

Nuclear Energy in Finland - Licensing and Liabilities

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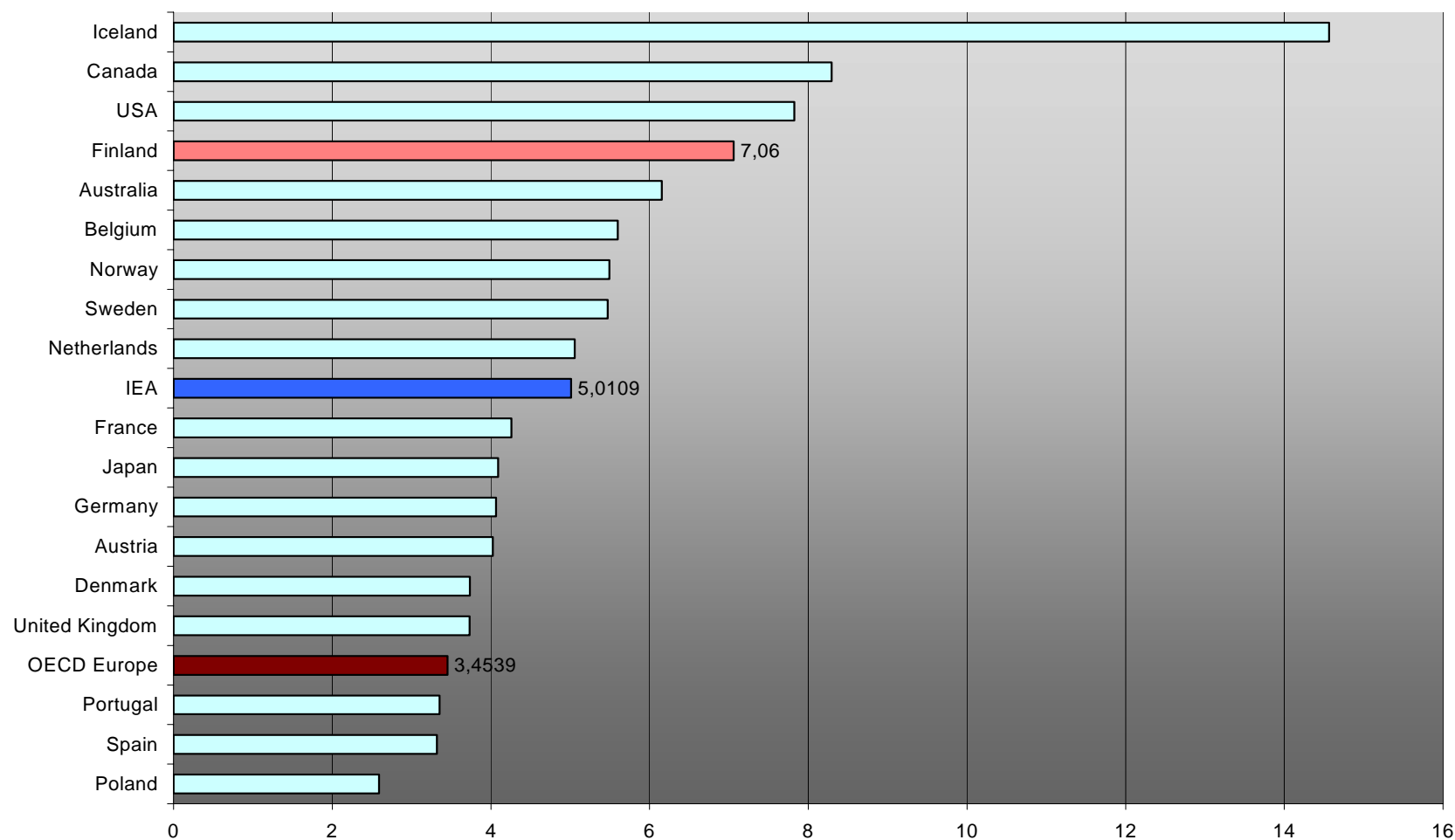


Energy in Finland

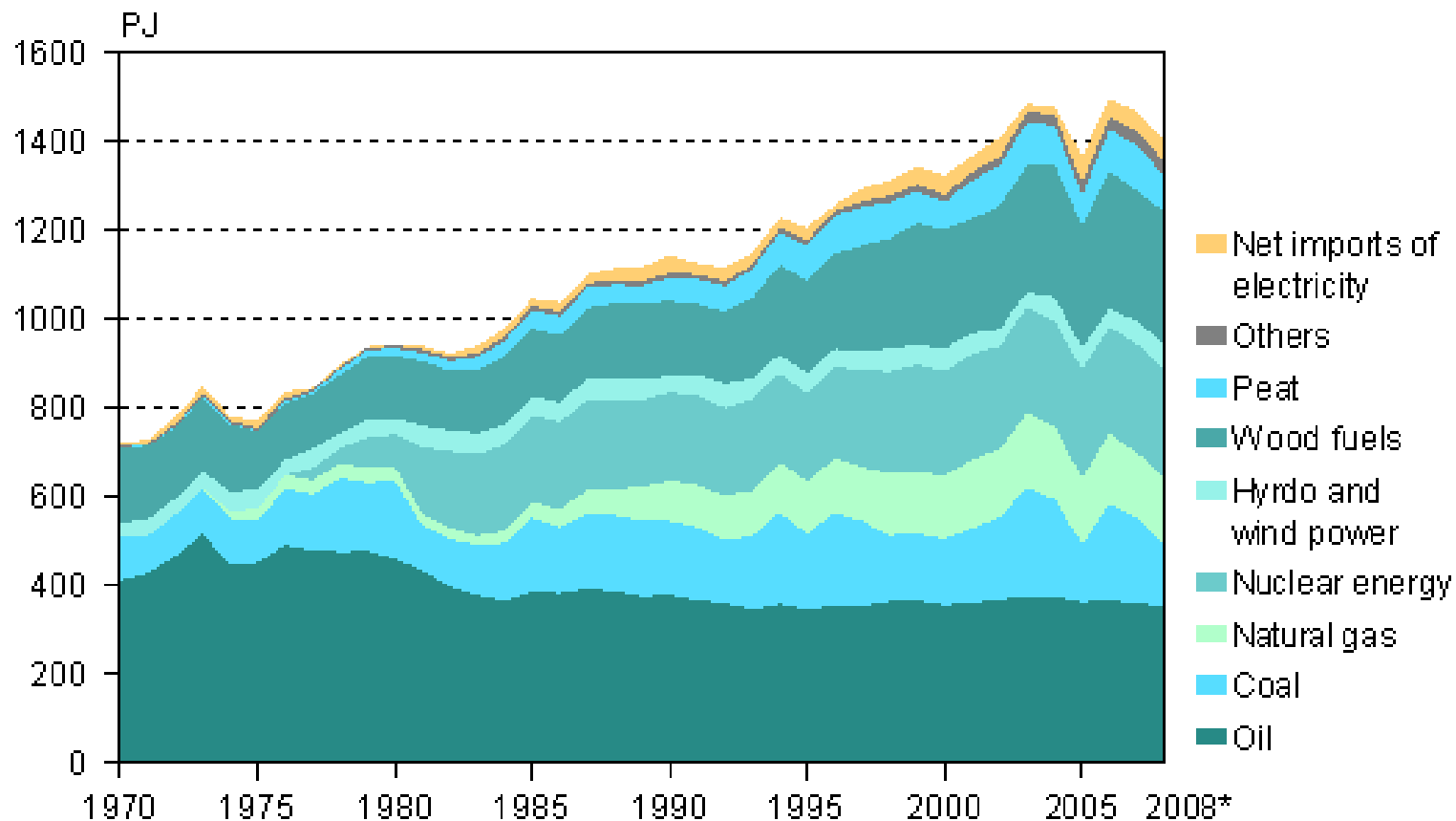
- Finland is a very energy intensive economy due to climate, long distances (transport) and industrial structure (paper, pulp, steel, etc.)
- Few indigenous energy sources, renewable energy corresponding to appr. 28 % of primary energy (mainly wood-based fuels)
 - => 38 % in 2020
- Diversified energy mix
- Electricity: lack of capacity, Nordic electricity market
- Nuclear energy: 25 % of power consumption
- IEA assessments of Finnish energy policy have been positive (latest review in 2007)



Energy Consumption in OECD Countries 2007e toe/inhabitant



Primary Energy Sources 1970 – 2008*



Nuclear Energy in Finland

- Two nuclear power plants and operators. Four units in operation:
 - 2 x PWR 488 MW (net) in Loviisa, utility Fortum (state as majority share holder); Soviet design with western safety design.
 - 2 x BWR 860 MW (net) in Olkiluoto, utility private Teollisuuden Voima Oyj, TVO; Swedish design
- Olkiluoto 3 EPR (1,630 MW) under construction from 2005. Three years delayed, commissioning target is 2012.
- Fuel: no front-end facilities
- No reprocessing of spent fuel – ban to import/export of nuclear waste (since 1994)

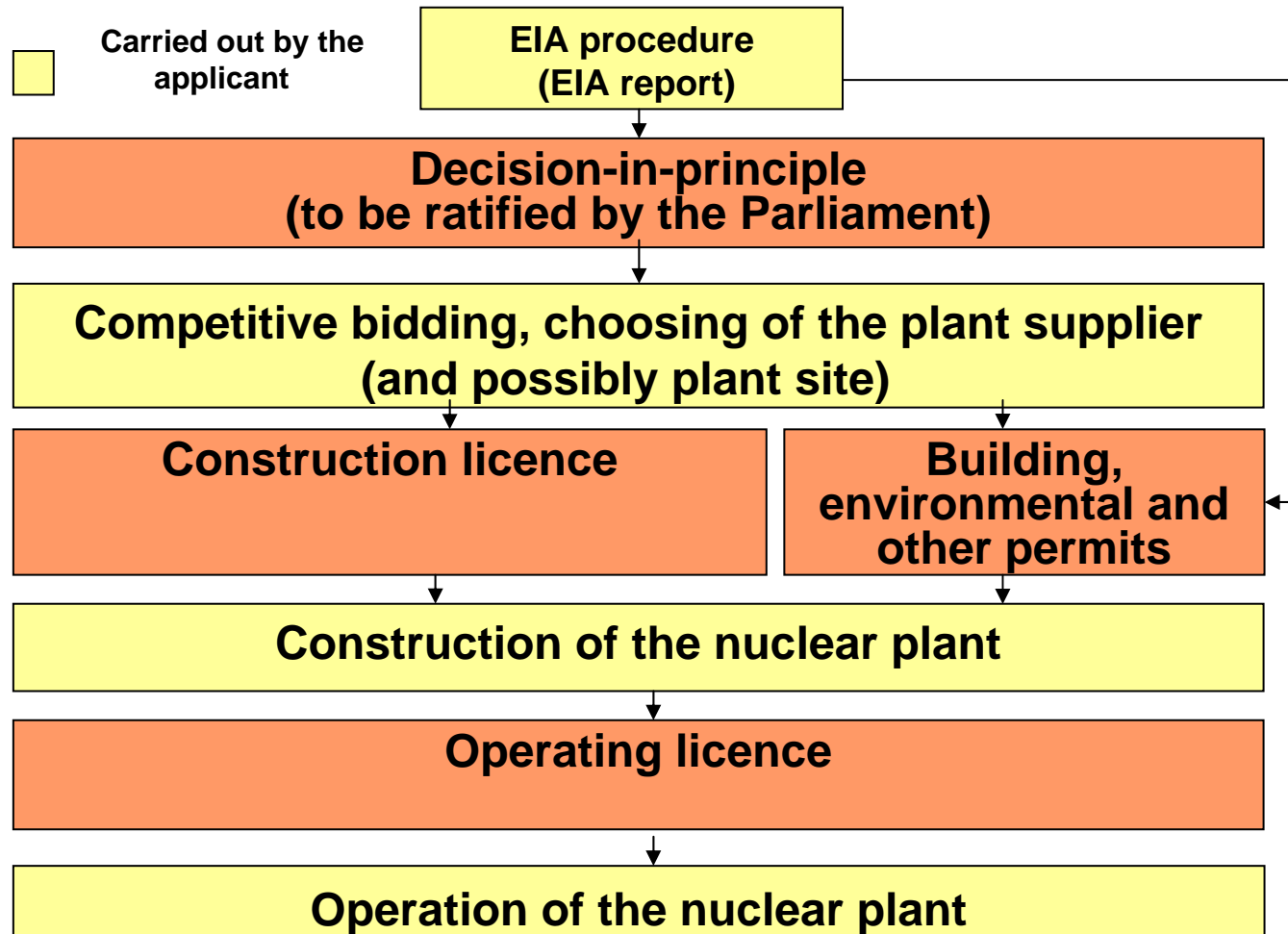


New Projects

- Three candidates: both existing operators (Fortum and TVO) and a new company Fennovoima Oy (34 % owned by E.On Nordic)
- Environmental Impact Assessments: Fortum and TVO finalised EIAs in 2008 and Fennovoima in 2009.
- Entire licensing process may last more than 10 years, including the construction of the plant.
- Decision-in-principle after EIA => government to complete the DIP/DIPs in early 2010. Parliament ratification needed.
- Companies to choose the supplier while the authorities (STUK) assess safety.
- No direct or indirect subsidies from the State.



Nuclear Plant Licensing Procedure in accordance with the Finnish Nuclear Energy Act



Finnish Nuclear Waste Policy

- Spent nuclear fuel policy: Government decision in 1983: deep disposal starts in 2020.
- Decision-in-principle for the final repository for the spent nuclear fuel in Olkiluoto (ONKALO) in 2001.
- ONKALO research tunnel activities (=underground rock characterisation facility) started in 2004, construction licence application for final repository in 2012.
- Deep disposal to begin in 2020
- All waste management and decommissioning costs must be covered by the utilities. For five units, the entire bill will be around 6 billion €. 1.7 billion € funded at the moment.
- Two existing deep (60-100 m) rock repositories in operation for the low level and intermediate level nuclear waste.



Nuclear Liability Act

- Based on the Paris Convention
- Operator's strict liability on incidents
- Current limit of the liability (per a nuclear incidence) is about 200 million €; insurance is obligatory
- Nordic Nuclear Insurers (NNI) – Finland and Sweden
- In 2005, an amendment to the Act in accordance with the Protocol amending the Paris Convention
 - Unlimited liability, obligatory insurance cover => 700 million €
 - Comes into force hand-in-hand with the ratification of the Protocol, which has been delayed (globally)
- Problematic aspects in getting insurance:
 - Environmental damages
 - Prescription period for latent damages (> 10 years)
=> A state guarantee needed?

