

EIP

Technology and Climate change

Key points

- The transition to green energy may reduce the cost of energy as renewable energy becomes cheaper than fossil fuels for most applications.
- Cheaper energy will support future technology. The environmental impact of technologies such as artificial intelligence and blockchain technologies may be partially mitigated by the use of green energy sources.
- Artificial intelligence may have other impacts on the way that humans interact with the environment making its environmental impact complex.
- Actions that can accelerate the transition to green energy are likely to help reduce global warming.

Technology has had a profound impact on the way people live. In the early 20th century, coal was a primary energy source for heating homes in the United Kingdom. However, by the end of the century, central heating systems had become commonplace, significantly reducing the use of coal. While natural gas became increasingly common for heating, other power sources like nuclear and renewable energy also began to help meet our electricity needs. During the 20th century, many societal changes occurred: horse-drawn carts giving way to automobiles, air transport developing from biplanes to Concorde, and advances in telecommunications allowed people to contact each other increasingly easily over large distances.

Even after all this, the life changes that would be brought by the computer and internet revolution (and potentially now by AI) could not be foreseen.

Recent studies on energy technology have identified two groups of technologies: one that tends not to exhibit significant price reductions over time, such as fossil fuel-based

technologies, and another that becomes significantly more affordable and powerful over time, such as computer components. While advances in fossil fuel extraction and utilization have occurred, the resulting cost reductions have been counterbalanced by increased expenses associated with accessing increasingly depleted fossil fuel deposits (and other factors such as geopolitics). Accordingly, motor vehicle ownership and running costs have not changed dramatically in the last ten or twenty years.

On the other hand, computer components have become significantly more affordable and powerful over time. It is anticipated that solar power, wind power, and battery technologies may follow a similar trend. Although the cost of materials needed for manufacturing solar panels, turbines, etc. could increase, projections suggest that per-unit energy costs will decrease relative to costs of producing energy from fossil fuels in the longer term.

If we consider the future of technology, it's clear that the development and deployment of artificial intelligence applications will require substantial computing resources, which in turn consume a significant amount of energy. This trend towards increased energy use by AI applications will probably continue as adoption increases. Typically, data centers are used to provide the necessary computing power to develop and deploy AI applications at scale. However, the environmental impact of data centers can be reduced by using energy-efficient server designs and renewable energy sources. It's encouraging to see that major data-center providers like Amazon and Google have publicly committed to transitioning towards using renewable energy for their data centers. It's worth noting that beyond energy consumption, thought should be given to other environmental impacts associated with data centers, such as the use of water for cooling, the manufacture of computer components, and managing the end-of-life disposal of the computer components.

Not all environmental impacts of artificial intelligence will be negative, as AI will make some processes more efficient, thus reducing environmental impact. For instance, using AI to predict and manage energy usage, improve the efficiency of agriculture, provide more efficient transport routing, and enhance other logistics has the potential to reduce carbon emissions.

Regarding the transition from fossil fuels to renewable energy, the World Economic Forum highlights two scenarios. In gradual scenarios, emissions would continue to rise, potentially hindering humanity's ability to meet the Paris Agreement goals of limiting global average temperature rise to below 2 degrees above pre-industrial levels. On the other hand, rapid scenarios, with a quicker transition to green energy, would see emissions peak in the 2020s. This accelerated shift could pave the way for achieving the

Paris Agreement objective.

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An important factor in expediting this transition is the ongoing improvements in technologies like solar power.

To support a faster transition from fossil fuels to greener energy, EIP is offering Decarbon Discounts ([see more information here](#)) for inventions that address a problem relating to at least one of energy generation, energy storage or management, and carbon capture in a way that helps mitigate climate change. Please see our website for further information.