

Global Forum on Nuclear Education, Science, Technology and Policy



A Global Nuclear Science and Engineering Commencement

*2021 Theme: The important role of early career nuclear
graduates in fighting climate change*

Programme and Speaker Biographies

**Virtual event
4 June 2021**

Forewords



The NEA launched the Global Forum for Nuclear Education, Science, Technology, and Policy in January 2021 to bring the insights of academia into the multinational deliberations and activities of the NEA.

Nuclear energy is poised to play an important role in the world's transition away from fossil fuels and towards a carbon neutral energy future. As such, many important issues and considerations face the nuclear sector. The unique voice of the academic community will enhance the global discussion – particularly as we focus on the need to usher forth new generations of experts in many science and technology fields related to nuclear science and engineering. The institutions that participate in the Global Forum for Nuclear Education act as a direct connection to the students who are the future of the nuclear sector.

With this in mind, the Nuclear Energy Agency, under the auspices of the Global Forum for Nuclear Education, looks forward to this Global Nuclear Science and Engineering Commencement as a way to uplift and celebrate these impressive young people. Throughout the duration of the COVID-19 pandemic, students around the world have demonstrated resiliency and commitment. Despite the challenges, these students and their educators have carried on and completed their academic plans.

I am, therefore, pleased welcome to students and professors and researchers from around the world to this Global Nuclear Science and Engineering Commencement. On behalf of the NEA, our members, and the global nuclear community, we congratulate you for your accomplishments and are excited to see what innovations and fresh thinking you will bring to the world as you take the next steps in your academic endeavours or begin your professional careers. The challenges are many but the opportunities are unlimited.

William D. Magwood, IV,
Director-General
OECD Nuclear Energy Agency (NEA)



As the first Chair of the Council of Advisors of the Global Forum for Nuclear Education, Science, Technology, and Policy, it is my great pleasure to welcome participants from around the world to this Global Commencement on

Nuclear Science and Engineering. This event is designed to highlight the possibilities of a career in the nuclear sector and multitude of options that lay before the next generation of nuclear professionals.

This year's virtual commencement theme is "The role of early career nuclear graduates in fighting climate change." The challenge of climate change has become one of the highest international priorities facing the world today and it is imperative the next generation of nuclear experts understands and leads intersections of nuclear and clean energy.

It is my hope is that this event will come to symbolise the important work and opportunities that will be undertaken by the Global Forum for Nuclear Education as it strives to develop platforms for co-operation to enhance nuclear science and technology education around the world and to advocate for students – both current and those of the future – who will lead the way toward a brighter and more sustainable tomorrow.

With this Virtual Global Commencement, we celebrate our students and propel them to the next steps in their careers and to tremendous opportunities they will encounter in the decades to come.

Richard Lester
Associate Provost, Massachusetts Institute of Technology (MIT) and Chair of the Global Forum's Council of Advisors

The important role of early career nuclear graduates in fighting climate change

Introduction

The Coronavirus (COVID-19) pandemic has interrupted many aspects of everyday life, including the opportunity for many students across the globe to celebrate their graduation through an in-person commencement ceremony. This year many students may not receive traditional graduation ceremonies and festivities, while transitioning to professional careers or to graduate studies.

At the same time, the world is also faced with the challenge of reducing CO₂ emissions. As the single largest source of non-emitting electricity in the developed world, nuclear energy plays a very important role in climate change mitigation. And today's nuclear science and technology graduates will play a large role in decarbonising the electricity sector and paving way for a clean energy future.

In this context, the NEA Global Forum on Nuclear Education, Science, Technology and Policy is organising an online event to celebrate and recognise the accomplishments of the global nuclear science and technology graduating class of 2021.

Registration

In order to register to the event, you will have to access the following link: https://oecd-nea.zoom.us/webinar/register/WN_zLKqEzc9T2CkRpRO_H8f4g

Programme

4 June 2021

9:00-10:30 and 16:30-18:00 (Central European Summer Time)

- Welcoming remarks: **William D. Magwood, IV**, NEA Director-General
- Keynote: **Richard K. Lester**, Japan Steel Industry Professor and Associate Provost at the Massachusetts Institute of Technology (MIT)
- Charge to the graduates: **Karen Astrid Hallberg**, Professor of Physics at the Balseiro Institute and Research Director at the Bariloche Atomic Centre in Argentina
- Salute from the nuclear industry: **John L. Hopkins**, Chairman and Chief Executive Officer, NuScale Power

Session 1: 9:30-10:30 CEST

- **Ryugo Hayano**, Professor Emeritus, University of Tokyo
- **Sylvie Retailleau**, President of Paris-Saclay University
- **Arun Khuttan**, End States Engineer at Magnox Ltd and COP26 Lead for Nuclear Institute's Young Generation Network (NI YGN)
- **Ekaterina Bogdanova**, PhD student and Research and Development Engineer at the National Research Nuclear University, Moscow Engineering Physics Institute (MEPhI)

Session 2: 17:00-18:00 CEST

- **Louis Martin-Vega**, Dean of Engineering, North Carolina State University
- **Pushker A. Kharecha**, Deputy Director and Associate Research Scientist, Climate Science, Awareness and Solutions, The Earth Institute
- **Jessica Lovering**, Co-Founder and Co-Executive Director at the Good Energy Collective
- **Larissa Shasko**, Climate Change Energy Policy Researcher and PhD student, University of Saskatchewan

Session 1 - Friday, 4 June 2021 (9:00-10:30 CEST)

9:00 **Check-in and introduction**

9:05 **Opening remarks**

[William D. Magwood, IV](#), NEA Director-General

Keynote speaker

[Richard K. Lester](#), Japan Steel Industry Professor and Associate Provost at the Massachusetts Institute of Technology (MIT)

Charge to the graduates

[Karen Astrid Hallberg](#), Professor of Physics at the Balseiro Institute and Research Director at the Bariloche Atomic Centre in Argentina

Salute from the nuclear industry

[John Hopkins](#), Chairman and Chief Executive Officer, NuScale Power

9:35 **Featured remarks**

[Ryugo Hayano](#), Professor Emeritus, University of Tokyo

[Sylvie Retailleau](#), President of Paris-Saclay University

[Arun Khuttan](#), End States Engineer at Magnox Ltd and COP26 Lead for Nuclear Institute's Young Generation Network (NI YGN)

[Ekaterina Bogdanova](#), PhD student and Research and Development Engineer at the National Research Nuclear University, Moscow Engineering Physics Institute (MEPhI)

10:00 **Question and answer session**

10:15 **Closing remarks**

~10:25 **Commencement concludes**

Session 2 - Friday, 4 June 2021 (16:30-18:00 CEST)

16:30 **Check-in and introduction**

16:35 **Opening remarks**

[William D. Magwood, IV](#), NEA Director-General

Keynote speaker

[Richard K. Lester](#), Japan Steel Industry Professor and Associate Provost, Massachusetts Institute of Technology (MIT)

Charge to the graduates

[Karen Astrid Hallberg](#), Professor of Physics at the Balseiro Institute and Research Director at the Bariloche Atomic Centre in Argentina

Salute from the nuclear industry

[John Hopkins](#), Chairman and Chief Executive Officer, NuScale Power

17:05 **Featured remarks**

[Louis Martin-Vega](#), Dean of Engineering, North Carolina State University

[Pushker A. Kharecha](#), Deputy Director and Associate Research Scientist, Climate Science, Awareness and Solutions, The Earth Institute

[Jessica R. Lovering](#), Co-Founder and Co-Executive Director at the Good Energy Collective

[Larissa Shasko](#), Climate Change Energy Policy Researcher and PhD student, University of Saskatchewan, Canada

17:30 **Question and answer session**

17:40 **Closing remarks**

~17:55 **Commencement concludes**

Speaker biographies



William D. Magwood, IV
Director-General, OECD Nuclear Energy Agency (NEA)

William D. Magwood, IV is the Director-General of the OECD Nuclear Energy Agency (NEA) since September 2014. Prior to this position, he served from 2010 to 2014 as one of the five Commissioners appointed by the US President and confirmed by the US Senate to the US Nuclear Regulatory Commission (NRC). From 2005 to 2010, he provided independent strategic and policy advice on energy, environmental and technology policy issues.

From 1998 to 2005, Mr Magwood was Director of Nuclear Energy at the US Department of Energy (DOE). During his tenure, he launched several important initiatives including the Generation IV International Forum (GIF). He began his career working as a scientist for Westinghouse and managing electric utility research and nuclear policy programmes at the Edison Electric Institute in Washington, DC. Mr Magwood, a US national, holds Bachelor's degrees in Physics and English from Carnegie Mellon University and a Master of Fine Arts from the University of Pittsburgh.



Richard K. Lester, Japan Steel Industry Professor and Associate Provost at the Massachusetts Institute of Technology (MIT)

Richard Lester is the Japan Steel Industry Professor and Associate Provost at the Massachusetts Institute of Technology (MIT), where he oversees the international activities of the Institute. From 2009 to 2015 he served as head of MIT's Department of Nuclear Science and Engineering. He is the founding director and faculty chair of the MIT Industrial Performance Center. Professor Lester's research focuses on innovation strategy and management, applied most recently to the problem of deep decarbonisation of the energy sector. He is also widely known for his research on nuclear technology innovation, management and control. Dr Lester holds an undergraduate degree in chemical engineering from Imperial College and a Ph.D. in nuclear engineering from MIT. He is the author or co-author of eight books, including *Unlocking Energy Innovation: How America Can Build a Low-Cost, Low-Carbon Energy System*, and *The Productive Edge: A New Strategy for Economic Growth*. From 2015 to 2019 he served as Chair of the National Academies' Board on Science, Technology, and Economic Policy.



Ekaterina Bogdanova, Research and Development Engineer at the National Research Nuclear University, MEPhI

Ekaterina Bogdanova is currently a PhD student studying Nuclear Technology at Moscow Engineering Physics Institute (MEPhI). In 2017 she received a Master's degree in Nuclear Reactors and Materials from MEPhI.

She is currently an Engineer at the Institute of Nuclear Physics and Engineering at the National Research Nuclear University within MEPhI.

In 2018 she took part in a NEA Internship where she contributed in the calculations of a multiphysics benchmark and development of a relational database. In 2020, she travelled to Tokyo Institute of Technology in Japan to work on the improvement to critical safety technology for Fukushima Daiichi NPS decommissioning.

Her current research interests include engineering and multiphysics computer modelling in nuclear technology, Monte Carlo calculations and, neutronics and thermal hydraulics codes verification.



Karen Astrid Hallberg, Professor of Physics at the Balseiro Institute and Research Director at the Bariloche Atomic Centre

Karen Astrid Hallberg is an Argentine Professor of Physics at the Balseiro Institute. She is Principal Researcher of the National Scientific and Technical Research Council (CONICET) at the Bariloche Atomic Centre and a 2019 L'Oréal-UNESCO Award for Women in Science Laureate. Prof Hallberg is an expert in quantum condensed matter physics, the study of the structure and behaviour of matter. She has developed and improved numerical tools, including the "Density Matrix Renormalisation Group" technique, to calculate the precise physical properties of novel materials at the microscopic level.

She received a degree in physics from the National University of Cuyo, and a PhD in physics from the Balseiro Institute. After her PhD, Hallberg moved to Germany to work as a postdoctoral researcher at the Max Planck Institute for Solid State Research (MPI-FKF) and at the Max Planck Institute for the Physics of Complex Systems (MPI-PKS). Hallberg returned to the Bariloche Atomic Centre in 1997, where she served as Head of the Condensed Matter Department. She is also an International Councillor of the American Physical Society, a member of the World Economic Forum's Global Future Council on Quantum Applications, a Senior Associate of the International Centre for Theoretical Physics (ICTP) and of the International Center for Theoretical Physics-South American Institute for Fundamental Research (ICTP-SAIFR).



**Ryugo Hayano, Professor Emeritus, University of Tokyo
and Chairman of Suzuki Method**

Ryugo Hayano is Professor Emeritus at the University of Tokyo. He has been the spokesperson of an “antimatter” research team called “ASACUSA”, at CERN’s antiproton decelerator facility, since 1997. In 2008, he received the Nishina Memorial Prize, the most prestigious physics prize in Japan, for his study.

Since March 2011, his twitter account focused on the Fukushima Daiichi accident and attracted some 150 000 followers; his activities in Fukushima include systematic measurement of school lunch for radiocaesium, study of internal exposures using whole body counters, development of a whole-body counter for small children (BABYSCAN), and comparison of external radiation doses of high school students living in Fukushima, outside of Fukushima, France, Poland and Belarus. He is also known as the author of the book *We want to know - A conversation about radiation and its effects in the aftermath of the accident.*



**John L. Hopkins
Chairman and Chief Executive Officer, NuScale Power**

John L. Hopkins is Chairman and Chief Executive Officer of NuScale Power, LLC, a leading US-based advanced small modular reactor technology development company.

Hopkins is currently serving as chairman of the Organization, Compensation and Succession Planning Committee of the US Chamber of Commerce, Washington, D.C.

Prior to joining NuScale in 2012, Hopkins was with Fluor Corporation since 1989, one of the world’s largest publicly traded engineering, procurement, fabrication, construction and maintenance companies. Hopkins held numerous leadership positions in both operations and business development globally.



**Pushker Kharecha, Deputy Director and Associate Research Scientist,
Climate Science, Awareness and Solutions, The Earth Institute**

Pushker Kharecha is a climate scientist who is fascinated by many aspects of Earth science. His interests encompass a wide range of temporal and spatial scales and his primary motivation is conducting policy-relevant scientific research. Although his doctoral work related to astrobiology and the Earth's primeval biosphere, when he joined the NASA Goddard Institute for Space Studies and Columbia Earth Institute in 2005 he shifted his focus to human-caused climate change. His research focuses on the human dimensions of the global carbon cycle, including the impacts of fossil fuel use and land use on climate. He is particularly interested in analyzing empirical data on energy and land use and developing climate change mitigation scenarios. Dr Kharecha has lead/co-authored multiple high-profile scientific papers and has served as a lead author on a major UN Environment Programme publication (*Global Environment Outlook-5*). He has also participated in numerous education, public and media outreach activities.



**Arun Khuttan, End States Engineer at Magnox Ltd and COP26
Lead for Nuclear Institute's Young Generation Network (NI YGN)**

Arun Khuttan is part of the UK Nuclear Institute's (the country's professional body for the industry) Young Generation Network (YGN) and is co-ordinating an international response in concert with the YGN's European counterpart of young atomic power advocates at COP26. He is also a member of the Next Generation Nuclear Industry Council.

He has gained a strong understanding of the energy sector through a MEng in Chemical Engineering and an MSc in Nuclear Engineering. He has completed a range of placements including a research project at the Australian Nuclear Science and Technology Organisation (ANSTO), in decommissioning, next generation nuclear reactors such as those at Moltex and new nuclear build such as at Hinkley Point C in the United Kingdom. He is now working at Magnox Ltd working to ensure the safe and secure clean-up of 12 nuclear sites.



**Jessica Lovering, Co-Founder and Co-Executive Director
at the Good Energy Collective**

Jessica Lovering is a Co-Founder and Co-Executive Director at the Good Energy Collective, a progressive research organisation focused on developing policy for advanced nuclear to contribute to deep decarbonisation of the global economy.

She completed her doctorate at Carnegie Mellon University in Engineering and Public Policy. There she studied policies concerning commercial nuclear exports and the deployment of advanced reactors, particularly microreactors smaller than 10 MW.

She is a non-resident fellow with the Energy for Growth Hub in Washington, DC, where her work focuses on the potential role for advanced nuclear in emerging economies. She is also a fellow with University of Michigan's Fastest Path to Zero Initiative.



**Louis Martin-Vega
Dean of Engineering, North Carolina State University**

Louis Martin-Vega is the Dean of Engineering at NC State University in Raleigh, North Carolina. With over 10 500 students, 750 faculty and staff members and more than USD 200 million in annual research expenditures, NC State's College of Engineering is internationally recognised for the excellence of its research, education and outreach programmes. Ranked 12th among US public colleges of engineering, it houses the 3rd highest ranked Nuclear Engineering Department in the country.

He was elected as a member of the National Academy of Engineering (NAE) in 2021. In 2011 he was inducted into the Hispanic Engineering National Achievement Hall of Fame for his commitment to college education and the promotion of diversity. A Fellow of AAAS, IISE, and SME he is also a past President of ASEE and has held several prestigious positions at NSF including Acting Head of its Engineering Directorate.

He received his BS in Industrial Engineering (magna cum laude) from the University of Puerto Rico at Mayaguez, an MS in Operations Research from New York University and M.E. and PhD degrees in Industrial and Systems Engineering from the University of Florida.



Sylvie Retailleau
President of Paris-Saclay University

Sylvie Retailleau is a University Professor and Professor of Physics at Paris-Saclay University. An alumnus of ENS Cachan, Sylvie Retailleau was admitted to the agrégation de physique appliquée in 1988 and obtained a PhD in science from Université Paris-Sud in 1992. Since 2001, she has held a professorship at the Université Paris-Sud, now Paris-Saclay University. She was in charge of the IST (Information, Systems, Technology) Master's degree until 2008, as well as the research operation "Integrated Quantum Components for Nanoelectronics" at the Institut d'Electronique Fondamentale (now C2N) since its creation in January 2002 until 2011.

Vice-President of the Physics Department of the Orsay Faculty of Sciences from 2007 to 2008, then Vice-Dean in charge of training from 2008 to 2011, she was Dean of the Faculty from September 2011 to May 2016. Sylvie Retailleau was President of Université Paris-Sud from May 2016 to December 2018, and President of Paris-Saclay University from 2019.



Larissa Shasko, PhD student, University of Saskatchewan and Nuclear Education, Skills and Technology Framework Fellow

Larissa Shasko is a PhD candidate at Johnson Shoyama Graduate School of Public Policy at the University of Saskatchewan in Canada. Her research areas include risk perceptions of low-dose radiation exposure, energy justice, and public engagement. Her PhD thesis focuses on using fuzzy cognitive mapping in the development of a youth-led engagement strategy for energy system transition, climate change, and small modular reactors (SMRs). As part of her NEST fellowship, she participated in the 2020 Small Modular Reactor Hackathon that was organised under the umbrella of the NEST SMR project hosted by the NEA and the Natural Sciences and Engineering Research Council of Canada (NSERC).

