TEMELIN 3, 4 SITING

Iva Kubanova, Jiri Fuzer
CEZ, a. s.

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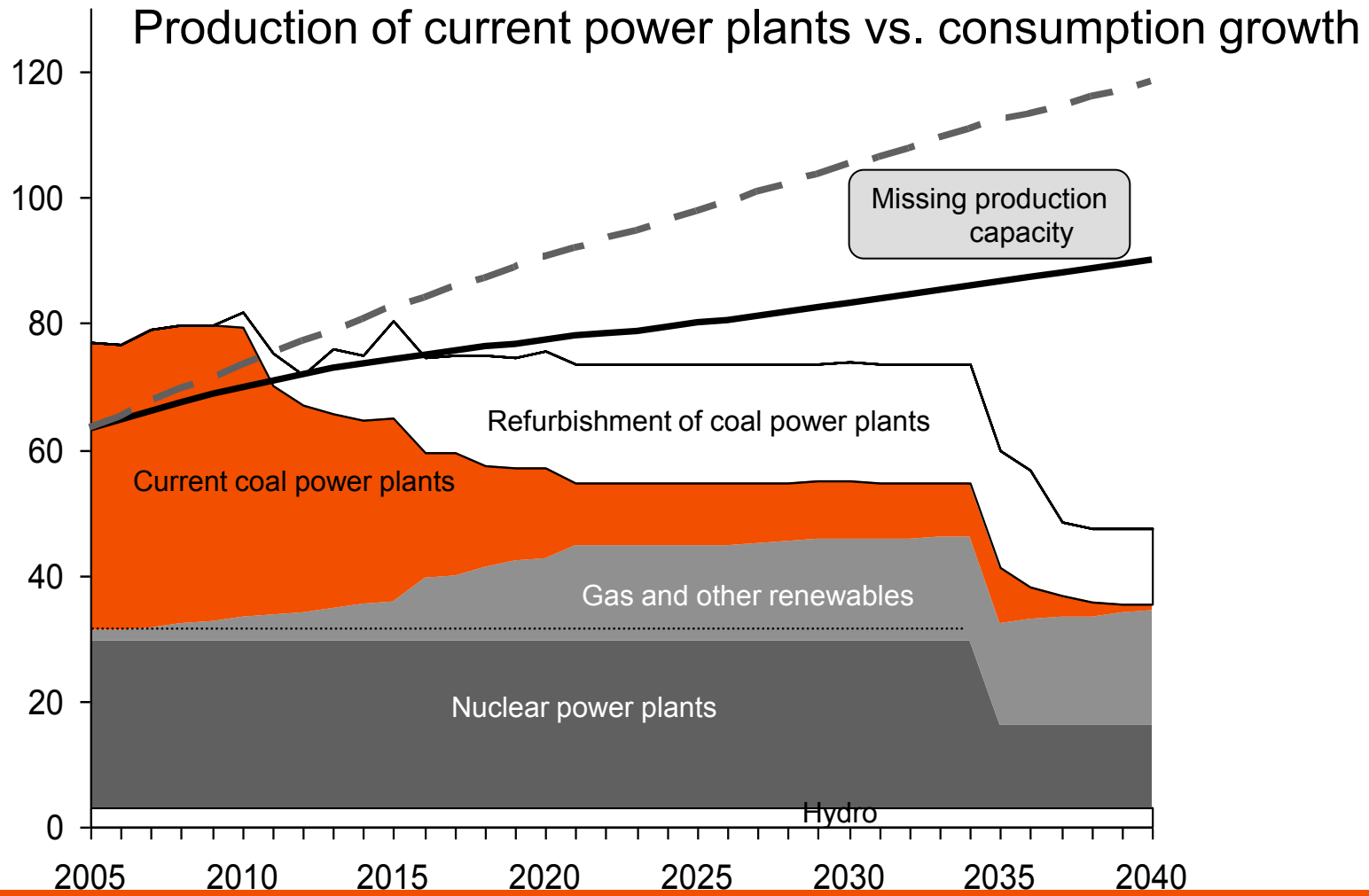
New Reactor Siting, Licensing and Construction Experience
Prague, September 2010

content

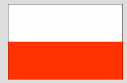
- Energetical situation in the Czech Republic
- Nuclear Projects of CEZ, a. s.
- Temelin 3,4 Project Status
- EIA Process
- Siting Process
- Summary, Discussion

Decommissining of current power plants and growth of consumption cause lack of electricity



majority of central eu countries face lack of capacity already nowadays the czech republic cannot rely on import

- Political decision to close down nuclear power plants (27% of current consumption)
- Even with an investment boom in the future it will max fulfill its own requirements



- The decommission of 3 500 MW of coal power plants for environmental reasons (NO_x) in 2015 already for sure, potentionally up to 7000 MW
- Already the shutdown of 3500 MW will make Poland dependent on imports
- Currently there is no ongoing long-term construction plan

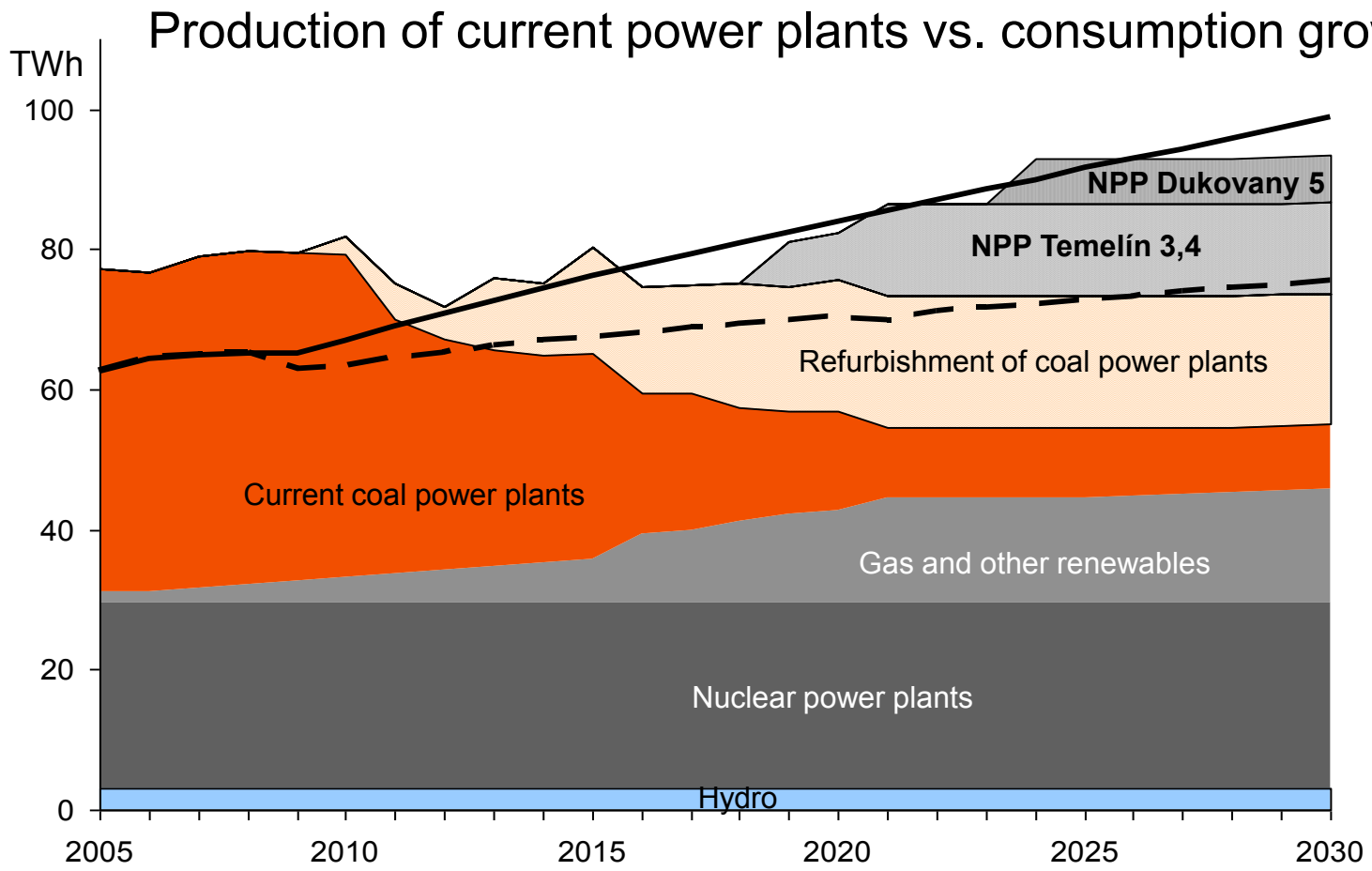
- Shut down of total installed capacity 1 600 MW by 2008 (Jaslovské Bohunice, Nováky, Vojany)
- From a net exporter has become a net electricity importer

- Today dependent on imports during peaks
- Total imports in 2005 were 16,3 TWh

- The largest importer in Central Europe (18% of consumption)
- No construction plans
- Limited fuel sources

- **Total of more than 30 GW to be shut down in Central Europe by 2020**
- **In total there will be a lack of installed capacity of up to 15 GW**

new units temelin 3,4 and dukovany 5 could cover future energy need



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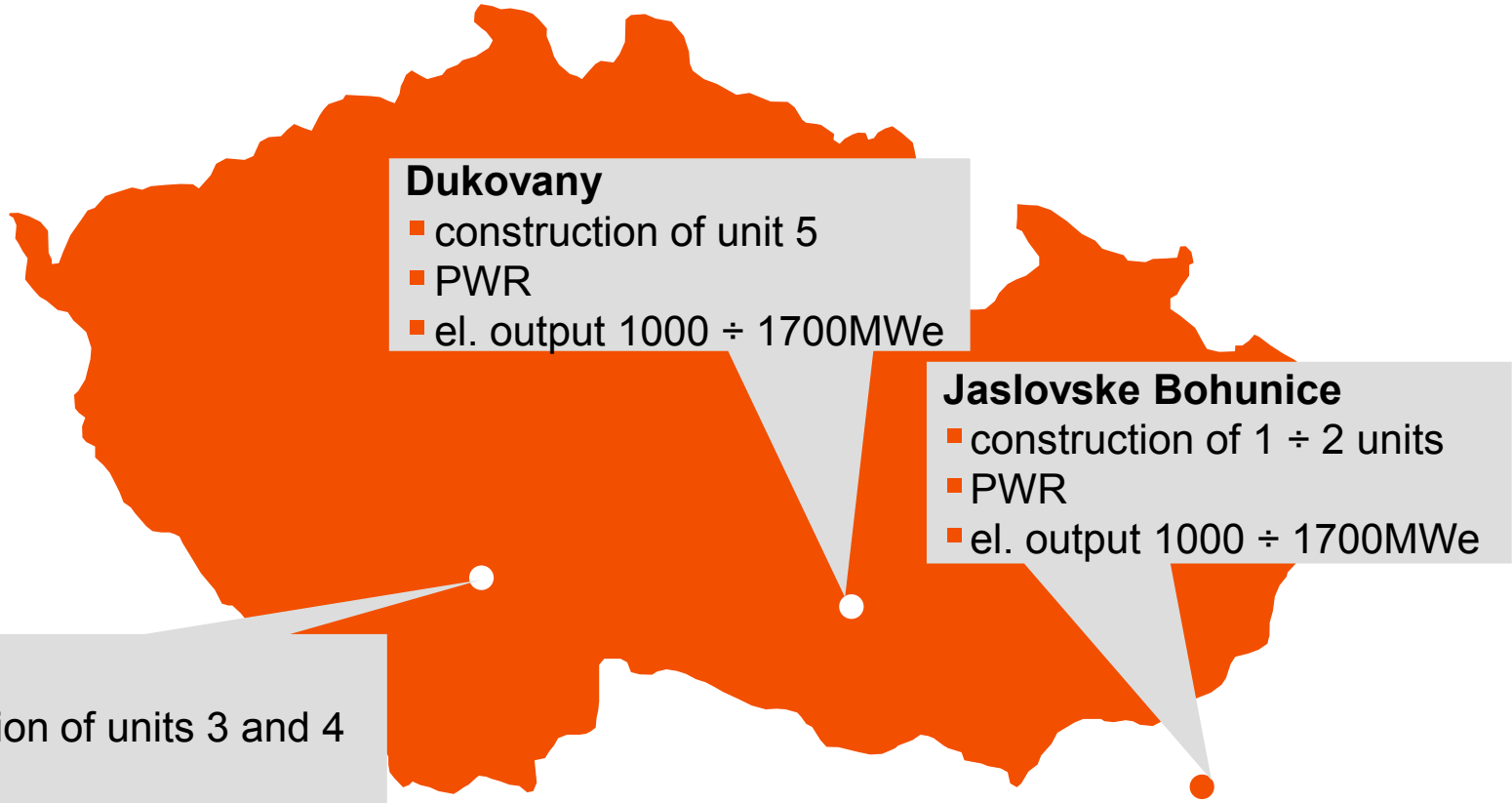
nuclear projects of cez, a. s.



temelin nuclear power plant

- Installed capacity 2 x 1000 MW
- VVER 1000 (V320)
- Temelin NPP is the largest energy source in the Czech Republic
- Temelin NPP is designed and built at the highest safety level

plan to build 2 new units
(to complete original intension)

tender in progress

dukovany nuclear power plant

- Installed capacity 4 x 440 MW
- VVER 440 (V 213)
- Dukovany NPP produces about 20 % of Czech electricity
- Dukovany NPP among top NPPs world-wide based on results in operational and safety performance indicators

consideration to build 1 new unit

feasibility study in preparation

jaslovske bohunice - slovakia

- Agreement with Slovak government
- Establishment of joint venture company for preparation and construction of new NPP

consideration to build 1 - 2 new units

feasibility study in preparation

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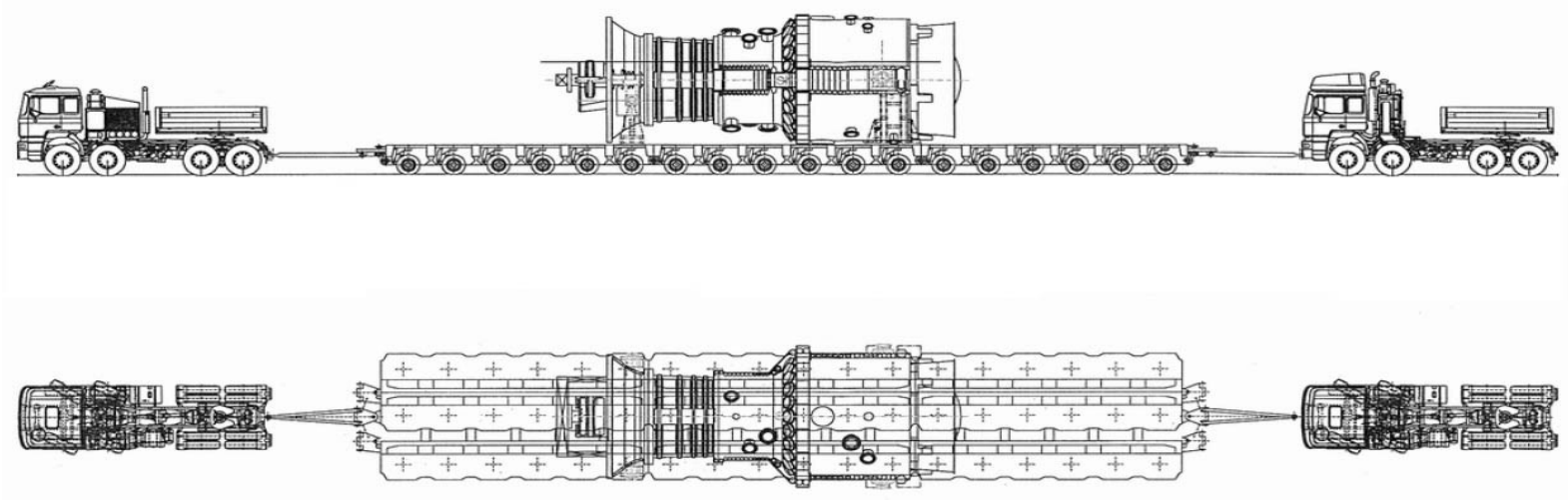
what has been done for temelin 3,4

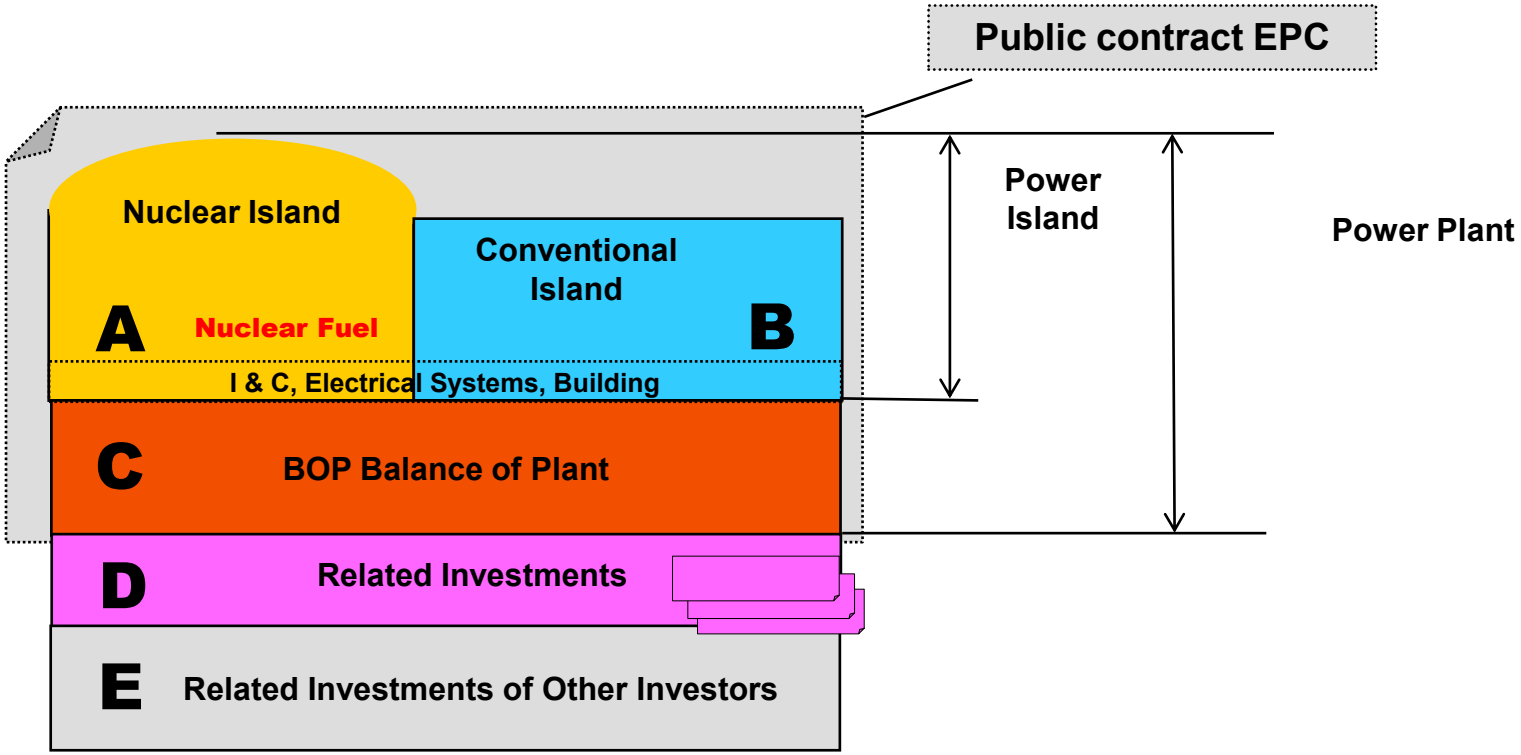
- Market investigation 2006, communication with potential vendors 2006 - 2008
- Feasibility study
- Study of heavy component transportation
- Study of related investments needed at site and in the surroundings



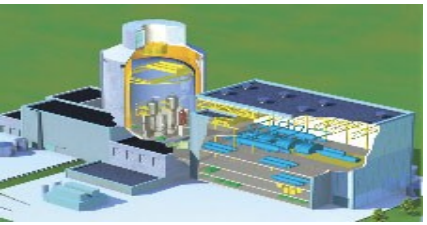
what has been done for temelin 3,4

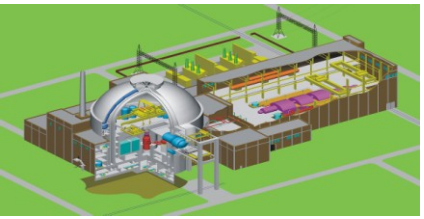
- Electrical grid issues studies
- Preparation of BIS documentation (based on EUR), tender organization
  - August 2009 – public tender announced
  - October 2009 – application of 3 vendors for qualification
  - February 2010 – qualification results announced
  - March 2010 – information meeting with 3 qualified candidates, special documentation (preliminary BIS) released
  - June 2010 – consultation meetings with all 3 potential vendors
- Next process
  - probably another round of consultation meetings with vendors
  - release of final BIS documentation

supply model



3 qualified candidates





Project	Vendor
AP 1000	Westinghouse USA
EPR 1600	AREVA EU
VVER 1000	Atomstroyexport Rusko

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environment impact assessment (EIA)

- July 2008 – CEZ, a. s. issued TEMELIN 3,4 INTENSION ANNOUNCEMENT accordingly law no. 100/2001 Coll. about environmental impact assessment

- Austria and Germany involved in EIA process

- February 2009 – CEZ, a. s. received INVESTIGATION PROCESS PROTOCOL with comments from the Czech Republic, Austria, Germany
  - 34 main conditions
  - 165 other questions, comments, requests

EIA – investigation process protocol

34 main conditions in 10 categories

- intension justification (do we need Temelin 3,4?; is nuclear energy alternative more contributing than risky?)
- technical resolution of the intension
- accumulation of impacts (Temelin 1,2 + 3,4)
- safety and population health
- spent fuel and wastes

EIA – investigation process protocol

34 main conditions in 10 categories

- transportation
- underground and surface water
- fauna, flora and ecosystems and scenery
- climate and atmosphere
- social aspects

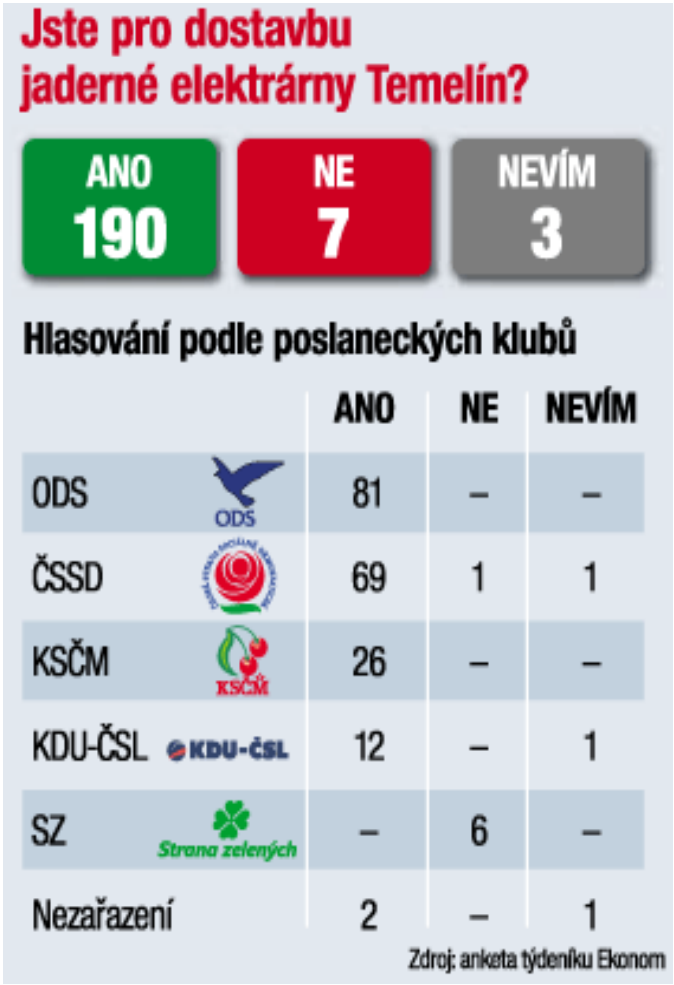
EIA – documentation elaboration and handover

- April 2010 – EIA DOCUMENTATION finalization
  - 500 A4 pages + attachments (particular studies)
  - Czech and German versions
- May 2010 - EIA DOCUMENTATION handover to the Ministry of Environment
- June 2010 – Ministry of Environment publishes EIA DOCUMENTATION in official EIA information system

EIA – documentation elaboration and handover and next steps

- July 2010 – South Bohemia Region publishes EIA DOCUMENTATION on official notice board (all legal time limits are derived from this publication date)
- July 2010 – Austria informs about delay of official publication in the country and feedback comments as well (cause : national law prescriptions)
- In next months : comments of relevant subjects, probably consultations with Austria, Germany, then expert opinion, public hearing and final statement of Ministry of Environment

EIA – current challenges



- EIA process started in political situation unfriendly to nuclear business (few Greens in parliament and government); impact visible in investigation protocol
- Design is not selected, EIA process is executed for „envelope of PWR GENERATION III, III+“
- Austrian and German requirements (severe accidents)
- Justification of nuclear energy alternative contribution against risks

current positive progression in the czech republic

- **Elections in May 2010 resulted in new government without participation of any anti – nuclear political party; initial governmental program statement supports nuclear energy utilization, including Temelin 3,4 construction**

- **New governmental position established : Governmental Attorney for Temelin 3,4**

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siting proces in the czech republic

- **1st step: EIA process**
  precondition of next approvals

  plan : 2011 / 2012 (delay expectable, critical path)

- **2nd step: SITING APPROVAL**
  by State Office for Nuclear Safety (SONS)
  Quality Assurance Program approval as a precondition
  approval based on evaluation of Initial Safety Report

- **3rd step: TERRITORIAL DECISION**
  by Building (Construction) Authority

temelin site

- Temelin site is not new, siting was executed formerly for 4 units (only 2 were built)
- Temelin site suitability is proven by 10 years of safe operation of Temelin 1,2
- Siting of Temelin 3,4 is focused mainly on:
  - verification of site data and methods used
  - verification of site suitability for new generation reactors
  - application of current licensing requirements

siting proces in the czech republic
initial safety report

Content of Initial Safety Report

Accordingly Atomic Law No. 18/1997 Coll.

- general project information
- site evaluation
- technical concept description
- preliminary evaluation of operation impact on population, environment
- future decommissioning method
- physical protection analyses
- siting quality assurance evaluation and quality principles for next stages

ENVELOPE APPROACH

siting proces in the czech republic initial safety report

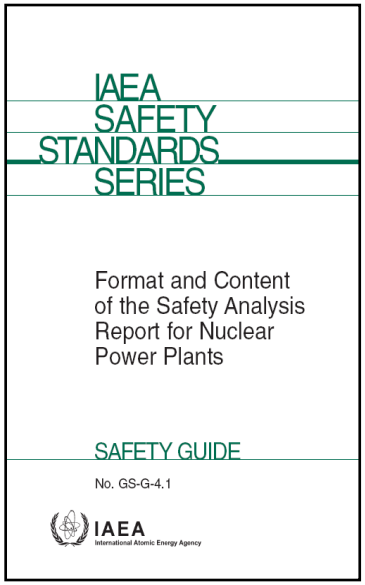
Initial Safety Report

- current status

2007 – 2008 study of ISR was prepared, limited opportunity to consult methodology with nuclear safety regulator (SONS)

2009 regular consultancies started (pre-licensing discussions), main target was to define proper interface between EIA process and siting approval based on ISR and also to discuss general approach to ISR

November 2009 – SONS requested set of requirements applied for ISR including format (structure originally accordingly IAEA guide GS – G- 4.1, newly combination with US NRC RG 1.70 / 1.206)



siting proces in the czech republic
initial safety report

Initial Safety Report

- **next steps**

restructured ISR will be prepared within 2010

ISR will include all relevant requirements of Czech legislation, IAEA Safety Fundamentals & Requirements level standards, WENRA reference levels and other relevant requirements (explicitly stated)

consistency of ISR & EIA & BIS documentation must be maintained

siting – current challenges

- Design is not selected, siting approval as well as EIA process is executed for „envelope of PWR GENERATION III, III+“
- Siting process of new NPP is done for the first time in new political and economical situation
- Czech legislation and also international standards (IAEA, WENRA, etc.) for new builds are in the development process; this brings uncertainty and also possible changes of licensing base in the future (it is not enough just to follow current requirements and rules, we have to predict future ones)

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summary

- In the future Europe and Czech Republic individually will need new energetical resources in spite of current decrease of electricity consumption due to economical crisis
- Temelin 3, 4 Project is under public contract mode, public tender has already started and also first siting steps are in progress
- EIA process is key factor for all next licensing steps
- Envelope approach (PWR GENERATION III, III+) is very new for all involved subjects in the Czech Republic and big challenge, but we believe it is a good way of new NPP Projects preparation

TEMELIN 2010

TEMELIN 20xx