Impact of Fukushima event on nuclear power sector

Preliminary assessment

March 25th, 2011

AREVA

- On March 11th, Japan was hit by one of the biggest natural cataclysms ever observed – a magnitude 9 earthquake on the Richter scale and a tsunami with a wave more than 10 meters high. The tsunami has resulted in a serious nuclear accident in the Fukushima power plant operated by the Japanese utility Tepco
- The event in Fukushima power plant has raised a lot of emotion worldwide and AREVA – as the whole nuclear community – shares this feeling
- However it is the responsibility of the nuclear players to keep a rational eye on this event – which is in no way comparable to Chernobyl neither technically nor in terms of consequences. This document objective is to provide a preliminary assessment of the potential business impacts on the nuclear industry country per country based on international reactions
- To date, the event in Fukushima power plant is not over. Once the situation on site will make it possible, the nuclear industry will take into consideration all the lessons learned in order to make nuclear industry even safer

Agenda

- **Synthesis**
- Country reviews

Main potential impacts of Fukushima event on nuclear power sector

- **Most countries with a nuclear installed base and/or a New Build program have had pretty rational reactions** following Fukushima event
  - Nuclear energy is necessary
  - Do not surf on the wave of emotion
  - Lessons have to be learned from Japanese crisis

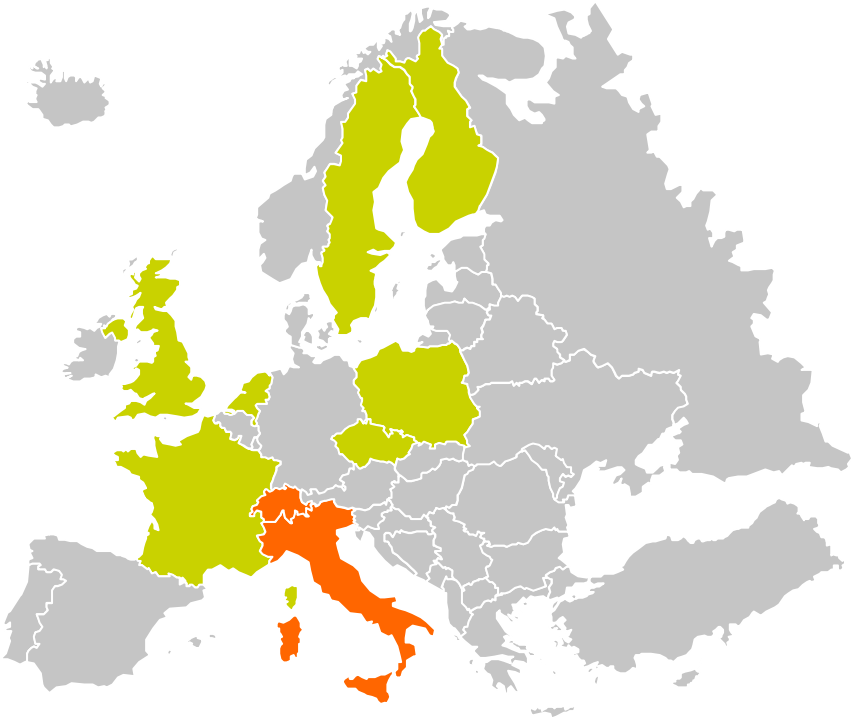
- **Most countries announced safety reviews on their existing NPPs**
  - For 14 European countries, those reviews will include check-ups
- **A few countries have also already announced that they will review their safety standards**
- **Only Germany directly announced more stringent measures** regarding its installed base (temporary shut-down of 7 oldest plants, 3-month moratorium on lifetime extension)

- **New Builds** – especially the ones with the closest CODs – **may be delayed** in order to integrate amended safety standards / licensing process
- However there is **no question – outside of Japan – to cancel New Build programs or stop current constructions**

Impact of Fukushima event on New Build

Europe, Middle East and Africa

- **UK, Czech Republic, Poland, Finland and The Netherlands have pretty rational reactions and share a close position**
  - Do not surf on the wave of emotion
  - Nuclear energy is necessary
  - Lessons have to be learned from Fukushima event and may impact on technical requirements for New Build programs
- **Their New Build programs – especially the ones with the closest CODs – may be consequently delayed**
- **However <u>there is no question to cancel them or stop current construction</u>**
- **Republic of South Africa:** State cabinet approved on March 17th the Integrated Resource Plan that confirms nuclear as part of the energy mix



- **Very few countries (Italy and Switzerland) decided to <u>a pause for reflection in</u> their nuclear New Build program**
  - Measures mainly driven by a protective approach aiming to prevent/contain over-reactions
  - 1 year for Italy

Impact of Fukushima event on New Build

Asia

- **Chinese State Council on March 16th**
  - Decided to temporarily suspend approval of new nuclear plants
  - Ordered a safety review of all operating and under construction plants
- **<u>However Indian and Chinese administrations and utilities confirm their will to continue with their nuclear New Build programs</u>** relying on most advanced standards



Impact of Fukushima event on New Build

Americas

- Most **Canadian provinces** involved in a New Build program **confirmed their commitment** despite Japan nuclear crisis

- **In the US**
  - In general, **reactions by political leaders are rational**
  - The **White House and the Nuclear Regulatory Commission have both expressed confidence** in nuclear energy
  - Other than those who were previously anti-nuclear, **opinion leaders also remain in a "wait and see" mode.**
  - U.S. utilities continue to be very quiet. Only NRG has halt all works except licensing and securing loan guarantee on South Texas Project given TEPCO contribution which could be suspended

- According to **Brazilian government and administration, Brazil will have not revise its nuclear program**



Main decisions announced to date regarding Installed Base

Europe, Middle East and Africa

	Safety review of existing plants	Safety standards review	Other significant decisions
France	✓		
Germany	✓	✓	► 7 oldest plants temporary shut-down ► 3-month moratorium on lifetime ext.
UK	✓		
Sweden	✓		
Russia	✓		
Switzerland	✓	✓	
Spain	✓		
South Africa			

check-ups[2]

✓ Announced by government and/or safety authorities

1. Part or on the top of the announced domestic safety review

Main decisions announced to date regarding Installed Base

Americas and Asia

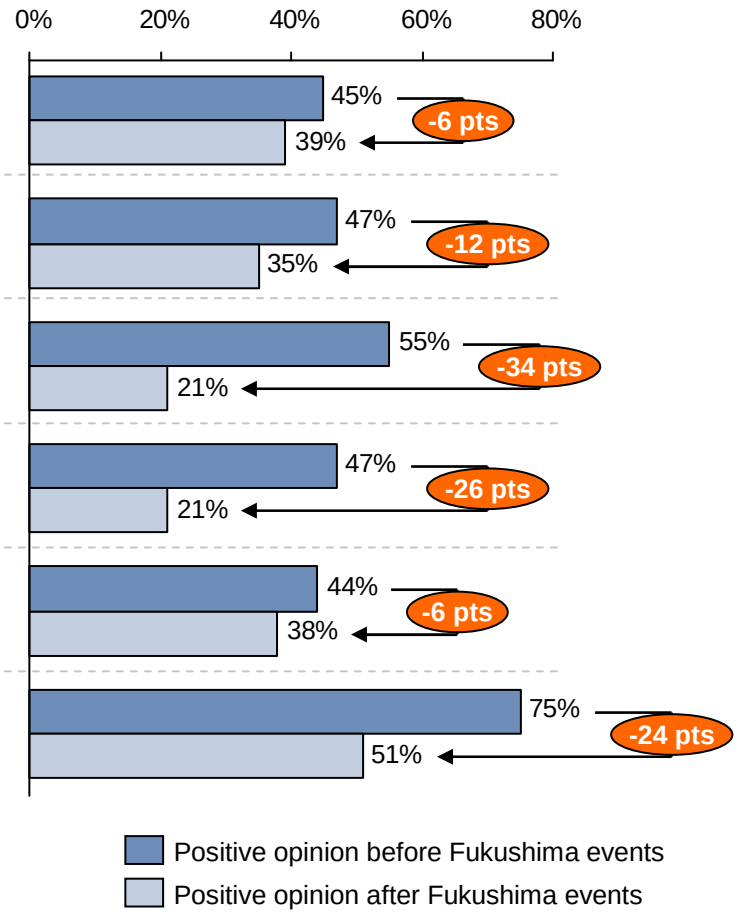
	Safety review of existing plants	Safety standards review	Other significant decisions
USA	✓	✓	► **90 day review** to analyze information on Japanese event
Argentina			
Canada	✓	✓	
Brazil			
Japan	✓	✓	
China	✓		
South Korea	✓		

✓ Announced by government and/or safety authorities

Public opinion

Whereas polls have been done right after Fukushima event, international public opinion showed a certain resilience

	Poll question and references
US	Would you favor or oppose the government promoting the increase use of nuclear power? *(the Pew Research Center, October 2010 & March 20th 2011)*
UK	Are in favor or opposed to new nuclear build in the UK? *(BBC News, November 2010 & March 22nd 2011)*
Switzerland	Are you in favor or opposed to the construction of new nuclear plants in Switzerland? *(Demoscope, January 2010 & Matin Dimanche, March 20th 2011)*
Sweden	Are you in favor or opposed to further developing the nuclear capacity in Sweden? *(AFP, November 2010 & March 22nd 2011)*
Finland	Do you have a positive general outlook towards nuclear energy before and after? *(MTV3, March 23rd, 2011)*
Bulgaria	Are you in favor of nuclear power, and, the expanding of the nation's nuclear capability? *(Alpha research, 2007 & March 23rd 2011)*



Nota: Results cannot be compared accross countries as poll questions are different

Nuclear players' stock price

Significant fall right after the beginning of the event has already been partly recovered

	Company	Stock price on March 10th	15/03 vs. 10/3		24/03 vs. 15/03		24/03 vs. 10/03
OEM	AREVA (EUR)	35.9	-19%	→	+9%	=	-12%
	Cameco (USD)	37.5	-21%	→	+5%	=	-17%
	MHI (JPY)	354.0	-19%	→	+24%	=	1%
	Toshiba (JPY)	500.0	-34%	→	+22%	=	-19%
	Hitachi (JPY)	506.0	-29%	→	+16%	=	-17%
	General Electric (USD)	20.1	-5%	→	+4%	=	-2%
Utilities	EDF (EUR)	31.0	-8%	→	0%	=	-7%
	GDF Suez (EUR)	27.3	-3%	→	+3%	=	+2%
	Iberdrola (EUR)	5.9	0%	→	+2%	=	+2%
	ENEL (EUR)	4.2	-3%	→	+5%	=	+2%
	RWE (EUR)	115.2	-9%	→	+1%	=	-7%
	E.On (EUR)	22.2	-9%	→	+1%	=	-6%
	EnBW (EUR)	22.2	-9%	→	+1%	=	0%

Agenda

- Synthesis
- **Country reviews**
  - Europe – Middle East – Africa
  - Americas
  - Asia

France



France

Preliminary assessment of Fukushima event impact

Significant reactions

- The French Nuclear Safety Authority ASN **does not see any reason to close down the facility of Fessenheim, eastern France, nor any other nuclear plant in France**, ASN's president Andre-Claude Lacoste said yesterday *(Les Echos, March 24th)*
- The French government has called for an **audit of all 58 nuclear reactors** in France. François Fillon, told the Assemblée Nationale yesterday that lessons were to be learnt from the catastrophe in Japan and that France would be doing all it can to improve nuclear safety *(Reuters, March 16th)*
- Sarkozy said: "**France has made the choice of nuclear energy,** which is key to its energy independence and in the fight against greenhouse gases...**I remain today convinced of the pertinence of this choice**". "Lessons from Fukushima accident will be drawn with a complete review of safety systems of our nuclear plants. This work will be made public" *(Wall street Journal, March 16th)*
- N. Kosciusko-Morizet said: "**we should not make radical decisions in crisis**, "we should wait the "return inspections of each facility to draw conclusions " (JDD, *March 21st*)

Installed base (58 operating reactors)

- **General safety review / check-ups of all operating plants, focusing on flooding risks, earthquake, electricity supply, loss of cooling system and operational management of crisis**

New Builds

- **Question of current construction (Flamanville 3) suspension has not been raised**

AREVA

Germany



Germany

Preliminary assessment of Fukushima event impact

Significant reactions

- Merkel said that she could **not rule out the possibility that safety checks could affect the life spans of nuclear plants** *(Reuters, March 22nd)*
- German Chancellor Angela Merkel defended her recent moves to phase out nuclear power, telling parliament **Germany could not give up nuclear energy immediately but a withdrawal policy "with a sense of proportion" had became imperative**. *(ChinaDaily, March 17th)*
- Germany's nuclear operators have started to take their oldest nuclear reactors offline after the government announced that **7 reactors that date back to the 1970s will be shut-down for three months pending a safety review** in the light of events in Japan. *(Platts, March 15th)*
- Merkel announced a **three-month moratorium on the extension of the nuclear plant's lifespan,** which had been approved in a law her administration supported. She ordered a review of the nuclear plant safety standards, saying there would be "no taboos in those reviews**"** *(CNN, March 14th)*

Installed base (17 operating reactors)

- **7 reactors off-line for 3 months:** E.ON (Isar-1, Unterweser, 33% of Brunsbuettel), Vattenfall (67% of Brunsbuettel), RWE (Biblis-A and -B) and EnBW (Neckarwestheim-1 and Philippsburg-1)
- **3-month moratorium on life time extension**
- **General safety review / check-ups of all operating plants**

UK



UK

Preliminary assessment of Fukushima event impact

Significant reactions

- C. Huhne: "I have called on the Chief Nuclear Inspector, Dr. Mike Weightman for a **thorough report on the implications of the situation in Japan and lessons to be learned**". Interim report due by mid May 2011 and a final report within six months. Both reports will be made public *(Reuters, March 16th)*
- Prime Minister David Cameron said "**I do think that nuclear power should be part of the mix in future** as it is part of the mix right now". (*Reuters, March 16th*)
- Weightman's review "will consider if there are implications for our new nuclear build program. It is **too early to say what the impact will be on the timeframe** for our work on the generic design assessment and site licensing," *(Platts, March 22nd)*
- C. Huhne (Energy secretary) would not "rush to judgment" until the implications of the disaster were known and a report into the safety of UK nuclear plants by the chief nuclear officer, Dr Mike Weightman, was complete. **The interim findings are due in May** (*Guardian, March 19th*)

Installed base (14 operating reactors)

- Weightman interim report on safety expected by mid-May, final report by September
- **General safety review / check-ups of all operating plants**

New Builds

- GDA (General Design Assessment) interim Design Acceptance Confirmations expected to be **postponed for 3 months** (new target date: September 2011)
- GDA may be amended to include specific lessons learned from Japan

AREVA

Sweden



Sweden

Preliminary assessment of Fukushima event impact

Significant reactions

- The government has asked the Swedish Radiation Safety Authority (Strålsäkerhetsmyndigheten) to **assess recent events at nuclear power stations in Japan and to see what can be learnt and used by the Swedish nuclear power industry**. *(Esmerk Swedish News, March 17th)*
- Prime Minister Fredrik Reinfeldt said: "We have to do all we can to put safety questions first and try to find a way for producing energy that has the least possible impact on the environment, the least possible use of fossil fuels and finite natural resources”.” **The decision to allow existing reactors to be replaced when they are no longer serviceable still stands**." (*Reuters, March 14th*)
- The strong support of nuclear power by a government that was just elected means Stockholm is likely to **stick to its decision to revive its nuclear industry**, at least while the current minority government holds power *(Forbes, March 16th)*

Installed base (10 operating reactors)

- **General safety review / check-ups of all operating plants**

New Builds

- As the project is in an early phase (COD 2024), **no impact can be forecasted** on the licensing schedule and process

AREVA

Spain



Spain

Preliminary assessment of Fukushima event impact

Significant reactions

- Miguel Sebastian Minister of Industry reiterated his government's decision to close its Gorona plant in 2013, but insisted Spain's nuclear facilities "are secure." “his government supports the stress tests and will present a plan which would focus on tightening nuclear security. (*ytwhw.com, March 21st*)
- Prime Minister Jose Luis Rodriguez Zapatero said that Spain will **review the safety of its nuclear power plants and that studies have been commissioned** to determine how vulnerable the plants are to earthquakes or flooding. *(AP, March 16th)*

Installed base (8 operating reactors)

- **General safety review / check-ups of all operating plants**

Czech Rep.



Czech Republic

Preliminary assessment of Fukushima event impact

Significant reactions

- Petr Nečas, prime minister said "**Closing the country's nuclear plants would "provoke an economic collapse**" (*The Prague Post, March 23rd*)
- Dana Drabova, the chief of the Czech Republic's nuclear safety office said officials **would not rush to a decision over nuclear plants but would instead take time to explore potential safety improvements** when the situation in Japan is more clear *(Reuters, March 17th)*
- Petr Nečas**: "The Czech Republic will definitely not halt operations at its nuclear power plants** *(Právo, March 17th)*
- **President Václav Klaus accused European politicians** who have called for a review of nuclear power in the wake of the Japanese earthquake of engaging in **"opportunistic populism"** *(The Prague Post, March 17th)*
- Dana Drabova, chairwoman of Czech State Office for Nuclear Safety: the Czech Republic has **no immediate plans to review its atomic expansion plans** due to the nuclear crisis in Japan (*Bloomberg, March 15th*)

Installed base (6 operating reactors)

- **General safety review / check-ups of all operating plants**

New Builds

- **Nuclear program timing confirmed at this stage**

AREVA

Switzer-land

Switzerland

Preliminary assessment of Fukushima event impact

Significant reactions

- Wanner, the director of the Swiss Federal Nuclear Safety Inspectorate (ENSI), said « that any plants failing to have the proper emergency systems in place would not be immediately shut down ». « **the power companies would be given a reasonable amount of time to introduce appropriate safety measures** » (*Swiss info, March 21st*)
- Nuclear Safety Federal Inspection (IFSN) will provide its safety review for the 5 existing plants **by end of March**. Switzerland **won't participate to EU stress tests** *(Le Matin, March 18th)*
- Doris Leuthard, Federal Councillor, in charge of energy ministry, said: 'Safety is the top priority,'. "Current frameworks and standards for licensing could be adapted if the review showed a need to improve safety measures". (*M&C, March 14th*)
- Energy Minister Doris Leuthard said Switzerland **has suspended the approval process for three new nuclear power stations in order to revisit safety standards** *(March 14th)*

Installed base (5 operating reactors)

- **Swiss safety inspection of all operating plants and potential adaptation of current safety frameworks and standards** for licensing

New Builds

- New build plans currently "on hold"

AREVA

Finland



Finland

Preliminary assessment of Fukushima event impact

Significant reactions

- **Halonen (President of Finland)** said: **Finland will continue with projects that have been approved by the Helsinki-based parliament** (*Bloomberg, March 16th*)
- « There is not immediate change on our construction plan on OL3 site **as we do not know yet what exactly happened in Fukushima »** *(Reuters, March 16th)*
- « It is **too early to figure our any eventual consequences** of the Fukushima nuclear accident in Japan **with respect to our 3rd generation EPR construction in Finland** » (*TVO Spokesman, March 16th*)

Installed base (4 operating reactors)

- **General safety review / check-ups of all operating plants**

New Builds

- **Limited risks of delay for TVO and FVO New Build programs**
- **Construction in Olkiluoto 3 not affected**

AREVA

Bulgaria



Bulgaria

Preliminary assessment of Fukushima event impact

Significant reactions

- Bulgaria will carry out a **stress test of its Kozloduy N-plant** on the Danube River after the EU agreed to gauge the safety of all reactors in the 27-nation bloc. The check up will cover **seven criteria** including threats from **earthquake**s, **floods**, **airplane crashes** and terrorism as well as reactors' **cooling systems** and their **age**, the government said in an e-mail today. **Experts** from the Vienna-based **International Atomic Energy Agency** will be invited to **monitor the tests**, according to the statement. *(Bloomberg, March 22nd)*
- Prime Minister Boyko Borissov said: "Bulgaria will be building the Belene N-Plant on two conditions: 51 per cent guaranteed participating interest for the State and project financing without any national budget allocations." *(Bsanna news, March 21st)*
- Nuclear Regulatory Agency (NRA) Chairman Sergei Tsochev told BTA his Agency needs more time to examine the Belene N-Plant technical design. He would not commit himself to a deadline. "We may set additional safety requirements," *(Bsanna news, March 21st)*

Installed base (2 operating reactors)

- **General safety review / check-ups of all operating plants**

New Builds

- **Uncertainties on Belene project which predated Fukushima event are on-going** (financing still not secured)

AREVA

RSA



RSA

Preliminary assessment of Fukushima event impact

Significant reactions

- **RSA cabinet has approved the Integrated Resource Plan 2010 that confirms nuclear as part of the energy mix**. The document will be published by DoE soon *(March 17th)*
- **The National Nuclear Regulator** (NNR) confirmed Eskom's assertions that its **Koeberg** nuclear power plant near Cape Town **can withstand both earthquakes and tsunamis** *(Timeslive, March 16th)*
- **South Africa Energy Minister** said "**South Africa's decisions on future nuclear plants** may be **affected by concerns about radioactivity** from Japan's earthquake-stricken reactor" *(Reuters, March 15th)*
- **Eskom Holdings** Ltd. sees **nuclear energy as playing a role in meeting power needs** even as the risk of radiation leaks in Japan rose. (*Bloomberg, March 15th)*
- **Eskom** said **South Africa** was "**well-equipped**" to have **nuclear** power stations and had a "**nuclear safety culture**". *(South African Press Association, March 14th)*

Installed base (2 operating reactors)

- **Eskom's** claimed its **Koeberg NPP withstand both eartquakes and tsunamis,** which was **confirmed by the NNR**

New Builds

- **Integrated Resource Plan -approved after Fukushima event began- confirms nuclear as part of the energy mix (~9 600 MW)**

NL



The Netherland

Preliminary assessment of Fukushima event impact

Significant reactions

- **MP Rene Leegte** said: “The **position** of the conservatives (VVD) has **not changed**[…] We have to **get off oil and gas**, as we cannot be **dependent** on the countries that supply this. Just think of **Libya**“ *(Nisnews, March 16th)*
- Economic Affairs Minister Maxime Verhagen said that the problems with the Japanese nuclear plants **could have an influence on the technical requirements the Netherlands will impose**. *(Nisnews, March 15th)*
- **An economic ministry spokesman** said the Netherlands will **continue plans to build** the country's second nuclear power plant. He said it was **too early to say whether developments** in Japan would prolong the permitting process *(March 14th, Reuters)*

Installed base (1 operating reactor)

- **General safety review / check-ups of all operating plants**

New Builds

- **Neither changes nor delays foreseen in the process**

AREVA

Poland



Poland

Preliminary assessment of Fukushima event impact

Significant reactions

- The Prime Minister, Mr. Donald Tusk, said that he **does not see the need for organizing the referendum** on the construction of a nuclear power plant in Poland if there are no special social emotions on this issue *(PAP, March 24th)*
- Polish Prime Minister Donald Tusk said a referendum was possible on two planned nuclear energy plants'. 'This kind of undertaking doesn't make sense without social approval,'. He added, however, that **most Poles supported nuclear energy as a source that was 'cheap, safe, and clean**.' (*M&C, March 23rd*)
- Tomasz Zadroga, director of PGE declared: "Poland's **nuclear energy program is needed** …our absolute priority is safety, so we are considering only the latest, so-called third generation, technology" *(thenews.pl, March 21st)*
- **The nuclear emergency currently gripping Japan would not happen in Poland**, due **to its location and the advanced design of the nuclear power plants Poland plans to build, the country's** Economy Ministry said. The country continues to plan its first nuclear power plant. (*The Wall Street Journal.com, March 16th*)

New Builds

- **Government is very supportive and no change nor delays announced**
  - Process is on-going for the selection of 2 consulting firms for site selection and tender organization

AREVA

Italy



Italy

Preliminary assessment of Fukushima event impact

Significant reactions

- **The new nuclear decree** dealing with nuclear installations (new builds and waste storage) **has been approved, referendum is confirmed** on June 12th and 13th, 2011 and **nuclear strategy policy postponed for 24 months** (*March 23rd*)
- Paolo Romani, said: " At the ministerial council of tomorrow we will issue a declaration for a **moratorium of one year** concerning the decisions and activities **on the identification of sites for new reactor plants**". According to Quotidiano Energia, the moratorium will exclude the activities linked with the identification of sites for waste storage (*Reuters, March 22nd*).

New Builds

- **New Build program likely to be delayed (1-year moratorium)**

AREVA

Agenda

- Synthesis
- **Country reviews**
  - Europe – Middle East – Africa
  - Americas
  - Asia

US



US

Preliminary assessment of Fukushima event impact

Significant reactions

- Officials said: "U.S. **nuclear regulators are launching additional inspections and considering a 90-day review of the country's 104 nuclear reactors** in the wake of Japan's nuclear crisis" *(Reuters, March 21st)*
- **"**The Nuclear Regulatory Commission **has issued an Information Notice to all currently operating U.S. nuclear power plants, describing the effects of the March 11 earthquake and tsunami on Japanese nuclear power plant** … **the NRC expects U.S. nuclear power plants will review the entire notice to determine how it applies to their facilities and consider actions, as appropriate** *(NRC News, March 18th)*
- **TVA officials confident in its nuclear plants.** "It will be up to our board to make a determination on Bellefonte," Golden said. "If they don't take any action there will be an August meeting where they may consider it. Right now we're thinking this unit, if we go forward with it, will be (ready) in the 2018 range." *(Daily Sentinel, March 22nd)*
- NRG, which has worked closely with TEPCO to develop the Texas reactors, said **there was too much regulatory uncertainty to continue pouring cash into the project**. It will halt all work except licensing new reactors and securing federal loan guarantees. The company said **it remains committed to its choice of the Advanced Boiling Water Reactor (ABWR)** design *(Reuters, March 21st)*
- Bellefonte on track despite Japanese nuclear plant problems (*Waff.com, March 16th)*
  - TVA Spokesman Terry Johnson says they're watching the situation closely but there's no change in progress. In fact, he says what's learned in Japan can be of great benefit here.
  - **Engineering work is underway** to determine what it will take to get the Unit One reactor at Bellefonte Nuclear Plant finished.
- **The White House and the NRC have both expressed confidence** in the current fleet of U.S. reactors and the regulatory system

Installed base (104 operating reactors)

- **90-day review** to digest information on Japanese events in order to determine whether the US needs to adapt its standards and **inspections and safety review of 104 operating plants** to assess their ability to respond to loss of power, flooding and equipment loss due to seismic event

New Builds

- **Administration reaffirms support to New Builds**
- **Except NRG postponement announcement, no impact on schedule communicated by utilities**

AREVA

Canada



Canada

Preliminary assessment of Fukushima event impact

Significant reactions

- In the wake of the nuclear crisis in Japan, **the Canadian Nuclear Safety Commission has ordered all reactor operators to revisit their safety plans and report on potential improvements to be made**. **Federal Natural Resources Minister** Christian Paradis explained that ”operators are to report, by April 29, 2011, on implementation plans for short- and long-term measures gaps” *(Nationalpost.com, March 21st)*

- A spokesman for the province's Energy Minister Brad Duguid said the **government remained committed to building two new units at the Darlington Nuclear Generating Station in Clarington, Ont.,** in the wake of a possible nuclear meltdown in Japan. *(March 15th, CTV News)*

Installed base (18 operating reactors)

- **Safety inspection of all operating plants and potential improvements of current safety frameworks and standards**

New Builds

- **New Brunswick maintains their commitment to their new build program**

- Ontario safety rules potentially be reviewed which could generate **some delays in their nuclear new build program for 2 units**

AREVA

Brazil



Brazil

Preliminary assessment of Fukushima event impact

Significant reactions

- Science and Technology Minister Aloizio Mercadante said **Brazil "isn't in a hurry"** to build its planned nuclear power plants and will modify projects to comply with any new international safety standards "With nuclear energy, **safety comes before any other issue**," *(Wall Street Journal, March 23rd)*
- The Secretary General of the Presidency, Mr. Gilberto Carvalho, explained that President Dilma Rousseff is concerned about the crises in Japan and their impact on the Brazilian nuclear program. *(March 16th)*
- Energy Minister Edison Lobao said Brazil will conduct an assessment of the safety of its nuclear facilities, without affecting current operations *(Reuters, March 17th)*
- Leonam Guimaraes, a **spokesman for Eletronuclear** « Although Brazil does not sit in an earthquake zone, **the Angra dos Reis plant in Rio is built to withstand quakes up to a magnitude of 7.0 and to resist hurricane** … **a seismic shock of that size in Brazil is impossible from the geological point of view**" *(Reuters, March 15th)*

Installed base (2 operating reactors)

- **General safety review of all operating plants**

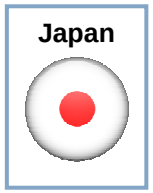
New Builds

- **No formal communication yet on potential consequences for Angra 3**

AREVA

Agenda

- Synthesis
- **Country reviews**
  - Europe – Middle East – Africa
  - Americas
  - Asia



Japon

Preliminary assessment of Fukushima event impact

Significant reactions

- Tepco, as Asia's biggest utility is known, **halted work on the No. 1 nuclear reactor at the Higashidori** plant and **suspended plans to build three other reactors**, spokesman Takeo Iwamoto said today. Chubu Electric Power Co., among Japan's three biggest energy utilities, **delayed building a new reactor**, while Electric Power Development Co. **stopped construction of its Oma nuclear plant**, officials at each company said. *(Bloomberg, March 24th)*
- Economy Minister Kaoru Yosano said that **nuclear power would remain the primary source of energy** for the Japanese economy despite concerns over safety after problems at the quake-hit Fukushima Daiichi power plant. "**There is no doubt that nuclear power will remain the main energy** source to support Japan's economy and society" (*Wall Street Journal, March 21st*)
- Hidehiko Nishiyama, a director general at the trade ministry said: "While people may become more cautious, **renewable energy alone isn't sufficient, so nuclear power is essential**" *(Bloomberg, March 22th)*

Installed base (54 operating reactors)

- **14 reactors off-line** (Tokai-2 for Japco, Fukushima-I1 to 6, Fukushima-II1 to 4 for Tepco, Onagawa 1 to 3 for Tohoku)
- **Review of the nuclear plant safety standards safety checks**

New Builds

- **Constructions (Higashidori, Ohma and Shimane) halted in Japan**
- **Schedule for New Builds delayed by at least one year**

China



China

Preliminary assessment of Fukushima event impact

Significant reactions

- **Hong Kong Nuclear Investment Co,** which owns 25 percent of Daya Bay, said **routine checks** showed the power station was **operating normally**. *(China daily, March 22nd)*
- **China Guangdong Nuclear Power Group Co** is conducting **safety checks on its power stations**, including those under construction. *(China daily, March 22nd)*
- **China National Nuclear Corporation (CNNC)** said it was **conducting safety checks on the country's existing nuclear power plants** *(Xinhua, March 20ieth)*
- **Premier Wen Jiabao presided the Executive Meeting of the State Council**. The meeting pointed out that safety should be priority in the nuclear power development. *(March 16th)*
- According to China's energy chief, **Japan's nuclear disaster will make the new generation of reactors safer** *(March 14th)*

Installed base (11 operating reactors)

- **General safety review of all operating plants**
  - **comprehensive safety inspection of all nuclear facilities.** Through carefully safety evaluations, remove safety hidden trouble, adopt measures to guarantee the safety**.**
  - **safety supervision on the operation nuclear facilities strengthened**

New Builds

- **Following State Council meeting, it has been decided**
  - Inspection of all units under construction
  - Stricter safety criteria for all new-build
  - Approval process of new NPPs suspended till above measures have been implemented
- **Construction of the 2 EPR units and 4 AP1000 units not affected**

AREVA

India



India

Preliminary assessment of Fukushima event impact

Significant reactions

- **NPCIL chairman & managing director** S K Jain said there would not be **any slowdown in the country's nuclear energy program** in view of the Japan incident *(Business Standard, March 22nd)*
- NPCIL and DAE confirm **necessity to re-assess EPR safety – in case of earthquake and tsunami. AERB would have already integrated this new requirement in EPR evaluation**
- The Department of Atomic Energy and its agencies including NPCIL have been instructed to undertake **an immediate technical review of all safety systems of our nuclear power plants** particularly with a view to ensuring that they would be able to withstand the impact of large natural disasters such as tsunamis and earthquakes. *(Sify, March 14th)*

Installed base (20 operating reactors)

- **General safety review of all operating plants**
  - **Safety audit committee on March 22nd**

New Builds

- Potential delay linked to Jaitapur site safety re-assessment

AREVA