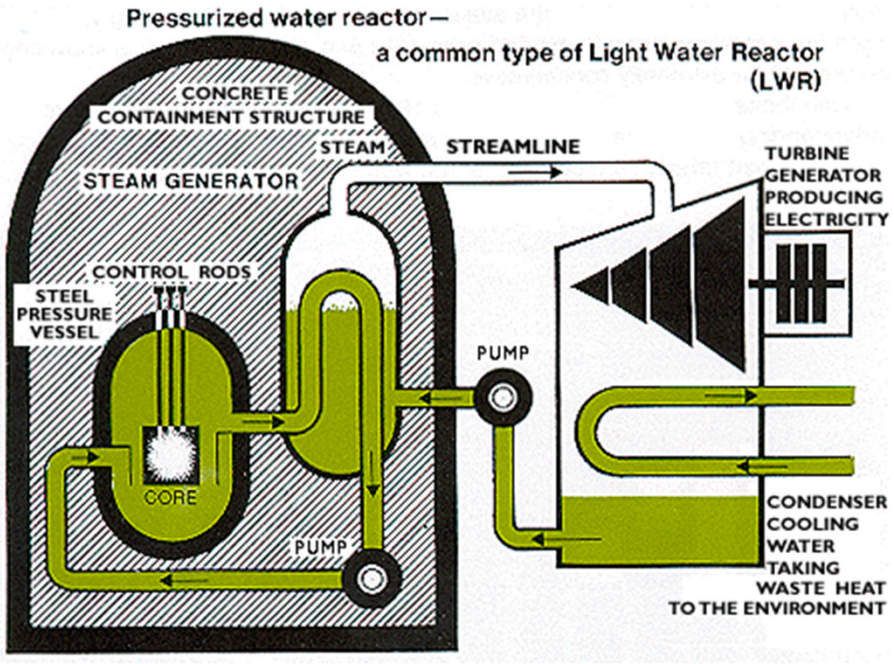
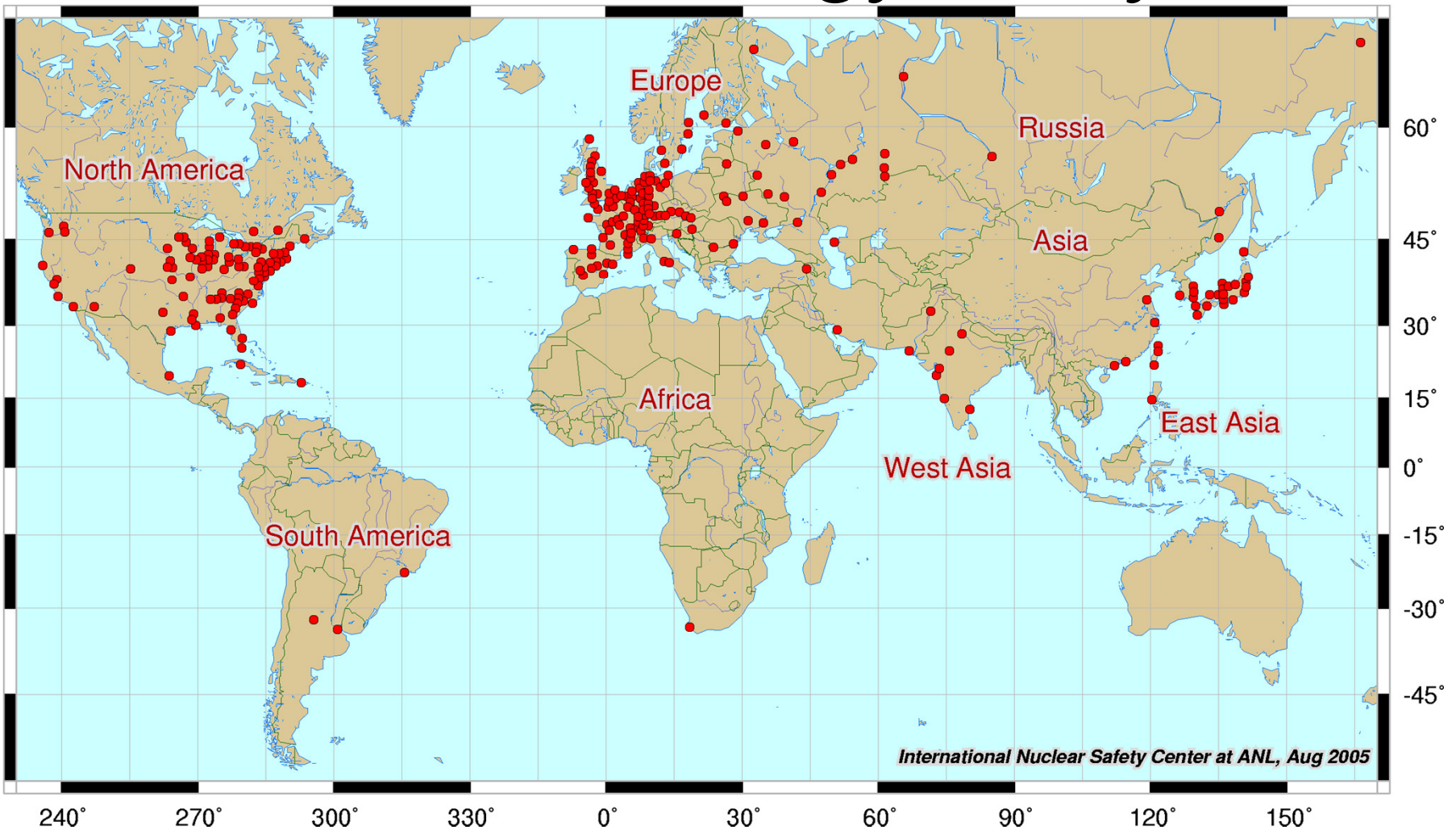
Nuclear energy: From Chernobyl to Fukushima

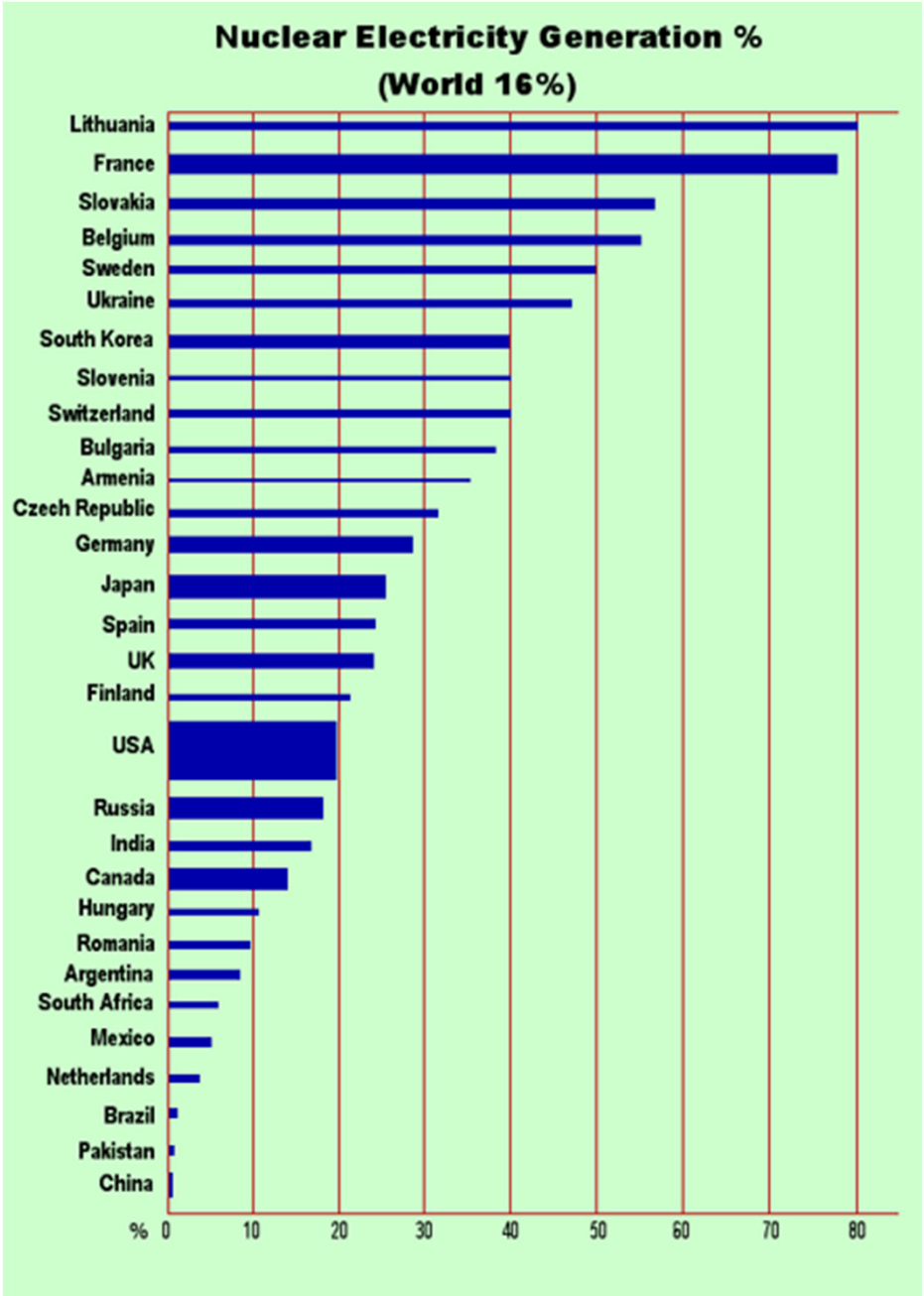
Nuclear energy

Nuclear core with fissile material (fuel) which produces heat



Nuclear energy today




Nuclear Electricity Generation %
(World 16%)
Lithuania
France
Slovakia
Belgium
Sweden
Ukraine
South Korea
Slovenia
Switzerland
Bulgaria
Armenia
Czech Republic
Germany
Japan
Spain
UK
Finland
USA
Russia
India
Canada
Hungary
Romania
Argentina
South Africa
Mexico
Netherlands
Brazil
Pakistan
China
% 0 10 20 30 40 50 60 70 80

Storage of Spent Nuclear Fuel

- Long-term storage
- Repository in deep geological formations
- Reprocessing

Nuclear accidents

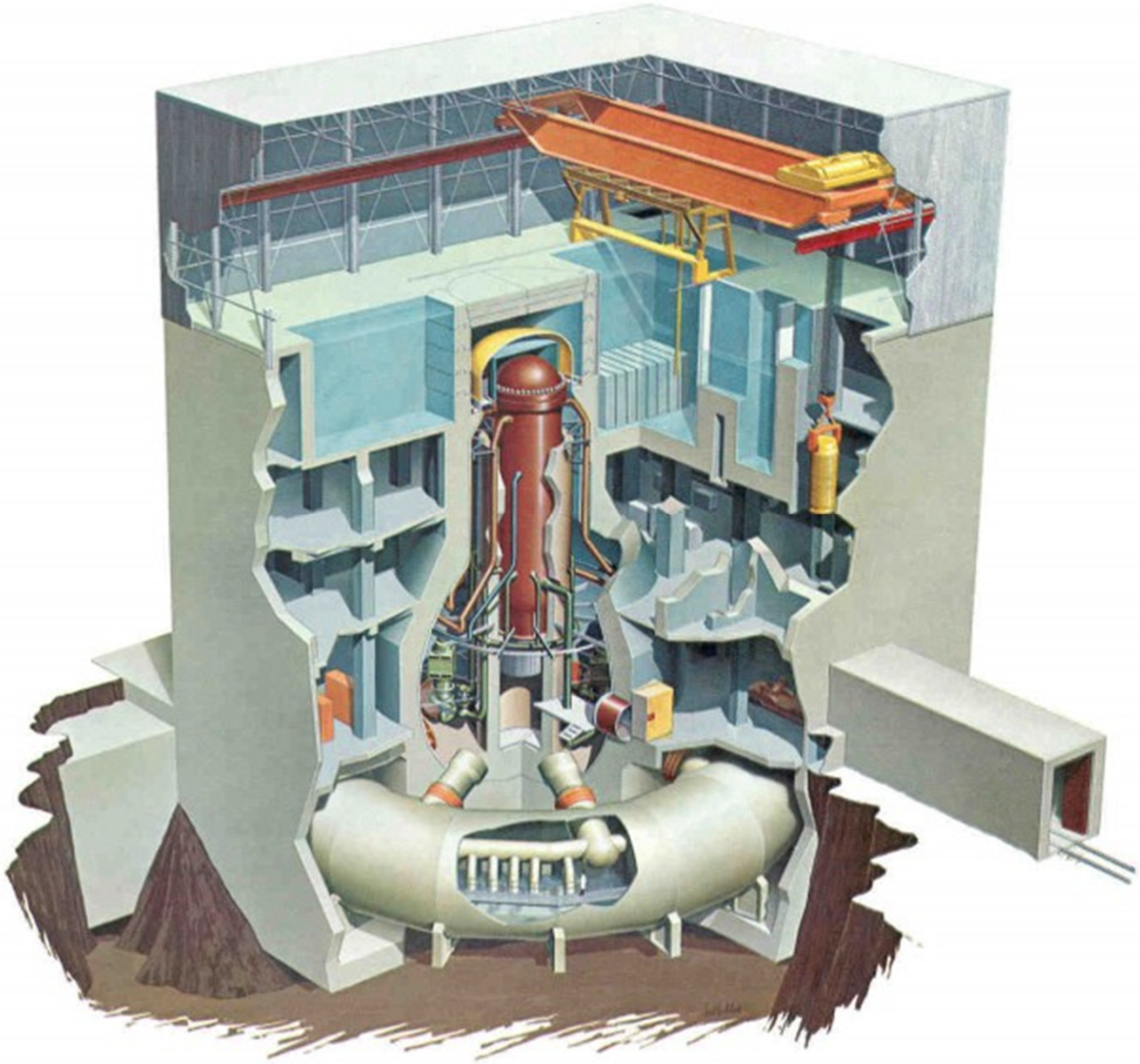
- Windscale (1957, UK, INES 5)
- Three Mile Island (1979, USA, INES 5)
- Chernobyl (1986, Ukraine, INES 7)
- Fukushima (2011, Japan, INES 7)

Chernobyl

- 26. april 1986
- Fire in graphite in the nuclear core
- Fallout over Europe
- Uncertain numbers of death
- Still counter measures in Norway

Fukushima

Fukushima



New Nuclear plans

- Mainly Asia
- Concrete plans for over 35 new plants in numerous countries:
  - Finland, South-Korea, Japan, China, India and Iran
  - Egypt, Turkey, Pakistan, North-Korea, Russia?

If nuclear power should be 1/7 of the climate solution

- 3 times todays capacity by 2050
- 1070 new reactors; about 25 new reactors/year
- Fukushima will lead to a new round of discussion about nuclear energy

Is nuclear energy the solution?

- China; 80 % coal, 18 % hydro, 2 % nuclear
- More efficient to capture and store CO_2 than to invest in nuclear

Conclusion

- Produces radioactive waste
- Short link between civilian and military use
- The unthinkable can happen
- The IPPC climate targets can be achieved without nuclear energy