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Harmony – the future of electricity and nuclear delivering its potential

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Director General

March 2018

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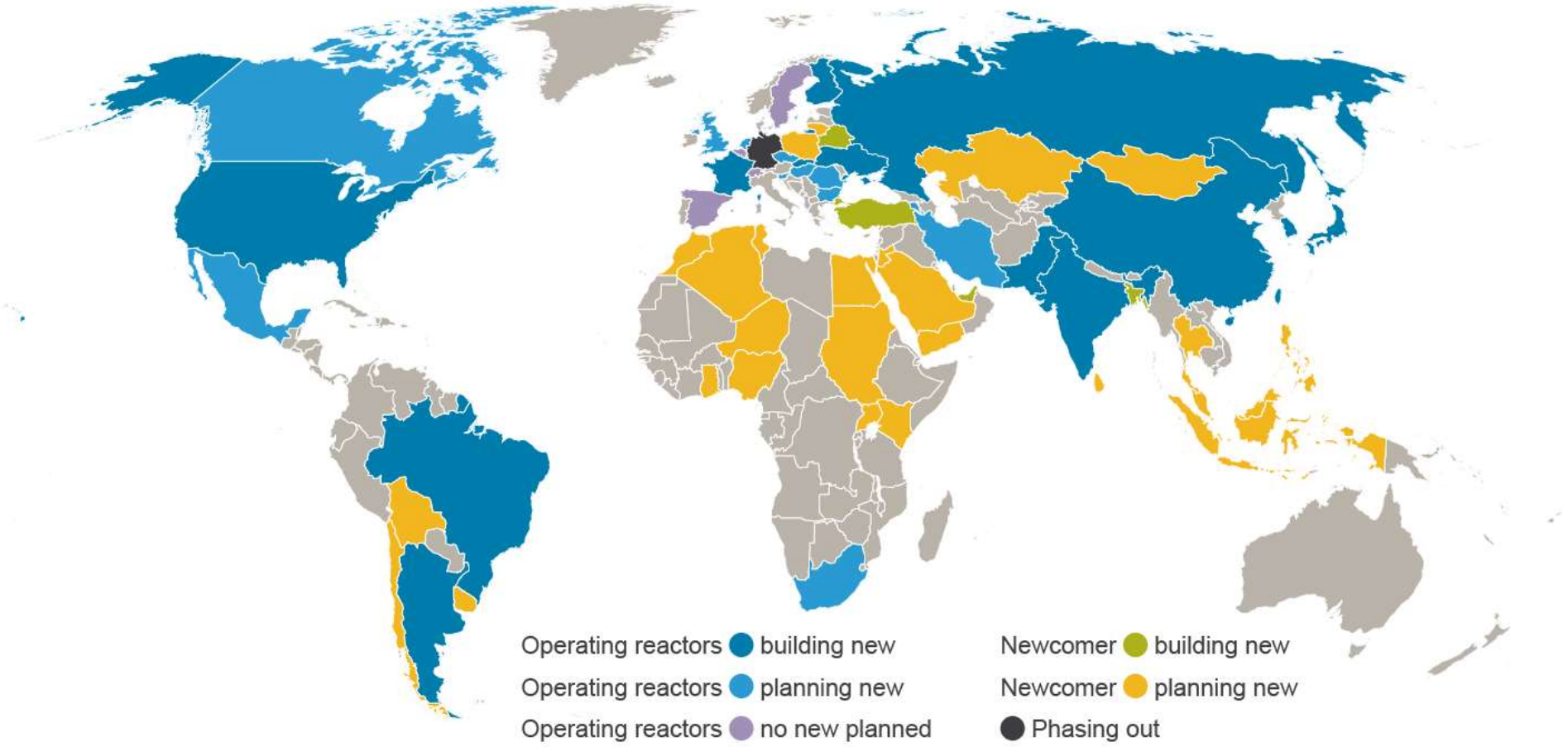
New build and new countries



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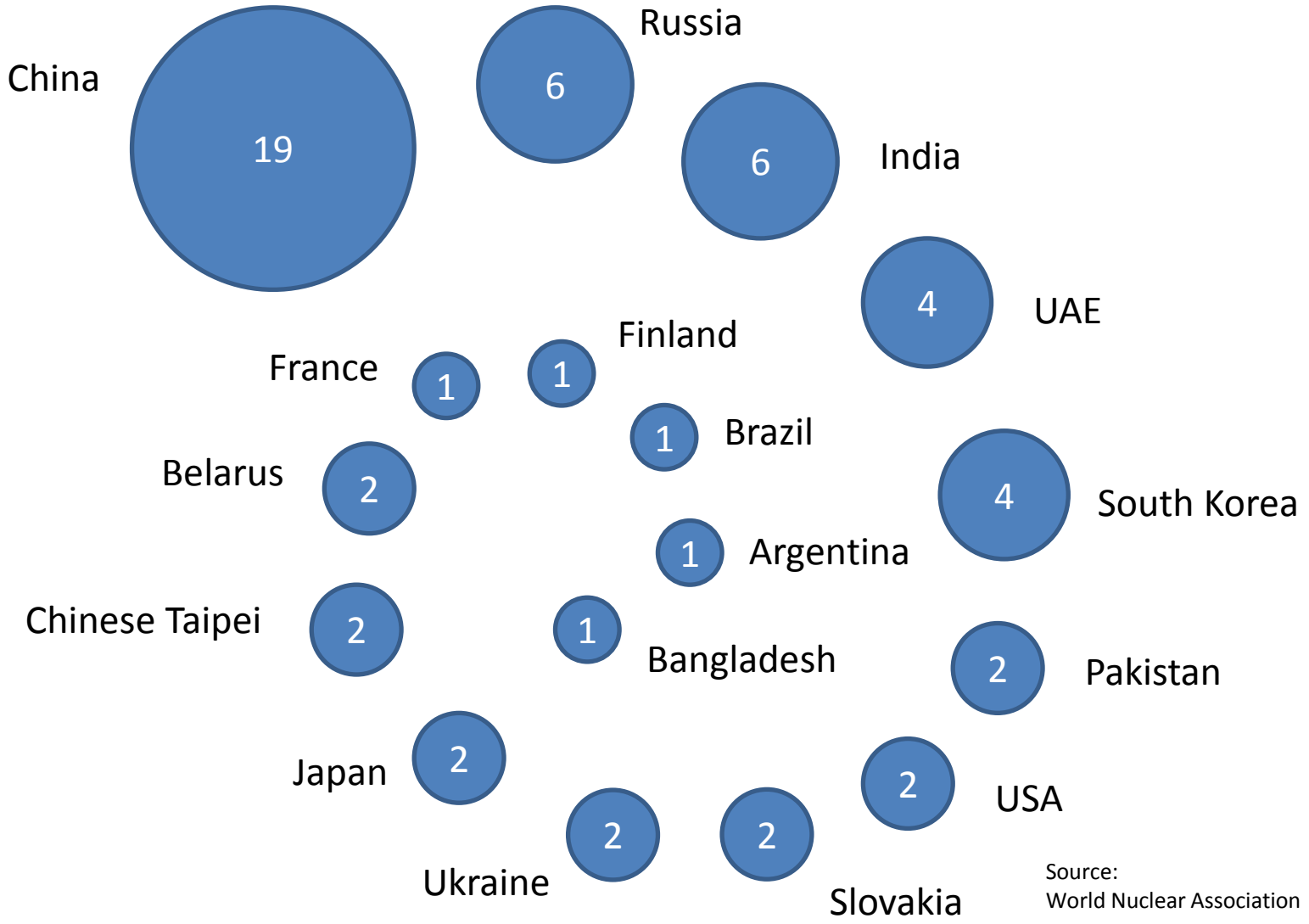
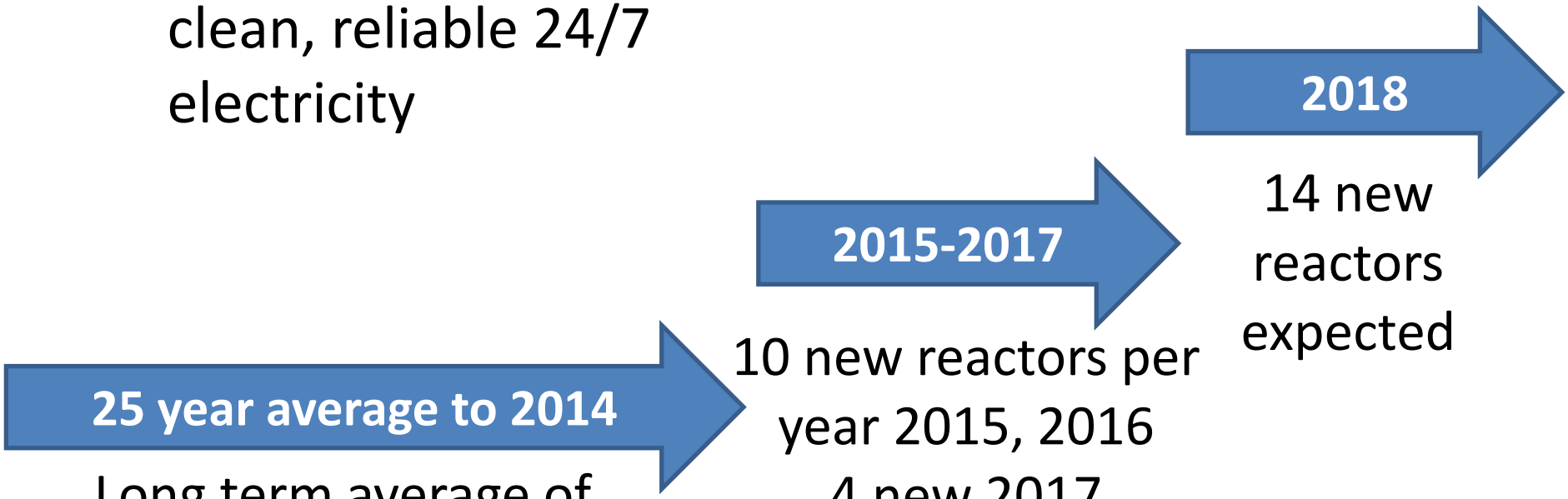
Highest level of construction in twenty five years: 58 reactors worldwide



Source:
World Nuclear Association

2018: Nuclear growth is accelerating

- New countries and new supply chains
- First nuclear power in United Arab Emirates
- Nuclear growth at a 25-year high
- Driven by need for clean, reliable 24/7 electricity



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Demand for electricity continues to rise and must be met cleanly

Source: 1945-1979, International Energy Agency databases and analysis
1980-2012, Energy Information Administration

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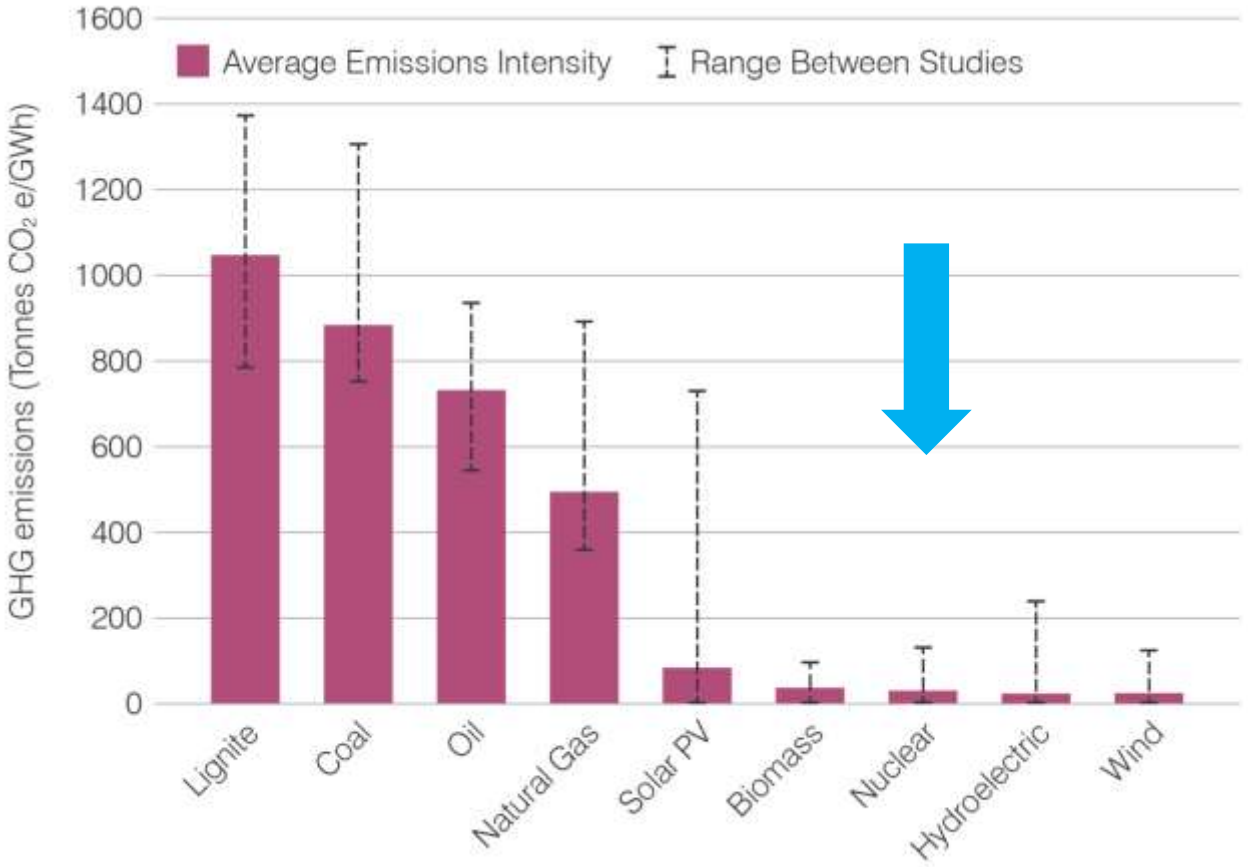
Decarbonising electricity generation – need for low life cycle emissions: Nuclear energy is among the best



Source: World Nuclear Association meta study, incl. IPCC 2014

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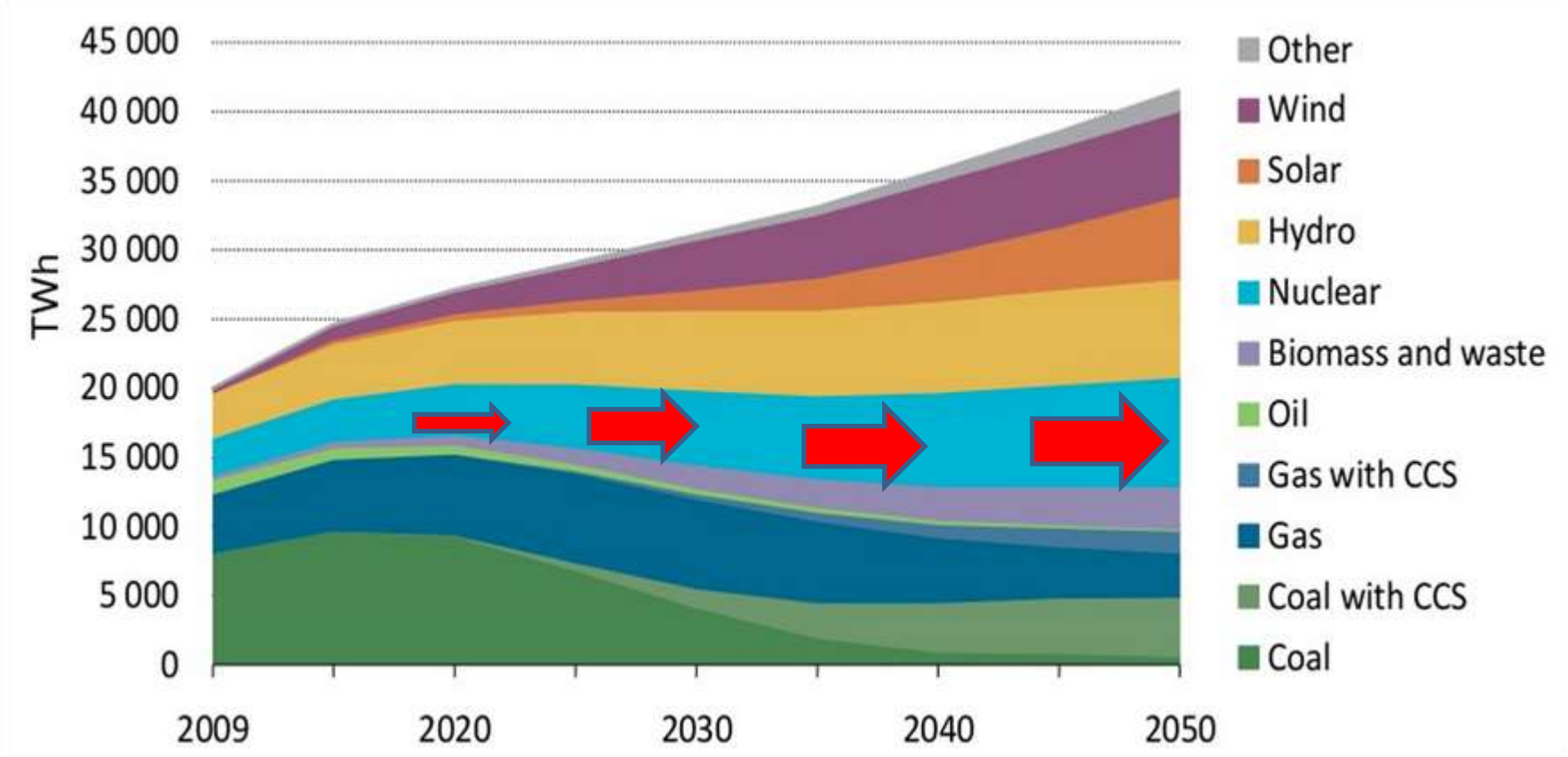
IEA 2°C Scenario: Nuclear to provide the largest contribution to global electricity in 2050



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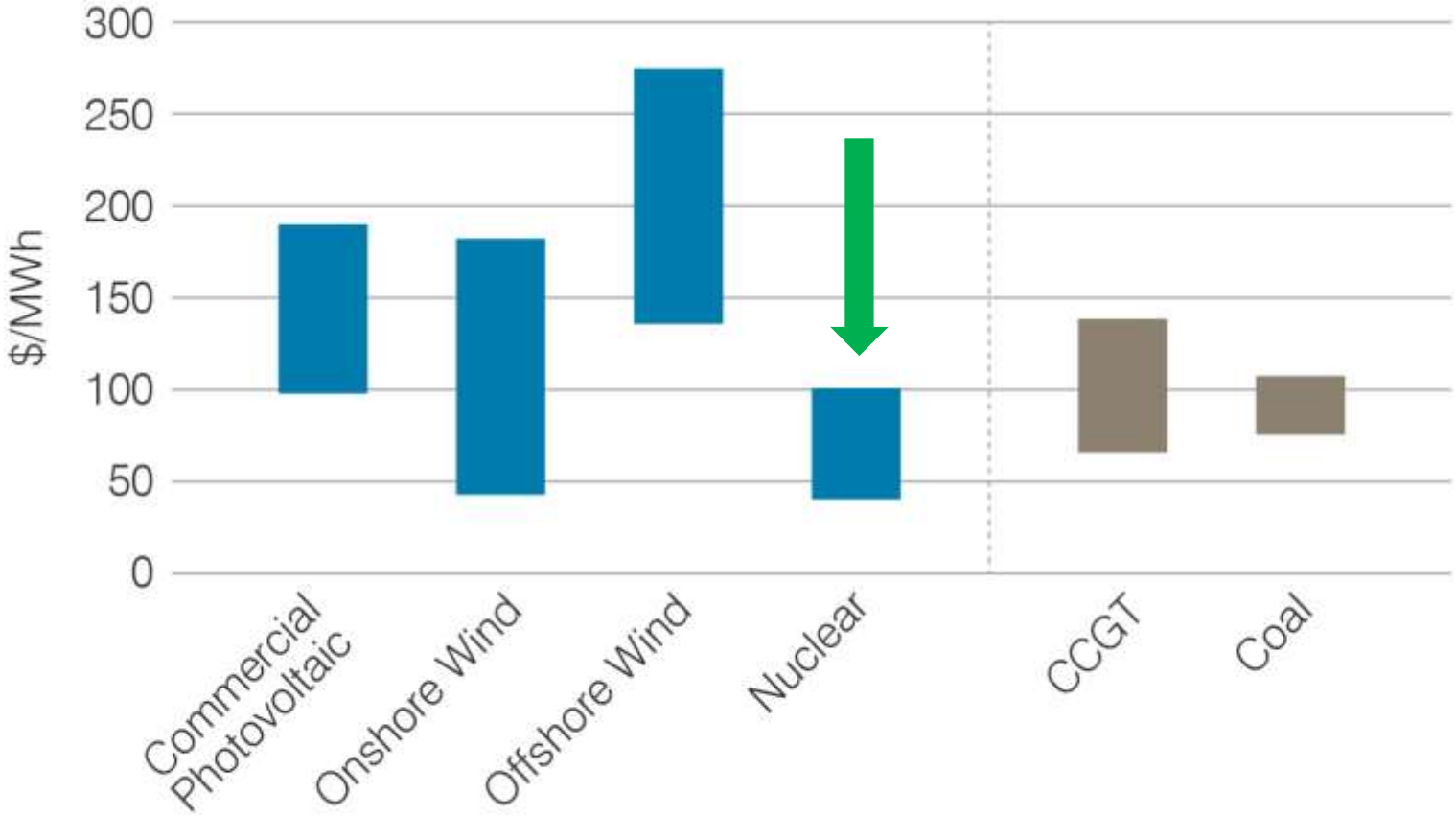
Nuclear energy is cost competitive

Levelised cost of electricity ranges (LCOE) at 7% discount rate



Source: Projected Costs of Generating Electricity - 2015 Edition, International Energy Agency and OECD Nuclear Energy Agency

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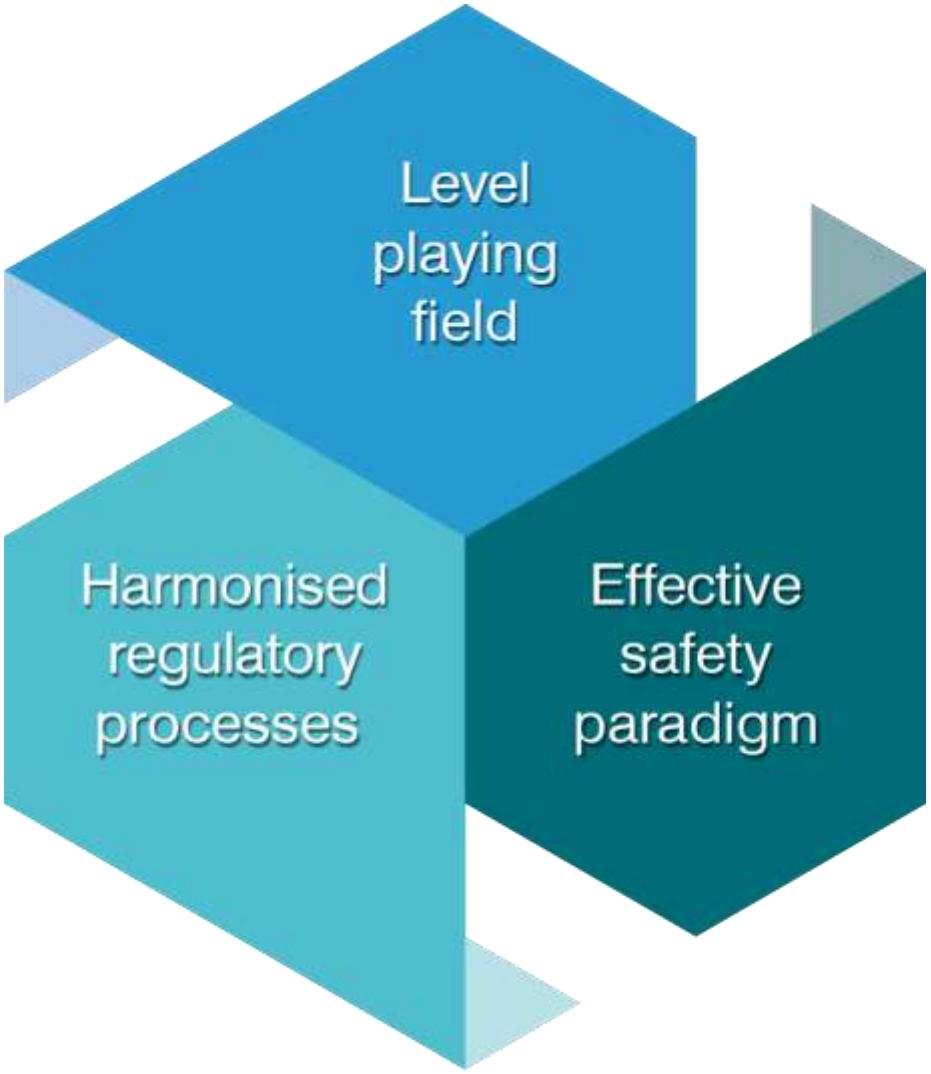
Harmony: a goal for the nuclear community



1000 gigawatt new nuclear capacity by 2050

25% of electricity supply in 2050

Nuclear to deliver reliable, affordable and clean electricity

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The world in not on track with the energy transition. Nuclear energy has to scale up.

Optimise existing low carbon energy resources already in place and drive investment in future clean energy, where nuclear energy is treated equally with other low-carbon technologies and is recognized for its values as part of a low carbon energy mix delivering 24/7

Electricity markets: Create a level playing field

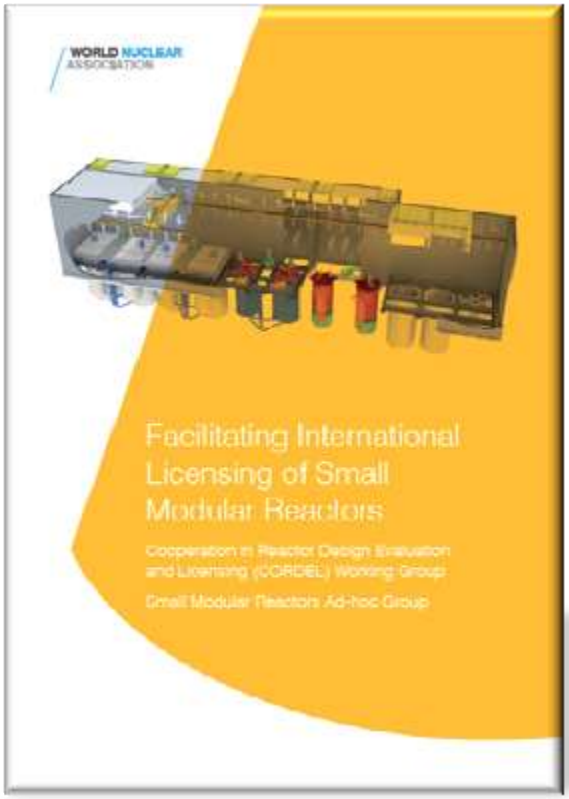
- Adopt appropriate carbon price that recognises energy sources for their zero-emissions attributes
- Reflect system costs in the energy market, ability to deliver 24/7 and ensure security of supply in systems with a large share of renewables
- Encourage investment in large capital low-carbon electricity generation projects

Harmonised regulatory processes

Ensure harmonised regulatory processes to provide a more internationally consistent, efficient and predictable nuclear licensing regime allowing for standardised solutions, to facilitate significant growth of nuclear capacity.

Examples of publications

- Facilitating International. Licensing of Small. Modular Reactors, 2015
- Aviation Licensing and Lifetime Management – What Can Nuclear Learn? 2013
- International Standardization of Reactor Designs, 2010
- Benefits Gained through International Harmonization of Nuclear Safety Standards for Reactor Designs, 2008



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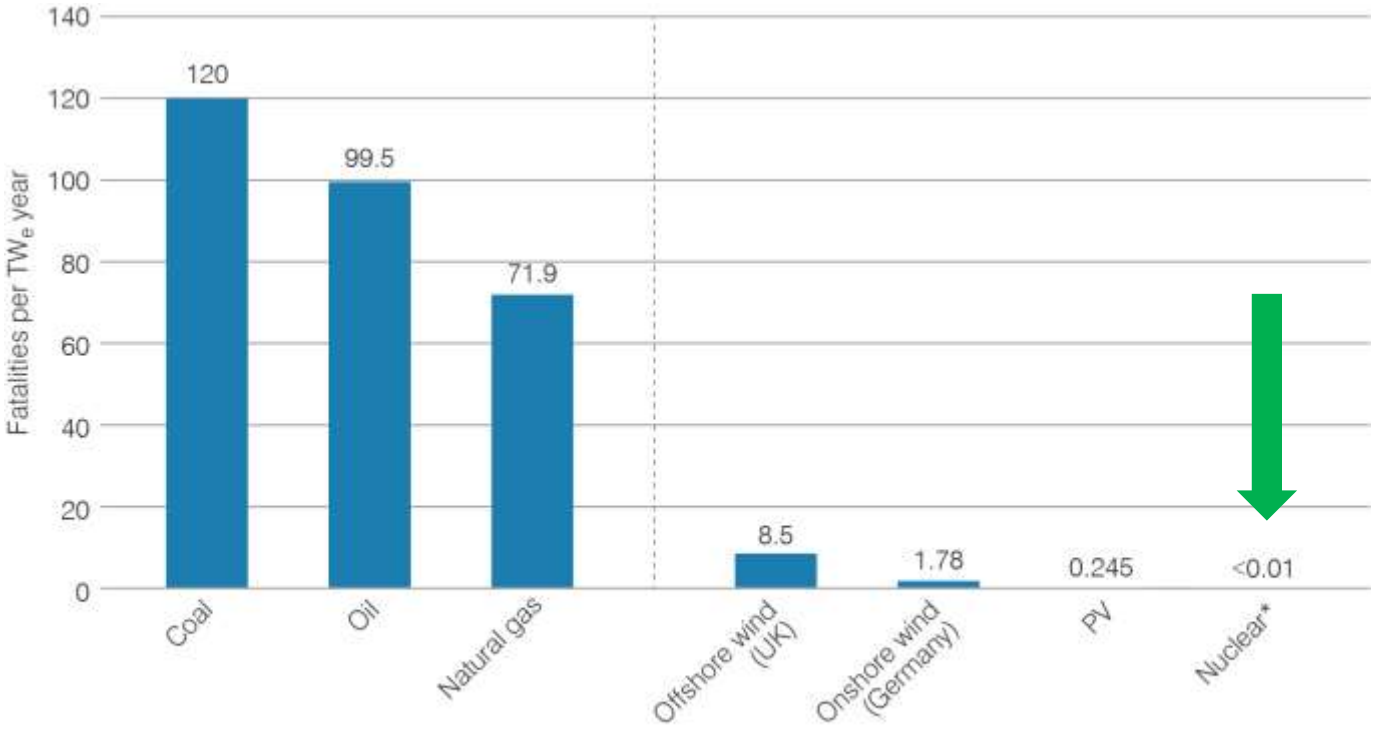
An effective safety paradigm

Create an effective safety paradigm focusing on genuine public wellbeing, where the health, environmental and safety benefits of nuclear are valued when compared with other energy sources

Energy accident fatalities for OECD countries

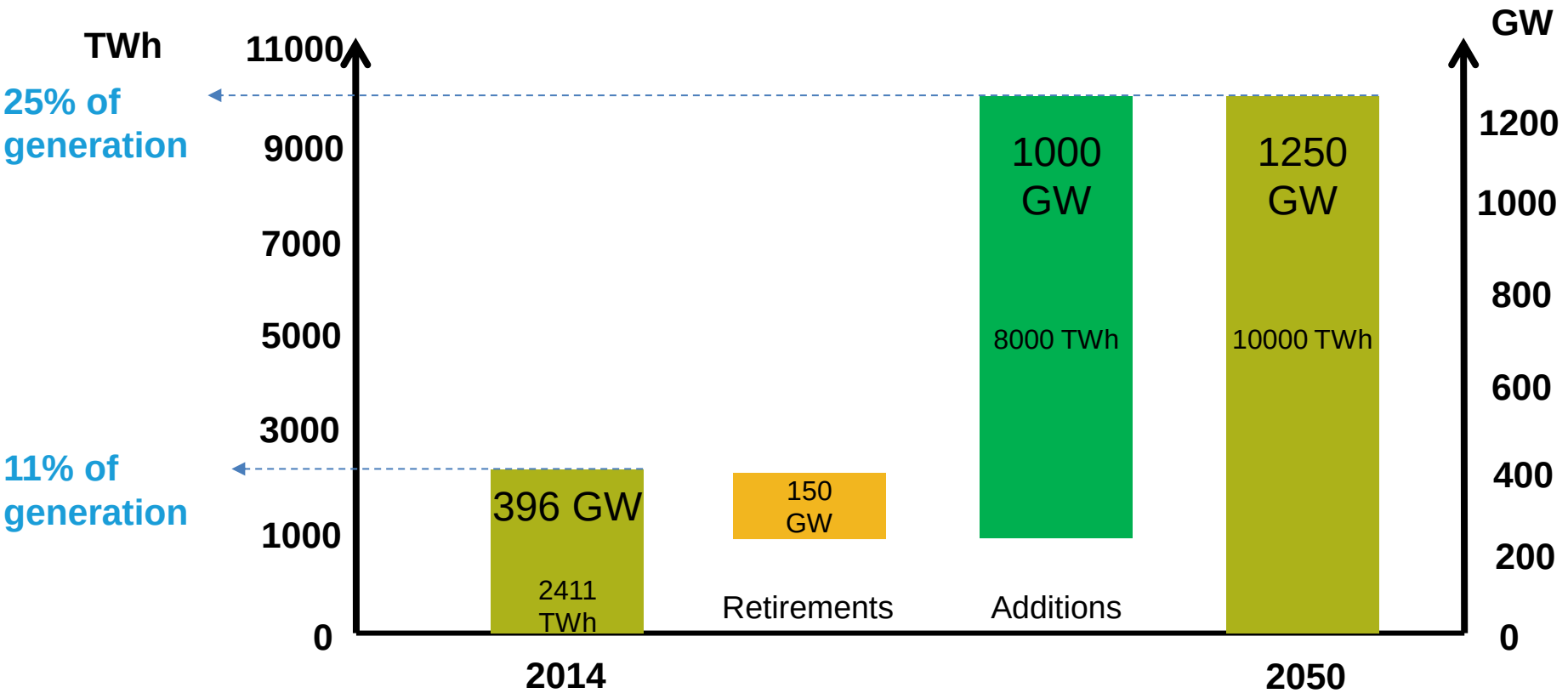


* Gen II PWR, Swiss

Source: Paul-Scherrer Institut. Data for nuclear accidents modified to reflect UNSCEAR findings/recommendations 2012 and NRC SOARCA study 2015

Source: Paul Scherrer Institut. Data for nuclear accidents modified by WNA to reflect UNSCEAR recommendations 2012 and NRC SOARCA study 2015

Nuclear: Substantial growth required to meet demand in IEA 2 degree scenario



Source: World Nuclear Association. Growth required for nuclear energy to supply 25% of electricity in 2050 under demand forecast of two-degree scenario (see IEA, 2015, Energy Technology Perspectives 2015.
Assumption: 91% capacity factor

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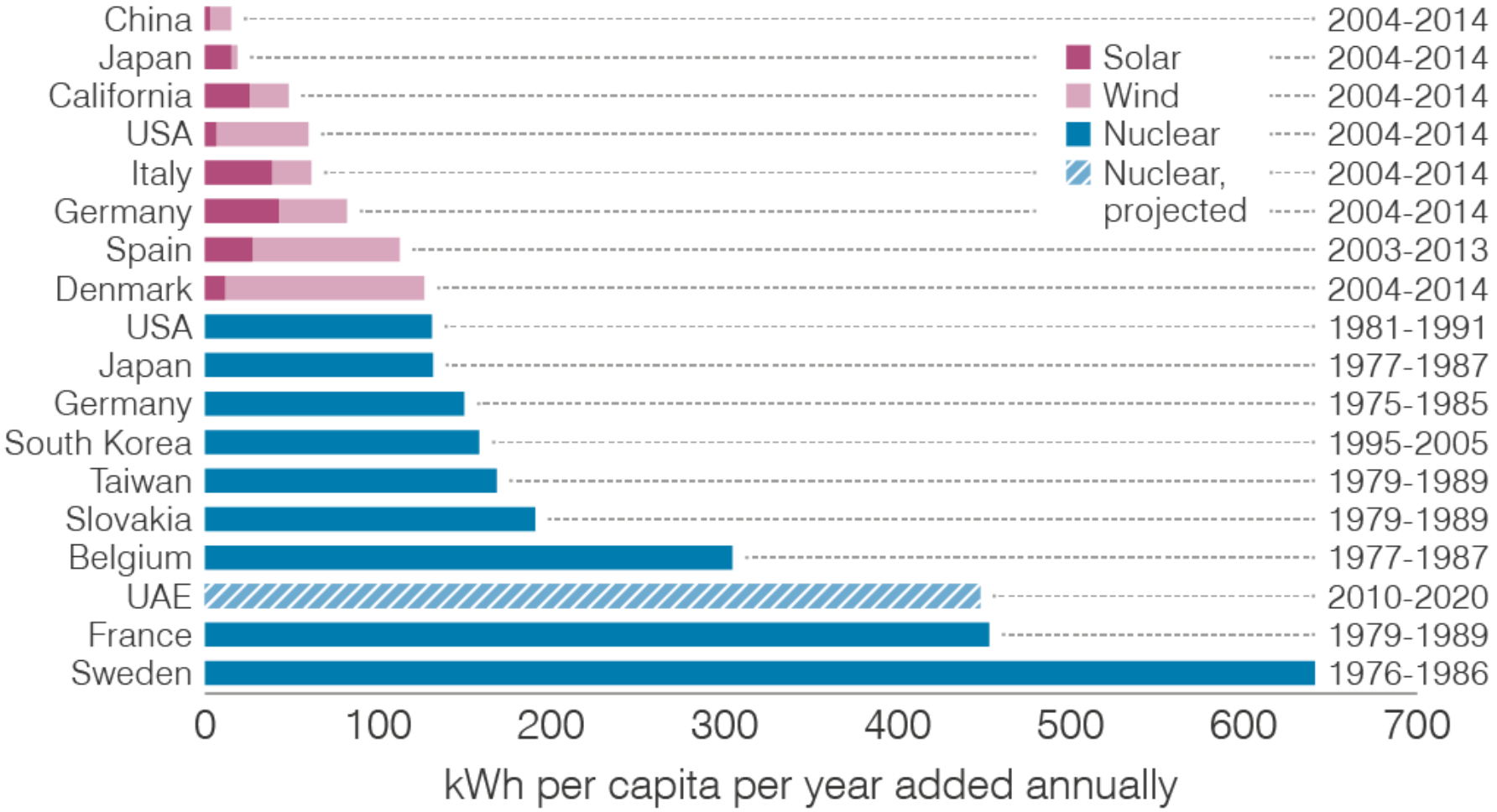
Nuclear makes quick, lasting decarbonisation possible



Source: Cao et al, Science, August 2016. UAE projections by WNA

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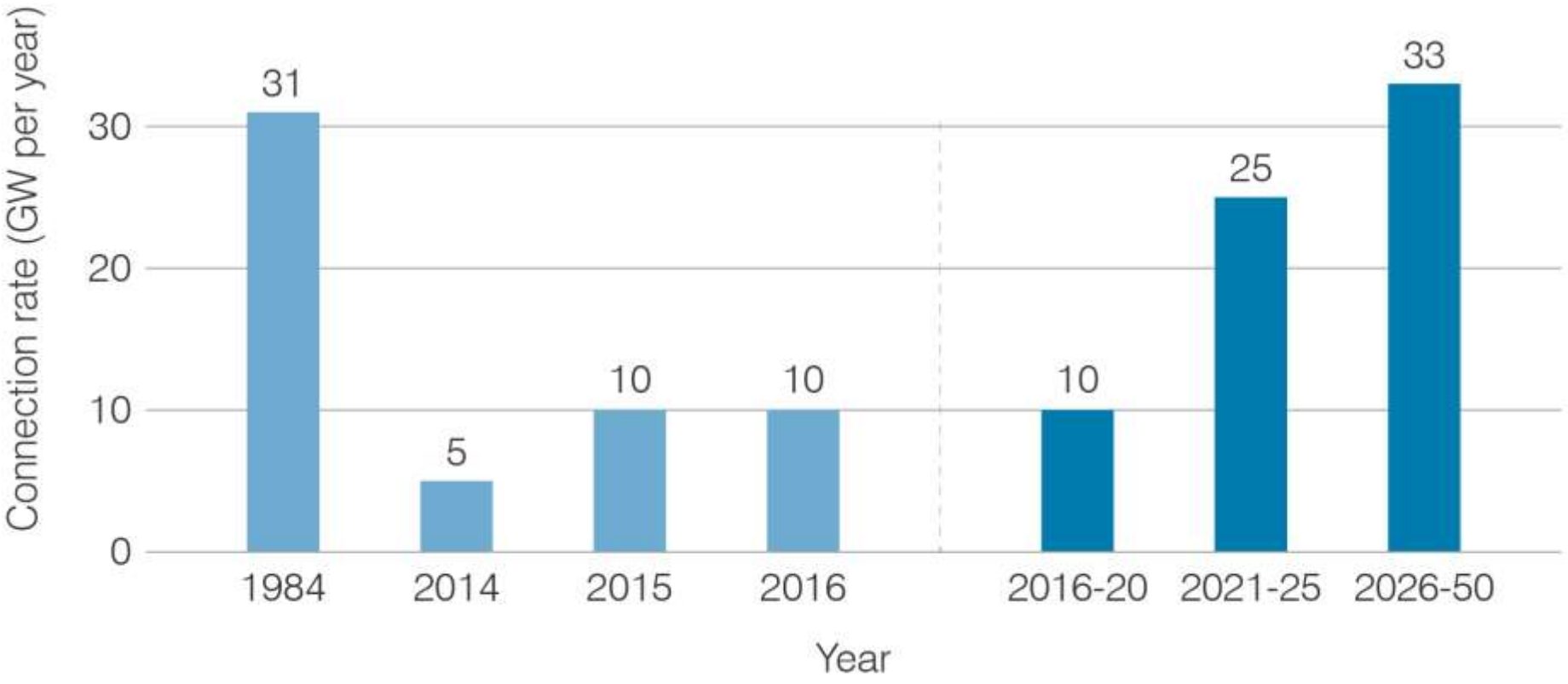
Harmony programme 2016-2050

Cumulative 1000 GW new nuclear capacity to 2050

Construction rate doubled from trend of 5GW/y or less to 10GW/y

We must maintain 10GW/y to 2020, then ramp up to 1980s level



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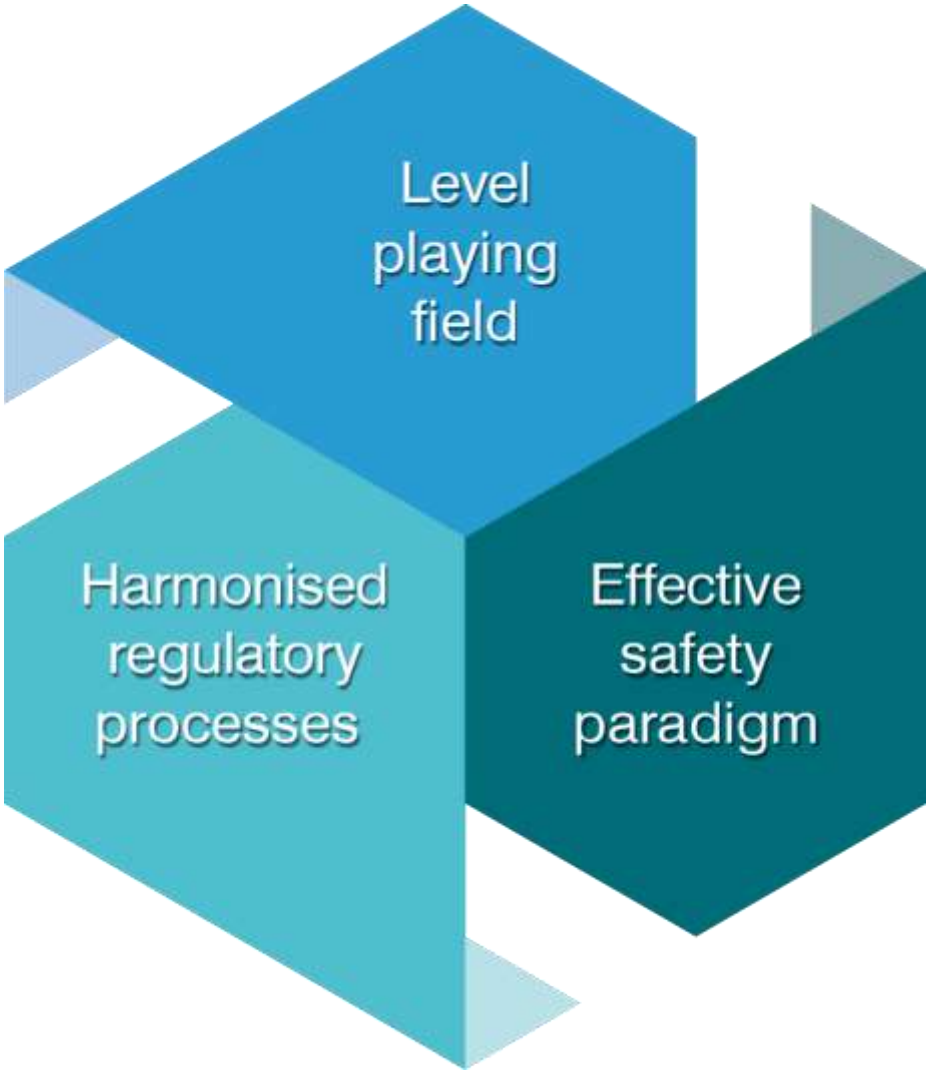
Harmony: a goal for the nuclear community



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www.world-nuclear.org