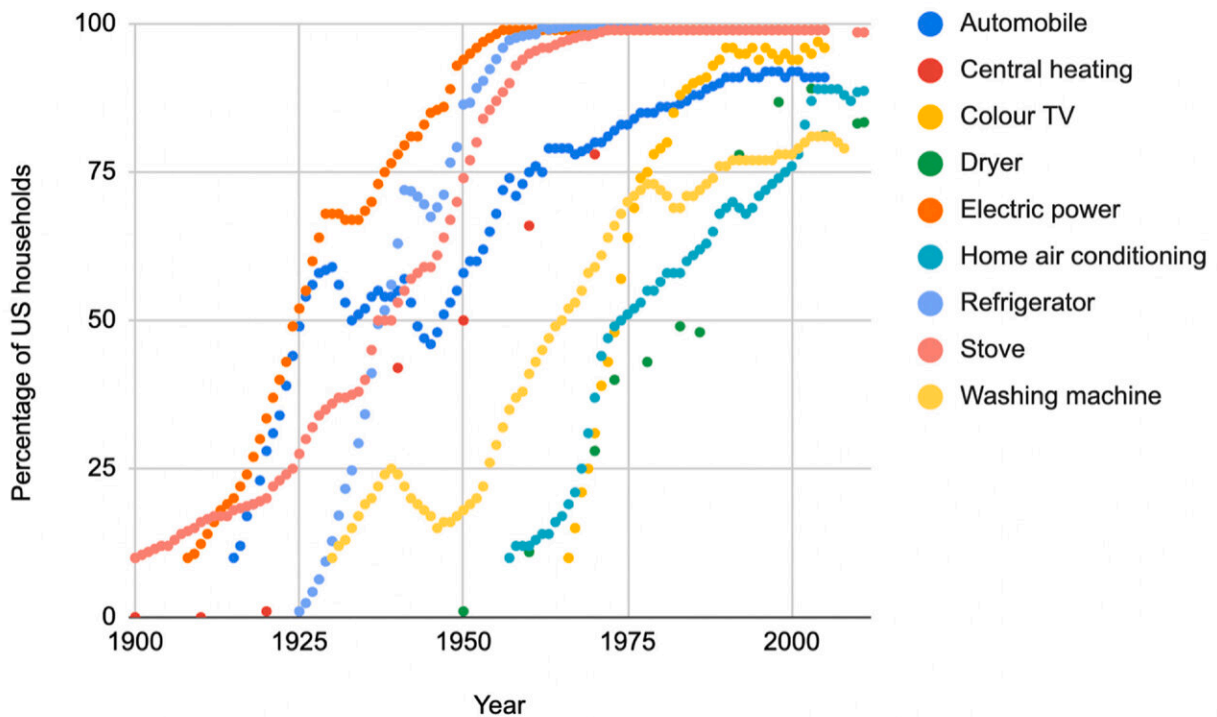


Group of united academics publish 'scientists' warning' on climate and technology

February 15 2024, by Brian Bell



In the past century, fossil-fuel-intensive technologies have become ubiquitous in the US (Ritchie and Roser, 2017). Fossil fuels are heavily involved in the production, use, and disposal/recycling/reuse of these technologies. Credit: *Journal of Cleaner Production* (2023). DOI: 10.1016/j.jclepro.2023.140074

Throughout human history, technologies have been used to make people's lives richer and more comfortable, but they have also contributed to a global crisis threatening Earth's climate, ecosystems, and even our own survival.

Researchers at the University of California, Irvine, the University of Kansas, and Oregon State University have suggested that industrial civilization's best way forward may entail embracing further technological advancements but doing so with greater awareness of their potential drawbacks.

In a paper titled "Scientists' Warning on Technology," published recently in the [Journal of Cleaner Production](#), the researchers, including Bill Tomlinson, UCI professor of informatics, stress that innovations, particularly in the fields of clean energy and artificial intelligence, will come with risks but may be the most effective way to ensure a [sustainable future](#).

"Since [prehistoric times](#), technologies have been created to solve problems and benefit people; think of the improvements that have been made in agriculture, manufacturing and transportation," Tomlinson said. "But these developments have had a dual nature. While addressing the human need for food, farming has led to [environmental degradation](#), and our factories and vehicles have caused a massive buildup of atmospheric carbon dioxide, which is causing [climate change](#)."

Co-author Andrew W. Torrance, the Paul E. Wilson Distinguished Professor of Law at the University of Kansas, said, "Technology is often offered as a panacea for environmental crises. It is not. Nevertheless, it will play a crucial role in any solution. That is why the role of technology must be taken seriously, rigorously measured, modeled and understood—and then interpreted in light of population and affluence."

He added, "I am extremely optimistic about the beneficial role technology could play in helping humanity find its sustainable niche in the biosphere, but [I'm also] stone-cold sober that other, less hopeful outcomes remain possible."

The scientists' warning concept dates to the early 1990s, when the Union of Concerned Scientists published a letter exhorting people to change their habits regarding stewardship of Earth and its resources "if vast human misery is to be avoided and our global home on this planet is not to be irretrievably mutilated."

A second warning, in 2017, was signed by more than 15,000 scholars in different scientific fields. Since then, dozens of additional admonitions have been published, with over 50 currently in preparation.

"The scientists' warnings weave a compelling narrative of humanity at a crossroads, urging us to acknowledge the fragility of our biosphere and embrace a collective responsibility for safeguarding our future through proper, science-based actions," said co-author William Ripple, Oregon State University Distinguished Professor of ecology, who led the project to write the article.

The *Journal of Cleaner Production* warning outlines two main methods for reducing, mitigating, or eliminating [fossil fuel use](#). The first is infrastructural substitution, replacing coal- and natural gas-fired power plants with renewable resources such as wind and solar, and abandoning internal combustion engines in favor of electric motors. This shift would also involve the widespread adoption of electric appliances in homes and swapping out gas furnaces and water heaters for heat pumps.

A second method to steer humanity away from fossil fuel burning centers on a concept known as "undesign," the intentional negation of technology and consideration of alternatives that do not rely on labor-

saving human inventions.

"People are often resistant to change, though, especially in contexts where they have come to depend strongly on particular goods and services," Tomlinson said. "Embracing undesign will require people to be guided to new cultural narratives that are not so reliant on heavily impactful systems."

In addition to clean energy technologies, the warning's authors look to [artificial intelligence](#) as a way to point human civilization toward a more sustainable tomorrow. They mention how AI is currently being used to connect wildlife habitats, monitor methane emissions, and optimize supply chains.

Tomlinson and his colleagues said AI presents far less energy-intensive alternatives to laborious tasks like writing and illustration and is becoming adept at writing computer code, which could come in handy in managing the "complexities of 8 billion-plus people cohabiting on Earth," according to the paper.

But Tomlinson noted that AI is not without risks, such as the possibility of runaway energy consumption, perpetuating biases in human societies and AI systems becoming independent and powerful enough that they pose a real danger to humanity.

"It's important that humans deploy new technologies to replace those that are environmentally harmful," he said. "But we need to remain vigilant for potential future harm and attempt to mitigate that as much as possible.

"In our scientists' warning, we identify an array of potential future risks from both electrification and AI. We believe that these outcomes are substantially less problematic than these technologies' potential benefits

from addressing the pressing environmental crises that humanity is currently facing."

More information: Bill Tomlinson et al, Scientists' warning on technology, *Journal of Cleaner Production* (2023). [DOI: 10.1016/j.jclepro.2023.140074](https://doi.org/10.1016/j.jclepro.2023.140074)

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