

## A decarbonized industry is a resilient one: how green materials reduce climate pollution

### The case for a clean transition in heavy industry

In the time it takes you to read this sentence, the equivalent of an [Olympic-size swimming pool of concrete](#) will have been poured. One article infamously called it “[the most destructive material on Earth.](#)”

Every year, [9,000 pounds of concrete](#) are produced for every person on Earth. Sand, which is a key ingredient in concrete and glass production, is the second most-used resource after water. The sheer volume of concrete we require is leading to a [global shortage of sand](#).

The climate crisis calls on us to transform these materials. Industrial facilities like steel mills and cement kilns are the leading source of some of the most damaging types of air pollution, which disproportionately impact frontline communities.

Transitioning to zero-emission steel, cement, and commodity chemicals is key to strengthening our industries, creating well-paying jobs, and building healthy economies in the face of climate change.

Incremental cost increases from decarbonization and improved cement mixtures do not pose a serious cost increase for consumers but can have a huge environmental payoff in the long run.

Concrete makes up a tiny fraction of most building costs: less than 1%. But [steel and cement production](#) alone make up 15% of all global CO2 emissions. A decarbonized industry will ensure a resilient future.

### Background on the industrial sector

You might not look at your home, office, or local grocery store and think, *That building is part of an industry responsible for one-third of global climate pollution.* But it's undeniably true.

Industry includes mining, manufacturing, construction, and waste processing. It covers [cement](#) and steel production, commodity chemicals like [fertilizer](#), and [hydrogen energy](#). It's comprehensive. It's growing. And it's paramount to a clean, just, and green future.

We know how to cost-effectively decarbonize industry. Now the task is to advocate for policies that can make that happen.

In 2022 we saw the groundbreaking [Buy Clean](#) initiative take flight. This ClimateWorks-supported initiative encourages the widespread adoption of decarbonized building materials and reduces costs by leveraging the power of public procurement. Last year,

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it was fully implemented in its first jurisdiction (California) and taken on in a major way at the [national level in the U.S.](#) and Canada. The policy was also introduced or proposed in multiple subnational, European, and Asian markets.

### **Why decarbonizing the industry by 2030 matters**

The climate discussion has long centered on improving clean energy deployment and efficiency, particularly when referring to the built environment, while rarely considering the embodied carbon of the materials used.

By 2030, we need scalable alternatives to current industrial systems that are unsustainably high in GHG emissions. The systems in question cover the entire industry: from producing basic materials like steel and cement to using non-organic materials like plastic and fertilizer.

Why 2030? Well, if we have fully viable alternatives by the end of the current decade, we allow markets time for scaling up green and low-carbon materials across the global economy by 2050.

Remember, [industrial GHG emissions](#) must be cut to zero by 2050 in high-income countries to meet our climate change mitigation targets. Middle- and lower-income countries are only a decade behind, with net-zero emissions in industry expected by 2060.

These years may seem far off at the moment, but the crucial time for decision-making is *now*. We need firm policies from businesses and governments in the next few years to stay on track, building on the momentum of the [Inflation Reduction Act](#) (IRA) and [Buy Clean policies](#).

As inflation rises to a [global 40-year high](#), the price of utilities has spiked over the past year. Energy costs for global production and shipping are reflected in the local prices of food and fuel. But change is already building momentum, as 2022 marked the first year that [investment in the low-carbon energy transition](#) broke \$1 trillion.

### **Story ideas**

#### *Labor*

- What is the impact on the American worker during and after the clean industrial transition?
- (U.S.) To combat misunderstandings about the clean energy transition, how will policies like the Inflation Reduction Act lead to a net increase in industry jobs?
- (U.S.) Meeting the [new national target](#) of reducing greenhouse gas emissions by 50% in 2030 will require deep economic changes like decarbonizing the power sector. How can local projects work to fuel a strong economy?
- (China) How does the accelerating transition to a decarbonized society benefit local workers?

#### *Environment*

- Is Limestone Calcined Clay Cement (LC3) – a low-carbon alternative to cement – accepted under cement standards in your country? If so, how can the widespread

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adoption of this material increase resource efficiency? If not, how can it help your country achieve carbon dioxide reductions and hit SDG goals?

- As of January 2023, LC3 standards are applicable in Europe, India, the United States, Cuba, and much of South America.
- What are the long-term effects of a transition to green building materials for the mining and extraction processes now used to source raw materials?
- Pick a large-scale infrastructure project in your area. What is the embodied carbon emitted from its production, and what could have been saved if clean materials had been used in construction?
- If and when building materials like plastics and fertilizers are decarbonized, how are they a benefit to homes and gardens in your local area?

### *Technology*

- Are there any local entrepreneurs and innovators making a difference in next-generation materials?
  - One example is [Dr. Karen Scrivener](#), a materials chemist advancing the fields of cement and wood production.
  - [Pawel Sikora](#) is incorporating waste glass into cement materials for a greater end-to-end lifecycle in building materials.
- Does your publication have any type of “Green Building 101” with information on key materials? If not, how can you educate your local and national audience?
- Why is a focus on energy efficiency in the building community outdated? What deeper conversations can result from switching the conversation to embodied carbon in materials?

### *Climate justice*

- How are frontline communities impacted by the U.S. steel industry?
- What is the ongoing damage in your local area of industrial facilities – and how can clean steel improve the health of workers, communities, and the environment?

## **Reporting resources**

### *National - United States*

- Information about the [Buy Clean](#) initiative and federal task force.
  - The government is prioritizing the purchase of [low-carbon construction materials](#). Established under the [White House Office of Domestic Climate Policy](#).
  - A [report to Build Clean](#): policy tools to reduce greenhouse gas emissions and local and legacy pollution from the American industrial sector.
- [Volts podcast](#): Rebecca Dell, who runs the industry program at the ClimateWorks Foundation, offers an overview of industrial decarbonization.
- An explainer of the [Inflation Reduction Act](#) (IRA) and its implications for business and industry in the U.S.

### *Global*

- The [Green Procurement Pledge](#) is a call to national and subnational governments to help cut carbon from their public construction projects.

- The [Industrial Deep Decarbonization Initiative](#) (IDDI) is a large and diverse coalition of governments and the private sector working to decarbonize heavy industries.
  - A related report on [deep decarbonization pathways](#) for the cement and concrete cycle in the United States, India, and China.
- Why you should care about [cement and concrete](#).
- How [green steel made with electricity](#) could clean up a dirty industry.
- An open guide to the world's energy system from [Global Energy Monitor](#).