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## ROLE OF ARTIFICIAL INTELLIGENCE IN ENVIRONMENTAL SUSTAINABILITY

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### ABSTRACT

With AI's rapid growth and increasing influence in so many fields, it's important to evaluate how it could affect progress towards the SDGs. Using a prevailing opinion expert qualitative data collection process, we find that AI can help achieve 134 targets across all purposes, however, it could potentially hinder the achievement of 59 goals. Unfortunately, the current focus of the research misses important information. AI-based technologies' potential to advance ecological sustainability and the rapid growth of AI must be accompanied by the required regulatory awareness and supervision. To do so might lead to compromised safety, ethics, and openness. The present article has focused on how Artificial intelligence can lead us to more environmental sustainability by reforming the picture of environmental issues and their fighting mechanism. The present article has inclined towards a doctrinal approach with both primary and secondary sources of data collection used.

**Keywords:** *Environment, environmental degradation, sustainable development, artificial intelligence, environmental laws, environmental sustainability.*

### INTRODUCTION

Environmental concerns have recently sparked heated conversations, awareness campaigns, and public outcry, all of which have contributed to a surge in enthusiasm for cutting-edge technology like AI. Conservation of natural resources, wildlife preservation, agricultural production, environmental services, vehicle emissions, wind power, and resource management may all benefit from the use of artificial intelligence. There is widespread agreement that AI will have a profound impact on economies throughout the world. It is predicted that by 2030, (Muralidharan 2021). AI would have contributed up to \$15.7 trillion to the global economy, which is more than the production of China and India put together right now. Roughly one million new engineers are produced in India every fiscal year, and 20% of them are unemployed.<sup>1</sup> The field of artificial intelligence (AI) has advanced to the point where an unemployed engineer who has taken a course in AI may find work in a firm in the industrial sector. The UN AI Summit held in Geneva in 2017 recognised AI, the tech behind personality cars but instead of

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<sup>1</sup>S. Muraleedharan (2021, January 30). Resilience in the atmosphere and cognitive computing. at EcoMENA. <https://www.ecomena.org/artificial-intelligence-environmental-sustainability/>.



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voice/face acceptance in cellular phones really does have the possibility of accelerating advances towards some kind of life of dignity, prosperity and security for all persons. It is proposed that this software be used to support efforts to end world hunger and destitution, safeguard the environment, and preserve the earth's resources.

## **BACKGROUND**

The massive wave of nations making rapid changes to their usage of artificial intelligence and other cutting-edge technology has reached also the Gulf Region. The United Arab Emirates, Saudi Arabia, and Qatar have each demonstrated a great commitment to developing and putting into practise cutting-edge technology, such as IT and digitisation, to improve the calibre and efficacy of healthcare system and arm their population with the education and training they'll need to compete in the global economy of the future. Since the instability of oil prices has prompted economies to seek new sources of income and development, it is projected that Middle Eastern nations would be among the key participants in this industry by 2030. Since the MENA area has so many undiscovered markets and industries, it is projected that future investments in AI will contribute around 15% of their total GDP. It's reasonable to assume that, in light of this explosive expansion, governments will give serious thought to taking a more proactive stance towards using these technologies in order to construct a viable model for environmental sustainability. An intellectual monitoring system could aid in the prevention of fish stocks and pollutants, the application of much more efficient aquaponics methodologies, the development of sea farmers, and the better exploitation and protection of freshwater supplies, every one of which is significant for the numerous Middle Eastern nations that are dedicated to preserving the aquacultural diversification of their aquatic environment.

## **LITERATURE REVIEW**

As the effects of climate change become more apparent in many countries, companies throughout the globe are realising the need for environmental sustainability in their operations. The environmental, economic, and social dimensions are often cited as constituting sustainability's trifold emphasis on future generations' well-being. While it is true that thriving economies and environmental degradation are incompatible, the pursuit of environmental sustainability also has dangers that might influence corporate operations and prospects in today's cutthroat marketplace (Patel, 2021).<sup>2</sup> All tiers of decision-making, from the global to the national to the individual consumer, may benefit from this concept. Within the next five years, the World Meteorological Organization predicts there is an almost 50/50 chance that the average temperature of the Earth would suddenly climb beyond 1.5 °C from its pre-industrial values

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<sup>2</sup>A thorough analysis of the research on how machine intelligence may affect environmental November 21, 2022. <https://doi.org/10.1016/j.jclepro.2022.134120> in How might ai - powered effect sustainable growth: A detailed literature review



(Alex Knapp, 2022).<sup>3</sup> To address this issue, the UN Framework Convention on Climate Change (UNFCCC) mandates minimum requirements for holding a conference known as the Conference of the Parties (COP), including an agenda item for achieving carbon neutrality. The United Kingdom has pledged to become the first country in the world to adopt the International Standard for Event Sustainability Management Systems (ISO20121) and the first COP to reach PAS 2060 (Internationally accepted specification for carbon neutrality). The COP26 Sustainability Report details the steps we took to ensure a carbon-neutral summit, eliminate unnecessary emissions, and draw conclusions for future conferences (Dwivedi et al., 2022)<sup>4</sup>. As a result, governments are demonstrating their leadership and ambition in the field of sustainable event management. It would be assumed that scientists would back the efforts of policymakers.

By 2030, the global economy might be worth as much as \$15.7 trillion thanks to the contributions of artificial intelligence. Artificial intelligence (AI) may be defined as a collection of several tools and techniques, including both analytical and iconic ones. Artificial intelligence (AI) seeks to express human reflective functions or demonstrate dimensions of human intelligence by carrying out several tasks/decision-making. These tasks and decisions primarily measure analytical, analytical-intuitive, and empathetic intelligence. There are still numerous obstacles in many different areas for AI to overcome. Examples include the detection of malware, the development of large-scale entrepreneurship projects, and the disclosure of crash hotspots and city planning. Other examples include the relationship between the continuous environment states and optimal control decisions techniques for predicting crashes. However, AI's reach is limited to a narrow scope of processes and environments. Cryptocurrencies, for instance, demand as much power as Finland does to function. Because of the importance of resolving the socioeconomic behavioural difficulties faced by economies, we must investigate the effects of AI on sustainability.

## AIM AND OBJECTIVES

The present research paper unfolds the following aims and objectives:-

1. To analyse the role of AI in the environmental sector.
2. To study the future scope of AI in protecting environmental sustainability

## METHODOLOGY

The researcher, who has limited themselves to doctrinal research methodology for this study, has consulted a wide variety of sources, such as relevant statutes, treaties, and judicial decisions. Some examples of primary sources are scholarly journals, books by well-known authors, national and international research papers, magazines, newspapers, websites, and other secondary sources.

## RESULT AND DISCUSSION

In their pursuit of human innovation's limits, companies like Microsoft, Google, and Tesla have invested

<sup>3</sup>Ibid.

<sup>4</sup>Ibid.,



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much in creating "Earth Friendly" artificial intelligence systems. Which use the help of Google's Machine learning AI, the business was able to boost the efficiency of its data centres and cut greenhouse gas emissions by 35 per cent. As computer systems alone consume 3% of the world's energy demand each year, the development of such Information systems not only increases energy conservation but also aids in establishing microgrids, integrating clean energy sources, and information provided access to remote communities. Distributed generation mounted in cities can use algorithms and machine learning to control and manage portions of the neighbouring power network to deliver precisely the electricity that's required or recommended by its dependents, in opposition to conventional power systems, which may prove grossly inefficient due to disorderly distributed generators.

In advance of the introduction of AI-driven automated vehicles into the auto industries, strategies including optimisation, eco-driving methods, and bicycle services are going to lower the overall number of automobiles on the highway and simplify the environmental footprint. When taken as a whole, smart cities and the buildings inside them have the potential to make better use of energy via the deployment of embedded sensors and the use of smarter, more efficient building and road materials. Material scientists and architects have taken cues from nature to create novel construction materials created from renewable biomass, such as solar and wind-powered air conditioners, asphalt that traps co2 from the atmosphere, and bacteria-based bricks. Solar panels may now be found both within and outside of cities, allowing them to provide a wider metropolitan area with energy. These measures form the foundation for a more cost-effective and ecologically responsible infrastructure.

One method for addressing the issue of regulating pollution levels and environmental services is the employment of smart learning machines and communications protocols that can spot leaks, potential problems, and deviations from industry norms and legal requirements. IoT technology is integrated into many industrial projects, including those for refrigerators, computers, and now even retail businesses. Because of the lack of techniques for transforming gathered useful information into sure that service, biologists are still struggling to develop trustworthy methods for forecasting environmental issues and other significant ecological obstacles or constraints. However, in 2017, Microsoft unveiled AI for Earth, a 50 billion dollars effort designed to address issues relating to climate change, agriculture, water, and biodiversity.

iNaturalist and eBirds are two more AI-enhanced Earth apps that gather information from their extensive network of specialists on the species seen. This data may be used to monitor species populations, ecological niches, and migratory routes. These programmes have also helped much in spotting and safeguarding aquatic environments, both on land and at sea. Using fuzzy neural networks, several organisations (including government agencies, nonprofits, and new businesses) are developing innovative approaches to farming. Technology exists to give in conjunction with utilizing mechanical and disease-causing micro-powered programs to allow a method of protecting the environment and crop production, advanced analytical models are used to track and forecast several aspects and factors which might have an influence on future yields. A fully convolutional tool named Plantix has been developed by PEAT, a Frankfurt agriculture tech company. can detect probable flaws and nutritional deficits in soil. Algorithms in the programme draw connections between variations in the leaf pattern and factors



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including soil deficiencies, pests, and illnesses.

Companies like AWhere and FarmShots in the United States employ machine learning algorithms and satellite imagery to do things like forecast the weather, assess the viability of crops and rank farms according to the prevalence of disease and pests. Water management systems that use artificial intelligence to autonomously irrigate crops based on data received from soil sensors are also gaining traction.

## **FUTURE SCOPE**

Researchers and scientists working with Artificial Intelligence systems have a responsibility to guarantee that the data produced is open, equitable, and reliable. Increased research and development funding from multinational corporations, educational institutions, and government sectors is required to meet the growing need for automated solutions and more precise data-study on environmental concerns and difficulties.

And more engineers and developers are needed for this technology. Environmental science and management have benefited greatly from the rise of artificial intelligence, which is becoming an increasingly common aspect of our everyday lifetaken. Because people are uniquely vulnerable due to their actions, characteristics, and online pursuits and attitudes toward technology, human aspects are an integral part of cybersecurity. Patients with mental illness may be more at risk for cybercrime, yet they may be unaware of the risks, harmful online activities, or ways to protect themselves. The possible effects of cybercrime on mental health, as well as the heightened danger to patients since the epidemic began, especially from online mental health providers, should be of concern to psychiatrists. Cybercrime may have lasting effects on victims' mental health and bank accounts, therefore it's crucial to raise patients' knowledge of the issue. First and foremost, mental health professionals should refer patients to reliable resources that teach them about cyber safety.

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