

Rosatom International Nuclear Law Symposium

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# Opportunities and challenges for the Russian nuclear industry in a post-Fukushima world

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8 June 2011



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# A post-Fukushima world

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# A post-Fukushima world

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- ▶ Serious incident; highest IAEA rating
- ▶ Caused by March 11 earthquake of 9 magnitude on the richer scale and a tsunami of 14 metres = beyond design basis event
- ▶ Partial core meltdown confirmed; situation still serious and of ongoing concern
- ▶ Long term consequences at Fukushima plant are still unknown
- ▶ Long term consequences for international future of nuclear power somewhat unclear
- ▶ But, nuclear world has changed:
  - Can identify and predict some national and international short term responses
  - Can identify and predict some new challenges and new opportunities for the Russian nuclear industry

# Responses to previous nuclear accidents

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- ▶ Historical experience of nuclear power use is all about "lessons learned" and continued improvement in safety, security and safeguards
- ▶ Chernobyl and Three Mile Island as "lessons learned" and indicators of possible responses to Fukushima
- ▶ Key areas of focus:
  - Nuclear safety
  - Emergency preparedness and response
  - Nuclear liability

## Responses to previous accidents (continued)

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- ▶ International responses to Chernobyl:
  - Convention on Nuclear Safety
  - Increased compensation under Paris and Vienna nuclear liability conventions; international funds for nuclear accidents
- ▶ National responses to Three Mile Island:
  - Changes to US Nuclear Regulation Commission's regulations in areas of:
    - Operator training and on-site staffing requirements
    - Emergency planning apparatus
    - Introduction of "safety culture" principle that every decision/action is driven by plant safety

# Responses to Fukushima

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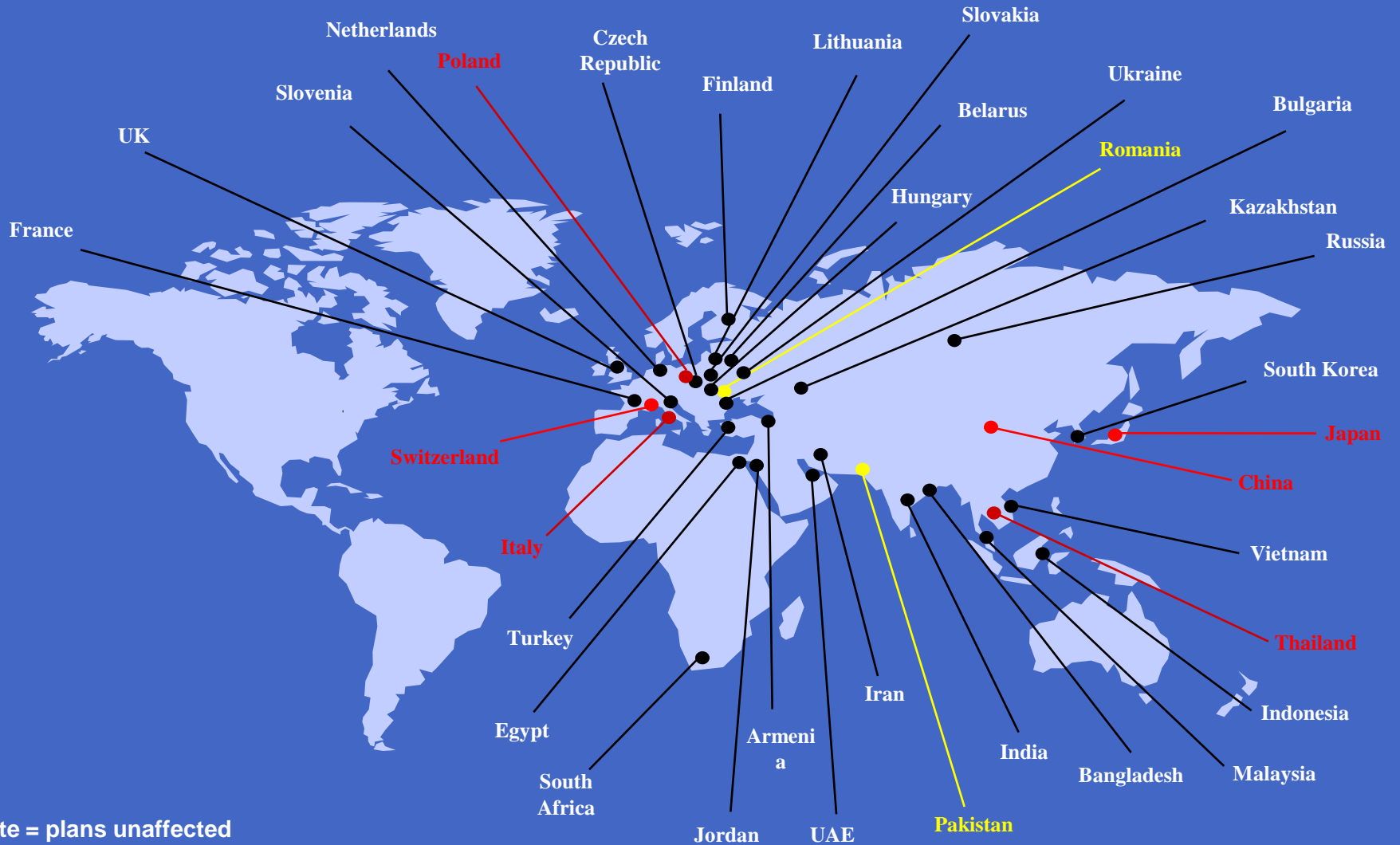


# National responses to Fukushima

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- ▶ All states undertaking safety reviews of existing nuclear power plants
- ▶ States considering whether changes to regulations are required
- ▶ Some examples of national responses:
  - US NRC - called on operators to conduct self-reviews of plants; NRC task force created to review existing regulations in light of Fukushima
  - Canada - regulator called on operators to review safety and emergency procedures
  - China – re-considering new build plans; considering strengthening safety regulations
  - India - tabled a bill to create an independent nuclear regulatory body
  - Italy - moratorium on nuclear power to be extended indefinitely
  - Switzerland - Cabinet voted not to replace existing nuclear power plants

# Overview of status of international power programmes post-Fukushima



White = plans unaffected  
Red = plans under revision  
Yellow = Unknown

# International responses to Fukushima

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- ▶ IAEA released preliminary summary of its International Fact Finding Expert Mission, 24 May to 1 June 2011:
  - Preliminary conclusions and lessons fall into three categories:
    - External hazards
    - Severe accident management
    - Emergency preparedness
  - Lessons learned:
    - Tsunami hazard underestimated: nuclear designers and operators to appropriately evaluate and protect against all natural hazards
    - Defense in depth, physical separation, diversity and redundancy requirements applied for extreme emergency events
    - National regulatory systems to adequately address extreme external events and ensure regulatory independence and clarity of roles
    - Hardened on-site emergency response centres for all major nuclear facilities with severe accident potential
    - Emergency arrangements for early phases of a crisis addressed

# International responses to Fukushima

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- ▶ IAEA Ministerial Conference to be held on Nuclear Safety 20-24 June
  - Objective of the Conference is to draw on the lessons from the accident at the Fukushima Daiichi NPP in order to strengthen nuclear safety throughout the world
  - The specific objectives of the Conference are to:
    - Make a preliminary assessment of Fukushima
    - Assess national, regional and international emergency preparedness and response capabilities with a view to strengthening them
    - Discuss safety implications and identify areas of the global safety framework to be reviewed and strengthened
    - Identify lessons learned and possible future actions
- ▶ European Energy Commission:
  - Conducting “stress tests” on all NPPs
  - WENRA prepared initial test criteria
  - Calling for stronger international safety standards

# Post-Fukushima world predictions and hopes

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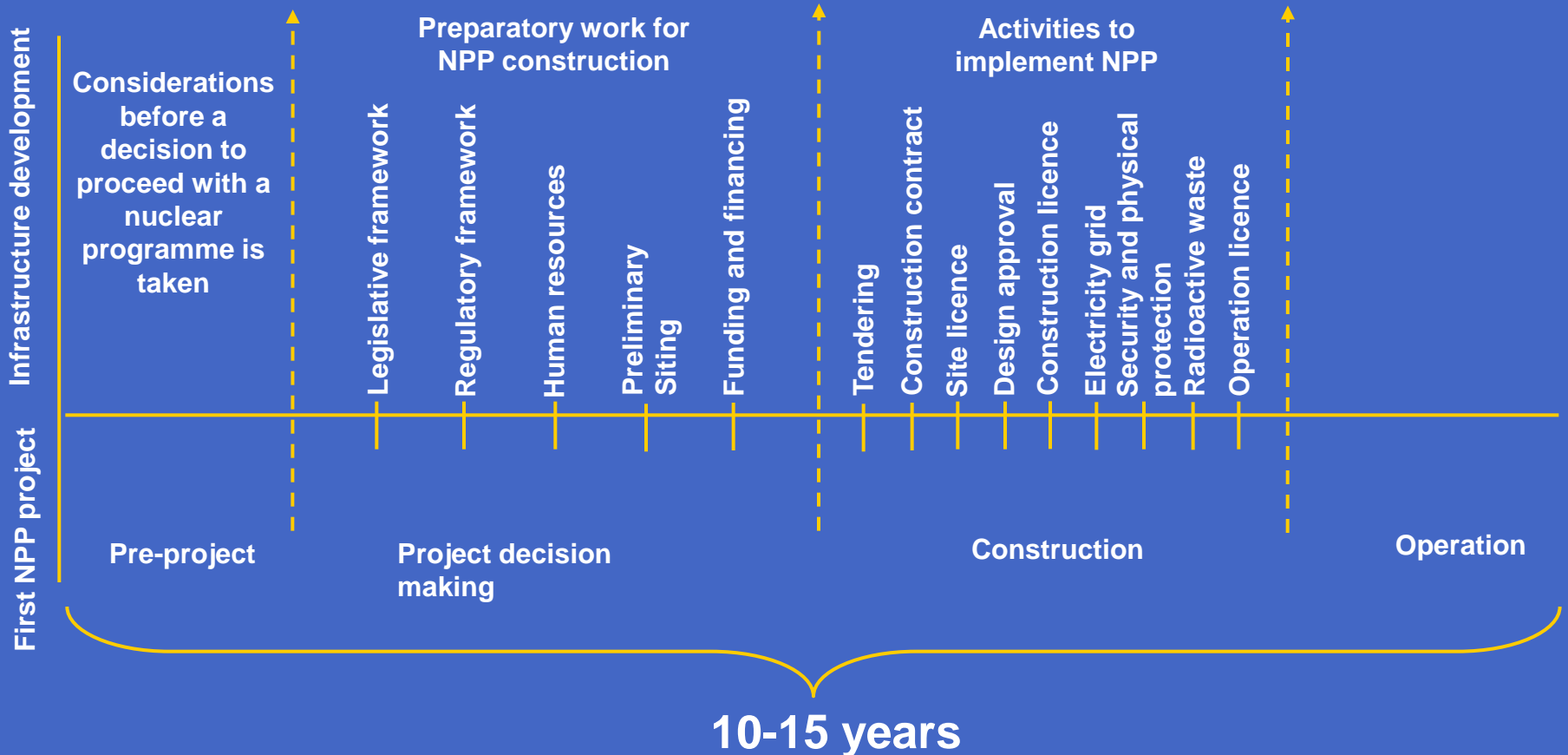
- ▶ Higher safety standards internationally and nationally: re-visitation of beyond-design-basis threats of extreme natural hazards
- ▶ Binding international safety standards - Convention on Nuclear Safety enhanced and a move to being obligatory rather than “incentive-oriented”
- ▶ Enhanced emergency preparedness and response arrangements – nationally for every nuclear site, nationally and internationally to ensure response informed, immediate and effective
- ▶ Increased levels of national operational transparency
- ▶ Increased attention on the importance of good, independent and effective nuclear regulation

# IAEA milestones: development of the infrastructure for a nuclear power programme

**Milestone 1: ready to make a knowledgeable commitment to a nuclear power programme**

**Milestone 2: ready to invite bids for first NPP**

**Milestone 3: ready to commission and operate first NPP**

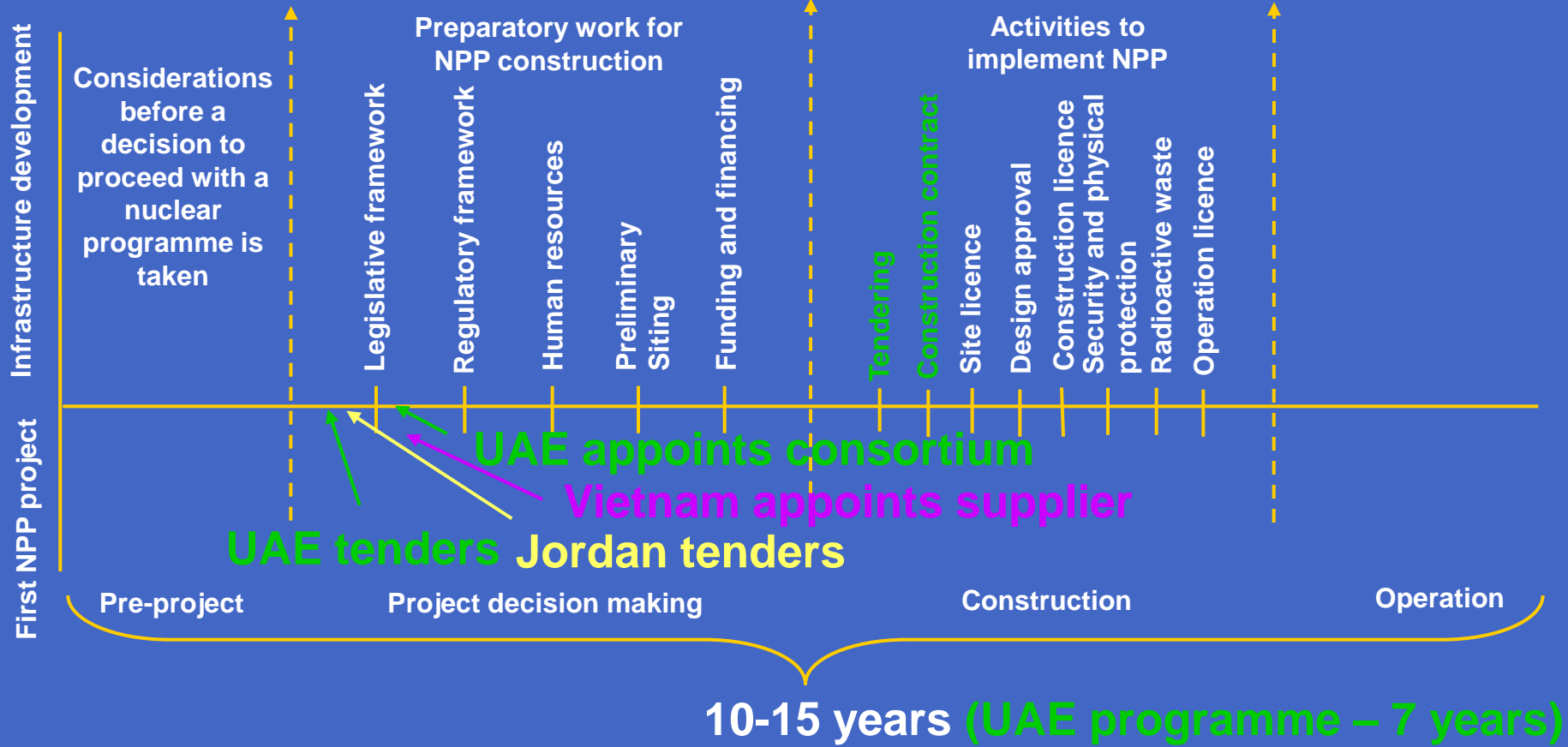


# Fast tracking - the paradigm shift to focus on procurement

**Milestone 1: ready to make a knowledgeable commitment to a nuclear power programme**

**Milestone 2: ready to invite bids for first NPP**

**Milestone 3: ready to commission and operate first NPP**



# Strategies for the Russian nuclear industry in international markets post-Fukushima

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- ▶ New challenges for entire industry
- ▶ Japanese nuclear industry will face challenges in Japan and also for export
- ▶ Entire nuclear industry will have to:
  - Help rebuild public confidence internationally and nationally in nuclear power
  - Demonstrate the safety nuclear technology, potentially to higher safety standards
  - Review technologies to consider suitability to deal with beyond-design-basis threats

# Strategies for the Russian nuclear industry in international markets post-Fukushima

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- ▶ Russian industry could be seen as a leaders in promoting:
  - Stringent and internationally binding nuclear safety standards
  - Strengthen bilateral relationships to enhance reciprocal safety obligations, review liability arrangements and facilitate emergency preparedness and response
  - Enhanced emergency preparedness and response cooperative arrangements
- ▶ Opportunities:
  - Russian industry success in emerging nuclear markets (eg. Turkey, Vietnam, Iran)
  - Russian role in re-building public confidence in countries such as Turkey
  - Increased opportunities for Russian technology to be exported

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