

Commentary

The Primary Benefits and Costs of Nuclear Energy

L. Robert*

Department of Nuclear Physics, Oregon State University, Corvallis, USA

Corresponding Author

L Robert

laurobert@gmail.com

Dates

Received: 04-April-2022,
Manuscript No. JNEP-
GT-22-63225; Editor as-
signed: 07-April-2022, Pre-
QC No. JNEPGT-22-63225
(PQ); Reviewed:
21-April-2022, QC No.
JNEPGT-22-63225; Revised:
28-April-2022, Manuscript
No. JNEPGT-22-63225 (R);
Published: 05-May-2022,
DOI: 10.11131/JNEP-
GT-22/1000009

Copyright © 2022 L Robert.
This is an open-access article
distributed under the terms
of the Creative Commons
Attribution License, which
permits unrestricted use, dis-
tribution, and reproduction
in any medium, provided the
original author and source
are credited.

1. Description

Nuclear energy is indeed the renewable resource found in an atom's nucleus, or core. Once collected, this energy can be used to generate electricity in a reactor by using two types of atomic reactions: nuclear fusion and nuclear fission. The latter causes atoms to divide into two or more nuclei when uranium is employed as a fuel. The heat produced by the fission energy causes a cooling agent, generally water, to boil. The steam generated by boiling or pressured water is then directed to turbines, which generate energy. Reactors use uranium as fuel to produce nuclear fission. Nuclear energy, on the other hand, has many benefits and costs; however it is such a contentious alternative energy source. The primary benefits and costs of nuclear energy have been explored here.

Nuclear power pollutes the environment due to the materials utilized, however there are issues regarding potential mishaps or leakage, especially since uranium is not a renewable supply, at least for the time being. One of this material's disadvantages is its high radioactivity, as well as its extremely long half-life. Radioactive fission products, spent fuel, and other radioactively contaminated materials are all examples of nuclear waste. Low-level waste can be disposed of in the same manner as regular industrial waste, whereas high-level waste requires special handling. The decay of radioactive fission products into stable elements can take a long time. As a result, nuclear waste retains its radioactivity for an extended period of time, and no feasible means for fast dispersing its toxicity has been developed. As a result, high-level nuclear waste cannot be disposed of and must instead be passed down to future generations.

A nuclear bomb has enormous explosive force, capable of destroying a whole city with only one bomb, and it also kills people for years by causing radiation illness. Hiroshima and Nagasaki had a total death toll of roughly 214,000 people immediately after the explosions. Thousands more died from radiation poisoning, cancer, and other long-term effects of radiation exposure in the years that followed. One of the most compelling justifications for nuclear power is that it is a renewable source of energy. Nuclear energy may be considered non-renewable as a source of electricity, but nuclear fuel is not. Uranium ore is used to mine uranium, which is the only nuclear fuel now used on a large basis which is abundantly available. However, unlike sunshine or wind, it is not a limitless resource. At the current rate of consumption, total Uranium supply will not last more than 80 years. That period will be cut much shorter if nuclear power generation becomes more commonly used. Nuclear energy's key advantages over fossil fuels. First and foremost, nuclear energy is pure, generating no pollutants and emitting no greenhouse gases. Cooling towers of nuclear power plants, contrary to popular belief, only exhale water vapor and so do not release any pollutant or radioactive chemical into the atmosphere. Many experts feel that nuclear energy is one of the cleanest sources of energy available today, when compared to all other options. Numerous nuclear energy proponents furthermore claim that nuclear power is responsible for the world's fastest decarbonization effort, citing countries such as France, Saudi Arabia, Canada, and South Korea as examples of countries that built nuclear reactors and hydroelectric dams to achieve the fastest reduction in carbon intensity and a clean energy transition.

