



Global Nuclear Energy Developments: The nuclear market after Fukushima

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Nuclear Power Reactors in Japan

Total Reactors in Operation : 54

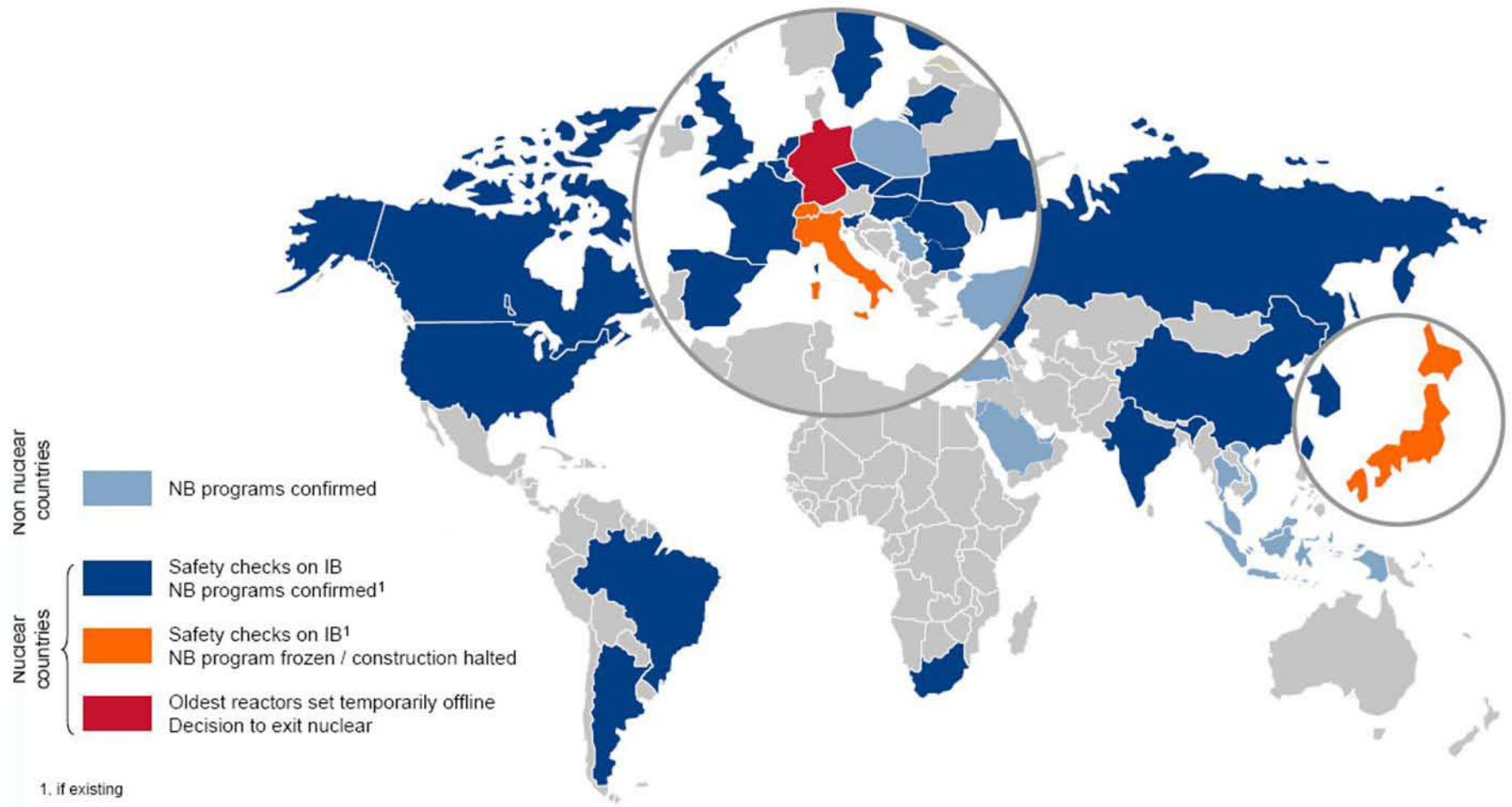
Under Construction : 02

Reactors in the zone of event : 13

- Fukushima-Daiichi: 6 units
- Fukushima - Daiini: 4 units
- Onagawa 3 units

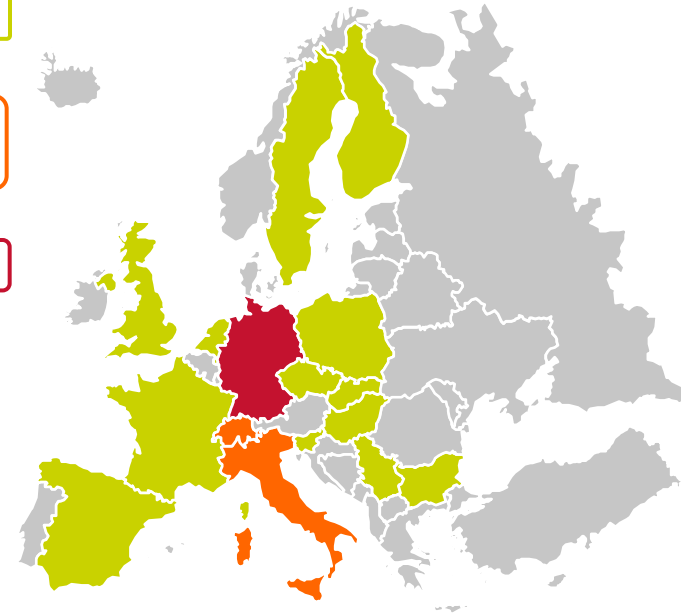


Impact of Fukushima Event on global nuclear market



Impact of Fukushima Event in Europe, Middle East and Africa

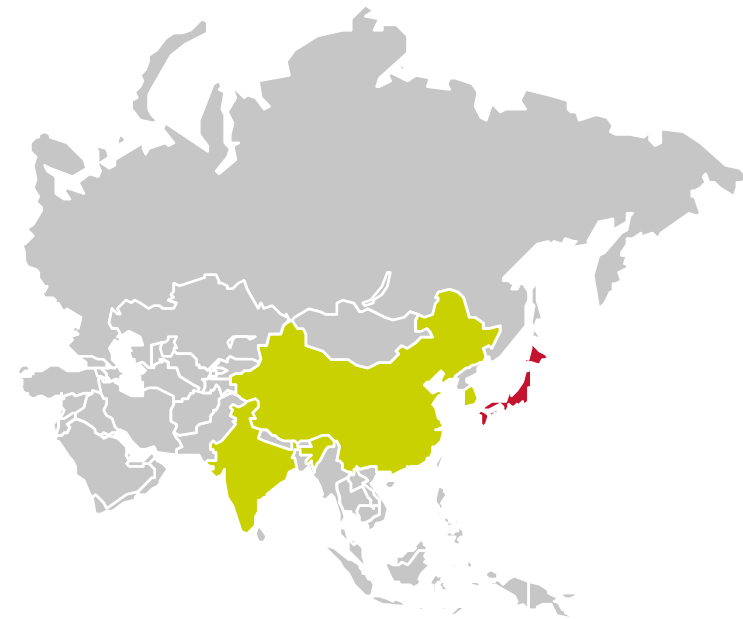
- ▶ UK, Czech Republic, Poland, Finland and The Netherlands have rational reactions and share a close position
- ▶ Very few countries (Italy and Switzerland) decided a “time-out” in their nuclear New Build program
- ▶ Only Germany decided more stringent measures



Impact of Fukushima Event in Asia

- ▶ China
- ▶ India
- ▶ South Korea

▶ In Japan,



Impact of Fukushima Event in Americas

- ▶ Canada
- ▶ United State
- ▶ Brazil
- ▶ Argentina



Safety Authorities Launched Comprehensive Safety Reviews

- ▶ Details of these tests are still unknown. The first SA to publish them will be STUK (Finland)
- ▶ The following situations are likely to be examined:
 - ◆ Earthquake
 - ◆ Flooding
 - ◆ Loss of electrical power
 - ◆ Loss of the ultimate heat sink
 - ◆ Loss of core cooling function
 - ◆ Loss of cooling function in the fuel storage pool.
- ▶ Not a single nuclear reactor building site has been interrupted outside Japan.
- ▶ Safety authorities working on the licensing of new reactor designs are going ahead with this work and did not interrupt it.

Safety Principles in the Post-Fukushima world

- ▶ Existing reactor fleets to be checked regularly
- ▶ Likely overall decrease in the number of life extensions
- ▶ Only Gen. III + reactors should be acceptable for new builds



Fukushima: impact on Public opinion

Majorities turned minorities

Japan (62 ↘ 39) -23%  Saudi Arabia (52 ↘ 43) -9% 

Canada (51 ↘ 43) -8%  Netherlands (51 ↘ 44) -7% 

Majorities severely thinned by 10% or more

China (83 ↘ 70) -13%  Egypt (65 ↘ 52) -13% 

India (58 ↘ 49) -9%  Russia (63 ↘ 52) -11% 

Majorities affected moderately drop in support less than 10%

France (66 ↘ 58) -8%  USA (53 ↘ 47) -6% 

Bulgaria (68 ↘ 62) -6%  Finland (58 ↘ 52) -6% 

Czech Rep. (63 ↘ 61) -2%  Korea (65 ↘ 64) -1% 

Minorities further thinned

Germany (34 ↘ 26) -8%  Belgium (43 ↘ 34) -9% 

Switzerland (40 ↘ 34) -6%  Poland (36 ↘ 30) -6% 

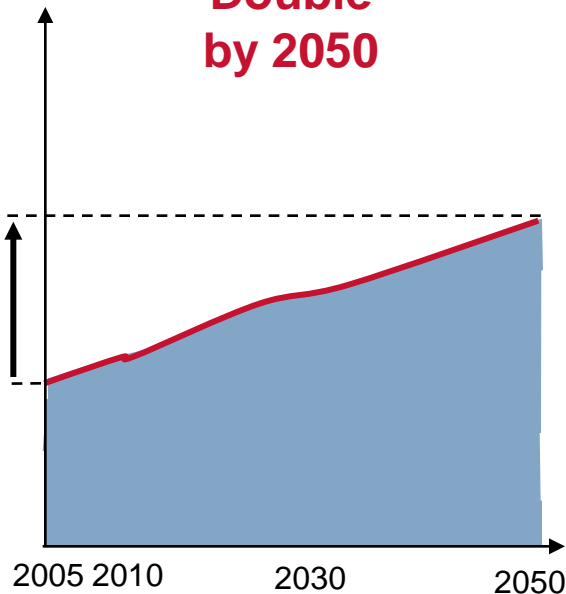
Italy (28 ↘ 24) -4%  Brazil (34 ↘ 32) -2% 

The world energy sector is facing 3 major challenges



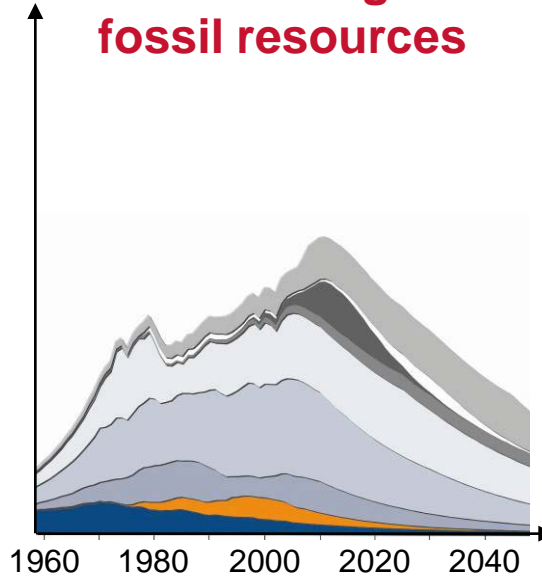
Energy demand

**Double
by 2050**



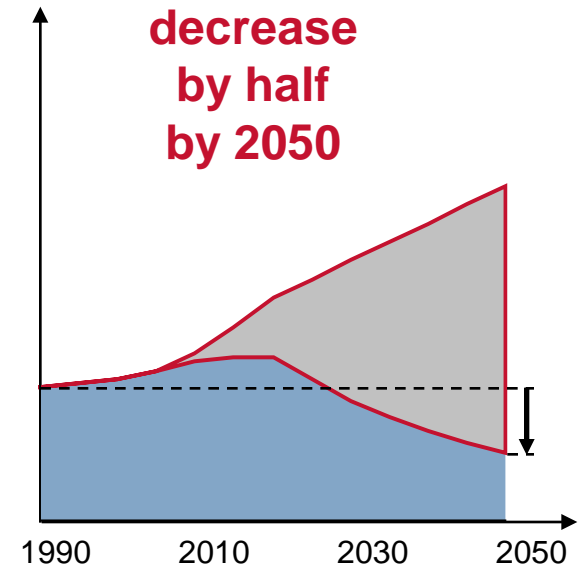
Oil & Gas availability

**Declining
fossil resources**



GHG emissions

**Must
decrease
by half
by 2050**



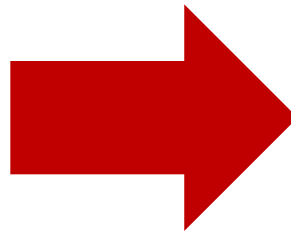
Fukushima has not changed the fundamentals



▶ **March 10, 2011**

▶ **The World needed
electricity generation
sources that were:**

- ◆ **Affordable**
- ◆ **Secure**
- ◆ **Job creators**
- ◆ **Clean**
- ◆ **Safe**



▶ **June 6, 2011**

▶ **The World needs
electricity generation
sources that are:**

- ◆ **Affordable**
- ◆ **Secure**
- ◆ **Job creators**
- ◆ **Clean**
- ◆ **Safe**

Conclusion

- ▶ **The world needs nuclear**
- ▶ **Operating Nuclear plants and new plants:**
 - ◆ **Are Competitive**
 - ◆ **Support National Security**
 - ◆ **Enable Economic Growth**
 - ◆ **Enable decarbonizes baseload electricity supply**
- ▶ **A sustainable future requires partnerships and strategic vision**
 - ◆ **Governments – Utilities – Suppliers – R&D**

**Building today means affordable energy
and economic security tomorrow**