



# Impact Of Technology: Sustainable Development On Environment

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## ABSTRACT

Sustainable development is an emerging area, because it addresses the socio economic development of every human being. It is one of the most significant societal challenges of the 23rd century. One global trend with significant implications for sustainable development is the extraordinarily rapid development of environment. Exponential Growth of Technology in India has played a significant role in all round development and growth of economy in our country. India has opted for a judicious mix of indigenous and imported environment technology. The term "technology" refers to the application of scientific knowledge for practical purposes and to the machines and devices developed there from. In this study focuses on the modern technology for future sustainable development on environment and also positive and negative environmental impact of sustainable development towards technology in environment. In addition how it contributes to reducing the negative impact on the environment.

**Keywords:** Sustainable Development, Society, Technology, Innovation, Environment

## Introduction

Nowadays, sustainable living and development pose a significant challenge. Every day we are exposed to environmental risks, including depletion of natural resources, pollution, deforestation, [e-waste generation](#), poor air and water quality, ozone layer depletion, and more. If proper action isn't taken, CO2 emissions from the United States alone are projected to reach [4,807 million metric tons by 2050](#). That's enough to get anyone worried, including business owners and major industry players. Clearly, we need a solution, and we need it fast. One way businesses and individuals have begun to tackle climate change is through the use of **sustainable technology**.

Advances in technology have revolutionized our lives. Today, a variety of services and communications are just a click away. As technology evolves, you need different resources to support it. Our lives are so impacted in so many ways by technological advances that it becomes difficult to describe some of the areas that have been severely affected. This article discusses the positive and negative impacts of technology on the environment. Since humans learned to make stone tools two million years ago, the technology of the Industrial Revolution has driven the world's positive growth. We all know that technology can do great things. Sustainable technological progress is essential to the development of our species. As history has shown, technology can have a huge impact on our future. However, there are also negative environmental impacts of technology that should not be ignored.

### Concept of Sustainable Technology

Sustainable technology is an umbrella term that describes innovation that considers natural resources and fosters socio economic development. The goal of these technologies is to drastically reduce environmental risks. And also to create and increase a sustainable product development.

Sustainability in technology can be defined in a few ways:

- **Substitution.** The technology fosters a shift from non-biodegradable to biodegradable materials in its production. It also replaces non-renewable with renewable resources.
- **Prevention.** The sustainable technology prevents deterioration, contamination, and other negative environmental impacts through its use or production.
- **Efficiency.** The technology is efficient in terms of its use of energy and resources.

### Objectives of the Study

In this study framed following research objectives:

1. To study the modern technology for future sustainable development.
2. To identify the positive and negative impact on sustainable development towards technology, economy and society.

### Technologies for Future Sustainable Development

Over the past few decades, the world has witnessed an unprecedented rise in technology, leading to significant changes in our everyday lives. From communication to healthcare, technology has transformed almost every aspect of our lives. However, as we move forward, the role of technology in achieving sustainability goals has become increasingly important.

The United Nations' Sustainable Development Goals (SDGs) lay out a blueprint for a sustainable future for all. The goals cover a range of issues, including poverty, hunger, health, education, gender equality, clean water and sanitation, affordable and clean energy, decent work and economic growth, industry, innovation and infrastructure, reduced inequalities, sustainable cities and communities, responsible consumption and production, climate action, life below water, life on land, peace, justice and strong institutions, and partnerships for the goals.

**Renewable Energy:** One of the most significant challenges we face is the transition to renewable energy. The development of advanced renewable technologies such as solar, wind, and geothermal energy is key to reducing carbon emissions and mitigating climate change. In addition, technology advancement will continue to make renewable energy more accessible, affordable, and efficient. Smart grids and energy storage solutions are essential to ensure reliable and efficient distribution of renewable energy.

**Sustainable Agriculture:** Technology can help improve food security and reduce the impact of agriculture on the environment. Precision farming techniques such as precision irrigation, precision fertilization, and precision pest management can reduce the use of water, fertilizers, and pesticides, while increasing crop yields. Additionally, new technologies such as vertical farming, hydroponics, and aquaponics can enable food production in urban areas and reduce the distance food travels to reach consumers.

**Sustainable Transport:** The transportation sector is a major contributor to greenhouse gas emissions. However, advances in electric vehicles, hydrogen fuel cells, and alternative fuels can help reduce emissions from transport. Additionally, smart transport systems that optimize traffic flow and reduce congestion can help reduce fuel consumption and emissions. Innovations in autonomous vehicles and drones can also improve the efficiency and safety of transport.

**Waste Management:** The rise of the circular economy and the adoption of sustainable waste management practices are critical to reducing waste and minimizing its impact on the environment. Technology can help with waste reduction, sorting, and recycling. For example, AI-powered waste sorting systems can accurately sort different types of waste, increasing the efficiency of recycling processes.

**Water Management:** Water scarcity is a growing concern, and technology can help manage this precious resource. Advanced water treatment technologies can help increase the availability of freshwater, while smart irrigation systems can help reduce water usage in agriculture. Additionally, smart sensors can detect leaks and monitor water quality, helping to reduce waste and prevent contamination.

**Smart Cities:** Cities are home to more than half of the world's population, and their sustainability is critical to achieving the SDGs. Technology can help make cities more sustainable by improving energy efficiency, reducing emissions, and enhancing mobility. Smart city technologies such as intelligent lighting, building automation, and traffic management can improve the quality of life for urban residents while reducing environmental impact.

## **Positive Impact of Technology on Environment**

**Reducing Paper Consumption:** Technology has helped the environment by reducing our need for paper. With the increasing use of email communication, the paperless office has become a common culture in the commerce sector. Reducing the need for paper also reduces deforestation and deforestation. This allows the country to form a smaller footprint.

**Reducing Energy Consumption:** As the use of technology in offices has increased, various ICT companies have developed "greener technologies" to overcome the detrimental effects of computers and accompanying technologies on the environment. The introduction of environmentally friendly technologies such as MFPs

and PC power management systems can help businesses that rely heavily on technology reduce their energy consumption.

**Low Carbon Technology:** Low carbon technology is another important environmental impact of this technology. This is a type of technology developed in China, which has the lowest carbon footprint of any developed country in the world. This low-carbon technology uses renewable fossil fuels to offset emissions levels that pollute the air.

**Healthcare and Wellness Advancements:** Tech possesses an enormous potential to improve health and healthcare systems as we know them. From Artificial Intelligence powered clinical drug trials through enabling preventative patients' monitoring up to wellness solutions like wearable's. We have seen tech minding the gap in healthcare in the pandemic. Telemedicine apps are the first step to making healthcare more equitable and accessible for all, no matter their socioeconomic status.

**Technology in Education:** We already have many learning platforms aggregating courses for different age groups, all from different fields and industries. They usually contain videos, interactive boards or games for practice. This alone makes education much more accessible and scalable than ever before.

**Environment Protection and Smart Cities:** If you ask someone how technologies influence the environment, they are likely to say "very badly". Even though it used to be true in the past, the ultimate awareness of the necessity to protect the environment has been growing over the last decade, and tech has been one of the quickest industries to jump on the train.

**Equal Opportunities:** The universal value behind technology is bringing equality to products and services and also minimizing socioeconomic gaps between society and people. As described above, tech makes health and education available to more people, making it easier to learn and get care, no matter their background.

### **Negative Impact of Technology on Environment**

When you think of technology, perhaps the first thing that comes to mind is the devices that most of us carry and use every day. Smartphones, tablets and laptops have revolutionized our lives. Many would argue that they have brought us many benefits. However, it is undeniable that these everyday technologies are taxing the environment. All of these and other modern electronic devices raise concerns about resource consumption, energy consumption, carbon footprint and waste. If we look at the entire lifecycle of a technological device, it's easy to understand why these electronic marvels pose so much of a challenge to our environment.

**Mineral Extraction:** When analyzing the environmental costs of technology, it is important to consider the actual materials used in its manufacture and where those materials came from. A significant amount of finite natural resources and precious metals are used in the manufacture of electronics and other modern technologies. The big picture is complicated, the materials needed to build just one phone come from all over the world. This can complicate end-to-end analysis of natural resource degradation.

**High Energy Consumption and Carbon Footprint:** The environmental impact of technology goes beyond raw materials and their origin. Manufacturers require vast amounts of energy to produce the complex

electronic technology products we use. Transporting these products around the world by plane or by car also contributes to the greenhouse effect that causes global warming and air pollution.

**E-Waste:** These are not the only environmental costs of consumer technology. These products also pose problems at the end of their useful lives. Globally, we throw out \$62.5 billion worth of e-waste every year. A small portion of old electrical equipment is recycled. However, most end up in landfills or are incinerated there. Unfortunately, not only do these landfills release methane and other carbon emissions, but discarded equipment releases chemicals, including mercury, that mix with other wastewater pollutants such as pesticides. A hodgepodge of toxic chemicals can enter waterways, exacerbating pollution and harming wildlife.

**Fake News and Misinformation:** Fake news and misinformation have been with us for quite some time, but with the tech advancements moving rapidly, people find it hard to keep up with what's true and what's not.

**Social media's impact on mental health:** Social media relies on instant gratification. All apps' notifications are there to lure a person back into the app and scroll. [According to neuroscientists at Freie University in Berlin](#), social media notifications (especially likes, follows etc) activate our brains' reward system.

**More or less Tech - What is the Future?:** Technology ultimately transformed the world as we know it, supporting many areas' faster development and bringing more equality and opportunity no matter one's personal socioeconomic background.

## Conclusion

It is possible to significantly reduce the significant environmental impact of technology. As consumers, we often have more power than we realize to reduce resource use and protect the environment. This will contribute to reducing air and water pollution. With the rise of various types of technology, there are several negative and positive environmental impacts on our planet. Energy consumption is increasing due to the rise of modern technology and globalization. This has had devastating effects on Earth's air quality and climate. But without innovation and technology, we would not have been able to improve our energy management systems or develop environmentally friendly products such as biofuels. People need to take step-by-step action to reduce the level of technological damage to the environment. We also need to find ways to effectively manage new technologies so that they continue to have a beneficial impact on ecosystems. Soil pollution from global warming, ozone layer depletion, hazardous waste, acid rain, radiation disasters, climate change, desertification, deforestation, noise and loss of biodiversity is shared by countries around the world.

Population growth and rising or falling standards of living through the use or misuse of technology exacerbate these problems. Evidence shows that if existing human-environment interactions continue and human populations increase at current trends, irreversible environmental damage could be inflicted on this fragile planet. The knowledge and consistent use of technology gained through human resource development, combined with the motivation and positivity of people, both individually and as nations, can pave a sustainable path to saving the world from possible man-made disasters. There is evidence, though not enough,

that individuals and nations understand the fragility of their environment. There is also a positive trend in international cooperation by technology.

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