

Finnish Nuclear Energy projects from an administrative point of view

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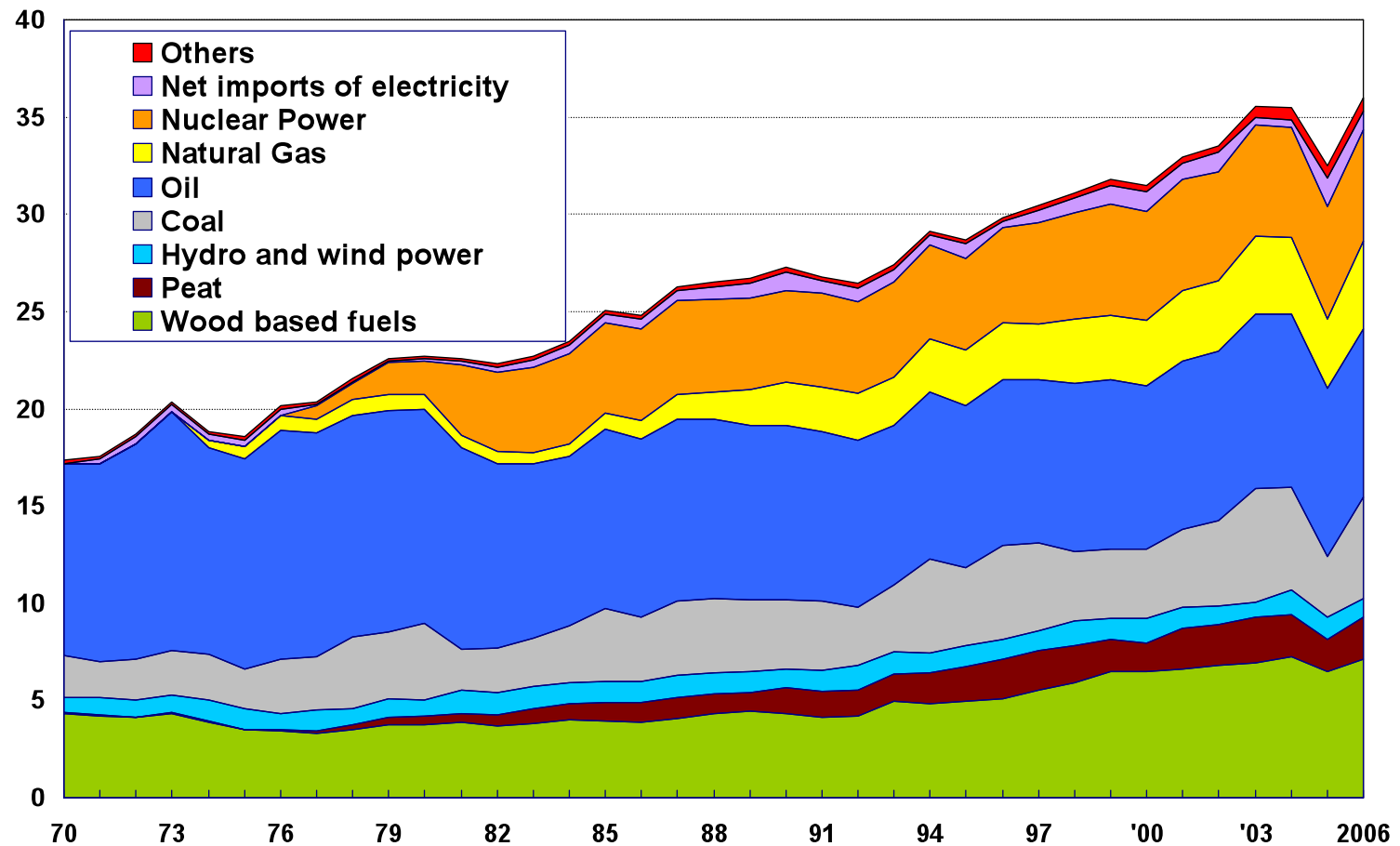


Finnish Energy Policy and Practice - a Success Story

- Lack of domestic energy sources and energy crisis were strong drivers
- Primary energy from several sources; eggs not in one basket
- Share of oil (24 %) one of the lowest in industrial countries
- Electricity production also very versatile
- Share of biomass/wood very high; new EU demand for renewables; from 28,5% to 38% (of final energy consumption) until 2020
- Combined Heat and Power (CHP) in industry and district heating/cooling
- Good performance in Nuclear Power
- Energy Efficiency (EE) important part of Energy Policy
- Finnish Energy technology well advanced
- New Climate and Energy strategy in the Parliament in autumn 2008

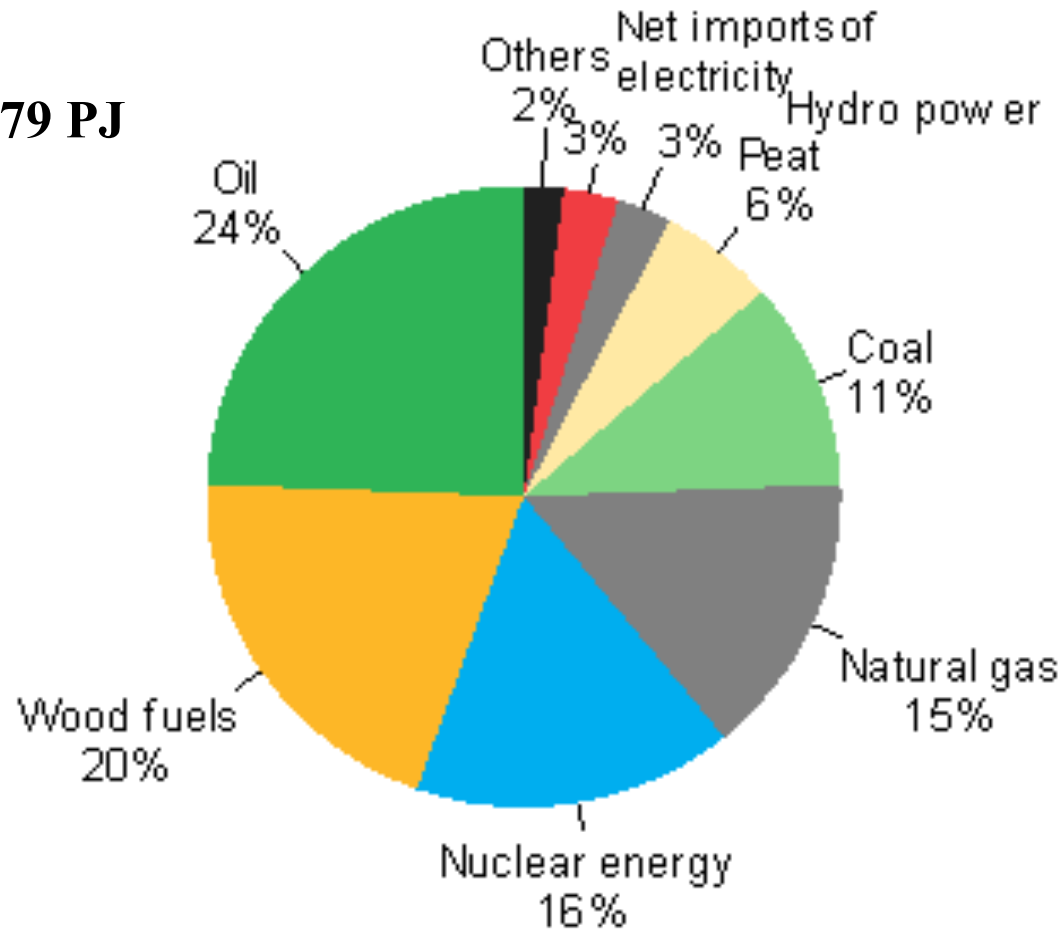


Primary Energy Sources 1970 – 2006, Mtoe

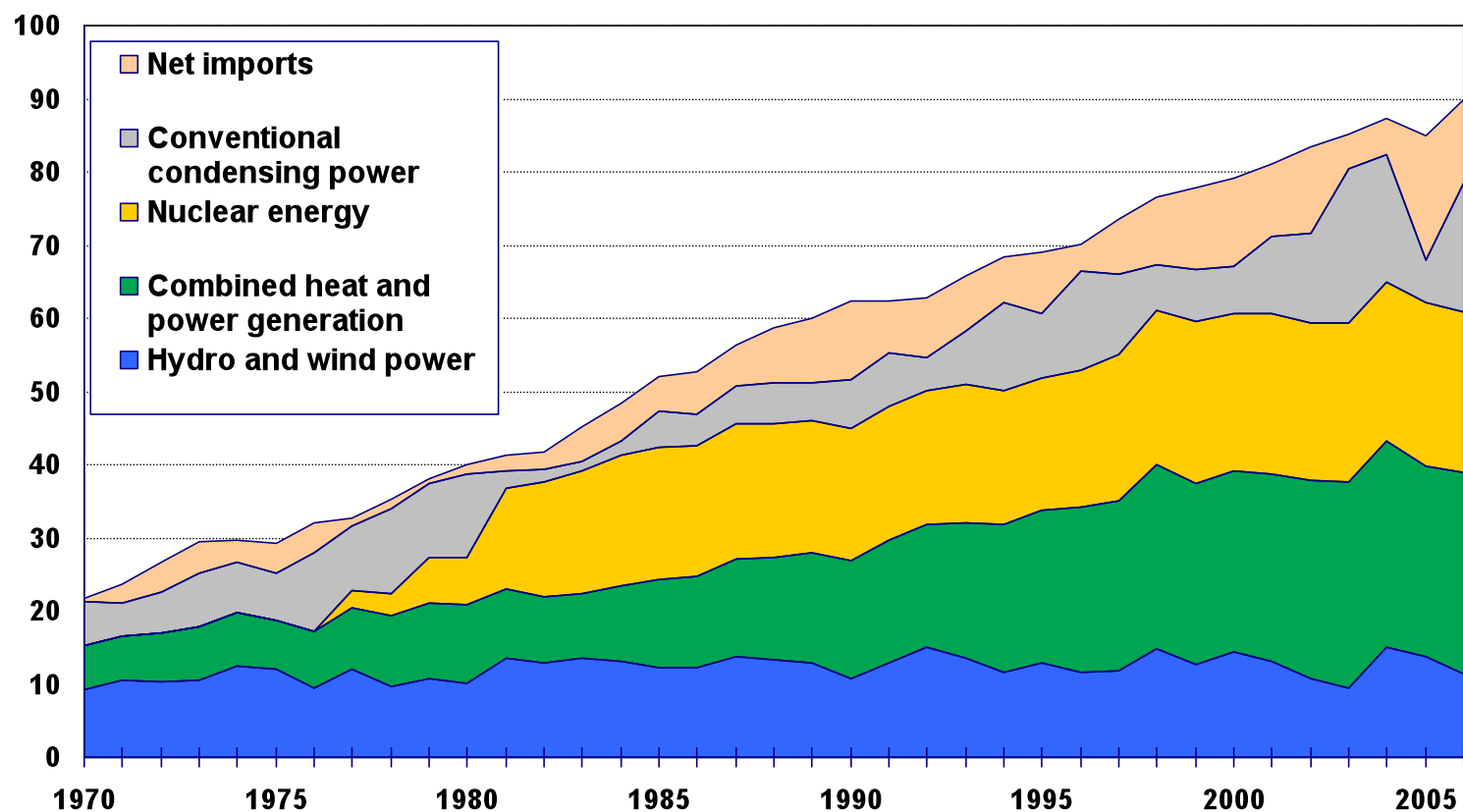


Total Energy Consumption 2006

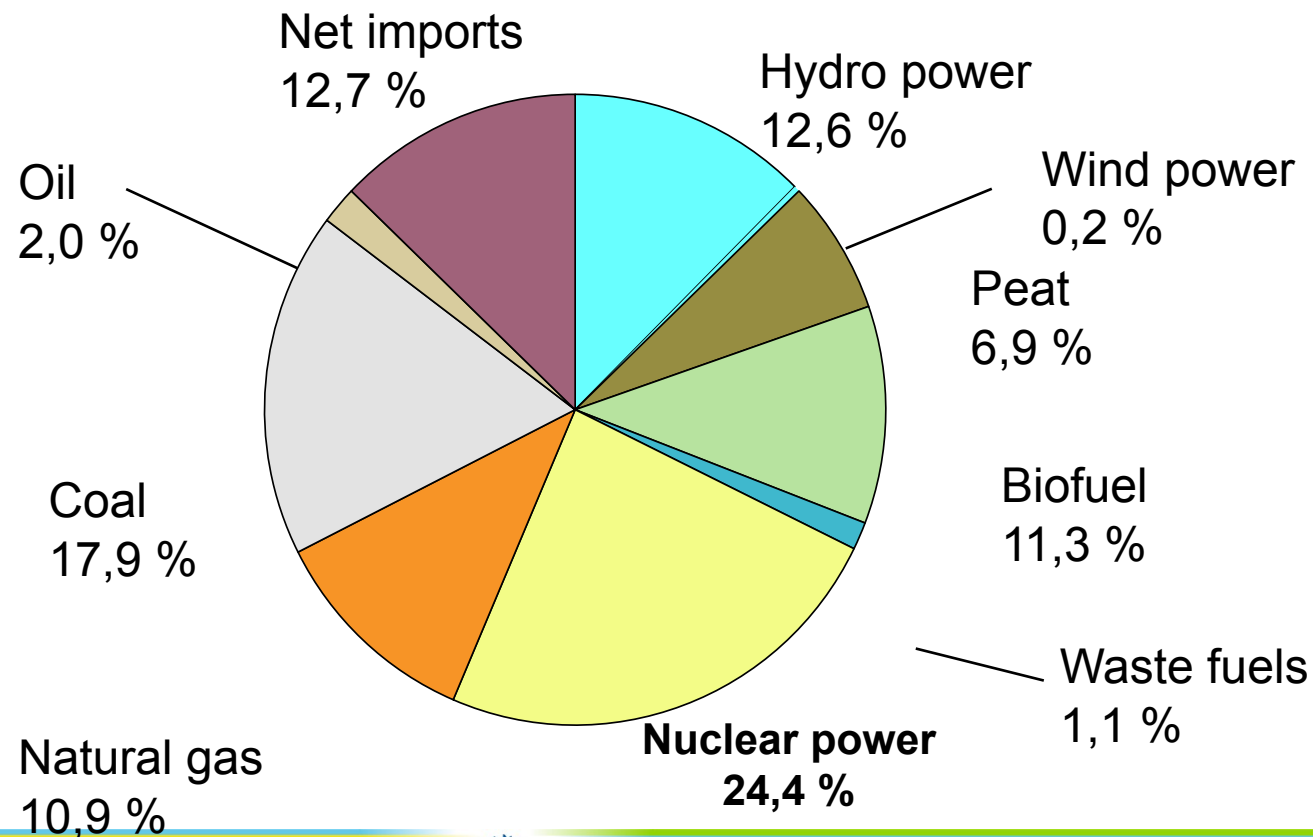
Total 1479 PJ



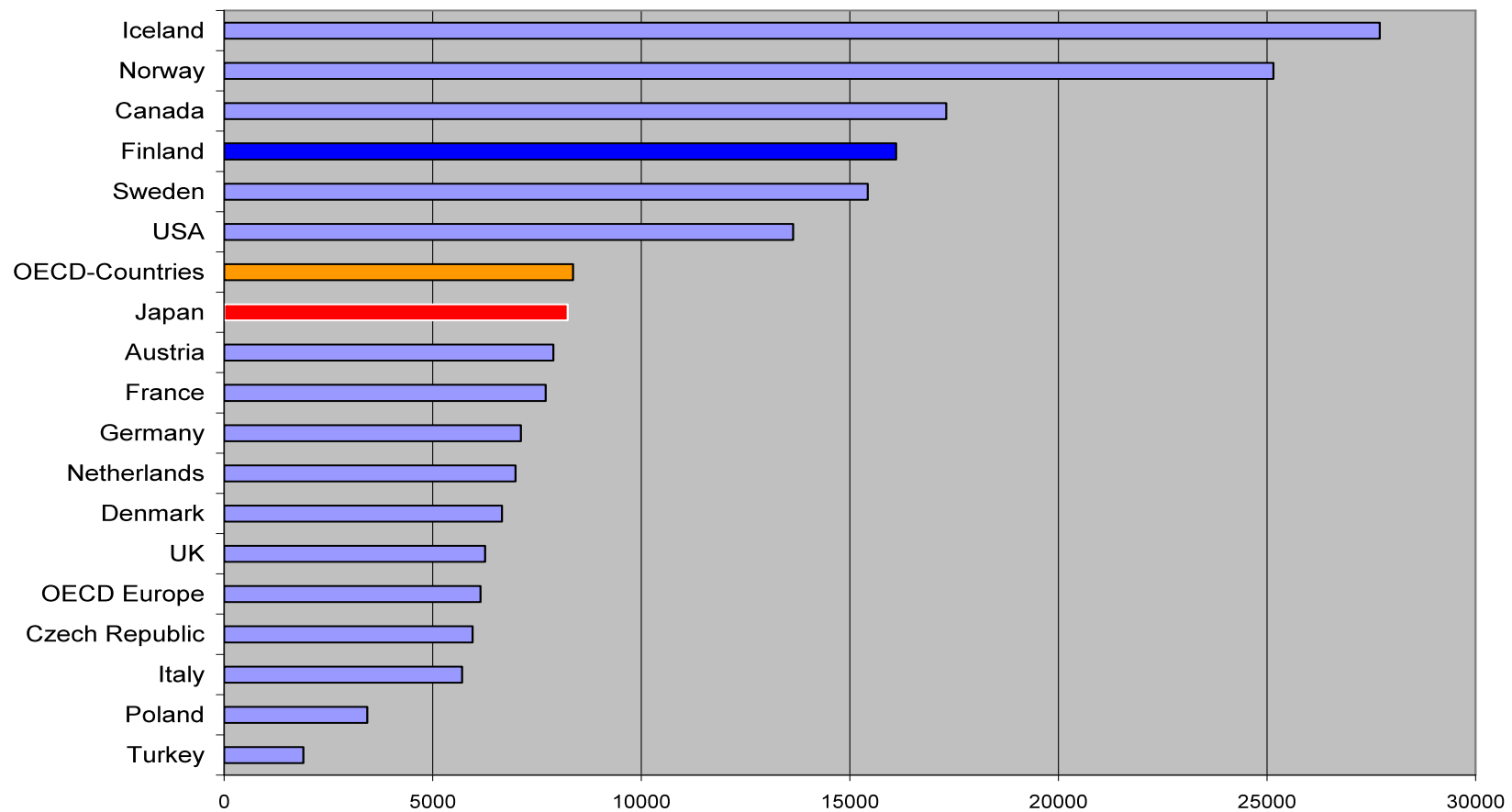
Electricity Supply 1970 - 2006, TWh



Electricity Generation by Energy Source 2006, 90 TWh

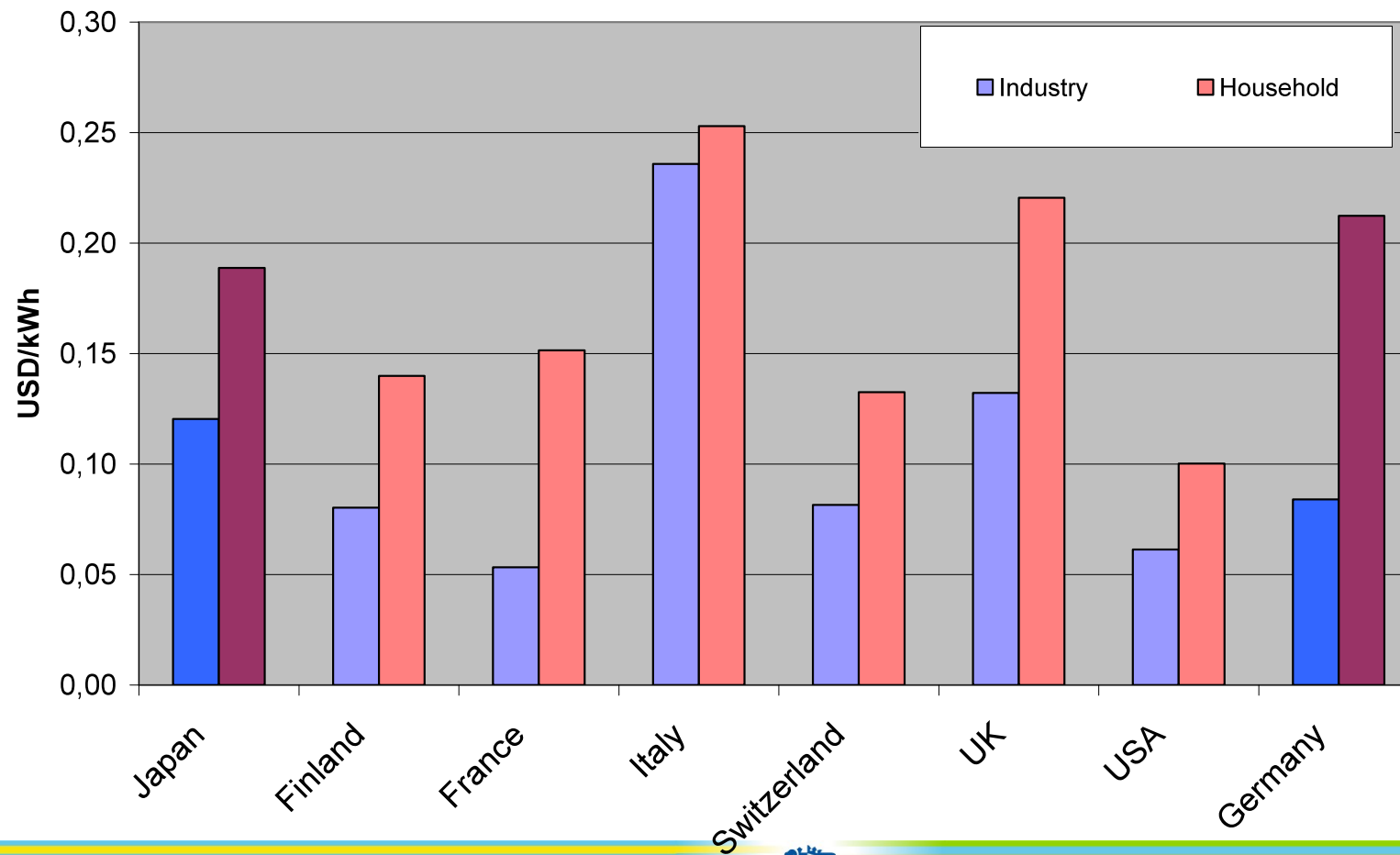


Electricity Consumption in some countries 2005, kWh/capita



Electricity price for industry and households, USD/kWh

Source: IEA Energy Prices and Taxes. Japan & Germany 2005 data, others 2007



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Finnish Cases in Nuclear Power; waste and NPPs Decision-making Processes in Finland

- Producing electricity with nuclear power is a normal industrial activity
- Organisations are very thin, practically no nuclear industry
- Nuclear research in VTT, Technical Research Centre of Finland (200 researchers)
- from the 1970s; two nuclear operators and 4 units in operation:
 - 2 x PWR 488 MW (net) in Loviisa, utility Fortum (state as a majority share holder); Soviet design with US -> FIN safety regulations
 - 2 x BWR 860 MW (net) in Olkiluoto, utility private TVO; Swedish design



Finnish Cases in Nuclear Power; waste and NPPs

Decision-making Processes in Finland

- Fuel; no front end facilities, deep disposal in the back end (from 2020)
- No reprocessing – ban to import/export nuclear waste (law 1994)
- There has not been a specific nuclear energy programme, but nuclear power has been included in energy and climate programmes
- 1993 Parliament's "no" to FIN5 (DIP 1993)



Decision-making Process Waste Case 1997- (Posiva)

- Posiva is taking care of handling of spent nuclear fuel from Loviisa and Olkiluoto. Ownership: 60 % TVO, 40 % Fortum, founded in 1995.
- Part of nuclear waste strategy (of 1983, see later) but not part of a certain nuclear power programme
- Applicant's project, not a Government project



Decision-making Process Waste Case (Posiva)

- Money for the waste is collected to a State fund. The waste price tag for 5 units is around 5 billion €, where the spent fuel is 2.5 billion €.
- Posiva had free hands in many ways like site selection
- Government did not impose a decision – but behind the scenes? 1983 is an obligation?
- Emphasis on the local level – veto right for the municipality where a nuclear facility is intended.



Decision-making Process Olkiluoto 3 Case 1998- (TVO)

Common features with the Waste case:

- TVO's project, not a Government project
- Emphasis on the local level in EIA and DIP– municipality veto right
- Alternative sites Eurajoki (Olkiluoto) and Loviisa, both in the DIP
- No decisive role for the neighbouring municipalities



Decision-making Process Olkiluoto 3 Case (TVO)

Special features of Olkiluoto 3:

- Wide consultations; EIA of 1998, DIP 2002 (also waste DIP), Construction licence 2005, operating licence application in 2009 and commissioning in 2011.
- Political decision at a very early stage of the project (versus 1993)
- Waste DIP 2001 was essential for the outcome



Decision-making Process Olkiluoto 3 Case (TVO)

Special features of Olkiluoto 3:

- "The overall good of the society" had different interpretations
- Quite narrow backing to the solution (DIP) in Parliament (107-92)
- After DIP Olkiluoto 3 has been only a safety case for policy makers (construction licence 17 Feb. 2005)
- Safety: STUK statement decisive in all licences (veto in practice)
- TVO has had free hands with the site and supplier choices

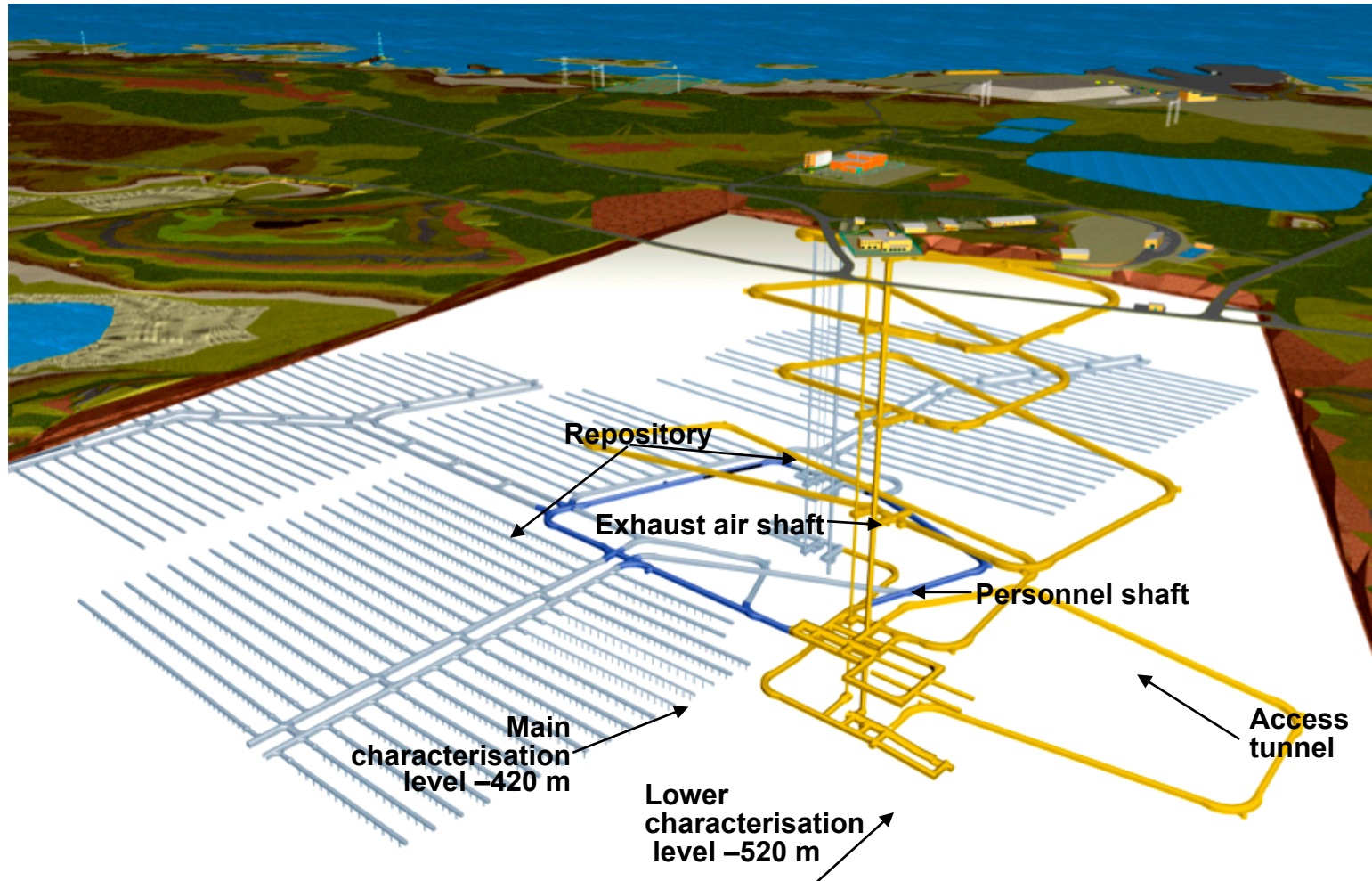


Decision-making Process FIN6 and/or FIN7 Cases (industry)

- Three candidates now: both "old" utilities (Fortum and TVO) and a new company Fennovoima Oy, owned by Finnish, Swedish and German industry
- EIA (~one year) begins the licensing process; both old ones have finalized it in 2008 and Fennovoima in 2008/09.
- Whole licensing process can last more than 10 years, including the construction of the plant.
- DIP after EIA => Government could make the DIP in 2010 at the earliest and the Parliament ratify it after that.
- Industry has free hands with the site and supplier choices. No subsidies from the State.
- Energy and Climate Strategy renewal in 2006; nuclear is an option. New strategy in the Parliament in 2008.



Deep repository ONKALO, Eurajoki Finland



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