PMAC PRINCE MAHIDOL AWARD CONFERENCE 2026

PS 3.1

PLANET, POWER, AND PEOPLE: BUILDING JUST TRANSITIONS ACROSS GENERATIONS

| BACKGROUND

Humanity has thrived for over 10,000 years within a period of climatic stability and a resilient Earth system, which has allowed the development of advanced technologies and cultures. However, as the 2024 Planetary Health check Report shows, we are now entering a dangerous new era marked by increasing symptoms of Planet Boundaries transgressions, such as more frequent extreme weather events, wildfires, reduced plant productivity, and water scarcity. The report reveals that six out of nine PB processes have breached the safe PB levels, with all six showing trends of increasing pressure in all control variables, suggesting further boundary transgression in the near future.

These challenges are compounded by a still-growing global population that must navigate unprecedented difficulties. The relationship between population dynamics and planetary health is central to understanding global environmental change. On one hand, population growth, consumption patterns, and resource demands drive climate change through carbon emissions and ecological degradation. On the other, climate change directly impacts human health and well-being, disproportionately affecting vulnerable subgroups based on age, geography, and socio-economic status. A nuanced understanding of population size, composition, and distribution is critical for developing sustainable responses to the planetary crisis

In 2023, the global population exceeded 8 billion, with projections estimating 9 billion by 2040 and 10 billion by 2060. While rapid population growth strains resources and increases exposure to climate risks, declining fertility rates in over 55 countries by 2050 present a contrasting challenge. Some environmentalists argue that population decline could mitigate climate pressures, yet high-income, low-fertility countries remain the largest contributors to greenhouse gas emissions.

Furthermore, ageing populations reshape consumption and emissions patterns. Energy use peaks between ages 35–55, declines, and then rises again after age 70 due to longer indoor stays and larger home sizes. This demographic shift may offset expected reductions in emissions from population decline, reinforcing the need for equitable, consumption-focused climate policies. In many LMICs, large youthful populations are driving rapid urbanization, economic development, and demand for food, water, and energy. These countries often struggle with inadequate infrastructure, leading to unsustainable resource extraction, deforestation, and pollution.

The stark disparity in carbon footprints—with individuals in the U.S. and Australia emitting nearly twice as much as those in China, despite China’s total emissions being the highest—underscores the urgency of rethinking sustainability strategies beyond population growth control.

The intersection of climate change, migration, and global health is an escalating crisis, as climate-induced environmental changes force large-scale displacement. Climate migrants, displaced by rising sea levels, extreme weather, and droughts, lack formal recognition under international law, leaving them vulnerable to inadequate protection and resources. The WHO Global Research Agenda identifies the health of displaced populations in climate contexts as an urgent yet under-researched issue. Climate migration exacerbates disease burdens, introduces novel health risks, and disrupts health systems, affecting both climate migrants and broader migrant groups. Addressing this crisis requires legal recognition, healthcare access, and climate resilience strategies.

Gender dynamics further complicate the planetary health and geopolitical landscape. Climate change and environmental degradation disproportionately impact women and girls due to entrenched gender inequalities, including limited access to healthcare, economic resources, and decision-making power. For instance, UN Women estimates that by 2050, up to 158 million additional women and girls could be pushed into poverty due to climate-related shocks. In crisis contexts, women often bear the brunt of caregiving responsibilities, face increased exposure to waterborne and vector-borne diseases, and are more likely to experience food insecurity. Studies have also shown that gender-based violence and maternal health risks increase in the aftermath of climate disasters and displacement. Addressing these disparities requires integrating gender-responsive approaches into climate adaptation, health governance, and peacebuilding strategies to ensure equitable outcomes.

Young people are not only disproportionately affected by planetary crises—they are central to shaping solutions. Youth-led movements have driven global climate awareness and catalyzed political pressure for urgent action. According to the World Economic Forum, youth participation in national climate action plans and innovation platforms is growing rapidly, particularly in low- and middle-income countries. Young people are contributing to both policy and practice, developing grassroots initiatives, digital tools, and climate resilience strategies. Empowering youth through education, leadership opportunities, and co-design mechanisms is essential to bridging generational divides, promoting intergenerational justice, and accelerating transitions toward sustainable, inclusive, and climate-resilient societies.

| OBJECTIVES

This PS3.1 explores the complex interplay of geopolitical transitions, demographic shifts, and planetary health threats, focusing on how these dynamics reshape governance systems, population resilience, and global cooperation. In an era marked by polycrisis, the session seeks to identify actionable strategies and inclusive governance mechanisms that foster health equity, sustainability, and intergenerational justice. Some key questions include:

How does planetary health (climate change, energy consumption, resource depletion) impact global migration, security, and power structures?

- What governance failures/successes are accelerating/addressing climate-induced displacement, food and water crises, and migration conflicts?
- How do planetary health risks (heatwaves, water shortages, disease outbreaks) contribute to geopolitical tensions and border conflicts?

What governance models and policy responses are needed to manage the intersection of population transitions, geopolitics, and planetary health crises?

- How can regional and international bodies (e.g., ASEAN, EU, UN…) improve cooperation on planetary health and migration crises?
- What policies are needed to regulate emerging technologies, protect climate migrants, and prevent political destabilization from demographic shifts?

How do gender disparities in global governance, labor markets, and demographic transitions influence geopolitics, migration, and planetary health?

- How do gender disparities in economic participation and political power influence climate adaptation, health system resilience, and migration policies?
- What strategies are needed to ensure gender-responsive governance that integrates planetary health, economic resilience, and demographic transitions?

Panelist / Panelist

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Raya Muttarak is Professor of Demography at the Department of Statistical Sciences at the University of Bologna, Italy. She also currently serve as a member of the UN High-level Advisory Board on Economic and Social Affairs (2025-2027). In 2021, she was the director of the Population and Just Societies Program at the International Institute for Applied Systems Analysis (IIASA).

Raya's research interest is in the field of population, environment and sustainable development with a focus on differential vulnerability, adaptive capacity, human impact on the environment, migration and forecasting future demographic and socioeconomic trajectories. She is currently a principle investigator of the European Research Council (ERC) Consolidator Grant project "Population Dynamics under Global Climate Change (POPCLIMA)" (2022-2026) which aims to assess the impact of climate change on fertility, mortality and migration and forecast future populations accounting for the climate feedback.

Her services to the scientific community includes serving as Chair of the the International Union for the Scientific Study of Population (IUSSP) scientific panel on "Population Dynamics under Global Conflict and Climate Change" (2023-2025) and Chair of the IUSSP Population-Environment Research Network in 2018-2020; Chief Editor of Population and Development Review from January 2022; an editorial board member of Population and Environment and Vienna Yearbook of Population Research; and reviewer of various funding agencies including ERC Starting Grant Panel Member (2023, 2025). She has taught a wide range of undergraduate and postgraduate courses including research methods, population and health, migration and development and population and climate change and has organised various training workshops, as part of the outreach activities.

Raya holds an MSc and DPhil in Sociology from the University of Oxford and pursued her postdoctoral research at the European University Institute in Italy, winning first the Max Weber fellowship, followed by the Marie Curie Intra-European Postdoctoral Fellowship. Muttarak joined IIASA in September 2011, while also working as a research scientist at the Vienna Institute of Demography (VID)/Austrian Academy of Sciences (2011-2017). From 2017-2020, she was a senior lecturer in Geography and International Development at the School of International Development, University of East Anglia.