# Competitiveness of Nuclear Energy

IAEA Scientific Forum

Nuclear Technology for Climate

*Mitigation, Monitoring, Adaptation*

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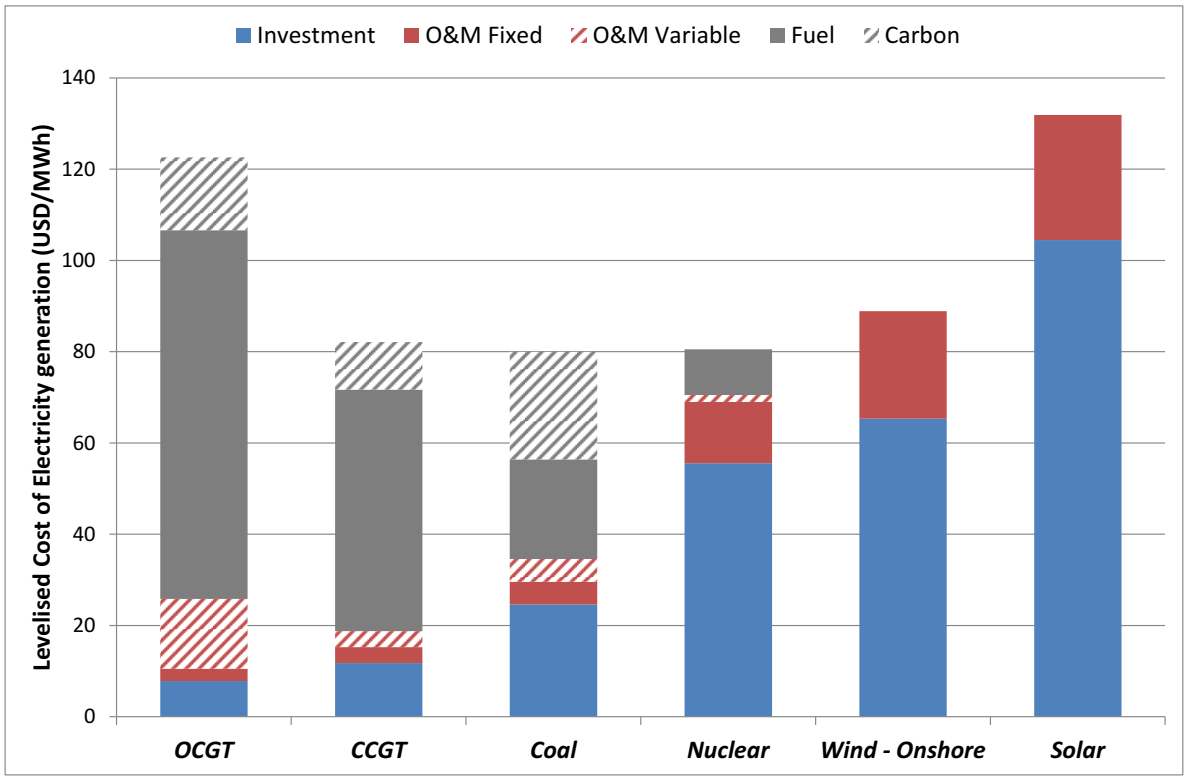
# Is Nuclear energy cost competitive? It depends...

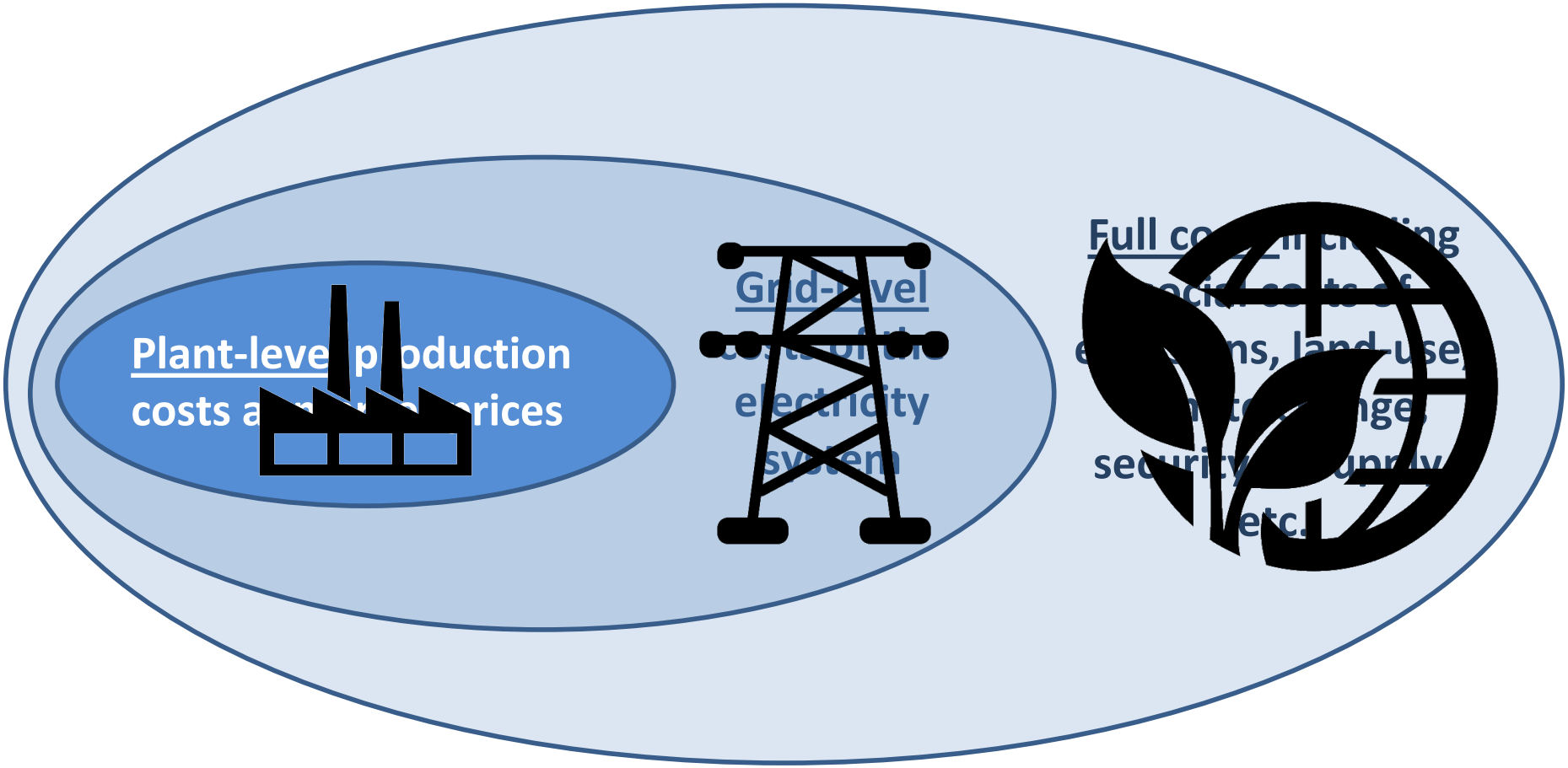



**Levelised Cost for Plants Built in 2020**

- **Today's nuclear energy plants are a very competitive source of long-term electricity supply**
- **Costs of renewables are dropping, but without subsidies are still high**
- **Costs of natural gas still set the pace for the market and are generally low**

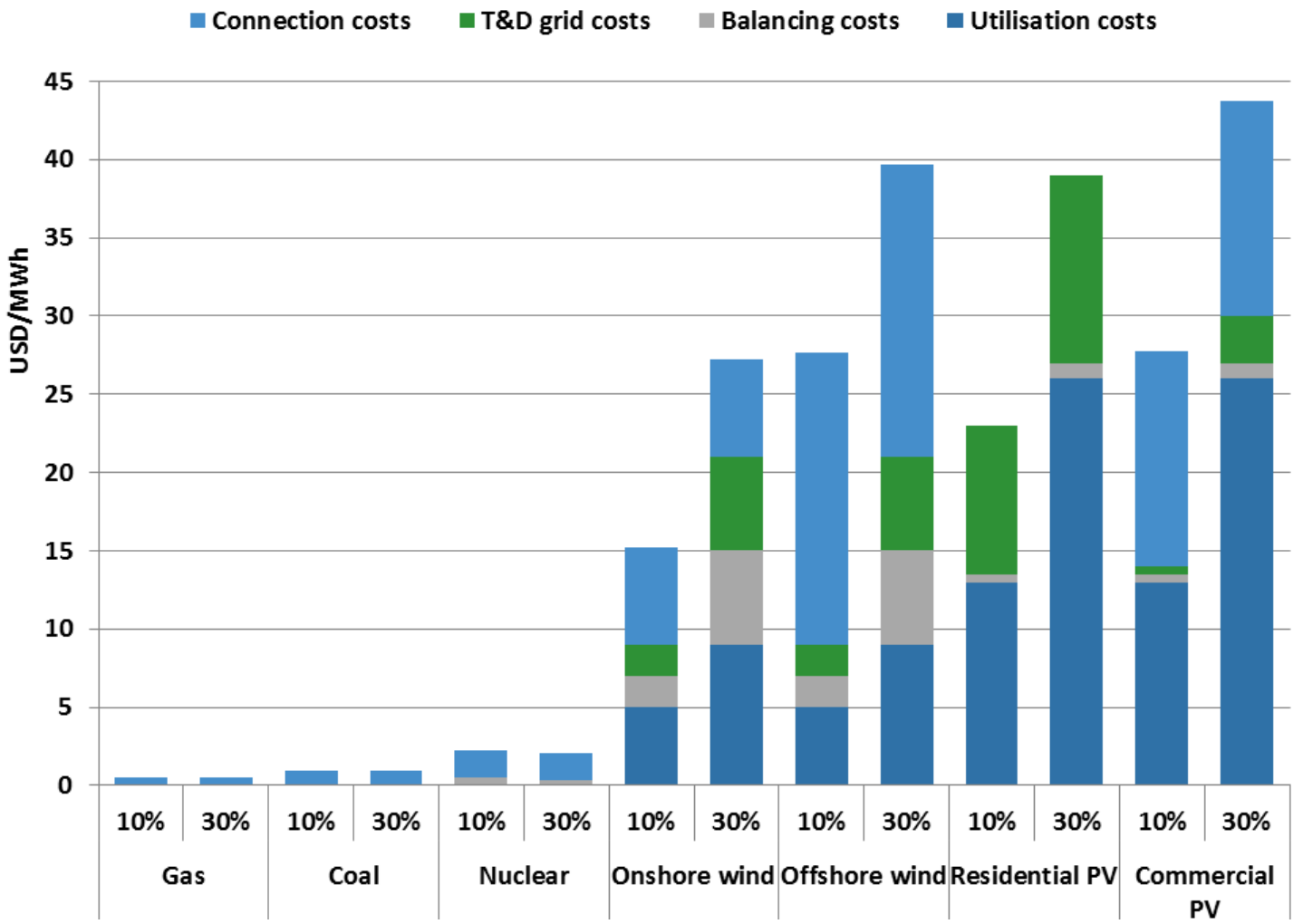
Source: NEA

# A price that reflects the true value




**Accounting for full costs informs public debate but cannot substitute for it.** Social and political discussions will give different weights to different variables in different countries

# Grid-level system costs



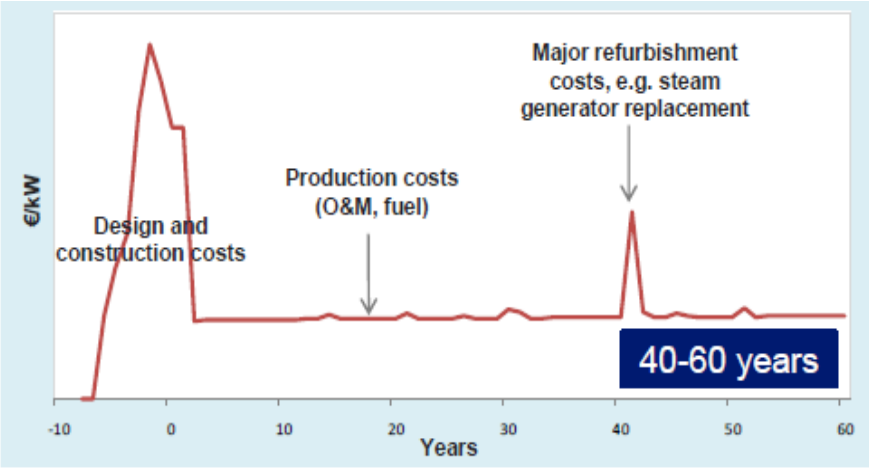

Grid-level System Costs for a grid with 10% and 30% of Variable Renewable Generation

Source: OECD/NEA

# A long-term investment in clean energy

## Lifetime cost (€/kW)

NUCLEAR

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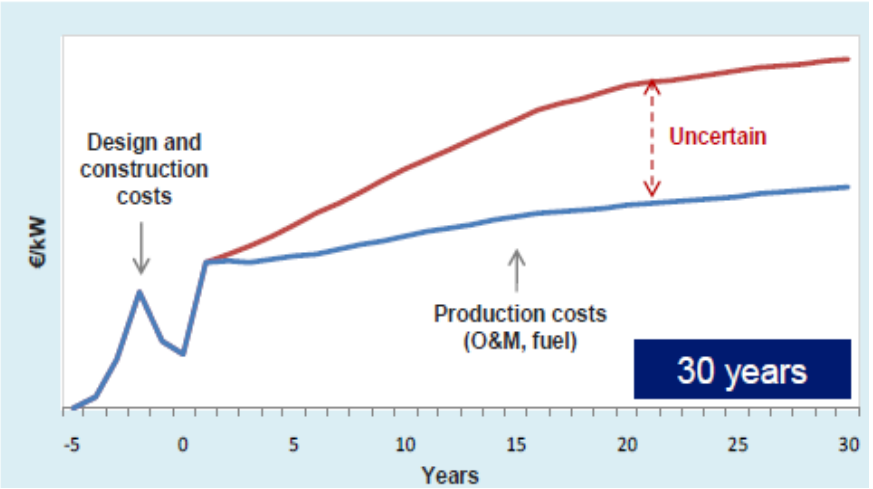
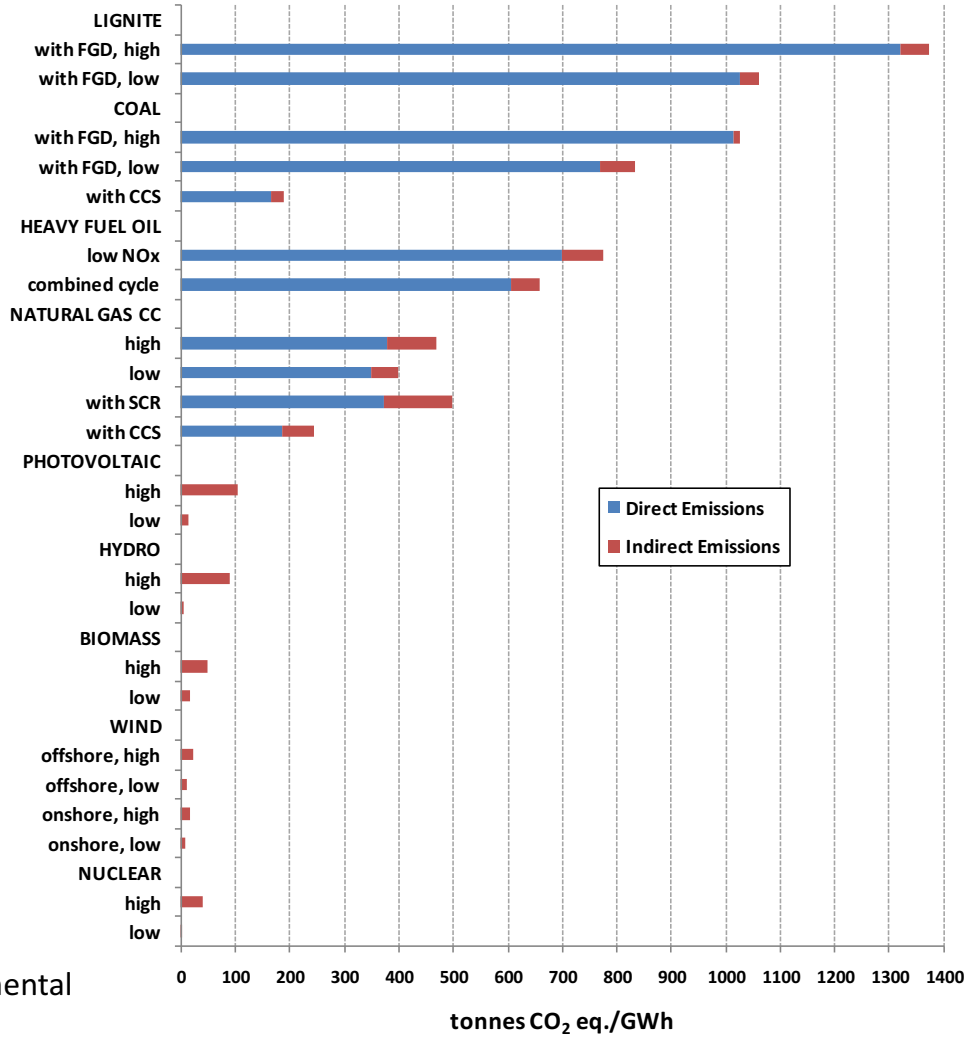


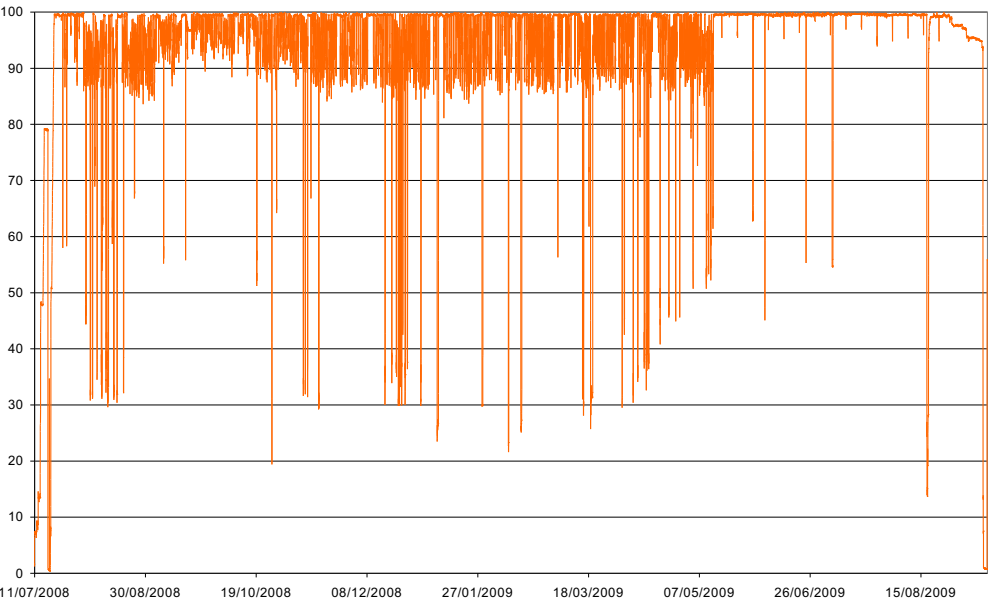

## Direct and indirect GHG emissions



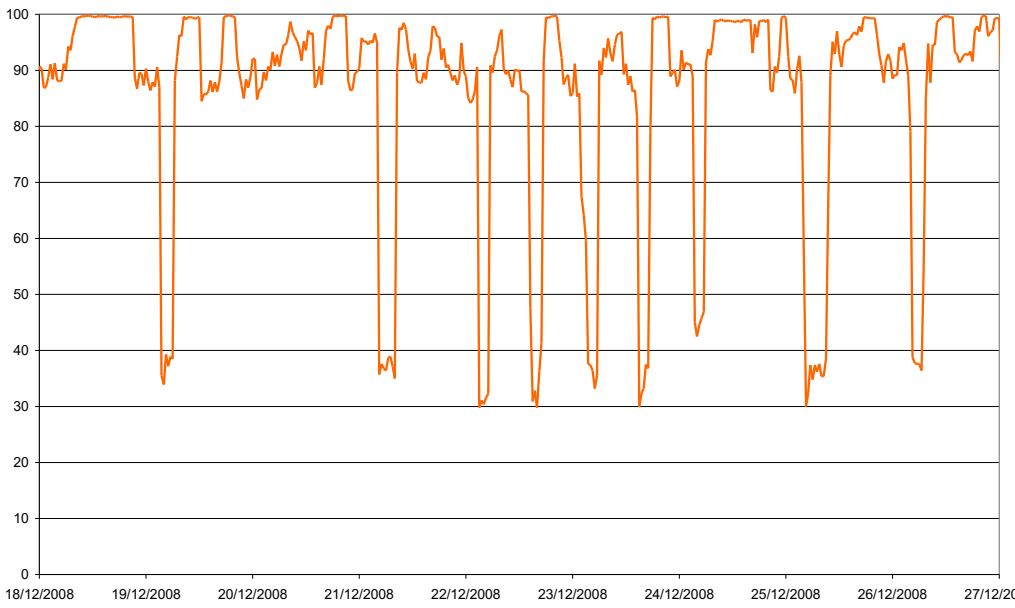

Sources: OECD/NEA, *Mitigation of Climate Change*, Intergovernmental Panel on Climate Change, 2007

# Nuclear power plants can be flexible

## Power history of a French PWR reactor




Whole cycle



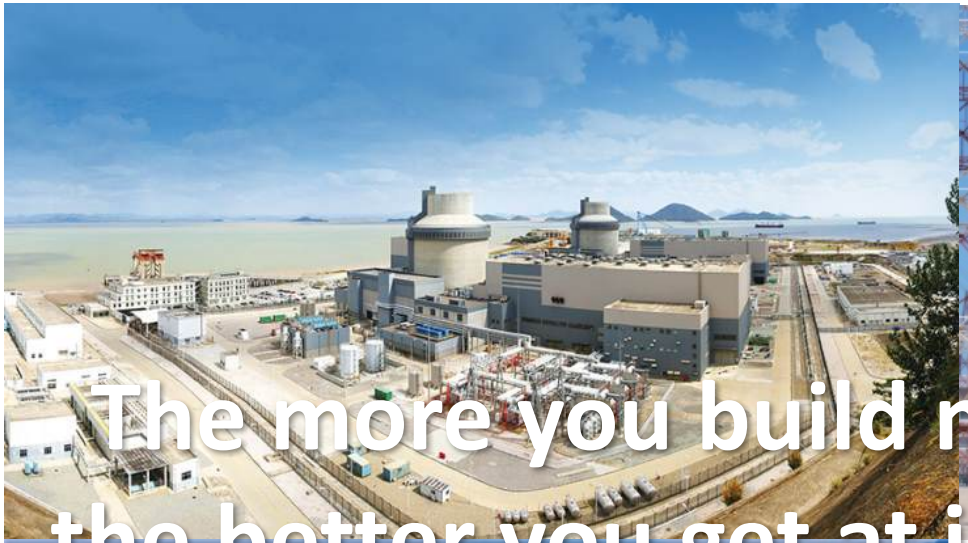

10-day period around Christmas

**Fresh Water** **District Heating** **Industrial Heat** **Hydrogen**

Source: EDF and OECD/NEA

Sanmen units 1 and 2 (Image: SNPTC)

Barakah unit 2 (Image: ENEC)



**The more you build nuclear power plants the better you get at it: practice does make perfect in the nuclear business**

Taishan 1 (Image: CGN)

Novovoronezh II-2 (Image: Rosatom)

# NEA: Helping governments


All NEA publications available at

**www.oecd-nea.org**

# The NEA: A framework to address global challenges

**The role of the NEA is to:**

- Foster international co-operation to develop the scientific, technological and legal bases required for a safe, environmentally friendly and economical use of nuclear energy for peaceful purposes.
- Develop authoritative assessments and forge common understandings on key issues as input to government decisions on nuclear technology policy.
- Conduct multinational research into challenging scientific and technological issues.


**NEA countries operate nearly 90% of the world's installed nuclear capacity**