"We are on a highway to climate hell with our foot still on the accelerator. Humanity has a choice: cooperate or perish. The good news is that we know what to do and we have the financial and technological tools to get the job done. "

Antonio Guterres, UN Secretary General, speaking at COP27, November 2022.

A Conversation with Great Minds

Climate Change: the role of science, technology & Innovation

26th session of the United Nations Commission on Science and Technology for Development (CSTD)

Monday 27 March 2023

12pm – 1pm (Geneva time)

Climate change is a global challenge that calls for global solutions. And we cannot address this challenge without science, technology, and innovation. These are critical adaptation tools that can be deployed to address the looming crisis that humanity is faced with. Innovation and advances in science and technology, if guided by the Sustainable Development Goals, can be used to drive the world along more sustainable and equitable pathways, particularly in the generation and use of energy. The challenge is how to scale these tools at speed to meet the needs of everyone, especially the three-and-a-half billion people who live in countries highly vulnerable to climate impacts.

On 16 March, UNCTAD published Technology & Innovation Report 2023, aptly themed *Opening Green Windows: Technological opportunities for a low-carbon world.* The report suggests that the green technology revolution offers developing countries not only the chance to build resilience and mitigate climate disaster, but also to spur economic and technological development, allowing developing countries to "leap" out of the cascade of crisis and move forward.

Green technologies – those used to produce goods and services with smaller carbon footprints – are growing and providing increasing economic opportunities, but many developing countries could miss them unless national governments and the international community take decisive action.

A green technology revolution means sharing knowledge and technologies with all countries, equally. Currently, most of the global capacity, technology and expertise is housed within a handful of countries. As the world transitions to a net-zero, resilient and just future, we cannot allow developing countries to fall behind.

This year's Conversation with Great Minds will address issues including how to prioritize R&D for climate change – especially for the most vulnerable people – how to share knowledge and technology, and what should be the role of governments and the UN to help.

Speakers

- **Prof. Hiroshi Amano (Japan),** Institute of Materials and Systems for Sustainability, Nagoya University.
- **Prof. Karen Scrivener (United Kingdom)**, Professor, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland.

Moderator

Julia Sieger, Broadcast Journalist and Presenter, France 24

Scenario

1. Moderator introduces the discussion and the speakers.
2. Speakers give 5-minutes of introductory remarks on how their work contributes to tackling climate change.
3. Round of Q&A between the moderator and speakers.
4. Questions from the audience.

Profiles (from Wikipedia)

Prof. Hiroshi Amano, Institute of Materials and Systems for Sustainability, Nagoya University.

Hiroshi Amano (born September 11, 1960) is a Japanese physicist, engineer and inventor specializing in the field of semiconductor technology. For his work he was awarded the 2014 Nobel Prize in Physics together with Isamu Akasaki and Shuji Nakamura for "the invention of efficient blue light-emitting diodes which has enabled bright and energy-saving white light sources".

Amano was elected as a member of the National Academy of Engineering in 2016 for the development of p-type gallium nitride (GaN) doping, enabling blue semiconductor LEDs.

From 1988 to 1992, he was a research associate at Nagoya University. In 1992, he moved to Meijo University, where he was an assistant professor. From 1998 to 2002, He was an associate professor. In 2002, he became a professor. In 2010, he moved to the Graduate School of Engineering, Nagoya University, where he is currently a professor.

He joined Professor Isamu Akasaki's group in 1982 as an undergraduate student. Since then, he has been doing research on the growth, characterization and device applications of group III nitride semiconductors, which are well known as materials used in blue light-emitting diodes today. In 1985, he developed low-temperature deposited buffer layers for the growth of group III nitride semiconductor films on a sapphire substrate, which led to the realization of group-III-nitride semiconductor-based light-emitting diodes and laser diodes. In 1989, he succeeded in growing p-type GaN and fabricating a p-n-junction-type GaN-based UV/blue light-emitting diode for the first time in the world.

Prof. Karen Scrivener, Professor, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland

Karen Louise Scrivener is a material chemist known for her pioneering works in cementitious materials. She is the head of Laboratory of Construction Materials at Ecole Polytechnique Fédérale de Lausanne and served as the editor-in-chief of the Cement and Concrete Research journal for 15 years.

In 1980, she graduated from the Cambridge University in Material Sciences. She earned her PhD in Materials Science from the Imperial College London in 1983 on the development of microstructure during the hydration of Portland cement under the supervision of Professor P. L. Pratt.

Scrivener worked at the Imperial College of London in the Department of Materials science until 1995 as a post-doctoral research assistant, Warren research fellow of the Royal Society and lecturer. In 1995 she decided to leave academia and joined the Central Research Laboratory of Lafarge near Lyon in France where she was a Senior Scientist and then Head of Calcium Aluminates Department. Since 2001 she has been a Full Professor and head of the Laboratory of Construction Materials in the Institute of Materials Science and Engineering at EPFL, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland.

In 2005, she became the editor in chief of the peer-reviewed journal Cement and Concrete Research and has since become a member of its Honorary Editorial Board. Karen Scrivener was elected Fellow of the Royal Academy of Engineering in 2014.

Scrivener plays an active role in promoting sustainable cements, in the form of blended cements. She co-authored with Vanderley M. John and Ellis M. Gartner with the support of the UNEP-SBCI (The United Nations Environment Programme – Sustainable Building and Climate Initiative), a reference report summarizing the main conclusions on the most viable low-CO2, eco-efficient cement-based materials for the future of construction.

In 2004, she founded Nanocem, a consortium of 23 academic and 10 industrial partners interested in fundamental research of cement and concrete and still serves as the principal coordinator. In collaboration with the Universidad Las Villas of Santa Clara, IIT Delhi, the Swiss Development and Cooperation and many international cement producers, she developed the LC3 project (Limestone Calcined Clay Cement) to produce a new type of low cost and low carbon cement.