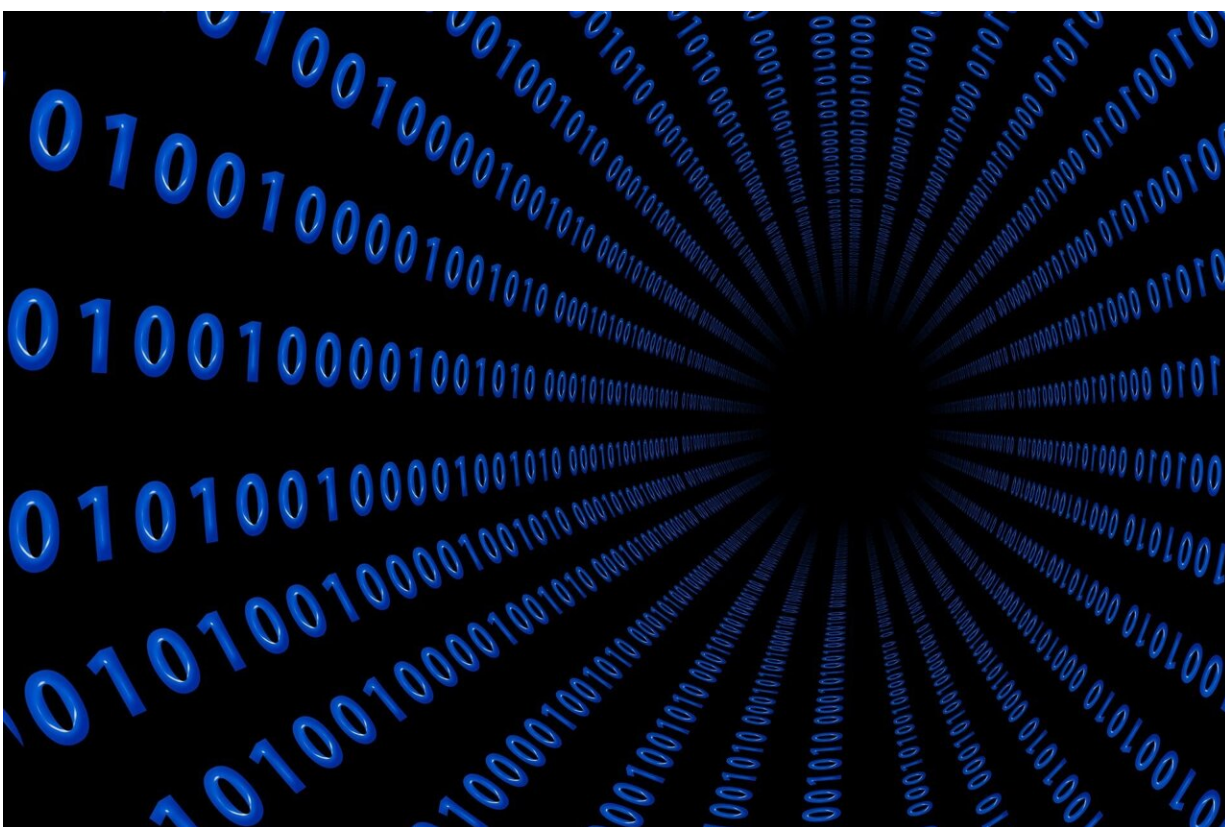


Researchers create carbon dioxide measurement tool to calculate emissions caused by stored digital data

June 5 2023



Credit: Pixabay/CC0 Public Domain

A unique carbon footprint tool has been created that will allow businesses to measure the CO₂ output of their stored data.

Each day, the [average person](#) creates 10 DVDs-worth of data via their phones, fitness trackers, emails—anything which uses ones and zeros to process information.

All these bytes are collected by companies and stored at various data centers around the globe. By 2025, there will be an estimated 180 zettabytes of stored data—the equivalent of 6.8 billion years of continuous Netflix streaming.

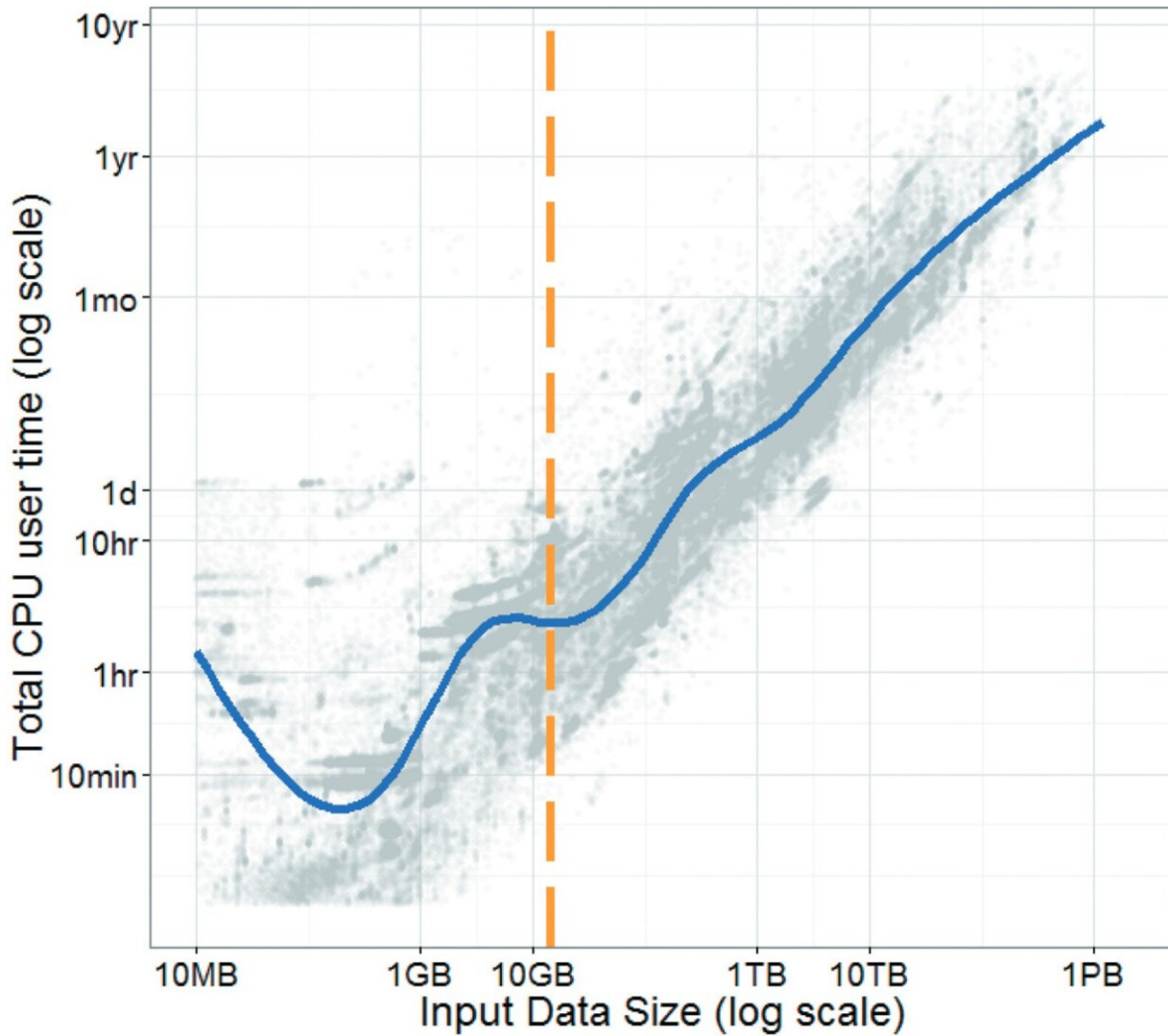
By using the tool, believed to be the first of its kind, companies can make data-driven decisions that benefit the environment and save money by reducing the need for [carbon](#) offsetting.

Its creators say it is the first publicly available tool to calculate the data CO₂ footprint across the data journey, from the origin of a dataset through to its end use—for example, AI analytics.

The tool enables organizations to see the environmental impact of data at key stages along the data journey, providing stage-by-stage CO₂ output as well as an overall CO₂ footprint for new data projects.

Professor Tom Jackson, of Loughborough Business School, said, "The ladder is unique because it allows you to measure impact at every stage on the data journey. Not just at the end."

"Imagine taking your car to a garage, where experts meticulously analyze every aspect of the vehicle to make it more environmentally friendly."



CPU time to process data. Source: Appuswamy et al. (2013). Credit: *Is there a role for knowledge management in saving the planet from too much data?* (2023).

"They consider factors like tires, [body shape](#), engine type, and even driver metrics to determine how to improve the car and reduce its carbon footprint."

"This process, carried out at each step, leads to significant savings in

CO₂ emissions."

His colleague Professor Ian Hodgkinson said, "In the push towards net zero, digital technologies have played, and continue to play, a critical role, but we must also be cognizant of the hidden data CO₂ cost attached to the way society and organizations use [digital technologies](#)."

"Identifying and measuring the data CO₂ footprint is essential for future decarbonization strategies."

Prof Jackson added, "We are excited to announce the launch of the world's first publicly available tool empowering organizations to assess the environmental impact of their data projects."

"With this tool, organizations can determine the carbon footprint of their data-related activities and explore better data approaches to reduce their [data carbon footprint](#) while driving down carbon emissions."

"By using this [tool](#), organizations can make informed decisions to minimize their environmental impact while still achieving their business objectives."

Recognizing the significance of digital decarbonization, the Organisation for Economic Co-operation and Development (OECD) and the Observatory for Public Sector Innovation (OECD-OPSI) have identified the work as a critical focus for accelerating the path to net-zero.

More information: Thomas Jackson et al, Is there a role for knowledge management in saving the planet from too much data?, *Knowledge Management Research & Practice* (2023). [DOI: 10.1080/14778238.2023.2192580](https://doi.org/10.1080/14778238.2023.2192580)

Provided by Loughborough University

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