



CREATING GOOD JOBS, A CLEAN ENVIRONMENT, AND A FAIR AND THRIVING ECONOMY

## WRITTEN TESTIMONY

**Jason Walsh**

**Executive Director, BlueGreen Alliance**

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Subcommittee on the Environment and Climate Change**

**Building a 100 Percent Clean Economy: Pathways to Net Zero Industrial Emissions**

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Thank you Chairman Tonko, Ranking Member Shimkus, and distinguished members of the subcommittee. My name is Jason Walsh, and I am the Executive Director of the BlueGreen Alliance, a national coalition of labor unions and environmental organizations. On behalf of my organization, our partners, and the millions of members and supporters they represent, I want to thank you for convening this hearing today to examine opportunities to reduce emissions in the U.S. industrial sector.

The BlueGreen Alliance unites America's largest and most influential labor unions and environmental organizations to solve today's environmental challenges in ways that create and maintain quality jobs and build a stronger, fairer economy. Our partnership is firm in its belief that Americans don't have to choose between a good job and a clean environment—we can and must have both.

Reducing emissions from the U.S. industrial sector—the topic of today's hearing—is a clear example of this principle. If done right, a robust federal commitment to rebuild American manufacturing and tackle emissions from this sector will grow American competitiveness in the global economy and secure and create a new generation of good, middle-class jobs across America—all while tackling the climate crisis.

The world's leading scientific organizations have been unambiguous that climate change is a dire and urgent threat and that the longer we delay, the stronger the action required. Over the last decade, we have witnessed the worsening impacts climate change is having on our communities.

At the same time, our nation is struggling with deep and crippling economic inequality. According to the Economic Policy Institute, “the bottom 90 of the American workforce has seen their pay shrink radically as a share of total income,” from 58% in 1979 to 47% in 2015. That is almost \$11,000 per household, or \$1.35 trillion in additional labor income. There is a direct correlation with the decrease of worker power over this time, as the share of workers in a union fell from 24% in 1979 to under 11% now.<sup>1</sup>

Americans face the dual crises of climate change and increasing economic inequality, and for far too long we've allowed the forces driving both crises to create a wedge between the need for

economic security and a living environment. We know this is a false choice—we know that we can and must have both, and we need a bold plan to address both simultaneously.

That's why this summer the BlueGreen Alliance alongside our labor and environmental partners released **Solidarity for Climate Action**, a first of its kind platform to fight climate change, reduce pollution, and create and maintain good-paying, union jobs across the nation.

If we do it right, innovating, manufacturing, and installing the clean economy can protect the environment while creating quality jobs. Prioritizing the industrial sector and U.S. manufacturing must be a key focus—both to reduce climate emissions, but also to create more good jobs in manufacturing and ensure our industries' global competitiveness.

### ***Tackling the Industrial Sector Must be Key Policy Focus***

The industrial sector represents a significant source of U.S. emissions. In 2016, the largest sources of greenhouse gas emissions by sector were transportation (nearly 28.5%), electricity production (28.4%), and industry (22 %).<sup>ii</sup> However, distributing electricity by end-use reveals that the industrial sector is the largest source of emissions in the United States, responsible for 29% of emissions overall.<sup>iii</sup>

Not only are industrial sector emissions large today, they have been growing and are projected to increase further. Globally, industrial sector emissions increased at an average annual rate of 3.4% between 2000 and 2014, significantly faster than total carbon dioxide (CO<sub>2</sub>) emissions.<sup>iv</sup> Industrial sector emissions are also growing at a faster rate than other sectors. Between 1990 and 2014, industrial sector emissions increased by 69%, while emissions from buildings, power, and transport increased by only 23%.<sup>v</sup> Industrial sector emissions in the United States are projected to increase 17.6% through mid-century.<sup>vi</sup>

While other economic sectors are projected to see flat or declining emissions,<sup>vii</sup> these climate benefits will be offset by increases in industrial emissions under a business-as-usual scenario. Reductions in the power and transportation sectors, for example, are projected to be offset by an increase in carbon emissions from industrial sources.<sup>viii</sup> Therefore, while progress must be made across sectors, industrial sector emissions are a current and growing threat to climate progress.

While emissions from a range of economic activities are included in the industrial sector, manufacturing accounts for roughly three-quarters of it. And within manufacturing, several key energy-intensive manufacturing sub-sectors are responsible for the majority of emissions.<sup>ix</sup> The six largest sources of industrial sector emissions, now and looking ahead, are chemicals, petroleum refining, iron and steel, food products, paper products, and cement and lime production.<sup>x</sup>

Addressing the emissions associated with these industries is a significant challenge. Reducing emissions to the level required by climate math will require smart policies, tremendous technological ingenuity, and significant investment. In the industrial sector, we've barely gotten started. Philanthropy and policymakers have focused to date on emission reductions in other

parts of the economy—in the power, transportation, and buildings sectors. The industrial sector has received little attention by comparison, a dynamic that needs to change, not least because it will be the single hardest sector in which to zero out emissions.

### *This is a Competitiveness Issue*

Tackling emissions from the industrial sector is not only critical from a climate change mitigation perspective. It is an issue of global economic competitiveness. Prioritizing investments in U.S. manufacturing will not only reduce greenhouse gas emissions, but it will create and retain good jobs for two primary reasons: (1) a significant proportion of emission reductions can be realized by reducing energy waste, which saves money that manufacturers can otherwise use for workforce and capital investments, and which also supports jobs through the installation of energy efficiency technologies; and (2) U.S. manufacturers' ability to produce clean technologies and to use cleaner processes will make them more competitive in a global economy in which market demand is shifting inexorably in that direction.

Let's take the steel industry as an example.

The steel industry currently generates approximately 7% of the world's CO<sub>2</sub> emissions, contributing over three gigatons of CO<sub>2</sub> to global emissions annually.<sup>xi</sup> Global steel demand is forecast to increase from 1.7 billion tons in 2018 to over 2.6 billion tons by 2050.<sup>xii</sup> Emissions are therefore likely to increase absent intervention.

There are several ways to look at reducing emissions from steel production:

#### *Industrial Energy Efficiency and Material Efficiency and Reuse*

A key way to improve the energy efficiency of manufacturing is through the use of co-generation systems, often referred to as combined heat and power (CHP), or waste heat to power (WHP).<sup>xiii</sup> In addition to CHP and WHP, a range of commercially available efficiency technologies and measures exist that could reduce greenhouse gas emissions from steel manufacturing. Studies have shown that efficiency improvements could result in a 15 to 20% reduction in energy consumption for steel.<sup>xiv</sup>

A range of other advanced manufacturing practices and technologies can drive continued yield improvement from crude steel production to final steel in products, equipment, buildings, and infrastructure. This can help reduce the amount of steel production needed for the same products.<sup>xv</sup>

We also need more innovation of technologies and business models to scale up the reuse of materials and support circular economies within manufacturing. Recycling is already an integral part of steel production, although we need to do more to reduce contaminants in steel products to further increase the recyclability of scrap steel. But increasing high-quality material recirculation is most important in subsectors like chemicals, where the recycling of plastics lags far behind other commodities.

## *Fuel and Feedstock Switching*

Fuel switching to clean sources can also help reduce greenhouse gas emissions from the industrial sector, particularly with respect to process heat, which is the biggest source of energy use and related emissions in the sector. This could include switching to dispatchable renewable sources, such as solar thermal or sustainable biomass, and the electrification of certain processes. Steelmaking, however, relies on very high temperatures for process heat, which we can't yet achieve with heat from cleaner sources.

New technological innovations are under development to address the emissions associated with high-temperature heat generation. One promising new innovation is a process called “electrolysis,” which could replace high-temperature chemical processes. In this method, electricity, rather than heat, would drive reduction and oxidation reactions.<sup>xvi</sup> The combination of renewable energy with electrolysis is currently being developed.<sup>xvii</sup>

A second innovative approach under development entails reducing emissions from the consumption of fossil fuel for heat and emissions from certain feedstocks by switching them with zero-carbon hydrogen or biomass.<sup>xviii, xix</sup> For example, primary steel can be produced through direct reduction of iron ore with renewables-based hydrogen<sup>xx</sup> as a fuel and feedstock instead of coal.<sup>xxi</sup>

## *Carbon Capture, Utilization, and Sequestration (CCUS)*

The Intergovernmental Panel on Climate Change (IPCC) Special Report found that CCUS plays a major role in decarbonizing the industrial sector in pathways limiting warming to both 1.5°C and 2°C, particularly in the key manufacturing industries with higher process emissions that result from the conversion of feedstocks into commodities—for example, iron ore into iron and steel, limestone into cement, and bauxite into aluminum.<sup>xxii</sup> It needs to be emphasized that these emissions are associated with chemical conversions rather than energy use and we do not currently have near-term options other than CCUS to manage them.

Industrial facilities that capture and sell CO<sub>2</sub> can reduce their emissions while also gaining an extra revenue stream, creating jobs in their company as well as downstream industries and suppliers. The economic benefit of this would encourage more carbon producers to capture their emissions, and could result in reduction of stationary source CO<sub>2</sub> emissions from current levels. Adoption of CCUS also means that we can find more effective ways to safely utilize CO<sub>2</sub> emissions in ways that do not damage the environment. CO<sub>2</sub> is already used in some industrial processes, such as waste gas recycling used in steelmaking (see below), and has the potential to shift from a burden to a valuable commodity in the future as research into safe carbon utilization advances.

## *The Future of U.S. Competitiveness is at Stake*

Investments are happening today to drive these innovations in iron and steelmaking and develop the cutting edge technologies and practices that will significantly reduce emissions in this

industry. But where are these investments happening? For the most part, they're happening in other countries, not in the United States.

For example, in Hamburg, Germany, ArcelorMittal launched earlier this year a €65 million pilot project to test hydrogen steelmaking on an industrial scale. And in Ghent, Belgium, with its partner Lanzatech, ArcelorMittal is building the first large-scale plant to capture waste gas and biologically convert it into bio-ethanol. It predicts a CO<sub>2</sub> reduction of up to 87% compared with fossil transport fuels. In Sweden, SSAB, a global steel company, joined with LKAB, Europe's largest iron ore producer, and Vattenfall, one of Europe's largest electricity producers, on a project to produce steel using hydrogen.<sup>xxiii</sup> Lastly, in 2016, the Al Reyadah project in Abu Dhabi came online, becoming the world's first commercial steel carbon capture project.<sup>xxiv</sup>

Many of these projects benefit from public support. The SSAB project, for example, will receive SEK 500 million from the Swedish Energy Agency, on top of the SEK 60 million already contributed. And the Al Reyadah CCUS project would not have happened without state support from the United Arab Emirates.

These types of cutting edge projects are not being built in the United States because we don't have the policies and programs in place that incent and support the kind of investments needed to make them a reality. If we don't start playing catch up with the countries that do, the future of innovative, low -and zero-emission steelmaking will be commercialized in countries that are our global competitors. We cannot let that happen. In iron and steel and other manufacturing sub-sectors, we must move forward an aggressive agenda to regain American leadership in clean technology innovation and deployment, which are inextricably linked.

### ***Recommendations***

We need a holistic approach in this country to retaining and growing clean energy manufacturing in the United States while also investing in these industries to make them the cleanest and most competitive in the world.

American leadership in inventing—and manufacturing—the most advanced technology of all kinds was once a cornerstone of a strong and growing middle class and a pathway for many out of poverty. Innovating, building, and installing the clean economy can be a critical pathway to revitalize American manufacturing while protecting the environment and creating quality jobs across the country. We can rebuild American competitiveness in the global economy, and secure and create a new generation of good, middle-class jobs across America through a national strategy to lead in clean and emerging technology production. This must include:

- Technical and financial assistance targeting the biggest energy using and emitting manufacturers in the United States, enabling them to deploy fully commercialized industrial energy efficiency technologies and energy performance systems;
- Major new investments to spur domestic manufacturing and supply chain development in rapidly growing clean technologies;

- Increased funding for research, development, demonstration, and deployment of the transformative technologies that will be required to decarbonize the industrial sector, in particular those related to electrification, fuel -switching, and industrial CCUS;
- Expanding and adapting clean technology manufacturing loan and grant programs such as U.S. Department of Energy’s (DOE) Advanced Technology Vehicles Manufacturing Loan Program and the Sec. 132 Domestic Manufacturing Conversion Grants program; and
- A focus on environmentally, economically, and socially responsible mining projects, as well as reclamation and recycling initiatives to ensure we’re creating the materials necessary for a clean and secure energy future here in the United States.

Nationwide improvements in industrial energy efficiency and pollution reduction enjoy the diverse support of the labor, business, and environmental communities. Measures to help reduce energy costs, decrease pollution, and boost productivity and efficiency within the industrial sector will support U.S. manufacturers and help maintain our competitive edge in the global economy. Congress should:

- Increase appropriations for the key federal programs within the DOE that focus on the industrial sector, including the Advanced Manufacturing Office (AMO);
- Pass the Clean Industrial Technology Act (CITA), sponsored in the House by Congressman Casten and others, which would establish a new advisory council at the Department of Energy to coordinate funding for developing innovative technologies for industrial processes;<sup>xxv</sup>
- Extend, modify, and create tax credits for industrial efficiency improvements like CHP and waste heat to power, as well as the advanced energy manufacturing tax credit (48C) to once again support manufacturers as they expand into the clean economy;
- Create a program modeled after the successful DOE Industrial Technologies Program to provide matching funds for major industrial efficiency projects, which was the direct driver for ArcelorMittal’s Indiana Harbor Combined Heat and Power project;
- Establish a grant or revolving loan fund program to provide resources to manufacturers for producing clean energy, transportation, and infrastructure technology and energy efficient products and for reducing greenhouse gas emissions from manufacturing facilities—with criteria for domestic, high-quality job creation, particularly in low-income communities. This could be modeled on the IMPACT Act of 2009; and
- Utilize “Buy Clean” or other federal procurement standards that require the federal government to consider the carbon footprint of goods they’re purchasing, and to prioritize manufacturing firms that uphold strong labor standards and create good jobs in low-income communities.

Lastly, any approach to industrial emissions reduction must consider the unique challenge the industrial sector faces related to global competitiveness. Many U.S. manufacturers are in

“energy-intensive, trade-exposed” (EITE) industries and are very vulnerable to global competition. Steel, glass, metal casting, pulp and paper, aluminum, and chemicals are all traded globally and purchased predominantly based on price in a global marketplace.<sup>xxvi, xxvii, xxviii</sup>

Additionally, policies intended to reduce emissions could unintentionally—through increased costs to U.S. manufacturers—result in a phenomenon known as “carbon leakage.” Rising costs could push production to manufacturers in countries with less stringent standards, which could ultimately result in an increase in global greenhouse gas emissions in the long term.<sup>xxix</sup> Any federal effort to tackle industrial sector emissions and grow U.S. manufacturing therefore must include:

- Using common sense tax, procurement, trade enforcement, and border adjustments policies to stop offshoring and the leakage of jobs—and pollution—overseas; and
- Ensuring that trade agreements are enforceable, fair for all workers, and benefit the environment and the climate.

### ***Ensuring Quality Job Creation***

At the same time, we must ensure that these investments result in good-paying jobs. While many clean economy jobs are good, union jobs, too many still are not. Too many companies are offshoring jobs, offering substandard wages, conditions and benefits, or failing to provide safe, healthy workplaces. We cannot rebuild prosperity if working people and the communities they live in fail to see the gains from innovation and a cleaner economy.

Therefore, in addition to investments in innovation, manufacturing, and emission reduction technologies, we need an ironclad commitment to *high-quality* job creation across all sectors of the economy—but especially related to clean energy, adaptation, and resilience. That means a commitment to:

- Increase union density across the country through strong support of the right to organize throughout the economy, including in the clean technology sectors;
- Apply mandatory labor standards that include prevailing wages, safety and health protections, project labor agreements, community benefit agreements, local hire, and other provisions and practices that prioritize improving training, working conditions, and project benefits. This includes respect for collective bargaining agreements and workers’ organizing rights such as neutrality, majority sign-up, and first contract arbitration for construction, operations, and maintenance;
- Raise labor standards in the non-construction sectors through improved wages and benefits and the prioritization of full-time work that eliminates the misclassification of employees and misuse of temporary labor;
- Invest in training, equipment, preparedness, plan development, and other tools including through registered apprenticeship programs to ensure a robust, skilled, and well-prepared workforce to address the extreme weather events and other impacts caused by climate change; and

- Utilize community benefit, workforce, and other similar agreements that improve access to jobs and career paths, and identify and implement mechanisms to ameliorate and improve local economic and environmental impacts, particularly in low-income communities and communities of color.

In closing, I want to reiterate that reducing emissions in the U.S. industrial sector—if done right—is a significant opportunity to ensure a more equitable society, increase U.S. global competitiveness, and create good-paying jobs across the country—all while reducing the emissions driving climate change.

We look forward to working with this Committee as you move forward your agenda for the 116th Congress. Thank you again for the opportunity to testify today.

## ENDNOTES

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