Nuclear Innovation 2050

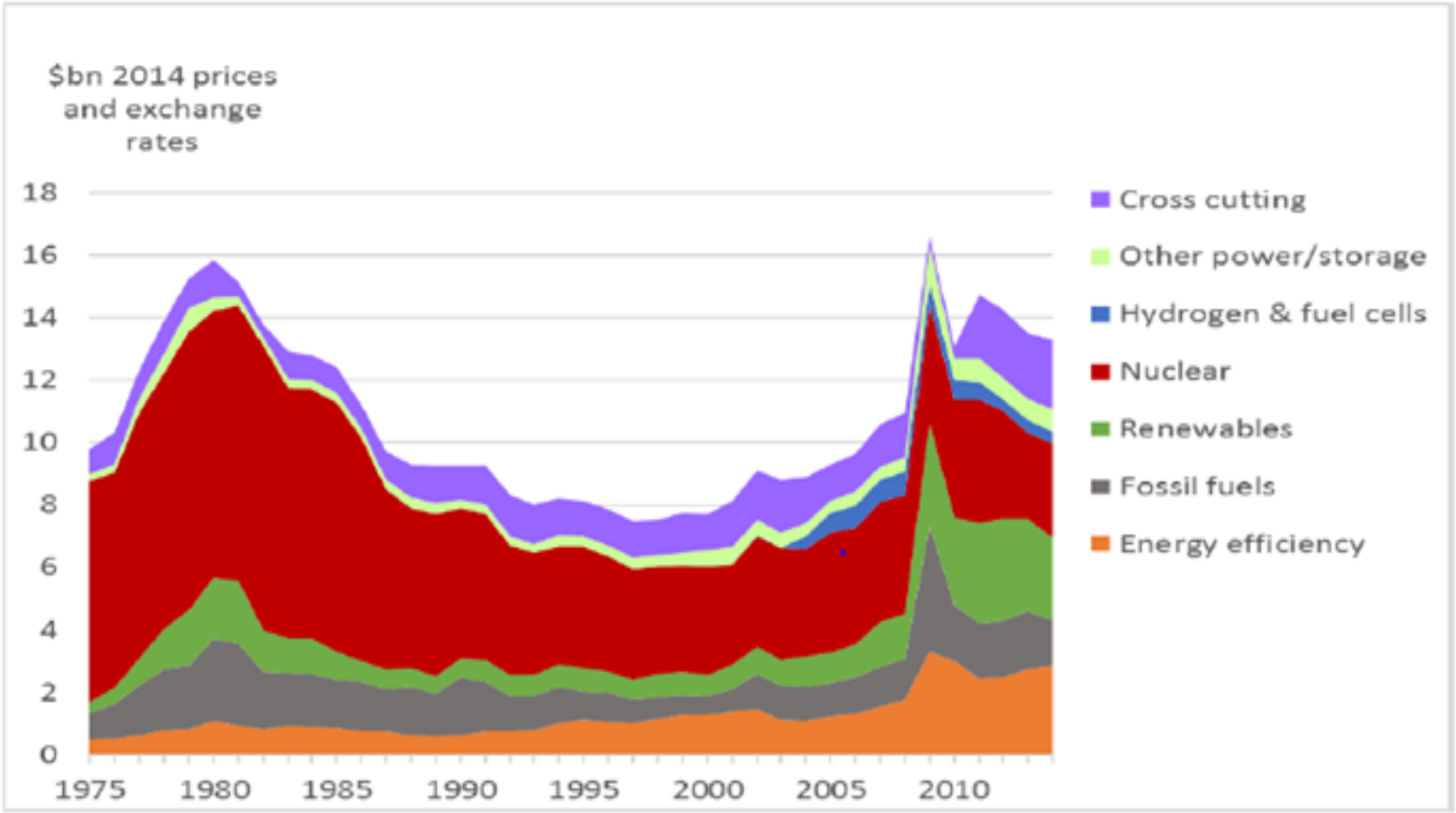
www.oecd-nea.org/ndd/ni2050/

Fiona Rayment
Chair of NEA NI2050 Advisory Panel

A Broad NEA Initiative

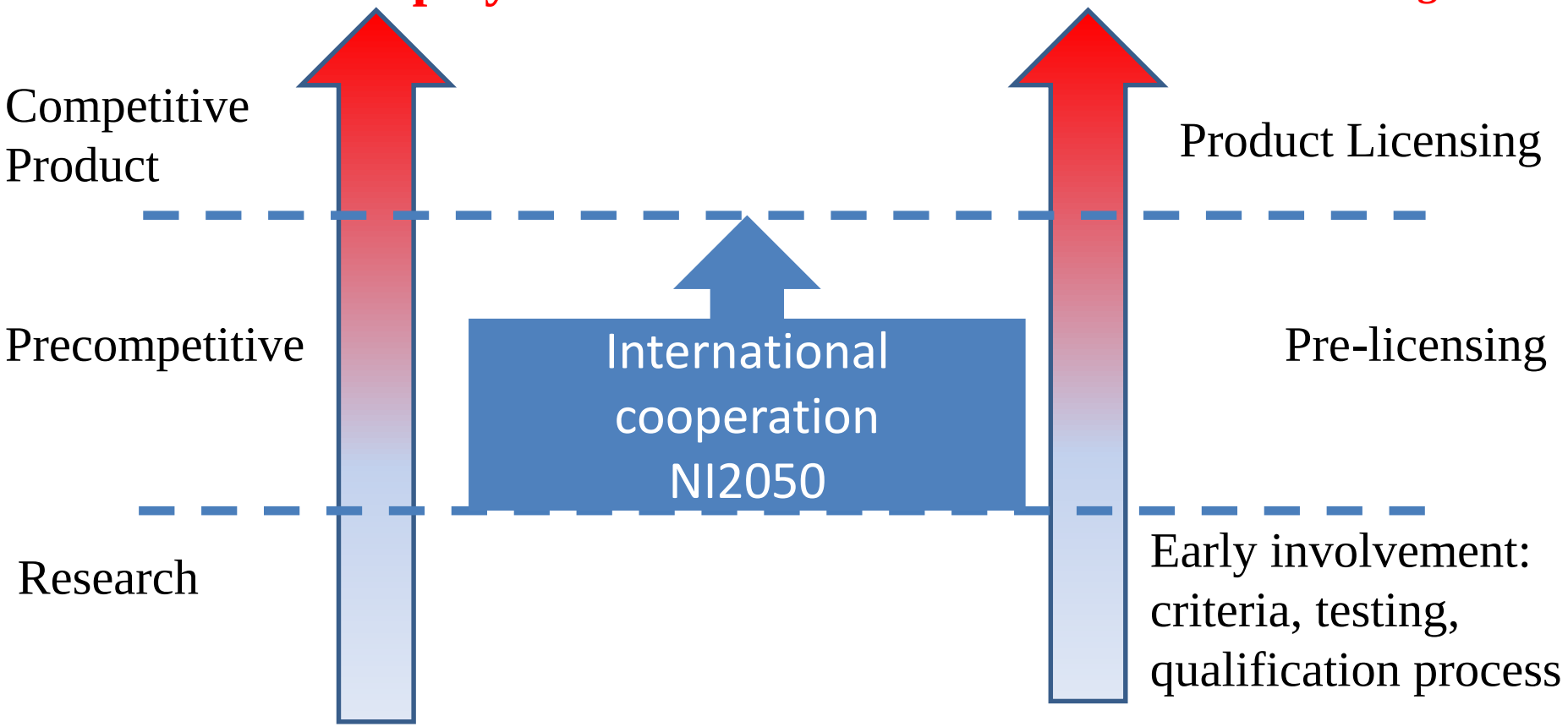
Building a co-operative framework enabling innovative fit-for-purpose nuclear fission technologies that will accelerate R&D and market deployment to contribute to a sustainable energy future

R&D Public BUDGETS/SCOPES



Source: Energy Technology RD&D, IEA (2015).

TECHNOLOGY AND LICENSING READINESS



Nuclear Innovation Headwinds

INFRASTRUCTURE

- Unlike many other areas of innovation, nuclear technology often requires the availability of special facilities (test reactor, hot cells, test loops, etc.) and nuclear-skilled workers.
- Tests using fissile materials require appropriate facilities, trained workforce, security and licencing.
- Much of the global infrastructure was built more than 40 years ago and is shrinking steadily.

REGULATORY

- The job of nuclear regulatory organisations today is to assure public safety, not to promote innovation.
- Regulators in most countries will not actively participate in technology development – but will wait for the finished technology to be presented for approval.
- Regulators are often perceived by researchers and industry as a barrier to innovation.

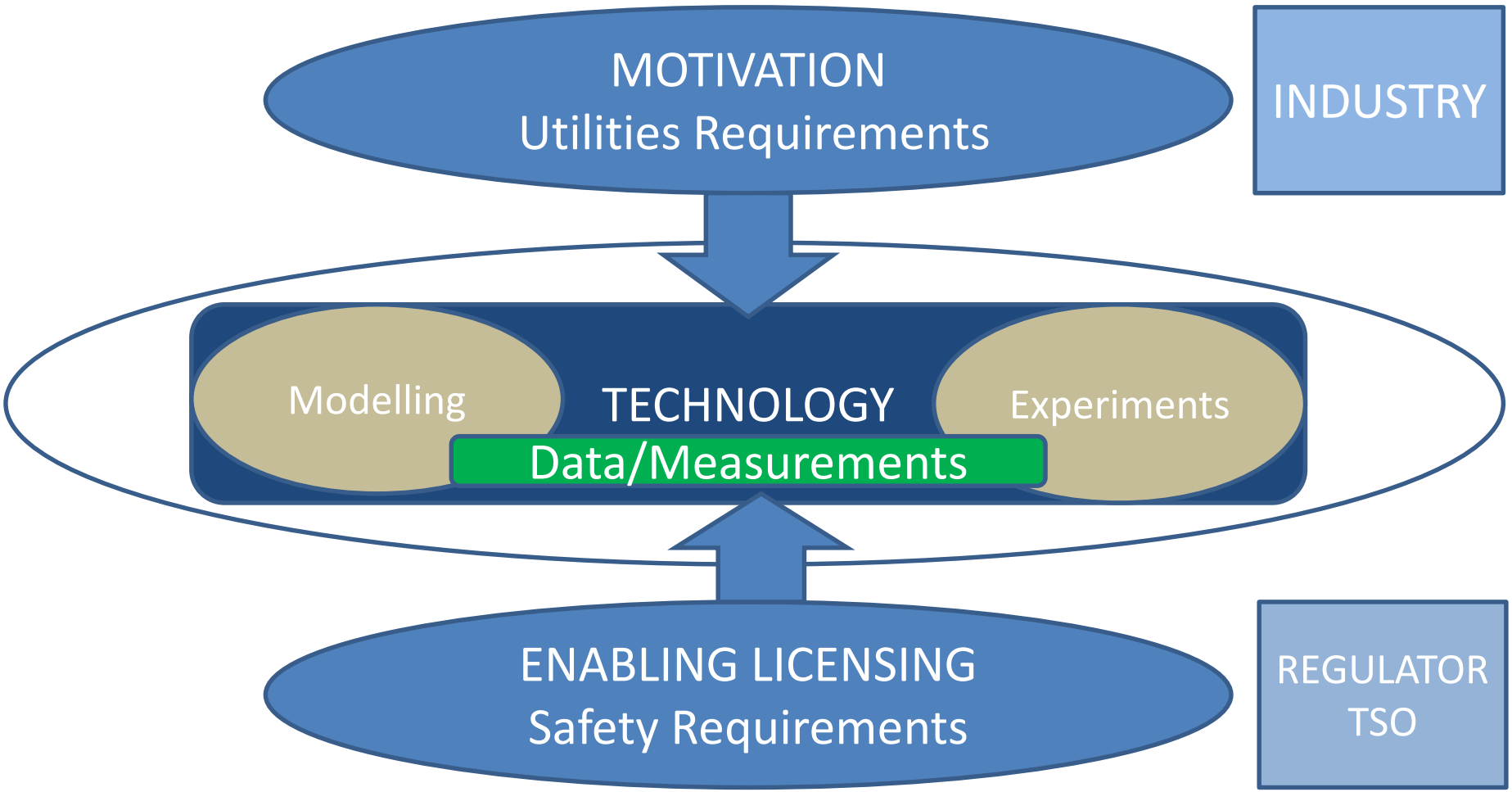
COST

- Nuclear technology research budgets have been under pressure in most countries for the last decade.
- Nuclear technology often requires an order-of-magnitude increase in funding to transition between research and engineering-scale demonstration.
- The cost and risk of nuclear technology innovation has become prohibitive in many countries.

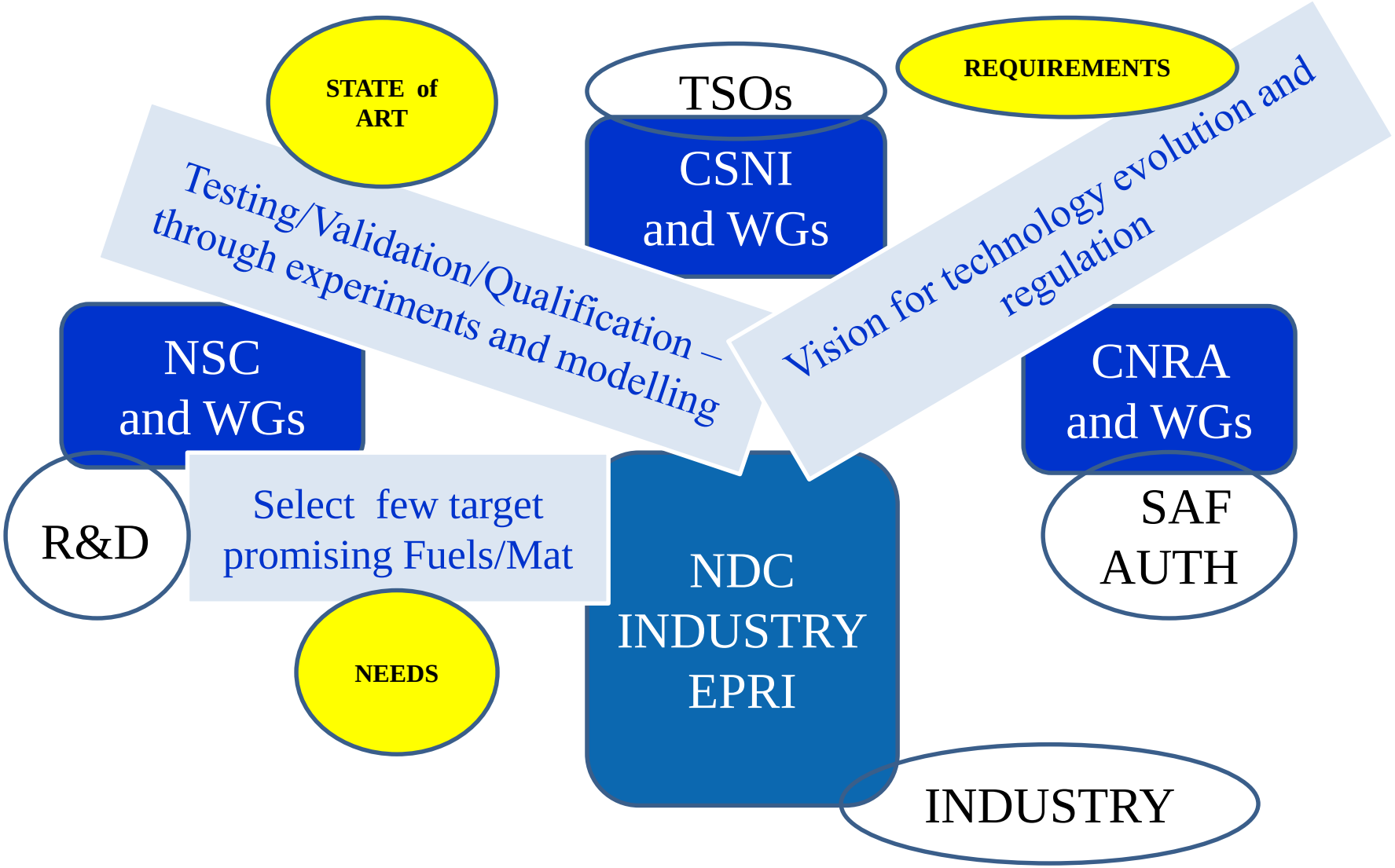
As main high level outcomes, NI2050 has

- opened the way for high level discussions on the role nuclear energy could play in the longer term « carbon neutral » future, with new reactors and fuel cycles, and with new usages of nuclear heat, leading to an increased flexibility at system level, for a better integration of nuclear with renewables
- confirmed that innovation in technology evolution is a necessary contributor to safety & economics
- recognised that success depends on regulatory engagement early on within the innovation process whilst still enabling regulatory independence.
- supported the creation of the « Multilateral Fuel and Material Testing Capacity » project, by showing the value of collaboration to improve the qualification of fuels and materials

Structure



« NI2050 Fuels/Mat » and existing NEA Groups



Innovation for the Future of Nuclear Energy – A Global Forum

Gyeongju, Korea June 10 - 12 June 2019

Key Outcomes

NI 2050 Future Focus

- Going forward we will be focusing on both nuclear and non-nuclear innovations that enable nuclear to continue to be an important part of any future clean, sustainable and affordable energy mix.

- Initial areas of focus:
  - Fuels and materials (Nuclear Innovation)
  - Advanced manufacturing and digital systems (Innovation into Nuclear)
  - Using nuclear energy beyond electricity (Innovation for better integration in the wide low carbon energy system)