AI's impact on UN goals for climate, development and global stability is analyzed for first time

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Credit: Nature Communications

Artificial intelligence (AI) represents a powerful but double-edged sword as nations confront global warming, poverty and issues of peace and justice. An international team of scientists this week released a first-ever study of how AI can help—as well as hinder—sustainable

development worldwide.

Published today in *Nature Communications*, the analysis focuses on how AI impacts the 17 goals for sustainable development adopted by the United Nations in 2015.

The study was co-authored by a diverse group of researchers led by Ricardo Vinuesa and Francesco Fuso Nerini, assistant professors at KTH Royal Institute of Technology. They were joined by Max Tegmark, professor at Massachusetts Institute of Technology (MIT) and author of the bestselling book Life 3.0, as well as Virginia Dignum, professor of AI Ethics at Umeå University, among other authors.

"AI is already changing everyone's lives in different ways," says Fuso-Nerini. "This analysis provides the basis for a needed dialogue on what kind of future humanity should aim for with AI," Vinuesa says.

The study offers guidelines for how to navigate the benefits and risks of applying AI solutions to these top world challenges, referred to as the Sustainable Development Goals (SDG), which take aim at 169 individual targets running the gamut from economy and society to environment.

The research results as a whole show that 134 of these targets could benefit from AI, while another 59 goals would not. Calculated as a percentage, AI has a positive impact of 79 percent.

City dwellers for instance stand to benefit from AI, potentially becoming more inclusive and safer, Vinuesa says. The study states that AI will enable improved technology for measuring urban air pollution.

AI shows clear potential in lifting people out of poverty, reducing energy consumption and promoting clean affordable energy. For example, so-called "smart" electricity grids can match and balance the need for

electricity against various renewable energy sources. However, overall demand for ICT solutions could increase data centers' electricity usage to 20 percent of the global total by 2030, the study points out.

In the sphere of global political stability and justice, growing inequality, biased election outcomes, hatred for minorities and increased nationalism can result if AI is developed in the absence of ethical scrutiny, democracy and transparency, the study states. On an individual level, social media algorithms that display content for users tend to rely on the receivers' own preconceived opinions.

This type of AI can further polarize societies, Fuso-Nerini says. "There's an underlying risk of prejudice when AI evaluates and predicts human behavior."

When it comes to AI's influence on political stability, both global and local, the researchers say that "adequate policy and legislation frameworks" are necessary to help direct AI's potential towards the highest benefit for individuals and the environment.

"Regulatory oversight should be preceded by regulatory insight, where policymakers have sufficient understanding of AI challenges to be able to formulate sound policy. Developing such insight is even more urgent than oversight, since policy formulated without understanding is likely to be ineffective at best and counterproductive at worst," Tegmark says.

More information: Ricardo Vinuesa et al. The role of artificial intelligence in achieving the Sustainable Development Goals, *Nature Communications* (2020). DOI: 10.1038/s41467-019-14108-y

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