

# Chapter 17

## AI Applications for Sustainable Development Goals

**Siriyama Kanthi Herath**

 <https://orcid.org/0000-0002-6443-9739>

*Clark Atlanta University, USA*

**Dilka Savindi Sodige**

 <https://orcid.org/0009-0006-3203-8160>

*Uva Wellassa University, Sri Lanka*

**Duleesha Pahasaranie Kalupahanage**

 <https://orcid.org/0009-0000-3902-1093>

*Sri Lanka Institute of Information Technology, Sri Lanka*

### ABSTRACT

*The emergence of artificial intelligence and the pursuit of sustainable development are two major forces shaping our world, The need to reorient the existing socioeconomic systems towards sustainability has never been more prescient. The United Nation identified ‘Sustainable Development Goals’, more conveniently known as SDGs, in 2015 as a guideline to fashion a new world that is quite equitable, prosperous and environmentally sustainable by the year 2030. AI can be applied to energy systems in enhancing the use of energy resources, in risk assessment and mitigation of natural occurrences, and in creating new clean technologies. Artificial intelligence is influencing many sectors of society and reshaping numerous industries. This chapter will explore specific examples of how AI is being used to address critical challenges related to the SDGs, discuss the potential benefits and limitations, and examine ethical considerations for responsible AI development and deployment in the context of sustainable development.*

### 1. INTRODUCTION

The emergence of artificial intelligence and the pursuit of sustainable development are two major forces shaping our world (Liu et al., 2021). Earth is in a rather dangerous state and has never been so threatened before. Deforestation, pollution and decay of the environment, conflicts and unrest as well as increasing disparities in wealth are on the rise (UN, 2015). The need to reorient the existing socioeconomic

DOI: 10.4018/979-8-3693-6392-8.ch017

systems towards sustainability has never been more prescient. The United Nation identified ‘Sustainable Development Goals’, more conveniently known as SDGs, in 2015 as a guideline to fashion a new world that is quite equitable, prosperous and environmentally sustainable by the year 2030 (UN, 2015). It is significant that these seventeen interrelated goals cover fundamental areas of human concern including poverty, clean water, climate, and cities (UN, 2015). AI can become a tool to solve problems such as climate change, poverty, and inequality and achieving the UN's Sustainable Development Goals (Liu et al., 2021). For example, AI can be applied to energy systems in enhancing the use of energy resources, in risk assessment and mitigation of natural occurrences, and in creating new clean technologies.

Amidst these challenges, technology and more specifically Artificial Intelligence (AI) has proved to be not only a driver of change but the enabler of change to meet the SDGs (Herath & Herath, 2024a). AI can be described as a vast area which consists of the technologies like machine learning, natural language processing, and computer vision that make machines capable of learning, reasoning, and making effective decision based on available data Russell & Norvig (2015). Therefore, this promising technology has many uses that can support different areas of the SDGs agenda.

## **2. THE EMERGENCE OF THE ARTIFICIAL INTELLIGENCE (AI) AS THE DISRUPTIVE TECH INNOVATION**

Artificial intelligence is influencing many sectors of society and reshaping numerous industries. For example, AI is expected to impact equality and inclusion (Bolukbasi et al., 2016) and global productivity rate (Acemoglu & Restrepo, 2016). Recent research reveals that AI supports the achievement of SDGs (Herath and Herath, 2024). Vinuesa et al., (2020) explore the impact of AI on various SDG goals and provide a breakdown of positive and negative potential effects across different areas.

In forecasting and predicting the course of the development of AI, Steiner (2018) stresses the positive impact of AI in demand for and utilization of resources along with risk management and mitigation in natural disasters, and formation of social innovations for SDGs. Herath and Herath (2024) discuss applied aspects regarding more detailed case studies including precision agriculture, smart grid and applying intelligent technique for better learning, all of which are closely associated with different SDGs. Therefore, the current chapter expands on this existing literature by offering a vast synthesis of the way AI can be utilized for reaching the SDGs. How AI can be used for better analysis and decision making, for support of emerging social business initiatives, as well as for ensuring fair and sustainable economic development which all together can help make the world better place will also be discussed comprehensively.

The most persuasive benefit of AI is that of the computational ability of tasks that involve intricate handling of data; this entails detailed data analysis. It assists in identifying probable difficulties/ opportunity mechanisms and management strategies that may enhance the various requirements/ needs of the diverse groups. Further, the application of AI solutions within the domain of social entrepreneurship will be helpful in the creation of work and equal opportunities for people in need to establish values for underprivileged groups of people, talking about social entrepreneurship and AI.

The focus of this chapter is to explore how AI can contribute to achieving the UN Sustainable Development Goals (SDGs). The main goal of this research is to evaluate the present state of AI concerning the mentioned objectives and affiliations with each SDG. We shall then examine specific solutions regarding artificial intelligence and showcase casework that has proven to be solving such core objectives. Moreover,

18 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/ai-applications-for-sustainable-development-goals/366895](http://www.igi-global.com/chapter/ai-applications-for-sustainable-development-goals/366895)

## Related Content

---

### Consumer Preferences for Plant-Based Herbal Tea: Post-Pandemic Study on Aecca Tea Using VALS Framework Through Psychographic Segmentation

D. M. Arvind Mallik (2024). *AI Impacts in Digital Consumer Behavior* (pp. 291-321).

[www.irma-international.org/chapter/consumer-preferences-for-plant-based-herbal-tea/341050](http://www.irma-international.org/chapter/consumer-preferences-for-plant-based-herbal-tea/341050)

### Healthcare Chatbots Using Artificial Intelligence and Sentiment Analysis

Mily Lal, S. Neduncheliyan, Arti Kaushik and Avinash Goswami (2025). *Human-Centric AI in Digital Transformation and Entrepreneurship* (pp. 279-296).

[www.irma-international.org/chapter/healthcare-chatbots-using-artificial-intelligence-and-sentiment-analysis/373222](http://www.irma-international.org/chapter/healthcare-chatbots-using-artificial-intelligence-and-sentiment-analysis/373222)

### A WebGIS-Based System for Urban Stormwater Risk Analysis Using a Cloud Matter-Element Model

Junfei Chen and Cong Yu (2020). *International Journal of Intelligent Information Technologies* (pp. 80-99).

[www.irma-international.org/article/a-webgis-based-system-for-urban-stormwater-risk-analysis-using-a-cloud-matter-element-model/257214](http://www.irma-international.org/article/a-webgis-based-system-for-urban-stormwater-risk-analysis-using-a-cloud-matter-element-model/257214)

### An Artificial Bee Colony (ABC) Algorithm for Efficient Partitioning of Social Networks

Amal M. Abu Naser and Sawsan Alshattnawi (2014). *International Journal of Intelligent Information Technologies* (pp. 24-39).

[www.irma-international.org/article/an-artificial-bee-colony-abc-algorithm-for-efficient-partitioning-of-social-networks/123942](http://www.irma-international.org/article/an-artificial-bee-colony-abc-algorithm-for-efficient-partitioning-of-social-networks/123942)

### Legitimizing Disruptive Technology: The Case of Blockchain in the Human Resources Sector

Raluca Bunduchi, Aizhan Tursunbayeva and Claudia Pagliari (2021). *Transforming Human Resource Functions With Automation* (pp. 1-19).

[www.irma-international.org/chapter/legitimizing-disruptive-technology/269759](http://www.irma-international.org/chapter/legitimizing-disruptive-technology/269759)