HARMONY

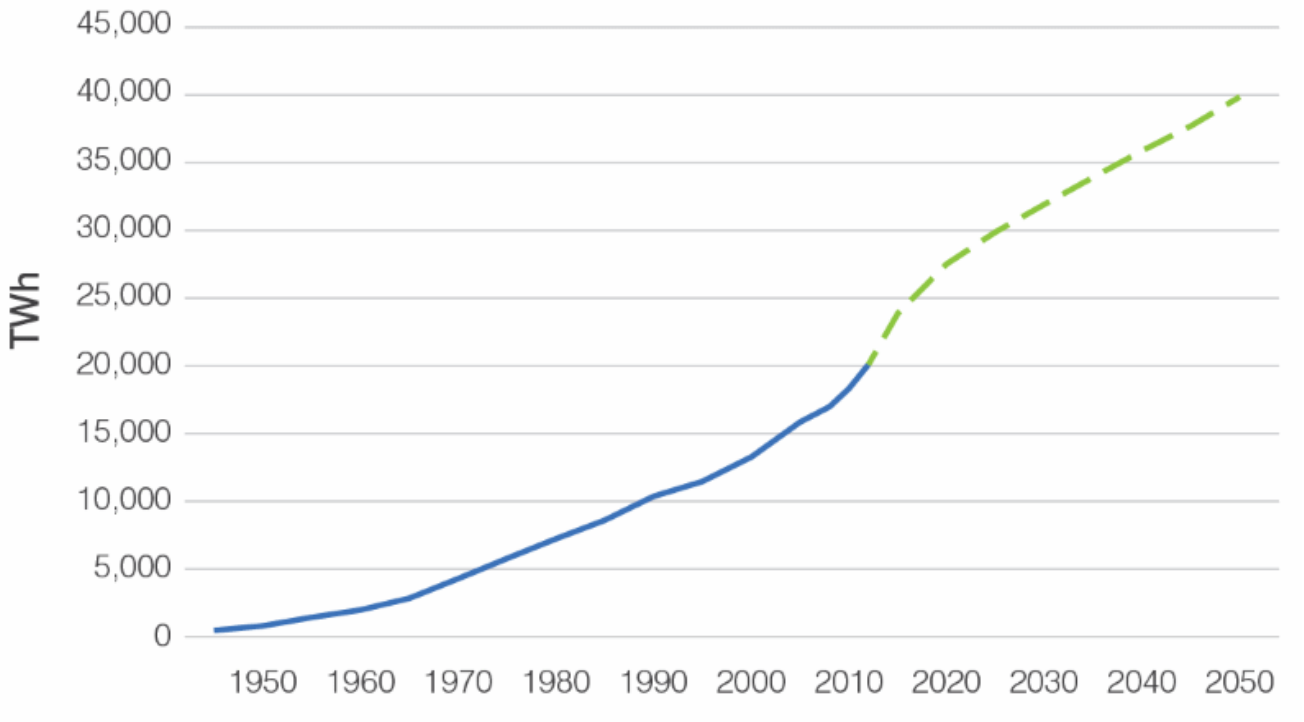
What will power our electric future?

The world has a growing need for clean energy

Almost 1 billion people live without electricity

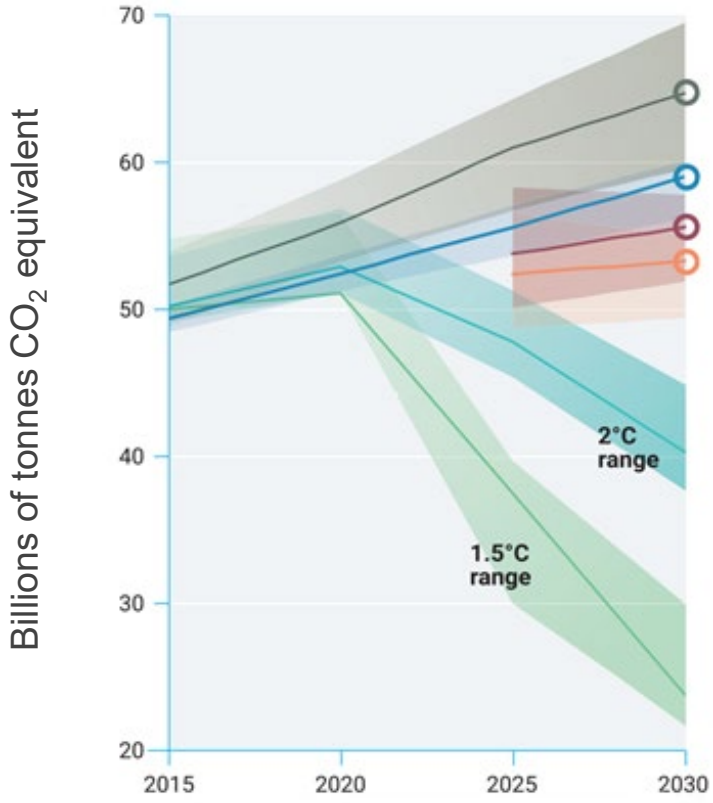
7 million people die each year due to air pollution

Demand for electricity continues to rise and must be met cleanly



Source: 1945-1979, IEA databases and analysis
1980-2012, Energy Information Administration
2013-2050, IEA Energy Technology Perspectives 2015

More serious and urgent action is required on climate



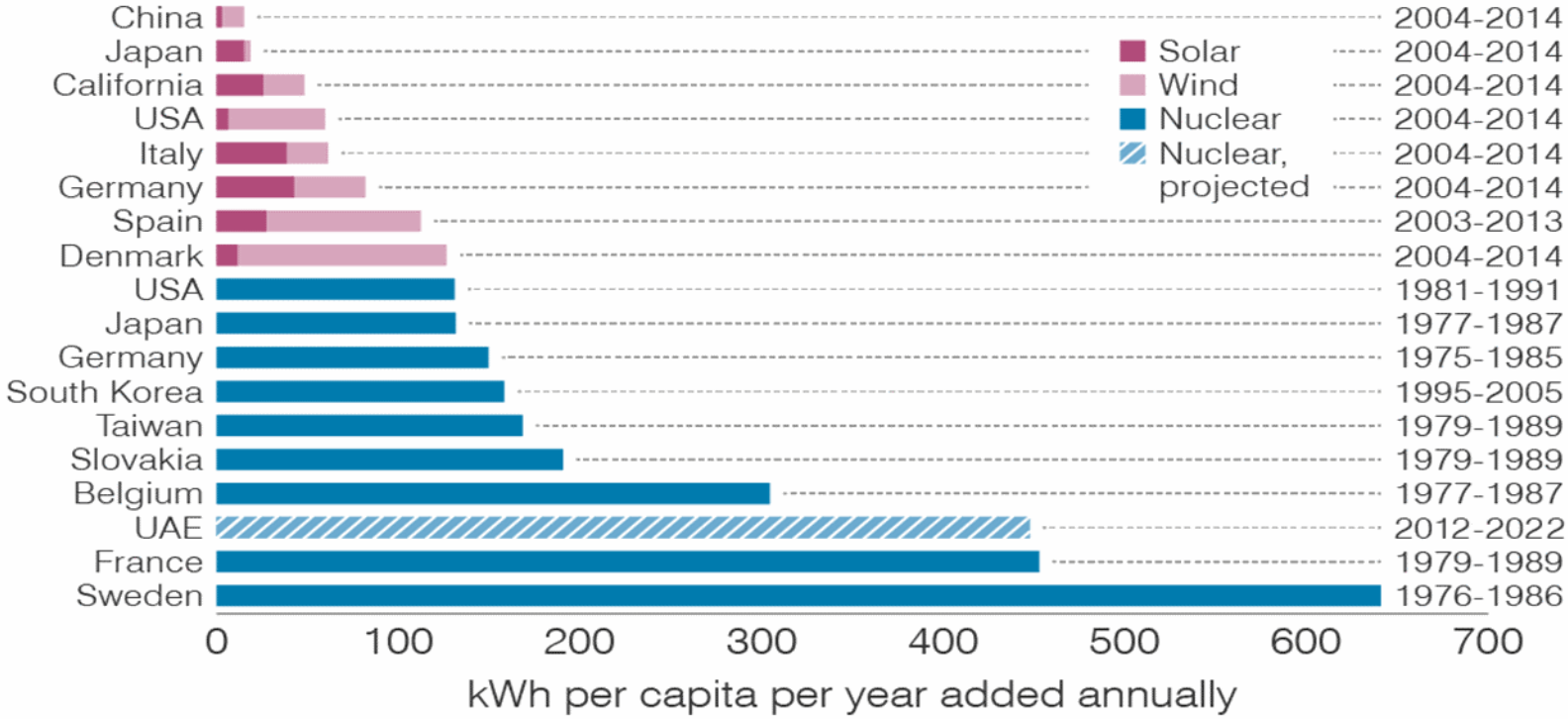
Business as usual

Where current climate commitments take us

Where we need to be

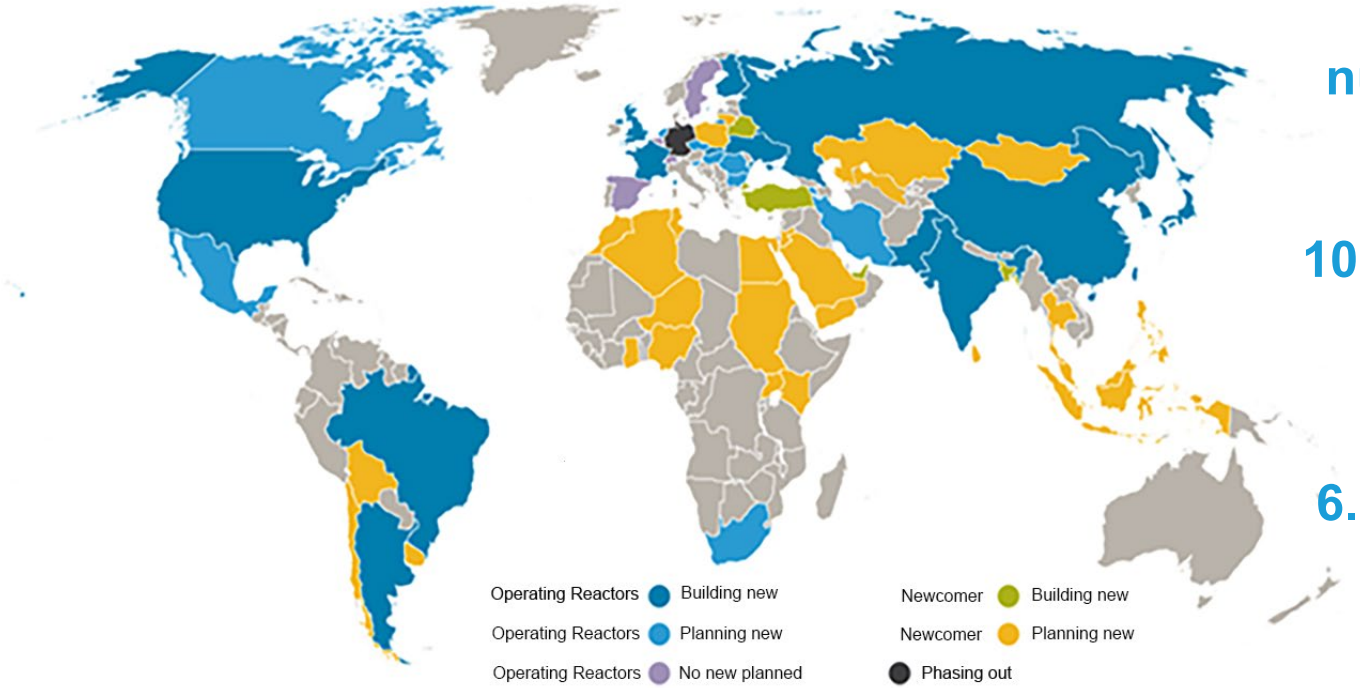
Adapted from Emissions Gap Report 2018, UN Environment

Nuclear makes quick, lasting decarbonisation possible



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

New construction and new countries



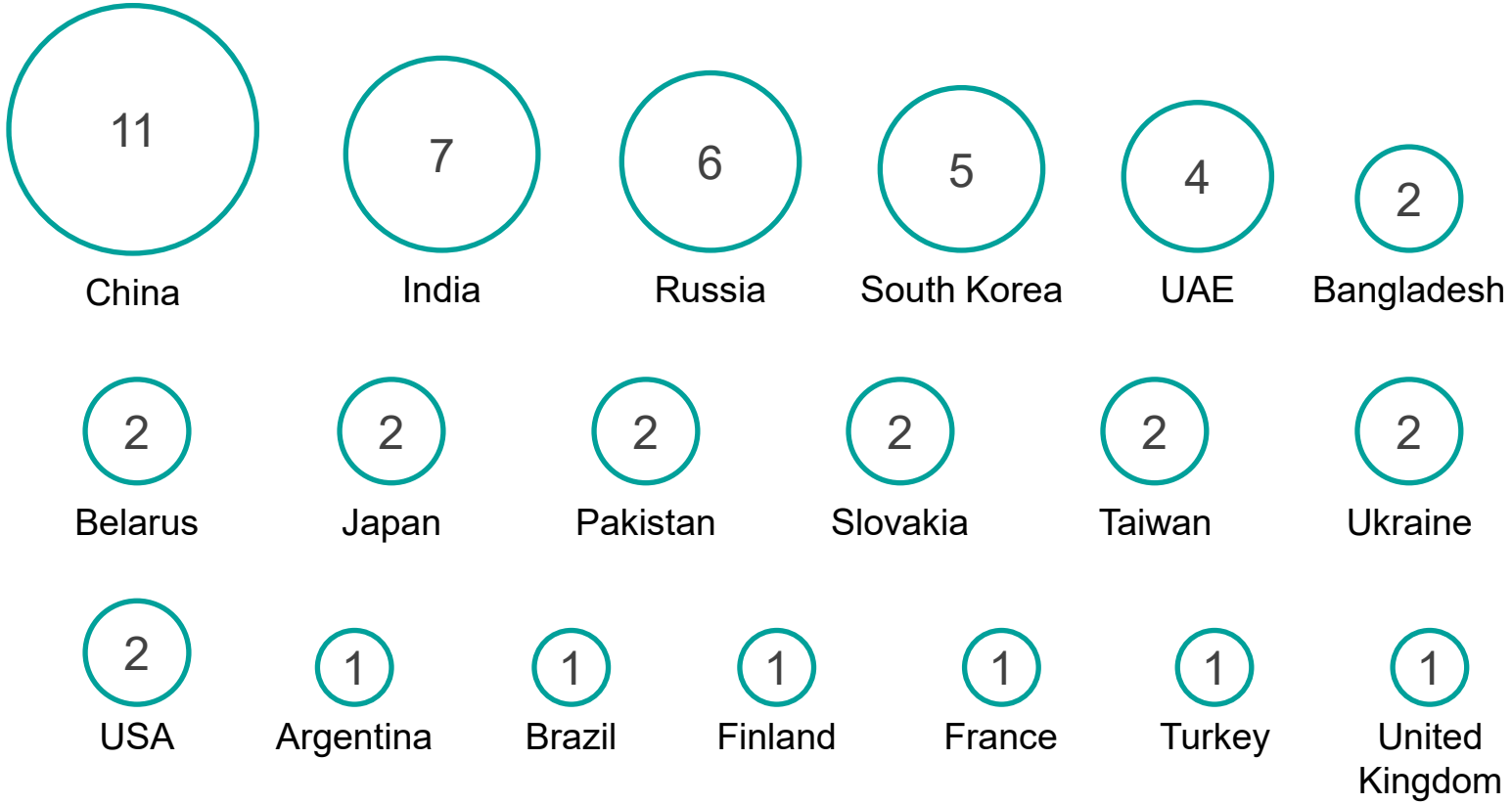
56.3 GWe nuclear construction worldwide

10.9 GWe construction in 4 newcomer countries

6.3 GWe construction started in 2018

Akkuyu 1 **(Turkey)**
Hinkley Point C 1 **(UK)**
Kursk 2-1 **(Russia)**
Rooppur 2 **(Bangladesh)**
Shin-Kori 6 (**Korea Republic)**

Highest level of construction in 25 years: 55 reactors



Clean nuclear energy on track to Harmony goal

10.3 GWe connected to the grid in 2018

Russia: Rostov 4
Leningrad 2-1

China: Tianwan 4
Sanmen 1,2
Haiyang 1,2
Taishan 1
Yangjiang 5

5.4 GWe restarted after lengthy shutdowns

Japan: Genkai 3,4
Ohi 3,4
Ikata 3

Nuclear innovations for further decarbonization

SMRs and floating nuclear power plants for local or remote communities

High temperature gas reactors for industrial heat

Clean electricity or H_2 to decarbonize transport

Fast reactors and fusion for extended fuel utilization

Harmony: a goal for the nuclear community

25% of electricity supply in 2050

1000 gigawatt new nuclear capacity by 2050

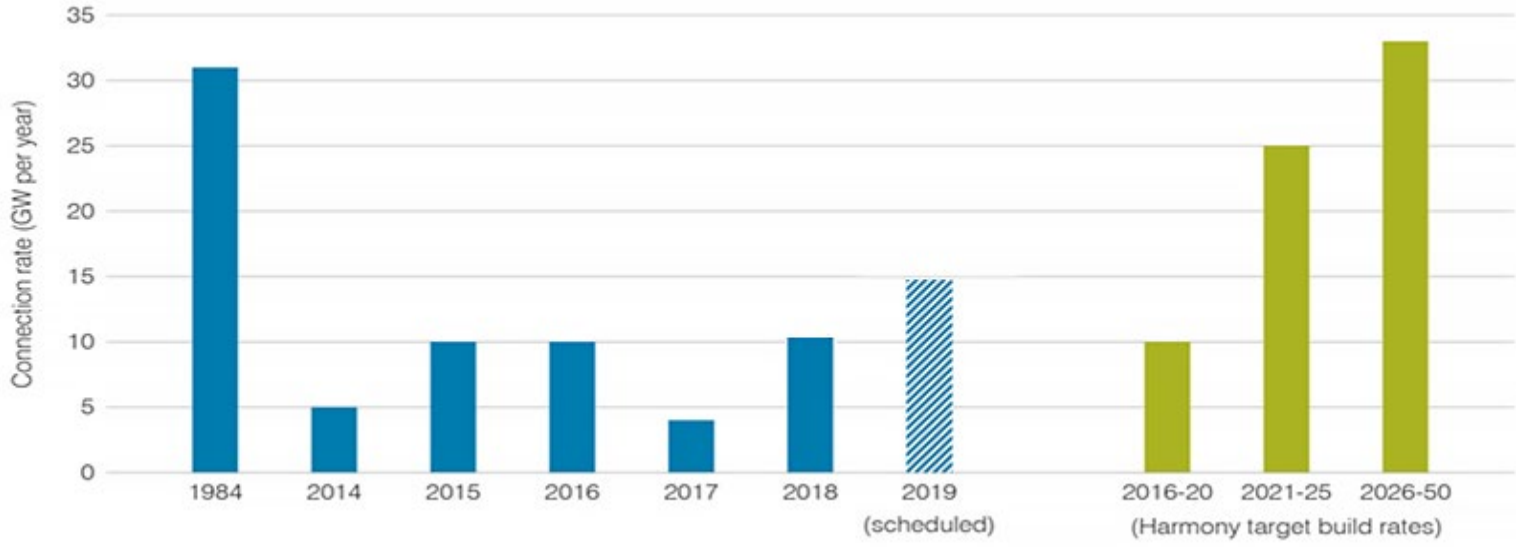
To help meet the growing demand for a clean and reliable low-carbon mix.

Harmony programme 2016-2050

Cumulative 1000 GW new nuclear capacity to 2050

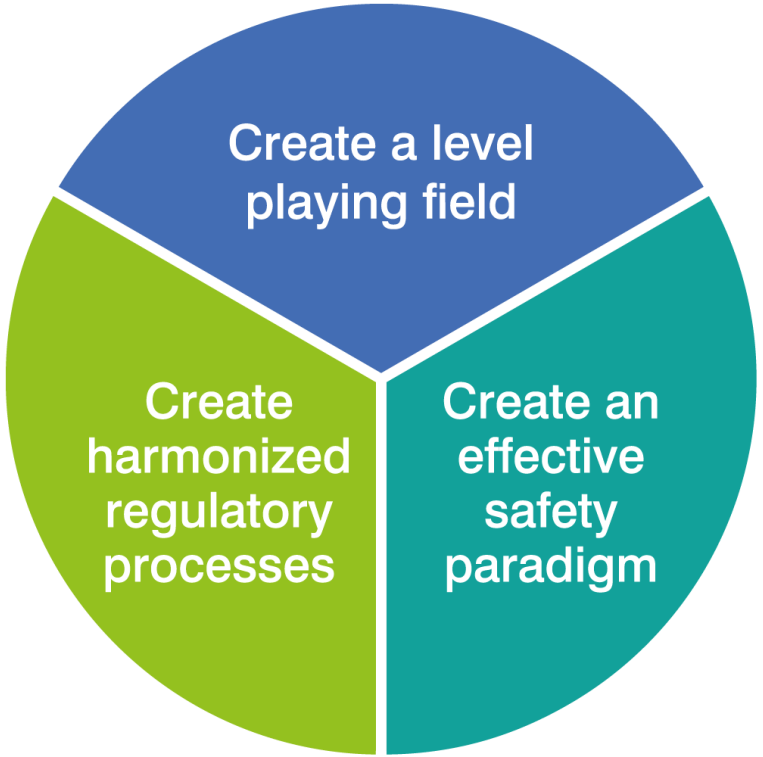
Construction rate doubled from trend of 5GW/y or less to 10GW/y

Then we need to triple from today's level



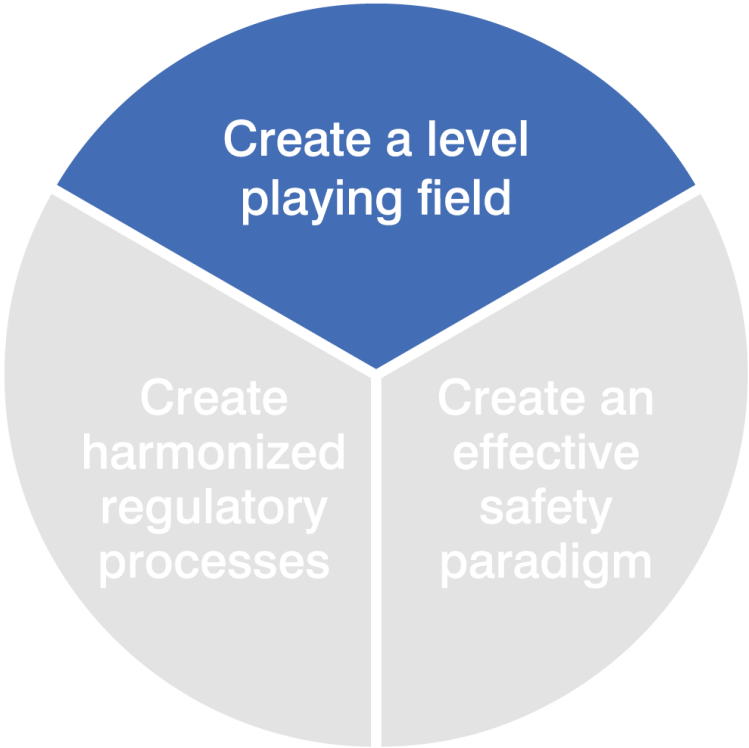
Harmony Programme

The Harmony programme provides a framework for action, helping industry reach out to key stakeholders so that barriers to growth can be removed.

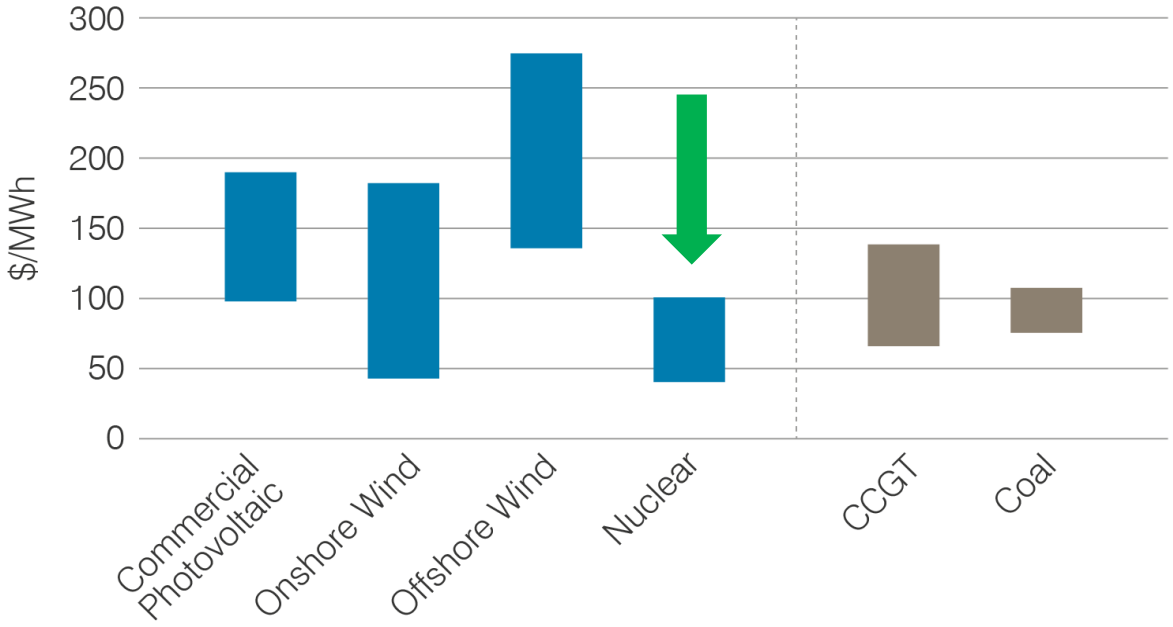


Level Playing Field

Create a level playing field in energy markets which optimizes existing low-carbon energy resources already in place and drives investment in future clean energy, where nuclear energy is treated on equal opportunity with other low-carbon technologies and recognized for its value in a reliable, resilient low carbon energy mix.



Nuclear energy is cost competitive: Levelized cost of electricity ranges (LCOE) at 7% discount rate



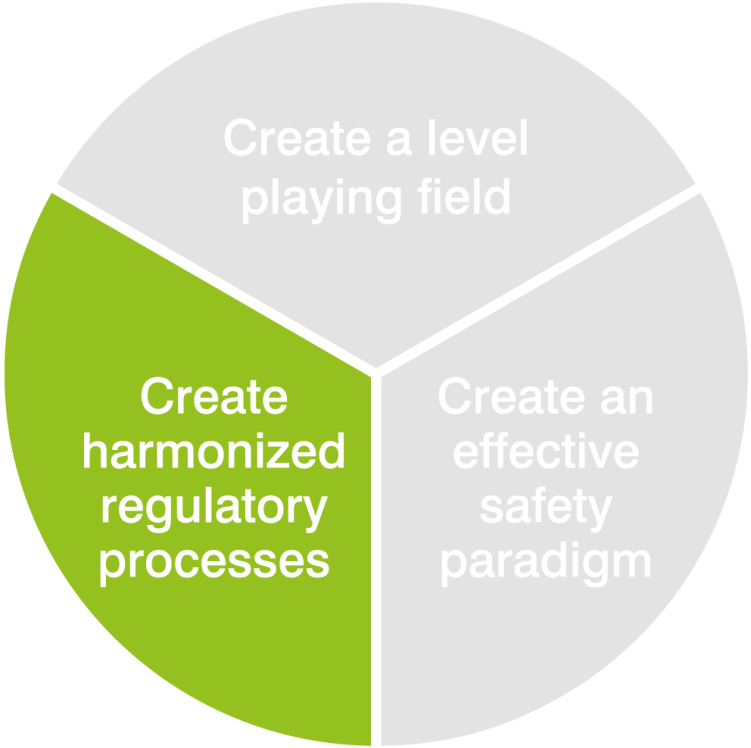
Source: Projected Costs of Generating Electricity - 2015 Edition, International Energy Agency and OECD Nuclear Energy Agency

HARMONY

Dozens of well-performing reactors are at risk of early closure in failing markets

Harmonized Regulatory Processes

Create harmonized regulatory processes in order to provide a more internationally consistent, efficient and predictable nuclear licensing regime, to facilitate significant growth of nuclear capacity and timely licensing of innovative designs.



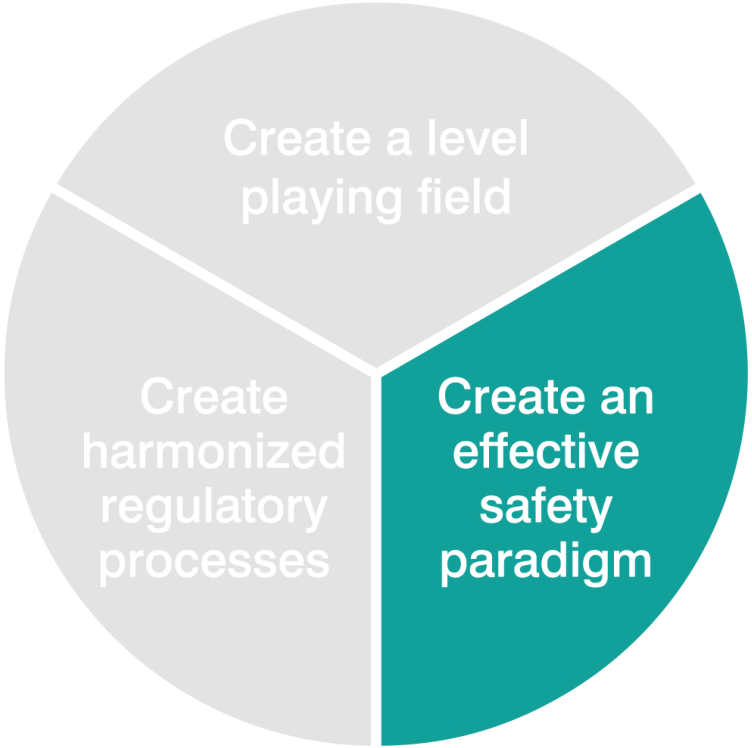
The variety of national regulatory requirements…

"…causes many drawbacks for the entire nuclear industry, including developers, vendors, operators and even regulators themselves

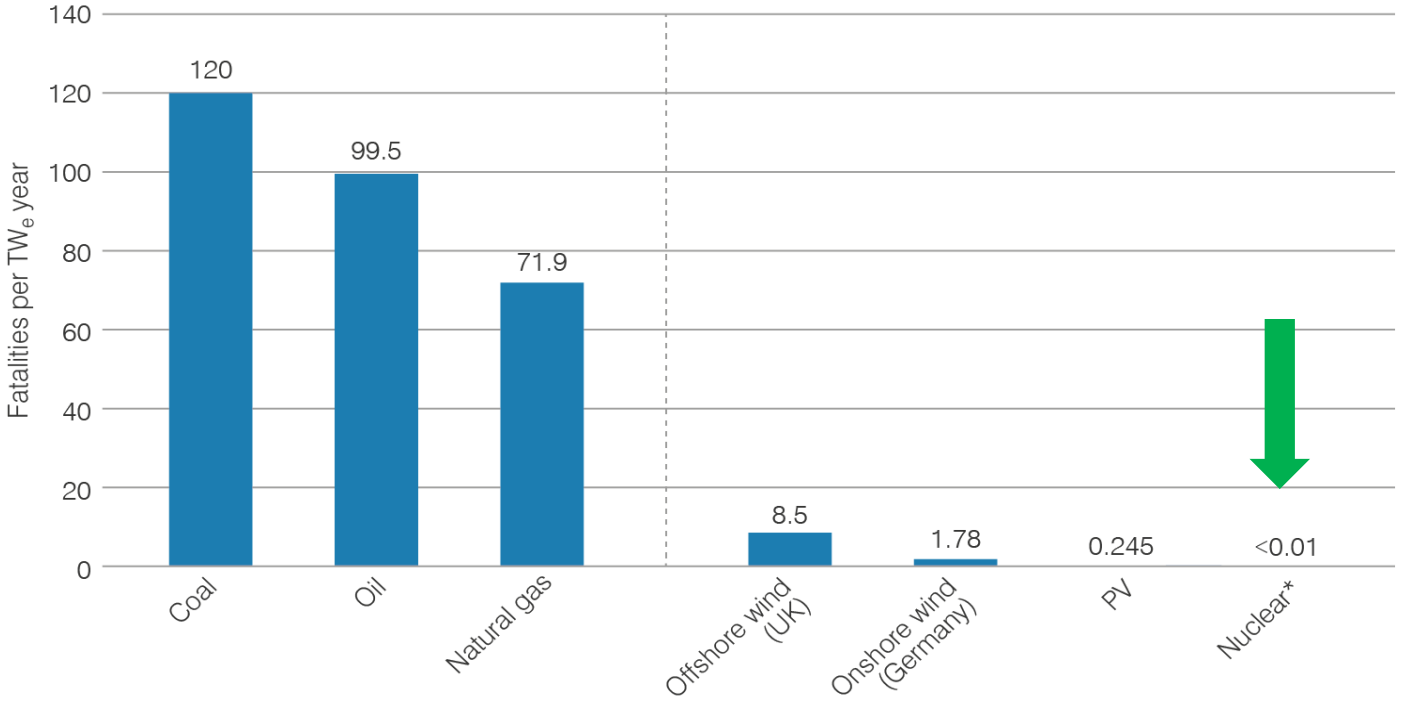
This results in increased costs and reduced predictability in project execution"

Effective Safety Paradigm

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



Safety of Electricity Generation:
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

Communicate the real benefits of nuclear technologies

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“There is no sustainable energy future in the absence of nuclear energy.”
Fatih Birol,
Executive Director,
International Energy Agency

HARMONY

"Harmony's success will depend on how we spread the word about nuclear energy to mitigate the worst impacts of climate change."

Josh Freed,
Vice President, Clean Energy Program,
Third Way

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WORLD NUCLEAR ASSOCIATION

The Harmony programme is a global initiative of the nuclear industry coordinated by World Nuclear Association.