POLICY BRIEF

Making the U.S.-EU Trade and Technology Council Work for Climate and Clean Tech: Recommendations for Action

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The United States and the European Union (EU) have recently launched various initiatives to manage their competition and enhance their cooperation on trade and technology issues. The Transatlantic Leadership Network's Trade and Technology Working Group addresses these topics in its work, including recommendations for more effective action. On climate and clean tech issues, our work has profited from background papers by Jonathan Elkind and Richard Morningstar, and presentations by Ann Mettler and Christoph Meinel. I thank them all for their contributions, from which I have profited. The following policy brief and its companion pieces, however, are my responsibility alone. An introductory policy brief offers an overview of the climate crisis and how the United States and the EU are addressing it. A second brief offers recommendations for U.S.-EU efforts going forward on this broad agenda. This policy brief focuses more specifically on how the U.S.-EU Trade and Technology Council might best fit as part of these broader efforts. All products from the TLN Working Group may be found at https://www.transatlantic.org/transatlantic-technology-and-trade-working-group/.

> *Working Group 2 – Climate and Clean Tech: Given the great importance of technology to address environmental challenges and connected market opportunities, the Climate and Clean Tech working group is tasked to identify opportunities, measures and incentives to support technology development, transatlantic trade and investment in climate neutral technologies, products and services, including collaboration in third countries, research and innovation, and to jointly explore the methodologies, tools, and technologies for calculating embedded greenhouse gas emissions in global trade.*
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> *U.S.-EU Trade and Technology Council Inaugural Joint Statement, September 2021* [1]

An important challenge facing the TTC Working Group on Climate and Clean Tech is to decide how it best fits within the overall context of broader U.S.-EU efforts to address these issues. It has the potential to play an important role by focusing on two priorities. The first are ongoing and upcoming challenges in the bilateral relationship. The second is to make real the pledge made by U.S. and EU leaders to "work towards" a Transatlantic Green Technology Alliance.

Address Ongoing and Upcoming Issues

Resolve the CBAM Challenge. In July 2021, the European Commission proposed that the EU adopt a Carbon Border Adjustment Mechanism (CBAM), which would levy charges on imported goods based on their attributed carbon emissions. Calculations of such charges would be tied to the price of carbon as determined via the EU's Emissions Trading System (ETS). The CBAM is intended to alleviate concerns of European companies that carbon pricing in the EU could render them less competitive than foreign companies that do not have to contend with carbon pricing; to ensure that EU decarbonization efforts do not push companies simply to shift production involving carbon emissions outside EU borders, a phenomenon known as "carbon leakage"; and to use the size of the EU's internal market and the power of its norm-setting authorities, often known as the "Brussels effect," to drive down carbon content across the globe.

The proposal still requires the approval of EU member states and the European Parliament. It is a legislative priority for the French presidency of the EU Council in the first half of 2022. If the legislation is enacted as currently proposed, during a 2023-2025 transition period the CBAM would apply to five sectors: cement, iron and steel, aluminum, fertilizers and electricity. It would enter fully into force on January 1, 2026. The proposal also projects a broadening of the CBAM's scope to include additional sectors as well as indirect emissions, transportation services and downstream industries such as tools, machines, vehicles, and plastics.

While the measure would have the biggest financial impact on Russia, Turkey, China, and the UK, the most exposed countries would be sensitive neighbors like Ukraine and developing nations that rely on a small number of industries, like Mozambique, Guinea, Sierra Leone, Ghana, Cameroon, Zambia, Zimbabwe and Egypt.[2]

There is still much debate about the shape of the CBAM in the EU, where some of affected industries remain resistant. The proposal has been criticized from various corners. There is little evidence of carbon leakage, and investment decisions rest on a much broader set of factors than the price of carbon.[3] High-carbon producers could shift sales to countries with low-carbon standards, resulting in no net reduction in overall global emissions. The proposed CBAM mechanism, which would impose a cost on all importers of CBAM-covered goods, regardless of their level of economic development, appears to contradict the EU's General System of Preferences (GSP) for developing countries and thus subvert the EU's own efforts to support poorer countries to boost their climate ambitions. A number of countries believe the current CBAM proposal is inconsistent with the EU's WTO treaty obligations.

While the United States would not be particularly hit by the initial phase of CBAM measures and the Biden administration has been sympathetic to the climate considerations that motivated the CBAM proposal, it has raised concerns about the proposed measure's WTO-compatibility, its impact on transatlantic commerce should it be extended beyond the five targeted sectors, its counterproductive potential to subvert U.S.-EU efforts to get more countries to elevate their climate ambitions, and its rigid reliance on carbon prices as determined by the EU. The latter is particularly troublesome, since Republican opposition almost certainly means that carbon pricing is unlikely in the United States for the foreseeable future. The Biden administration prefers utility and infrastructure regulations over carbon pricing. Democrat-inspired legislation pending before the U.S. Congress refers to "polluter import fees," but would avoid EU-style rigidity by permitting any type of decarbonization measures to count when assessing tariffs.[4]

U.S.-EU differences over decarbonization mechanisms – with the EU favoring carbon pricing and the U.S. preferring utility and infrastructure regulations – should not prevent the two parties from devising a workable approach to CBAMs. Instead of igniting a transatlantic trade war over carbon pricing – which has no foreseeable chance of being implemented in the United States -- the two parties should use the TTC to explore mutually acceptable alternatives, such as devising a process of mutual recognition of each party's approach to decarbonization. Openings along these lines may be found in the Commission's current proposal, which would accept calculations of embedded emissions in CBAM goods that would be verified by an independent third party accredited by a national accreditation body, and would reduce levies imposed if importers can prove that carbon prices have been paid in the country of origin.[5]

The EU's current approach is a classic case of the perfect being the enemy of the good. A uniform global price on carbon may be an optimal way to address these issues, but political and economic realities make such a goal less realistic than broad mutual recognition of differing approaches to carbon pricing across different jurisdictions – beginning with the United States and the EU.[6]

Such an approach would enable the two parties to focus on sectoral approaches to key industries where U.S.-EU cooperation is not just important but also essential for rapid decarbonization. [7] Shaping a Green Steel Deal for the North Atlantic would be a start.[8]

Use a Green Steel Deal as a template for other sectoral agreements. In October 2021 the two parties agreed to shelve their lingering steel and aluminum trade through an innovative arrangement that could position them to accelerate the decarbonization of steel and aluminum, two of the most carbon-intensive industries. Under the deal, the U.S. agreed to remove Section 232 tariffs on EU steel and aluminum exports up to past trade volumes, the EU agreed to suspend retaliatory tariffs against the United States, and both sides agreed to pause their related WTO disputes. The two parties then announced they would negotiate by 2024 what U.S. Trade Representative Katherine Tai has called "the first ever carbon-based arrangement" to encourage low-carbon steel and aluminum production and to deal with overcapacity. By linking the issues of decarbonization and overcapacity, the two parties intend to both advance their climate agendas while devising carbon-based means to restrict access from dirty steel producers and from steel-dumping non-market economies, such as China, which they mention explicitly. If such procedures were to be challenged as discriminatory under the WTO, the two parties could make a credible case that exceptions protecting human health and the environment are allowed under Article XX of the GATT. Moreover, by inviting like-minded countries to join them, U.S.-EU cooperation could mobilize a broader plurilateral coalition of countries behind such an arrangement – and potentially set a precedent for other carbon-based sectoral deals.[9]

A U.S.-EU technical working group was initiated as part of the agreement to confer on methodologies for calculating steel and aluminum carbon-intensity, among other issues, and share relevant data. The group's mandate is similar to that of the TTC's Working Group on Climate and Clean Tech. Its work can either be folded into TTC efforts or used as a model for similar technical working groups to develop methodologies for calculating carbon-intensity in other sectors, such as cement, which would have the additional advantage of offering an alternative to the EU's proposed CBAM arrangements.

Mobilize efforts to reconcile trade and climate at the WTO. As climate issues increasingly impinge on the global trade agenda, the United States and the EU are each under greater pressure to ensure their climate policies are compatible with international trade rules as agreed under the WTO system. Structural reforms of the WTO that could head off collisions between climate and trade are a long-term proposition. The United States and the EU should prioritize shorter-term efforts that could serve as a bridge to a time when WTO rules are updated:[10]

- ***Explore possible "climate waivers."*** Measures to address climate change could be exempted from certain WTO commitments to free trade under the WTO's Article IX, which provides for waivers from WTO in exceptional circumstances. The two parties and other like-minded countries can explore how they might make best use "climate waivers" under this provision to realign relevant trade rules to address climate change without having to negotiate permanent changes to such rules. [11]
- ***Revive and reframe negotiations on an Environmental Goods Agreement,*** which stalled in 2016 over disagreements on definitions of environmental goods and whether to include services and non-tariff barriers. William Reinsch and Emily Benson have proposed a rejiggered framework focused on removing tariffs on those goods that directly combat climate change. Those goods are largely agreed among key WTO members. This framework sidesteps the need to define an "environmental good" or to measure carbon content. They suggest starting with an offer to negotiate a multilateral agreement, but being prepared to move to a plurilateral agreement among like-minded countries if multilateral negotiations come up empty after two years. [12]

- ***Clarify and strengthen the WTO's Article XX,*** which allows WTO members to justify ordinarily inconsistent measures if they are either necessary to protect human, animal or plant life or health, or if the measures relate to the conservation of exhaustible natural resources.
- ***Explore arbitration possibilities in the absence of Appellate Body reform.*** The WTO's ongoing crisis has centered on disputes about the role of its Appellate Body in arbitrating trade disputes. The Body's work has lapsed primarily because the United States has refused to renew the mandates of its judges. In the U.S.-EU steel and aluminum deal, however, the United States agreed, in case of failure to reach a final agreement, to comply with arbitration under Article 25 of the WTO's Dispute Settlement Understanding. While this is a second-best alternative, it is a sign that the United States remains obliged to WTO rules. This route could be explored as other disputes arise.[13]
- ***Reconcile WTO energy subsidy rules***, which still allow fossil fuel subsidies but not fossil-free ones.

Make the Transatlantic Green Technology Alliance real

Leaders at the June 2021 U.S.-EU Summit pledged to "work towards" a Transatlantic Green Technology Alliance. Both parties must use the TTC to make it real. A Green Technology Alliance could help both parties align on technical standards, address regulatory discrepancies, and mobilize public and private investment to accelerate the development, scale up and deployment of breakthrough technologies.

  - ***Tap digital technologies to generate less carbon-intensive economic activity.*** Digital technologies are transforming the way energy is produced, transported, and consumed. They will be indispensable to decarbonization. Digital innovations can make electric power systems more efficient, resilient, and clean. Examples include basic digital upgrades, such as sensors and smart meters; the growing role of distributed renewable energy sources in the historically centralized power sector; and modeling the energy consumption of a building's digital twin, which promises to cut costs in the building industry by 15-25% and its energy footprint by up to 17%.[14] Electric vehicles herald the further decarbonization of transportation; digital technologies can ensure those vehicles can integrate into the grid without overload. Data science can enable better forecasting of renewable output and customer demand and help get sustainable energy where it needs to be.[15]
  - ***Build open-source energy datasets.*** The relative scarcity of nonproprietary data is a serious barrier to the application of data science to energy. Research studies often draw on datasets that belong to a corporation and cannot easily be shared. At a minimum, academic journals should require authors to name the companies from which they drew their data. Predictive modeling and analytics competitions could also elicit new approaches to harnessing data science. Open-source datasets would be even better, as they would enable researchers and firms to train machine learning algorithms to work as well in energy as they do in other fields.[16]
- ***Scale Up.*** Many of the clean technologies needed to halve global emissions by 2030 – from solar and wind generation to zero emission vehicles and low-carbon hydrogen – already exist. However, many are currently too expensive to compete with conventional fossil-fuel-based technologies. Relatively weak demand for these technologies keeps the market small, which stifles innovation and its commercialization. The challenge is to rapidly scale up clean technologies in hard-to-abate sectors so they can become more affordable, accessible and attractive than their traditional, higher-carbon counterparts.[17]

  This will require greater public investment in demonstration projects, which is a major weakness in the clean energy innovation system. Public investments should not and cannot take the place of the far larger resources the private sector can bring to bear, but private investment is currently deterred by the high costs and risks still associated with scaled-up clean tech demonstration projects. Governments can set incentives and market signals to help make clean-tech innovations commercially viable, spurring further investments and paving the way for widespread adoption and deployment by the private sector.

The EU and the United States are each making a start. The United States has allocated $20 billion over five years to support commercial demonstration of innovative low-carbon technologies. Dedicated revenues from the EU's ETS could generate $25 billion over ten years for such initiatives. While promising, these sums fall short of the $90 billion of public money the IEA says will be needed to complete a portfolio of demonstration projects before 2030.[18]

Of course, competitive calculations play a role here, as each side of the Atlantic is focused on promoting its own clean-tech commercial breakthroughs. Nonetheless, both parties can profit by harnessing their respective strengths. European research and early-stage development of low-carbon technologies continues to be world-beating. Yet the EU is relatively weak when it comes to scaling and commercializing its innovations. The United States, in contrast, accounts for more than 65% of global cleantech growth equity funding and venture capital investments, yet trails in areas of low-carbon research where Europe is strong. Given the deeply integrated nature of the transatlantic innovation economy, both parties stand to gain by harnessing their relative synergies to promote scaled-up demonstration projects that hold promise for commercialization.[19] They could build additional synergies with initiatives like the First Movers Coalition, a buyers club of 25 major global companies making purchasing commitments to help commercialize key emerging clean technologies across sectors like steel, trucking, shipping, aviation, aluminum, concrete, chemicals, and direct air capture.

Such efforts are not just "nice to do," they take on added urgency when considering that autocratic governments such as China do not necessarily need to rely on purely market-based approaches to the technologies of the future. Beijing directs massive resources to promote its own competitors in many clean-tech areas, based on differing norms likely to be found in democracies, which could erase the competitive advantages currently held by U.S. or European companies. A cautionary tale is offered by the solar industry, where pioneering U.S. and European companies once led global markets. Today, thanks to substantial government subsidies, forced technology transfer, and predatory pricing, China produces three-quarters of global supplies.

- ***Channel capital to sectors and technologies with untapped climate impact potential.*** According to PricewaterhouseCoopers's (PwC) latest State of Climate Tech report,[20] 5 technology areas with the potential to reduce emissions by 81% received just 25% of climate tech investment between 2013 and the first quarter of 2021, whereas 75% went to 10 tech areas with less potential. The mobility and transport sector received 61% of all investment funding but represents just 16% of global emissions. The Built Environment sector, in contrast, has received just 4% of funding yet contributes 21% of global emissions; and industry, manufacturing and resource management has received only 9% of investment funding while accounting for 29% of emissions. Investments tend to flow to more mature technologies integrated into business models tested to be viable, rather than nascent technologies that have yet to be fully proven, scaled-up or commercialized. Given that it can take many years, and even decades, to achieve commercialization following the prototype and demonstration phases, and the need for rapid decarbonization in some of the most carbon intensive industries, these technologies need to be quickly mobilized.
- ***Prioritize key innovation sectors***. PwC identified wind power, green hydrogen and food waste technologies as under-funded areas relative to their potential to reduce emissions. Our analysis highlights five technology areas (green hydrogen production, food waste technology, precision agriculture, sustainable aviation fuels and low-emission iron and steel) that are potentially lagging behind in terms of innovation in research and development, as shown by their relative immaturity compared to the proximity of their sectoral tipping point (diagram below). For instance, collaborative innovation in the power sector might include offshore wind, next-generation electricity storage, and technical standards for decarbonizing grids.[21]
- ***Address the innovation and funding gap in climate adaptation***. PwC's analysis of climate tech investment between 2013 and 2021 shows that 97% of funding has gone to technologies that mitigate climate change, with only 1% going into adaptation to climate change effects. Similarly, of the 3,000+

climate tech start-ups PwC analyzed during this period, only 1% was focused on adaptation rather than mitigation.

- ***Drive the commercialization of new clean energy technologies*** through streamlining and standardizing licensing requirements and implementing complementary policies that unlock demand for these innovations. For example, coordination on hydrogen safety, codes, technical standards and regulations will create certainty for investors and a path forward for integration with existing technologies, such as natural gas pipelines.
- ***Prioritize technological innovations that reduce reliance on critical materials***. Given U.S. and EU dependencies and the accelerating need for such materials as clean technology products and services expand, this is a priority area for joint action. There is opportunity to take advantage of manufacturing advances in clean energy equipment that require radically less inputs such as cobalt (in battery systems) or use equipment that employs recycled minerals.[22]
- ***Address the climate and energy consequences of digitalization.*** While digital infrastructures, devices and the software they run can help to reduce greenhouse gas emissions, they also consume large amounts of energy and natural resources, particularly critical materials. They already emit twice as much as global air traffic, and their emissions are set to grow by at least 6% annually. Moreover, digital users now use more energy than digital producers. This is all is set to increase further as more digital products more ubiquitous, more cloud services are adopted, and as artificial intelligence and machine learning demand more computing power.[23] Many tech companies have pledged to reduce their impact by going to "net zero," offsetting the emissions they produce by buying clean energy from other companies. Overall, however, such efforts do not reduce the amount of dirty energy they produce, and open companies up to charges of "greenwashing" their accounts. More effective efforts are needed:
    - *Embed Green IT considerations into Clean IT frameworks.* The Green IT movement focused on renewable energy resources to produce, power and recycle digital hardware, and making those systems more energy efficient. It did not focus on the daily emissions occurring over the life of a device and the software it runs. Clean IT approaches include Green IT considerations but go further by raising awareness not only of the carbon footprint of digitalization and IT systems, but of algorithms and software programs as well, and then devising climate solutions rooted in "sustainability by design."
    - *Optimize the sustainability of algorithms and programs.* While hardware makers by now are accustomed to build energy efficiency into their products, programmers are largely unaccustomed to do the same with their algorithms. Yet algorithms solving the same problem, and programs implementing the same algorithms, can vary in their energy efficiency. Digital engineers are challenged to optimize the energy efficiency of algorithms, programs and IT systems. Research breakthroughs have generated algorithmic energy efficiencies of up to 95%, but at a cost of precision, speed, and memory size. The trade-off between precision/speed/data throughput and energy consumption must be brought into balance by making it a core principle of computer system design, including through such techniques as clean data profiling, energy-aware computing for data centers, and energy-efficient deep neural networks.[24]
    - *Build "sustainability by design" into next-generation algorithms,* artificial intelligence, blockchain cryptography, and Internet of Things (IoT) ecosystems. Devices must be designed properly up front and public and engineering awareness of the digital carbon footprint and especially of the impact of wasteful algorithms must be raised. Since the use of digital technologies already represents the biggest share of the digital carbon footprint - and will continue to rise steeply - it is necessary to design algorithms to use energy more efficiently.
    - *Raise awareness and improve training*. The United States and the EU, together and via the G7, should establish and coordinate incentives to improve research and training, and raise public awareness of the need to develop energy-effective algorithms and programs.
    - *Update software procurement guidelines* towards energy-efficient software solutions in a coordinated manner among G7 countries, which could be introduced into the G20 and other broader groupings.

- *Prod Big Tech and other lead companies to shift from "net zero" pledges to 100% renewable energy targets,* and to invest more in renewables research, development and deployment, including Clean IT frameworks.

Negotiate a Clean-IT successor to Energy Star. In December 2000 Washington and Brussels agreed to coordinate labeling for energy-efficient products under the "Energy Star" rubric, which the United States had introduced in 1992. Transatlantic cooperation on Energy Star offered multiple benefits. Consumers on both sides of the Atlantic could make better choices with regard to energy-efficient products. Companies with deeply integrated operations across the transatlantic economy could generate efficiencies by aligning to similar standards. Energy Star was renewed multiple times, but finally lapsed in 2018. While laudable in intent, Energy Star testing schemes failed to keep up with evolving technologies and the arrangement was a casualty of diverging U.S. and EU trajectories in terms of prioritizing energy-efficiency standards. Today, however, there are new reasons to consider a successor agreement: both parties are more aligned on their energy-efficiency goals; both want to maintain their roles as standard-setters in the field; the deep integration of the transatlantic economy has only grown – a successor arrangement would enhance the competitiveness of U.S. and European companies; and digital technologies have evolved to enable more thorough energy-efficiency metrics that can include Clean-IT considerations. A Clean-IT label for sustainable computer systems, endorsed by the United States and the EU, could play a major role in promoting widespread awareness and adoption of sustainable software worldwide.[25]

End EU-USMCA commerce in internal combustion engines by 2035. The EU aims to end the sale of internal combustion vehicles within its borders by the early 2030s. In the United States, California will end their sale by 2035, and most major U.S. carmakers are already aligning with that target. Given these targets, 2035 should also be the endpoint for transatlantic trade of internal combustion engines. Without a common deadline, producers from the first-mover jurisdiction could simply go on exporting vehicles to the other or manufacturing vehicles in factories there. This is significant, due to the deeply intertwined nature of the transatlantic vehicle industry. A transatlantic deal should extend to USMCA partners Mexico and Canada, each of which is key to both the U.S. and the European vehicle production system. Such an agreement, in turn could be extended to other like-minded partners. The TTC Working Group could establish the modalities for such an agreement.[26]

Set Standards. International technical standards define the technological frontier. Those who determine the standards are those who shape the competition. Technical standard-setting in clean technologies also have direct bearing on key U.S. and EU foreign policy goals, such as addressing the climate crisis, the protection of human rights and democracy, as well as broader foreign economic and trade policies. Technical norms and standards are used to define leading markets and technology pathways as well as project designs, business models, and opportunities for partner countries. Competing standards can fragment markets. Countries able to enforce standards that are tailored to their economies gain advantages in their competitiveness. Countries that fail with their standards risk negative consequences for domestic companies.[27]

In the past, the United States and the EU have indulged themselves in never-ending debates over whose standards are best, or in often-fruitless efforts to align over conventional products and technologies. They have squandered energy and their combined potential. The TTC represents an effort by both sides to break out of this cycle by focusing attention on mutually critical sectors and on technologies for which standards are largely yet to be devised, for example those that can deploy green hydrogen at scale or reduce the energy consumption of algorithms and software programs, or those that involve vast quantities of data, such as digital tools that decarbonize electric grids or manage energy supply and demand. If the two parties can coordinate and cooperate more effectively in these areas, they have the opportunity not only to remain global standard-makers, but to export compatible domestic systems and potentially mine data from them.[28] This is particularly important and urgent with regard to China's robust efforts to establish clean technology standards, ensconce them through active presence in standards development organizations, and to export those standards through investments in countries participating in its Belt and Road Initiative.[29]

Given these shared challenges and opportunities, and recognizing significant differences in standards development processes on each side of the North Atlantic, the TTC offers a means for the two parties to improve information sharing, bolster their respective participation in international standards-setting bodies, establish an early warning framework to guide their coordination, and to vote together where possible. They could consider allocating funding to support joint investigations of standardization developments in strategic sectors. They could devise "sandboxes" to test emerging clean tech standards for standards development and prioritize interoperability as a way to lower costs and risks from divergences in standards. And they could include financial and other incentives to encourage adoption of international standards for clean tech deployment by participants in their respective infrastructure connectivity initiatives -- the EU's Global Gateway initiative and the U.S. Blue Dot Network.[30] EU-US coordination and cooperation in these areas could form the core of a broader concert of like-minded democracies that could consult on evolving clean tech standards, with a view to coordinating and cooperating where possible.[31]

Prioritize a Green Hydrogen Initiative. Hydrogen is likely to be integral to the energy transition. It is a highly promising climate-neutral energy carrier that can be converted into electricity through fuel cells, burned to produce heat or power, or used as feedstock in several industrial processes, with only water vapor as a by-product, with no carbon emissions. Hydrogen can be particularly useful for decarbonizing sectors such as heavy industry and chemicals, transportation, oil refining and fertilizer production. Hydrogen can be produced almost anywhere in the world, making it difficult for exporters to weaponize hydrogen trade, thus enhancing energy security.[32]

Because hydrogen is an energy carrier, not an energy source, it needs energy to be produced. "Grey" hydrogen is produced from natural gas and coal; "green" hydrogen from renewable energy, produced through electrolysis; "purple" hydrogen from nuclear electricity; and "blue hydrogen" from gas and coal but with technologies that capture carbon dioxide before it enters the atmosphere.[33] While today more than 95% of hydrogen is produced from fossil fuels in the form of grey hydrogen,[34] it is green hydrogen that holds the greatest promise for the energy transition.

Green hydrogen allows renewable energy produced from intermittent sources such as solar and wind to be stored and dispatched. It can store such energy much longer than batteries. Currently, it is more expensive to produce green hydrogen than the other types. However, costs are coming down and several countries are allocating more and more investments to hydrogen technologies. China has already managed to lower the production costs of electrolyzers considerably.[35]

A worldwide race is under way to develop hydrogen capacity. While the European Commission and key EU member states such as Germany have prioritized green hydrogen, the United States, Japan and the Republic of Korea are promoting a technology-open approach.[36] Since green hydrogen is the only option available to Germany and some other EU member states as part of their sustainable energy mix, a narrowed focus on green hydrogen for U.S.-EU coordination, potentially including Japan, would advantage participating parties in at least two areas. The first is in the area of standards – setting global standards for green hydrogen will be key to hydrogen's tradability, its eventual role in the energy transition, and to the competitiveness of U.S. and European companies. Varying or competing standards could lock in physical, infrastructural, regulatory and financial fragmentation for a major emerging market. The second related area is infrastructure connectivity. Hydrogen is playing a growing role in diverse connectivity initiatives, ranging from China's Belt and Road Initiative to the EU's Global Gateway, the U.S. Blue Dot Network and Japan's High Quality Infrastructure. The success of those initiatives – and the governance principles that underpin them – will depend as much on technical standards as on financial capacity and sustainability norms.[37]

[1] White House, "U.S.-EU Trade and Technology Council Inaugural Joint Statement," September 29, 2021, https://www.whitehouse.gov/briefing-room/statements-releases/2021/09/29/u-s-eu-trade-and-technology-council-inaugural-joint-statement/.
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