

MIT sees acceleration in US greenhouse emissions

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U.S. greenhouse gas emissions could grow more quickly in the next 50 years than in the previous half-century, and technological change may cause increased emissions rather than control them, according to a new study by an MIT economist and his colleague.

What's more, technology itself cannot be relied on as the most efficient tool for reducing carbon dioxide (CO₂) emissions or solving the global energy crisis, said Professor Emeritus Richard Eckaus of the MIT Department of Economics and his co-author, Ian Sue Wing, of Boston University.

Their paper, "The Implications of the Historical Decline in U.S. Energy Intensity for Long-Run CO₂ Emission Projections," was published in the November issue of *Energy Policy*. In it, the pair portray the changing interplay among technology, energy use and CO₂ emissions based on a simulation of the U.S. economy.

"We found that, in spite of increasing energy prices, technological change has not been responsible for much reduction in energy use, and that it may have had the reverse effect," said Eckaus, who with Sue Wing is also affiliated with the Joint Program on the Science and Policy of Climate Change at MIT.

The researchers studied the periods 1958 to 1996 and 1980 to 1996 and projected from 2000 to 2050. Based on their findings from the past 50 years, and adjusting for a more realistic expectation for technological

changes, they found that the rates of growth for energy use and emissions may accelerate from the historical rates of 2.2 percent and 1.6 percent, respectively.

"The rates of growth could be higher by a half percent or more, which becomes significant when compounded over 50 years," Eckaus says.

Eckaus acknowledged it has become counter-intuitive to question technology's potential to solve the energy problem. But U.S. steelmaking illustrates how fossil fuel consumption can increase along with technological change: Steelmakers' furnaces are now electrical, reducing coal use at the plant. But coal generates some of the electricity that powers the factory furnace, resulting in more CO₂ emissions.

"The net savings in this case comes from the use of scrap steel instead of iron ore, not from new furnace technology," Eckaus said.

"There is no 'a priori' reason to think technology has the potential for reducing energy use while meeting the tests of economics. It's politically unappetizing in the U.S., but in Europe, gas costs six dollars a gallon. Make energy more expensive: People will use less of it," Eckaus said.

A former consultant to the World Bank, Eckaus has been an adviser on economic policy to Egypt, India, Mexico and Portugal, among other countries; he advocates policies to control both energy use and CO₂ emissions.

Source: Massachusetts Institute of Technology

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