

Thème 2 : Le futur des énergies

Choix énergétiques et impacts sur les sociétés

What are our energy choices?

Explain why both renewable energy, nuclear energy and energy efficiency are at the heart of the energy transition and climate goals. What are the advantages and disadvantages of nuclear energy as an energy source?

The historic climate accord from 2015 seeks, at minimum, to limit average global temperature rise to “well below 2°C” in the present century, compared to pre-industrial levels. Renewables, in combination with rapidly improving energy efficiency, form the cornerstone of a viable climate solution. ¹

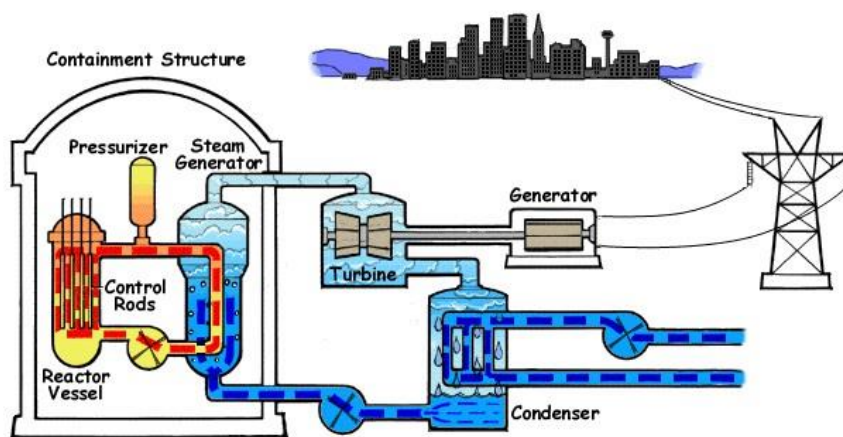
Energy efficiency means producing the same final energy services - light, heat, and cooling rooms, transport for people and freight, pumped water, turning motors – but using less energy to do so. It means the same or better material quality of life, usually at less cost- not only less direct energy cost, but also less pollution, less drawdown* of domestic energy sources, less conflict over siting facilities [...] ²

Nuclear power is clean, efficient, and cheap. Radioactive minerals such as uranium are mined. Electricity is generated from the energy that is released when atoms from these minerals split.

A small amount of radioactive material produces a lot of energy, it’s relatively cheap and can last a long time. It doesn’t give off pollutants. But there are disadvantages. Nuclear reactors are expensive to run and nuclear waste is highly toxic. Leakage of nuclear materials can have a devastating impact on people and the environment. ³

*drawdown: depletion, spending

The Pressurized Water Reactor (PWR)



PWRs keep water under pressure so that it heats, but does not boil. Water from the reactor and the water in the steam generator that is turned into steam never mix. In this way, most of the radioactivity stays in the reactor area.

US NRC : <https://www.nrc.gov/reading-rm/basic-ref/students/animated-pwr.html>

1 International Renewable Energy Agency (IRENA) 2018
2 Limits to growth, D. Meadows, J. Randers, D. Meadows, 2004
3 <https://www.bbc.co.uk/bitesize/guides/z3tjcw/revision/1>