

# ● ACCOMPLISHING BASIC NEEDS WITH SUSTAINABLE DEVELOPMENT GOALS VIA ARTIFICIAL INTELLIGENCE



**Prof. Priti Saxena\***

\*Director, Centre of Post Graduate Legal Studies, Babasaheb Bhimrao Ambedkar University, Lucknow.

**Prashant Tripathi\*\***

\*\*Research Scholar, Babasaheb Bhimrao Ambedkar University, Lucknow.

---

## Abstract

*Since human civilisation is a result of intellect, increasing human intelligence through artificial intelligence (hence referred to as AI) may benefit society. AI that excels in one or more disciplines, is manifestly beneficial to the people. AI is the most remarkable invention that benefits humanity. One aspect of AI is how pervasively it appears in our daily life in all of its products and forms. On the other hand, the idea of basic needs and the Sustainable Development Goals (hereafter referred to as SDGs) have emerged as the main priorities of contemporary democracy. In today's technologically advanced society, meeting basic needs and reaching the SDGs are only achievable through technical advancements; otherwise, these objectives would only be theoretical. This paper aims to build a relationship between basic needs and SDGs and how artificial intelligence can be helpful in the accomplishment of basic needs with SDGs. The objective of the paper is to use artificial intelligence to fulfil human needs and attempt to make the debate of AI a little more popular and a bit more mainstream by touching on human needs because AI has the potential to be harnessed to benefit humanity.*

---

## Key words

*Scientific Technology, Artificial Intelligence, Basic needs, SDGs, technical advancements.*

---

## 1. Introduction

Technologies are anticipated to become more powerful as a societal and economic lever for global transformation. Since the Industrial Revolution 4.0 has begun, new-age technology is taking the form of AI. AI has currently reached a sufficient level of maturity both as an umbrella scientific discipline and as a technology, having spread from laboratories to the entire society<sup>1</sup>. AI is rapidly expanding into new domains such as health, poverty, infrastructure, commerce, agriculture, education, disaster management, and others, as well as into the government policies that regulate each of these areas. Machine intelligence and robotics with deep learning capabilities have had significant disruptive and enabling effects on almost all the areas of the society. It is generally acknowledged that AI has shown a great deal of promise and appears to have demonstrated that it has the power to improve the world. Despite overwhelming enthusiasm, many individuals are still dubious about both the usefulness of the research appearing to support AI and the myriad potential applications that could have adverse

---

<sup>1</sup>Margaret A. Goralski and Tay Keong Tan, "Artificial Intelligence and Sustainable Developments" *IJME*, Vol. 18, p. 100330, 2020.

effects. As a result, AI ethics has grown into a thriving field of research, but it is still in its fancy, and there is not much agreement on what it involves or how it should be pursued, as with other new areas<sup>2</sup>.

Scientific technologies and Basic Needs are two important components which have great impact and significance in human life. Basic Needs are generally described in terms of minimal conditions that a person must meet in order to satisfy his or her basic needs, such as food, clothing, and shelter, and to lead a respectable life. The changing socio-economic condition of nations has extended the horizons of basic needs that encompasses a number of other psychological and social needs i.e. participation in governance, self-reliance, autonomy and self-expression. The relationship between technology and basic needs must be balanced and all the emerging challenges must be addressed with creative solutions, new laws and policies. The basic needs are also part of SDGs because SDGs includes all the essential requirements which can be cited with reference to basic needs. Among the 17 goals, few goals are true depiction of basic needs. It means that if a nation is achieving these goals with effective policies, it automatically fulfilling the basic needs of its people. SDGs provide a good framework for examining and categorizing the possible benefits and downsides of AI as technology becomes more common in modern cultures<sup>3</sup>. It is important to emphasise the list of basic needs included in the SDGs while talking about the proposed nexus between AI and SDGs with basic needs. The following SDGs have been selected by the authors from among the SDGs' 17 goals because they correspond to basic needs -

### **Basic Needs under Sustainable Developments Goals-**

- No Poverty (SDGs-1)
- Zero Hunger (SDGs-2)
- Good Health (SDGs-3)
- Quality Education (SDGs-4)
- Clean Water and Sanitation (SDGs-6)
- Decent Work and Economic Growth (SDGs-8)
- Industrial Innovation and Infrastructure (SDGs-9)

The list is not exhaustive one. Other goals may also qualify to be included as basic needs but in compliance of definition of ILO and other international organizations, the above mentioned goals can be considered as basic needs. In this context, authors will analyse whether the application of sophisticated technologies, such as artificial intelligence (AI), will help us to achieve the Sustainable Development Goals (SDGs) and basic needs, or will lead us further down the path of increased economic and social uncertainty and upheaval. This paper offers a thorough analysis of the function and impact of AI and associated technologies in accomplishing SDGs and basic needs.

---

<sup>2</sup>Lideniro Alegre, "Potential Applications for Artificial Intelligence in the Petroleum Industry" JPT, Vol. 43, p. 1306, 1001, <https://doi.org/10.2118/21138-PA>.

<sup>3</sup>Nina Jatana and Alsitair Currie, "Population and the Sustainable Development Goals", Population Matters available at : [https://populationmatters.org/sdgs?gclid=Cj0KCQjwraqHBhDsARIsAKuGZeH57nTpQ2Eigr1Koj9foI8HEfcYC1vcLZIKbtvkhBbODb8vFmiSrlaAnesEALw\\_wcB](https://populationmatters.org/sdgs?gclid=Cj0KCQjwraqHBhDsARIsAKuGZeH57nTpQ2Eigr1Koj9foI8HEfcYC1vcLZIKbtvkhBbODb8vFmiSrlaAnesEALw_wcB), (last visited on March 22, 2022).



## 2. Artificial Intelligence: A Concern

Artificial Intelligence is a field of computer science which emphasizes on the creation of machines that could work and react like humans. It aims at achieving efficiency and accuracy in human decision-making by replicating human intelligence. It could be said that it is intelligence demonstrated by machines, in contrast to the natural intelligence displayed by humans and other animals<sup>4</sup>. Artificial Intelligence could be classified into two different kinds, namely, analytical and human-inspired Artificial Intelligence. Analytical AI has characteristics similar to that of cognitive intelligence; which refers to the natural intelligence possessed by humans and animals involving the brain to perform an intelligent activity<sup>5</sup>. Analytical AI generates such logical reasoning of the functioning of the world using past experiences based on which future decisions are taken. Human AI comprises of those elements consisting of both cognitive capacities as well as emotional intelligence in addition to such other competencies needed in decision-making and interaction with others<sup>6</sup>. The scope and nature of AI is unlimited and it has marked an important place in the field of science, social science researches as well as other significant fields. Due to its goal of attaining automated expertise and simplifying human decision-making process, the field of AI has attracted major financial support and investments from both within and outside the field of computer science. It has also propounding impact on issues of basic needs and SDGs.

## 3. Understanding of Basic Needs

The notion of Basic Needs is not new in present scenario, but it goes back to 1940s. The reference of basic needs in writings was firstly found in the psychological literature of 1940s. The idea of basic needs got more specific shape and explanation in the article written by Albert Maslow in the journal of Psychological Review, 1943<sup>7</sup>. In this article, Maslow introduced the concept of hierarchy of needs. Maslow believes that under the domain of human psychology, everyone has inborn desire to be self-actualized and for achieving such goals basic needs must be fulfilled. His hierarchy of needs is shaped in pyramid style which goes downwards to upwards and includes psychological needs, security and safety needs, social needs, esteem needs and self-actualization needs<sup>8</sup>. In the hierarchy of needs, the psychological needs is considered as basic needs which includes food, water, clothing, shelter and breathing<sup>9</sup>. Further in 1950s, the concept of minimum needs were proposed by Pitamber Pant of Indian Planning Commission for the fulfillment of basic needs in Indian perspective.

---

<sup>4</sup>Michael Negnevitsky, Artificial Intelligence, A Guide to Intelligent Systems, 20 (Pearson Education Limited, England, 2008).

<sup>5</sup>Saswat Sarangi and Pankaj Verma, Artificial Intelligence: Evolution Ethics and Public Policy 15 (Routledge India, New Delhi, 2019).

<sup>6</sup>Ibid.

<sup>7</sup>A. H. Maslow, A Theory of Motivation, available at: <https://psychclassics.yorku.ca/Maslow/motivation.htm> (last visited on March 24, 2022).

<sup>8</sup>Kendra Cherry, "Maslow's Hierarchy of Needs" Verywell Mind, available at: <https://www.verywellmind.com/what-is-maslows-hierarchy-of-needs-4136760#:~:text=Needs%20at%20the%20bottom%20of,need%20for%20safety%20and%20security> (last visited on March 24, 2022).

<sup>9</sup>Ibid.

However, Basic needs got the international institutional recognition by International Labor Office (ILO) in the year of 1976 which put forward the basic needs concept formally at the Tripartite World Conference on Employment, Income Distribution and Social Progress. The basic needs concept is also set out in the ILO document *Employment, Growth and Basic Needs: A One World Problem* published in 1977<sup>10</sup>. As per ILO, basic needs means meeting the minimum requirements of food, shelter, clothing<sup>11</sup>, and also access to essential services such as safe drinking water, sanitation, public transport, health and education i.e. items of social consumption<sup>12</sup>. Several jurists have propounded its own idea of basic needs depending upon their understanding of socio-economic conditions of respective countries. For example, at primitive stage of human development, the food, clothing and shelter were on the focal point but as science and technology advanced, the right to the internet has emerged as a crucial right, indicating a shift in basic needs for human being in the present scenario. From human rights perspective, various International and regional human rights conventions have acknowledged, the right to rip off gains from scientific advancement and its utilization for the welfare of mankind<sup>13</sup>. A few basic needs are acknowledged in human rights instruments as being part of those rights that are essential for human survival. Therefore, in order to serve humanity and meet its basic needs, scientific innovations like AI must be utilised.

#### 4. Sustainable Development Goals

United Nations established 17 Sustainable Development Goals (SDGs) in 2015, which must be met by 2030. These includes no poverty, zero hunger, good health, clean water and sanitation, industrial innovation and infrastructure, smart cities, decent work and economic growth and many more. It means that SDGs broadly involves the environmental, social, and economic & financial objectives. Sustainable development is described as a way of development that satisfies current wants and aspirations without jeopardizing future generations' ability to fulfil their own needs and desires<sup>14</sup>. The aim of the SDGs is basically guiding the world for looking forward to a more safe, sound and effectively peaceful environment with more sustainable consumption and production patterns, while also enshrining a global commitment "to leave no-one behind": not in the delivery of services nor when it comes to engaging people in decision making<sup>15</sup>. Unlike the MDGs, which were aimed at poor nations, the SDGs are universal and apply to all

---

<sup>10</sup>Kenneth A. Reinert, "The Basic Needs Approach", George Mason University, 2021, available at: <https://reinert.gmu.edu/wp-content/uploads/2021/04/The-Basic-Needs-Approach.pdf> (last visited on March 16, 2022).

<sup>11</sup>Louis Emmerij, "The Basic Needs Development Strategy", World Economic and Social Survey, available at: [https://www.un.org/en/development/desa/policy/wess/wess\\_bg\\_papers/bp\\_wess2010\\_emmerij.pdf](https://www.un.org/en/development/desa/policy/wess/wess_bg_papers/bp_wess2010_emmerij.pdf) (last visited on March 26, 2022).

<sup>12</sup>Rimmer, Douglas. "'Basic Needs' and the Origins of the Development Ethos." 15 JDA 215(1981) available at: <http://www.jstor.org/stable/4190877> (last visited on March 26, 2022).

<sup>13</sup>Szal, Richard J. "Operationalising the Concept of Basic Needs." 19 (3)The Pakistan Development Review 237-46 (1980) available at: <http://www.jstor.org/stable/41258532> (last visited March 28, 2022).

<sup>14</sup>Jaffery D Sachs, "From millennium development goals to sustainable development goals" 379The Lancet 2206-221 (2012).

<sup>15</sup>United Nations, "Sustainable Development", Department of Economic and Social Affairs, available at: <https://sdgs.un.org/goals> (last visited on March 28, 2022).



Member States. They are also far more ambitious than the Millennium Development Goals, as they address not only the social, but also the economic, environmental, and political dimensions of sustainable development, with goals on inequalities reduction, no poverty, zero hunger, infrastructure, energy, peaceful societies, and other new areas<sup>16</sup>. Therefore, the SDGs are a bold promise that represent a valiant commitment to continue what we have started and deal with some of the most pressing problems in the world.

## 5. A Discussion on the linkage of AI with SDGs and Basic Needs

The relation of AI, SDGs and basic needs is very relevant topic of discussion and hotly debated subject in current world order. As per the relevant data in extant, AI has the potential to achieve its objectives across the SDGs and basic needs mostly through technical advancement. However, the development of AI may have a detrimental influence on SDGs and basic needs for that reason, it is necessary to analysis the impact of AI & associated technologies on SDGs and basic needs<sup>17</sup>. So far as SDGs are concerned, it is based on the three pillars namely social development, economical development, and environmental development. Sustainable-AI development is an inclusive framework. It is, nevertheless, distinct from previous frameworks in that it has the capacity to emphasize certain features of artificial intelligence and digitalization<sup>18</sup>. This shift in viewpoint provides particular insights that may be applied while debating the future of artificial intelligence. Another side, the dialogue on SDGs and basic needs have reached a very high degree of inclusiveness. It is applicable to all countries and areas of the world. It focuses on the fulfilment of basic desires of every individuals. It also adopts human rights approach towards basic needs and SDGs for effective implementation of policies and schemes at international as well as national level. By addressing basic needs within the framework of the SDGs, countries can work towards a more sustainable and equitable future, where no one is left behind and everyone has the opportunity to live a dignified life. The focus of the AI discourse tends to concentrate on the consequences of its applications for providing standard of life, good health and education facility and proper housing and sanitation facilities.

### 5.1. SDG 1- No Poverty

SDG 1 provides the goal to end the poverty in all its forms everywhere. Poverty amounts miseries to human life and everyone is abstained for getting the basic needs for the survival of their life. In the year of 2015 the most recent reports reveals that 10 percent of the world's population or 734 million people lived on less than \$1.90 a day<sup>19</sup>. Before COVID-19, baseline projections suggested that 6 per cent of the global population would still be living in extreme poverty in 2030, missing the target of ending poverty<sup>20</sup>. The

---

<sup>16</sup>The World Bank, millennium Development Goals, available at:<https://www5.worldbank.org/mdgs/> (last visited on March 28, 2022).

<sup>17</sup>Vinuesa, Ricardo et al., "The Role of Artificial Intelligence in Achieving the Sustainable Development Goals" 11NC1-3(2020).

<sup>18</sup>Henrik Skaug Sætra, "AI in Context and the Sustainable Development Goals: Factoring in the Unsustainability of the Sociotechnical System." 13Sustainability4 (2021).

<sup>19</sup>United Nations, "Goal 1- End the poverty in all its forms everywhere", Sustainable Developments Goals, available at:<https://www.un.org/sustainabledevelopment/poverty/> (last visited on April 05, 2022).

<sup>20</sup>Ibid.

pandemic's aftermath poses a threat to drive more than 70 million people into abject poverty.

This goal can be fulfilled by providing adequate standard of living, proper opportunity of employment and work, implementing schemes of social security and equal right of men and women in economic rights. Adequate standard of living includes the adequate health facility and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services which is part of basic needs and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control. Meeting basic needs such as food, water, shelter, and access to essential services is crucial in eradicating poverty and ensuring a decent standard of living for all.

Since the development of new-age technology, AI will provide real-time resource allocation through satellite mapping and data analysis of poverty. The strength and opportunity such as Emergence of new technologies in primary and industrial sector across developing countries, Predictive power of machine learning upon satellite and aerial images, Deep Learning with mobile device data as a strong domestic income predictor, Combining digital transaction and property data in regression techniques, AI and digital technologies support government decision-making against economic breach<sup>21</sup>. Figuring out the global diffusion of AI advancements to guarantee equitable development. Blockchain technology for transparent and corrupt-free government operations, digital labour and outsourcing for employment, and passive data gathering combined with AI and data analysis for accurate estimates of poverty. Perhaps the most ambitious objective of all is to eradicate all types of poverty, everywhere<sup>22</sup>. AI can also assist in identifying people and communities who are poor by examining data and patterns. It can help with the targeting of social protection programmes, financial aid, and attempts to reduce poverty, ensuring that resources are directed towards those who most need them. AI can improve financial inclusion by giving access to underserved groups into banking and financial services.

## 5.2. SDG 2-Zero Hunger

SDG 2 explains to end the problem of hunger by achieving sustainable food security, nutrition and agriculture. SDG 2 focuses on three basic needs i.e. food security, nutrition and agriculture. The problems of hunger, food insecurity and malnutrition is prevailing across the globe and no country is free from these problems. Recent data shows that nearly 690 million people are hungry, or 8.9 percent of the world population - up by 10 million people in one year and by nearly 60 million in five years. The world is not on track to achieve Zero Hunger by 2030<sup>23</sup>. If recent trends continue, the number of people affected by hunger would surpass 840 million by 2030<sup>24</sup>. The COVID-19 pandemic could now double that number, putting an additional 130 million people at risk of suffering

---

<sup>21</sup>D. Le Blanc. "Towards integration at last? The sustainable development goals as a network of targets" 23SD176-187 (2015).

<sup>22</sup>M. Nilsson, D. Griggs, et al., "Policy: Map the interactions between sustainable development goals" 534 Nature 320-322(2016).

<sup>23</sup>United Nations, "Peace, dignity and equality on a healthy planet", United Nations, available at: <https://www.un.org/en/global-issues/food>(last visited on April 10, 2022).

<sup>24</sup>Ibid.



acute hunger by the end of 2020. This problem of hunger can be eradicate only after providing adequate food. In the era of welfare state, the appropriate authorities have primary responsibility to provide food. Adequate food facility includes food, clothing, housing and medical care and necessary social services. Ensuring access to nutritious food and promoting sustainable agriculture is essential to meet the basic need of food security and nutrition.

In order to combat malnutrition, including within the framework of primary health care, through inter alia, the application of readily available technology and through the provision of adequate nutritious foods and clean drinking-water, taking into consideration the dangers and risks of environmental pollution<sup>25</sup>. This can only be secured by international cooperation including ensuring equitable distribution of world food supplies. To be sustainable, agriculture must meet the needs of present and future generations, while ensuring profitability, environmental health, and social and economic equity. Sustainable food and agriculture (here in after SFA) contributes to all four pillars of food security - availability, access, utilization and stability - and the dimensions of sustainability (environmental, social and economic)<sup>26</sup>.

AI vows to assist with making food creation and utilization more proficient and sustainable. Agriculture technologies ranging from robots, sensors, drones, satellite imagery, big data and internet of things (here in after the IoTs) and other AI equipped entities are being used in various stages of agriculture<sup>27</sup>. Such sophisticated technologies are being employed for weather forecasting and monitoring, eco-friendly crop protection method, irrigated land scape mapping, and soil analysis to crop health analysis. With the developing measure of information being produced on farms, AI will be fundamental for farmers to use this information to make better decisions<sup>28</sup>. S. Aubry and Ch. Eigemann, prominent academician has suggested through his work that outdated technology and other agriculture related problem can be solved by the digital and new age-technology revolution in agri-sector<sup>29</sup>. The application of AI in the field of agriculture can be precisely cited under the following heads:

- Use of Ag-tech at Pre-harvest level, for analyzing the pre-existing data relating to traits and genes of crops and also recommend that which crops will be best for particular fields<sup>30</sup>.

---

<sup>25</sup>Supra Note 22.

<sup>26</sup>United Nation, "Sustainable Food and Agriculture", Food and Agriculture Organization, available at: <https://www.fao.org/sustainability/en/> (last visited on March 18, 2022).

<sup>27</sup>D.G. Panpatte, "Artificial Intelligence in Agriculture: An Emerging Era of Research" Institutional Science, Canada, Science Direct, available at: <https://www.sciencedirect.com/science/article/pii/S258972172030012X#bb0340> (last visited on April 18, 2022).

<sup>28</sup>Ibid.

<sup>29</sup>S. Aubry and Ch. Eigemann, "New Challenges to digitalization of genetic resources for food and agriculture" 10AFS 122-127 (2019).

<sup>30</sup>Netafim, "Precision Irrigation: Power a sustainable farming ecosystem to ensure a food secure future" NETAFIM, available at: <https://www.netafimindia.com/digital-farming/> (last visited on March 18, 2022).

- Seed sowing and planting, the primary step in agriculture is seed sowing and plantation. AI systems are now being applied in seed sowing and plantation process<sup>31</sup>.
- Farm monitoring services by Drones, AI equipped drones are helping farmers scan fields, monitor crops, seeding and analyzes plant health<sup>32</sup>.
- Agricultural Robots<sup>33</sup>.
- Weather forecasting and Soil Moisture adequacy Index these technologies bring accurate and reliable data that help in timely crop damage assessment and crop planning<sup>34</sup>.
- Supply Chain Management<sup>35</sup>.

Therefore, Agriculture is not immune to the march of automation, and artificial intelligence (AI) is a vital tool in this evolution by informing on crop health, weather patterns, and soil quality. AI can improve agricultural practices by offering information for effective resource management, targeted irrigation, and pest control, leading to higher agricultural yields and greater food production. Artificial intelligence (AI) can accomplish the zero hunger goal by monitoring and analyzing data on food production, distribution, and consumption, assisting in the identification and correction of bottlenecks, the reduction of food waste, and the provision of wholesome food for all.

### 5.3. SDG 3- Good Health and Well-Being

SDG 3 deals with the good health and well-being of everyone. Ensuring healthy lives and promoting well-being at all ages is basic needs and essential to sustainable development. Poor health threatens the rights of children to education, limits economic opportunities for men and women and increases poverty within communities and countries around the world<sup>36</sup>. Health is also connected to other aspects of sustainable development, including water and sanitation, gender equality, climate change and peace and stability<sup>37</sup>. Currently, the world is facing a global health crisis of COVID-19 which is spreading human suffering, destabilizing the global economy and upending

---

<sup>31</sup>Rajesh Agarwal, "AI in Agriculture: Sowing the Seeds of Prediction-Fostered Planning", INC42, <https://inc42.com/resources/ai-in-agriculture-sowing-the-seeds-of-prediction-fostered-planning/> (last visited on April 20, 2022).

<sup>32</sup>T. Bak and H. Jacobsen, "Agriculture robotic platform with four wheel steering for weed detection" 87BE2125-2126 (2013).

<sup>33</sup>Fabienne Lang, "A 'Vegebot' has been built to harvest lettuce by using Machine learning", Interesting Engineering, available at: <https://interestingengineering.com/a-vegebot-has-been-built-to-harvest-lettuce-by-using-machine-learning/> (last visited on April 20, 2022).

<sup>34</sup>T. Talaviya, D. Shah, et. al., "Implementation of artificial intelligence in agriculture for optimization of irrigation and application of pesticides and herbicides", 4AIA58-73(2020)

<sup>35</sup>Baruah, Ayushman, "Artificial Intelligence in Indian Agriculture - An Indian Industry and Startup Review". EMERJ, November 22, 2019, available at: [www.emerj.com](http://www.emerj.com) <https://emerj.com/ai-sector-overviews/artificial-intelligence-in-indian-agriculture-an-industry-and-startup-overview/> (last visited on April 22, 2022).

<sup>36</sup>United Nations, "Goal 3-Good Health and Well-Being- Ensure Healthy Lives and Promote Well-Being for All at All Ages", Sustainable Developments Goals, available at: <https://www.globalgoals.org/3-good-health-and-well-being/> (last visited on April 23, 2022).

<sup>37</sup>Supra Note 34.





the lives of billions of people around the globe<sup>38</sup>. The United Nations Development Programme highlighted huge disparities in countries' abilities to cope with and recover from the COVID-19 crisis<sup>39</sup>. The pandemic provides a watershed moment for health emergency preparedness and for investment in critical 21st century public services.

The utilization of the scientific progress in the health sector has been suggested in order to achieve this basic needs because basic needs such as access to healthcare services, clean water, sanitation, and adequate nutrition are fundamental for achieving good health and well-being for all. The market for AI in healthcare is quite promising. Its capacity to deduce conclusions and spot trends from vast amounts of patient records, medical pictures, epidemiological data, and other data<sup>40</sup> has a great deal of promise. AI has the potential to help doctors improve their diagnoses, forecast the spread of diseases, and customize treatments<sup>41</sup>. When AI and health care digitalization are coupled, healthcare practitioners may monitor or diagnose patients from a distance and change the way they manage chronic illnesses, which take up a significant portion of health care spending. Machine learning is suited to analyzing the data in millions of medical histories to forecast health risks at the population level<sup>42</sup>. This could be an early win for AI because it brings the potential for large savings and would not require the regulatory scrutiny to be expected when trying to anticipate individual health risks<sup>43</sup>. Hospitals also could improve their capacity utilization by employing AI solutions to optimize many ordinary business tasks<sup>44</sup>. During the pandemic time, AI is being used as a tool to support the fight against the viral pandemic that has affected the entire world since the beginning of 2020<sup>45</sup>. The first application of AI expected in the face of a health crisis is certainly the assistance to researchers to find a vaccine able to protect caregivers<sup>46</sup>. The predictions of the virus structure generated by AI have already saved scientists months of experimentation. The American start-up Moderna has distinguished itself by its mastery of a biotechnology based on messenger ribonucleic

---

<sup>38</sup>United Nations, "Covid 19 and SDGs", UNDP, available at: <https://feature.undp.org/covid-19-and-the-sdgs/> (last visited on March 18, 2022).

<sup>39</sup>Ibid.

<sup>40</sup>Calum Chase, "The impact of AI on Healthcare", Forbes, October 01, 2020, available at: <https://www.forbes.com/sites/calumchase/2020/10/01/the-impact-of-ai-on-healthcare/?sh=9d9e55d6a071> (last visited on M April 27, 2022).

<sup>41</sup>Ibid.

<sup>42</sup>Jennifer Bresnick, "Top 12 ways Artificial Intelligence will impact Healthcare", Health It Analytics, April 30, 2018, available at: <https://healthitanalytics.com/news/top-12-ways-artificial-intelligence-will-impact-healthcare> (last visited on April 28, 2022).

<sup>43</sup>Ashokan Ashok, "Impact of Artificial Intelligence in Healthcare", Unfold Labs, available at: <https://unfoldlabs.medium.com/the-impact-of-artificial-intelligence-in-healthcare-4bc657f129f5> (last visited on April 28, 2022).

<sup>44</sup>LixaLix, "Building Equitable AI for Public Health", UM NEWS, January 20, 2020, available at: <https://news.umanitoba.ca/building-equitable-ai-for-public-health/> (last visited on April 29, 2022).

<sup>45</sup>Swami Sivasubhramaniam, "How AI and Machine learning are helping to fight covid-19", World Economic Forum, May 28, 2020, available at: <https://www.weforum.org/agenda/2020/05/how-ai-and-machine-learning-are-helping-to-fight-covid-19/> (last visited on April 30, 2022).

<sup>46</sup>Ibid.

acid (mRNA) for which the study of protein folding is essential<sup>47</sup>. It has managed to significantly reduce the time required to develop a prototype vaccine testable on humans thanks to the support of bioinformatics, of which AI is an integral part<sup>48</sup>. Similarly, Chinese technology giant Baidu<sup>49</sup>, in partnership with Oregon State University and the University of Rochester, published its Linearfoldalgorithm<sup>50</sup> to study the same protein folding. This algorithm is much faster than traditional algorithms in predicting the structure of a virus, secondary ribonucleic acid (RNA) and provides scientists with additional information on how viruses spread<sup>51</sup>. Further, the Canadian company BlueDot is credited with the early detection of the virus using an AI and its ability to continuously review over 100 data sets, such as news, airline ticket sales, demographics, climate data and animal populations<sup>52</sup>. AI is also being utilized in therapy, and it has the potential to enhance the mental health of individuals who do not have access to human therapists.

Therefore, AI improves preventative healthcare programs and diagnostics, resulting in new scientific advances. The utilization of AI based technologies in Healthcare sector protects the right to health and also provide the supplemental help to achieve the SDGs 3. These technologies must be utilized by appropriate authority without any discrimination. At international level, a polite tendency must be adopted by developed countries towards developing countries regarding the supply and management of these sophisticated technologies.

#### 5.4. SDG 4-Quality Education

Access to quality education is a basic need and a human right. By providing inclusive and equitable education, the SDGs aim to ensure that everyone has the opportunity to acquire knowledge and skills for a better future. SDG 4 focuses on the quality education and emphasizes on lifelong learning opportunities. The importance of education compelled to international as well as national communities to declare it basic needs. Everyone has the right to education<sup>53</sup>. Education shall be free and compulsory, at least in

---

<sup>47</sup>Abbas M. AL-Bakry and Ammar AbdrabaSakran, "Importance of using Artificial Techniques in Medical Field", University of Information Technology and Communication, available at: [http://uoitc.edu.iq/images/online\\_workshops/AI\\_Covid19.pdf](http://uoitc.edu.iq/images/online_workshops/AI_Covid19.pdf) (last visited on April 30, 2022).

<sup>48</sup>Supra Note 45.

<sup>49</sup>Baidu, "How Baidu is bringing AI to fight against coronavirus, MIT Technological Review, available at: <https://www.technologyreview.com/2020/03/11/905366/how-baidu-is-bringing-ai-to-the-fight-against-coronavirus/> (last visited on April 30, 2022).

<sup>50</sup>Linear Fold Algorithm is the combination of computational linguistics and incremental parsing algorithms that are used to scan the RNA sequence in a faster way.

<sup>51</sup>Keith Darlington, "How Artificial Intelligence is helping to prevent the spread of the covid-19 pandemic", Open Mind, available at: <https://www.bbvaopenmind.com/en/technology/artificial-intelligence/how-ai-is-helping-prevent-the-spread-of-the-covid-19-pandemic> (last visited on April 30, 2022).

<sup>52</sup>Cory Stieg, "How this Canadian Start-up spotted coronavirus before everyone else knew about it", CNBC, March 06, 2020, available at: <https://www.cnbc.com/2020/03/03/bluedot-used-artificial-intelligence-to-predict-coronavirus-spread.html> (last visited on April 30, 2022).

<sup>53</sup>Universal Declaration of Human Rights, 1948, art. 26.

International Covenant on Economic Social and Cultural Rights, 1966, art. 6 & 13.

Convention on the Elimination of All Forms of Discrimination against Women, 1979, art. 12

Convention on the Rights of Child, 1989, art. 28 & 29.

Conventions on the rights of persons with Disabilities, 2006, art. 24



the elementary and fundamental stages. Technical, professional and higher education shall be made generally available and equally accessible to all on the basis of merit. It is agreed that education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms<sup>54</sup>.

For decades people have discussed how to revolutionize education with technology, whether "gamifying" instructional materials or expanding access to knowledge via massive open online courses. EdTechXGlobal and Ibis capital estimated that schools spent nearly \$160 billion on education technology (Ed-Tech), in 2016, and forecast spending to grow 17 percent annually through 2020<sup>55</sup>. Although the exact percentage of artificial intelligence in education is unknown, it is expected to rise as more and more artificial intelligence technologies are used to accomplish important goals like improving teaching effectiveness and efficiency, ensuring universal access to education, and fostering the kind of skills that will be critical in the twenty-first century. So where will artificial intelligence be in education in 2030? It will most likely have a significant role. However, ethical considerations-beginning with who owns student data, who may view it, who can use it, and for what purposes-as well as technological issues are crucial to success.

ICT plays very important role in education sector. The objective of ICT in education is to provide accessibility through online medium of education and to improve the quality of teaching especially in remote areas<sup>56</sup>. Online learning has been around since the advent of ICT and its technologies. Teachers and students are both learning new approaches to teaching through this. In order to ensure that learning continues, online learning has become more and more popular during the COVID-19 epidemic. ICTs have ensured that education is accessible to everyone, even in rural places. It has made sure that every learner benefits, regardless of where they are. While attracting and keeping students is important, a fundamentally new approach to learning-inside or outside of the classroom-will probably bring about the real revolution in education. Over the past few decades, a lot of work has been done to move away from a standardised approach and to customise learning for each student. Adaptive learning solutions tailor lesson plans to each student's prior knowledge, unique learning style, and progress in order to overcome the shortcomings of traditional classroom instruction. Adaptive learning strives to provide each student with the appropriate information at the appropriate time in the most effective manner, as opposed to teaching the entire class a single lesson that may disengage quick learners or leave behind difficult students. Artificial intelligence could improve adaptive learning and personalized teaching by identifying factors or indicators of successful learning for each student that were previously not possible to capture.

---

<sup>54</sup>Ibid.

<sup>55</sup>EdTechXGlobal and Ibis Capital, "Global EdTech industry report: A map for the future of education," DELOITTE, available at: <https://www.google.com/search?q=%E2%80%9C2016+Global+EdTech+industry+report%3A+A+m+a+p+f+o+r+t+h+e+f+u+t+u+r+e+o+f+e+d+u+c+a+t+i+o+n+%2C+%E2%80%9D+EdTechXGlobal+and+Ibis+Capital&oq=%E2%80%9C2016+Global+EdTech+industry+report%3A+A+m+a+p+f+o+r+t+h+e+f+u+t+u+r+e+o+f+e+d+u+c+a+t+i+o+n+%2C+%E2%80%9D+EdTechXGlobal+and+Ibis+Capital&aqs=chrome..69i57.340j0j4&sourceid=chrome&ie=UTF-8> (last visited on May 2, 2022).

<sup>56</sup>Manpreet Kaur, "What is ICT in education and its importance", TechPrevue, January 4, 2021, available at: <https://www.techprevue.com/ict-in-education/> (last visited on May 6, 2022).

Teachers may no longer be required to do time-consuming administrative duties including managing and responding to standard inquiries. Natural language, computer vision, and deep learning could help replace teachers in answering students' routine questions or acting as tutorial supervisors<sup>57</sup>. In the future, voice and face recognition technology may be used by AI systems to monitor a whole classroom and identify individual pupils. Finally, by the application of machine learning algorithms to data from student education profiles, social media, and polls, AI might help teachers create the most productive groups or courses. UNESCO estimates that the world will need to recruit and train 24.4 million primary school teachers in order to achieve universal primary education by 2030 and another 44.4 million teachers to fill openings at secondary schools. Many of these new hires more than 85 percent of them, in the case of primary school will be required just to replace teachers who leave education<sup>58</sup>. The potential for AI is undeniably enormous, but it need a break from Big Tech and proprietary and Western focused systems. The necessity to ensure that high-quality educational systems are available to all is demonstrated not just by SDG4, but also by the significant effects that would result from achieving this objective. Better education in the poor countries would have enormous advantages for these nations.

### 5.5. SDG 6- Clean Water and Sanitation

SDG 6 deals with ensure availability and sustainable management of water and sanitation for all. Access to drinking water and sanitation facilities are recognized as basic needs, reflecting the fundamental element in every person's life for his/her health, dignity, and well-being. Lack of access to safe, sufficient and affordable water, sanitation and hygiene facilities has a devastating effect on the health, dignity and prosperity of billions of people<sup>59</sup>. People have rights, and states have a responsibility to provide services like water and sanitation. A person's right to water and sanitation must be guaranteed equally and without discrimination by duty bearers, while right holders are free to assert their rights. Everyone has the right to adequate, appropriate, safe, physically accessible, reasonably priced water for household and personal use. The right to sanitation entitles everyone to have physical and affordable access to sanitation, in all spheres of life, that is safe, hygienic, secure, and socially and culturally acceptable and that provides privacy and ensures dignity<sup>60</sup>. A recent UN report on global clean water and sanitation suggests that over 40% of the world population still doesn't have access to safely managed drinking water<sup>61</sup>. In short, the noble purpose of delivering clean water and sanitation needs serious attention and innovation by combining sustainable development with the intelligent management of infrastructure.

---

<sup>57</sup>Jason Maderer, "Artificial intelligence course creates AI teaching assistant,"Georgia Tech Press, available at: <https://news.gatech.edu/news/2016/05/09/artificial-intelligence-course-creates-ai-teaching-assistant>, (last visited on March 28, 2022).

<sup>58</sup>Kate Hodal, "UN warns universal education goal will fall without 69 million new teachers",The Guardian, October 05, 2016, available at: <https://www.theguardian.com/global-development/2016/oct/05/un-universal-education-goal-fail-69-million-new-teachers-unesco>(last visited on May 10, 2022).

<sup>59</sup>United Nations, "Human rights to water and sanitation", UN Water, available at: <https://www.unwater.org/water-facts/human-rights/> (last visited on May 10, 2022).

<sup>60</sup>Ibid.

<sup>61</sup>United Nations, "Goal6-Ensure access to water and sanitation for all", Sustainable Developments Goals, available at: <https://www.un.org/sustainabledevelopment/water-and-sanitation/> (last visited on May 10, 2022).



AI has the potential to help resolve challenges related to clean water and sanitation. It has the power to revolutionize water-use efficiency and sanitation management in terms of engineering, mapping and forecasting while widely improving sustainability and scalability of water and sanitation services<sup>62</sup>. It is helping utilities and municipalities to better manage their water and wastewater systems to ensure a clean and sanitized water supply. Some utilities and water-intensive industries have already started using AI to innovate services related to water deliverability and sanitation<sup>63</sup>. Machine learning and artificial intelligence may be used to identify issues and ensure that resources are allocated early on in the process of treating water.

Another side, the existing manhole cleaning practice requires workers to manually position the sewer genic machine or sewer iron rod which is inserted in sewage line for cleaning but these machines are not that much effective to unblock the sewage line and no one wants to enter in it because the sewage are fulfilled with human excreta and toxic indissoluble filth. It is a great achievement by Indian engineers that the world's first Robotic scavenger is created by Kerala based Genrobotic Company and such robotic entity is named as Bandicoot 2.0<sup>64</sup>. During the launch of The Bandicoot 2.0, UN Secretary-General Mr. Antonio Guterres has accepted this fact that now AI has made it possible by replacing manual scavenging to robotic scavenging<sup>65</sup>. Another instrument is Manhole Monitoring System- G Beetle which monitors the manhole networks across the city. It works on the machine learning program and AI technology which gives information about the condition of manholes and also give an alarm when these manholes are getting overflow and clogged<sup>66</sup>. In the recent development, the development of Robotic Scavenging has been engaged by different country in order to protect the miserable condition and health of manual scavengers.

## 5.6. SDG 8- Decent Work and Economic Growth -

SDG 8 promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. Roughly half of the world's population still lives on the equivalent of about 2 dollar per day and it has been seen in too many places, having a job doesn't guarantee the ability to escape from poverty. Poor working conditions are often related to poverty, inequality and discrimination and also vulnerable groups mostly faces such issues. The decent work promotes the earning of every individual which world be necessary for them to fulfill their basic needs.

---

<sup>62</sup>DAIA, "Artificial intelligence and global challenges- clean water and sanitation",Medium, available at: <https://medium.com/daia/artificial-intelligence-and-global-challenges-a-plan-for-progress-39b69df9c3a3> (last visited on May 15, 2022).

<sup>63</sup>Ibid.

<sup>64</sup>Kathakali Chanda, "Bandicoot: Genrobotics' robot that can scoop out filth from sewers",Forbes India, June 07, 2018,available at: <https://www.forbesindia.com/article/startups-special-2018/bandicoot-genrobotics-robot-that-scoops-out-filth-from-sewers/50401/1>(last visited on May 16, 2022).

<sup>65</sup>Astha Ahuja, "Bandicoot, Sewer Cleaning Robot Wins Infosys Foundation's Aarohan Social Innovation Awards", NDTV NEWS, February 26, 2020, available at: <https://swachhindia.ndtv.com/bandicoot-sewer-cleaning-robot-wins-infosys-foundations-aarohan-social-innovation-awards-41900/> (last visited on May16, 2022).

<sup>66</sup>Genrobotics, "G BEETLE- Manhole Monitoring System", available at: <https://www.genrobotics.org/manholemonitoringsystem> (last visited on May 16, 2022).

Improvement in economy and right to work would enhance the income of individual and this enhancement would provide better standard of living, quality of education and health and so forth. By focusing on decent work and economic growth, the SDGs aim to create an enabling environment where individuals can secure sustainable livelihoods, improve their living conditions, and meet their basic needs, thereby promoting inclusive and sustainable development.

In 2013, Oxford Martin School published a research paper entitled which suggested that 47 per cent of US jobs are at risk of automation over the coming two decades<sup>67</sup>. According to a Report by Mckinsey Global Institute<sup>68</sup>, AI alone would contribute, on an average, 1.2 per cent per year in productivity growth. International Labor Organization (ILO)<sup>69</sup> demonstrates how "smart farming" increases productivity by using the Internet of Things (IoT), with sensors to collect real-time data which could be utilized for creating appropriate conditions that can sow, water, fertilize and harvest.

With the emerging New-Age Technology, the concerns regarding technology-led job displacement or joblessness have come to the center stage. The issue of machines displacing or replacing human labor has been discussed and debated for a very long time. John Maynard Keynes, who coined a new expression i.e. 'technological unemployment'<sup>70</sup>. He defined it as the "unemployment due to our discovery of means of economizing the use of labor outrunning the pace at which we can find new uses of labor"<sup>71</sup>. Optimists agree that technology may be disruptive to jobs in the short run, but they insist that there is no permanent negative impact on jobs. At the other extreme, pessimists contend that under certain circumstances, new technologies can possibly lead to a lasting decline in the number of workers employed.

Further by fostering innovation, boosting productivity, and fostering inclusive and sustainable economic development, AI can significantly contribute to the achievement of SDG 8. Artificial intelligence (AI) technologies have the potential to automate repetitive work, generate new employment possibilities, improve decision-making, increase access to financial services, and optimise supply chain, resource allocation, and energy management processes. AI can promote sustainable economic growth by minimising environmental impact, decreasing waste, and enhancing resource efficiency. By eliminating human bias from the recruiting and recruitment procedures, it

---

<sup>67</sup>Carl Benedikt Frey and Michael Osborne, "The Future of Employment: How Susceptible Are Jobs to Computerisation", Oxford Martin School, available at: [https://www.oxfordmartin.ox.ac.uk/downloads/academic/The\\_Future\\_of\\_Employment.pdf](https://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf)(last visited on May 18, 2022).

<sup>68</sup>Mckinsey and Company, "Outperformers: High growth emerging economic and the companies that propel them", Mckinsey Global Institute, available at: <https://www.mckinsey.com/mgi/overview/in-the-news/2018>(last visited on May 20, 2022).

<sup>69</sup>Thomas Jayneet.al., "Future of work in African Agriculture", ILO, available at: [https://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms\\_624872.pdf](https://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms_624872.pdf)(last visited on May 20, 2022).

<sup>70</sup>Reccardo Campa, "Technological Unemployment: a brief history of an idea"6OI60 (2018), available at: [https://www.researchgate.net/publication/314187966\\_Technological\\_Unemployment\\_A\\_Brief\\_History\\_of\\_an\\_Idea](https://www.researchgate.net/publication/314187966_Technological_Unemployment_A_Brief_History_of_an_Idea)(last visited on May 20, 2022).

<sup>71</sup>Ibid.



can also aid in addressing prejudice and discrimination in the labour market. To the benefit of society as a whole, it is crucial to make sure that AI technologies adhere to inclusion, ethics, and human rights values.

### **5.7. SDG 9- Industry, Innovation and Infrastructure**

SDG 9 has primary focus to build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. From the basic needs perspective, Infrastructure shapes the urban environment and is the engine of sustained and inclusive economic growth. It is our responsibility to develop quality, reliable, sustainable and resilient infrastructure, supporting economic development and social well-being. It is fundamental to promote inclusive, sustainable, affordable and equitable access for all, using to this end, new, innovative tools. SDG 9 encourages the promotion of technological advancements and innovations. This includes innovations in areas such as water purification, renewable energy, waste management, and transportation. Technological innovations can enhance the provision of basic services, making them more efficient, accessible, and sustainable. By investing in infrastructure development, including housing, water supply systems, sanitation facilities, and energy networks, countries can ensure that basic needs are met.

New hybrid manufacturing, which incorporates AI, IoTs sensors, and 4D printing, is changing sectors and resulting in exponential innovation. This emerging technology could also be deployed to address the infrastructure challenges, thereby promoting the public good in respect of energy, water, and waste management, transportation, real estate, and urban planning. For example, "traffic light networks can be optimized using real time traffic camera data and Internet of Things sensors to maximize vehicle throughput". While AI has the potential to be essential for both public and private sector innovation, a closer examination of the objective indicates that domestic development and improved access to ICT are far more important. Nonetheless, even if wealth is unevenly distributed, contemporary AI may contribute to broad creativity as well as scientific and technological development, which might possibly benefit everybody in the long term. Therefore, by leveraging AI technologies in industry, innovation, and infrastructure, countries can drive sustainable development, enhance efficiency, and promote inclusive growth, aligning with the objectives of SDG 9.

### **Conclusion**

To conclude, it has been found that AI is quickly expanding its wing into various sectors. Machine intelligence and robots with deep learning capabilities have had significant disruptive and enabling effects on society. Therefore, preliminary findings from sustainable AI development indicate that there is a great deal of opportunity to think about AI in terms of sustainable development and basic needs. AI, being a collection of general-purpose technologies, does not have a single future. It has multiple futures, and these futures are dependent on social factors other than technical advancements. As the AI revolution alters our society, it may signal a utopian future in which human's basic needs can be fulfilled and this revolution also emphasizes that human and machines can coexist peacefully, or it may herald a dismal future filled with conflicts, poverty, and pain. Countries may take advantage of AI's potential to accomplish sustainable development, advance decent work, and promote economic progress by responsibly and broadly utilising it. By promoting AI in agriculture, such as efficient irrigation systems, post-

harvest technologies, and distribution networks, countries can enhance food production, reduce hunger, and ensure food security, addressing a fundamental basic need.

In this paper the authors have considerably tried to establish the relation between SDGs and basic needs by highlighting that basic needs can be addressed up to an extent with the SDGs. The authors also established that SDG and basic needs can be fulfilled substantially by prospective application of AI based technologies. AI can be utilized for satisfying the human needs and can establish a sophisticated digital society without any conflicts of coexistence between human and machines. The potential of AI can be harnessed to benefit humanity. Achieving SDG and providing basic needs is crucial for an egalitarian society. This can be accomplished by employing AI. Therefore, we need to create collaboration, responsible development, and suitable legislation, to prevent conflicts if any and achieve the goals. Collaboration among stakeholders, including governments, organizations, and communities, is crucial to leverage AI effectively in accomplishing basic needs while advancing sustainable development goals.