



Global Nexus Initiative
Where Climate, Nuclear, and Security Meet



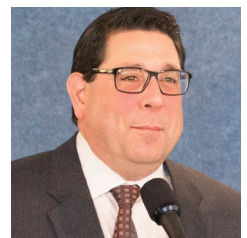
Executive Summary

Nuclear Power for the Next Generation:

Addressing Energy, Climate, and Security Challenges

Executive Letter

The Global Nexus Initiative (GNI) was created to examine the complex challenges posed by the intersection of climate change, energy demand, and global security. It is a partnership between two important nuclear stakeholders, the Partnership for Global Security (PGS), a think tank with a long history of offering innovative solutions to global nuclear security challenges, and the Nuclear Energy Institute (NEI), a nuclear industry association that supports the beneficial use of nuclear technology and advocates for policy on issues affecting the nuclear industry. GNI brought together for the first time a diverse and distinguished working group of nuclear industry executives and climate change, energy, and global security experts. It succeeded in crafting actionable recommendations that will ensure the safe and secure use of existing and new nuclear energy sources, support economic vitality, and protect people and the environment.



Based on our first two years of work, GNI has confirmed that it will be extremely difficult, if not impossible, to meet the goal of the Paris Agreement on climate change to limit temperature increases and decarbonize the global energy sector without a significant contribution from nuclear power. But, it also determined that it will be daunting to deploy nuclear power on the scale needed and with the public confidence required unless significant changes are made in the way the technology is brought to market and governed.

Concentrations of greenhouse gases in the earth's atmosphere are at their highest level in recorded history.¹ In recognition of this, GNI has endorsed the four major approaches to decarbonize the global energy system: energy efficiency, renewable energy, nuclear power, and carbon capture and sequestration. It focused on the zero carbon output provided by nuclear power and how it can be sustained and increased in the future. The initiative supports the maintenance of the existing reactor fleet as long as it remains safe and secure. It identified a framework for the deployment of advanced reactors, including small modular types, and the importance of market forces in the decision making about these reactors. It underscored the need for rapid development of sound policy and regulation to accompany these new technologies.

The group believes that the global nuclear governance system must evolve and be strengthened to support nuclear power's sustained clean energy contributions and expand access to electricity in the 21st Century. GNI recognizes the significant geopolitical implications of nuclear power for international security and the global economy. It noted the importance of minimizing risks associated with the nuclear fuel cycle, and it was concerned about the challenges posed by emerging markets and new suppliers.

This report is a distillation of the issues examined in a series of workshops and three major policy memos that offered 22 recommendations. These proposals were produced through a process that had as a core principle: no artificial consensus or ideological preconceptions. So, while not all participants agreed with every proposal, there is agreement that action must be taken on the four key policy findings and recommendations that have been produced by PGS and NEI in this report.

Sincerely,



Kenneth N. Luongo
President, Partnership for
Global Security



Maria Korsnick
President, Nuclear Energy Institute

¹ [IPCC, 2014: Climate Change 2014: Synthesis Report](#). Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland; [Headline statements from the Summary for Policymakers](#), Climate Change 2014 Synthesis Report, IPCC, November 5, 2014.

Findings and Recommendations



1. Nuclear Power is Necessary to Address Climate Challenges

Nuclear power, in addition to other clean energy technologies, is essential to meet increasing global clean energy demands. Cutting carbon emissions while powering the 21st Century will require preserving the existing nuclear fleet, replacing many reactors by midcentury, and constructing new, advanced reactors. Deploying the next generation of technologically advanced reactors in the next 10-15 years will require three significant evolutions – new policies; an innovative, effective regulatory system; and a bold private-public financial partnership.



2. Nuclear Governance Needs Significant Strengthening

Nuclear governance – the global framework of international and national laws, regulations, recommendations, and operating practices that support nuclear safety, security, and nonproliferation – must be strengthened if nuclear power is to continue being a major provider of zero carbon energy. Nuclear challenges are constantly evolving and the governance system is increasingly under novel pressures from new suppliers, newcomer nations, and non-state actors. Strengthening public confidence through enhanced safety and security measures is essential. Governments, international institutions, the nuclear industry, and civil society need to work together to create effective, credible, and rapid governance responses to these new realities.



Findings and Recommendations

Continued



3. Evolving Nuclear Suppliers Impact **Geopolitics**

Nuclear power is a significant element of a country's geopolitical influence. There are long timeframes and deep relationships that are developed in the course of building and operating a nuclear plant and through the exchange of technologies. Traditional nuclear leaders, including the United States and its allies, need to recognize and elevate the importance of supplying the international nuclear marketplace in their geopolitical strategies to meet the economic and political ambitions of other nations that may not share their deep commitment to upholding effective nuclear norms. The control of market share translates into the power to create nuclear governance rules and prevent commercial competition from eroding vital safety, security, and nonproliferation standards.



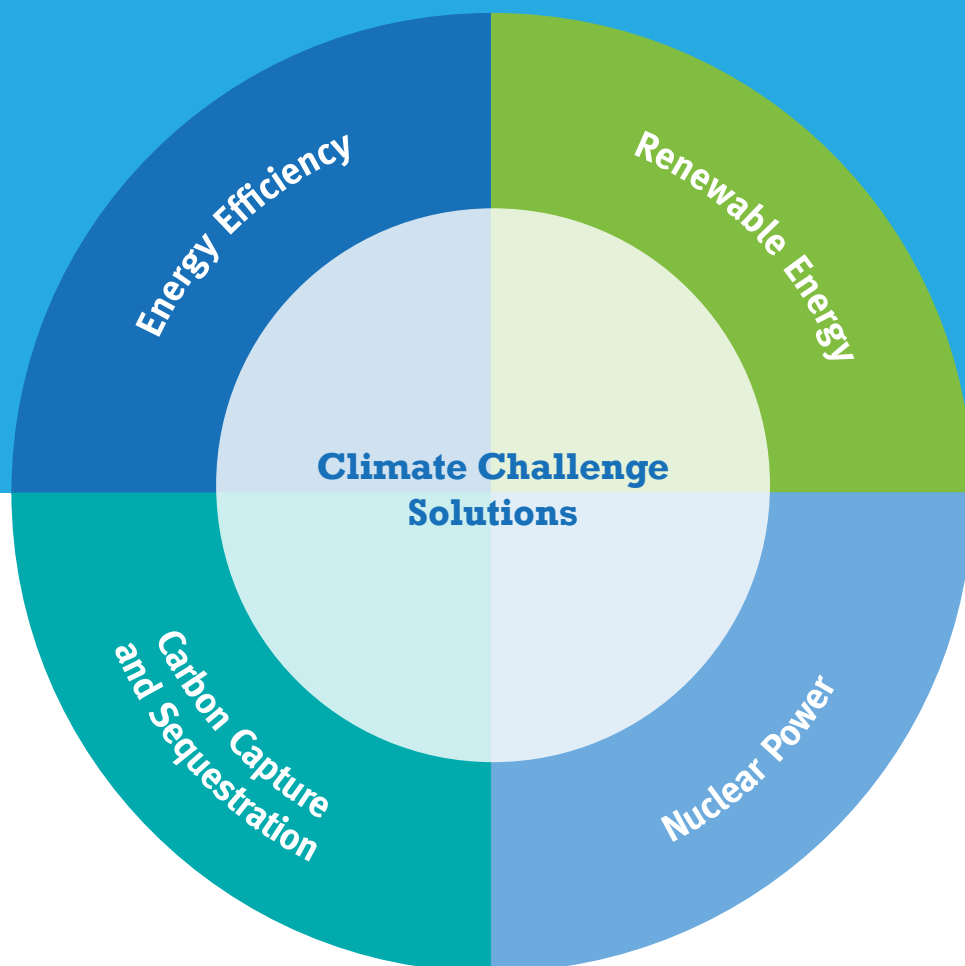
4. Innovative Nuclear Policy Requires “Break the Mold” **Partnerships**

A unique, collaborative relationship has been created between non-traditional partners – the nuclear industry and the civil society organizations that work on nuclear governance, climate change, and energy policy. GNI proved that together they can develop valuable new policies that address important issues arising from the nexus of nuclear power, climate challenges, and global security. Further progress on joint policy development – and the strengthening of public confidence that this offers – can best be served by institutionalizing and expanding this “break the mold” partnership and expanding the collaboration and financing that fuels this unique partnership.



Effective Responses to Today's Challenges

As the number of nuclear reactors grows worldwide in response to the need for carbon-free energy and economic development, its governance system will be taxed with ensuring the safety and security of a larger number of nuclear plants and materials. It also will have to address emerging and mutating threats like cybersecurity. Effective governance in this evolving environment will require a greater willingness to identify and rapidly remedy safety, security, and proliferation vulnerabilities and acceptance of increased transparency and comprehensiveness by the international community. It is in the interest of all nations to ensure that stringent safety, security and nonproliferation systems are in place in every country operating, expanding, and pursuing nuclear power programs.



GNI Results

GNI held a series of workshops from 2015-2017 to explore the intersection of nuclear power, climate, and security issues and develop smart policy responses to today's challenges. These meetings involved dozens of experts from around the world and resulted in [22 policy recommendations](#) which are detailed in three policy memos. This report is a distillation of those memos. For additional details on the ideas and proposals discussed in this report, please visit www.globalnexusinitiative.org.



The Role and Responsibility of Nuclear Power in a Carbon Constrained World (December 2015)

Achieving the international community's goal of limiting global temperature increases to 2° Celsius will require a significant transformation in the way the world produces and consumes energy. GNI urges policymakers to recognize the existing and potential contribution of nuclear power in reducing global carbon emissions. Policy changes simultaneously should enhance public support, safety, and security and strengthen international confidence in nuclear power programs.

A Framework for Advanced Nuclear Reactor Development: Policy and Issues (September 2016)

The next generation of nuclear reactors are at a critical crossroad between technology development and deployment. GNI explains that near-term demonstration projects, advanced licensing procedures, and enhanced safety, security, and safeguards measures are critical if the next generation of reactors are to inspire public confidence, enable commercial success, and meaningfully contribute to climate goals.

Evolving Nuclear Governance for a New Era (April 2017)

The global nuclear governance system is facing a series of new challenges that require effective responses from a strong coalition of governments, the nuclear industry, professional associations, and the nuclear nonproliferation, security, and safety expert communities. GNI calls for a strengthening of the system through realistic continuous improvement, a demonstrated commitment to norms and standards by nuclear suppliers and users, and a greater appreciation of nuclear power as a geopolitical tool.

Working Group Members

We gratefully acknowledge the members of the GNI working group, a distinguished panel of 17 experts from the nuclear industry, environmental and energy communities, and global security organizations with decades of first-hand management and policymaking experience on these critical issues.

- Amb. Hamad Alkaabi, UAE Permanent Representative to the IAEA and Special Representative for International Nuclear Cooperation (UAE)
- Amb. John Bernhard, Ambassador to the IAEA from Denmark (retired) (Denmark)
- Amb. Kenneth Brill, Ambassador to the IAEA from the United State (retired) (U.S.)
- Armond Cohen, Co-Founder and Executive Director, Clean Air Task Force (U.S.)
- Mary Alice Hayward, Vice President of Strategy, Government and International Relations, AREVA (U.S.)*
- Caroline Jorant, President, SDRI Consulting; Former Director for Non-Proliferation and International Institutions, AREVA (France)
- Kenneth N. Luongo, President, Partnership for Global Security; Former Senior Advisor to the U.S. Secretary of Energy for Nonproliferation Policy (U.S.)
- Melissa Mann, President, URENCO USA, Inc. (U.S.)
- Dr. Richard Meserve, President Emeritus, Carnegie Institute for Science; Former U.S. Nuclear Regulatory Commission Chairman (U.S.)



GNI Working Group members met for a series of four workshops in Washington, D.C. from 2015-2017.



Working Group Members

Continued

- Dr. Anita Nilsson, President AN & Associates; Former Director of Nuclear Security at the IAEA (Sweden)
- Robert Nordhaus, Partner, Van Ness Feldman; Former General Counsel, U.S. Department of Energy (U.S.)**
- Dr. Everett L. Redmond II, Senior Technical Advisor, New Reactor & Advanced Technology, Nuclear Energy Institute (U.S.)
- Richard Rosenzweig, Former Chief Operating Officer, Natsource; Former Chief of Staff, U.S. Secretary of Energy (U.S.)
- Dr. Phil Sharp, Former President, Resources for the Future; Former Member of the U.S. House of Representatives (U.S.)
- David Slayton, Research Fellow, Hoover Institution; Former U.S. Navy (U.S.)
- John Stewart, Director of Policy and Research, Canadian Nuclear Association (Canada)
- Dr. Tatsujiro Suzuki, Former Vice Chair of the Atomic Energy Commission of Japan; Former Associate Vice President, Central Research Institute of Electric Power Industry (Japan)

*Ms. Hayward left the working group in January 2017 when she began a new job at the International Atomic Energy Agency. Her contributions to the project before that time are greatly appreciated.

**Mr. Nordhaus passed away in December 2016. We greatly appreciated his contributions to the project and mourn the loss of a valued colleague.

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Guest experts attended each workshop to provide targeted insights on key issues.



Formed in 2015, the Global Nexus Initiative (GNI) brings together for the first time leading experts from the nuclear industry, nuclear security, and environmental communities to examine the complex challenges posed by the intersection of climate change, energy demand, and global security. GNI is co-sponsored by the Partnership for Global Security and the Nuclear Energy Institute.

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NUCLEAR ENERGY INSTITUTE

NEI

1201 F St., NW, Suite 1100
Washington, DC 20004
P: 202.739.8000
E: membership@nei.org
W: nei.org



PARTNERSHIP for
GLOBAL SECURITY

Partnership for Global Security

1400 I (Eye) St. NW, Suite 440
Washington, DC 20005
P: 202-332-1412
E: info@partnershipforglobalsecurity.org
W: partnershipforglobalsecurity.org