CEO of Liberty Mutua



YU Kongjian
Peking University



TROTT Christopher
Ambassador of the United Kingdom to the
Holy See



ZAMAGNI Stefano
PASS Honorary Academician



TURKSON Peter K.A.
PAS/PASS Chancellor



ZEMPILAS Basil
Lord Mayor of Perth, Australia

Memorandum

- › **Dress Code** is business casual.
- › **Food:** We will provide coffee breaks, lunch on 15, 16 and 17 May and dinner on 15 and 17 May. If you have any food allergies or dietary requirements, please let us know in advance.
- › **Security:** Invites are strictly personal. Please remember to bring a valid ID.

FOR MORE INFORMATION

Please refer to www.pass.va and www.pas.va for further information on the Academies, the Academicians, and current and past events.

PICKUP SCHEDULE ON 15, 16 and 17 May 2024

› On 15 May:

h. 8:00 am from the *A.Roma Hotel*

h. 8:15 am from the *TH Carpegna Palace Hotel*

h. 8:45 am from the *Domus Sanctae Marthae*

to accompany participants to Casina Pio IV, seat of the Pontifical Academies of Sciences and of Social Sciences

The same buses will take you back to your hotels after dinner at 9:30 pm

› On 16 May:

h. 7:45 am from the *A.Roma Hotel*

h. 8:00 am from the *TH Carpegna Palace Hotel*

h. 8:30 am from the *Domus Sanctae Marthae*

to accompany participants to the *Synod Hall*

h. 8:45 am shuttle bus from the *Synod Hall* to the Papal Audience

The same buses will take you back to your hotels the end of the meeting at 7:00 pm

› On 17 May:

h. 8:00 am from the *A.Roma Hotel*

h. 8:15 am from the *TH Carpegna Palace Hotel*

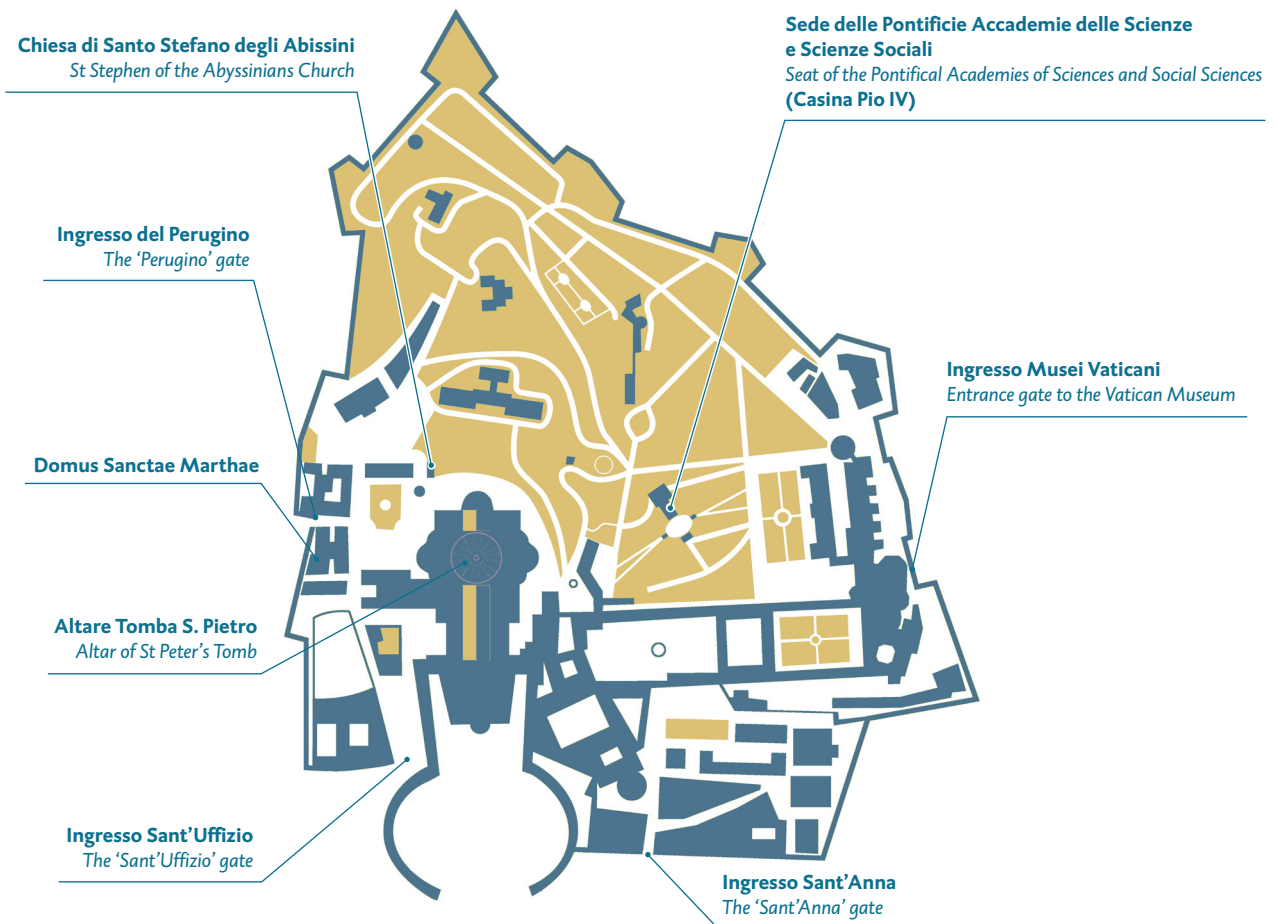
h. 8:45 am from the *Domus Sanctae Marthae*

to accompany participants to Casina Pio IV, seat of the Pontifical Academies of Sciences and of Social Sciences.

The same buses will take you back to your hotels after dinner at 9:30 pm

WI-FI

- › WI-FI network: **academy-guest**
- › Password: **G@rdens1936**



MEDIA ENQUIRIES



Journalists and media operators who wish to participate must apply, no less than 48 hours before the event, through the Holy See Press Office online accreditation System available at: press.vatican.va/accreditamenti



I giornalisti e gli operatori media che intendono partecipare devono inviare richiesta, entro 48 ore dall'evento, attraverso il Sistema di accreditamento online della Sala Stampa della Santa Sede, all'indirizzo: press.vatican.va/accreditamenti



Los periodistas y gráficos que deseen participar deben enviar una solicitud, al menos 48 horas antes del evento, a través del Sistema de acreditación online de la Oficina de Prensa de la Santa Sede, a esta dirección: press.vatican.va/accreditamenti

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