



Address of the PAS President to "Faith and Science: Towards COP26"



Holy Father, Religious leaders, Youth leaders, Excellences, Colleagues, Ladies and Gentlemen, We are currently facing unprecedented challenges and the environmental degradation of our common home due to climate change. Science is broadly unified on climate change issues. Now faith seems unified too. This is historic. These climate challenges are symptoms of deeper social ills and for this reason it is essential that science and faiths combine forces to address them. I am grateful to the Holy See, and the Governments of Italy and of the United Kingdom for bringing us together.

I would like to emphasize a range of four science-based sets of solutions that have been addressed in our faith and science dialogues preparing for COP26 with my fellow scientists.

First, behavioral and consumption-based solutions

We need fundamental changes in our consumption behavior to achieve resilience and fairness.

- The starting point is the promotion of ethics in consumption, including sufficiency approaches and no waste. A concept of “enough” needs promoting in the global middle classes and the wealthy, and incentivising with taxes and regulations. Faith-based organizations can play critical roles to get us there, especially engaging the youth.
- Cutting food waste is cutting GHG emissions. Sustainable dietary patterns can lead to reductions as high as 70% of GHG emissions and land use, and 50% of water use in agriculture.[1] Dietary shifts also yield benefits in health and mortality risks.

- The flip side of adjustment in consumption is to share more: Past commitments such as 100 billion USD[2] per year by high income countries for climate change adaptation in developing countries need to be delivered.
- School curricula must help children understand the complexity and interconnectedness of the ecological challenges we are facing, and must empower them as agents of change. Religious schools must teach science. The schoolchildren that joined us at the Pontifical Academy of Sciences stressed that they were not just asking for a good education but rightly insisted on their right to know, and to learn from science about the earth's future.[3]

Second, use carbon costing for smart, fair solutions

We need to get carbon pricing right. Carbon pricing should ideally be applied to all sectors, not only energy, but also, for example, to food, agriculture and housing.

- Research shows that carbon prices of USD 50-100/tCO₂ by 2030[4] would be necessary in all countries to stay well below 2°C rise. The 1.5°C goal seems no longer achievable in the foreseeable future, according to IPCC.[5]
- However, we need to address equity implications of such carbon taxing. Carbon taxing all food commodities would increase malnutrition in Sub-Saharan Africa and South Asia, hence the need to tax selectively. The poor must be protected. Sparing food groups known to be beneficial for health from taxation could help avert the negative health impacts experienced by vulnerable groups.

Third, technological solutions

We need technological innovations and breakthroughs both for mitigation and for adaptation. Since the dangerous 1.5°C warming is now projected to occur in the early 2030s, barely 10 years from now, precedence must be given to making people climate resilient.

- We already have technological solutions that can effectively help mitigate and adapt to climate change, but their adoption must be facilitated. Nature-based solutions in farming can provide 37% of the cost-effective CO₂ mitigation needed through 2030 to keep global warming below 2°C.

[6]

- In the housing and construction sectors, shifting to residential renewable energy use, climate proofing our houses, and biobased and wood-based manufacturing together can save high GHG emissions.

[7]

- New technologies for a large-scale removal of carbon from the atmosphere may become essential to reduce the climate crisis. We need to invest more in research and science to develop large-scale, reliable and sustainable carbon capture and storage technologies. We also need carbon capture and storage technologies for precautionary reasons to avoid possible tipping points and irreversibility due to climate change, as well as likely limits to adaptation that may arise at higher warming levels, for example, those connected to rapid thawing of permafrost and sea level rise.

Health-related solutions

We need to apply a “One Health” concept, meaning health of people, and health of planet – health of animals, plants, soils, and nature. Health must be central to policies that stabilize climate change below dangerous levels, as well as zero air pollution, and prevent ecosystem disruptions.

- We must pay special attention to the world’s poorest three billion, whose health is undermined by 18th century technologies to meet basic needs such as cooking, lighting, and heating and who contribute very little to climate pollution.[8] Clean energy access will void 3.8 million deaths lost to *indoor smoke* and make these 3 billion people climate resilient.
- Phasing out of fossil fuels will help save about 4 million lives worldwide per year from premature death caused by *outdoor air* pollution. [9] Regions that have reduced air pollution have achieved marked improvements in human health as a result.

[10]

- Adaptation options for future climate risks associated with water-borne and food-borne diseases include improving access to potable water, reducing exposure of sanitation systems to flooding and extreme weather events, and improved early warning systems.

In short, we must act based on

- 1) **Behavioural change**
- 2) **Carbon costing**
- 3) **Science and Technology adoption**
- 4) **One health solutions**

These four actions need to be done together, and faith and science need to jointly address all of them.

According to science, there is now a high risk that a large part of the earth will become uninhabitable in 60 years' time. This must not happen for the children who have their first birthday today, like my granddaughter Emmi.

We endorse the joint appeal. But we must move beyond appealing.

The measures in our appeal must be enforced.

Thank you.

References:

I gratefully acknowledge the insightful presentations by scientists during the sessions of "Faith and Science: Towards COP26", as well as inputs by PAS Academician V. Ramanathan.

- [1] Aleksandrowicz, L., Green, R., Joy, E. J. M., Smith, P. & Haines, A. The Impacts of Dietary Change on Greenhouse Gas Emissions, Land Use, Water Use, and Health: A Systematic Review. *PLoS One* **11**, e0165797 (2016).
- [2] UN. *Copenhagen Accord*. (2009).
- [3] *Children and Sustainable Development. Ecological Education in a Globalized World* Battro, A.M., Léna, P., Sánchez Sorondo, M., von Braun, J. (Eds.). Springer © 2017
- [4] Stiglitz, J. E., Stern, N., Duan, M., Edenhofer, O., Giraud, G., Heal, G., La Rovere, E. L., Morris, A., Moyer, E., Pangestu, M., Shukla, P. R., Sokona, Y., & Winkler, H. *Report of the high-level commission on carbon prices*. (2018).
- [5] IPCC. *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. (2021).
- [6] Griscom, B. W. *et al.* Natural climate solutions. *Proceeding Natl. Acad. Sci. United States Am.* **114**, 11645–11650 (2017).
- [7] Ivanova, D. *et al.* Quantifying the potential for climate change mitigation of consumption options. *Environ. Res. Lett.* **15**, 93001 (2020).
- [8] WHO. Household air pollution and health. (2021). Available at: <https://www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health>.
- [9] Lelieveld, J. *et al.* Effects of fossil fuel and total anthropogenic emission removal on public health and climate. *Proc. Natl. Acad. Sci.* **116**, 7192 LP – 7197 (2019).
- [10] Health of People, Health of Planet and Our Responsibility Climate Change, Air Pollution and Health. Editors Wael K. Al-Delaimy, Veerabhadran Ramanathan, Marcelo Sánchez Sorondo