



International  
Symposium  
on **PRE**paration  
for **DEC**ommissioning

## International Perspective in Decommissioning of NPP in OECD Nuclear Energy Agency Countries

**PREDEC**

February 16 – 18, Lyon, France

**Dr. Michael SIEMANN**

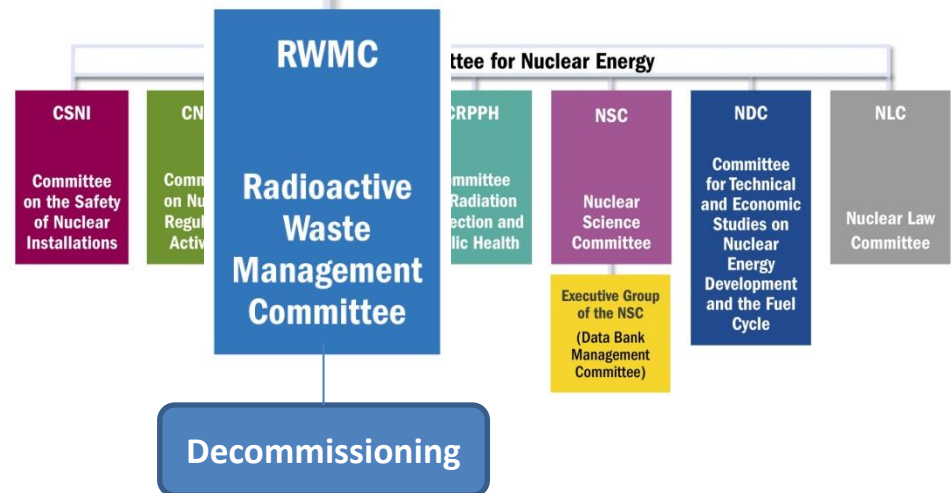
Head of Division of

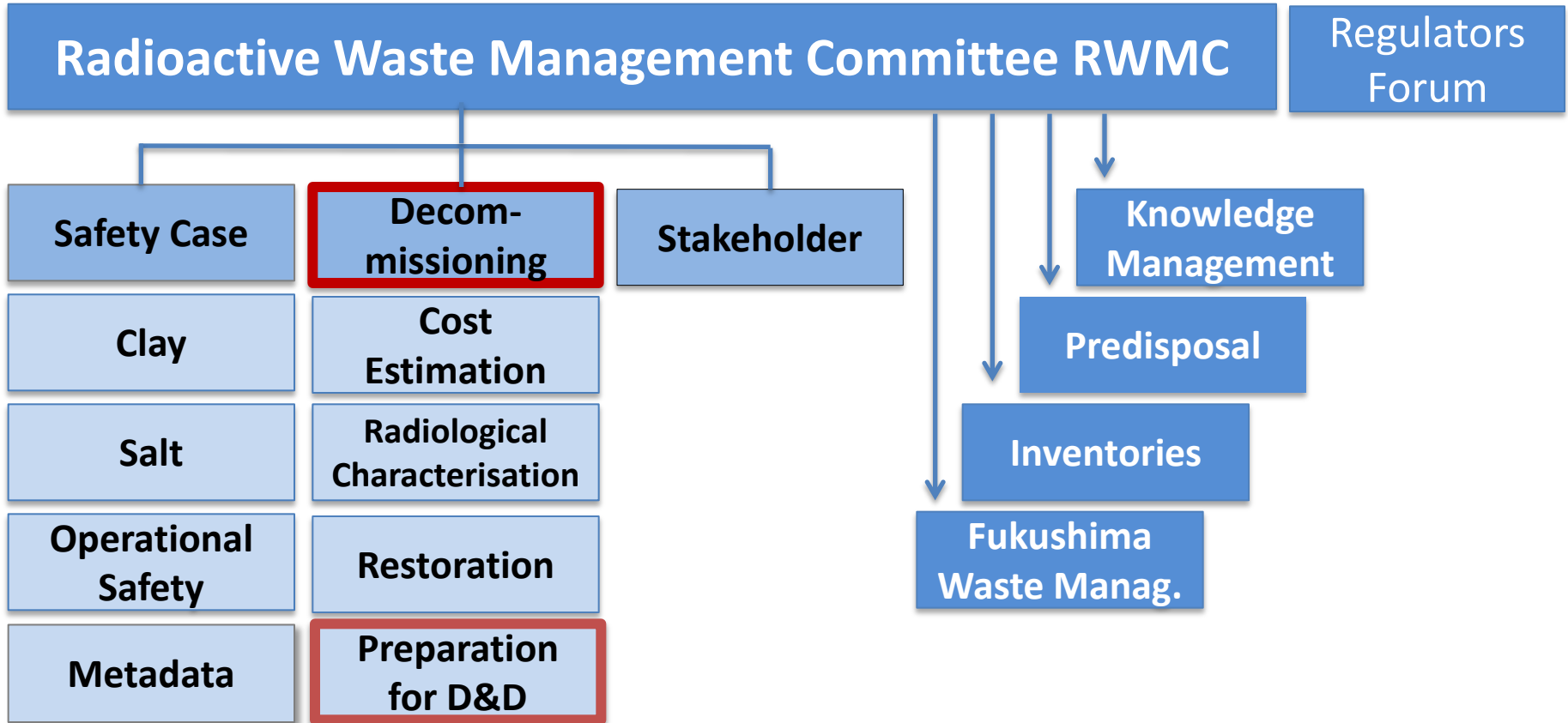
Radiological Protection and Radioactive Waste Management

OECD Nuclear Energy Agency, Paris

## The NEA: A Forum for Co-operation for the Most Advanced Countries in the World

- 🌐» Founded in 1958
- 🌐» 31 member countries
- 🌐» 7 standing technical committees
- 🌐» 75 working parties and expert groups
- 🌐» 21 international joint projects
- 🌐» Like-minded countries!





**OECD/NEA joint projects in the radioactive waste management area:**

- **Co-operative Programme for Decommissioning (CPD)**
- Thermochemical Database (TDB)
- NEA/IAEA/EC: Status and Trends in Radioactive Waste Management

## Status Quo in Decommissioning of Nuclear Power Reactors

Situation <sup>1</sup>	In operation	Shutdown/under decommissioning	Fully decommissioned
Nuclear Power Reactors Worldwide	441	155	15
Nuclear Power Reactors OECD NEA	360	140	15

<sup>1</sup> PRIS database, IAEA, Jan 2016

## Future Challenges in Decommissioning in OECD NEA Expected Shutdowns for Decommissioning

### America and Asia

Country	Permanent Shut Down*	Decommissioning completed	NPR In Operation*	Shut Down before 2030**
U.S.A	33	12	99	5***
Canada	0		19	14
Korea	0		24	0
Japan	16		43	23

\*based on PRIS database

\*\* based on shutdown after 40 years operational time

\*\*\* due to license extension for several reactors

## Future Challenges in Decommissioning in OECD NEA Expected Shutdowns for Decommissioning Europe

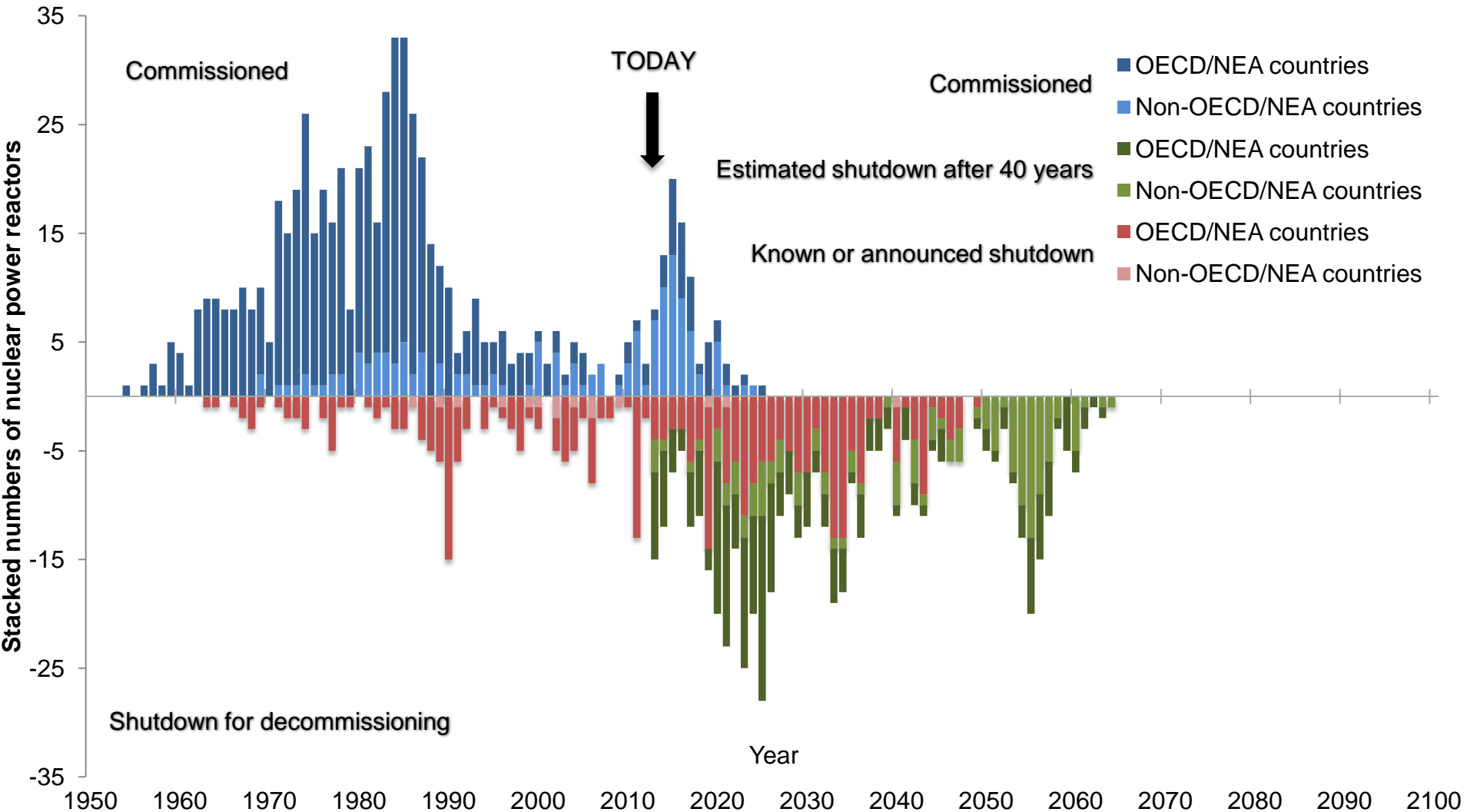
Country	Permanent Shut Down*	Decommissioning completed	NPR In Operation*	Shut Down before 2030**
UK	30		15	18
France	12		58	0 ***
Finland	0		4	2
Germany	28	3	8	8
Hungary	0		4	0
Russia	5		35	23
Belgium	1		7	7
Sweden	3		10	4
Switzerland	1		5	4
Spain	2		8	8
Italy	4		0	0
Netherlands	1		1	0
Slovakia	3		4	0

\*based on PRIS database

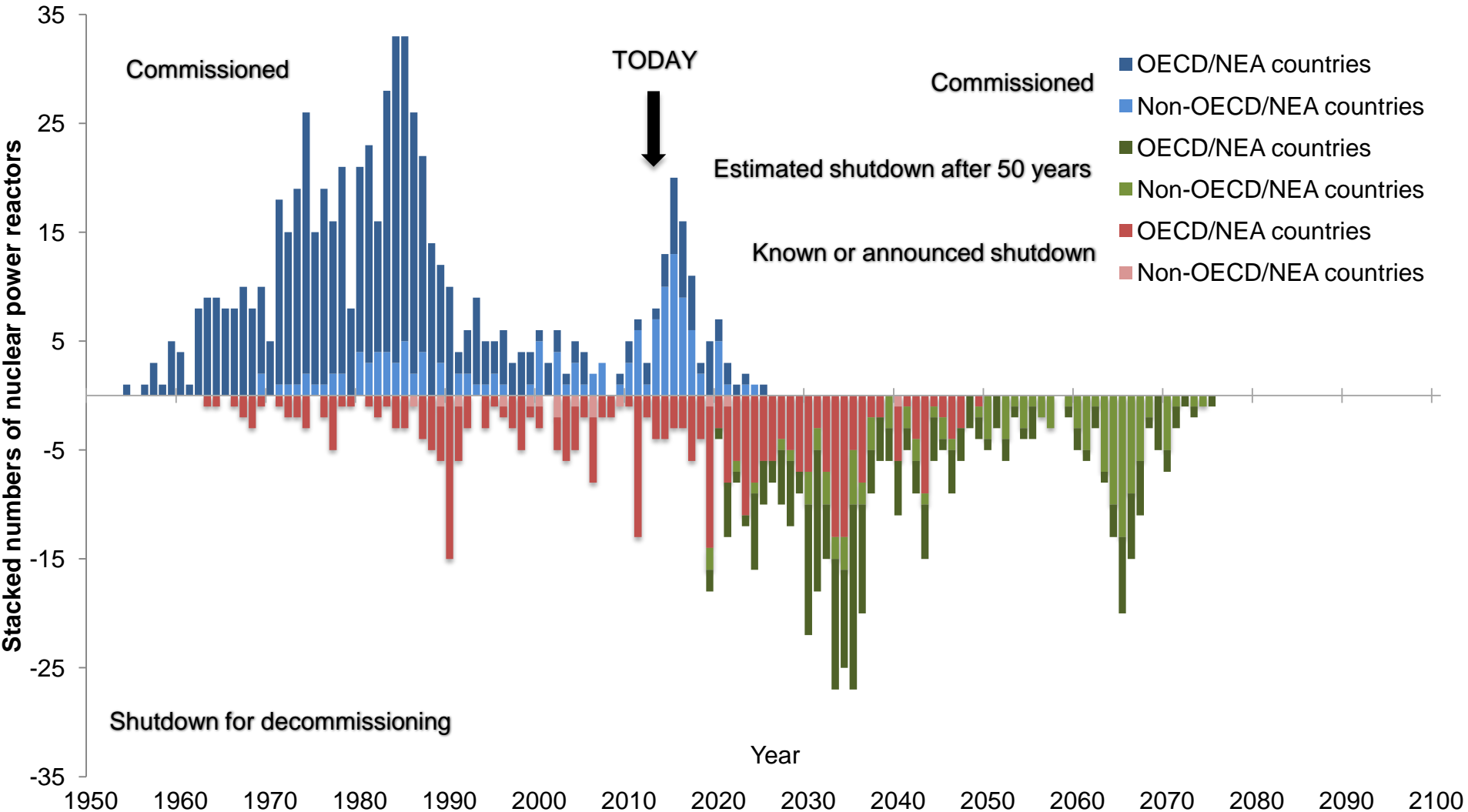
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## Nuclear Power Reactors Worldwide

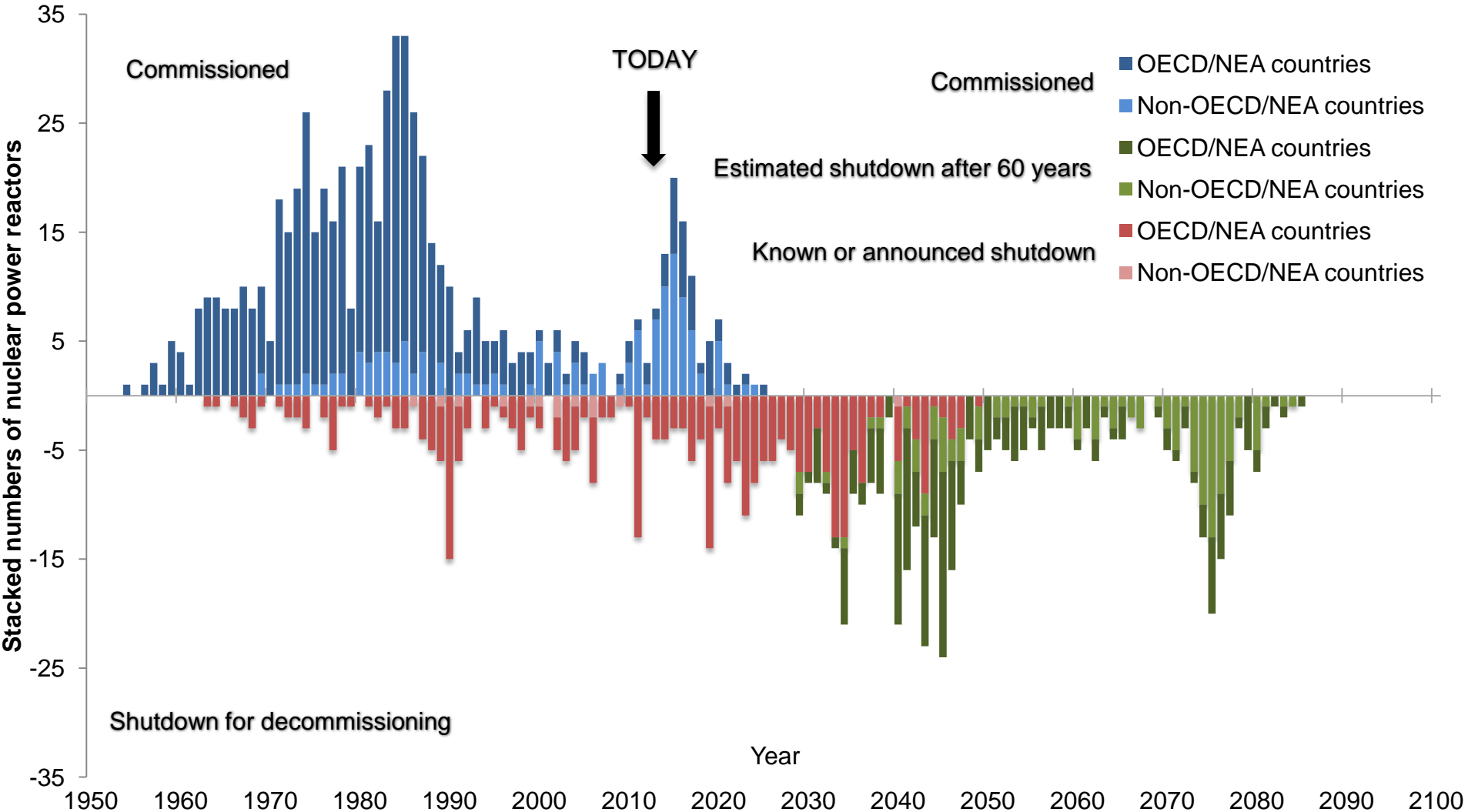


## Nuclear Power Reactors Worldwide

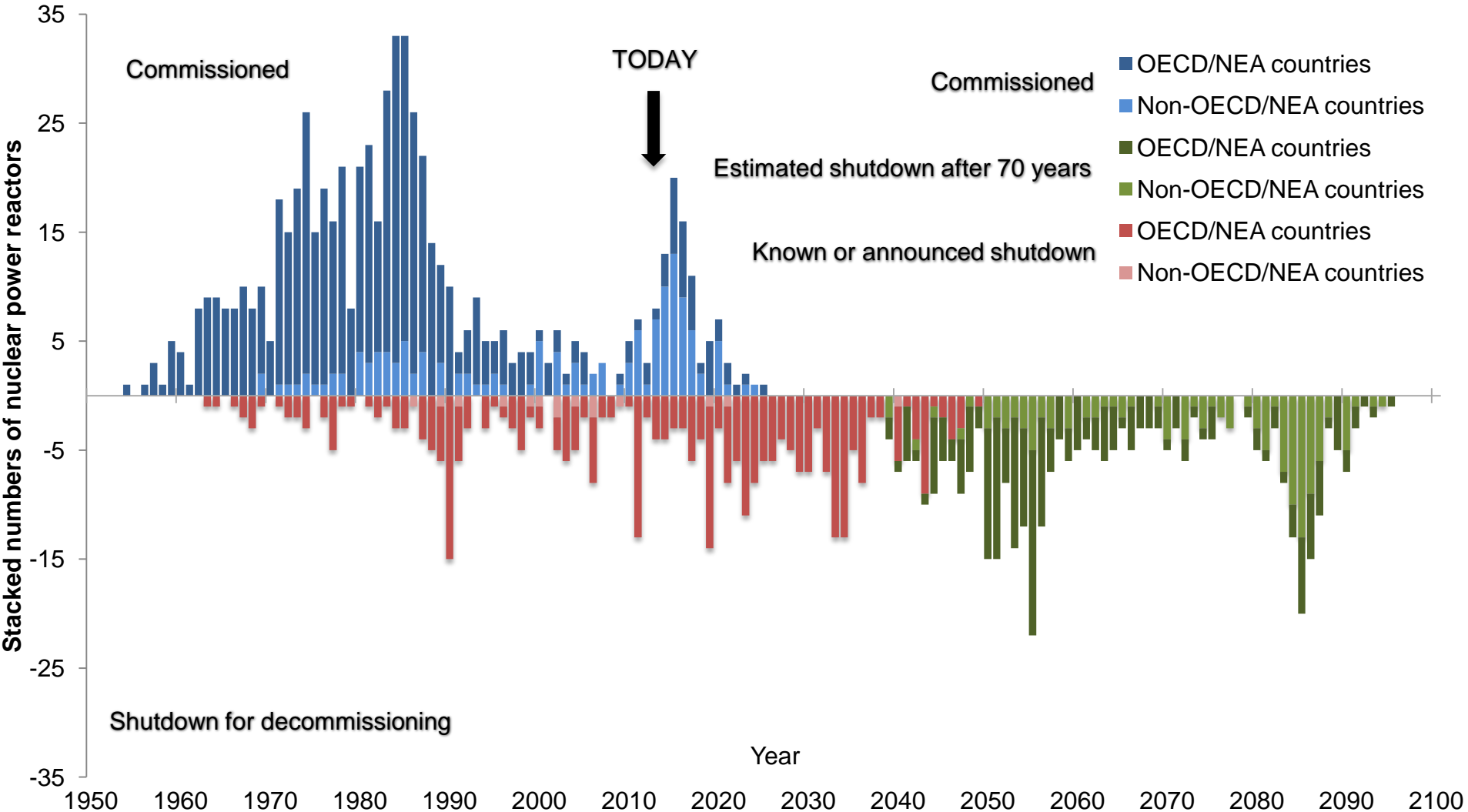




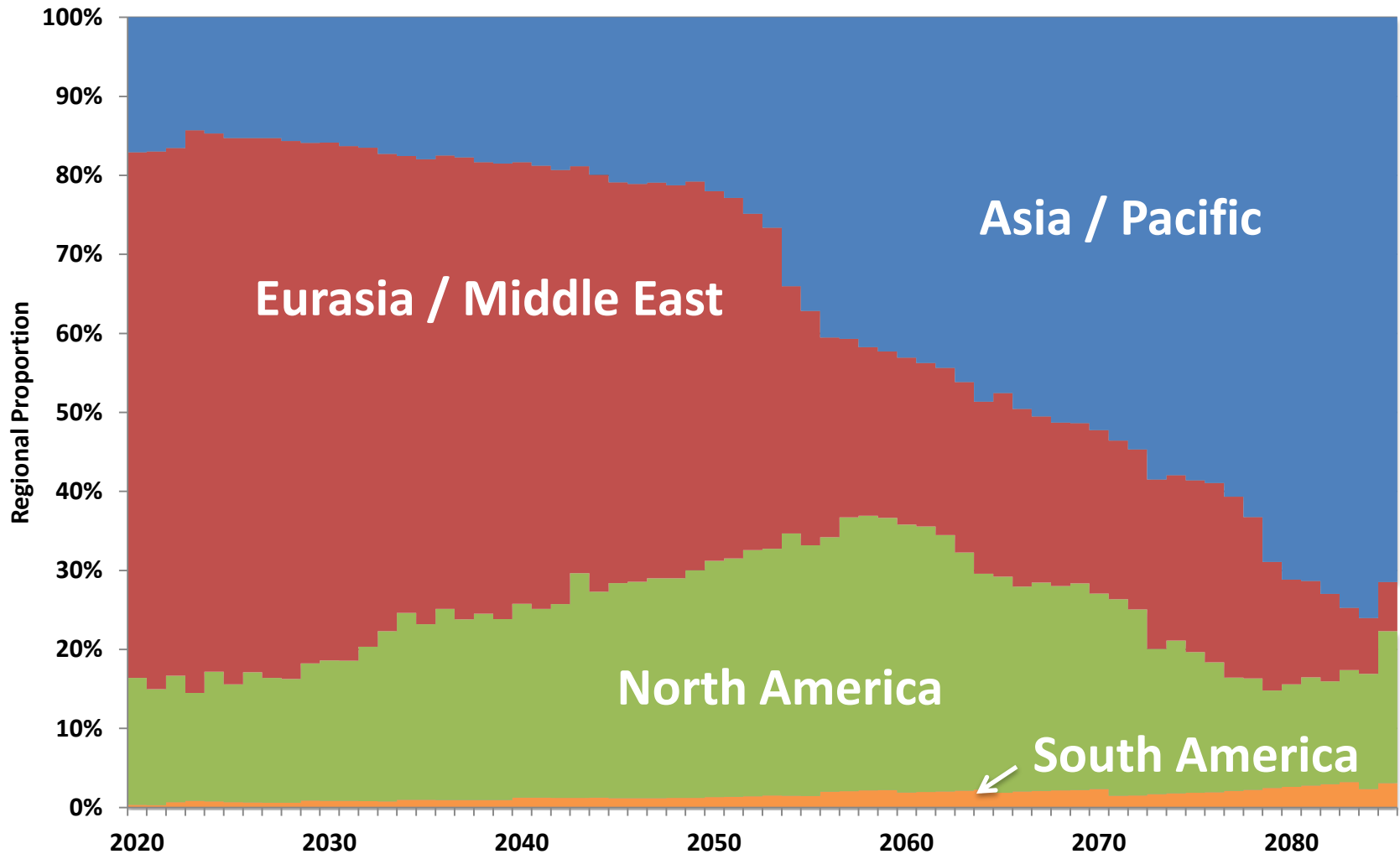
## Nuclear Power Reactors Worldwide



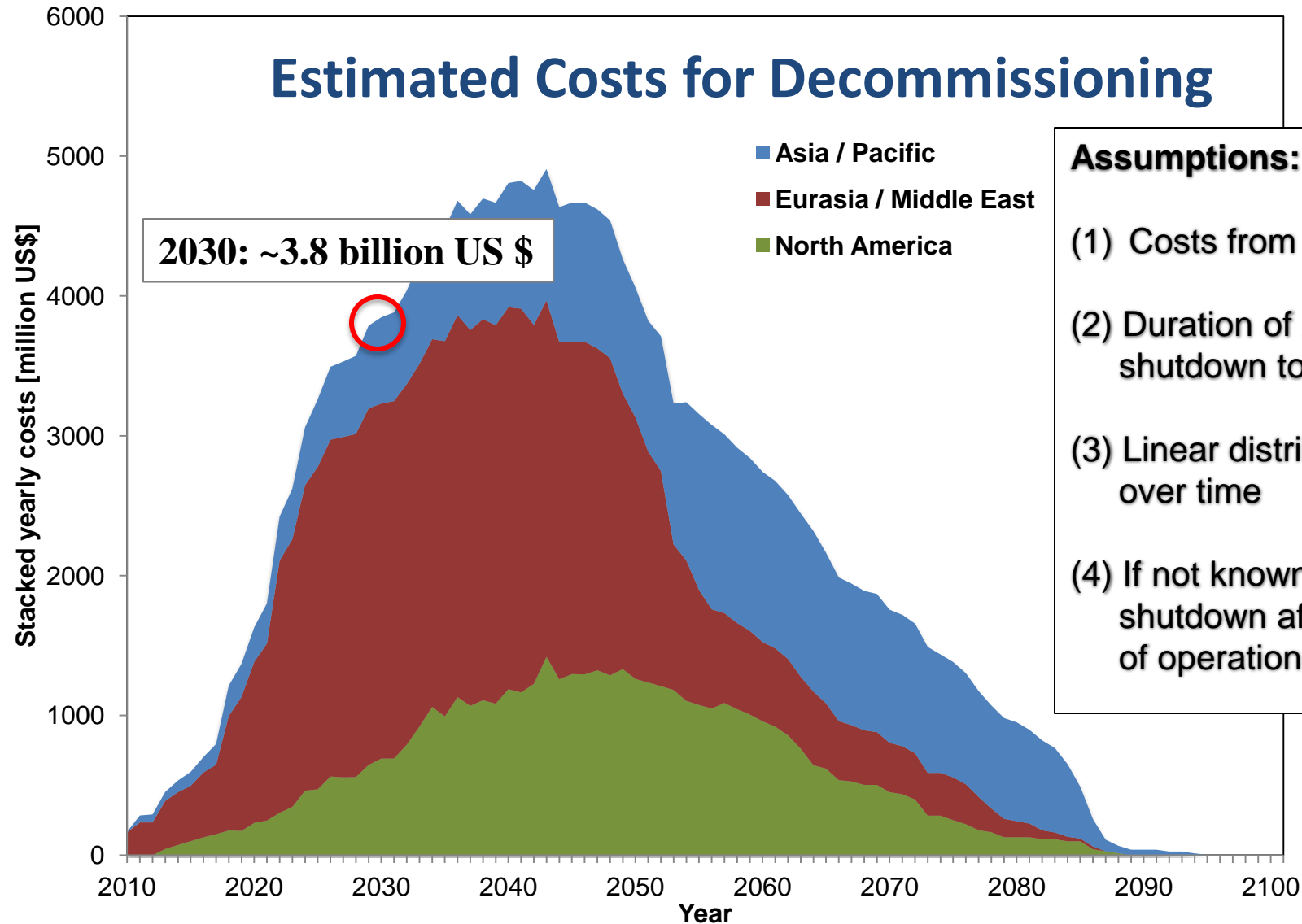
## Nuclear Power Reactors Worldwide



## Regional Proportional Decommissioning Costs



## Estimated Costs for Decommissioning



### Assumptions:

- (1) Costs from NEA 2003
- (2) Duration of 25 years from shutdown to release
- (3) Linear distribution of costs over time
- (4) If not known, reactor shutdown after 40 years of operation

## Thank you very much for your attention!

### And good luck!

#### Initiators:

#### NEA Task Groups:

- **Preparing for Decommissioning during Operation and after Final Shutdown TGPFD**
- **Radiological Characterisation for Decommissioning TGRCD**

#### Co-Sponsors:



**Studsvik**

