

Accelerating the Global Transformation of Industry at the G7

Recommendations for the German G7 Presidency

Discussion Brief

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Main Messages

- 1 Transforming industry and decarbonising hard-to-abate sectors is essential for reaching climate-neutrality** and the goals of the Paris Agreement. In view of long investment cycles and massive reinvestment needs, transformative action is required in the 2020s. International coordination of state action has an essential role to play in this context.
- 2 The G7, as the world's industrial powerhouses and major markets, play a pivotal role in spearheading the deep decarbonisation of industry globally.** The UK presidency has laid important groundwork, which now must be translated into tangible action. The German presidency should pursue efforts to establish the proposed Coordinating Committee for the G7 Industrial Decarbonisation Agenda.
- 3 The G7 should coordinate green industrial policies** and focus on catalysing the adoption of international standards for the measurement and certification of embedded carbon, creating demand for green industrial products through public procurement, and creating green lead markets.
- 4 Efforts at industry transformation should extend beyond the G7.** All initiatives must be aligned with multilateral processes. G7 members must also support industry transformation outside the G7 through development assistance, strategic partnerships, and trade diplomacy.

The G7 Should Tackle Industry Transformation¹

Industrial decarbonisation is essential for achieving climate neutrality among the G7 and beyond. Industry is responsible for approximately 24% of global CO₂ emissions and about 27% of global total final energy use. The steel and cement sectors alone are responsible for approximately 12% of global CO₂ emissions.² There have been only modest declines in emissions in the past years, the majority of which has occurred outside energy-intensive industries. Reaching climate neutrality necessarily entails decarbonising industry and doing so quickly. An estimated 30-50% of all assets in the steel, cement, and chemicals sectors will require substantial reinvestments by 2030.³ Given the long investment cycles, industry transformation must be accelerated in the first half of the 2020s: investments made in the coming years must be compatible with climate neutrality by or before mid-century, or risk ending up as stranded assets.

Successfully decarbonising industry requires bold action on all fronts: stimulating the innovation and commercialisation of low-carbon technologies, improving energy efficiency, and phasing out carbon-intensive production methods and products. This is not only a matter of switching from high-carbon to low-carbon fuels but rather about reconfiguring value chains and developing new business models. Likewise, a successful industry transition hinges on finding low-carbon substitutes for materials with a high carbon footprint, as well as reducing the overall throughput of materials by transitioning to a circular economy.

The G7 are pivotal actors for developing and scaling-up low-carbon technologies globally. They are some of the most developed *industrial* nations, representing 45% of global GDP in nominal terms and 35% of global gross industrial value added with just 10% of the global population. Thus, the G7 boast large markets and account for a major share of global industrial output. This gives them important leverage in the global economy and can be a source for diffusing regulatory standards and technologies globally.

Transformative change in industry requires industrial policy – “intentional efforts to build specific industries in the green economy”.⁴ The state has an essential role to play in setting regulatory frameworks, incentivising transformative investments, sharing part of the risk, and creating lead markets for low-carbon technologies. Intelligent green industrial policy can moreover help to build pro-climate economic and political coalitions and result in positive path-dependencies and policy feedbacks that strengthen climate action in the long run. Actively building green industrial sectors, moreover, will create jobs and safeguard the livelihoods of workers in the low-carbon economy of the future.

Industrial policy can be a positive sum game if it refrains from protectionist reflexes. Scaling up low-carbon technologies lowers their costs and leads them to market maturity. Eventually, this benefits everyone as clean technologies diffuse globally and push out fossil incumbent technologies. Experience with the development and commercialisation of clean technologies, like wind and solar, shows that innovation benefitted from the collaboration of firms from different countries that bring their

¹ While the carbon border adjustment and climate club proposals are closely connected to industry transformation, this paper only addresses them tangentially. A separate input paper just on climate clubs and border measures will follow.

² Including process emissions. IEA, “Tracking Industry 2020” (2020), <https://www.iea.org/reports/tracking-industry-2020>.

³ Agora Energiewende and Wuppertal Institute, “Breakthrough Strategies for Climate-Neutral Industry in Europe” (2021).

⁴ Bentley Allan, Joanna I. Lewis, and Thomas Oatley, “Green Industrial Policy and the Global Transformation of Climate Politics,” *Global Environmental Politics* 21, no. 4 (2021): 1–19, https://doi.org/10.1162/glep_a_00640.

respective industrial specialisations and domestic institutional advantages to the process.⁵

Given the globalised nature of production and consumption, international cooperation over industrial transformation is crucial. Therefore, cooperating and coordinating on green industrial policy is in everybody's best interest. Rather than derailling decarbonisation through trade disputes,⁶ the G7 should focus on creating frameworks for effective collaboration and generate a mutual understanding over the means and ends of green industrial policy.

Priorities for the German Presidency

1. Translate Commitments into Action

The UK presidency has laid important groundwork for industry transformation. The German presidency should continue on this path, transforming written commitments into tangible action. In the 2021 Carbis Bay Leaders Declaration, G7 leaders for the first time specifically addressed the need for industrial transformation and expressed their ambition to “take action to decarbonise areas such as iron and steel, cement, chemicals, and petrochemicals, in order to reach net zero emissions across the whole economy.”⁷ To this end, G7 members committed in 2021 to launching the **G7 Industrial Decarbonisation Agenda (IDA)** jointly proposed by the UK and US and meant to “complement, support and amplify ambition of existing initiatives” for industrial decarbonisation. The UK presidency's Exploratory Document on

the IDA lists a number of joint work areas including (1) market regulation, (2) development of decarbonisation standards, (3) investment and procurement strategies, and (4) joint research.⁸ In order to institutionalise actual workstreams, **the German presidency should pursue efforts to quickly establish the proposed Coordinating Committee for the G7 IDA.**

In 2021, the G7 reached general agreement on priority areas for coordination across industrial decarbonisation, the next logical step is translating this into action. The Carbis Bay Declaration specifically highlights the role of “public procurement, standards and industrial efforts to define and stimulate demand for green products and enhance energy and resource efficiency in industry”. The German Presidency should now focus on translating these important political signals into concrete agreements and actions that address both the demand and supply, the innovation and commercialisation of clean technologies. This should be done in close alignment with existing multilateral initiatives, like the Clean Energy Ministerial's Industrial Deep Decarbonization Initiative (IDDI)⁹, Mission Innovation¹⁰, or the Leadership Group for Industry Transition (LeadIT)¹¹.

2. Catalyse the Adoption of International Standards

There are many strategies around industrial decarbonisation – but from carbon border adjustments to the creation of green lead markets, they all rely on **reliable and transparent information about the life-cycle emissions of traded products**. All these

⁵ Jonas Nahm, *Collaborative Advantage: Forging Green Industries in the New Global Economy* (Oxford University Press, 2021).

⁶ Latest disputes between Canada and the US over tax credits for EVs in Biden's Build Back Better bill are a case in point, see Riley Beggin, “Canada Threatens to Impose Tariffs If EV Tax Credits Pass,” *The Detroit News*, October 12, 2021, <https://www.detroitnews.com/story/business/autos/2021/12/10/canada-threatens-tariffs-if-ev-tax-credits-pass/6468845001/>.

⁷ G7, “Carbis Bay G7 Summit Communiqué,” July 13, 2021, 15.

⁸ *Ibid.* 15; Proper workstreams are supposed to be established and supervised by a Coordinating Committee. As of today, there is no information about the establishment of the Committee.

⁹ <https://www.unido.org/IDDI>

¹⁰ <http://mission-innovation.net/missions/net-zero-industries-mission/>

¹¹ <https://www.industrytransition.org/>

polices need to differentiate low-carbon products from conventional ones, and therefore need to ascertain their embedded GHG emissions. Likewise, consumers and producers require reliable and transparent information about the carbon footprint of products. While some international standards already exist (ISO 14025, 140040s, and 14060s), they are not applied broadly and widely enough to provide the transparency required.

The G7 should therefore focus on three aspects: Firstly, improve the uptake of product declarations of embedded emissions.¹² G7 governments can do so through incentivising voluntary labelling schemes or by making product carbon footprints mandatory in public procurement. More far-reaching would be developing mandatory labelling systems and, eventually, adopting Product Carbon Requirements (PCRs), i.e., limits on the embedded carbon of certain products.¹³ Secondly, and building on the first point, the G7 should focus on making data on embedded emissions comparable by pushing for common monitoring, reporting, and verification systems (MRV). Lastly, G7 members should catalyse the development of standards for measuring and certifying the embedded emissions of *complex* products through the International Organization for Standardization (ISO).

While the G7 is not the body to develop standards, it can improve their widespread adoption and thus contribute to transparency on the embedded emissions of products and trade flows. This will also help making border adjustment and other trade-related climate measures consistent with principles of non-discrimination. Consistent

labelling and PCRs, moreover, are important tools for demand creation¹⁴ and may enable the establishment of sectoral alliances that are open to all participants that adopt the same PCRs. The EU-US Joint Statement on Steel and Aluminium from October 31, 2021, lays the groundwork for open alliances based on such common standards.¹⁵

Similarly, there is a need for **international standards for green hydrogen and its derivatives**. While the G7 should recognise that hydrogen is secondary to direct electrification and its use should be focused on so-called no-regret applications, hydrogen and its derivatives will play a crucial role in decarbonising industry – but this will only be compatible with climate neutrality if the hydrogen is produced with additional renewable electricity. This makes it all the more important to have international standards to judge whether industrial feedstocks are sustainable or not. Here, the G7 has an important role to play in animating the swift development of international standards for measuring the life-cycle emissions of hydrogen and developing internationally applicable MRV systems.

3. Create Demand for Green Industrial Products

G7 countries should signal and scale-up demand for green industrial products. Demand is essential to scale up and commercialise new technologies – and thereby lower their cost. There are different levers for demand creation, of which **public procurement** is a crucial one. Coordination over public procurement among G7

¹² These should follow ISO standards, especially ISO 14025 and ISO 14067.

¹³ The EU's Sustainable Products Initiative and Ecodesign Directive already provide a regulatory framework to establish such requirements. These may start with carbon-intensive basic materials but should eventually extend also to final products. See Timo Gerres et al., "To Ban or Not to Ban Carbon-Intensive Materials: A Legal and Administrative Assessment of Product Carbon Requirements," *Review of European, Comparative & International Environmental Law* 30,

no. 2 (2021): 249–62, <https://doi.org/10.1111/reel.12395>.

¹⁴ CISL and Agora Energiewende, "Tomorrow's Markets Today: Scaling up Demand for Climate Neutral Basic Materials and Products." (CLG Europe, 2021).

¹⁵ Bentley Allan and Todd Tucker, "The E.U.-U.S. Steel Deal Could Transform the Fight against Climate Change," *Washington Post*, October 31, 2021, <https://www.washingtonpost.com/politics/2021/10/31/eu-us-steel-deal-could-transform-fight-against-climate-change/>.

members can be based on voluntary pledges for a **minimum share of low-carbon public procurement** to be reached by 2025 and mechanisms to ratchet up commitments thereafter. Alternatively, or subsequently, G7 countries can move to more formal **procurement alliances** that agree on more expansive standards and conditions of green public procurement.

Public procurement is a sizeable lever for demand as public actors have considerable buying power for goods and services. This is especially true for G7 countries as they spend between 10% and 16% of GDP on general procurement. Public construction projects of physical infrastructure like roads or buildings constitute a significant share of those basic materials that are at the heart of industrial decarbonisation – in particular steel and cement. Through minimum content requirements or preferential buying obligations, governments can create demand for low-carbon industrial products. Germany, along with Canada and the United Kingdom already pledged to buy low-carbon cement and steel as part of the **IDDI's Green Public Procurement pledge**.¹⁶ The German presidency should use the G7 to get all members to support the IDDI's initiative and to push forward more detailed and formal coordination of policies for demand creation.

Ideally, procurement schemes should be open to products from all countries, provided that the life-cycle emissions of products can be documented. This will provide incentives to foreign producers and help scale up technologies more quickly. While some members, like the US, rely heavily on local content requirements in their domestic decarbonisation agendas, the German presidency should further conversations about making green public procurement

open to all countries to create larger markets for low-carbon industrial products.

G7 countries should also double down on creating and demonstrating innovative technologies. The transformation of industry hinges on the development, refinement, and deployment of innovative technologies, including Oxyfuel CCS, Direct Reduced Iron, chemical recycling, among many others. Especially their demonstration and deployment is much needed. The required investments are unlikely to come from the private sector alone.¹⁷ RD&D spending globally and among G7 members has remained flat or has fallen in relative terms in the past years. This trend must be reversed to accelerate the development of breakthrough technologies. **G7 members should therefore agree on increasing public spending on Research, Development and Deployment (RD&D) of clean technologies.**

Coordination among G7 members over green public procurement, RD&D, and regulatory measures can be steppingstones for the **creation of Green Lead Markets** for low-carbon industrial products. Combined with other regulatory and finance instruments like standards, carbon contracts for difference, carbon pricing, and carbon border adjustments, G7 markets can evolve into lead markets for green industrial products that can then set a global standard.¹⁸

4. Contain Trade Disputes on Climate Measures

Green industrial policy has the potential to exacerbate trade disputes. It is politically legitimate, perhaps necessary to connect industrial decarbonisation with an agenda for creating industrial jobs, strengthening the domestic industrial base by levelling the playing field, and seeking technological leadership, including through subsidies for

¹⁶ <https://www.unido.org/news/worlds-largest-steel-and-concrete-buyers-make-game-changing-push-greener-solutions>

¹⁷ IEA, "Net Zero by 2050" (IEA, 2021). 186, <https://www.iea.org/reports/net-zero-by-2050>

¹⁸ Gökce Mete and Oliver Johnson, "Creating Lead Markets for Green Industrial Products" (LeadIT, 2020), <https://www.industrytransition.org/insights/creating-lead-markets-for-green-industrial-products/>.

low-carbon technologies. Yet all these elements can also be perceived as simple protectionism with a green tarnish. Considering the already existing concerns around trade tensions, it is pertinent for members of the G7 to come to terms on the necessity of green industrial policy and to be transparent about them.

There are two measures in particular that G7 members can take to avoid the perception of green protectionism: first, keep support policies open to investors and producers from abroad – from green lead markets for low-carbon industrial products (provided adequate MRV is in place), to investments support for low-carbon production facilities. Second, embed domestic industrial policy in climate and trade diplomacy, for instance, as part of the WTO's Trade and Environmental Sustainability Structured Discussions. The G7 should work towards consensus on the goals, the principles, and the acceptable means for a green industrial policy that flows into these discussions. **To this end, the G7 can mandate the OECD to come up with criteria and a definition of 'green' subsidies** that can help guide a more rational discussion of trade issues.

Ultimately, agreement among G7 members may take the form of a 'peace-clause' for trade related climate measures. This would mean that G7 members agree to temporarily wait before challenging national measures, such as subsidies for clean technologies, or to refrain from countermeasures, provided that the measures are transparent and aligned with agreed-upon principles of green industrial policy.

5. Reach Beyond the G7

Global problems require global solutions: G7 countries should help other countries by increasing official development assistance dedicated to the

decarbonisation of industry. The G7 cannot rely on markets for the diffusion of clean technologies alone. In accordance with international obligations to increase climate finance, G7 members should commit to more international funding to decarbonise the industrial base in low- and middle-income countries – or to avoid building up a fossil-intensive industry in the first place. This can and should be done through official development assistance: Multilateral development banks are key for channelling finance into industry transition projects in low and middle-income countries. For instance, the World Bank's Climate Investment Fund has a dedicated Industry Decarbonization Programme that requires donor replenishment.¹⁹ Likewise, bilateral development assistance is an important tool for spurring industrial decarbonisation in low- and middle-income countries and should be aligned with climate neutral development pathways. Analogous to the Just Energy Transition Partnership with South-Africa²⁰, G7 countries should push forward efforts to broker deals with third countries that include finance and investments as well as access to green technologies in exchange for ambitious efforts of industry transition.

Actions must be aligned with other multilateral processes, such as the UNFCCC, G20, and WTO negotiations. G7 initiatives in general and concerning industry transformation in particular must build strong ties to existing multilateral workstreams. This includes engaging with the Leadership Group for Industry Transition as well as the efforts of the Clean Energy Ministerial's IDDI. Likewise, the G7 must actively bring major growth markets, such as India or Brazil, on board. It is therefore an important testing and coordinating space for action at the G20 level. In the end, the goal should be to catalyse multilateral processes, not to supplant them.

¹⁹ <https://www.climateinvestmentfunds.org/cif-programs>; Timo Gerres et al., "Green Steel Production: How G7 Countries Can Help Change the Global Landscape" (LeadIT, 2021),

<https://www.industrytransition.org/insights/g7-green-steel-production/>.

²⁰ <https://ukcop26.org/political-declaration-on-the-just-energy-transition-in-south-africa/>

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