

Environmental impact of the production and distribution of energy

Before reaching its end users, electricity goes through several phases including power generation, transmission and distribution. Each of these activities has a potential impact on the environment that can not only modify natural habitats and landscapes with global consequences for our planet, but also directly affect the lives of the people who live in the immediate surroundings where the energy facilities have been built.

It is true that in recent years governments have tried to accelerate the shift from fossil-fuels to renewable resources in order to reduce GHG emissions that cause global warming and the release of other pollutants that are extremely harmful to people's health, but, unfortunately, even renewable resources and so-called green energy have their own negative impact.

The drawbacks of green energy

Even though developing renewable energy technologies that exploit the sun, wind and geothermal energy is of fundamental importance as far as climate change and environmental problems are concerned, using renewable sources is not a definitive solution to environmental problems. Despite the fact that they produce extremely low levels of GHG emissions and conventional air pollution, manufacturing and transporting green energy produces some emissions and pollutants all the same. Renewable energy installations can also damage land and wildlife habitat, and some technologies consume significant quantities of water.

Some examples

- The production of some photovoltaic cells generates toxic substances that may contaminate water resources; in addition, clearing land (sometimes cutting down entire woods) for the placement of a solar farm may have long-term effects on the habitats of native plants and animals.



- Dams can deeply affect the water ecosystem by transforming a system of running water into semi-lacustrine water: which means that local wildlife and plants have to adapt to their new habitat and, if they do not, they cannot survive.
- Wind turbines are not only responsible for making birds change their migration routes but also for causing their death: lots of birds are found dead on the ground surrounding the turbines because they have collided with the blades.
- Onshore wind farms, which are often arranged on massifs, have a significant visual impact upon landscapes, especially in important natural areas; they are also the cause of sound pollution, caused by the noise they produce that can be harmful for the people living nearby.
- The production of energy from biomass has led to an extensive use of farmland to grow crops for fuel, rather than for food. Moreover, to ensure large yields, the biofuel market supports harmful agricultural practises (such as the use of fertilisers) that have led to toxic algae blooms and other environmental hazards.

Adapted from: https://www.iberdrola.com/wcorp/gc/prod/en_US/sostenibilidad/docs/efectos_energia.pdf

to clear: liberare

to concern: riguardare

to exploit: sfruttare

GHG (greenhouse gas): gas serra

massif: massiccio (rilievo montuoso)

onshore: sul continente, nell'entroterra

semi-lacustrine: semilacustre

1  For each renewable energy resource, identify the cause and effect of the problems they pose.

Energy source	Cause	Effect
Solar		
Wind		
.....		
.....		

2  You are going to read about some experts discussing climate change and how to face it. For questions 1 to 10 choose from the people A-D. The people may be chosen more than once.

Which person says...

1. some renewables are not always available?
2. the transition to renewables is still slowed down by the massive use of fossil fuels?
3. renewable resources can still cause some kind of environmental problem?
4. governments can create carbon tax incentives to push businesses to use sources of renewable energy?
5. governments are not complying with European regulations?
6. it is hard to completely change the way of generating energy, but possible?
7. governments should impose heavy tolls on manufacturers who still rely on fossil fuels for making their products?
8. renewables are still expensive?
9. energy demands today are too high and so our world cannot rely only on renewables?
10. people should try to pursue the same objectives as far as global warming is concerned?


A	<p>Jennifer Shade</p> <p>Even though they are being phased out, fossil fuels are still the main cause of the climate crisis. We can't keep mining fossil fuels and at the same time keep the world from a climate disaster. We must act now, and decisively, to switch to alternative sources of energy. Despite all the rhetoric about shifting to renewable energy, the world is largely relying on fossil fuels to produce energy and not taking into account the goal set by the Paris Agreement in 2015. The coal, gas, and oil industries have no interest in making this happen on their own. Only strict and urgent policy measures can help avoid catastrophic consequences in the near future.</p>
B	<p>Mike Stanton</p> <p>Reliable and affordable energy is crucial to our quality of life, and we will need to responsibly harness all forms of energy if we are to face the growing global demand for energy and simultaneously combat climate change. Today, many people lack the energy they need and renewables alone can't meet those needs. Transforming the energy system is one of the most complex tasks the world has faced, but I think that collaboration and innovation will enable us to accelerate the growth of renewables while reducing greenhouse gas emissions from the use of fossil fuels. Businesses all around the world should take action to improve their technologies in order to find the best way to reduce greenhouse emissions from their own operations.</p>

C	<p>Stanley Metziger</p> <p>Climate change is the defining topic of our generation and ultimately impacts everyone and all companies globally. It is our responsibility to ensure that we are doing everything possible to mitigate CO₂ emissions and facilitate the transition to clean-burning energy. However, although climate science is calling for a reduction in the use of fossil fuels, I believe the replacement of fossil fuels with renewable sources will not be a definitive solution. Despite being much greener in terms of emissions, they can have some harmful effects on the environment and on people's lives. I think that a resource such as natural gas, which is on the whole a clean-burning fuel, could play an important part in this energy transition, especially because it is more affordable.</p>
D	<p>Alice Gray</p> <p>Undoubtedly yes, the world must accelerate its transition to renewable energy. Reducing greenhouse gas emissions is a global issue that requires global action. Governments could use taxes or market mechanisms to establish a carbon price high enough to drive significant change and take measures to support parts of society that are negatively affected by the emissions released by factories and businesses still relying on coal, oil and natural gas.</p> <p>However, even though renewables are becoming more affordable they still pose a problem, which is their intermittency. Energy demands are constantly growing, so we need to develop technologies to store energy for periods of little or no wind or sunshine. Batteries could be an answer, but their maintenance and disposal also poses environmental challenges.</p>

Adapted from: *Climate and Energy Experts Debate How to Respond to a Warming World in The New York Times, Oct, 7, 2019*

3  Match the two parts of the sentences below.

- | | | |
|--|--------------------------|--|
| 1. Many aquatic animal species... | <input type="checkbox"/> | a. because energy production alters their natural habitat. |
| 2. A huge number of animals die... | <input type="checkbox"/> | b. are in danger. |
| 3. Large areas of lands are altered... | <input type="checkbox"/> | c. they do not have enough time to replenish. |
| 4. In the future people might lack food and water... | <input type="checkbox"/> | d. to clear space for the construction of energy facilities. |
| 5. Renewable resources are exploited so much that... | <input type="checkbox"/> | e. even though they also cause environmental problems. |
| 6. Renewable resources reduce GHG emissions... | <input type="checkbox"/> | f. because of the extensive use of farmland for the production of biomass. |

4  **PAIR WORK** Talk about the topic shown in the diagram below.

