

## Green technology and renewable energy

Green technology refers to the development and use of technologies that minimize the negative impacts of human activities on the environment and society. It encompasses a wide range of products, services and practices that support a more sustainable future.

Often known as "green tech," the concept is gaining attention as the world seeks ways to address climate change. The creators of green technology use scientific knowledge and innovation to help conserve natural resources, reduce greenhouse gas emissions and promote the use of renewable energy.

Green technology solutions are meant to be sustainable; they are designed to meet the needs of the present without compromising the ability of future generations to meet their own needs. They should limit environmental impact in various ways, including the use of renewable energy sources and a focus on energy efficiency.

Green tech strategies consider the entire lifecycle of a product or service, from raw material extraction to end-of-life disposal. Their proponents aim to understand the full environmental impact of their activities within a circular economy. They also recognize the social implications of technological development, promoting social equity and well-being. These implications include considering the impact of technology on local communities, workers and consumers, and striving to create innovative solutions that benefit society as a whole.

Green technology initiatives play an important role in addressing climate change. Greenhouse gas emissions from human activities (such as burning fossil fuels and deforestation) are producing unprecedented levels of carbon dioxide in the Earth's atmosphere. These concentrations lead to global warming and its consequences, including rising sea levels, extreme weather events and ecosystem disruption. According to the Intergovernmental Panel on Climate Change (IPCC), immediate steps must be taken to limit global warming to 1.5°C (34.7°F) above preindustrial levels.<sup>1</sup>

Adopting sustainable technologies can help mitigate emissions and reduce the carbon footprints of countries and companies. They can conserve resources, preserve biodiversity and reduce ecosystem disruption. But the benefits of green technology extend beyond environmental protection. They include:

Green tech companies are part of a growing industry with the potential to create new jobs in fields such as renewable energy, sustainable manufacturing and environmental consulting.

Investing in green technology might improve a company's brand image, as adopting sustainable practices can attract environmentally conscious customers and investors.

Also known as clean energy or green energy, renewable energy is generated from natural sources that are replenished faster than they are used. Power sourced from renewable resources and alternative fuels generally produces zero carbon emissions and minimal air pollutants. Types of renewable energy sources include solar energy, wind power, hydroelectric power, geothermal energy and biomass. Solar panels and wind turbines are common examples of this technology.

Monitoring and optimizing energy consumption can reduce both waste and costs. From a green technology perspective, it involves creating or improving products and systems to use less energy. Examples of this technology in action include energy-efficient appliances and LED lighting, energy storage technologies, smart meters and energy management systems.

Green technology can help make the disposal of resources and products more sustainable. Waste management technologies include advanced recycling facilities that convert waste into valuable resources, such as energy or raw materials for manufacturing. They also include waste-to-energy systems that use controlled incineration to convert waste products into power.

Electric cars, trucks and buses that are powered by rechargeable batteries help reduce emissions from fossil fuels. Biofuels and alternative low-carbon fuel technologies also fall into this category. Advancements in public transportation and urban infrastructure to support electric vehicles (EVs), bicycle and foot transit are also part of this effort.

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