REVITALIZING MATERIALS MANUFACTURING
Building Washington’s Clean Materials Manufacturing Economy | June 23, 2022
Industry accounts for 30% of US GHGs & 40% of global GHGs

*Figures include electricity and heat emissions allocated to final sectors.*
Under BAU, industry will be the top source of US GHGs within the decade.
Sector is not on track to deliver the cuts needed to meet President Biden’s pledge to slash US GHGs at least 50% by 2030.

Gap is only set to widen by 2050, at which point massive cuts in industrial GHGs are needed to stay on a 1.5°C warming pathway.

*Emissions savings compared to BAU account for captured and stored CO₂ via CCS applications in the lime and cement sector.
Many industrial products are highly emissive yet foundational to modern life & climate action.

Most industrial GHGs come from making a small set of products: basic chemicals, iron and steel, cement, aluminum, glass, and paper.

Demand for these products is growing, not shrinking; global cement production increased in 2020 despite the economic downturn caused by the pandemic, and global crude steel production dropped just 1%.

We need a lot of cement, concrete, steel, and aluminum to build wind turbines, solar panels, and EVs to provide power and mobility in carbon-constrained world.
Historically, climate policy has been seen as a threat to jobs, risking offshoring emissions.

Industry in the US employs millions of workers that tend to earn higher-than-average wages and are likelier to be unionized.

But sectors like cement, steel, and aluminum are energy intensive, operate on thin profit margins, and face exposure to global competition.

Important to ensure climate policies are designed in a way that preserves the competitiveness of domestic manufacturers.
Need a package of policies

- Federal and state incentives and direct investments (R&D, pilots, demonstrations);
- State regulations;
- Smart procurement policies to ensure cleaner plants have a competitive advantage; AND

- To minimize and mitigate GHG leakage and account for embedded GHGs in imported industrial materials – e.g., via a CBAM.
Role of leadership states like WA

State industrial decarbonization policies can have far-reaching benefits. They can:

1. Generate model policies that can be exported to other jurisdictions; and
2. Catalyze early commercial scale decarbonization projects and help lower barriers to wider adoption of advanced technologies.
Addressing the “Carbon Loophole” to Mitigate Global Emissions

Presentation for Building Washington’s Clean Materials Manufacturing Economy

June 23, 2022
CO2 emissions embedded in trade, 2019

Share of carbon dioxide (CO₂) emissions embedded in trade, measured as emissions exported or imported as the percentage of domestic production emissions. Positive values (red) represent net importers of CO₂ (i.e. "20%" would mean a country imported emissions equivalent to 20% of its domestic emissions). Negative values (blue) represent net exporters of CO₂.

Source: Our World in Data based on the Global Carbon Project

OurWorldInData.org/co2-and-other-greenhouse-gas-emissions/ • CC BY
CO₂ emissions embedded in global trade

Carbon dioxide (CO₂) emissions embedded in trade, measured as the net import-export balance in tonnes of CO₂ per year. Positive values (red) represent net importers of CO₂ (i.e. "100 million" would mean a country was a net importer of 100 million tonnes of CO₂ in a given year). Negative values (blue) represent net exporters of CO₂.

Source: Our World in Data based on the Global Carbon Project

OurWorldInData.org/co2-and-other-greenhouse-gas-emissions/ • CC BY
Roughly 10 gigatons of CO2e emissions – or 25% of total global emissions – passed through the Carbon Loophole in 2015

Source: Global Efficiency Intelligence
Policy Opportunities

Carbon Transparency

Cleaner government Procurement

Embodied Carbon Trade Policy
Carbon Transparency

- Environmental Product Declarations (EPDs)
- Free and accessible lifecycle assessment data

Government Procurement

- Buy Clean
- Additional Demand Incentive Procurement Programs for Low-Carbon Materials

Trade Policy

- Performance-based carbon border adjustment mechanism (CBAM)
Clean Products Standard
A New Approach to Industrial Decarbonization

JUNE 23, 2022

Emily Wimberger
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Introducing a clean products standard

- Establishes the maximum amount of GHGs per unit of material produced that can be emitted in the production of covered industrial products sold in the US
- Covers both products manufactured in the US as well as those imported into the country
- Products could meet the standard through any technological or process-based solutions that allow them to meet the emissions limit
- The stringency of the standard for each product category tightens over time, as can the breadth of products covered
- Builds on a long history of products standards as well as GHG tracking efforts
- Can leverage infrastructure established for government procurement policies like “Buy Clean”
US manufacturing greenhouse gas emissions, 2018

Million metric tons of CO2e

Source: Rhodium Group analysis
GHG emissions and GHG intensity of manufacturing, 2018

Million metric tons of CO2e

Source: Rhodium Group analysis
Compliance metrics and standards setting

- **Compliance metric:** greenhouse gas intensity of production, calculated as a function of:
  - Direct emissions associated with the production of the basic manufactured material from the manufacturing facility
  - Electric emissions associated with grid-purchased electricity
  - Total amount of material sold, in physical units

- **Standard setting:** declining standard based on a regularly updated assessment considering GHG abatement potential through range of mitigation options including:
  - Electrification
  - Switching to low-carbon fuels (e.g., biofuels or electrofuels) for fuel or feedstock
  - Low-carbon production processes
  - Paired deployment of carbon capture technologies
  - Energy and process efficiency improvements
Exports (green) as a share of domestic value of shipments, 2018

- **Chemicals**: 30.5%
- **Glass**: 20.0%
- **Aluminum**: 18.1%
- **Paper**: 13.4%
- **Iron & Steel**: 10.2%
- **Cement**: ~0%

Source: Rhodium Group analysis
Covered products in final goods

- **Substantive input**: the basic material being regulated must comprise a substantive share of the overall cost of inputs to the production of a product
  - **Potential metric**: coefficients from BEA industry-by-industry total requirements I/O table

- **Consumer facing**: the product obligated to demonstrate compliance should be the end of the manufacturing chain
  - **Potential metric**: intermediate versus final use data from BEA use of commodities by industry table
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WHAT IS BUY CLEAN?

Buy Clean promotes spending taxpayer dollars on products that are produced in a more efficient and environmentally-friendly manner.

This leverages existing public spending to reward manufacturers that are investing in decarbonizing.

Buy Clean and Buy Fair Washington | Policy Framework

**Reporting requirements**
- Environmental product declaration
- Health certifications
- Supplier code of conduct
- Working conditions

**Covered products**
- Concrete
- Reinforcing steel
- Structural steel
- Engineered wood products
Buy Clean and Buy Fair Washington | Policy Framework

Covered projects

- Large public buildings

Implementation

- Phased-in by building size over 2 years
- Exempt in case of significant delay or limited supply
- Database
- Advisory group
Why disclosure?

- Build capacity
- Improve data availability
- Provide insight on local markets
- Ensure fair competition
WHERE IS WASHINGTON NOW?

- **Reducing embodied carbon footprint of public buildings:** Executive Order 20-01
- **Commitment to fair and responsible procurement:** Buy Clean and Buy Fair requirements for public projects identified in 2021 State Energy Strategy
- **Promoting regional collaboration and leadership:** Pacific Coast Collaborative’s Low-Carbon Construction Task Force
- **Investing in policy foundation:** Funded Buy Clean and Buy Fair Database and pilot projects and Department of Enterprise Services construction industry work group
For more information, contact:
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Machinists Institute

NonProfit Education and Training provider created by IAM 751 to grow the future workforce in Aerospace, Advanced Manufacturing, Mechanics, Wood production and more, through:
• Pre-Apprenticeship
• Registered Apprenticeship
• Professional Development

MI uses holistic and student centered design to develop programs and offer support services like childcare, transportation, tuition, one on one career and education guidance, so our students can focus on their career opportunities. We bridge down to K12 and articulate to college degrees, to open doors along the career continuum.

MI partners closely with community based organizations to build networks of trusted messengers to support outreach, recruitment and support communities historically excluded from these career opportunities.
Manufacturing Workforce Development

- Registered Apprenticeship and how it can be supported in Manufacturing
- Employee Centered strategies
- Agency Collaboration

Goals:

- Reduce Occupational Segregation, Recruitment /Retention/ Promotion
- Equity in the access to good jobs through labor standards
- Attract manufacturing companies to do business in WA by providing a highly skilled and diverse workforce

Questions? Contact Shana Peschek at Shana.Peschek@machinistsinstitute.org