

Suomen energiahistoriaa – ja –tulevaa

Finnish Energy History – and the Future

Suomen Akatemia, Uusi energia avajaisseminaari
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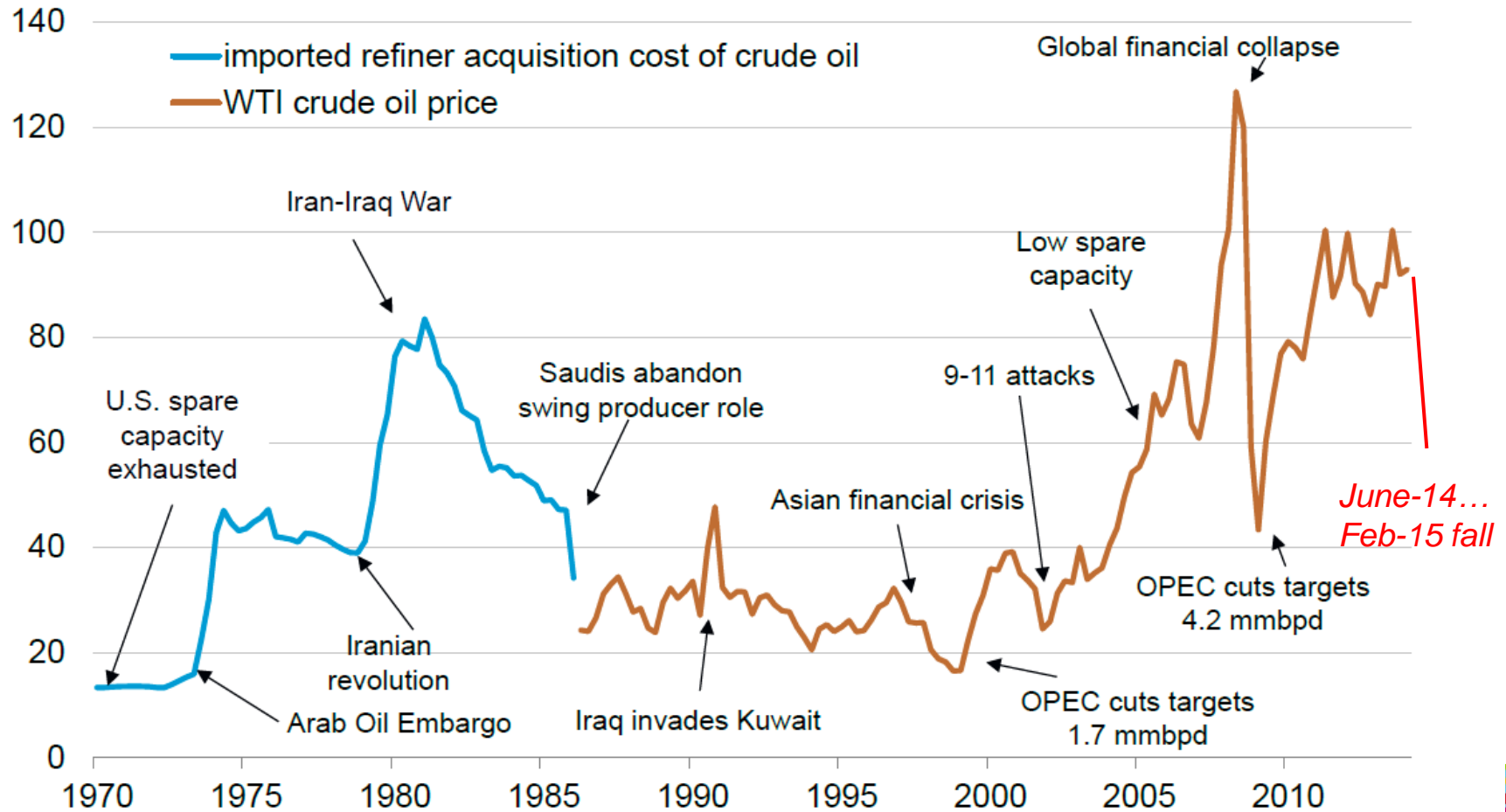
Energy policy – started about 40 years ago

- Prior to 1st Oil / Energy Crisis in 1973-74 Energy was part of Economy & Industry, Oil was dominant fuel (in Finland ~60 %)
- The jump in Oil price in 73/74 and later 79/80 created Energy Policies, Renewable Energy and Energy Efficiency programs etc, boosted Nuclear Energy and Natural Gas
 - IEA, International Energy Agency (in OECD framework) founded – first Oil Supply questions, now all energy questions
 - Energy Department started 1st March 1975 in MTI (KTM)/FIN



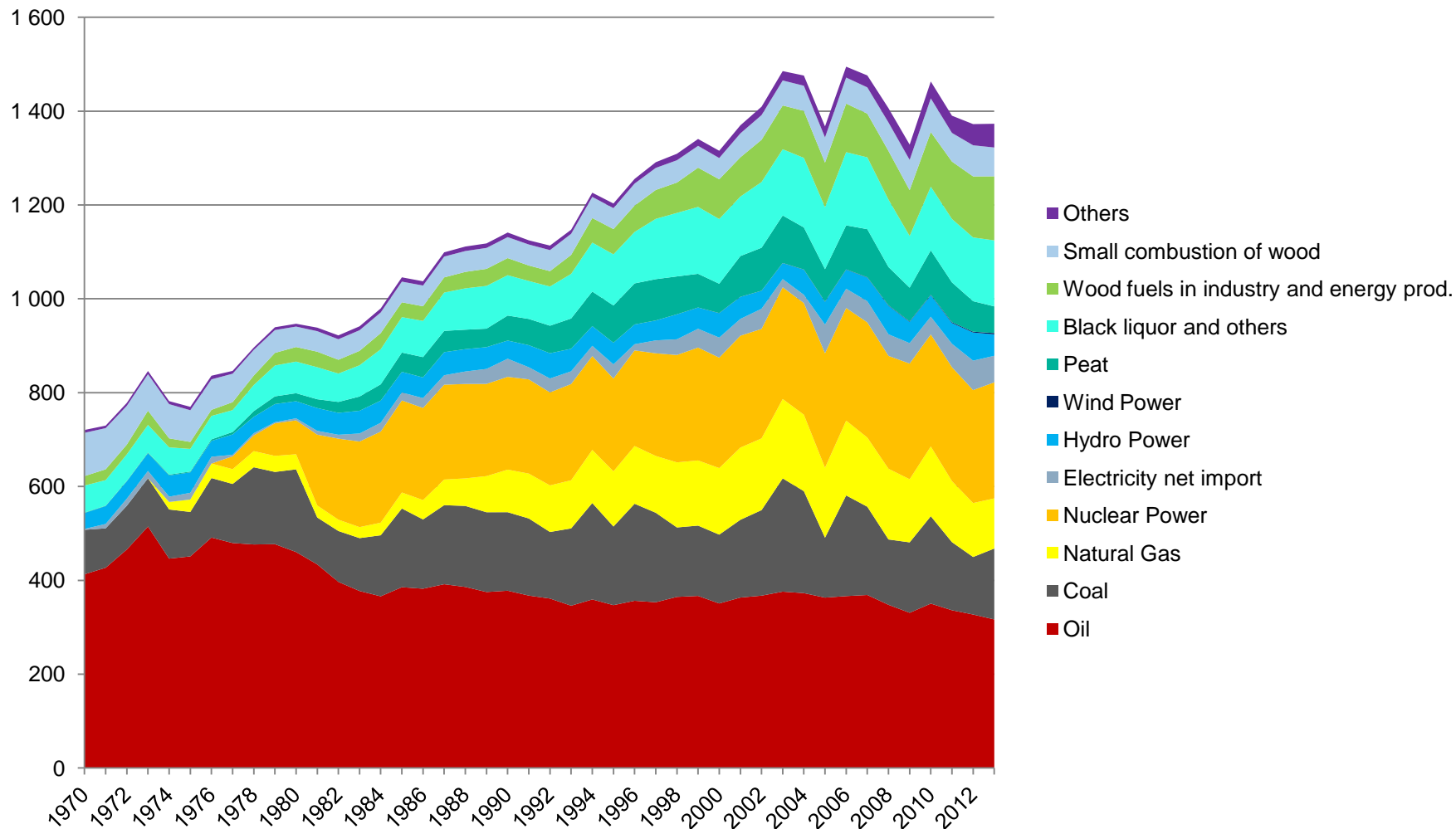
Crude oil prices react to a variety of geopolitical and economic events

price per barrel
(real 2010 dollars, quarterly average)



Sources: U.S. Energy Information Administration, Thomson Reuters

Primary energy consumption in Finland, PJ



Finnish Energy Policy in a nutshell

- Facts: Energy intensive industry (50 % of energy); Lack of indigenous energy; Cold & dark climate; Relatively sparsely inhab.
- Answers: Versatile, efficient, economical, market-based system
- Finland often at far-end in international / EU –comparison
- Since 1995 Finland part of EU: in Energy and Climate issues EU has been active, EU / Member State goals, Directives etc.
 - Goals (major) for 2008-2012, 2020, 2030 and 2050
- Today no policy (Energy, Climate, Agriculture etc.) separate or before others; now economy questions dominate



... what comes in the Future

- Renewables and Energy Efficiency advance, towards more economical and market-based solution, also sustainability
- "Distributed electricity production" / variable production (wind, PV)
- District Heating / Cooling DHC stays in Finland / Europe
- Role of Nuclear Power, CCS
- EU 2020, 2030, 2050 goals, will others follow?, COP21 in Paris
- Past 40 years development continues: technology (LED, PV, FC, cars, EV..) advance, oil and gas are not yet running out...



Gross inland consumption (toe) per capita

Finland's energy consumption is among the highest of the western nations

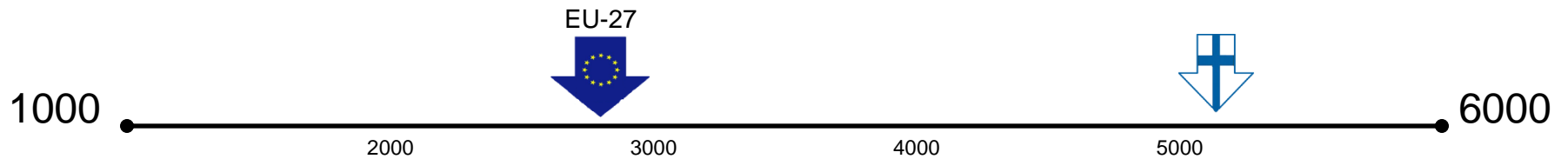
Source: [Eurostat](#)



Average heating degree days

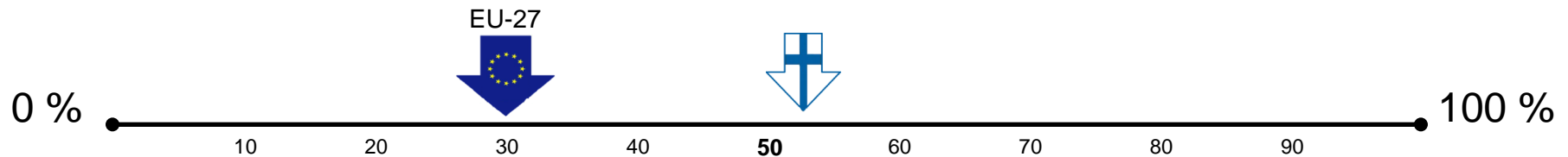
Northern conditions are a challenge

Source: [Ministry of the Environment](#)



Share of industry sector in final energy consumption

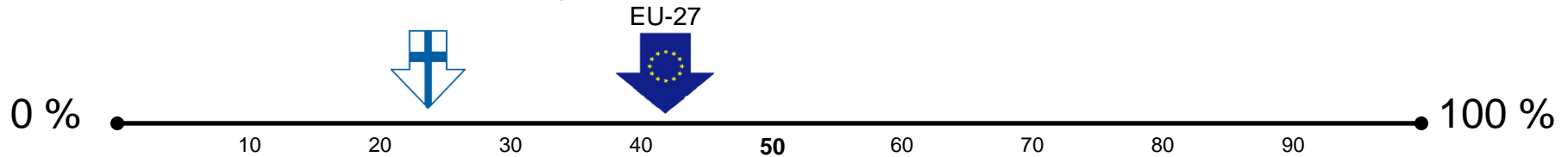
Source: [Odyssee Indicators](#)



Share of Oil in final energy consumption

Finland has a diversified energy mix

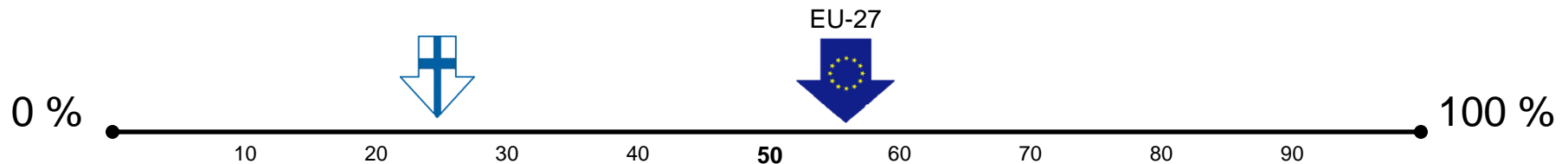
Source: [Odyssee Indicators](#)



Market share of the largest producer in the electricity market

Developed and open electricity market

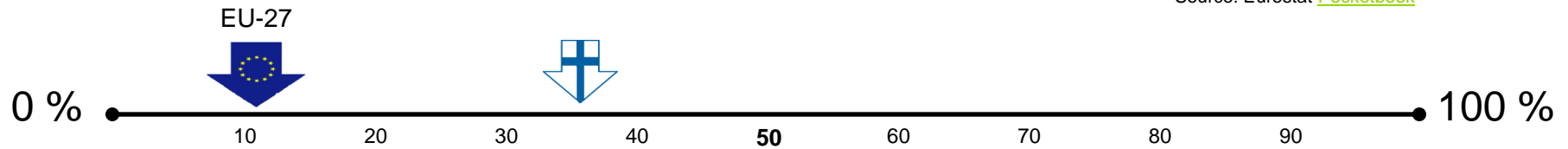
Source: [Eurostat](#)



Share of CHP in gross electricity generation

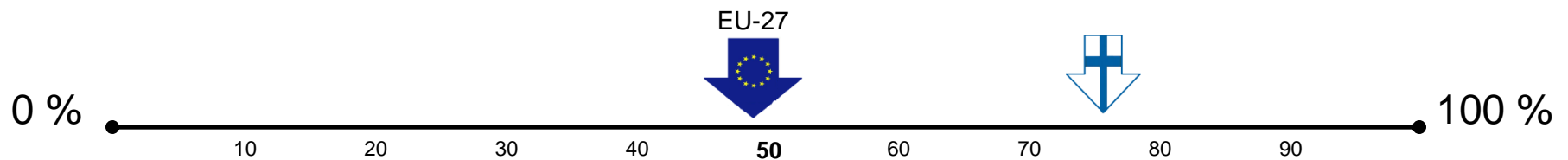
Finland is a world leader in combined heat and power (CHP)

Source: Eurostat [Pocketbook](#)

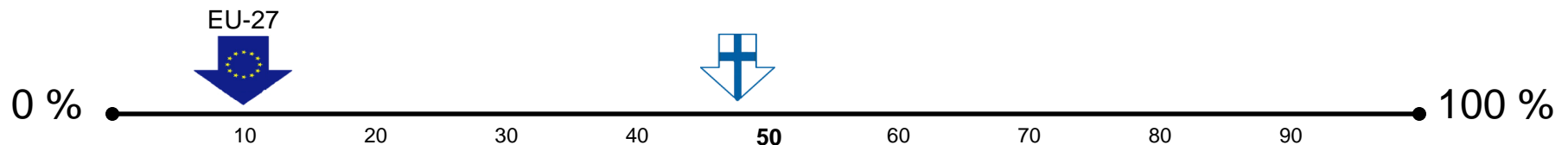


Thermal efficiency of power plants

Source: Eurostat [Pocketbook](#)

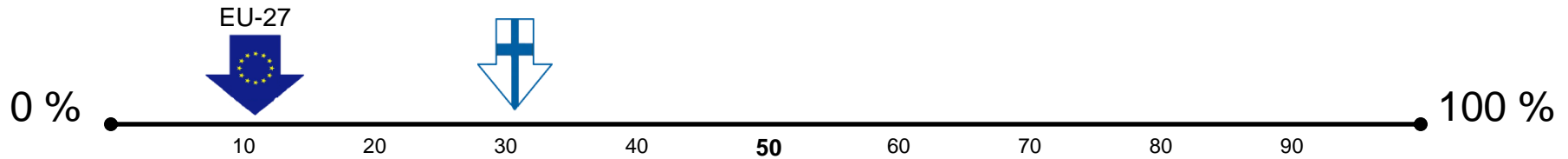


Share of district heating in total heating market



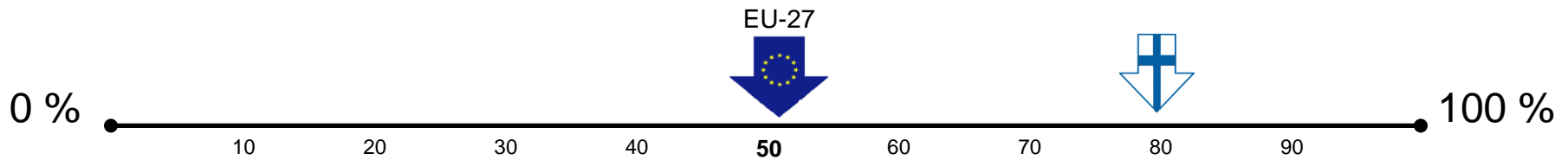
Share of renewable energy in gross final energy consumption

Source: [Eurostat](#)



Share of wood energy in total renewable energy

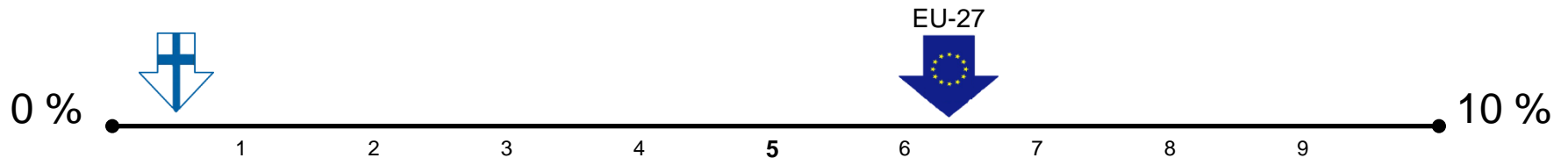
Source: Eurostat [EUwood](#)



Share of wind in total electricity consumption

Low levels of wind and photovoltaic capacity

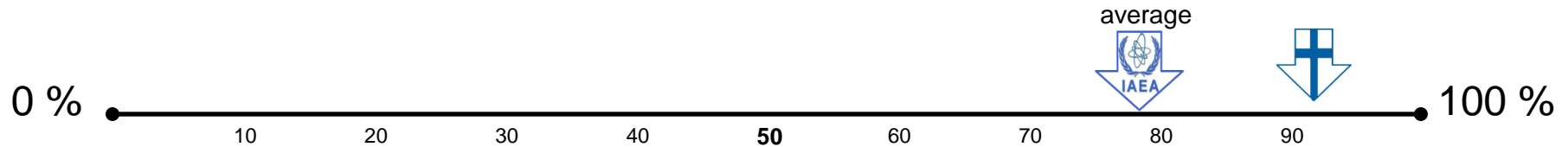
Source: [EWEA](#)



Nuclear power plant load factors

Good experience in the use of nuclear power

Source: [IAEA](#)



Source: [OECD](#)

Government energy R&D budget in IEA member countries as a percentage of GDP

First place among OECD member countries



per thousand units of GDP

