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Role of Nuclear Power in a Cleaner and More Distributed European Power Market

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Europe, Middle East & Africa



Westinghouse in Europe



1962

first Pressurized Water Reactor (PWR) in Europe was built by Westinghouse



60%

of the nuclear power plants in the EU are based on Westinghouse technology



25

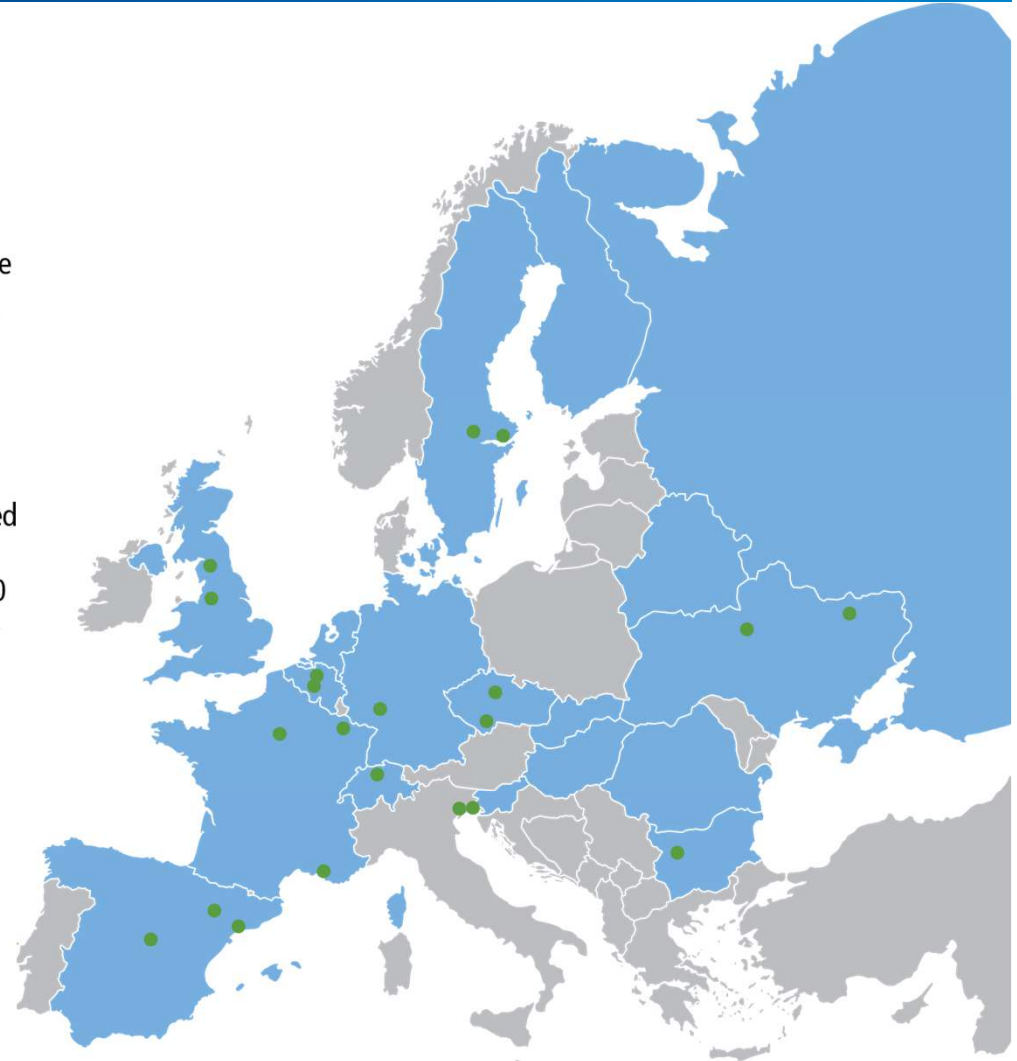
commercial reactors designed and supplied by Westinghouse across Europe



4,000

highly-skilled and trained people across Europe, plus an additional 1,500 contractors

- **54 out of the 58 French reactors** are based on Westinghouse licensed technology.
- **65 nuclear reactors in Europe** are currently fuelled by Westinghouse (PWR – including VVER, BWR, AGR and Magnox).
- We have operations in **11 European countries**.
- Our AP1000® reactor is the safest, most efficient and reliable design currently available in the worldwide marketplace.



Broad Global Capabilities and Experience

Operating Plants Business

Delivers operating plant products and services, including global field services, instrumentation and control, welding and machining, and installation-related functions

Decommissioning, Decontamination & Remediation

Deploys global technologies and forms local partnerships to carry out long-term projects



New Plants & Major Projects

Delivers both new-plant projects and major projects for new and operating plants on a global basis

Nuclear Fuel & Manufacturing

Designs and delivers fuel for PWR, BWR, VVER and AGR reactors, and oversees manufacturing operations worldwide

Engineering Center of Excellence

Supports all product lines by driving common engineering capabilities and accelerating innovation



Westinghouse technology is the basis for nearly 50 percent of nuclear power plants operating worldwide!

Nuclear Industry in Europe



Did you know?

European Electric Utility Challenges

Government



Unclear EU policies

Technology



Subsidized RES

Market



Weak EU Economy



Germany Energy Shift



Cheap Coal



Broken ETS



Russia

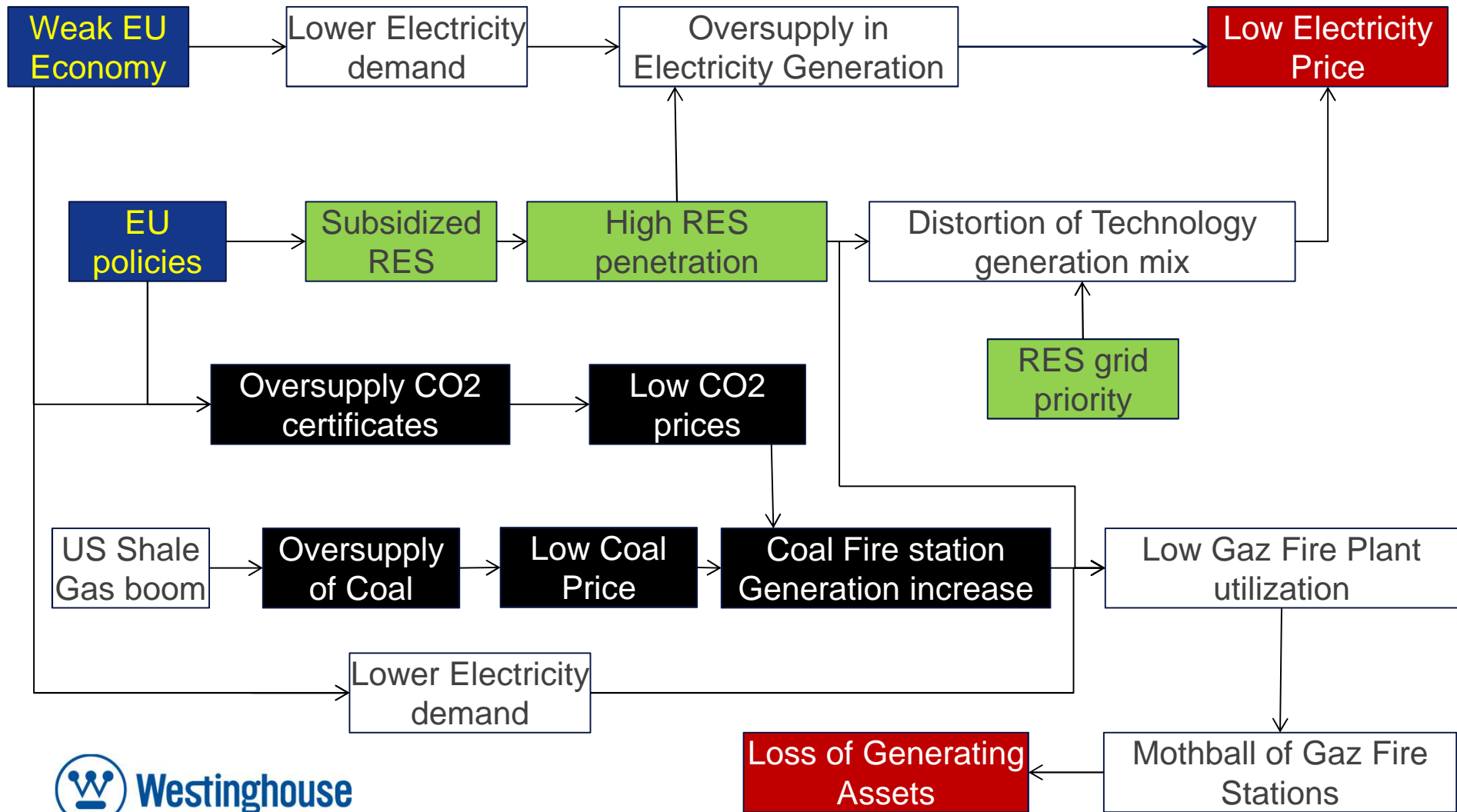


(shale) Gas



Low Electricity Price

Electric Utility Profitability



EU Nuclear Market Consequences

- **How are some EU Nuclear Utilities Responding?**
 - Deferrals and cancellations of major upratings and life extension investments
 - New nuclear build delays
 - Utilities striving to lower their operating costs
 - Investments focused on mandatory regulatory changes

EU Energy Policy to the Rescue?

- European Energy policies are generally driven by three considerations:
 - **Combating climate change**
 - **Competitiveness** (affordable energy for domestic and industrial consumers); and
 - **Security of energy supply.**
- Most Member States try to find a balance.

BUT

- The EU weighs tackling climate change ahead of other priorities:
 - “20-20-20” (GHG, RES and energy efficiency) targets by 2020.
- Conflicting policies (***ETS vs RES vs liberalization etc***):
 - unstable and unpredictable policy framework;
 - 27 political interventions has cost utilities **€200bn in shareholder value**

First Signs of Hope

2030 Energy and Climate Agreement – October 2014 **NEW**

* **40% CO2 reduction from 1990***

* **27% RES (at EU-wide Average)**

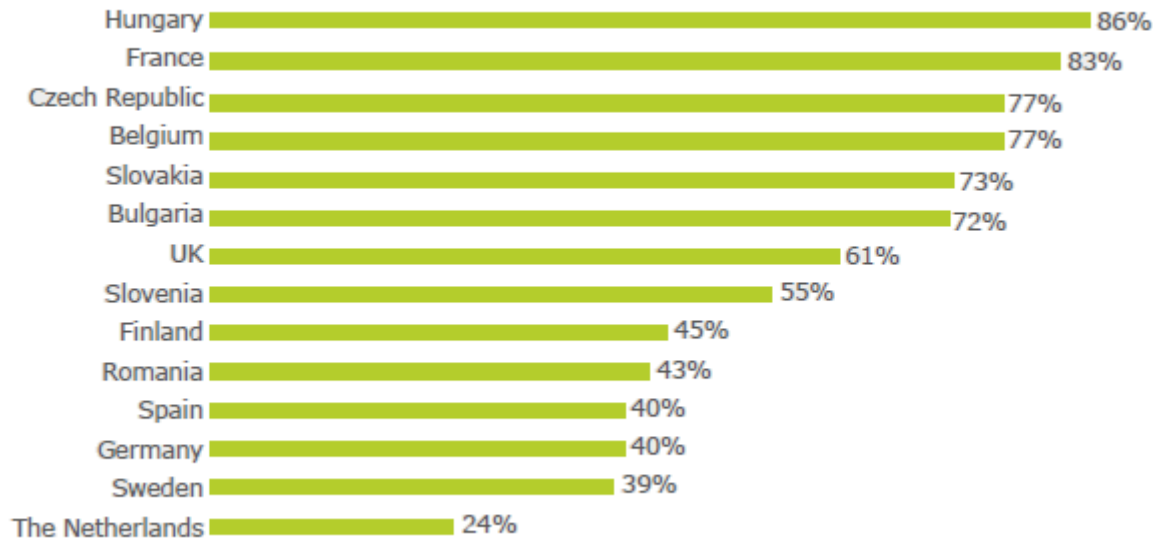
* **27% Energy Efficiency Target** (Indicative, non-binding)

- Key Member States are beginning to understand the limitations of RES and associated costs.
- “Nuclear Magritte” Group letter of 25 June 2014 to European Commission



Nuclear Generating More than Half of Europe's Low Carbon Electricity

Nuclear share in low-carbon electricity by country



53%
of low-carbon electricity



Source: Eurostat, 2014

What Should Industry Do?

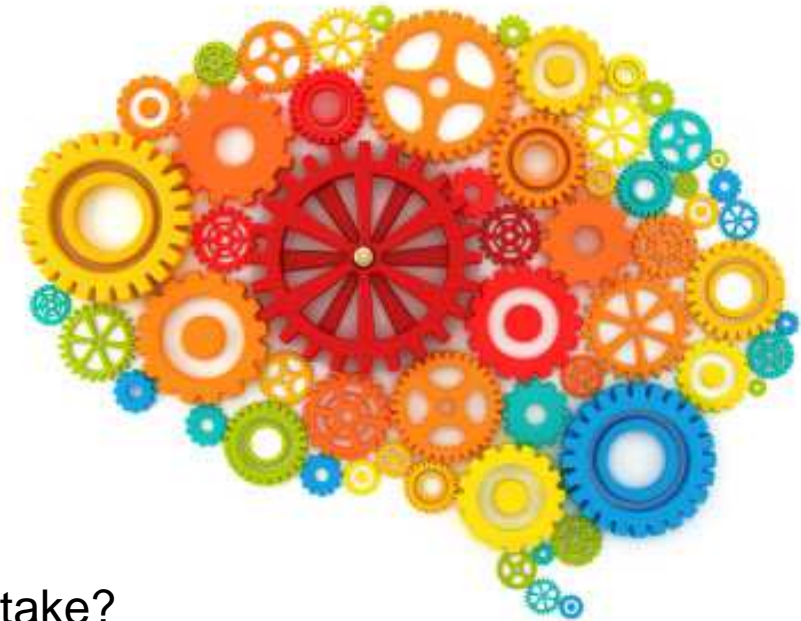
Industry Must Take Strong and Unified Step

- **Zero Discrimination for “Zero Carbon Technologies”**
 - Eliminate Grid Priority for RES
 - Reinforce MS right to Energy Choice
 - Eliminate Discriminatory Taxation on Nuclear
- Eliminate Subsidies or **Expand to ALL**
- Demand that **Total Systems Costs** are Included
- Demand that **Impact Assessments** on all EU Energy and Climate Directives



What Can YOU Do?

- **Policymaking:**
 - Raise Your Voice to National Authorities
 - Work with National Nuclear Societies
 - Participate in Energy Debates
 - Engage Your Leadership
- **Operations:**
 - Help Bring New Thinking
 - How Can We Be More Competitive?
 - Lower O&M Costs
 - Continue to Innovate
 - Accident Tolerant Fuel
 - Load Follow of RES – What will it take?
 - Process Heat – How can we monetize?
- **Innovation**
 - SMRs – Achieve Economic Value
 - Find New Solutions to Fuel Recycling (Maximize Energy/Decrease Waste)



WE Need to Work Together Across Europe

- Lower Capex/R&D Budgets Severely Restrict Innovation
- We need to establish more cross border activities – beyond EU
- We need to work with Academia
- Bring more support from National R&D budgets
- Include the entire life cycle (fuel load to final repository)



**YOU ARE THE FUTURE LEADERS OF THIS CRITICAL
INDUSTRY**

RAISE YOUR VOICE!

THANK YOU

