



THE PONTIFICAL
ACADEMY
OF SCIENCES



THE PONTIFICAL
ACADEMY OF SOCIAL
SCIENCES

JOINT SUMMIT ON

FROM CLIMATE CRISIS TO CLIMATE RESILIENCE

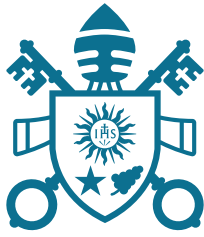
*A Vatican 3-day Summit for bending the curve
and bouncing forward to climate resilience*



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, policy-makers, 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	<i>Word of Welcome</i> 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	<i>Climate Crisis: UN's IPCC Perspective</i> Hoesung Lee IPCC Chair – 2023
9:45-10:00	<i>Climate Resilience: MAST Strategy PAS/PASS Initiative</i> Veerabhadran Ramanathan PAS Council; UC San Diego & Cornell
10:00-10:15	<i>Catastrophic Migrations: MAST Strategy</i> Marcelo Suárez-Orozco PASS Council & UMass Boston & Judit Senarriaga-Esteve UMass Boston & Spain
10:15-10:30	<i>Governing in the Age of Climate Change</i> Hon. Governor Maura Healey Commonwealth of Massachusetts
10:30-10:40	<i>Chair Perspective</i> 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	<i>Science/Societal Issues with Water</i> Sunita Narain
11:50-12:05	<i>Floods</i> Joyce Kimutai Kenya
12:05-12:20	<i>Droughts</i> Kenneth Strzepek Massachusetts Institute of Technology
12:20-12:35	<i>Sponge Planet</i> Kongjian Yu Peking University
12:35-12:50	<i>Water, Agriculture</i> Jean Jacques Muhinda AGRA, East Africa
12:50-13:00	<i>Synthesis & Next Steps</i> 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** *Air Pollution, Climate & Health***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 – FOOD**Co-Chairs: **Joachim von Braun** [PAS](#)& **Edith Ofwona Adera** [Kenya Adaptation Acceleration Program, ADB](#)**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** *Food/Gender***Edith Ofwona Adera****18:00-18:10** *Synthesis & Next Steps***Joachim von Braun****18:10-18:40** Open Discussion**SESSION V – ENERGY**Co-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](#)

Commentators (10 minutes each)

Mayor Sadiq Khan [London](#)**Chief Melissa Hoffer** [Commonwealth of Massachusetts](#)**Mayor Haris Doukas** [Athens](#)**Governor Hugo Mario Passalacqua** [Misiones](#)**20:20** Buffet Dinner Casina Pio IV

DAY 2 | THURSDAY, MAY 16, 2024

Synod Hall | Mayors and Governors Summit Presided by His Holiness Pope Francis

8:45-9:00 *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

9:00-09:15 *How do we Adapt to the Climate Crisis?*
Hon. Ana María (Anne) Hidalgo Mayor of Paris

9:15-9:30 *The Gold Standard – Climate Leadership in the Golden State*
Hon. Governor Gavin Newsom State of California

9:30-9:45 *Climate Leadership in Brazil*
Hon. Jäder Barbalho Filho Minister of Cities

9:45-10:00 *Chair's Remarks*
Hon. Deanne Criswell

SESSION VII – BEST PRACTICE IN GOVERNANCE

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

10:00-10:15 *Governance in the Age of Climate Change*
Hon. Sadiq Khan Mayor of London

10:15-10:30 *Climate Leadership in Santiago de Chile*
Hon. Governor Claudio Orrego Santiago Metropolitan Region

10:30-10:45 *Climate Leadership in the Empire State: Building Resiliency for All*
Hon. Governor Kathy Hochul New York State

10:45-11:00 *Climate Leadership in Rome*
Hon. Roberto Gualtieri Mayor, Rome

11:00-12:30 Audience with The Holy Father

12:30-13:50 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: **Governor Kathy Hochul** New York

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

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

13:50-14:05 *Governance, Energy*
Hon. Michelle Wu Mayor of Boston

14:05-14:20 *Governance, Water*
Hon. Luigi Brugnaro Mayor of Venice

14:20-14:40 Coffee Break

SESSION VIII – IN THE FRONT LINES: CLIMATE HOTSPOTS

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

14:40-16:40 *In the Front Lines* Mayors & Governors (10 mts each)
Hon. María José Catalá *Mayor, Valencia*
Hon. Takeharu Yamanaka *Mayor, Yokohama*
Hon. Hugo Mario Passalacqua *Governor, Misiones*
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)

Tracy Palandjian

16:40-18:10 *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**

Proposals from All Mayors and Governors for Next Steps (45 mts)

18:10 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 I 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 II Ethics and Equity

Co-Chairs: **Vittorio Hösle** [PASS](#)

& **Hon. Roberto Andrés Gallardo** [President COPAJU & Instituto Bartolomé de las Casas](#)

10:55-11:05 *Ethics and Climate Change*
Vittorio Hösle [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 *Papal Ethical and Scientific Foundations Constitutional and Legal Reflections*
Justice Antonio Herman Benjamin [National High Court of Brazil](#)

12:00-12:25 Open Discussion

12:25-14:25 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](#)

14:25-14:40 *Climate Finance*
Craig Cogut [Pegasus](#)

14:40-15:05 *Green Jobs for a Just Transition*
Tracy Palandjian [CEO, Social, Finance](#)

15:05-15:20 *Philanthropy*
Jim & Cathly Stone [James M. & Cathleen D. Stone Foundation](#)

15:20-15:35 *Public-Private Partnerships*
Andrew Forrest [Mining Industry, 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

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>Climate Resilient Crops</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>Weather Extremes & Mental Health</i> Jyoti Mishra Neural Engineering & Translational Lab University of California San Diego
19:25-19:40	<i>The Application of Science to Health</i> Avak Kahvejian Flagship Pioneering, Massachusetts
19:40-19:50	<i>Changing the Narrative to Health for Urgent Climate Actions: Chairs' Perspective</i> Jeremy Farrar
19:50-20:20	Open Discussion
20:20-20:35	Closing Remarks by Cardinal Turkson & PAS & PASS Presidents
20:35	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



ADERA Edith Ofwona

Kenya Adaptation Acceleration Program, ADB



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UCLA School of Education
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ALFORD Sr Helen

PASS President, Vice Rector of the Pontifical
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Pegasus Capital Advisors LP



BARBALHO FILHO Jäder

Minister of Cities



COLLINS Michael

University of Massachusetts
Chan Medical School



BENJAMIN Antonio Herman

National High Court of Brazil



CRISWELL Deanne

FEMA Administrator, USA



BERKOWITZ Michael

Executive Director, Climate Resilience Academy,
University of Miami



CROWFOOT Wade

Natural Resources Agency, California



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Clarence James Gamble Professor of
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T.H. Chan School of Public Health



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Amb. of the United States of America
to the Holy See



BRUGNARO Luigi

Mayor of Venezia



DOUKAS Haris

Mayor of Athens



CARAMASCHI Renzo

Mayor of Bolzano



DREYFUS Gabrielle

Georgetown University



CATALÁ-VERDET María José

Mayor of Valencia



ESTY Daniel

Yale University



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Chief Scientist, World Health Organization



FARRELL Justin
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GALLARDO Roberto
President COPAJU & Instituto Bartolomé de las Casas



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



GUALTIERI Roberto
Mayor of Rome



GUSTAFSSON Örjan
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Lancet-Commission, London



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Mayor of Paris



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Governor, New York State



HOFFER Melissa
Chief Commonwealth of Massachusetts



HOPPE Martin
Head of Division, Food and nutrition security



HÖSLE Vittorio
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Cornell University



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Co-founder and CEO, Seed Global Health
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KIRSHEN Paul
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JALIL Raoul
Governor of Catamarca



LABORDE David
FAO, UN



LEE Hoesung
IPCC Chair – 2023



LEE Matthew
Ambassador of Taiwan to the Holy See



LELIEVELD Jos
Max Planck Institute



LÉNA Pierre
PAS Academician



LEPORE Matteo
Mayor of Bologna



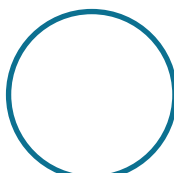
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MEEHAN Martin



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Mayor of Florence



NEIRA Maria

Director of the Department of Environment,
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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



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Veerabhadran

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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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STONE Cathleen

James M. & Cathleen D. Stone Foundation



STONE James

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Chairperson, MSSRF, Chennai



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PASS Academician



VON BRAUN Joachim
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WATERS Mary
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WOLF Marianne
PAS Academician



WU Michelle
Mayor of Boston



YAMANAKA Takeharu
Mayor of Yokohama



YU Kongjian
Peking University



ZAMAGNI Stefano
PASS Honorary Academician

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 p.m.

➤ 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*

The same buses will take you back to your hotels the end of the meeting at 6:00 p.m.

➤ On 17 May:

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

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

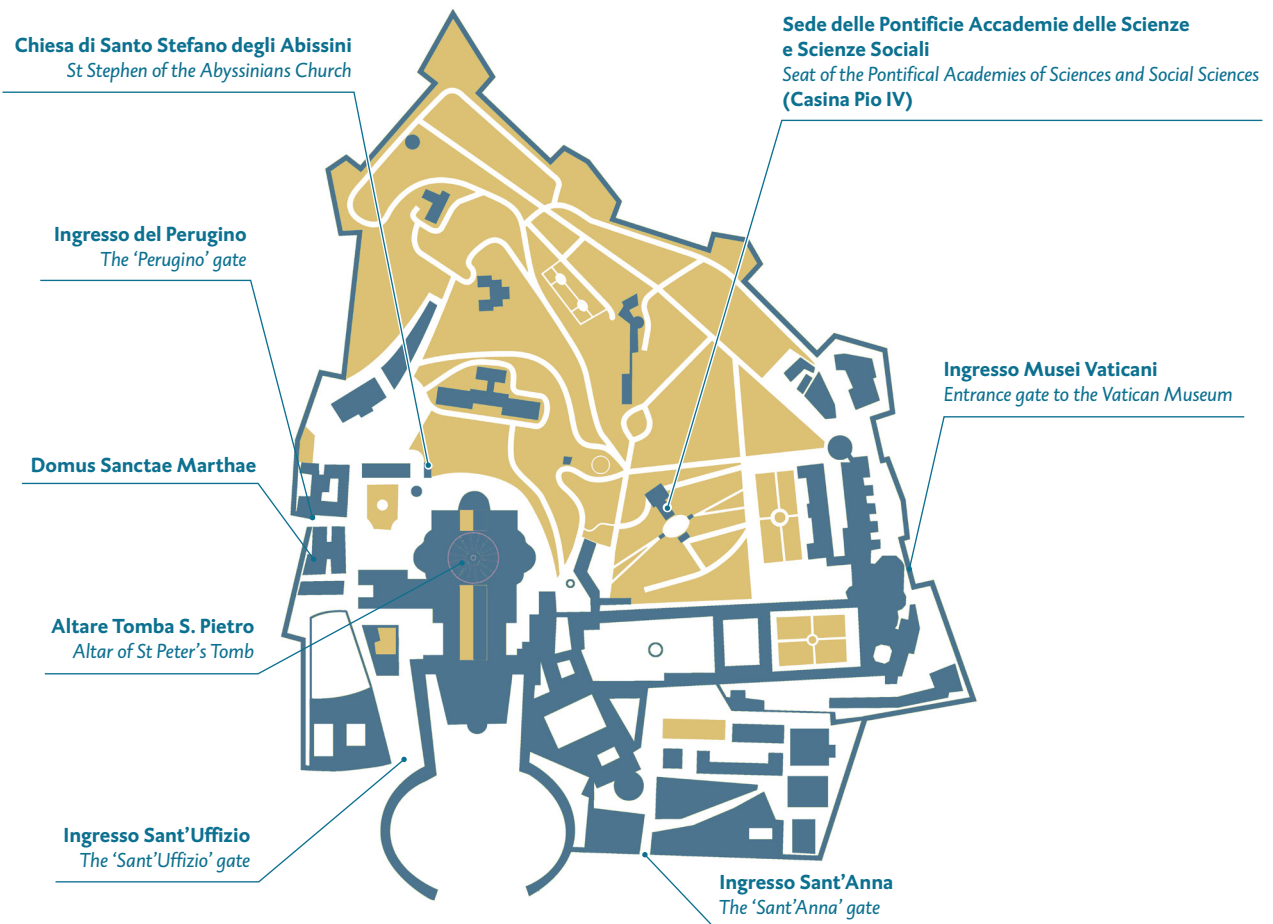
h. 8:45 am from the *Domus Sanctae Marthae*

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 p.m.

WI-FI

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



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