

Artificial intelligence and sustainable development

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ABSTRACT

Many factors will affect society's shift towards sustainable development and attainment of the UN Sustainable Development Goals for 2015-2030. But of all, perhaps none has the potential to have a greater impact than artificial intelligence. AI has the potential to foster many advances in numerous areas, as well as the potential to cause some problems. But on the whole, the potential to make advances in sustainable development methods, technologies and operations offered by AI are profound and could lead to great strides in a relatively short time. In this editorial, the relation between AI and sustainable development is examined from my position as founding Editor in Chief of the journal.

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Many factors will affect the shift by society towards sustainable development, and also the attainment of the UN Sustainable Development Goals (SDGs) for 2015-2030. But of all, perhaps none has the potential to have a greater impact than artificial intelligence (AI). In fact, in a recent editorial in the *European Journal of Sustainable Development Research* (Rosen, M.A. 2024. Advances in Sustainable Development Research and The Seven Year Itch. *European Journal of Sustainable Development Research* 8(4):em0266) discussing advances from research in sustainable development over the journal's first seven years, the present author wrote, "AI has the potential to foster many developments and advances in many fields, as well as the potential to cause many problems. But taken as a whole, the potential to make advances in sustainable development methods, technologies and operations offered by AI are profound and could lead to great strides in a relatively short time." Here, the relation between AI and sustainable development is examined from my position as founding Editor in Chief of the journal.

A bit of history at this point is instructive. The first significant definition of sustainable development was put forward in the Brundtland Report of 1987, entitled *Our Common Future*, as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." In 2015, the UN approved the 17 SDGs, in part by building on that definition. The SDGs aim to improve lives globally and to safeguard the environment.

Now on to AI, which has evolved significantly during the past few years, especially in its generative capabilities. The

potential impact of AI is being observed in many facets of society on a large scale and across many sectors of the economy. Its proponents point out how AI can help us address problems that have not been resolvable in the past, and help solve problems quickly, and thereby to deliver social advances aimed at providing benefits. Its detractors point out concerns of various types from AI. More on those later.

But what about AI and sustainable development together? Advances in AI offer the potential to accelerate greatly progress on sustainable development and the SDGs. AI can help us reap the advantages of shifting towards sustainable development, such as improving societies and lives of their populations and protecting the environment and the ecosystems within it.

Reports have shown that AI has already been or will in the future be used to advance the SDGs across the world by promoting productivity and economic growth while safeguarding the social good, protecting the environment and combating climate change, fostering equality and inclusion and eliminating poverty, establishing sustainable cities and communities (with sustainable infrastructure, housing, transportation and agriculture), providing quality education, and providing better early warning for natural disasters.

The potential offered by AI regarding sustainable development is particularly important given most experts feel that progress on the SDGs is generally not strong, with challenges related to sustainable development remaining largely unaddressed in such areas as, for instance, access to safe water and hygiene and safe sanitation, and reduced hunger and vulnerability to climate change.

As noted earlier, there exist many challenges in applying AI at large scale for initiatives aimed at improving the social good for all people and societies. Barriers to applying or scaling AI include 1) regional inequities with developing/less wealthy countries receiving less attention regarding AI implementation even though it is for these countries that the need for applying the SDGs is often the most significant, 2) inadequate availability high quality and unbiased data to support the AI tools, and problems in detecting inaccurate and biased results generated with AI as well as AI generated misinformation, 3) low receptiveness of companies and organizations to adopting AI and a lack of adequate highly skilled workers in AI, 4) a lack of policies and governance to avoid or prevent AI-induced problems and rights abuses, and an inadequate focus on deployment of AI for sustainable development initiatives rather than just research, development and innovation.

Many people and organizations are investigating and assessing AI and its potential for accelerating sustainable

development and the SDGs. Many indicate that the rapid development of AI needs to be supported by the necessary regulatory insight and oversight for AI-based technologies to enable sustainable development, to avoid problems, and that AI can have a transformative role in shaping how society views and accepts sustainable development. AI deployments for sustainable development have been reported in transportation, agriculture, engineering, public health, and environment and biodiversity protection.

In wrapping up, I reiterate that of the many factors that may or will influence the shift by society towards sustainable development and addressing the SDGs, perhaps none has the potential to have a greater impact than AI. On the whole, even though artificial intelligence possesses the potential to cause problems, it has the potential to foster many profound advances quickly in all areas and places, and is therefore likely to be a significant contributor to sustainable development in the future.