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Funding Embodied Carbon Initiatives

Climate Compliance vs Action 2023: An Update on “Buy Clean,”
Emissions, LCAs, EPDs, and Funding

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February 1, 2023



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About the Atlantic Council Global Energy Center

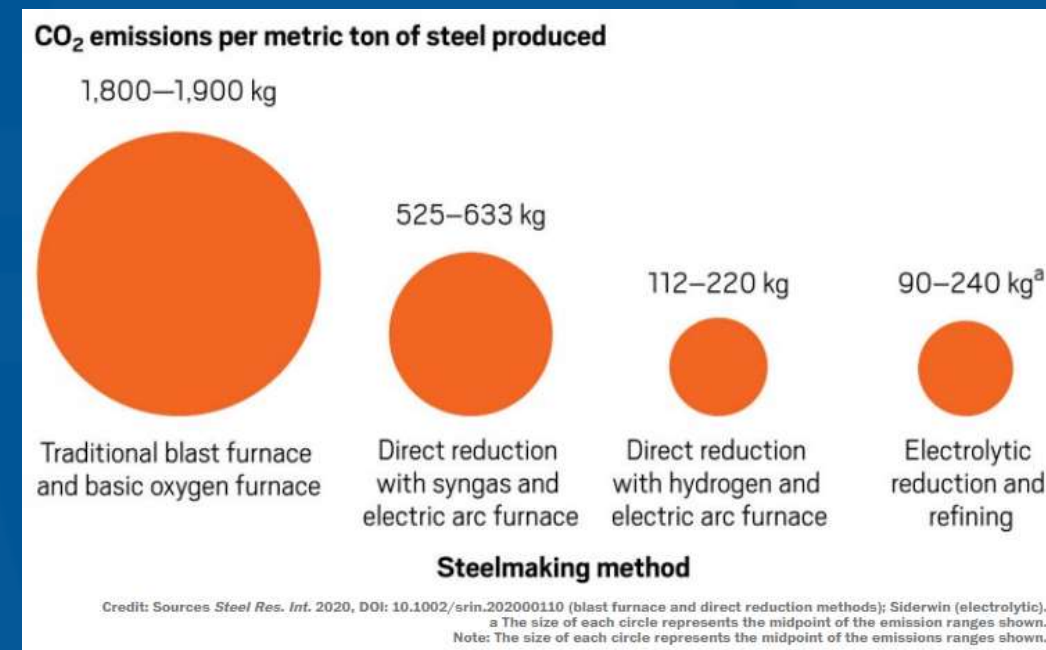
The Atlantic Council is a nonpartisan organization that galvanizes US leadership and engagement in the world, in partnership with allies and partners, to shape solutions to global challenges.

The Global Energy Center promotes energy security by working alongside government, industry, civil society, and public stakeholders to devise pragmatic solutions to the geopolitical, sustainability, and economic challenges of the changing global energy landscape. The center has 18 staff members and 58 fellows.



Reducing emissions from steel in the US

- Steel generates ~24% of industrial CO₂ emissions in the US and ~8% of total global emissions.
- In the US, 69.2% of crude steel is produced in electric arc furnaces and 30.8% from blast furnaces.
- Companies need to convert.
 - Technological innovation
 - Fuel switching
 - Energy efficiency
- The US profile is different from the world.



Caitlin Swalec, "Guest Post: These 553 Steel Plants Are Responsible for 9% of Global CO₂ Emissions," Carbon Brief, published June 29, 2021, <https://www.carbonbrief.org/guest-post-these-553-steel-plants-are-responsible-for-9-of-global-co2-emissions/>.



Reducing emissions from steel worldwide

- ~75% of crude steel is produced in high carbon-emitting blast furnaces globally.
- It would require **\$4.4 trillion** to decarbonize the entire industry, according to McKinsey.

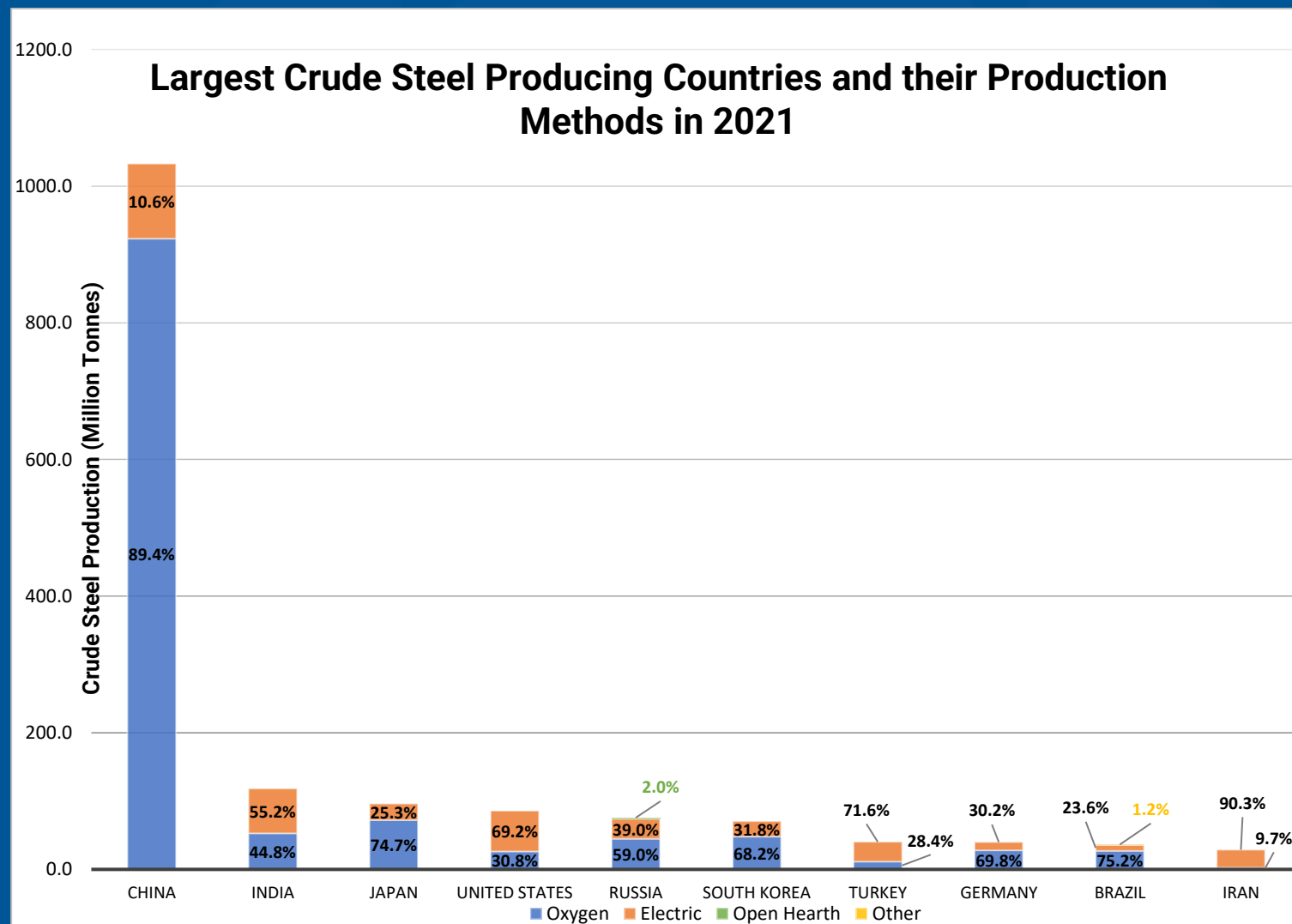


Chart data: World Steel Association, "World Steel in Figures 2022," World Steel Association, published August 4, 2022, <https://worldsteel.org/steel-topics/statistics/world-steel-in-figures-2022/>.



Reducing emissions from cement and concrete

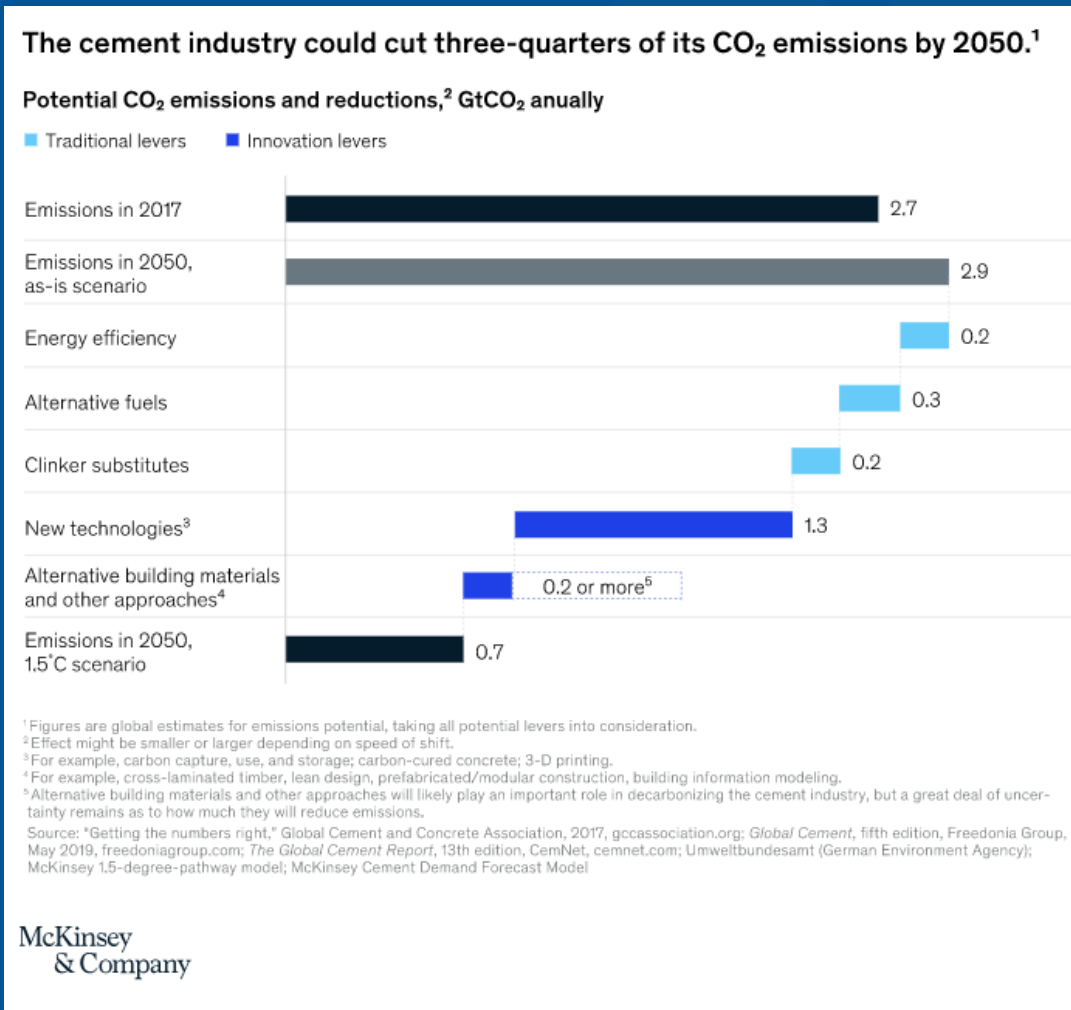
Respondents to an RFI from the US General Services Administration:

- **80%** of concrete manufacturers reported already producing or supplying low embodied carbon material.
- **55%** reported that low embodied carbon concrete has similar costs to conventional concrete.
- **60%** had developed a product-specific EPD.
- Resulted in the GSA's P100, which articulates new standards for purchasing from concrete and asphalt manufacturers.





Reducing emissions from cement and concrete





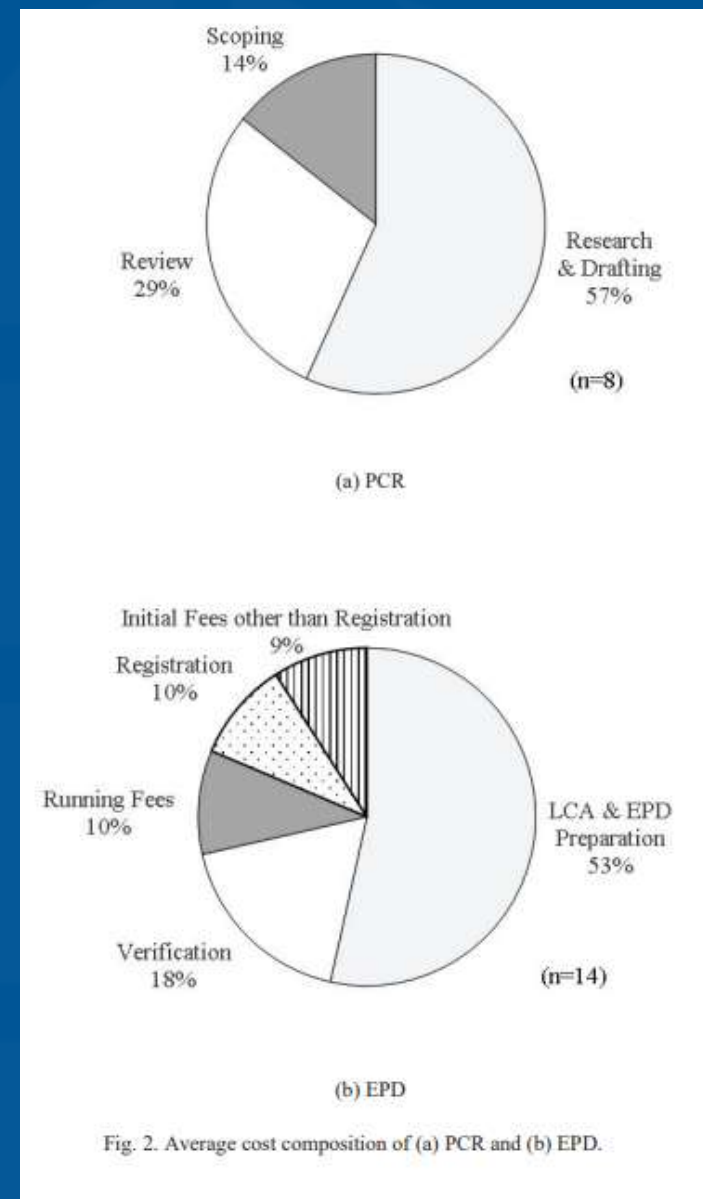
The Use and Value of EPDs

- Provides useful information for governments and other regulators to set minimum or required environmental specifications for products.
- Enables purchasers to make informed selection decisions and buy less carbon-intensive products.
 - Establishes the range of emissions from a product.
 - May help in quantifying the carbon content of imported and exported materials.
- Allows parties to assess not only the emissions from specific embodied materials, but also the emissions of the project.



The cost of preparing EPDs

- Companies file environmental product declarations (EPDs) based on product category rules (PCRs).
 - PCRs exist only for some products.
 - Product-specific and industry-wide EPDs
 - Average cost in 2017: **\$13,000 – \$41,000 USD**
 - Average labor in 2017: **22 – 44 person days**
- Costs include:
 - Registration
 - Data collection
 - Life-cycle assessment and EPD report generation
 - Verification and publication
 - Expiration

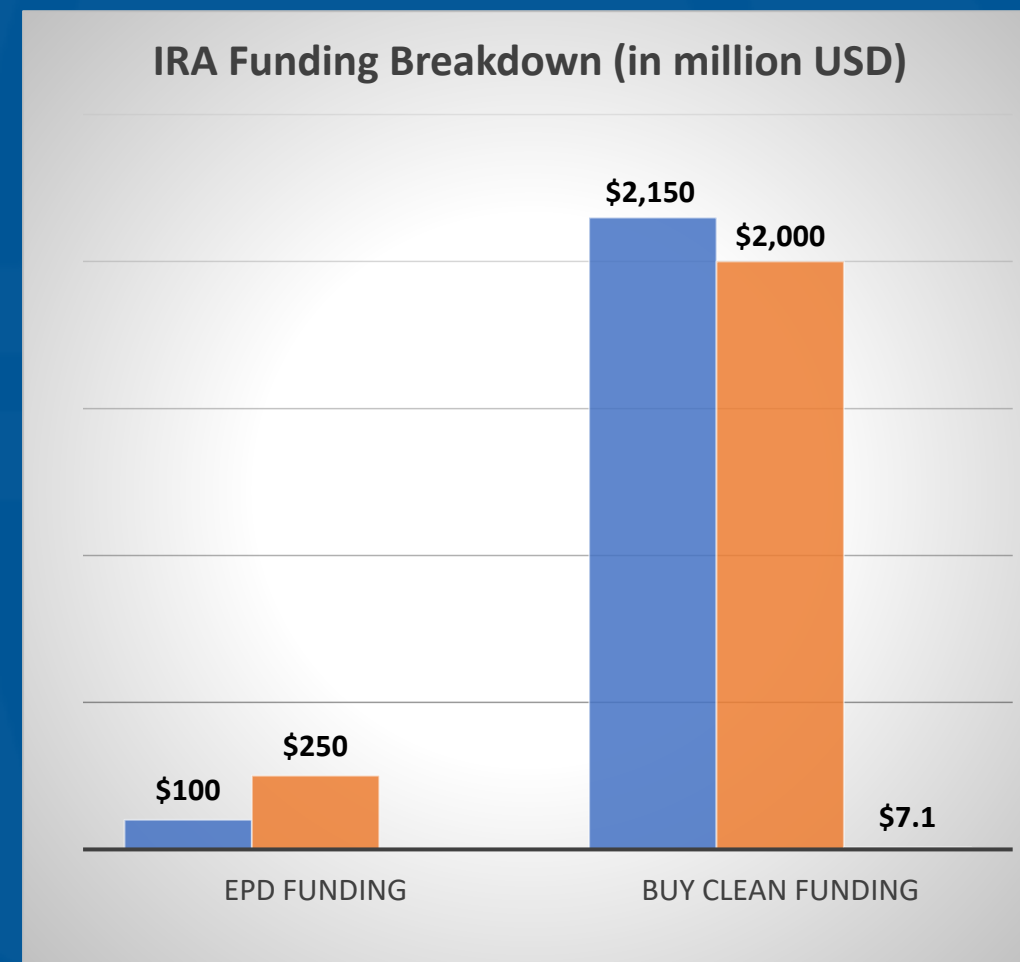


Tomohiro Tasaki, Koichi Shobatake, Kenichi Nakajima, and Carl Dalhammar, "International Survey of the Costs of Assessment for Environmental Product Declarations," *Procedia CIRP*, Elsevier, Volume 61, pp. 727-731, published April 19, 2017, <https://www.sciencedirect.com/science/article/pii/S221282711631318X>.



Funding in the Inflation Reduction Act

- **Funding for EPDs**
 - Administrative Costs: \$100 million
 - To create a selection program for construction materials
 - Grants and Technical Assistance: \$250 million
 - To help manufacturers develop and verify EPDs
- **Funding for Buy Clean**
 - Federal Buildings Fund (GSA): \$2.15 billion
 - Federal Highway Administration: \$2 billion
 - Federal Highway Administration Climate Challenge Initiative (state-based): \$7.1 million
 - FEMA financial assistance for low-carbon materials and incentives for low-carbon and net-zero energy projects
- **The government is creating the market before the regulations.**





Additional Funding

- **Bipartisan Infrastructure Law**
 - Carbon Reduction Program: **\$6.4 billion**
 - Provides funds for projects that reduce transportation emissions
 - Hydrogen Initiatives
 - Regional Clean Hydrogen Hubs: **\$8 billion**
 - Clean Hydrogen Electrolysis Program: **\$1 billion**
 - Clean Hydrogen Manufacturing and Recycling Initiatives: **\$500 million**
- **America COMPETES Act**
 - **\$1.8 billion in FY 2023** for the DOE for energy-related supply chain activities
 - **\$1.2 billion** to expand manufacturing capacity in the US



Summary

1. Significant funding is available.
2. Progress is being made to reduce industrial emissions, but there is a long way to go.
3. Government should standardize PCRs and streamline EPD certification.
4. A dynamic environment for operators will require updating EPDs frequently.



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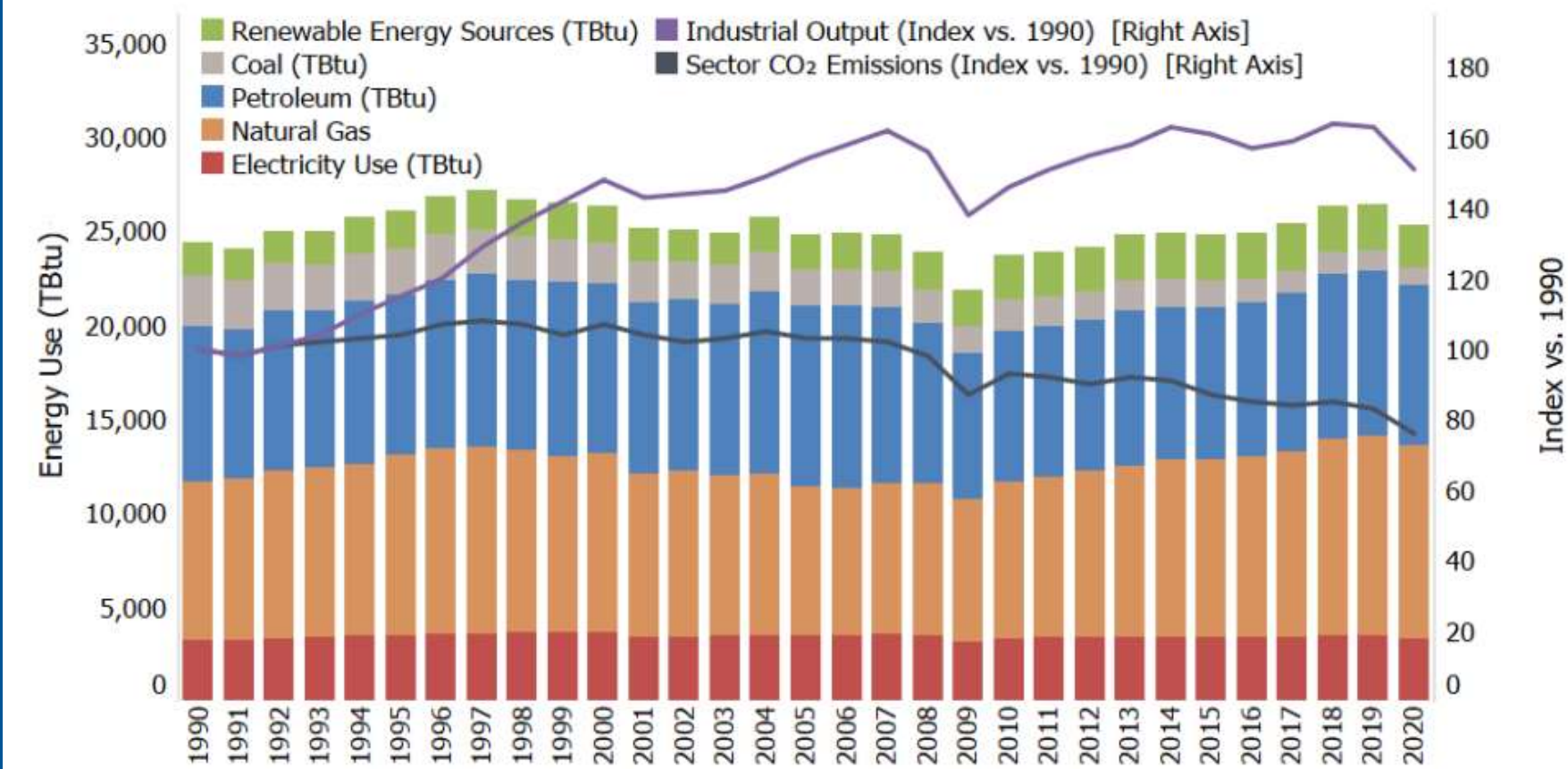
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Backup Slides



Emissions and fuel use by the industrial sector

Figure 3-12: Fuels and Electricity Used in Industrial Sector, Industrial Output, and Total Sector CO₂ Emissions (Including Electricity)



EPA, "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020," U.S. Environmental Protection Agency, published April 15, 2022, <https://www.epa.gov/system/files/documents/2022-04/us-ghg-inventory-2022-chapter-3-energy.pdf>.



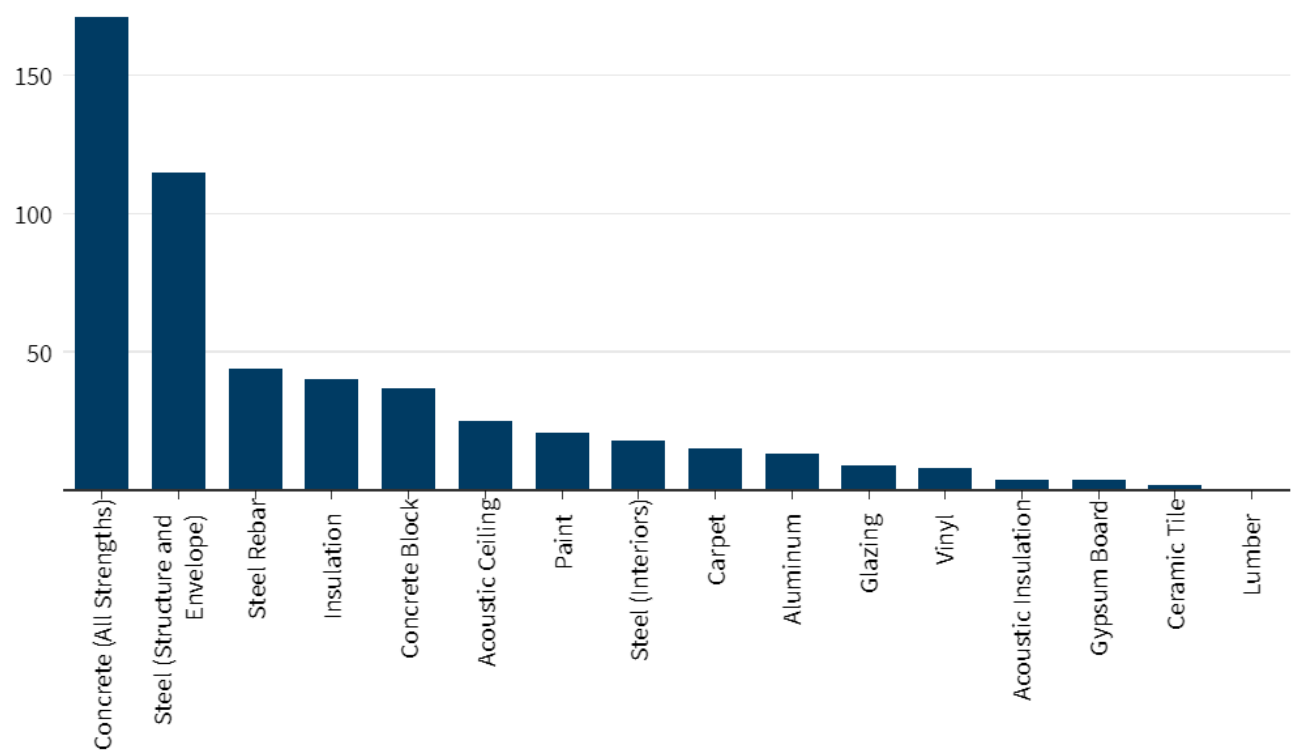
Legal Implications

- What happens when an EPD is inaccurate, intentionally or unintentionally?
- Who verifies the accuracy of EPDs?
 - SCS Global Services
 - UL Solutions
- How are EPD requirements negotiated/handled at borders?
- U.S. General Services Administration issued P100, which creates a standard for asphalt and concrete acquisition for project construction



Estimated Annual Federal Carbon Emissions Distribution

By common building materials, thousand tons of CO₂e



<https://rmi.org/white-house-buy-clean-guidance-targets-emissions-in-building-materials/>