

Issue Brief: Reducing Industrial Emissions

Industrial emissions have been steadily on the rise and could soon exceed emissions in the power sector as it continues its successful decarbonization efforts. As demand for industrial commodities grows in developing nations, it matters where these goods are produced. In the U.S., manufactured products are [40% more carbon efficient](#) than the world average. Therefore, commonsense climate policy to address global emissions should incentivize the domestic industrial sector and propel its carbon efficiency leadership, so that it can continue to affordably reduce its emissions profile and remain globally competitive as other countries move to decarbonize.

COMMONSENSE CLIMATE POLICY INCLUDES A FOCUS ON REDUCING INDUSTRIAL EMISSIONS IN A WAY THAT INCREASES U.S. GLOBAL COMPETITIVENESS AND EXPORTS

Globally, [industry](#) accounts for approximately [24% of direct greenhouse gas emissions](#)—34% if indirect emissions are considered. While different studies may categorize industry sub-sectors in slightly different ways, the largest contributors to industrial emissions include: **iron and steel** (responsible for around 6.1% of global CO₂ emissions, according to the [World Resources Institute](#)), **chemicals and petrochemicals** (6.1%), **cement** (3.2%), and **aluminum** (3%, according to the [International Energy Agency](#)).

Most of the global production of many industrial commodities takes place outside of the United States. China, for example, accounts for over 50% of global [steel](#), [cement](#), and [chemicals](#) production, and nearly 60% for [aluminum](#). Overall, approximately [50%](#) of Chinese CO₂ emissions are from the industrial sector, a figure which points to the magnitude of emissions that may be embodied in the exports of major industrial producers.

Embodied carbon refers to the emissions derived from all upstream processes related to the production and exchange of goods. In other words, it represents all the emissions generated throughout the supply chain and other activities required to produce a good and deliver it to its final destination. Developed countries—including the U.S. and many in Europe—are among the [largest importers](#) of embodied carbon. On the other hand, China is by far the largest exporter of embodied emissions. Addressing embodied carbon in the trade of energy-intensive goods such as steel and cement provide an immense opportunity to reduce emissions: for example, [50% of the embodied carbon](#) in the cement that crosses international borders is traded between different global regions.

The U.S. “carbon advantage” can be the basis for global emissions reductions as well as export growth. Compared to global competitors, U.S. industry is substantially cleaner. The [U.S. steel sector](#), for example, is the most energy-efficient in the world among steel-producing nations. By comparison, the average product made in China results in [three times more carbon](#) than if it were made in America; in Russia, it results in [four times](#) more carbon than in the United States.

Policies that reward cleaner production and are aimed at strengthening the competitiveness of industrial producers in more carbon-efficient countries, such as the United States, can reduce global emissions by reducing the carbon embodied in the trade of industrial goods. Effective policies would also counter the global influence of countries that use energy and resources as a [political weapon](#) or where production is plagued by concerns over human rights violations. To be fully effective, policies must also reduce domestic permitting and regulatory barriers that currently limit domestic industrial production.

REDUCING INDUSTRIAL EMISSIONS CAN HELP REVITALIZE AMERICAN MANUFACTURING

Sound policy that differentiates cleaner, more efficient “Made in the USA” products from imported high-carbon products could also help enable a revitalization of domestic manufacturing, create jobs, and bring stability to the sector.

For example, the manufacture of cement and concrete products [employed 194,600 Americans](#) in 2021 (18% more than in 2011) and chemical manufacturing provided a total of [868,900 jobs](#) (an 11% increase from 2011). Overall U.S. job growth over that time period was 10%.

While numerous factors impact the relative cost competitiveness of U.S. goods, energy and production

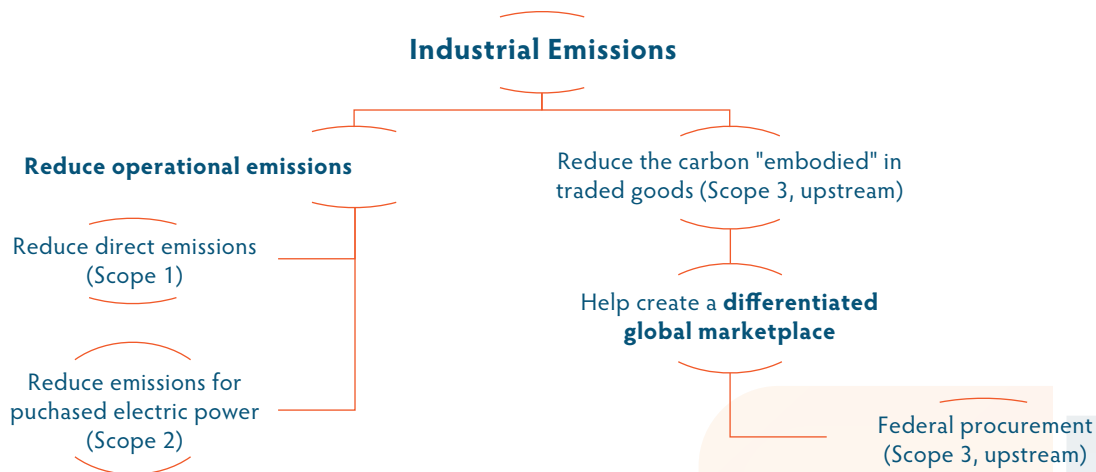
efficiency are among them. Policies that incentivize innovation and accelerate the adoption of new, more efficient, technologies will better position U.S. companies to compete globally, and increased U.S. market share will mean more American jobs.

CRES FORUM RECOMMENDATIONS TO REDUCE INDUSTRIAL EMISSIONS

CRES Forum supports federal policies that will:

- Incentivize companies to economically reduce their direct emissions (Scope 1) and indirect emissions (Scope 2) in a manner consistent with free market principles, reducing the carbon intensity or embodied carbon of the products they sell.
- Promote investment in research, development, and demonstration for innovation in cleaner energy solutions, including carbon capture technologies, that will affordably reduce industrial emissions and enhance U.S. competitiveness in the global marketplace.
- Optimize the carbon performance advantage of U.S. producers in the global marketplace.
- Update federal procurement policy (Scope 3 upstream) to provide the U.S. government – the world’s largest buyer of goods and services – the best opportunity to purchase high-quality, low-carbon products at an acceptable cost while considering budgetary impacts.
- Reduce regulatory and permitting obstacles that make U.S. manufacturing less competitive and force dependence on supply chains controlled by geopolitical adversaries.

While these areas of engagement are complementary, various policy approaches are needed to deliver measurable job growth, capital formation, and reduced greenhouse gas emissions.



Fund federal programs that efficiently and affordably reduce industrial emissions

CRES Forum supports appropriate and fiscally responsible implementation of federal programs that further innovation and reduce industrial emissions.

Government policy can support the advancement of manufacturing practices that make the U.S. more carbon efficient and increase American competitiveness in the global marketplace. Smart policy promotes the development of low-carbon technologies that are affordable, and thus exportable. As U.S. companies produce and export increasingly low-emissions goods here at home, as well as technologies that allow other countries to produce energy more efficiently, we can reduce emissions everywhere. Monetizing America’s carbon advantage is not only good for the American economy, it is good for global emissions reductions.

Recent legislation has authorized or appropriated significant funding to advance innovation for American producers. For example, the Department of Energy supports research, development and demonstration (RD&D)

to reduce industrial emissions through various programs and funding streams in several key areas that provide increased opportunity for innovation, adoption and deployment:

- Advanced manufacturing and decarbonization.
- Hydrogen and fuel cell technologies, including hydrogen electrolysis and hydrogen manufacturing recycling.
- Carbon management technologies and demonstration projects utilizing carbon capture; carbon dioxide removal; carbon transport and storage; hydrogen with carbon management; and integrated carbon management.
- Industrial emissions demonstration projects and advanced industrial technologies.
- Advanced nuclear reactor technologies.
- Advanced energy manufacturing and recycling.

Additional policy pathways to support U.S. clean industry and manufacturing

- **Reform the permit process to expedite capital upgrades and new projects.** Eliminate permitting obstacles to upgrading capital equipment and improve efficiency by incorporating newer technologies that consume less energy, or switch to cleaner practices.
- **Support implementation of programs to assist U.S. small businesses with Environmental Product Declarations (ISO 14025) and life-cycle emissions accounting and disclosure.** Environmental Product Declarations (EPDs) are based on Life-Cycle Assessments, which evaluate the environmental impact of a product throughout its entire [life cycle](#) – from raw material acquisition to design, production, shipping, and disposal. Companies that disclose EPDs have a competitive edge in marketplaces where buyers prioritize the environmental impacts of their projects. Applications may include concrete, iron and steel, and natural gas. The voluntary disclosure of the total carbon content or life cycle emissions of manufactured goods provides information to the market to drive more informed consumer purchasing and exports of U.S. manufactured goods to global markets.

Recent legislation established EPD assistance in the form of grants and technical assistance to businesses that manufacture construction materials and products. Moving forward, it will be important to ensure that implementation does not create excessive administrative burdens, which could disproportionately affect small and medium U.S. enterprises. As overseas markets move forward in implementing emissions disclosure practices, it is important to protect their competitiveness and support their efforts to meet the standards of the markets they participate in.

Conclusion

As demand for industrial commodities continues to grow around the world, encouraging U.S. producers to continue improving their carbon efficiency will be an important part of reaching emissions reductions goals. Currently, higher-emitting overseas production has an advantage over cleaner producers because of [lower costs](#). Policies that emphasize American companies' carbon manufacturing advantage can contribute not only to reducing global emissions, but to enhancing the competitiveness of U.S. businesses.