

How can we meet growing energy demand whilst minimising use of raw materials and natural capital?



Patrick Carter-Cortez
PhD student, Cambridge Nuclear Energy Center



Safi Syed
Business Development Project Manager, Urenco, UK



Alexandre Marty
Head of climate and natural resources, EDF, France



John Wagner
Director of Idaho National Laboratory, USA



Dinara Ermakova
Anthropocene institute, USA

The only current scalable carbon-free technology is nuclear energy

Event organisers: Organisers = American nuclear society, European nuclear society, Sauvons le Climat.

Fossil fuels should be replaced by a combination of nuclear energy and renewable energy, powered by hydrogen as a carrier. Nuclear energy is the only carbon-free technology scalable to meet the demand. The American Nuclear Society pledge for tripling nuclear energy capacity by 2050 (Figure 1) – knowing that currently 93 nuclear reactors are active in the US for a production of # 100 GW –.

In France, the French electrical company runs 67 nuclear power plants and generates 322.7 TWh. 96% of its electricity is carbon free: 86% from nuclear, 10% from hydropower and other renewable sources.

EDF currently works on various scenarios of energy supply from combination of sources and runs a specific type of Life Cycle Assessment to support the decision making process. For example, wind energy requires substantial amount of minerals and has other impacts on the environment, although being carbon-zero.

Energy consumption have been steadily increasing for the last decades and energy sources have been evolving from mostly fossil (coal, oil and gas) to more balanced with nuclear and renewables.

The geographical distribution of raw materials useful for renewables is far more less distributed than the other ones. In addition, the value chain also concentrates only a few countries; China being prominent in both categories (and sometimes the only actor). Besides, The status of millions of abandoned mining sites worldwide poses environmental issues. Lastly, it is important to define a clear way to attribute environmental impacts between countries in the entire LCA, especially due to the huge importance of shipping in the global economy.

Impactful Verbatims

“One might check other impacts and not only carbon emission”

“Instead of looking for one technology to meet the energy demand, we should consider a mix of technology”

“New paradigm: energy sufficiency and consider minimizing the energy demand while developing impactless technologies”

“Combination of nuclear energy and hydrogen technology is part of the solution for net zero approach”

“One should not cross planetary boundaries”

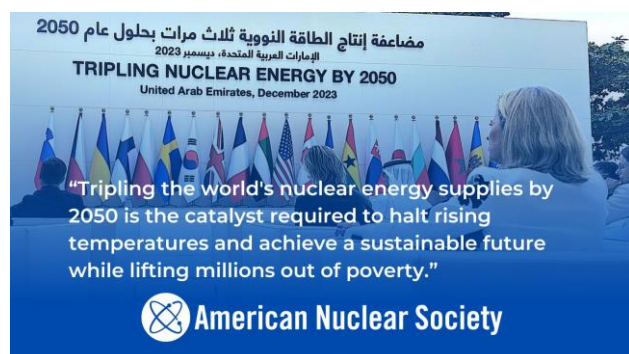


Figure 1.