

## Seminar Invitation:

**The World in 2050: Transformation Toward a Sustainable Future for All****Nebojsa Nakicenovic**

Vice Chair, Group of Chief Science Advisors to European Commission  
Distinguished Emeritus Scholar and Former Deputy Director General IIASA  
Former tenured Professor of Energy Economics TU Wien

**Date:** Wednesday, October 18, 2023

**Time:** 2 p.m.

**Location:** Ronald Tutor Campus Center, TCC227

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**Abstract:** Humanity is facing formidable challenges from war and food insecurity to pandemic and ever-increasing pressure on the Earth systems including climate change. With the adoption of the United Nations 2030 Agenda with its 17 Sustainable Development Goals and the Paris Climate Agreement back in 2015 there appeared resolve to achieve aspirational and ambitious vision of a safe and just future for all within planetary boundaries – a world free from hunger, injustice, and poverty, leading to universal education, health, and employment with inclusive economic development, based on transparency, dignity and equity. Seven years have passed and only seven to go till 2030. A lot has been achieved but not nearly enough given the Herculean task ahead and formidable immediate challenges and crises. An important example is climate change. To achieve the Paris Agreement, greenhouse gas emissions need to be halved every decade and approach net zero by the middle of the century, in less than three decades, while the global emissions are still increasing at an unprecedented rate. Transformation toward a sustainable future for all is still possible but the world is still going in the other direction. These challenges cannot be resolved in isolation or in “silos”. Evidence is accumulating that this can only be achieved through a systemic and holistic approach and is no longer possible through incremental, detached, and partial solutions. We argue that a safe and just future for all can be achieved through disruptive and inclusive change about people, societies and about values and behaviors. This will require “doing more with less” – efficiency and sufficiency of providing more services with less resources and impacts on the Earth system – a new integrated, systemic, and holistic pathways to achieve the grand transformation.

This is the objective of The World In 2050 ([www.TWI2050.org](http://www.TWI2050.org)) initiative. Central is the development of transformational pathways toward achieving all 17 SDGs and Paris Agreement using an integrated and systems approach. The pathways harness the synergies and multiple benefits across SDGs, and approaches to governing this sustainability transformation. TWI2050 identifies six transformations which will allow achieving the SDGs and long-term sustainability to 2050 and beyond: i) Human capacity and demography; ii) Consumption and production; iii) Decarbonization and energy, iv) Food, biosphere and water; v) Smart cities and vi) Digital revolution.

The last TWI2050 report focuses on the Digital Revolution along with the other five transformations as potential enablers of the 17 SDGs. It analyzes the potential integration of digital technologies into new systems and human activities and the ongoing advances in AI, connectivity, digitization of information, additive manufacturing (3D printing), virtual reality, Internet of things (IoT), machine learning, block chain, robotics, quantum computing and synthetic biology. A good example of the power of digitalization is the disruptive nature of information and communication technologies (ICT) and their gigantic potential effect in enabling fundamentally new human activities while reducing specific energy and materials requirements as well as greenhouse-gas emissions compared with the analogue devices they replace.

Humanity may be moving toward new civilizational thresholds. Super-intelligent machines like the convergence of quantum computing and AI might even develop a “life” of their own, with the capacity both to harm and benefit human agents. The digital transformation calls for a comprehensive “social steering”, a set of regulatory standards and normative frameworks, physical infrastructure, and digital systems, to capture the benefits of the digital revolution while avoiding the many potential downsides. An essential priority should be to develop science, technology, and innovation roadmaps to better understand the potential benefits and dangers of digitalization and how to leverage the digital revolution toward sustainable development for all. The principles of digital transformation for sustainable development have yet to be written as humanity embarks on the fundamental transformation. If the potential opportunities are seized, the transformational change would benefit people and the planet.

**Bio:** Nebojsa Nakicenovic is the Vice Chair of the Group of Chief Scientific Advisors to the European Commission; Distinguished Emeritus and Honorary Scholar of the International Institute for Applied Systems Analysis (IIASA) where he was the Deputy Director General and Acting Director General; and former tenured Professor of Energy Economics at Vienna University of Technology.

He is Executive Director of The World In 2050 (TWI2050), and a member of the Earth Commission by Future Earth.

Other positions include member of the U.S. National Academies Roundtable on Science and Technology for Sustainability; Scientific Advisory Board of the Potsdam Institute for Climate Impact Research; Fondazione Eni Enrico Mattei; the Austrian Institute for Economic Research; Steering Committee of the Renewable Energy Policy Network 21; Advisory Board of the Austrian World Summit; and Member UN Ad Hoc Informal Multi-stakeholder Technical Group of Advisors on Sustainable Development Goal 7.

Previous positions encompassed research in support of the European Commission including as a coauthor of 2022 Horizon Europe and New European Bauhaus NEXUS report; Director of the Global Energy Assessment; Co-Chair of the Global Carbon Project; author of the IPCC since its First Report, Convening Lead Author of the Special Report on Emissions Scenarios, of IPCC Second, Third, Fourth and Fifth Assessment Reports; Member of the German Government's Advisory Council on Global Change (WBGU); Co-Chair of the first Austrian Climate Change Assessment; Chair of the Advisory Board of OMV Future Energy Fund, established to support innovative and sustainable energy investments; Member of the UN Secretary General's Advisory Group on Energy and Climate Change and of UN Secretary General's 10- Member Group to support the Technology Facilitation Mechanism.

Dr. Nakicenovic's research interests include patterns of technological change including the evolution of energy, mobility, settlements, digital technologies, economic development, and climate change.

He holds bachelor and master degrees in economics and computer science from Princeton University and the University of Vienna, where he also completed his Ph.D., and Honoris Causa Ph.D. degree in engineering from the Russian Academy of Sciences.

Google Scholar documents 838 publications by Dr. Nakicenovic with some 66 thousand citations. He serves on the Editorial Boards of ten peer-reviewed scientific journals and previously on another ten.

Dr. Nakicenovic is a recipient of the Austrian Grand Decoration in Silver; the 2007 Nobel Peace Prize jointly with other authors of the IPCC, and of the 2005 Sheikh Zayed Environmental Award jointly with authors of the Millennium Ecosystem Assessment.

He is Fellow of the World Academy of Art and Science, Luohan Academy, and the International Science Council, and Member of the Academia Europaea, Montenegrin Academy of Sciences and Arts, the International Academy for Systems and Cybernetic Sciences, and the Earth League.