



Consulting on Nuclear Law, Licensing and Regulation

The European reaction to the Fukushima incident

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Contents


- Introduction: Nuclear in the EU – Facts and “Who is Who”
- Member States’ actions after Fukushima
- EU actions after Fukushima



Part 1: Introduction: Nuclear in the EU – Facts and “Who is Who”



Nuclear in the EU (1)

 **14 Member States with NPPs in operation**

 **13 other Member States**

143 units in operation

Share of nuclear in total EU electricity generation: 28% (2009)





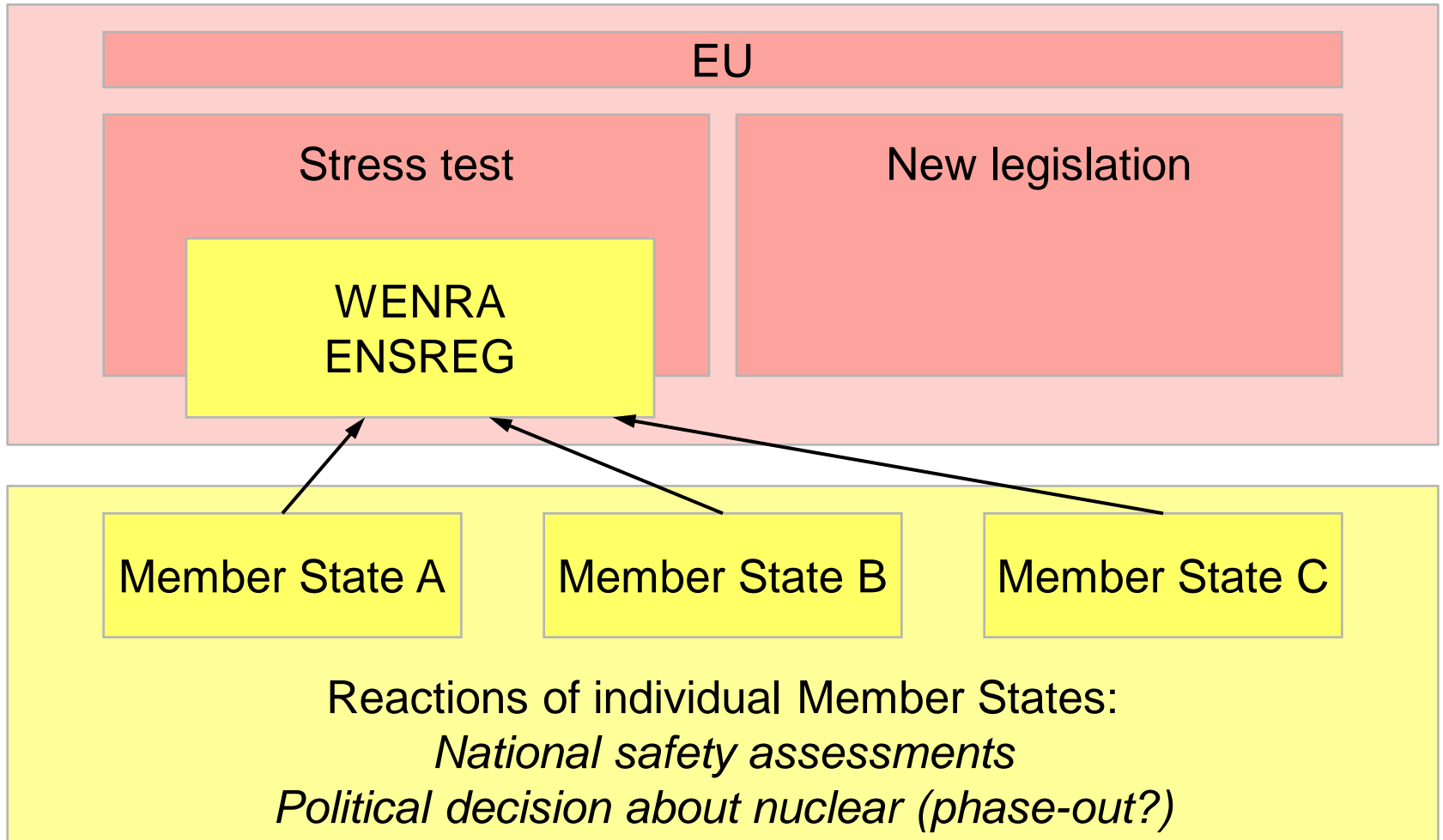
Nuclear in the EU (2)

The distribution of competences between the EU and its Member States in the nuclear field is based on the EU Treaty and the EURATOM Treaty:

- Choice of nuclear as part of the energy mix: lies with Member States
- Regulation of nuclear safety: lies with Member States. There is no EU nuclear regulatory agency
- EU has some legislative competence (see Directive on Nuclear Safety, 2009). EU legal acts have to be implemented by Member States into their national legislation



Two levels of reactions in Europe (1)





Two levels of reactions in Europe (2)

The actors on EU level

- Commission of the EU: “government” of the EU. Can propose legislation to the Council (=representatives of member states)
- ENSREG, European Nuclear Safety Regulator Group: Regulators of all 27 EU member states; created by Decision of the Commission
- WENRA, Western European Nuclear Regulators Association: “club” of the 14 regulators of countries with NPPs; was created independent of EU



Part 2: Reaction of EU Member States to the Fukushima incident



Measures by Member States

- Assessments of nuclear facilities
 - Scope: robustness of NPPs concerning external natural events; ability to cope with accident situations like loss of cooling and loss of electricity supply
 - Reports by national regulators or national advisory commissions
 - Aligned with EU Stress Test, but sometimes with additional scope
- Politics:
 - General approach to nuclear energy revisited
 - Extremely diverse reactions



Germany: Accelerated phase-out (1)

The German reaction to Fukushima incident cannot be understood without the previous history:

- In 2002, the lifetime of German NPPs was limited to approx. 32 years by phase-out legislation
- In December 2010, new legislation was passed: Extension of lifetime by 8 years (for older NPPs) and 14 years (for newer ones)
- This lifetime extension was very controversially debated in Germany



Germany: Accelerated phase-out (2)

The Fukushima incident led to a complete turnaround:

- Government took immediate measures:
 - “Moratorium” on 14 March: shutdown of the 8 oldest NPPs “for three months” (no legal basis)
 - Safety assessment by RSK (Reactor Safety Commission)
 - Creation of an “Ethics Commission” to reflect on whether nuclear power should have a future in Germany
- The RSK assessment was altogether positive: German NPPs are robust, with some backfitting recommended
- The “Ethics Commission” recommended phase-out within 10 years



Germany: Accelerated phase-out (3)

- On 31 July 2011, new legislation repeals the lifetime extension and even accelerates the phase-out:
 - The 8 oldest NPPs remain offline for good
 - The shutdown of the remaining 9 NPPs is fixed in the Nuclear Energy Act, ranging from end 2015 to end 2022
- New energy policy based on renewables and new transportation lines and storage facilities
- German operators accept political decision, but claim compensation
- To conclude: Some private views on the phase-out, its reasons and its consequences



Switzerland: new build cancelled

- Before the Fukushima incident, 2 new NPPs had been planned by Swiss utilities
- This was supported by government
- The Fukushima incident changed the situation: on 7 June 2011, Swiss Federal Council (Parliament) enacted a law not to replace the existing nuclear power plants
- The 5 existing NPPs may continue operation



Italy: new build cancelled

- Italy had phased out its nuclear programme in the 1990s after Chernobyl
- New build was planned from 2008
 - New legislation enabling new build
 - Partnership ENEL (Italy) – EDF (France)
- In June 2011, a referendum stopped new build plans by cancelling the new legislation with a huge majority
 - Clear impact of Fukushima incident
 - Result assisted by unpopularity of Berlusconi government



France: some uncertainties

■ Nuclear safety

- Regulator ASN imposes substantial upgrading on operator EDF
- This could challenge economic viability of older NPPs

■ Politics:

- Construction of Flamanville 3 (EPR) will continue
- Future of the second EPR project in Penly is uncertain
- Lifetime extension of 58 existing NPPs is uncertain
- Much depends on presidential elections in 2012



UK: no substantial consequences

- Safety assessment by regulator ONR (Weighman report) was very reasonable and led to some improvement measures at NPPs
- In July 2011, UK Parliament voted the National Policy Statement on nuclear, the basis for new build
 - Designating 8 sites for new NPPs
 - Introducing facilitated planning processes
- *“Nuclear energy has risks, but we face the greater risk of accelerating climate change if we do not embark on another generation of nuclear power”* (Chris Huhne, Secretary for Energy and Climate Change).



Other Member States relying on nuclear

- Finland will go on with planning and construction of 2 NPPs
- Poland (which does not have any NPPs) will continue its new build programme (2 NPPs with 3 GW each, to go in operation between 2020 and 2030)
- Czech Republic wants to increase the share of nuclear from 30% to possibly 60% by 2050



Part 3: Actions on EU level after the Fukushima incident

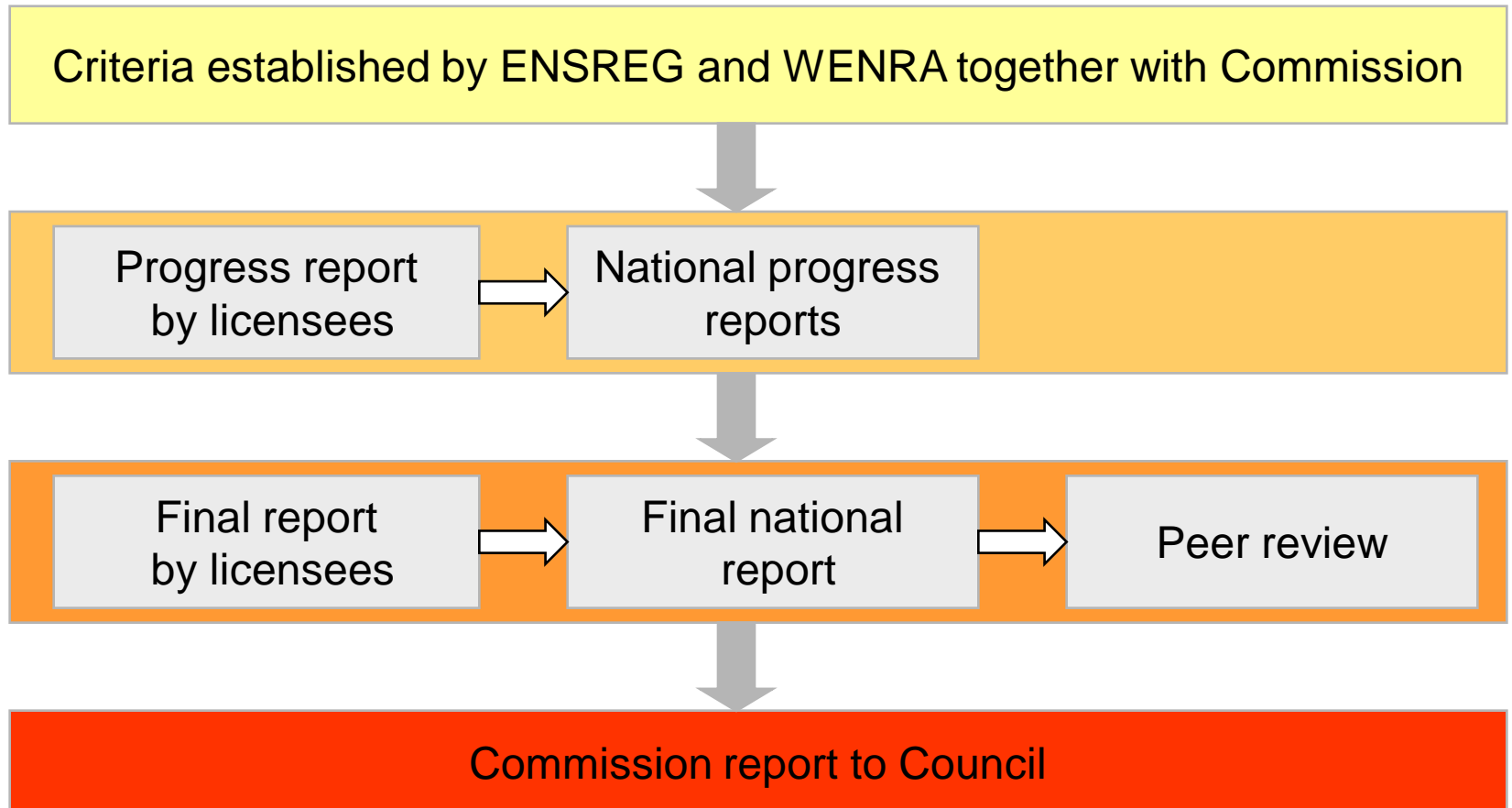


EU reaction

- **Policy:** “Nuclear energy will be needed to provide a significant contribution in the energy transformation process in those Member States where it is allowed. It remains a key contributor to CO₂ emission reductions”.
- Commission initiative: Actions on **nuclear safety** post-Fukushima should best be done jointly on EU level
- On 24/25 March, the European Council (Heads of Government) declared that
 - “the safety of all EU nuclear plants should be reviewed on the basis of a comprehensive and transparent risk assessment (“**stress test**”)
 - the Commission should “**review the existing regulatory and legal framework** for the safety of nuclear installations...”



Stress Test (1) - System





Stress Test (2) - Timetable

June 1, 2011	Criteria ready, start of assessments
August 15, 2011	Progress report by licensees
September 15, 2011	Progress report by regulators (national report)
October 31, 2011	Final report by licensees
December 9, 2011	Progress Report by the Commission to the Council
December 31, 2011	Final national report
January to April, 2012	Peer Reviews of the National Reports
28/29 June 2012	Consolidated report by the Commission to the Council



Stress Test (3) - Scope

- Initiating events
 - Earthquake
 - Flooding
- Consequence of loss of safety functions (from any initiating event)
 - Loss of electrical power, incl. station blackout
 - Loss of ultimate heat sink
 - Combination of both
- Severe accident management issues
 - Loss of core cooling function
 - Loss of cooling function in fuel storage pool
 - Loss of containment integrity

The methods of assessment are left to the Member States



Stress Test (4) – Basic aspects

- Consequences will be taken on national level
 - Will there be substantial upgrading of particular NPPs?
 - Will plants be shut down for good if backfitting is too costly?
- Participation is “voluntary” but in practice no Member State could afford to stay outside
- Neighbouring states have joined (Switzerland and Ukraine) others are doing comparable assessments (Russia, Belarus, Croatia, Armenia and Turkey)
- Emphasis on transparency: the reports are published
- Politically, the Stress Test is a success for the Commission – it is closely involved in the regulation of NPPs



EU Legislation – new initiatives

The Commission has announced new legislation in the fields where the EU is competent

- Introducing EU safety standards for siting, design, construction and operation
- Reinforcing effective independence of national regulators
- Enhancing emergency preparedness and response
- Reinforcing the EU nuclear liability regime

Draft legislation will be presented in 2012



Summary: European reactions to Fukushima

- Political reaction of Member States is very divergent:
 - Accelerated phase-out
 - Cancelling new build, but keeping existing NPPs
 - Additional safety assessment but no basic change in nuclear policies, including new build
- The EU...
 - Remains positive to nuclear
 - Promotes common approach to safety assessment
 - May enlarge its competences in nuclear safety



Thank you ...



Leipzig, Germany



... for your attention



Leipzig, Germany