Analytical Study of Artificial Intelligence (AI) in Achieving Sustainable Development Goal in India

Arvind Sakwar
Assistant Professor, Economics
Government College, Pithampur, Dhar, MP
arvindsakwar24@gmail.com

Abstract*: The growth of Artificial Intelligence (AI) has affected human life entirely. Today a big challenge before the entire world is how to save water, save forest, save earth, save glacier, and save energy. So that Sustainable development is the biggest threat. Artificial Intelligence can help in achieving this goal. The Secondary data is used. In this paper the most popular article and research paper on Artificial Intelligence associates in achieving SDGs are analysed. Descriptive statistics of the relevant topic discussing, finding challenges and new methods of Artificial Intelligence are also analysed. The purpose of this paper is also to answer these issues by examining the effects of AI-SDGs relationship and to look into the conceptual framework presented here which aids in the investigation as to which SDGs AI may be useful in attaining and which goals may be compromised as a result of increased AI uses in Agriculture sector, Health sector manufacturing sector, Environmental Sector along with Sustainable Development. AI will assist us in building more efficiently, using resources more sustainably, and effectively reducing and managing waste, thereby achieving some of the UN's Sustainable Development Goals (SDGs). While AI as a technology shows great promise, it is critical that the ethical and human aspects are addressed transparently to ensure its success in achieving the Sustainable Development Goals (SDGs).*

Keywords: Artificial Intelligence, Internet, SDGs, Sustainable Development

I. INTRODUCTION

Artificial Intelligence is the man-made machine digital tools(Computer) that enables machine to assist human intelligence and performing assigned task with in short while and without harm, it reduces hazard and threat of human life. it develops and studies methods and software which enable machines to perceive the environment and take actions that maximize their chances of achieving defined goals, with the aim of performing tasks typically associated with human intelligence. Such machines may be called AIs. Artificial Intelligence is affecting all the fields of human life. The Socio, Economical, Financial, Science, Medical Science, Research, Trading, Geography almost all the aspects of human behaviour are influenced with AI. It helps inachieving the Sustainable development goals in many ways, that make the environment pollution free. The AI helps in data driven, decision making, analysing the fact, and also helping in making conclusion that reduces man efforts and time.Sustainable development has become a pressing global concern as we strive to meet the needs of the present without compromising the ability of future generations to meet their own needs. With the world facing complex challenges such as climate change, resource scarcity, and environmental degradation, it is crucial to harness the power of technology to drive sustainable solutions. Artificial intelligence (AI) has emerged as a transformative force with the potential to revolutionize sustainable development efforts across various sectors.

Sustainable development encompasses the pursuit of economic growth, social progress, and environmental protection, aiming to create a harmonious balance between human activities and the natural world. It requires innovative approaches and tools to tackle complex problems, and this is where AI can play a pivotal role. Artificial intelligence refers to the development of computer systems capable of performing tasks that typically require human intelligence, such as problem-solving, learning, and decision-making. By analysing vast amounts of data and identifying patterns, AI can provide valuable insights and support evidence-based decision-making for sustainable development initiatives.

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II. REVIEW LITERATURE

www.blockchain-council.org (LinkedIn): - It stated that The United Nations has set out 17 Sustainable Development Goals (SDGs) that are essential to achieving a sustainable future. These goals cover a wide range of issues, including poverty, hunger, health, education, climate change, and inequality. The United Nations estimates that AI could help to achieve 79% of the SDGs.

AI has the potential to make a significant contribution to achieving the SDGs. For example, AI can be used to analyse the environment degradation causes and make the predictions to save the environment with the help of AI based Technology. AI can be used to develop new technologies and products that can help to address sustainable development challenges. For example, AI can be used to develop new ways to generate and conserve energy, to improve agricultural productivity, and to reduce pollution. Make our systems more efficient and sustainable. AI can be used to automate tasks, optimize processes, and reduce waste. This can help to make our systems more efficient and sustainable.

Right for Education- African: -This article states that AI is making a profound impact is in environmental conservation. Global challenges, including climate change, deforestation, and biodiversity loss must be addressed immediately. Huge amounts of data gathered from sensors, satellites, and other sources can be analysed by AI technologies like machine learning algorithms to provide insightful information on these environmental problems. For instance, AI-powered systems can identify trends of deforestation in real-time, allowing authorities to act quickly and stop future harm to our forests. Similarly, AI systems can examine climate data to forecast severe weather, assisting communities in being ready and lessening the effects of natural disasters.

Sustainability for all: -According to a study published in nature, **AI could help achieve 79 % of the** Sustainable Development GoalsSDGsthis technology could become a key tool for facilitating a Circular economy and building smart cities that use their resources efficiently.AI can also help **enhance the efficiency of Reuse, Recycle and Renewable energies**. Companies are already using this technology to find out the daily availability of energy-generating facilities (wind turbines, hydraulic plants, biomass plants etc.), in order to predict the energy production required to be produced in the coming days and, ultimately, to prevent and diagnose breakdowns.Beyond the energy sector, there are many industries and businesses that can improve thanks to AI, all while helping the planet. **In agriculture, for example, it is used to make irrigation and fertilisation more efficient.** Thanks to humidity, temperature and fertilisation sensors, Artificial Intelligence is able to **predict crops' needs**. The most innovative solutions within agricultural sustainability are drones that help farmers with surveillance, in addition to hyperspectral image analysis for comprehensive pest control. These study shows the AI assists in many ways to get sustainable development goals.

Welcome to the United Nation: -Professor Daron Acemoglu of the Department of Economics at the Massachusetts Institute of Technology, who shared his take.He states in his article "This is one of the promises that boosters of AI make. I am not as optimistic on this. I see a path of how AI can be used for helping workers, as I explained in response to the previous two questions. But when it comes to central issues of sustainable development, such as combating extreme poverty in the developing world, fighting climate change, delivering better healthcare to billions of people around the world, and sustaining peace, the most important decisions are human decisions. AI could be a small help, but it would be misleading and counterproductive to think that technologies can by themselves solve these human problems."

III. RESEARCH METHODOLOGY

Descriptive, qualitative methods and secondary data are used to examine the current status of Artificial Intelligence and its impact on Sustainable development Goals. In this study, following data bases have been explored such as Scopus, science direct, research gate, google scholar, Wiley, etc. to identify appropriate literature.

Objectives:

To analysed the significant role of Artificial Intelligence in achieving Sustainable Development Goals in India.

IV. FINDING

1.Water resource management: -In India's water management, AI takes on a multifaceted role, employing AI-powered sensors and data analytics to monitor water supply systems in real-time. This monitoring is particularly vital in a country with inefficient infrastructure and a significant issue with non-revenue water. AI goes a step further with predictive models that consider factors like climate patterns, population growth, and agricultural demands to provide precise forecasts of water demand. This proactive approach ensures that water supply aligns accurately with the population's needs, reducing the risk of overuse and wastage. Additionally, AI plays a crucial part in water treatment and purification, significantly enhancing water quality and safety. Given India's ongoing challenges with water contamination, this facet of AI takes on added importance in safeguarding public health. Summing it up, AI's role in India's water management is dynamic and adaptive, designed to comprehensively address the nation's unique water challenges. This holistic approach promises to reduce water wastage and bolster overall water sustainability, contributing to a more water-secure future for India.

1. Leak Management 2. Flow monitoring 3. Over use and Contamination 4 Devise Strategies Sensors, smart meters they can be used for the better management of water.

Hydraulic models are used for several purposes:

explanation and prediction tools, for what happened in one location at one time in the water distribution network without any instrumental and sensor data

forecasting tools, for the "what if" scenario for planning and operation of the water distribution network

prescriptive tools, for decision support platforms, which are becoming popular by advising on the best options available to solve a particular problem or constraint and, in some cases, automate the decision.

AI technologies, such as artificial neural networks (ANNs), deep learning (DL), support vector machine (SVM), genetic algorithm (GA), and fuzzy logic (FL), can perform independent analysis, evaluation, and prediction according to the input data, optimize the system variables, or send out warning signals to analyse parameters and adjust the output accordingly; this greatly reduces human errors and improves productivity.

2. **Energy consumption** monitoring Continuous monitoring of energy consumption is key to effective energy management in data centres. AI provides real-time insights into power consumption patterns, enabling operators to identify areas where energy can be conserved.

3. **Renewable energy sources**, such as solar and wind power, are playing an increasingly vital role in addressing the global challenges of climate change and energy sustainability. As the world strives to transition to a greener future, the integration of artificial intelligence (AI) in renewable energy systems has emerged as a powerful tool to optimize efficiency, improve forecasting, and enhance the overall management of sustainable power generation.

4. **Waste management Kochi**: Cochin Smart Mission Limited (CSML) is Planning to introduce an artificial Intelligence (AI) based solid waste management system in the city corporation area to manage waste more effectively. Within a period of four months, CSML will roll out a "smart System" for monitoring controlling, and a disposal of solid waste in corporation ABD areas From Rajendra Maidan to Marine Drive initially and extend the project to other wards later. CSML's integrated command control and communication centre (IC4) platform to be used for smart garbage management will have standard operating procedures, alerts, notifications, management information system (MIS), dashboards etc.

Internet of things (IoT)-based weighing sensors would be used at material collector centres and resource recovery facilities to measure incoming waste and outgoing materials. The proposed "Smart Bin"will have the capacity to send the SMS alerts on its usage pattern and capacity filling to IC4, in real time. Hence, Cochin is using the AI in making the city waste free.A smart bin is a waste collection bin that is equipped with sensors and other technologies that enable it to collect data on the amount and types of waste being deposited in the bin. Smart bins may also be equipped with GPS tracking devices and data analytics software, which can be used to optimize the routes taken by waste collection trucks and to identify trends in waste generation.

5. **Forest Management and AI**: - In the forest conservation context, AI is helping humans by making identifications of animals, their movements, and unexpected events easy and prompting the authorities to take action. This reporting happens in near real-time and provides multi-spectral reconnaissance and surveillance of the forest.AI-enabled aerial drones, infra-red cameras, real-time monitoring devices, RFID tags, and GPS geo-location for surveillance are some technologies used for wildlife conservation worldwide. In India and globally, AI-loaded robotics and drones are being tested in forests to understand various use cases for protecting wildlife and the forest-based resources. Micro Chip can use in forest conservation it alerts the user by sending messages for any ill activities happening in forest.

V. CONCLUSION

On the basis of analysis, it has been found that Integrating AI technologies into sustainable development efforts holds immense potential to address the multifaceted challenges we face. Here are some key ways in which AI can contribute to sustainable development:

- Optimizing Efficiency with AI
- Enhancing Forecasting Accuracy
- Proactive Maintenance and Condition Monitoring
- AI-enabled Smart Grids
- Innovation in Energy Storage System
- Environmental Monitoring and Conservation
- Energy Efficiency and Climate Change Mitigation
- Sustainable Agriculture and Food Security
- Smart Cities and Urban Planning
- Healthcare and Well-being

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