

Nuclear Energy in a Global Perspective

World status and role in meeting needs in the 2 degree scenario

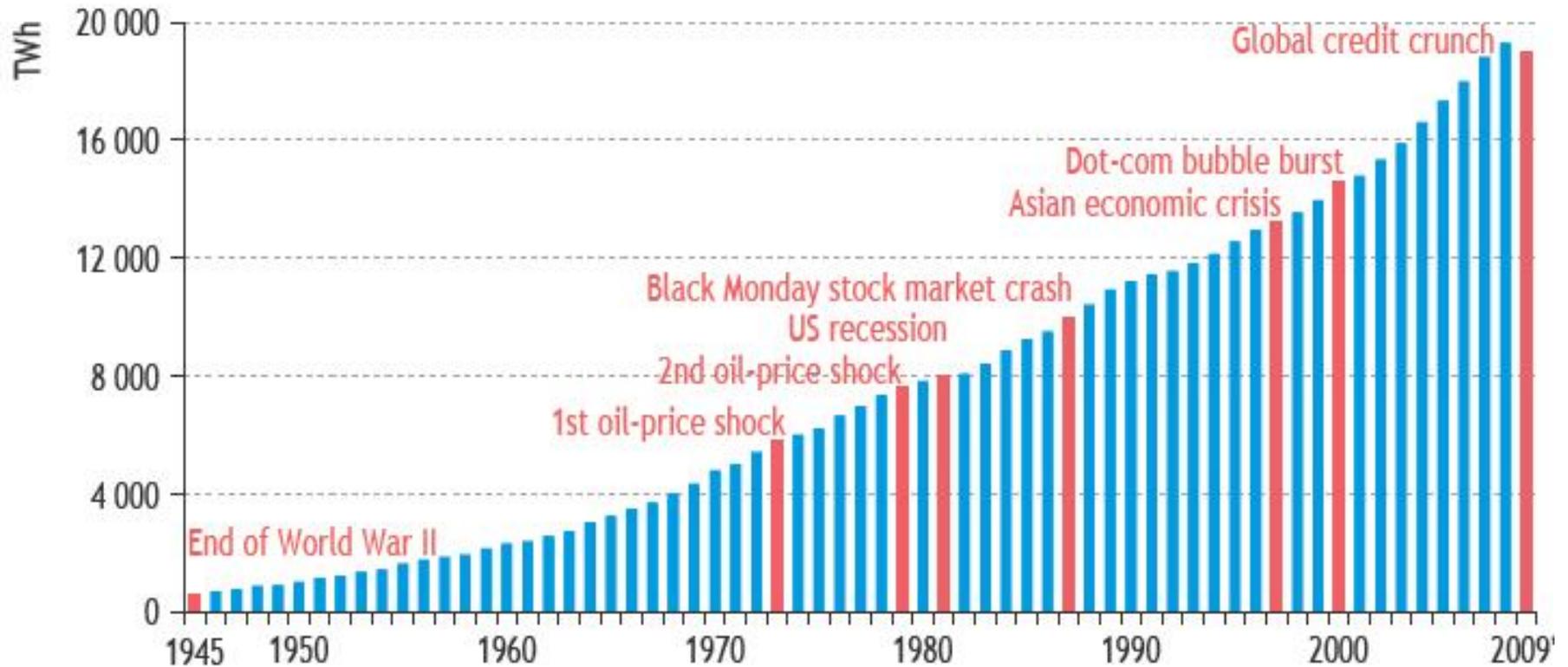


Agneta Rising
Director General

Harmony
Stockholm
November 2015

THE CURRENT STATUS OF NUCLEAR ENERGY

Accelerating rise in world electricity consumption

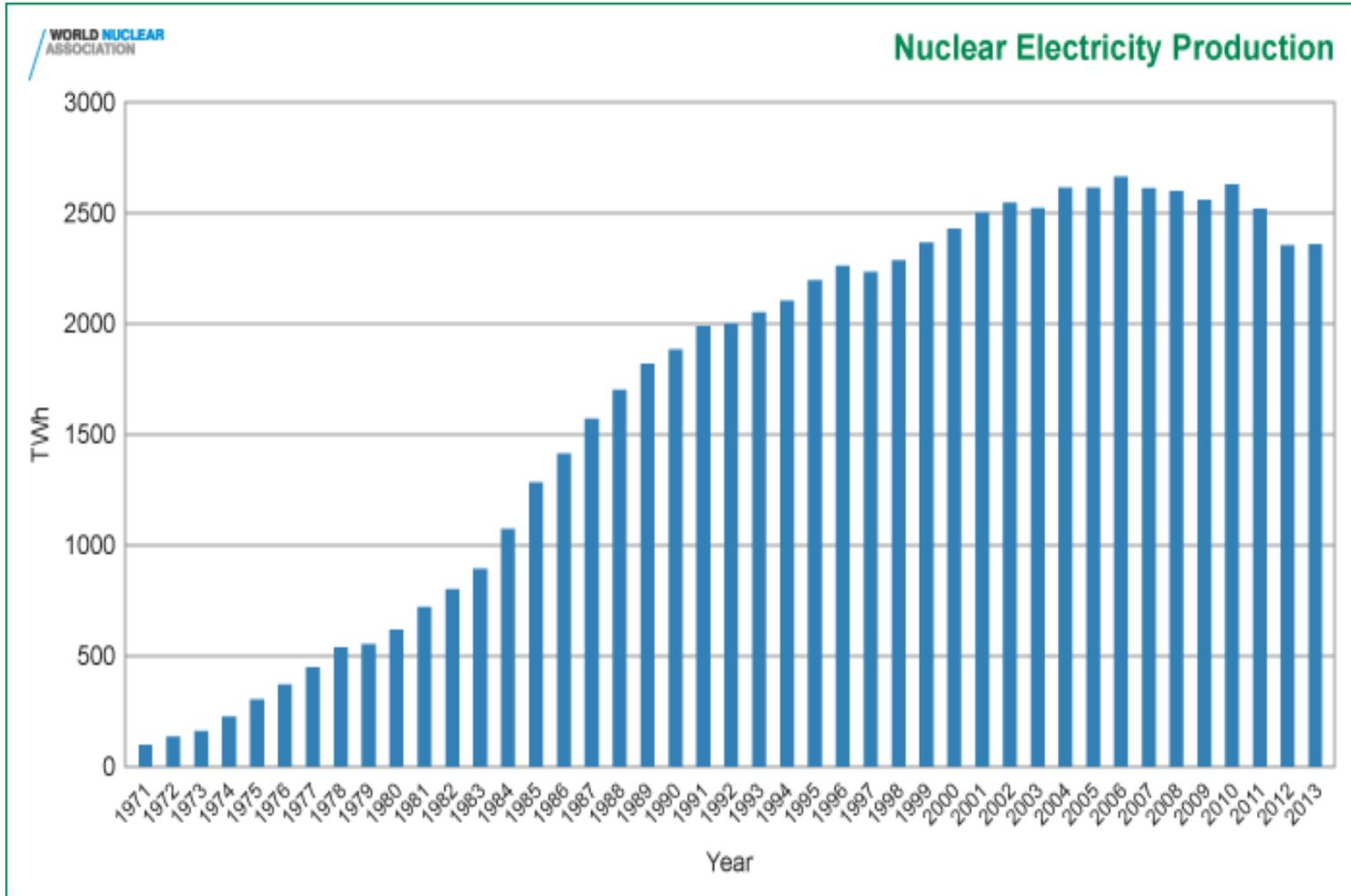


* IEA estimate.

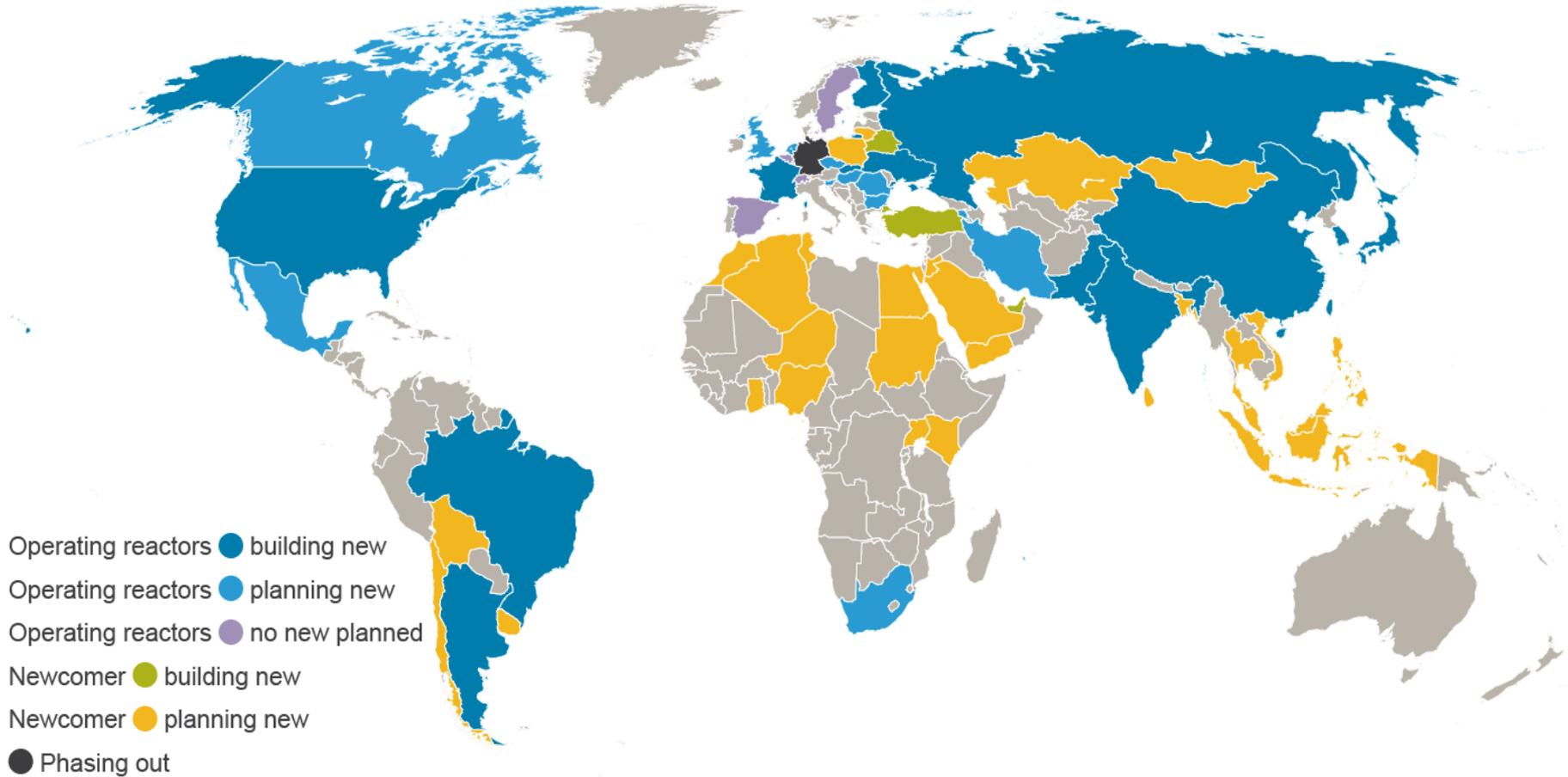
World Energy Outlook

Source: IEA databases and analysis.

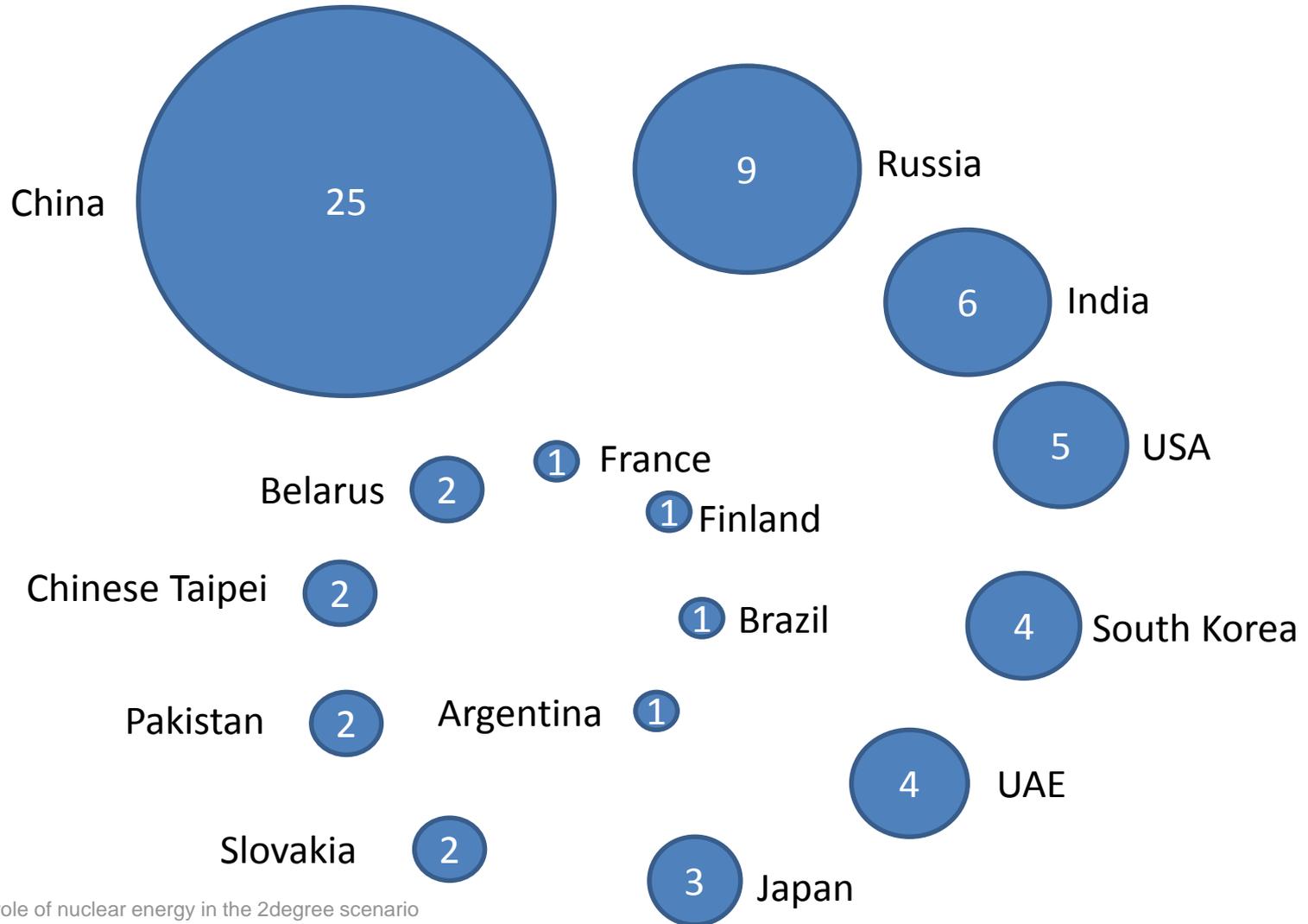
Global Nuclear Generation



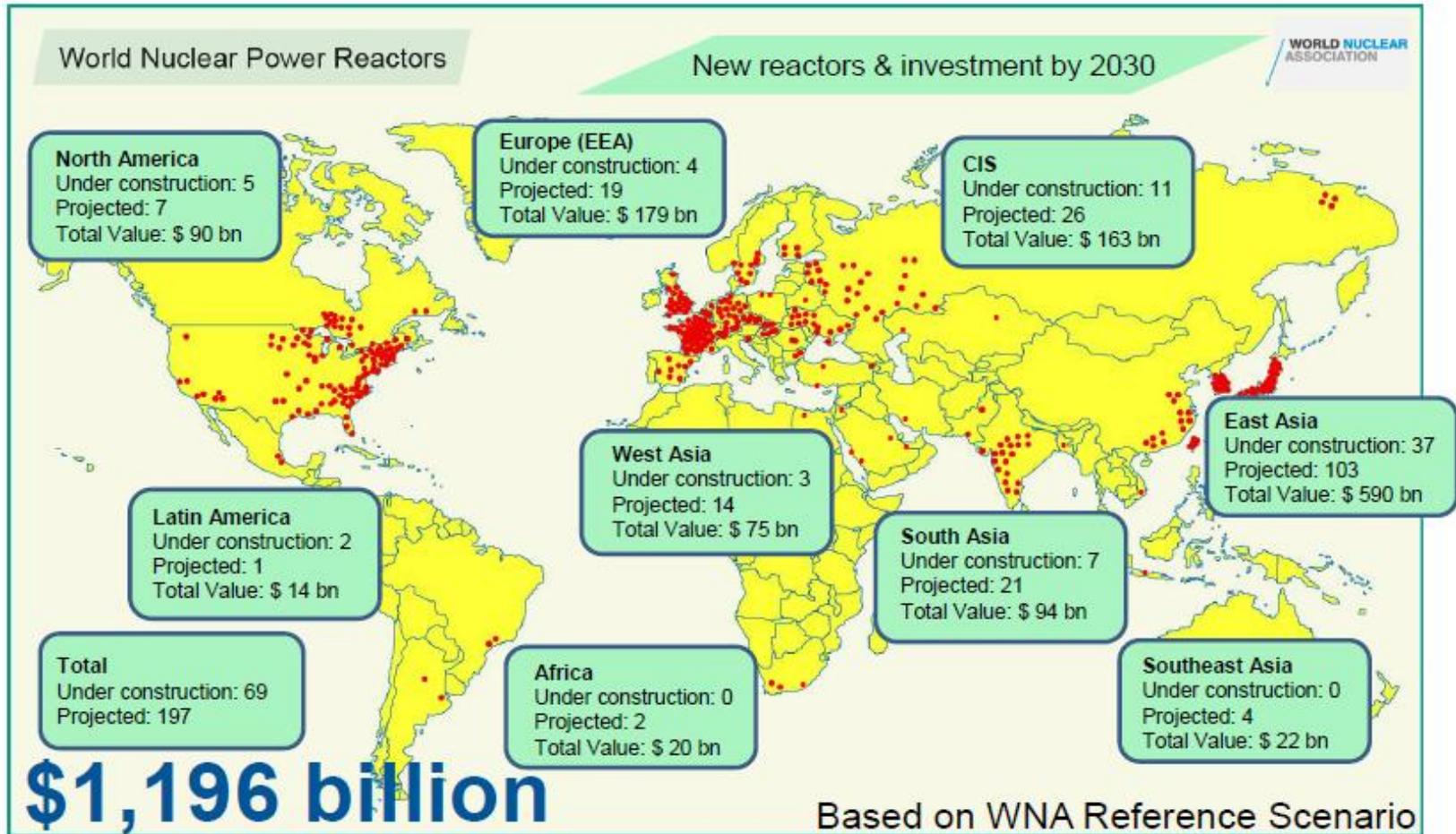
Global Nuclear Status



Highest level of construction in twenty five years: 68 reactors worldwide

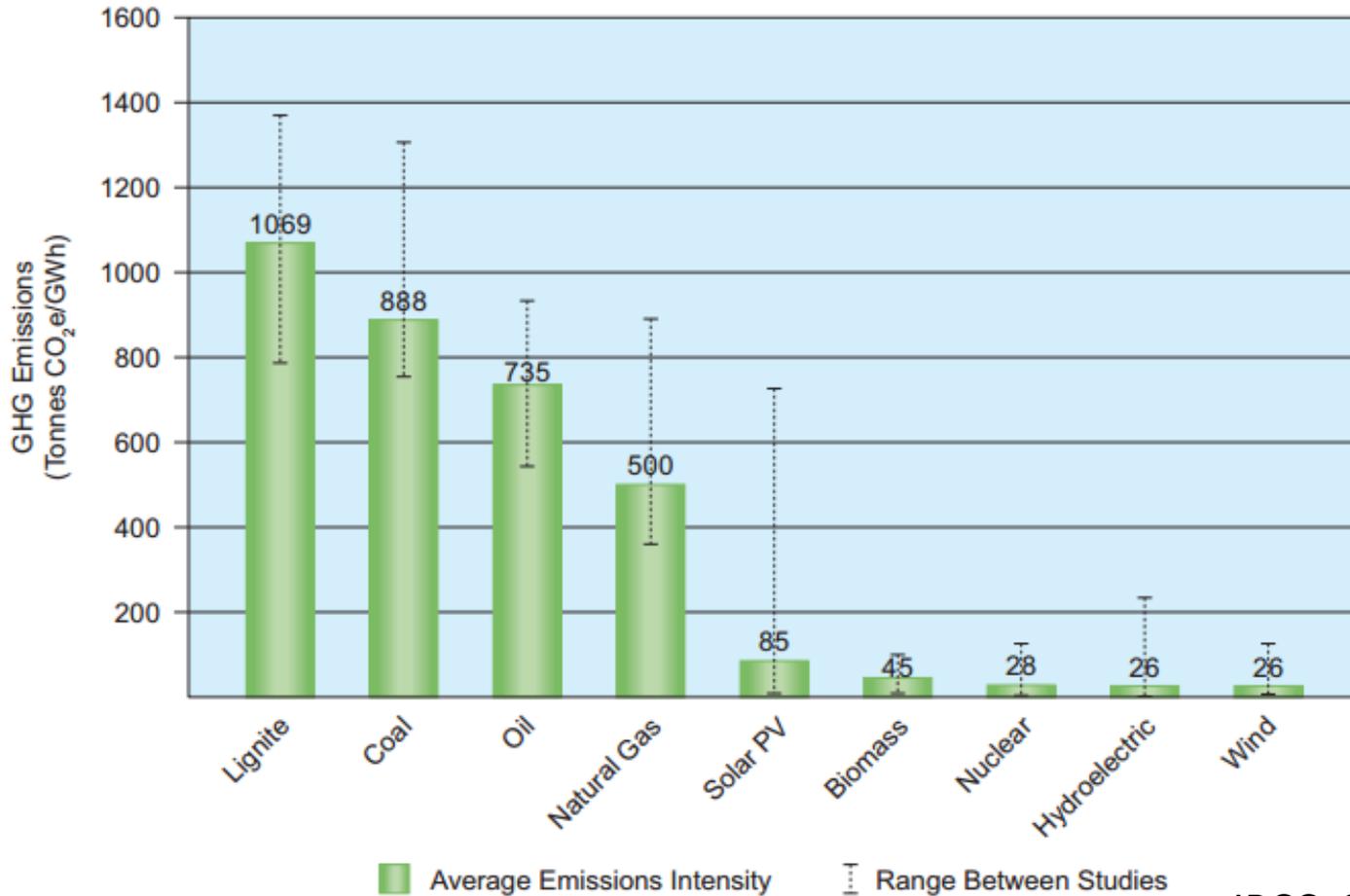


The global nuclear industry - assessment of current market



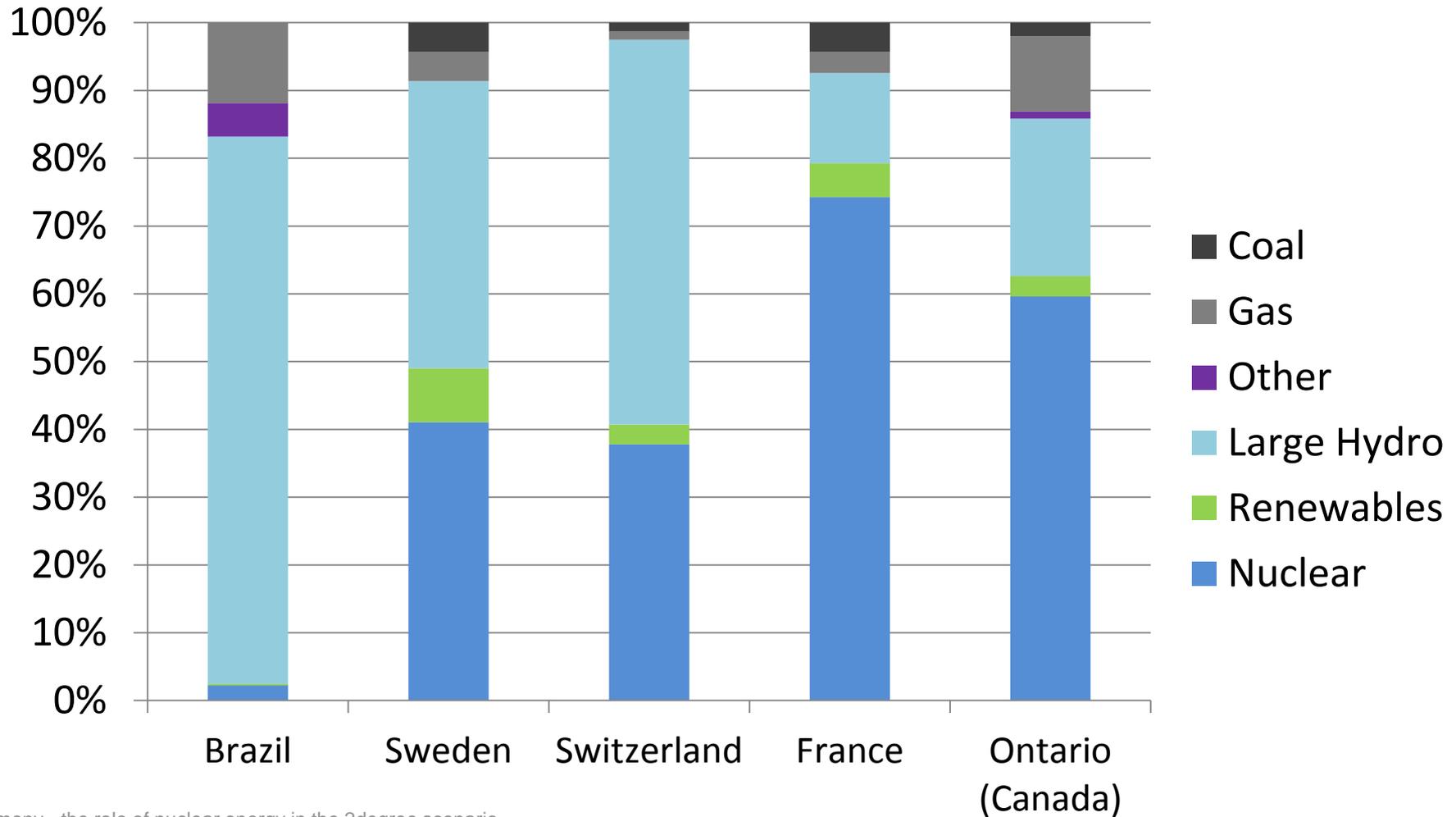
THE POTENTIAL OF NUCLEAR ENERGY TO DECARBONISE

Decarbonizing electricity generation vital by year 2100



IPCC: 2014

Nuclear is an important part of the low carbon solution



Harmony in nuclear energy deployment

Strong
framework in
policy and
regulation

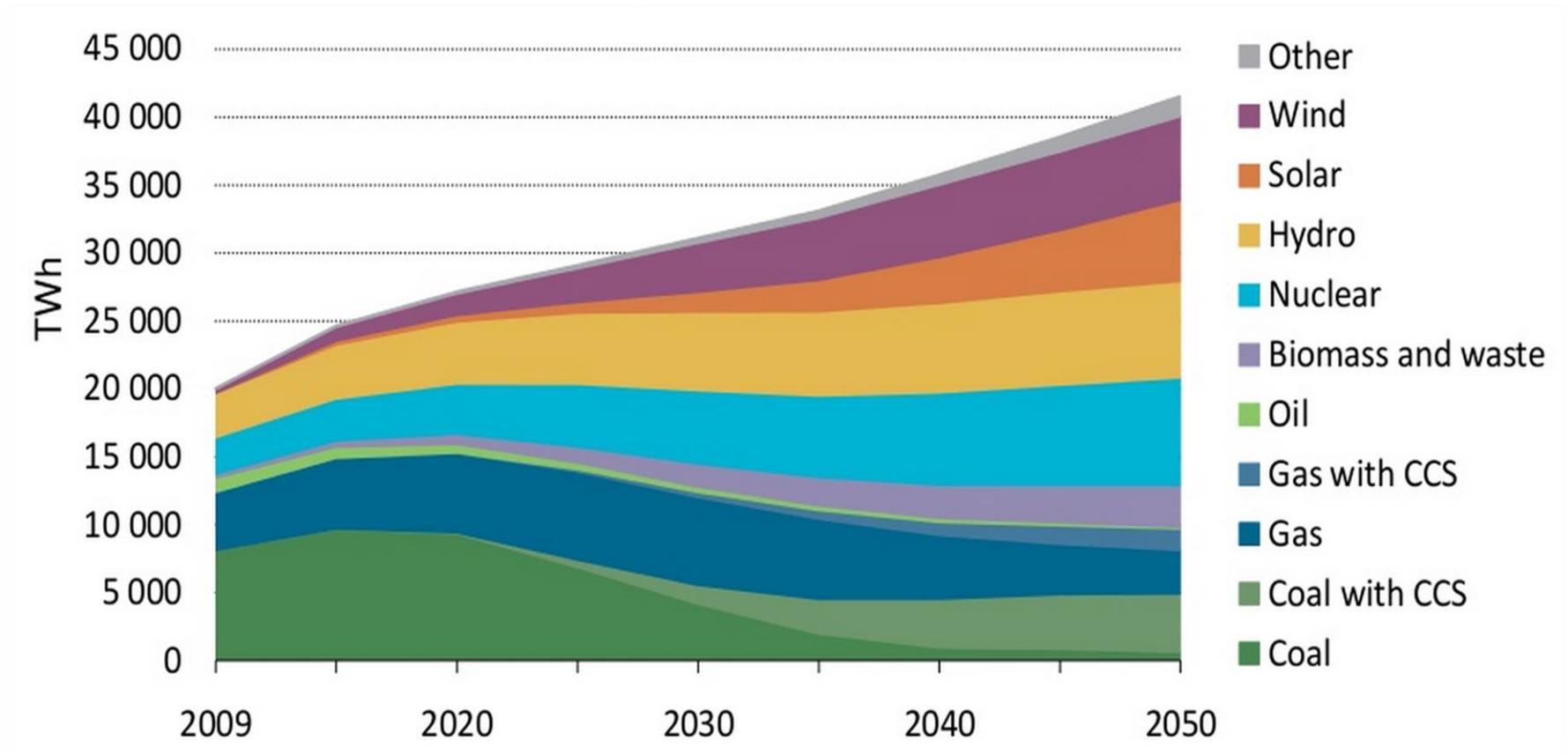
Confidence
among
stakeholders



Affordable and
reliable
electricity,
national energy
independence

THE IEA 2°C SCENARIO

IEA 2°C Scenario: Nuclear is Required to Provide the Largest Contribution to Global Electricity in 2050

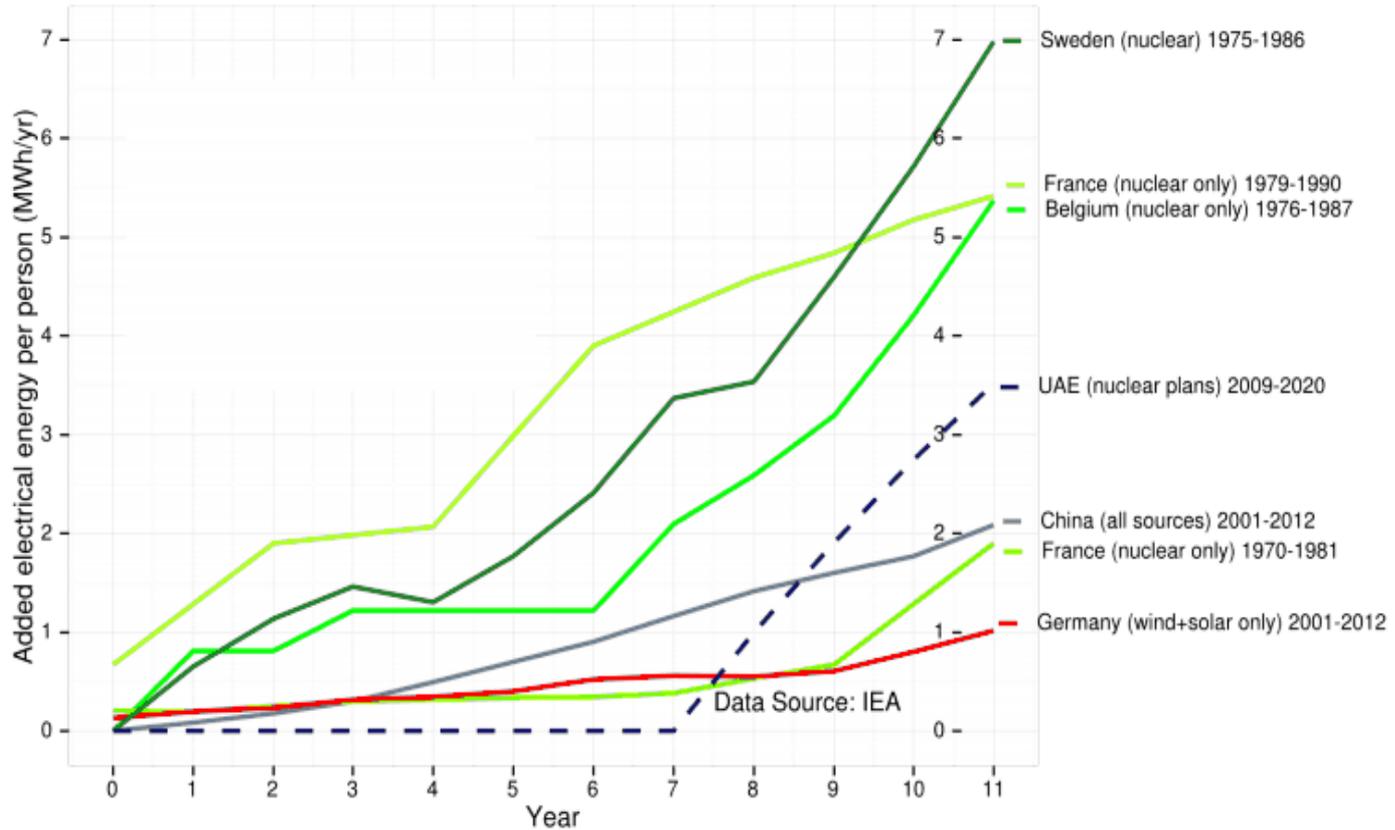


Harmony - the role of nuclear energy in the 2degree scenario
 Agneta Rising, Director General

Source: International Energy Agency

Nuclear makes quick, lasting decarbonisation possible

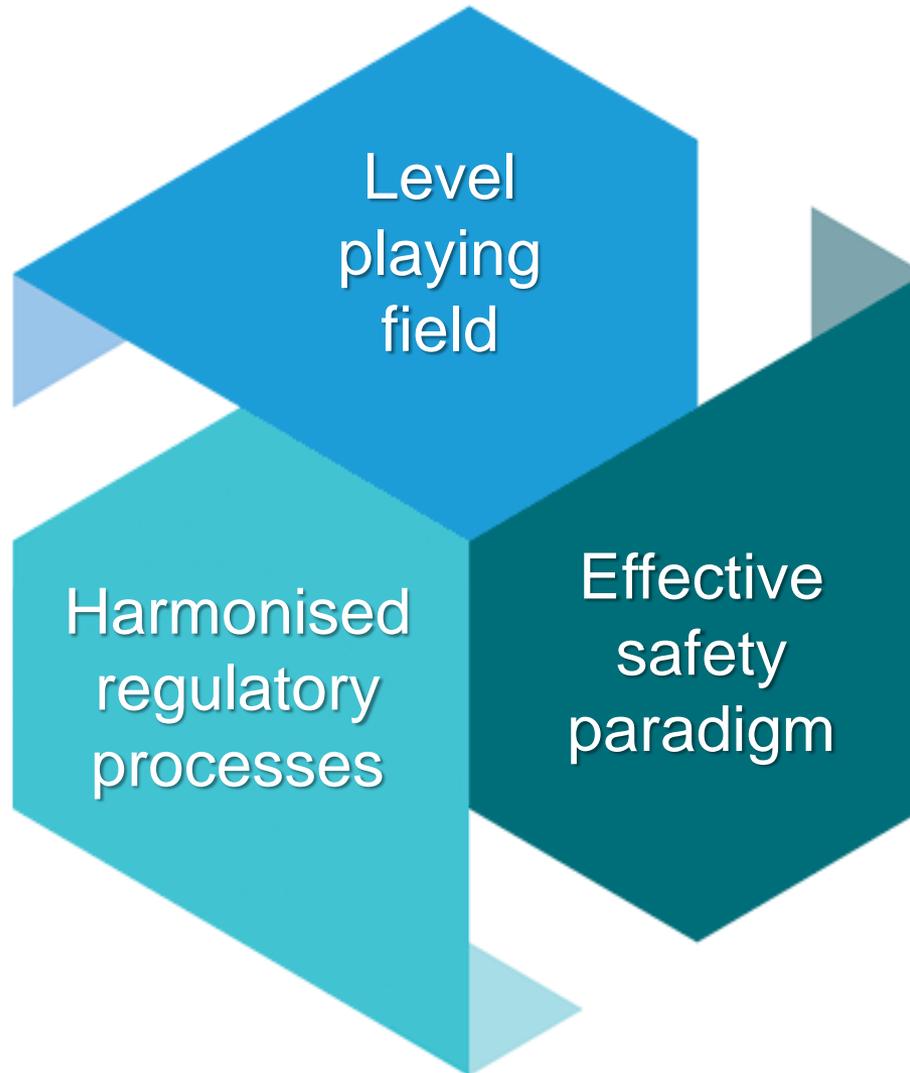
How much extra electrical energy can you add in 11 years?



Source: Geoff Russell – [nuclear has scaled far more rapidly than renewables](#)

HOW TO ACHIEVE REQUIRED NUCLEAR NEW BUILD

Harmony objectives



Level playing field: the challenge of deregulated markets

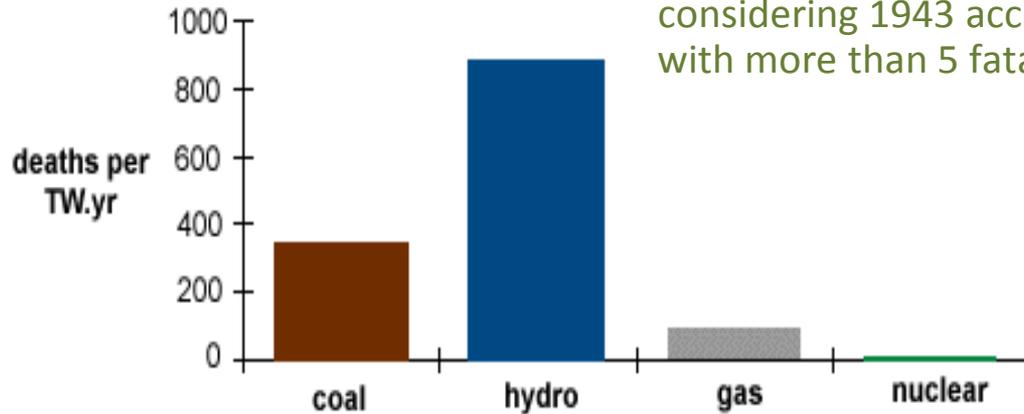
Deregulated markets should be reformed to:

- support capital investments
- include grid system costs
- eliminate nuclear-only taxes
- reform subsidies
- give credit for low carbon emissions

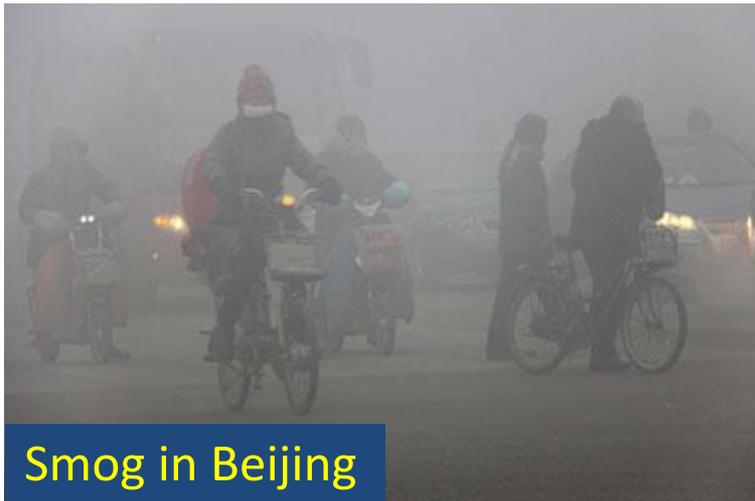


Time for an effective safety paradigm

Paul Scherrer Institut 1998:
considering 1943 accidents
with more than 5 fatalities



The alternatives to nuclear are far more dangerous – even including accidents



Harmonised regulatory processes

Enhance standardisation

Harmonise and update global codes and standards

Streamline licensing processes

Ensure efficient and effective safety regulation

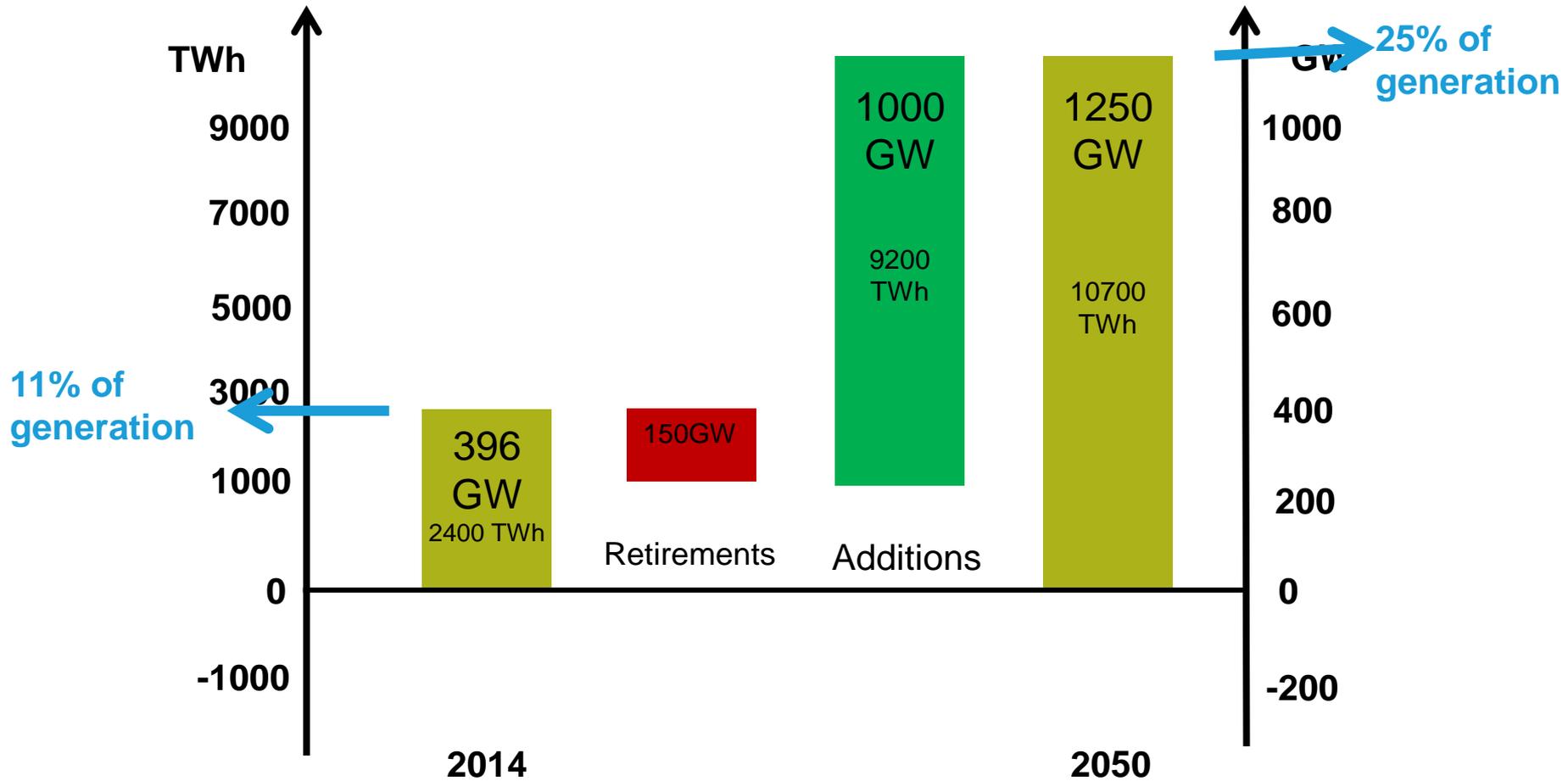
Enabling international trade

Nuclear innovation: enable development and licensing of new technologies



GOING BEYOND IEA 2°C SCENARIO: 1000 GW OF NUCLEAR NEW BUILD

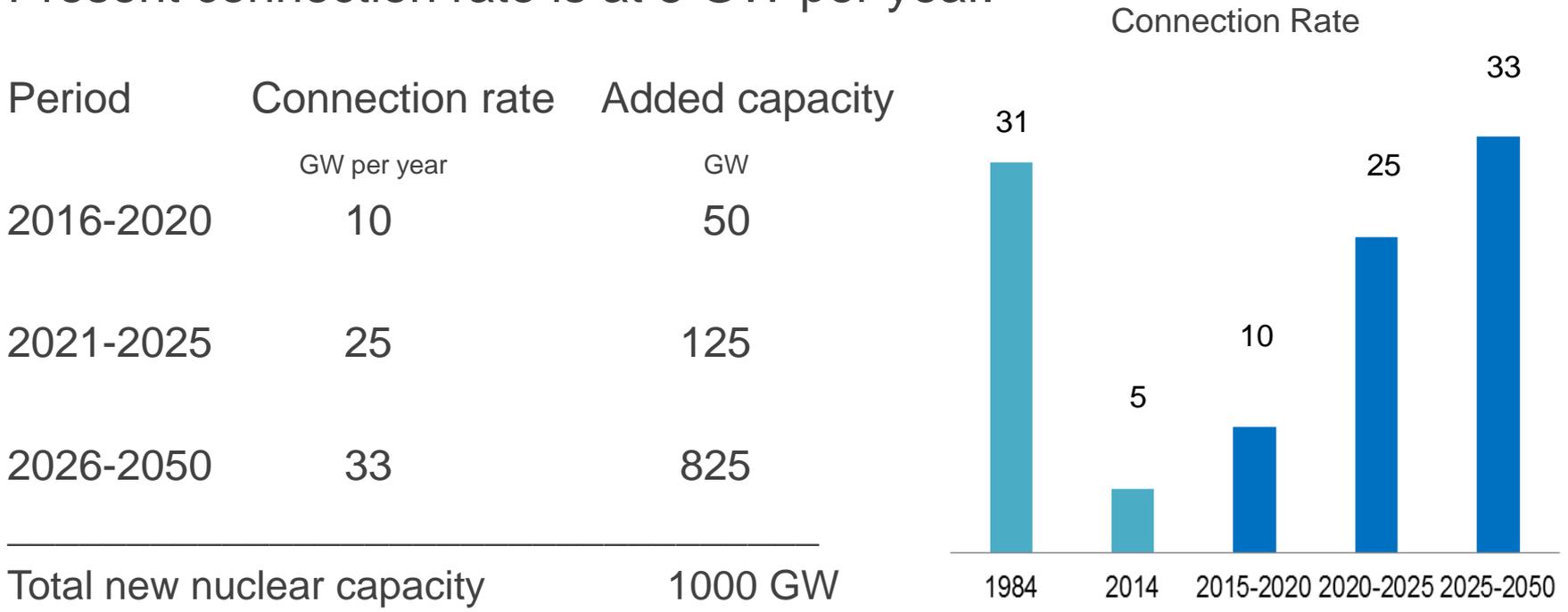
Nuclear energy should go beyond IEA projection



Source: IEA-NEA, 2015, Technology Roadmap: Nuclear Energy, Paris: OECD-IEA: p. 22;
 IEA, 2015, Energy Technology Perspectives 2015, Paris: OECD-IEA

To deliver 1000 GW new nuclear capacity to 2050

Historic connection rate in the mid of 1980s was 31 GW per year.
Present connection rate is at 5 GW per year.



HOW TO ACHIEVE THE HARMONY GOAL

The global nuclear industry: identify barriers, engage in dialog, develop key actions

Level playing field: Establish a level playing field for all low-carbon technologies, valuing not only environmental qualities, but also reliability and grid system costs.

Harmonise regulatory processes: enhance standardisation, harmonise and update global codes and standards.

Effective safety paradigm: Ensure global nuclear safety. Confidence in management of nuclear technology and operations. Stakeholder trust. Risks in perspective.

Harmony goal

1000 gigawatt new
nuclear capacity by 2050

Level
playing
field

Nuclear energy
to deliver
reliable,
affordable and
clean electricity

25% of
electricity
supply 2050

Harmonised
regulatory
processes

Effective
safety
paradigm

Increase accessibility to nuclear energy

Markets must recognise nuclear energy benefits

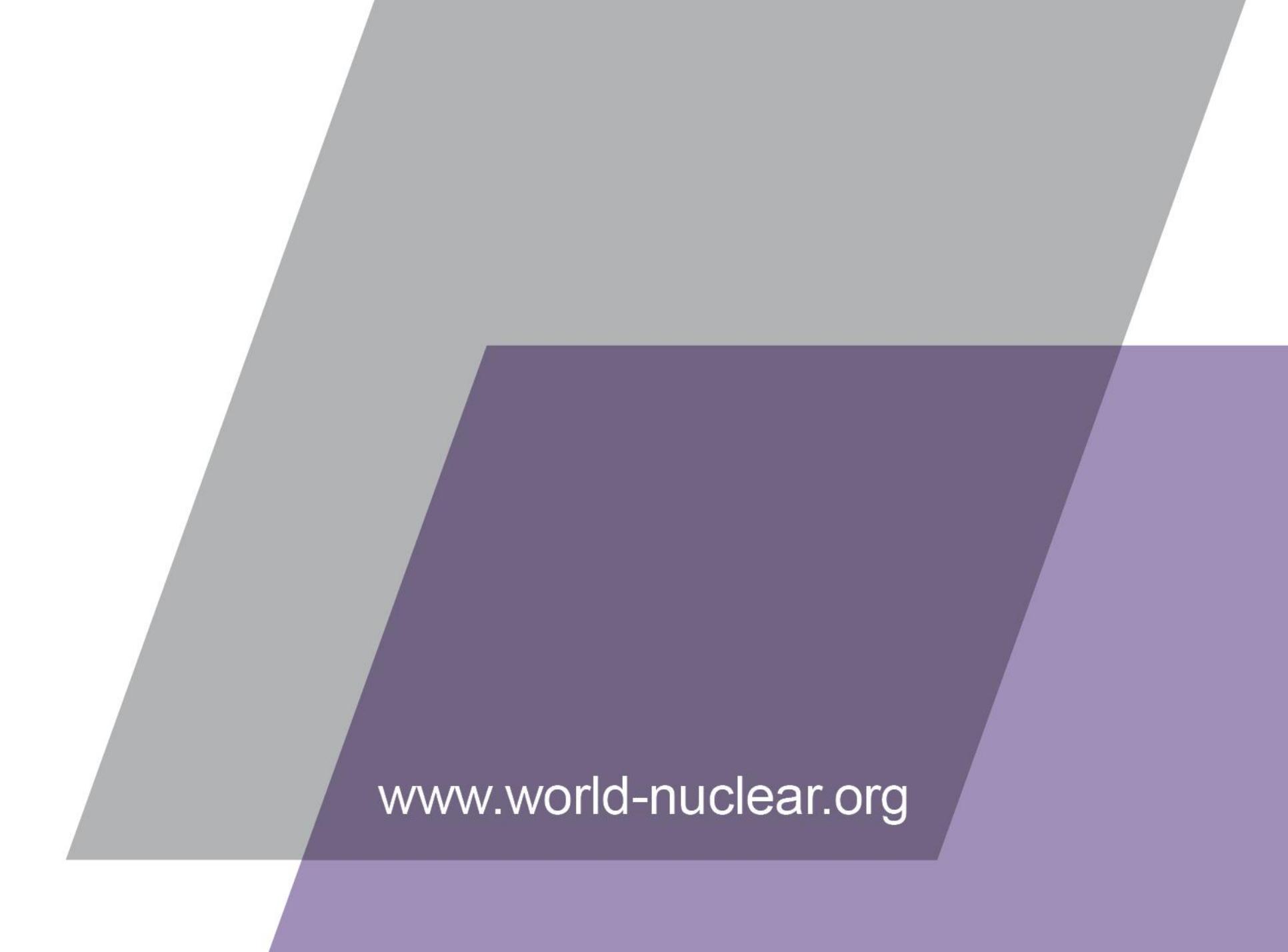
Governments must take action to ensure that electricity is delivered by the second, now and decades into the future

Policies are needed to steer us to an environmentally-sound energy mix.

Deregulated markets, while promoting competition, are leading to prioritisation of short term returns over more environmentally sustainable and economically sound long-term investments.

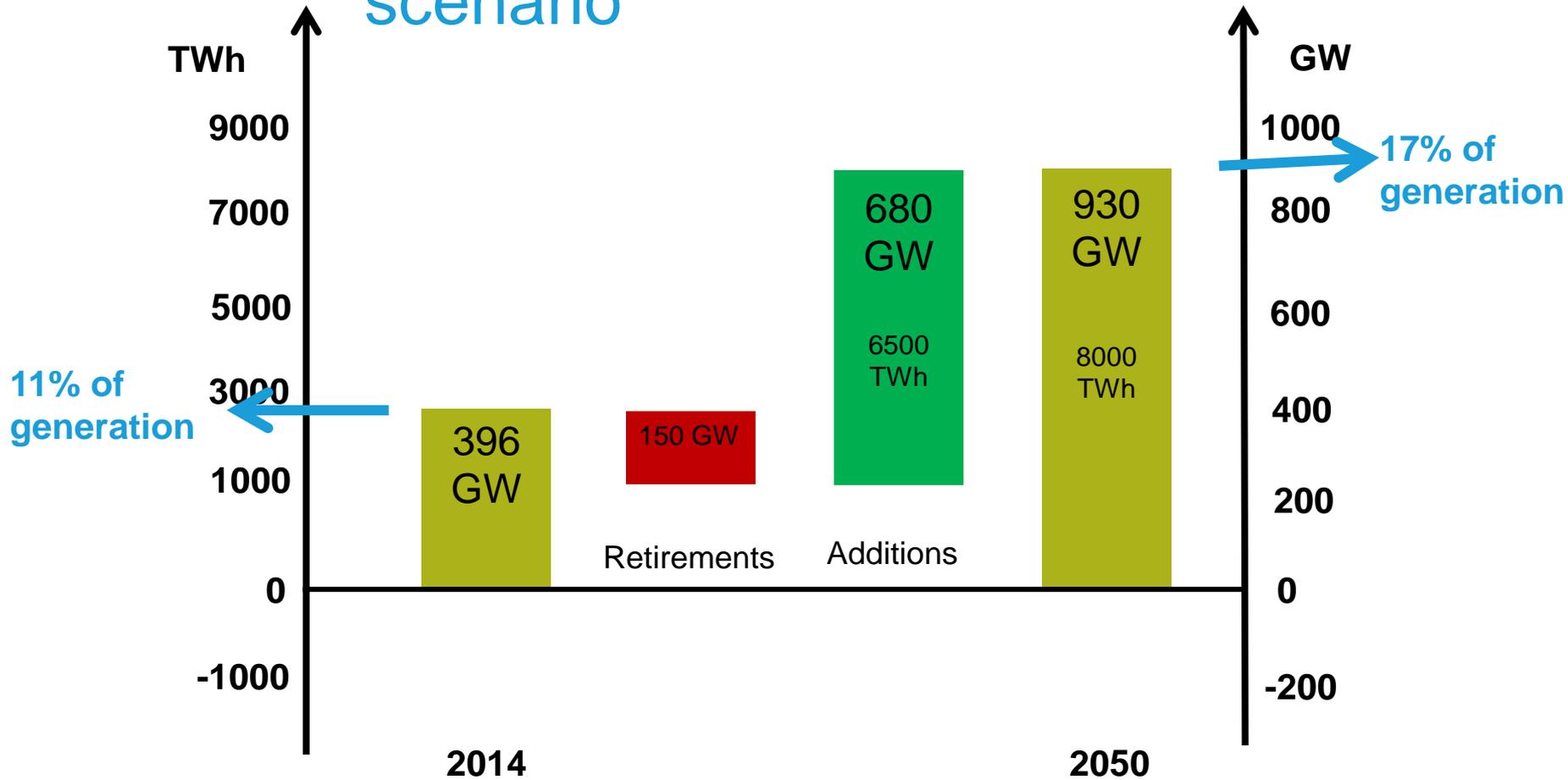
Nuclear industry must play its role

Keep nuclear competitive, deliver on time and to budget.
Build confidence among its stakeholders about the reliable, affordable and clean nature of nuclear energy.



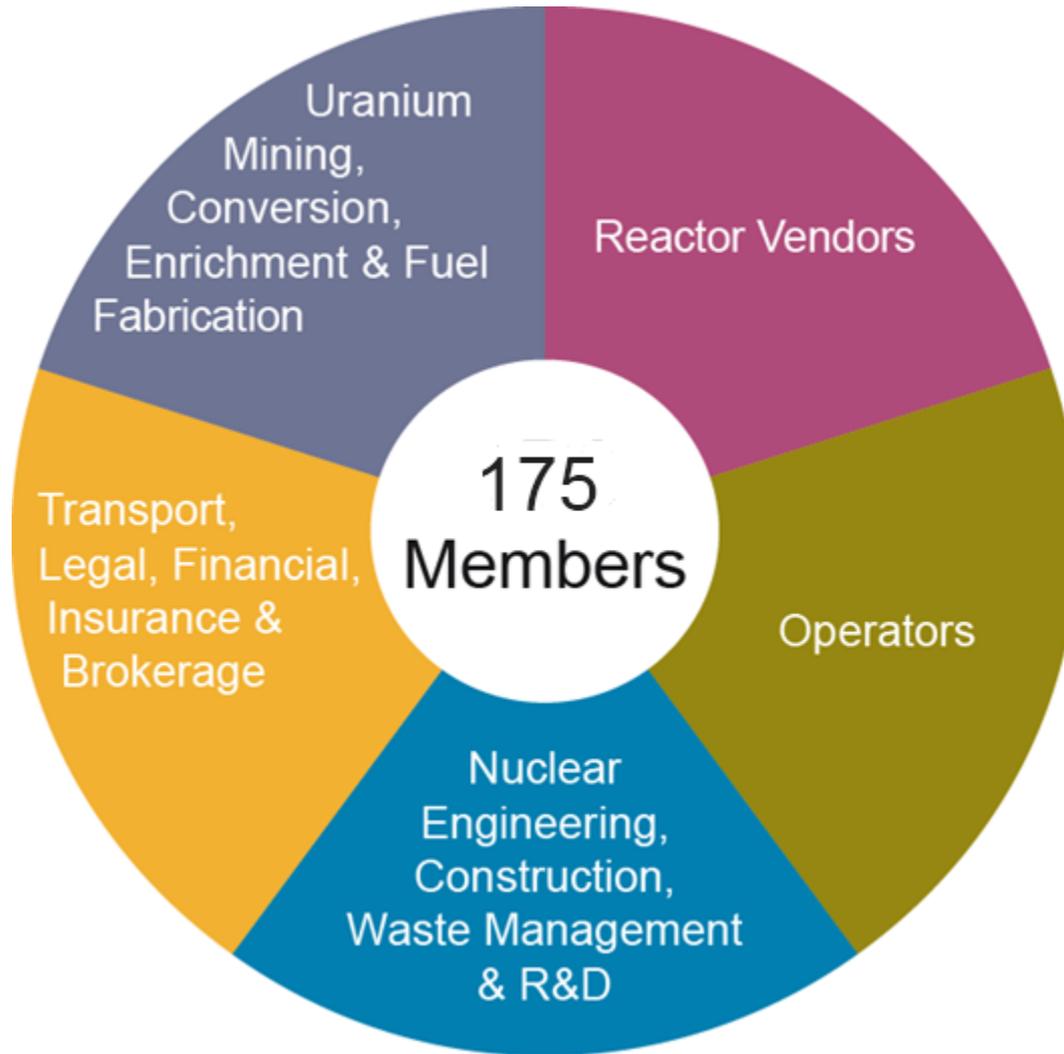
www.world-nuclear.org

The role of nuclear: Substantial growth required to meet demand in IEA 2°C scenario



Source: IEA-NEA, 2015, Technology Roadmap: Nuclear Energy, Paris: OECD-IEA: p. 22;
 IEA, 2015, Energy Technology Perspectives 2015, Paris: OECD-IEA

Our Member Companies



Representation in Key International Forums



IAEA
International Atomic Energy Agency



World Energy Council
CONSEIL MONDIAL DE L'ENERGIE



United Nations
Framework Convention on
Climate Change



NEA
NUCLEAR ENERGY AGENCY



**International
Energy Agency**

INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION

ICRP

Nuclear energy must more than double worldwide

"The contributions of nuclear energy - providing valuable base-load electricity, supplying important ancillary services to the grid and contributing to the security of energy supply - must be fully acknowledged"

“Global capacity (of nuclear) must **more than double**, with **nuclear supplying 17% of global electricity generation in 2050**, to meet the IEA 2 Degree Scenario for the most effective and efficient means of limiting global temperature rise to the internationally agreed maximum.”

International Energy Agency

Air pollution deaths

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25 March 2014 Last updated at 10:43 [Share](#) [f](#) [t](#) [e](#) [p](#)

Air pollution linked to seven million deaths globally

By Helen Briggs
BBC News



On some days you need a mask to go outside due to smog in Beijing

Seven million people died as a result of air pollution in 2012, the World Health Organization estimates.

Its findings suggest a link between air pollution and heart disease, respiratory problems and cancer.

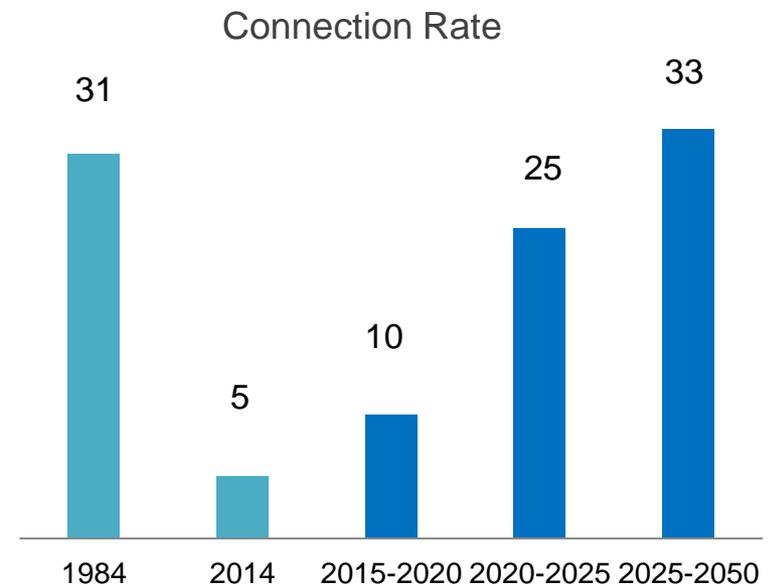
Related Stories

[Air pollution causes cancer - WHO](#)

To deliver 1000 GW new nuclear capacity to 2050

Historic connection rate in the mid of 1980s was 31 GW per year.
Present connection rate is at 5 GW per year.

Period	Connection rate GW per year	Added capacity GW
2015-2020	10	50
2020-2025	25	125
2025-2050	33	825
Total new nuclear capacity		1000 GW



C20th: The electric century



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Agneta Rising, Director General