

# Nuclear Innovation: Clean Energy (NICE) Future initiative

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NICE Future

Nuclear Innovation: Clean Energy Future

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An Initiative of the Clean Energy Ministerial



This Nuclear Innovation: Clean Energy (NICE) Future initiative of the Clean Energy Ministerial envisions a world in which nuclear energy innovations and uses advance clean energy goals. The initiative recognizes there is no one-size-fits-all solution to energy and fosters collaboration among clean energy supporters in exploring diverse solutions, including nuclear energy technology solutions, both electric and non-electric, for clean, integrated, and reliable systems of the future.



1. Exploring innovative applications for advanced nuclear systems both electric and non-electric.

2. Engaging policy makers and stakeholders regarding energy choices for the future.



3. Pooling experience on economics, including valuation, markets structure, and ability to finance.

4. Communicating nuclear energy's role in clean integrated energy systems and developing the nuclear workforce of the future.

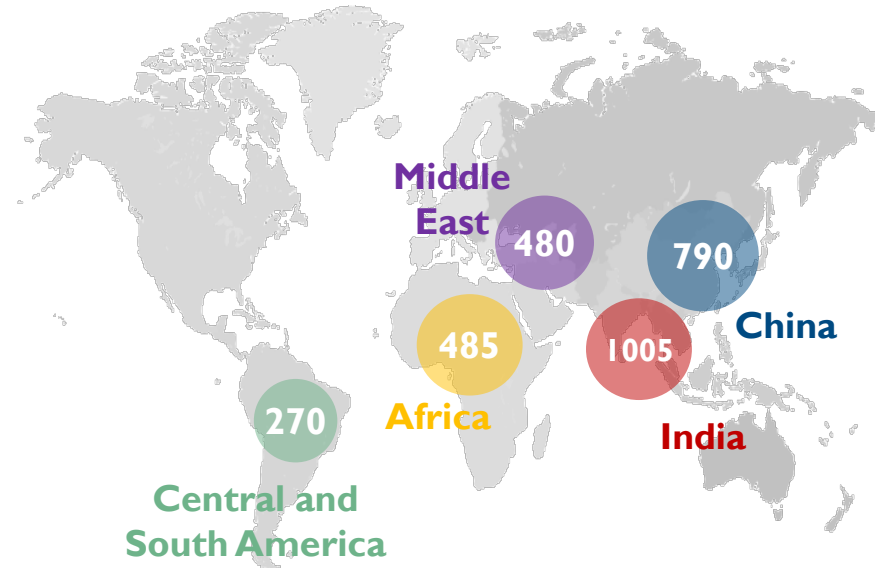


## Focus Areas



Nuclear energy is non-emitting and provides more than a third of emissions-free electricity.

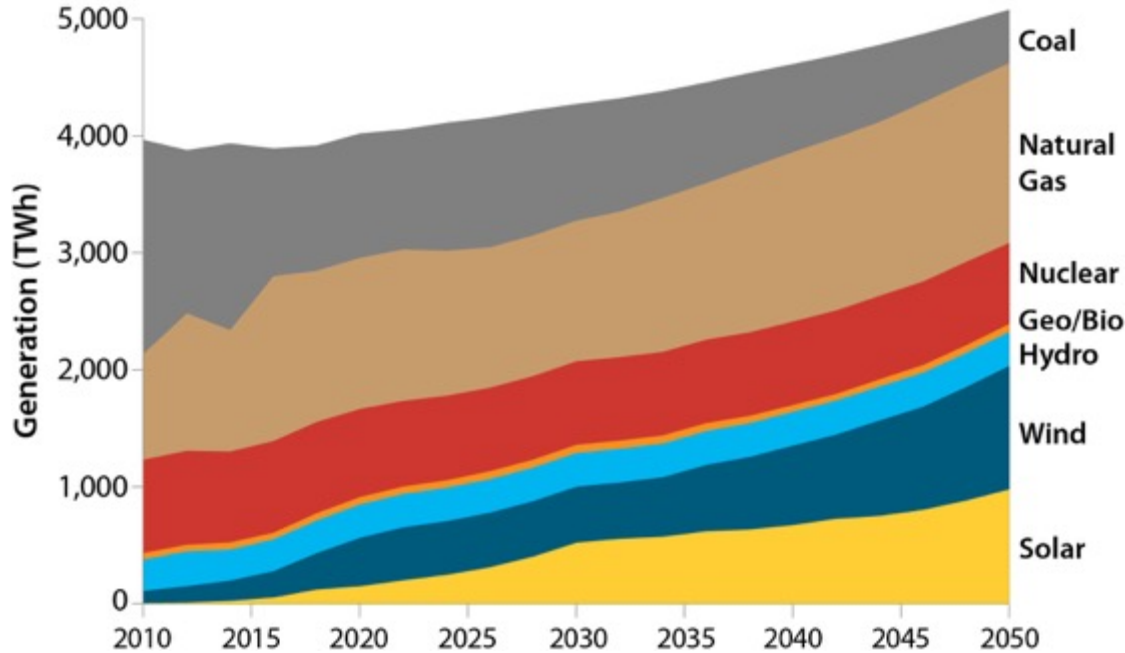
As energy demand around the world grows, nuclear energy, and its exciting innovations, will play a key role within clean and integrated energy systems of the future.



*Change in primary energy demand, 2016-40 (Mtoe)*



## One future scenario for U.S. electricity generation



Together, nuclear and renewable energy could reduce emissions of carbon and help meet this Century's global low-emission energy goals.

**Low-carbon energy sources**



The NICE Future initiative was officially launched at the 9th annual Clean Energy Ministerial (CEM9) in May 2018 and had strong presence (nuclear mention at multiple events, industry delegations, etc.) at CEM 10 in May 2019.

The CEM is an international forum for ministers to share policies and programs that advance clean energy technology.





Initiatives under the CEM are country-led and opt-in. The NICE Future initiative is part of a global partnership of countries and organizations exploring the potential for nuclear power uses, innovations, and greater systems integration, to accelerate progress toward clean energy goal. **We are growing.**

## External Partners

- International Energy Agency
- OECD Nuclear Energy Agency
- International Atomic Energy Agency
- International Framework for Nuclear Energy Cooperation
- Generation IV International Forum
- ClearPath
- Third Way
- Terra Praxis
- Energy for Humanity
- Energy Options Network
- Women in Nuclear Global
- International Youth Nuclear Congress
- Nuclear Industry Council
- Nuclear Energy Institute
- World Nuclear Association

## Who we are







The initiative focuses its work into action areas that include research and outreach to help countries understand how nuclear can enable their clean energy systems and reimagine the roles of nuclear.



*Suzie Jaworowski holding Breakthroughs*



*University students speaking at IFNEC-Millennial Nuclear Caucus event in Tokyo*

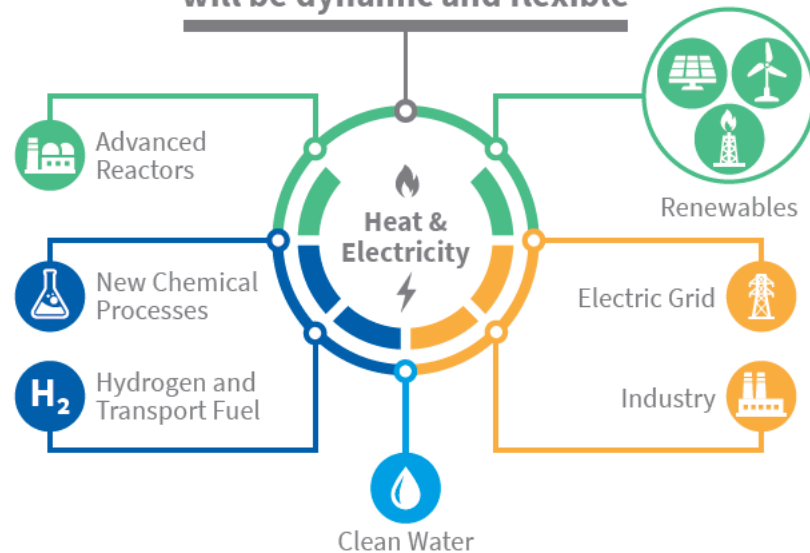


Energy systems of the future will need to go beyond electricity to better serve societies' needs. This will include chemical generation, clean water, and energy storage.

The NICE Future initiative seeks to highlight innovation happening now to help nuclear energy participate as a piece of the clean energy puzzle.

Whether it is producing process heat, enabling flexible electricity grids, or serving as a backstop for renewable production, nuclear energy has valuable roles to play in future clean energy systems.

## Integrated Nuclear Energy Systems will be dynamic and flexible



Source: Adapted from Idaho National Laboratories and Clear Path

Integrated nuclear-renewables

Desalination for drinking water

Process heat

Flexible electricity grids

Hydrogen production and energy storage

Advanced smart designs (SMRs/Gen IV)

Nuclear waste reduction



Diverse application areas are possible.



Data centers and research campuses

Image: "Nuclear Reimagined," Third Way



The initiative has achieved incredible impacts.

80+

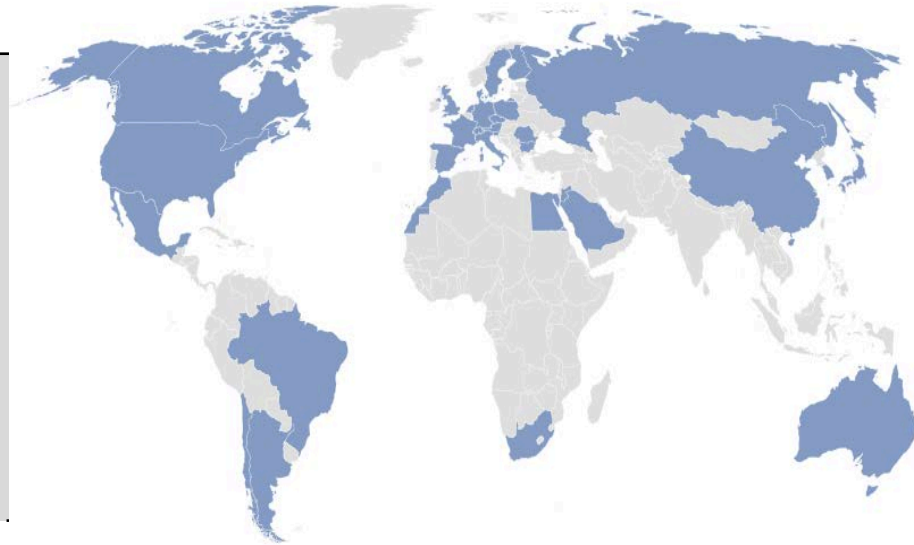
2000+

35%

Collaboration or interest from **80+** organizations in **25** countries

**2000+** NICE Future webinar/conference participants in **53** countries

**35%** of world represented by some level of country engagement with NICE Future



*Countries with attendees in blue*



**Key deliverable** for NICE Future at CEM10, led by Canada and U.S.

**Objective:** To spark imagination, challenge pre-conceptions of nuclear energy's role in clean energy systems.

**Approach:** Not a typical policy report, a compilation of ~20 short, compelling stories to engage a non-nuclear audience.

**Select topics:** Advanced nuclear, small modular reactors, nuclear-renewable systems, energy parks, hydrogen, etc.

...and over 20 high-level appearances, panels, and keynote speakers from the initiative.



Breakthroughs book cover



Panel after The New Fire screening



An international cooperative effort led by Energy Options Network, ClearPath Foundation, and Energy for Humanity to analyze the value of flexible nuclear systems globally. Key deliverable for CEM 12

## Focus Areas:

1. **Modeling revenue opportunities** for flexible nuclear energy systems, working in tandem with renewable energy in various parts of the world and
2. **Communicating cost and technical performance requirements** back to government stakeholders and advanced reactor design teams.

## Deliverables:

- **Briefing materials** (reports, summaries) aimed at decision makers and other stakeholders
- **Seminars and workshops** that directly engage various facets of the energy community.

**CEM and non-CEM member countries are invited to join!**



The NICE Future initiative supports engagement with governments and also with industry and civil society:

- **Supporting development of NICE Future deliverables** (e.g. providing technical and economic information, contributing to the development of analysis and resources). **We welcome even more ideas from Argentina!**
- **Participating in keystone events or workshops, webinar series, and other events** to share information and experience
- **Partnering to deliver engagement events** that communicate the outputs and outcomes of the initiative
- **Sharing outcomes** with your own networks





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*Nuclear and Renewable systems power an industrial center as part of Third Way's "Nuclear Reimagined" series, <https://www.thirdway.org/blog/nuclear-reimagined>*