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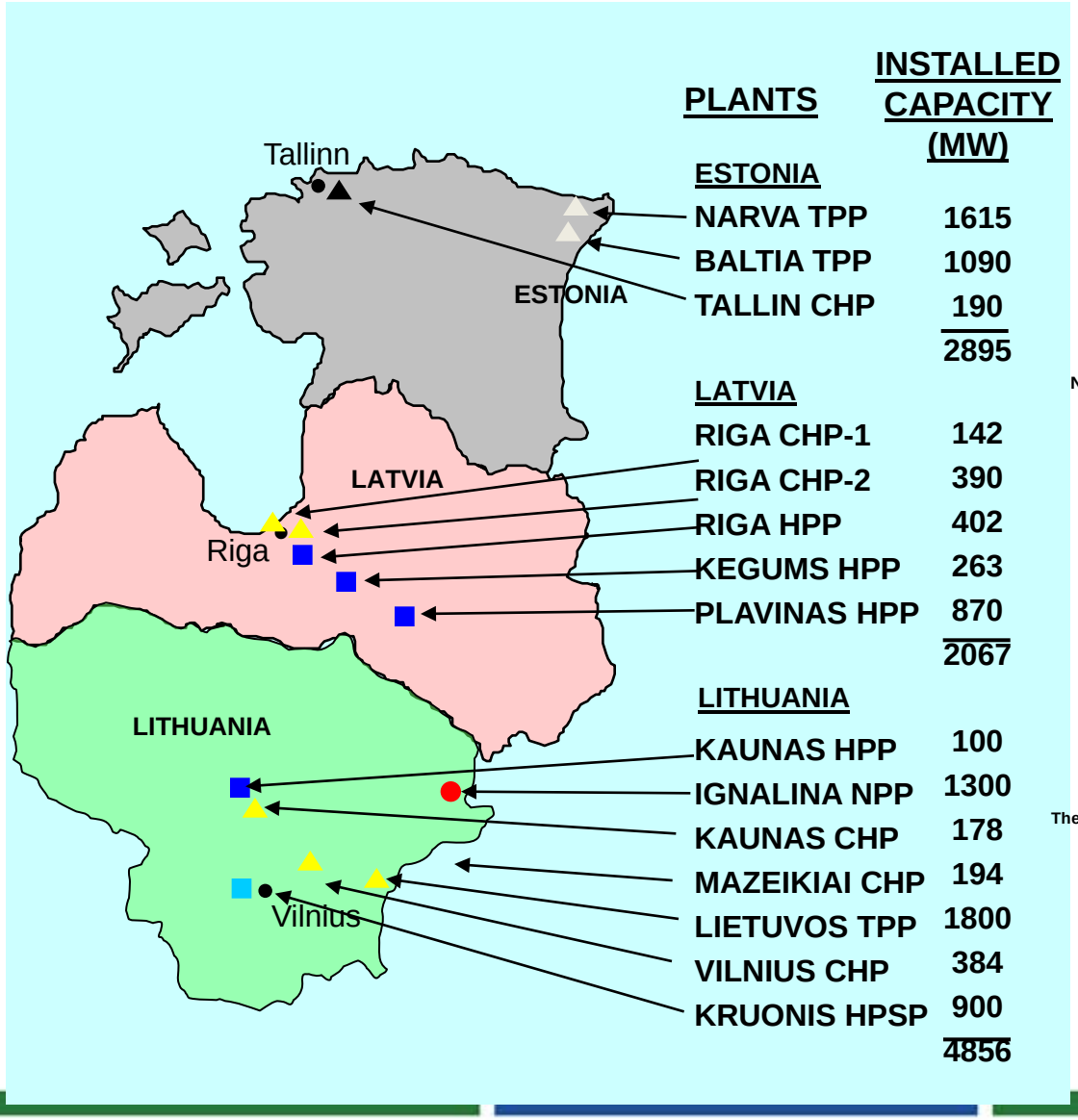
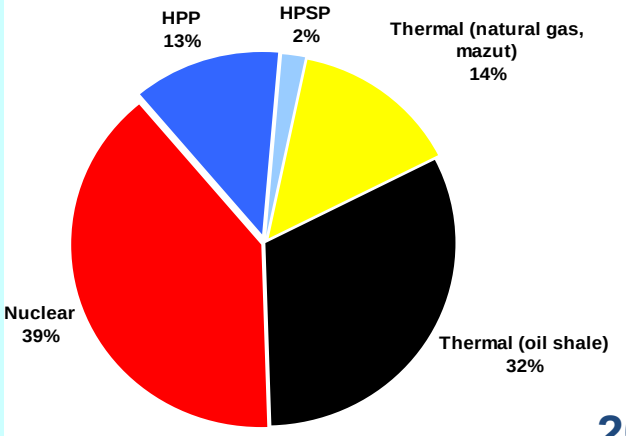
Implementation of the Visaginas Nuclear Power Plant Project

IAEA International Conference on Opportunities and Challenges for Water Cooled Reactors in the 21st Century, Vienna, 27 October 2009

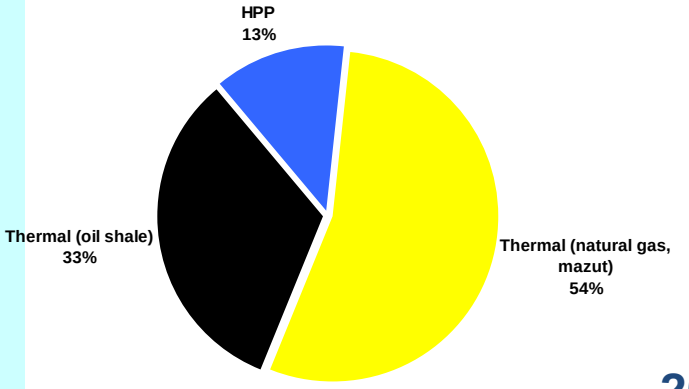
Major generation facilities in the Baltic states



PLANTS	INSTALLED CAPACITY (MW)
ESTONIA	
NARVA TPP	1615
BALTIA TPP	1090
TALLIN CHP	190
	2895
LATVIA	
RIGA CHP-1	142
RIGA CHP-2	390
RIGA HPP	402
KEGUMS HPP	263
PLAVINAS HPP	870
	2067
LITHUANIA	
KAUNAS HPP	100
IGNALINA NPP	1300
KAUNAS CHP	178
MAZEIKIAI CHP	194
LIETUVOS TPP	1800
VILNIUS CHP	384
KRUONIS HPSP	900
	4856



2008



…2010

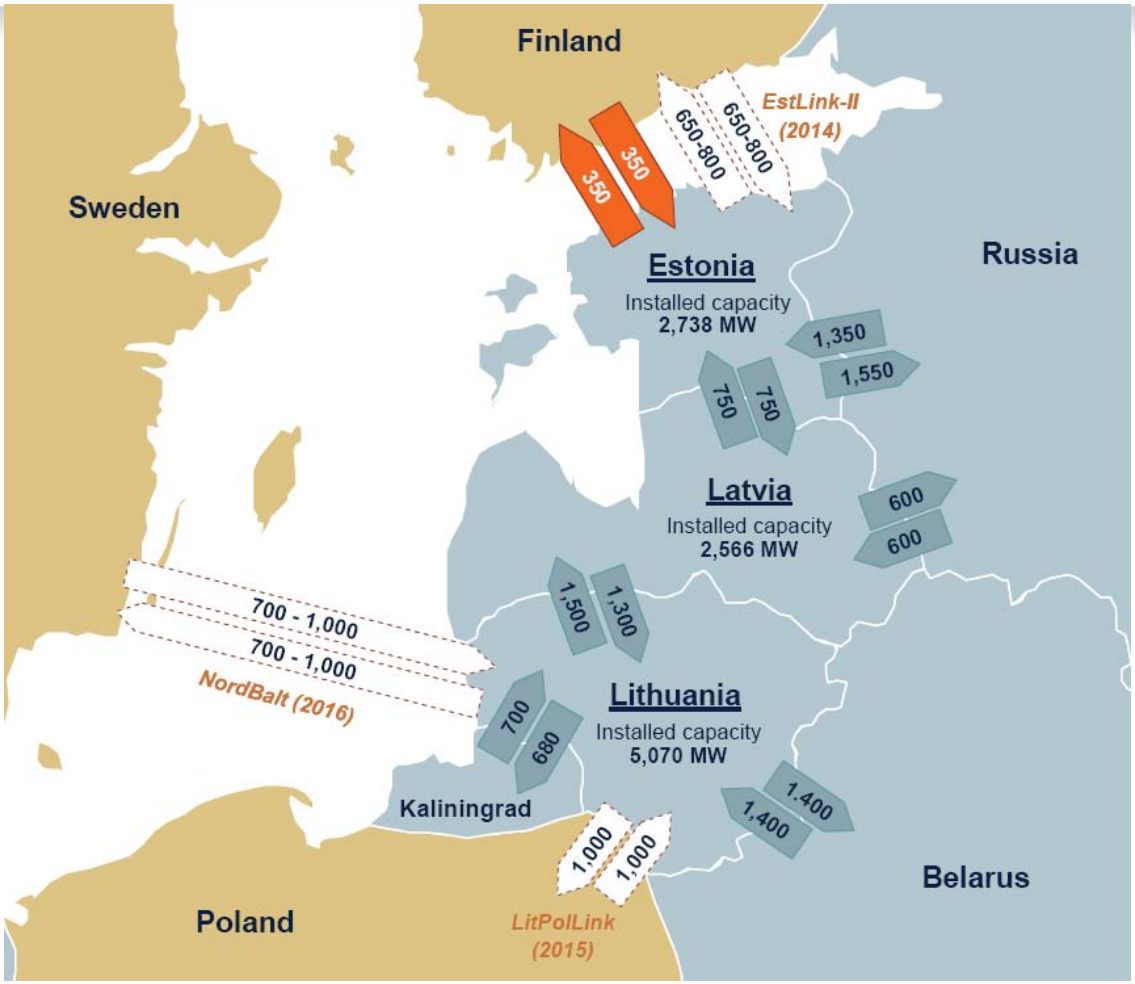
Nuclear power background and programme

- 2 units RBMK-1500 on Ignalina NPP site
  - commissioned in 1983 and 1987
  - shut down in 2004 and 2009 (forecast)
- Decommissioning activities ongoing. RW treatment, storage and repository facilities under construction

Present energy situation - challenges

- Ignalina NPP (2600 MWe) shut down and decommissioning
- Absence of grid interconnections to the EU transmission systems
- Dependency from “single” fuel supplier

Regional commitment to a common energy market



Integration into European markets

- New Interconnectors between the three Baltic States and Finland, Poland and Sweden sponsored by EU through the Baltic Energy Market Interconnection Plan http://ec.europa.eu/energy/infrastructure/bemip_en.htm
- Price level convergence / interlinked market behaviour anticipated

Liberalisation and unification of wholesale markets

- Unification of Baltic wholesale markets with Nord Pool rules (2013) and full integration into Nord Pool as a new zone (2015)

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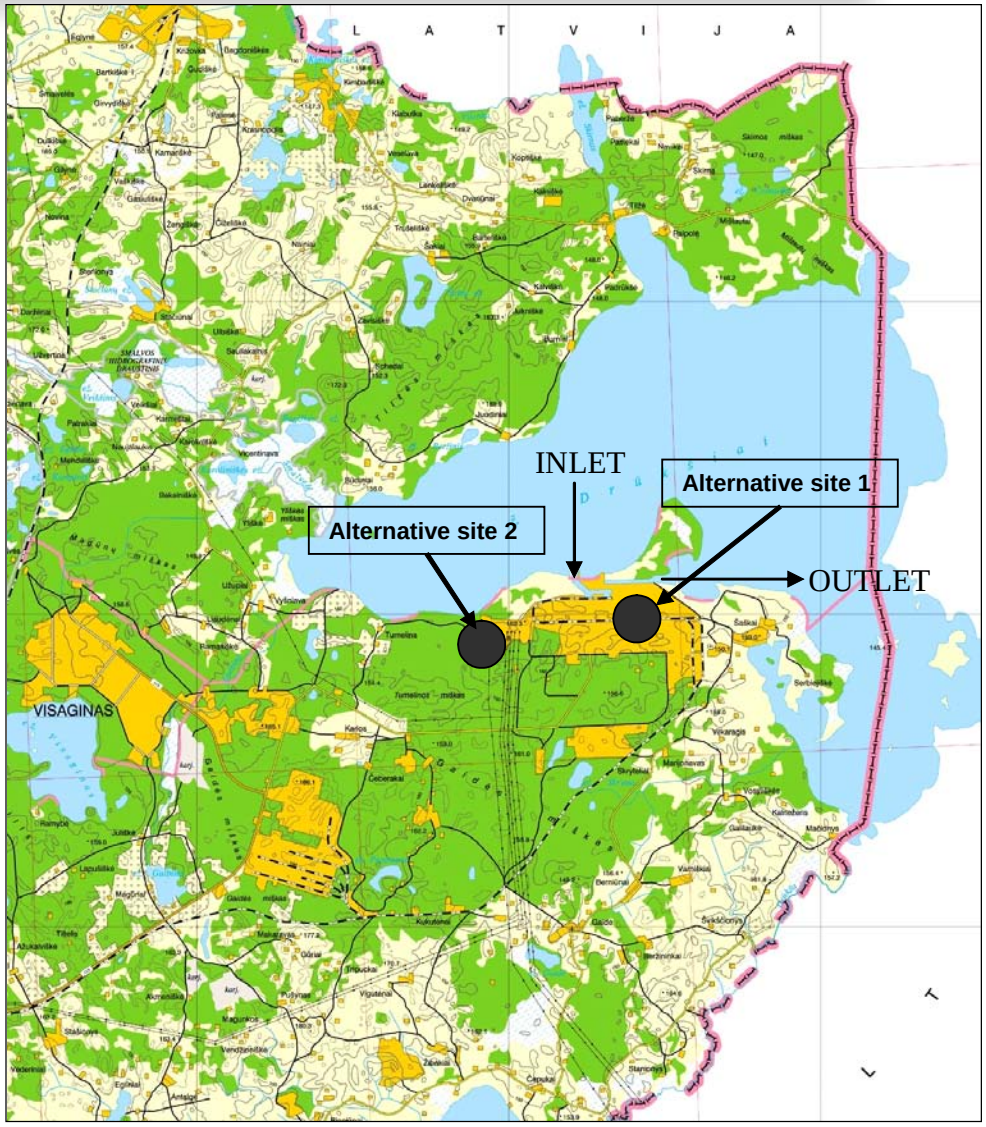
Visaginas NPP project status

- NPP project has been initiated by the Parliament of Lithuania – National Energy Strategy has been approved in 2007
- Law on Nuclear Power Plant has been passed in 2007;
- NPP project preparation works have been started in 2006 when Memorandum of Understanding between AB “Lietuvos energija“, AS Latvenergo and Eesti Energia AS was signed. Polish PGE has joined afterwards;
- Feasibility study concerning implementation of the new nuclear power plant project in Lithuania has been conducted;
- Special purpose company Visagino atominė elektrinė has been established;
- Environmental Impact Assesment (EIA) report completed and approved by MoE;
- Ongoing physical site assessment studies against IAEA NS-R-3 recommendations, lake hydrology, transportation, land plotting and other works;
- VAE business model and financing plan development project (Project **White Knight**). Consortium led by N M ROTHSCHILD and Sons Limited (UK).

Environmental Impact Assessment

Site alternatives



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Results

- **Final decision by the Ministry of Environment:**
  - *“the construction and operation of Visaginas Nuclear Power Plant with the power capacity up to 3400 MW_{el} in the examined sites is permissible”*

- EIA report is coordinated with 11 governmental and municipal authorities
- EIA report is coordinated with public
- EIA report is coordinated with Poland, Belarus, Latvia, Estonia, Finland, Sweden and Austria
- EIA report and procedures were positively evaluated by special International Atomic Energy Agency mission

Decisions on alternatives

- Technological alternatives:
  - All modern and safe reactors (not older than Gen III/III+)
- Territorial alternatives:
  - Both proposed sites
- Cooling alternatives:
  - Direct cooling up to 3160 MW thermal released
  - Current (Ignalina NPP) and west cooling water inlet options are allowed
  - Current (Ignalina NPP) cooling water outlet option is allowed

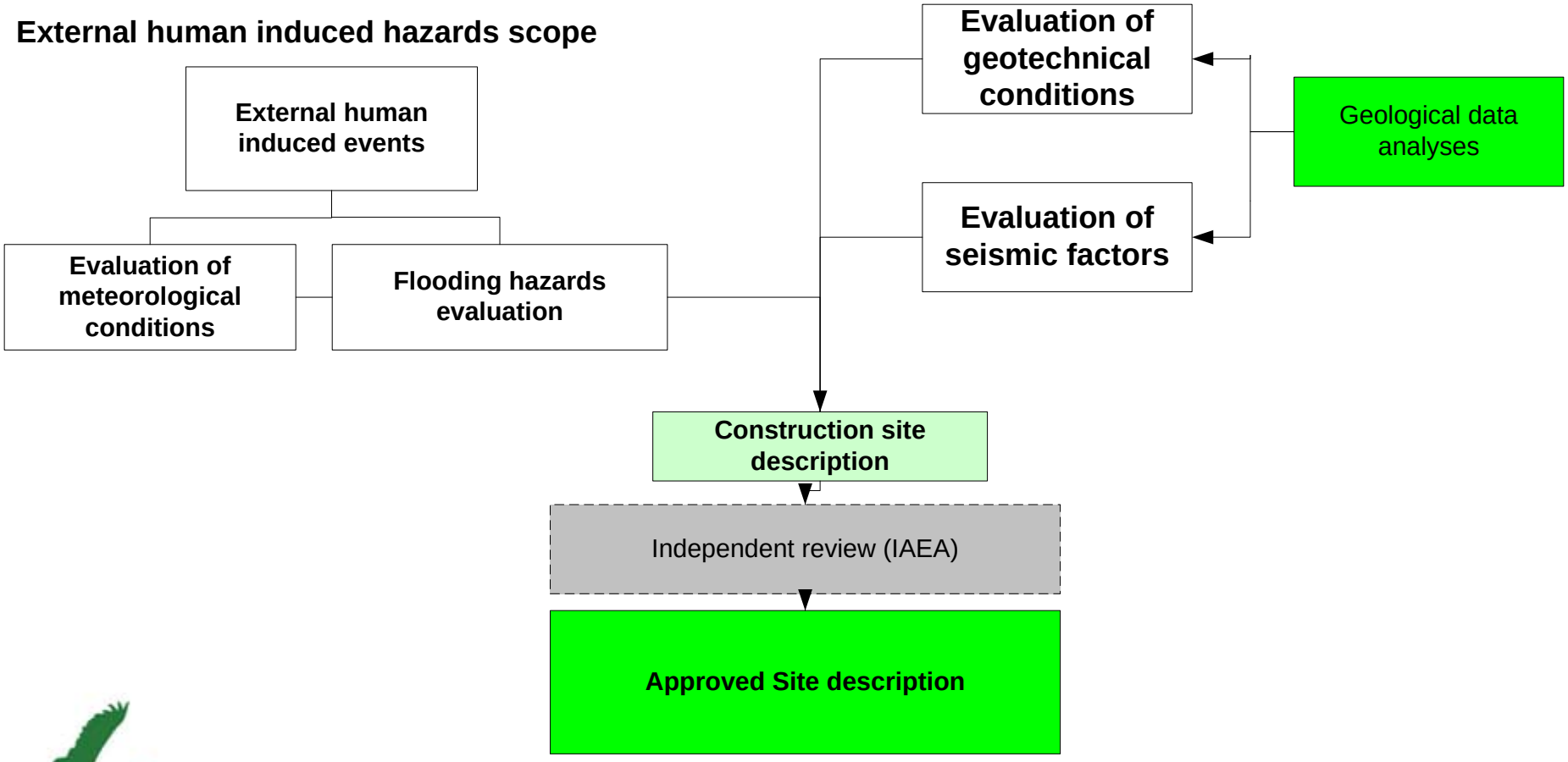
Main additional conditions

- Site evaluation against IAEA safety requirements
- Evaluation of possibilities to utilize Ignalina NPP radioactive waste management facilities
- Druksiai lake water temperature monitoring system
- Number of requirements for the environmental management plan
- Noise impact mitigation measures

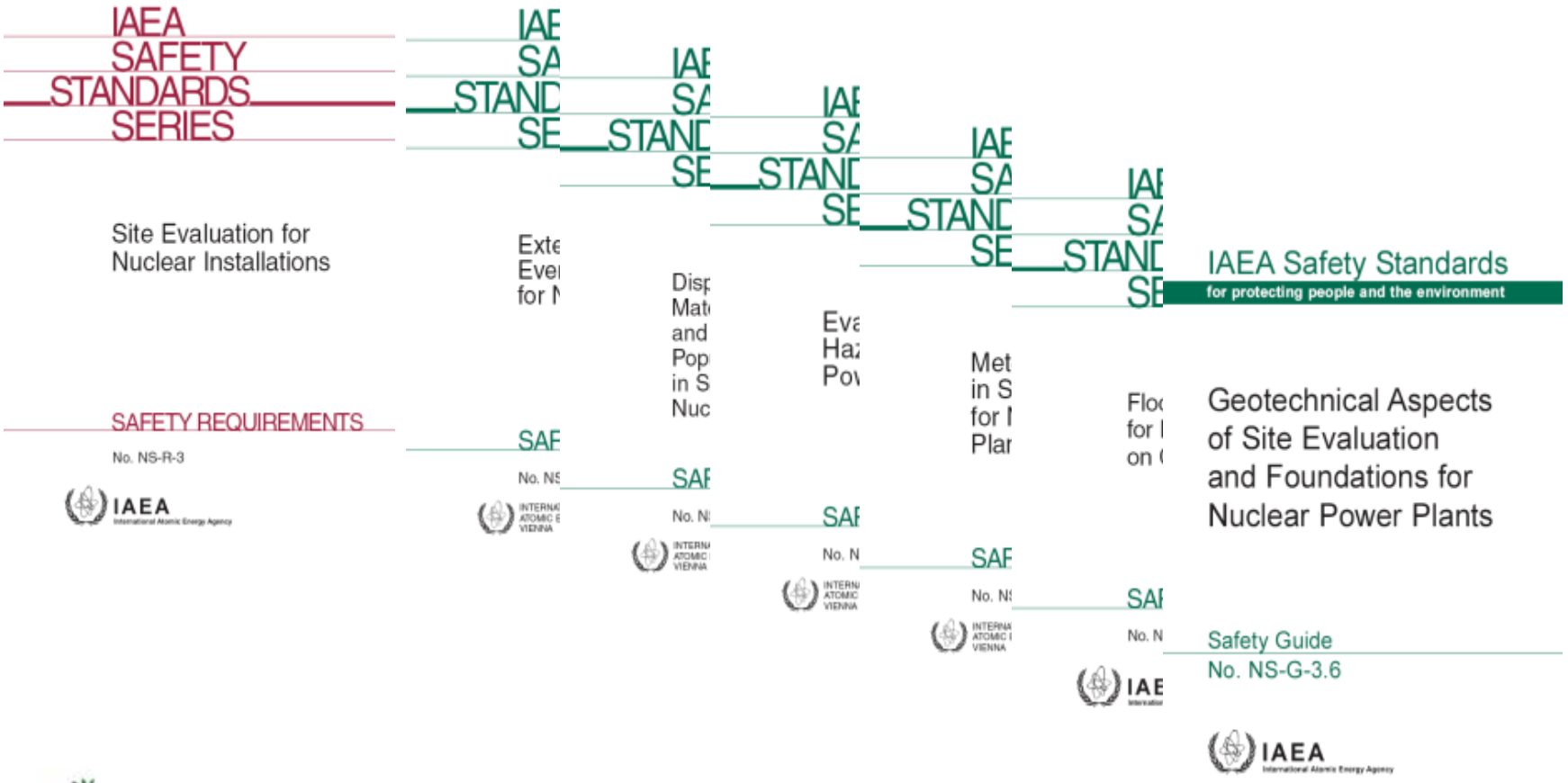
Site Evaluation Against International Atomic Energy Agency (IAEA) Requirements

Project Scope

Construction sites evaluation against IAEA safety requirements



Relevant IAEA Safety Guides



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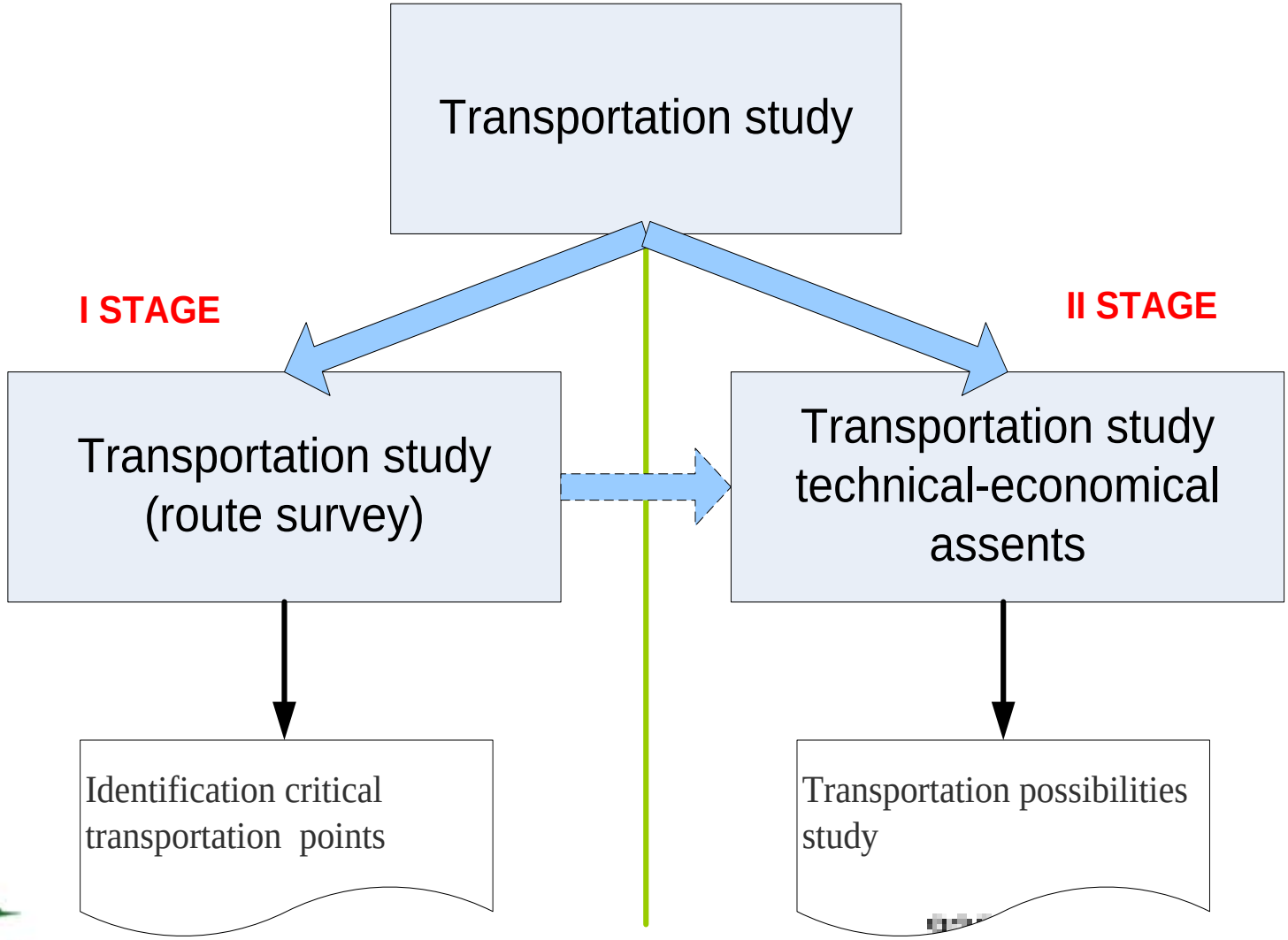
Transportation Study

Stages


Transportation study
I STAGE
II STAGE
Transportation study (route survey)
Transportation study technical-economical assents
Identification critical transportation points
Transportation possibilities study

Other projects

Other ongoing projects

- Territorial planning activities
- Site environmental due diligence
- Development of VAE infrastructure for connection to the grid
- Measurements of Druksiai lake (ultimate heat sink) thermal balance
- Takeover of existing Ignalina NPP infrastructure
- Strategies for:
    - Nuclear fuel cycle and supply assurance
    - Radioactive waste management:
    - Local participation
    - Quality assurance
    - Personnel training programs
    - Technology transfer
- Information packages on:
    - Cooling system
    - Transmission grid technical requirements

Other completed projects

- Description of Legal and Regulatory Environment, including:
  - current legal and regulatory framework;
  - detailed timetable for obtaining necessary licenses and permits;
  - description of applicability of relevant technical standards;
  - identification of necessary amendments of legal acts
    - initiation of amendments is on-going within the Programme of Development of Legal Acts)
- Description of Physical Protection Requirements and Feasibility
  - physical protection requirements for nuclear facilities;
  - requirements for implementation of physical protection system
- Draft Concept of the Law on Decommissioning Fund of New Nuclear Power Plant is prepared

Other relevant project related activities

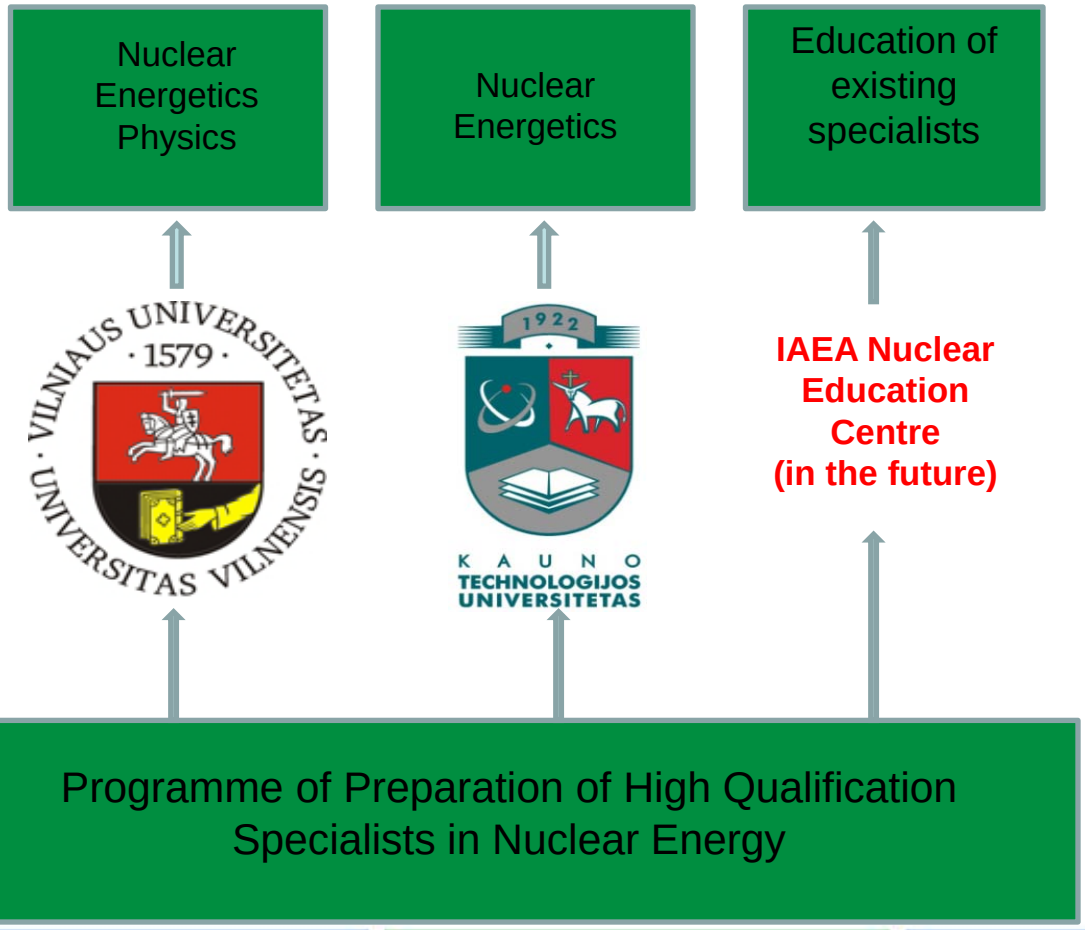
Interaction with Nuclear Regulator

State Nuclear Power Safety Inspectorate (VATESI)

- In 2008 the official consultation procedure was initiated by VAE and agreed with VATESI
- Consultations are held in particular fields of interest in nuclear safety, licensing, quality assurance, physical protection, general time schedules etc.
- Decisions regarding further actions to be taken are adopted during quarterly joint meetings
- Beneficiaries are both parties

Programme for Human Resources Development

- Near-term goal – development of VAE organization;
- Long-term goal – ensuring necessary competencies during implementation of entire project



PR activities

- Continual publicity of achieved results:
  - http://www.vae.lt;
  - regular newsletters about the project development status;

- Advertisement of nuclear energy as very reliable source in total energy mix

- Membership in Lithuanian and international organizations
  - Lithuanian Nuclear Energy Association, LBEA, member of ENS
  - World Nuclear Association, WNA

- Pointing out the business possibilities as well as future demand for competencies in different project's implementation areas

Conclusions of the first stage of the White Knight project

Creating an attractive platform for partners

Lithuanian NNPP represents an attractive opportunity to invest in nuclear

- **Project is financially and commercially viable over long-term**
  - – Strong need for NNPP within region given medium-term supply shortage
  - – Output at low marginal cost to level of equity investment
  - – Baltic and EU commitment to interconnection
- **Contributes to meeting “Green Agenda” and environmental targets**
  - – Corporate, not just political, attraction of CO2 free generation development opportunity to diversify portfolios
- **Risk mitigating attractive features**
  - – Unrivalled political and public support
  - – Significant economic stimulus for entire region over long-term
  - – Government seeking to establish attractive regulatory and investment regime
- **Attractive platform for new build skill development for partners and potentially future twin development**
- **The Project represents opportunity to participate in an attractive NNPP development that will benefit the region in terms of security of supply, energy supply, fuel diversity and economic stimulation**

VAE site

VAE site: future view

Thank you!

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