Statement by International Senior Scientific Advisers Ahead of COP26

The scientific case for urgent climate action is unequivocal. The IPCC's Sixth Assessment Report *Climate Change 2021: The Physical Science Basis* showed there is no doubt human activity has warmed the ocean, atmosphere and land and the world is now 1.09°C warmer than it was in the early industrial era. Sea levels are rising, while weather extremes and their impacts such as heatwaves, excess rainfall, wildfires, flooding and droughts are more intense and more frequent. Climate modelling indicates that with every fractional increase in warming, these effects will get worse with all countries vulnerable.

The latest science tells us it is still possible to limit warming to 1.5°C by the end of the century, but only with steep reduction in global emissions by 2030 and if we reach global net zero around 2050, based on targets defined by Nationally Determined Contributions. Stabilising the climate would limit the increase of sea-level rises and probability of extreme weather events. It would improve prospects for prosperity, and protect the health of humans and natural ecosystems. It will require rapid, urgent and sustained action and significant behavioural, socioeconomic and technological transformations across the world. This must begin with rapid scale up and deployment of a wide range of existing and novel technological solutions.

Successfully mitigating climate change also requires intense international collaboration on research and innovation to develop and deliver new solutions across all sectors of the global economy. There is an urgent need for enhanced methods of creating, storing and using low-emissions energy – including improving semiconductors, batteries and low-emitting fuel production – as well as work on heating and cooling, and carbon capture and storage. More efficient, innovative and environmentally friendly methods in agriculture, industry, building and transport are also required. Further work is necessary to enhance our understanding of the interactions between biodiversity, ecosystems and climate change, to protect the natural world from further biodiversity loss and maximise its ability to store carbon. Actions should be practical and people-centred so that global transitions can be fast, efficient, equitable, respectful, affordable and inclusive. It will require investment, but immediate benefits and progress towards UN Sustainable Development Goals are achievable, including improved air quality, human health, energy security and economic opportunities. In the long term, the costs of inaction far outweigh the costs of action.

In parallel, adapting to the consequences of climate change is critical. Even at 1.5°C, essential systems will be affected, such as housing, transport, healthcare, food and water supplies, with effects greater on already vulnerable populations. Adaptation efforts today will help ensure the continued safety, security and prosperity of our communities and industries. This requires continued support for foundational research to produce accurate and timely climate models at the local, national and international level. It also requires wide-ranging research and innovation to deepen understanding of the human, political, environmental and economic impacts of climate change and enable creation of locally-led plans and actions to counter or cope with these impacts.

In November this year, Parties to the UNFCCC will come together at COP26 in Glasgow. We call on their researchers, industry leaders, policymakers and political leaders to work with communities to:

Develop ambitious scientific evidence-based Long-Term Strategies which demonstrate efforts to keep the 1.5°C temperature goal alive. These should:

- Focus on the policies and requirements – technological, socioeconomic, and financial – to pilot and scale up existing decarbonisation solutions over the next decade which will help to achieve near-term targets and Nationally Determined Contributions, while assisting in keeping 1.5°C within reach.
- Include plans to accelerate development and deployment of next-generation decarbonisation solutions that are not yet affordable, effective or available.
- Contain clear pathways for achieving emissions reductions targets, detailed sectoral policies, regular reviews of progress, and be updated as appropriate to reflect scientific and technological developments.
- Enable just transitions for sectors and communities in diverse contexts, and reflect the roles and choices of all actors and stakeholders in the green transition.

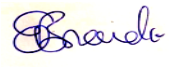
Increase international collaboration to accelerate research, development, demonstration and deployment of effective mitigation and adaptation solutions. These should:

- Build on and strengthen existing international initiatives.
- Be outcomes-focused, with regular reviews of progress, and backed by appropriate funding and staffing.
- Facilitate sharing of expertise, indigenous knowledge, and data, creating an evidence-base that helps all countries deploy existing mitigation and adaptation solutions in a locally-appropriate manner, informed by the voices of the vulnerable and marginalised.

Establish programmes to strengthen global research and innovation capacity. These should:

- Build on the range of existing initiatives to align and expand research and innovation capacity, supporting direct participation and access to innovation at all levels and across all sectors.
- Be backed by efficient financial frameworks and technology transfer systems.
- Promote greater use of evidence in decision making and support development of efficient, scalable, affordable and inclusive innovations.

Signed:

Professor Paulo Artaxo Professor of Environmental Physics, Institute of Physics, University of São Paulo, Brazil Member of IPCC	**Professor Ekanem Braide FAS** President, The Nigerian Academy of Science 
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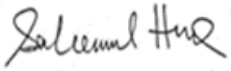
Professor Mahouton Norbert Hounkonnou President, Network of African Science Academies 	**Dr Saleemul Huq** Director, International Centre for Climate Change and Development Independent University Bangladesh 

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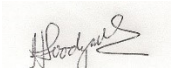
Professor Himla Soodyall Executive Officer of the Academy of Science of South Africa 	**Professor Tarmo Soomere** President of the Estonian Academy of Sciences Chair of the European Science Advisors Forum 
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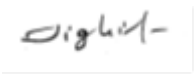
Professor Ion Tiginyanu President of the Academy of Sciences of Moldova 	**Sir Patrick Vallance** UK Government Chief Scientific Adviser 
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