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# THE ROLE OF AI IN SUSTAINABLE DEVELOPMENT

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**Abstract:**

*Our environment is deteriorating day by day. The various concerns like climate change, pollution, degradation of resources, loss of biodiversity, etc. need to be addressed. In 2015, the UN member States adopted an Agenda 2030 of 17 Sustainable Development Goals for Sustainable Development to tackle the degrading environment. These goals are based on three dimensions, economy, social development, and the environment. A holistic approach is required to safeguard our environment and meet these SDG goals, as the rising climatic issues, pandemics, war, etc. have put the Vision 2030 of Sustainable Development in peril. Artificial Intelligence can used effectively for meeting the SDGs and safeguarding our environment. Various AI applications like remote sensing, wildlife resources conservation and protection, pollution control, and climate change predictions pave the way for wisely dealing with environmental problems. AI can further revolutionize our approach to protecting our environment. Its inclusion is important for a better understanding and efficient management of environmental issues, it will also help to improve our decisions for living a sustainable lifestyle.*

*The study proposed here focuses on the multitudinous role of AI in meeting our Sustainable Development Goals.*

**Keywords:** *holistic, peril, safeguarding, inclusion, sustainable lifestyle.*



## Introduction:

Due to various environmental issues, the usual functioning of the ecosystem is being disrupted, because of this, our world is facing many unprecedented ecological challenges. Contemporary environmental challenges are causing immense concern because millions of species are being put at risk. The sprawling data indicates how the human species is being affected by this issue.

## Sustainable Development:

Considering the risk of human life, the UN member States in 2015 adopted the Agenda 2030 of Sustainable Development. Sustainable Development means judiciously meeting the needs of the present generation while considering the needs of the upcoming generation. (1)

The UN member states will endeavor to achieve the 17 Sustainable Goals mentioned in the Agenda by 2030, which is important to co-exist with the environment, due to contemporary challenges like climate change, population explosion, loss of biodiversity, excessive use of energy resources, poor literacy rate, poor economic growth, pandemic, international conflict, and poverty. Halfway to the deadline, the world is still struggling to meet these goals before the deadline of 2030. It is important to measure the progress made on sustainable development. It is equally important to take expeditious action to accelerate the Sustainable Development Goals. At this crucial period, not only the AI can be utilized as a technological marvel but also, as a powerful force to bring about transformation. (2) To move towards a future marked by sustainability, we need a propelling effect of AI.

## Artificial Intelligence:

In today's world, there is a vast amount of data, and it is possible that the human brain may not always be able

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to absorb and interpret this data with speed. There is a possibility of human error and a risk of less precision in the interpretation of data. So, it is important to develop machines with software and algorithms to interpret the data accurately, reducing human work and time. The lengthy and time-consuming task can be made easy with AI. AI is the term used for a group of technologies that can process information at breakneck speed.

According to the reports of the European State Agency, the Scientists at the University of Leeds, claim that their AI can map large icebergs in Antarctica in Satellite images, in just one-hundredth of a second [3]

AI mojo is working in every sphere, it can be utilized for finding new solutions in the environmental sector. According to PwC UK, the use of AI in agriculture, energy, water, and transport, will contribute about 5.2 trillion USD to the global economy in 2030. [4] AI can also detect patterns in data, this will help the stakeholders to make eco-friendly choices.

Now, in India, The Ministry of Information and Technology has boldly launched India's own safe and secure indigenous AI model at an affordable cost of less than 100 rupees per hour after a 40% government subsidy. [5]

**AI for a sustainable future:**

1) AI-driven sensors are used to check the water and air quality. Any contamination detected by these highly sensitive sensors is treated swiftly. This sensor network is very effective in keeping the water and air clean. In this way, AI can be used in meeting SDG 6, 'Clean Water and Sanitation'.
2) AI can be used in industrial and business spaces for energy conservation. It manages the energy consumption in smart buildings. It reduces the cost of energy consumption when it quickly analyses the data. This is essential in meeting SDG 7, 'Affordable and Clean Energy'.
3) Carbon emissions can be reduced with the help of AI tools; they can also be used to improve waste management in cities. The 'Greyparrot', a startup in London, identifies all the waste objects found in the global municipal recovery sites for the maximum recovery and reuse of the waste materials. [6]

   It can even be applied to weather forecasts, e.g., The 'IKI Project' uses AI technology to predict weather patterns. SDG 11 focuses on 'Sustainable Cities and Communities,' AI can help meet this goal.
4) Sustainable Development Goal 12, 'Responsible Consumption and Production,' can be met by the predictive capability of AI, which determines the energy output. Also, efficient generation of renewable energy like solar energy and wind energy is possible with AI technology.
5) AI can be used to reduce greenhouse gas emissions thus controlling climate change. Even an iceberg can be tracked with the AI. There has been an increase in the intensity of Climate-related disasters like Wildfires. With the aid of AI tools, the wildfire instances can be reduced. 'Pano AI' is working on verifying and classifying wildfires. The 'Sipremo', is exploring AI to predict climate disasters, to prepare the government and businesses for future challenges. [7] This is important for the Sustainable Development Goal 13, 'Climate Action'
6) AI can be used to monitor and safeguard the marine ecosystem. With AI ocean health and associated risk can be studied. It provides real-time monitoring and gives advanced ocean analytics. 'Stream Ocean' is working in this field for coral restoration with the help of AI. The 'Ocean Cleanup', is cleaning the ocean litter by mapping with AI. [8] This is helpful to fulfill SDG 14, to conserve and sustainably use water resources i.e., 'Life Below Water'.
7) The advanced algorithms of AI can be used to analyze the data of species habitats, food, population, and threats. AI Algorithms can be used

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to categorize the species as endangered, rare, threatened, vulnerable, extinct, etc. This can help tackle biodiversity loss. Sustainable Development Goal 15 'Life on Land'.

Now researchers are using AI to acquire data on deforestation by pairing AI with satellite images. (9) The impact of deforestation on climate change can be mapped by AI. The Scotland company, Space Intelligence, claims that it has mapped more than 1 million hectares of land using satellite data. (10) This company also measures the rate of deforestation and carbon storage rate of forests. Brazil's Rio City Hall and the startup Morfo are using computers powered with AI to disperse the native seeds to boost reforestation. (11)

**Objectives:** The main purpose or objective of the study is as follows

1) To study the importance of Artificial Intelligence.

2) To study the role of Artificial Intelligence in Sustainable Development.

**Methodology:**

The overall approach of the study is to seek knowledge about the role of Artificial Intelligence in Sustainable Development. For this purpose, data has been collected from secondary sources like journals, newspapers, magazines, and website articles from the internet. Various statistics, reports, and assessments highlighting Artificial Intelligence and Sustainable development are referred to for the study.

**Suggestion:**

For meeting the Environmental Goals Sustainably with the aid of AI, the following points should be considered

1. The AI used had to be reined for the future implications.
2. All the stakeholders should prioritize precise standards and restrictions while using AI.
3. An approach should be used to ensure the long-term viability of AI.
4. The greener and cleaner technologies should be used to reduce the energy demand of AI-driven technologies.
5. Multidisciplinary research and knowledge exchange should be done to reduce the complications of AI tools.
6. Funding should be provided to those start-ups and ventures that are using AI while working towards the Sustainable Development Goals.
7. It is important to develop more and more AI tools but simultaneously, the government should develop some regulations to check their environmental consequences.

**Conclusion:**

Artificial Intelligence is very crucial for achieving SDG targets. AI is dealing with contemporary environmental issues in many fields. Processing huge amounts of data, AI is helping to combat various environmental issues. But simultaneously, it also has a considerable energy and water requirement, which needs to be managed by more innovations in AI technology. For a sustainable future, AI and the environment must go hand in hand, for this, it is important to deal with the futuristic problems. In a labor-surplus country like India, policies should be framed to ease the anxiety around AI disrupting labor markets. It is equally important to understand that Sustainable development is a multifaceted issue and addressing it requires the involvement of every individual.

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