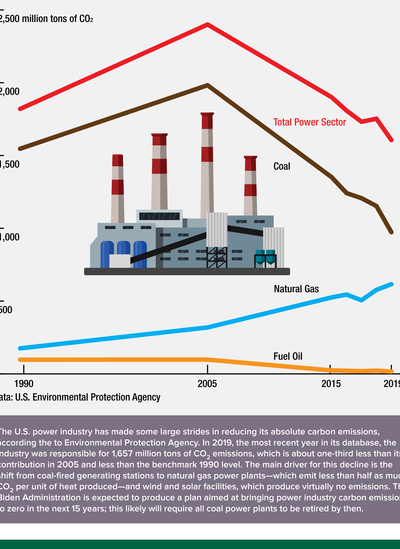
Three Charts about U.S. Climate Emissions

Even before the country rejoined the Paris Agreement, progress had been made on greenhouse gas emissions.

BY JEFFREY WINTERS

The levels of carbon dioxide and other heat-trapping gases have increased from around 280 parts per million at the beginning of industrialization in the 19th century to a record 412 ppm today, which scientists believe could be high enough to lead to catastrophic climate changes. The first step in turning this situation around is to reduce and then eliminate greenhouse gases. While the United States has been criticized for not doing its part—it even left the international Paris Agreement on emissions reductions for a few years—the U.S. has reduced emissions levels in some sectors of its economy. Some painful measures may have to be taken to bring net emissions to zero, but the nation is not as much a scofflaw as many think.

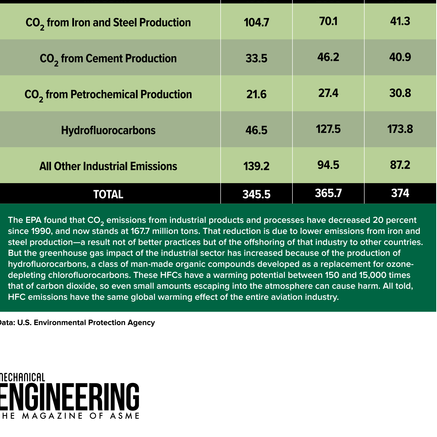
U.S. carbon dioxide emissions per $1 billion in real GDP



Data: Federal Reserve Bank of St. Louis

There is a real connection between economic activity and carbon emissions. That makes sense, because many contributions to gross domestic product—manufacturing, transportation, the building of infrastructure—require the burning of fossil fuels. As the economy grows, so do carbon emissions. This association has led some to worry that eliminating emissions will mean impoverishing citizens. The data from the U.S. since 1980 suggests that isn't the case. Using data from the Federal Reserve Bank of St. Louis, one can see that the emissions level per billion dollars of GDP (adjusted for inflation) has gone down from 712,000 tons in 1980 to 285,000 in 2017. It is a slower decline than what scientists suggest is needed, but it shows that economic progress and climate progress are not incompatible.

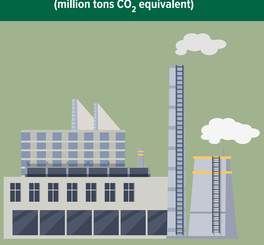
Carbon dioxide emissions from U.S. power industry



Data: U.S. Environmental Protection Agency

The U.S. power industry has made some large strides in reducing its absolute carbon emissions, according the to Environmental Protection Agency. In 2019, the most recent year in its database, the industry was responsible for 1,657 million tons of CO_2 emissions, which is about one-third less than its contribution in 2005 and less than the benchmark 1990 level. The main driver for this decline is the shift from coal-fired generating stations to natural gas power plants—which emit less than half as much CO_2 per unit of heat produced—and wind and solar facilities, which produce virtually no emissions. The Biden Administration is expected to produce a plan aimed at bringing power industry carbon emissions to zero in the next 15 years; this likely will require all coal power plants to be retired by then.

Industrial emissions of greenhouse gases
(million tons CO_2 equivalent)



INDUSTRY	1990	2005	2019
CO_2 from Iron and Steel Production	104.7	70.1	41.3
CO_2 from Cement Production	33.5	46.2	40.9
CO_2 from Petrochemical Production	21.6	27.4	30.8
Hydrofluorocarbons	46.5	127.5	173.8
All Other Industrial Emissions	139.2	94.5	87.2
TOTAL	345.5	365.7	374

The EPA found that CO_2 emissions from industrial products and processes have decreased 20 percent since 1990, and now stands at 1677 million tons. That reduction is due to lower emissions from iron and steel production—a result not of better practices but of the offshoring of that industry to other countries. But the greenhouse gas impact of the industrial sector has increased because of the production of hydrofluorocarbons, a class of man-made organic compounds developed as a replacement for ozone-depleting chlorofluorocarbons. These HFCs have a warming potential between 150 and 15,000 times that of carbon dioxide, so even small amounts escaping into the atmosphere can cause harm. All told, HFC emissions have the same global warming effect of the entire aviation industry.

Data: U.S. Environmental Protection Agency

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