Major new study charts course to net zero industrial emissions

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A major new study by an interdisciplinary team of researchers finds that it is possible—and critical—to bring industrial greenhouse gas emissions to net zero by 2070. Published Sunday in *Applied Energy*, the study assesses the range of technologies and policies interventions available to enable global industry decarbonization. This paper was the result of a

collaboration among almost two dozen leading technical experts, led by Jeffrey Rissman of Energy Innovation and coauthored by Dallas Burtraw of REsources for the Future (RFF).

The industrial sector was responsible for 33 percent of global greenhouse gas emissions in 2014 (including process emissions and indirect emissions from purchased electricity). Therefore, cutting emissions from this sector is critical to meeting international climate goals, such as those set by the Paris Agreement.

"There are promising technical approaches to dramatically reduce industrial emissions, such as improved energy and material efficiency, as well as increased use of electricity and hydrogen," says Rissman. "Smart, ambitious policy will be necessary to accelerate deployment of these technologies and achieve zero industrial emissions by 2070."

The paper finds that governments can accelerate research and development (R&D) in sustainable manufacturing and incentivize new technology deployment and market scale-up through policy mechanisms such as R&D support, emissions standards, carbon pricing, and government procurement of low-carbon materials and industrial products.

"Industry has many opportunities to reduce emissions, but firms can rarely act alone. Policies like carbon pricing and performance standards are essential to coordinate this effort." says Burtraw. "Deep mid-century decarbonization goals require private sector and government partnership."

The paper also finds that, when used together, the right technologies and policies enable net zero industrial greenhouse gas emissions by 2070. It particularly examines the role of the following technologies, innovation areas, and policy interventions that can be part of the emissions

reduction strategy:

- Electrification, use of hydrogen, energy efficiency, and carbon capture
- Material efficiency, longevity, re-use, material substitution, and recycling
- Specific technologies for iron and steel, cement, and chemicals and plastics
- Carbon pricing, research support, standards, government purchases, data disclosure

More information: Jeffrey Rissman et al, Technologies and policies to decarbonize global industry: Review and assessment of mitigation drivers through 2070, *Applied Energy* (2020). DOI: 10.1016/j.apenergy.2020.114848

Provided by Resources for the Future (RFF)