

# Harmony — the future of electricity

By Agneta Rising



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The World Nuclear Association's Harmony programme sets out the global nuclear industry's vision for the future of electricity. It aims to help the world meet the energy challenges arising from the increase in demand for electricity and the need to reduce greenhouse gas emissions and air pollution. For this purpose, the nuclear industry has set the Harmony goal of 25 percent of global electricity in 2050 to be provided by nuclear energy. This will require the construction of approximately 1000 GWe of new nuclear capacity.

The Harmony goal is based on the International Energy Agency's 2 degree scenario, which aims to avoid the most damaging consequences of climate change and, thus, requires a large increase in the production of nuclear energy. To meet this goal, Harmony envisages a mix of low-carbon generating technologies working together.

Governments' current Intended Nationally Determined Contributions — the climate actions that countries declared they would take under the Paris Agreement to curb greenhouse gas emissions — fall significantly short of the 2 degree target, let alone the aim of reaching 1.5 degrees. The current plan to address climate change is, therefore, not on track, and urgent additional action is needed

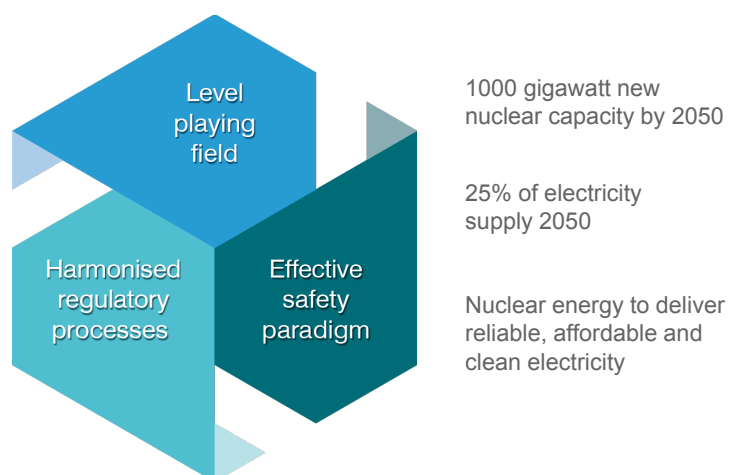
to reduce emissions. However, achieving the Harmony goal will only be possible if the following objectives are met.

## Level playing field

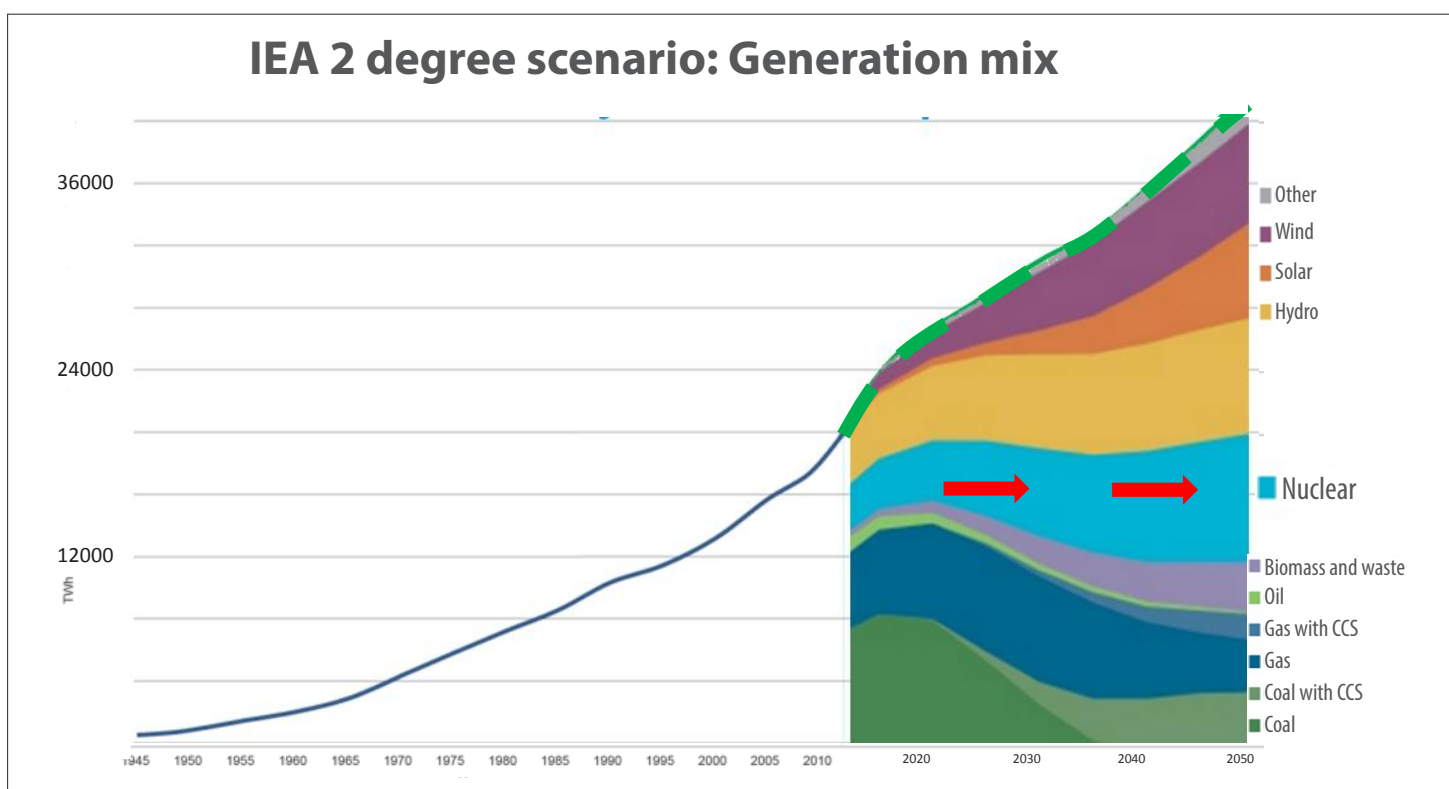
Nuclear is a proven source of reliable, clean, baseload power with significant benefits. However, nuclear power plants are facing financial challenges, resulting in early closures of plants that were performing well operationally and limited investment in new ones. A combination of factors, including subsidies and priority of dispatch for renewable energy, has led to market failure for nuclear power.

The Harmony objective is to support the establishment of a level playing field in energy markets that recognizes existing low-carbon energy resources already in place and drives investment in additional clean energy resources where nuclear energy is treated on an equal level with other low-carbon technologies and is recognized for its values in a reliable low-carbon energy mix. As the only low-carbon generating resource that can be scaled to meet actual demand, nuclear power should also receive recognition and compensation for its contribution to system reliability and for other public benefits.

## Harmony goal: ready to deliver more nuclear to ensure the 2 degree scenario



Source: WNA



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

## Harmonized regulatory processes

Nuclear safety is a national responsibility, and this has led to significant differences in licencing arrangements, with each State developing its own regulatory framework, licencing process and safety requirements. While there is a globalized market for new nuclear projects and supply chain, this internationalization has not spread to regulation and licencing. The harmonization of regulatory processes, safety requirements and codes and standards would result in significant benefits for improved new build investment, project delivery, reduced costs, accelerated innovation and increased safety.

Harmony aims to promote harmonized regulatory processes to provide a more internationally consistent, efficient and predictable nuclear licencing regime that allows for standardized solutions to facilitate significant growth of nuclear capacity, without compromising safety and security.

## Effective safety paradigm

Despite nuclear energy's good safety record, a lack of public confidence and trust in some countries is restricting its development. Nuclear energy has one of the lowest overall impacts on human health and the

environment, but this is not reflected in public understanding. Therefore, we need to create an effective safety paradigm that focuses on genuine public well-being, where the health, environmental and safety risks and benefits of nuclear are recognized and assessed objectively alongside those of other power generation technologies.

## The need for action

While the Harmony goal is ambitious, it is achievable. In order for nuclear energy to reach the Harmony goal and to support the world in meeting its 2 degree target, a rapid ramp-up of new nuclear builds to an annual connection rate of 33 GWe within the next decade is required, which is comparable to the rate achieved in the 1980s. The main challenges are not in the production — although significant strengthening and building of capability would be required — but in securing the necessary policy support and building confidence.

The World Nuclear Association's Harmony programme is a cooperative effort by the whole nuclear community, working with key stakeholders to take the action necessary for nuclear energy to be able to play its crucial part in meeting the global energy challenge.