DRIVING EU LEADERSHIP IN THE CLEAN ENERGY TRANSATLANTIC MARKET

THE RACE TO SECURE ENERGY INDEPENDENCE AND LEAD THE GLOBAL CLEAN ENERGY ECONOMY IS INTENSIFYING. IN AN INCREASINGLY UNCERTAIN GEOPOLITICAL CONTEXT, EU LEADERSHIP ON CLEAN ENERGY TECHNOLOGIES IS CRUCIAL TO DELIVERING A DECARBONISED, COMPETITIVE AND SECURE ENERGY FUTURE.

CARBON-FREE EUROPE
A TECHNOLOGY-INCLUSIVE CLIMATE INITIATIVE

Foreword

The race to secure energy independence and lead the global clean energy economy is intensifying. In an increasingly uncertain geopolitical context, EU leadership on clean energy technologies is crucial to delivering a decarbonised, competitive and secure energy future.

Building on Breakthrough Energy and Cleantech Group's 2023 report, which underscored the rising momentum for a Green Transatlantic Marketplace, this report advances that conversation by offering actionable, private sector-driven strategies to preserve and expand collaboration despite shifting political priorities, and to grow a dynamic, secure, and competitive clean energy ecosystem across the EU, UK, and US. While these regions each face diverging domestic pressures and political uncertainties, the EU is uniquely placed to lead independently in advancing clean energy solutions and ensuring its place at the forefront of the global clean energy economy.

There remains a critical opportunity for businesses across the EU, UK and US to lead in shaping a resilient and thriving clean technology (cleantech) marketplace. The EU, in particular, is well-positioned to chart an independent course—strengthening its global position in cleantech while advancing its climate, competitiveness, and energy security goals. With the transatlantic cleantech market still in its early stages, fragmentation remains an urgent risk. But through strategic private-sector investment, policy consistency, and a focus on regulatory alignment within Europe, businesses can help ensure the development of a stable and competitive cleantech ecosystem.

This report explores the structural and policy barriers preventing deeper cleantech collaboration across the Atlantic. Drawing on insights from companies operating across the EU, UK, and US, we identify cross-cutting challenges, ranging from supply chain vulnerabilities and technology deployment hurdles to inconsistent policy environments and complex permitting processes. Despite political uncertainty, businesses can, and must, play a key role in advancing the cleantech marketplace.

While trade disruptions and barriers such as tariffs pose immense challenges, there remain other areas where meaningful progress is still possible. Due to evolving trade dynamics, while we recognize that tariffs are harmful to transatlantic cooperation on clean tech, this report does not delve into the impact of trade policy and instead prioritises areas where actionable progress can be made.
Strategic recommendations include:

1. Capitalising on Near-Term Opportunities Despite Political Uncertainty: Even as transatlantic political alignment weakens, the EU and UK each retain the ability to act independently—and need to do so urgently–to strengthen their energy security and improve their competitive standing in the global cleantech market. By accelerating the development and integration of clean technologies, these regions can reduce dependency on external energy sources while building industrial competitiveness, and mitigating exposure to geopolitical risks. Delaying action while awaiting political alignment risks ceding leadership in the global cleantech and increases delivery risk of achieving net-zero.
2. Private Sector Leadership: The private sector plays a central role in driving the growth of the transatlantic cleantech marketplace. While political prioritisation may fluctuate, businesses have an opportunity to lead innovation and develop scalable solutions. Through continuous dialogue with policymakers on addressing operational hurdles such as standards or financing rules, companies can help Europe maintain competitiveness in the global market and ensure that energy security goals are met through sustainable, homegrown technologies.
3. Leveraging the UK's Position: The UK is uniquely positioned to act as a geostrategic bridge, accelerating collaboration between the EU and the US, helping to foster stronger connections between policymakers and businesses. By facilitating cross-border dialogue and collaboration where possible, the UK can strengthen energy security and competitiveness on both sides of the Atlantic, ensuring that the transatlantic cleantech marketplace develops with shared objectives. Through these channels, the UK can help drive investment, promote innovation, and be a thought leader.

By adopting a multifaceted and cooperative approach, European stakeholders can overcome barriers, scale innovation, and build a cleaner, more competitive transatlantic economy for the future.

Introduction

Clean technologies (cleantech) are essential to Europe's energy security, industrial strength, and global competitiveness. As global energy demand rises, driven by developments like the AI revolution and the rapid expansion of data centers, scaling the development, manufacturing, and deployment of advanced energy solutions has become an economic and strategic imperative. For the EU and UK, accelerating this effort will reinforce economic independence, spur innovation, decarbonise the economy, and cement Europe's position as a global leader in the clean energy transition.

As the demand for reliable and clean energy sources grows, transatlantic trade and investment in cleantech are vital to rise to this challenge[1]. However, a clean transatlantic marketplace remains underdeveloped, notably lagging behind the more generally robust transatlantic economic relationship. Yet businesses, especially in Europe, are uniquely positioned to lead the way. By strengthening supply chains and advancing cross-border innovation, the private sector, together with EU policymakers, can help build a more connected and resilient cleantech marketplace even in the absence of strong political alignment between the EU and US. While tariffs are undeniably a significant barrier to the development of the transatlantic marketplace, the issue is too politically contentious and unpredictable to yield actionable progress at this time. As such, this report focuses on other structural barriers, those more technical in nature and less vulnerable to political volatility, where there is greater potential for near-term cooperation and impact.

This report aims to understand the structural barriers that inhibit the market growth of cleantech as well as outlines how European businesses and institutions can take the lead in overcoming them. The report highlights clear opportunities to reinforce Europe's energy and economic resilience while ensuring the continent remains at the forefront of global cleantech innovation and decarbonisation.

Throughout our research, we engaged with over 35

stakeholders across various sectors and companies operating across the transatlantic marketplace. Our key takeaways reveal significant, tangible barriers spanning multiple domains, including technology, supply chains, geographic factors, and company size. There is no single, universal solution; addressing these challenges requires a multifaceted approach. With recent elections having taken place across the EU, US, and UK, we now see actionable opportunities. Each jurisdiction can begin addressing specific domestic areas immediately. Our interviews revealed actionable next steps, like streamlining access to public funding and reducing administrative burden, that can spark meaningful progress in the near-term.

Going forward, we offer strategic recommendations on how stakeholders should engage and operate within this space, highlighting key considerations for the coming years for the EU to take a leading role in bolstering the development of the clean transatlantic marketplace.

1 Breakthrough Energy and Cleantech Group report on Transatlantic Cleantech Investment (Transatlantic Cleantech)

Results and findings

This project employed a two-step approach: an initial written survey (mainly quantitative) followed by qualitative in-depth interviews (for more information on our methodology, please see Annex 1). All in all, the survey and subsequent interviews captured the experiences of companies currently operating in or planning to engage with the clean transatlantic marketplace. It is important to note that we collected the survey and interview inputs prior to the 2025 US presidential election and the newly announced tariffs under the current Trump administration. As such, the barriers identified here should be interpreted as additional challenges that compound today's more visible obstacles, such as the uncertain trade landscape. In some cases, stakeholders pointed to clear pathways to mitigate or overcome these persistent barriers: solutions that remain highly relevant despite evolving political dynamics. The results obtained via the survey aim to illustrate those experiences and help identify which potential barriers are significantly impacting businesses' operations and strategic decision making. The interviews, conducted after the survey, delivered a more in-depth understanding of each company's concerns and how the specific barriers limit their ability to participate in the clean transatlantic marketplace.

This section provides a general overview of our results, outlining the broad trends identified via the survey and the interviews and is followed by a deep-dive discussion on the significance of each of the identified barriers, and the specific impact they can have on the various stakeholders. This section also presents initial stakeholder recommendations that emerged from the survey and interviews to address and potentially overcome identified barriers.

Survey results:

A total of 24 stakeholders participated in the survey, representing a diverse range of actors: (1) investors and venture capital firms focused on cleantech, (2) standard-setting organizations, (3) corporations spanning established energy players to startups working with emerging clean technologies, and (4) industry associations and trade bodies within the cleantech sector.

Respondents rated the impact of pre-identified barriers (see Annex 1) on their ability to participate and grow the clean transatlantic marketplace, using a scale from 1 to 5 (irrelevant to very significant). The survey results revealed that **all five identified barriers had at least a moderately significant impact on respondents**, with each barrier receiving an average score above 3 (moderately significant impact).

Diving deeper into the results, we find that (1) regulatory fragmentation (significance score of 4.2/5), (2) the lack of global/common standards (significance score of 3.9/5) and (3) political uncertainty and risk (significance score of 3.9) are seen as the main barriers by businesses to engaging in clean transatlantic trade, cooperation and investment. While trade barriers (significance score of 3.4)[2] and financing constraints (significance score of 3.2) remain elements that are perceived to impact the development of the transatlantic marketplace, these trail behind the three former elements by an important margin.

Interviews:

To complement the survey findings, we conducted interviews with stakeholders to better gauge how the identified barriers affect their activities, and more importantly, to understand how to overcome these barriers. During the process, we interviewed an additional 11 stakeholders, including respondents to the original survey, as well as new stakeholders. Following a similar approach to the survey, we targeted a broad array of participants across the entire cleantech value chain including (1) Investors and venture capital (VC) firms, (2) Standards setters, (3) Established corporates and small and medium-sized enterprises (SMEs) in the cleantech space, and (4) Industry associations and trade bodies.

While providing concrete examples of how their ambitions to expand and deepen their respective activities on either side of the Atlantic are hampered by the barriers discussed through the survey, the interviews served also to gain insights into stakeholders' appetite for the further development of the clean transatlantic marketplace.

Notably, all interviewees expressed a strong desire for deeper transatlantic cooperation on cleantech, viewing a robust

2 To note, the survey predated the Trump administration's proposed tariffs on the EU and UK

partnership as essential for maintaining competitiveness in a shifting global landscape and addressing concerns over unfair competition in the cleantech sector.

1. Regulatory Fragmentation

Regulatory fragmentation, as well as the lack of harmonised standards, significantly impacts stakeholders' ability to engage in the transatlantic marketplace. Survey respondents identified regulatory fragmentation between the EU and other trading partners as the most critical obstacle to transatlantic cleantech trade. All but one respondent ranked it as at least moderately significant, with 73% considering it a significant (27%) or very significant (46%) barrier.

Most survey respondents and interviewees agreed that current regulatory fragmentation, both between and within jurisdictions, directly prevents the development of a unified transatlantic cleantech marketplace. As a result, companies that operate in both the EU and US must invest significant time and resources to navigate the distinct regulatory frameworks in each region, ultimately missing the potential benefits of a more streamlined, coordinated market.

A clear example of this inconsistency can be seen within the hydrogen sector. Due to different regulatory approaches to the definition of clean hydrogen, a project that qualifies for the US' Inflation Reduction Act (IRA) 45V Credit[3] would not necessarily be automatically deemed as producing clean hydrogen, according to the EU's Renewable Energy Directive (RED II) definition[4]. Another issue raised by interviewees are safety and performance requirements requiring producers to adapt their hydrogen membrane technology for each specific market. Both these cases hinder the scale-up of hydrogen production operations across the Atlantic, preventing actors from benefiting from related economies of scale, and impeding the emergence of a large, harmonised and competitive transatlantic hydrogen market. Moreover, regulatory fragmentation (which eventually results in market fragmentation) ultimately reduces the scale of hydrogen supply chains, which could impede the production of hydrogen where it is cheapest, preventing producers from benefiting from geographical competitive advantages. All in all, this slows down the development of this emerging technology (and its related market) which is crucial to ensuring energy security and supporting the energy transition.

Survey respondents also warned of the dangers of regulatory fragmentation within jurisdictions, notably in relation to permitting for cleantech projects. Respondents highlighted, for instance, the critical role the European Commission must play in ensuring that licensing processes of future fusion projects are harmonised across Member States, so that both developers only have to deal with one rather than 27 different processes.

In addition, while many actors choose to operate across the transatlantic marketplace despite these difficulties, the current degree of regulatory fragmentation limits and hinders the participation of new emerging actors. As outlined in section 5 (Financing constraints), deciding to establish a presence across the Atlantic requires not just large operational investment, which many would be willing to make, but also a high investment in regulatory compliance capacity, which few emerging players can afford. A sector-agnostic example of fragmentation, which some survey respondents saw as a barrier to entry to the EU market, is the EU's Corporate Sustainability Reporting Directive (CSRD) which extends beyond any reporting requirements imposed in the US (e.g. the proposed SEC disclosure rules) or other global standards (e.g. ISSB standards).

Overall, 81% of respondents find diverging reporting requirements (arising through elements such as the CSRD) to be a moderately significant barrier to their participation in the transatlantic marketplace. SMEs in particular argued that having to comply with such legislation requires a detrimental redirection of resources away from their core business towards purely reporting purposes. While the European Commission's recent Omnibus proposal on corporate sustainability reporting attempts to address some of these issues, the current status quo remains a direct barrier to entering and operating in the EU market. Overall, Stakeholders noted that regulatory fragmentation between the EU and US hampers the exchange of goods, services, skills and technology, which are all key in the development and scale-up of cleantech.

To address regulatory fragmentation, survey respondents and interviewees argue that better harmonisation of legal definitions, reporting and disclosure requirements, specific product regulations, and safety requirements would improve their ability to operate on both sides of the Atlantic. These regulatory elements should occur alongside efforts to develop and implement common standards (see section 2), particularly for emerging clean technologies in the EU, US, and UK.

3 The IRA introduced a tax credit for the production qualified clean hydrogen at a qualified clean hydrogen production facility. The IRA defines qualified clean hydrogen as hydrogen whose production process results in a lifecycle greenhouse gas emissions rate no greater than 4 kilograms of CO2 emissions per kilogram of Hydrogen.

4 The RED II defines Renewable Fuels of non-biological origin (RFNBOs), which include renewable hydrogen as clean, if either (1) the share of renewable energy in the bidding zone where the hydrogen is produced is above 90% or (2) the emission intensity of the electricity used for the production of hydrogen is lower than 18 gCO2eq/MJ and the hydrogen producer has concluded power purchase agreements (PPAs) with renewable energy producers.

Stakeholder recommendations:

- **Continuous technical dialogue for greater alignment:** The EU should work towards maintaining an open dialogue with the US at a technical level on ongoing and future cleantech and industrial policy initiatives to avoid additional fragmentation and attempt to address barriers where they already exist.
- **Minimum regulatory harmonisation:** Policy initiatives need to be designed from the onset with a minimum international harmonisation threshold in mind and ensure their interoperability between jurisdictions. As a basic requirement, the EU should strive for sufficient alignment between definitions (and standards) used across the regulatory frameworks, with additional guidance offered to support companies operating across jurisdictions.
- **Aligned and proportionate (sustainability) reporting requirements:** Particular attention should be paid to sustainability reporting requirements, as a lack of cross-jurisdictional interoperability can become an unmanageable burden for companies wishing to operate across EU Member States and in the transatlantic marketplace. As such, the EU should ensure swift finalisation of its efforts to reduce the burden imposed by the CSRD (amongst others) and strengthen its cooperation with global partners to ensure the interoperability of its entire reporting framework with other international approaches. Moreover, reporting and other regulatory requirements must consider company size and allow sufficient time for their implementation, to avoid blocking emerging companies from participating in the transatlantic marketplace. While the EU's ongoing work on the "Omnibus simplification package" is a promising start, dialogue with its counterparts to facilitate dialogue and optimise possible alignment remains crucial.

2. Lack of Global Standards

Closely tied to regulatory fragmentation is the lack of sufficient harmonisation on product standards, which greatly hinders the development of a broader clean transatlantic marketplace. This challenge is especially critical for the EU, as fragmented or underdeveloped standards limit its ability to scale its clean technology exports, collaborate internationally, and attract global investment. Among companies surveyed, only 4 respondents (12%) considered this issue insignificant or irrelevant, underscoring its strategic importance. **The majority of respondents emphasise the need for greater harmonisation of standards, viewing it as a crucial driver for advancing cooperation and market growth.**

Respondents consistently stressed the need for greater harmonisation of standards, viewing it as a key enabler of a more integrated and scalable clean technology ecosystem. For the EU, aligning its internal standard processes and strengthening its voice in international standard-setting forums is crucial, not only to reduce barriers with its trading partners, but also to set global norms that reflect EU values and climate ambitions.

A lack of global standards refers to the absence of universally-agreed technical and operational criteria for clean technologies, such as renewable energy storage, hydrogen production, or electric vehicle charging infrastructure. Without harmonised global standards, companies and regions independently develop their own specifications, leading to inconsistencies in product compatibility and interoperability across markets. This hinders innovation and limits the scalability of solutions that need to work universally. One example raised is the lack of aligned production rules for clean hydrogen between the US and EU, which arise as a result of the absence of international standards. The stricter US 45V tax credit guidelines compared to the EU's requirements could lead to issues such as distorted competition, greenwashing, and additional certification challenges for hydrogen producers. As outlined in the previous section, these regulatory differences, emerging from a lack of standards, result in market fragmentation and slow the global advancement of hydrogen technologies. Another example is how electric vehicle (EV) charging stations may use different plug types and charging protocols across regions, making it difficult for EV manufacturers and customers to operate seamlessly internationally.

As outlined above, regulatory fragmentation often stems from or causes a lack of global standards. When each region develops its own rules, it leads to a fragmented regulatory landscape. Conversely, regulatory fragmentation can prevent the establishment of global standards, as regions may be unwilling to abandon their established frameworks in favour of international ones. Together, these barriers prevent the standardisation needed to streamline cross-border trade, increase operational costs, slow down innovation, and limit companies' ability to operate in multiple regions effectively.

Without a clear definition of what constitutes "clean," a unified clean transatlantic marketplace cannot exist. While global standards like the GHG Protocol offer a foundation for carbon accounting, they currently do not meet this need. The development of common standards and accounting frameworks is vital for facilitating clean trade across the Atlantic. Collaboration through organisations such as the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) is crucial for advancing these global standards and strengthening the transatlantic relationship.

Respondents also indicated the need for improvements in the standardisation process, underscoring the importance of interoperability and transparency in the global standard setting process. The slow progress of dialogues related to low/no carbon molecules adds uncertainty to project development and can escalate costs. Furthermore, expanding the EU-US Mutual Recognition Agreement to include hydrogen technologies may offer beneficial synergies.

Additionally, the rapid pace of updating standards compared to the legislation referencing them raises concerns about their applicability. Moreover, the lack of feedback mechanisms within bilateral exchange fora, such as the expired EU US Trade and Technology Council (TTC), limits the engagement of industry stakeholders in standardisation discussions. Moving forward, it is vital to ensure transparency in these discussion and to involve industry and relevant stakeholders directly.

For a more in-depth view on divergences on standards, a comprehensive list of specific sector standard examples raised in the survey and interview process can be found in Annex 2.

Stakeholder recommendations:

- **Support international standardisation bodies and limit divergence:** EU policymakers should offer greater support to international standardisation bodies to foster the development and implementation of coherent global standards for cleantech. Policymakers should refrain from diverging from these international standards where possible, and instead seek greater alignment with international frameworks.
- **Harmonised standards and common definitions:** The ultimate goal should be to achieve robust alignment of cleantech standards across the EU, UK and US to support unified regulatory frameworks. A foundational step would involve ensuring that the EU's definitions for cleantech concepts (e.g., clean hydrogen) are clear and are interoperable with safety and product standards, enabling smoother transatlantic deployment of technologies.

3. Political Uncertainty

A substantial majority of respondents view political uncertainty and related risk as a moderately significant to very significant barrier to expanding their role in the transatlantic marketplace. With elections having taken place in 2024 in all three regions, the trajectory for the newly formed governments and their accompanying policies adds significant uncertainty for the future of cleantech and transatlantic trade.

In this environment, the EU has a unique opportunity to serve as a source of stability by reinforcing its long-term decarbonisation goals and demonstrating a clear, predictable policy framework for industry. Respondents to the survey underscored the importance of political stability in enabling long-term investments, especially in emerging sectors like clean hydrogen, renewable gases, and cross-border infrastructure. Ensuring rapid, coherent implementation of policies, such as the EU's Clean Industrial Deal, could signal continuity and reliability to investors and stakeholders.
Survey respondents emphasised that substantial investments and deployment relies on political stability and a predictable regulatory framework. For instance, in the US, even with extended incentives like tax credits, there is uncertainty about the political sustainability of clean energy, leading to hesitation among investors and companies.

Elections on both sides of the Atlantic have contributed to heightened uncertainty. In Europe, political opposition has already attempted to roll back critical achievements of the Green Deal, such as revisions to the Industrial Emissions Directive (IED) and the Nature Restoration Law. Ongoing disruptions in national political landscapes and (potential) revisions of key policies, including the Emissions Trading System (ETS) directive, the full implementation of the Carbon Border Adjustment Mechanism (CBAM), or the ongoing Omnibus Simplification package, cast doubt on the long-term durability of these frameworks against potential backlash. Moreover, the US administration and their stance on climate policies and instruments such as the IRA, further limit long-term planning capabilities for the cleantech energy sector.

Respondents cited the absence of a clear, stable and ambitious regulatory framework as a barrier to scaling emerging technologies, such as clean hydrogen, and underscored the negative impact of political indecision on the viability of renewable gas as a transition and destination fuel for hard-to-abate industries. The combined lack of policy clarity and political instability undermines the sector's ability to build the infrastructure necessary for rapid decarbonisation. Political uncertainty fosters an unpredictable political environment, greatly impacts the future developments of various cleantech markets as it's more challenging to rely on a stable policy landscape.

Uncertainties around sustained government support for hydrogen and ammonia infrastructure projects pose a barrier to establishing a robust transatlantic marketplace by discouraging private investment. This uncertainty reduces companies' motivation to engage in transatlantic clean energy efforts, as the lack of clear regulatory frameworks and political alignment erodes confidence among potential customers, slowing the adoption of new technologies across various sectors. Shifting legal or political priorities complicates business planning, posing a risk to operations that rely heavily on consistent legislation. Without a unified political direction, investment climate uncertainty intensifies, further exacerbated by the potential for future trade disputes that could disrupt transatlantic energy market stability.

Stakeholder recommendations:

- **Reinforce a long-term commitment to decarbonisation**: In view of political turmoil across jurisdictions, committed EU policymakers should provide businesses with a stable and predictable policy roadmap to encourage their necessary long-term investments in cleantech projects to achieve net-zero.
- **Transparent dialogue:** EU policymakers should continue to openly communicate with industry about the state of the transatlantic relationship and its future, to provide as much transparency and opportunity to deliberate as possible to businesses.

4. Other trade barriers (subsidies, customs rules, protectionist actions, etc)

Survey respondents and interviewees underscored the prevalent adverse impact of "other" trade barriers to the further development of cleantech trade between the EU, US, and UK. While these barriers are generally considered less impactful than others, 81% of survey respondents view them as at least a moderately significant obstacle to their transatlantic goals. These trade barriers are typically seen as government-imposed restrictions that limit the movement of goods and services across borders. They impede free trade by increasing the cost and complexity of imports and exports. Foreign businesses are often pressured to invest in local production facilities to avoid restrictions, while intricate customs regulations add to costs and cause delays for traders. Ongoing trade tensions and the escalation of tariff measures between the EU and US have further complicated the cleantech marketplace, adding challenges that not only stifle investment and disrupt supply chains, but undermine predictability for businesses on both sides of the Atlantic.

Overall, **survey respondents and interviewees raised concerns on three categories of barriers: (1) indirect trade protectionist measures, (2) localised production requirements acting as trade barriers, and (3) complex customs regulations discouraging trade.**

One concern that was raised is the EU's CBAM, which requires actors importing goods into the EU to buy CBAM credits (pegged to the EU Emissions Trading System credits) equivalent to the emissions produced by the imported good. In other words, the CBAM acts as a GHG emissions tariff on imported goods. While protecting EU industry from emission dumping, the mechanism can have adverse impacts on the development of cleantech trade between the EU and US. Notably, as outlined above, due to the lack of a harmonised definition of clean hydrogen between the two jurisdictions, US hydrogen might have difficulty complying with the EU's Renewable Fuels of Non-Biological Origin (RFNBO) framework, in turn making it more difficult to directly comply with the CBAM. While RFNBO-compliant hydrogen is automatically awarded zero emissions, which exempts these imports from the requirement to purchase CBAM credits, US producers are likely to face difficulties with RFNBO recognition. As a result, they may be required to comply with CBAM requirements separately.

Another trend that emerged from the survey and interviews were concerns regarding localised production requirements. While stakeholders support legislation that encourages cleantech manufacturing in both the EU and US, they cautioned against provisions within these initiatives that could undermine the transatlantic marketplace. A key example raised was the IRA, which restricts subsidies and tax incentives to US-manufactured cleantech, thus giving US companies a competitive advantage undermining EU competitors. Similarly, stakeholders also pointed to the geographical restrictions in public procurement, preventing EU or US actors from accessing public procurement in their foreign jurisdiction. Additionally, in the wind sector, the US Jones Act was criticised for creating barriers to offshore wind development, particularly by restricting the use of EU-owned or crewed vessels in delivering components to offshore wind farms.

Finally, also tied to the discussion on regulatory fragmentation, actors argued that having to navigate complex and differing customs regulations in both jurisdictions further impedes trade between the EU and US. Stakeholders noted that the complexities of the customs systems often leads to transportation and shipping delays for components and necessary materials, disrupting project timelines. This ultimately discourages stakeholders from engaging in transatlantic projects, thus diminishing transatlantic collaboration on cleantech solutions.

While often overshadowed by more high-profile issues like financing or permitting, "other" trade barriers, such as subsidies, customs regulations, and protectionist policies, collectively exert a significant drag on transatlantic cleantech collaboration. Stakeholders emphasised that, despite their varied forms, these barriers share a common consequence: they increase uncertainty, distort market access, and raise the cost of doing business across borders. The cumulative effect is a fragmented and less predictable marketplace that discourages joint investment and innovation in critical clean technologies. Addressing these barriers through harmonised standards, mutual recognition frameworks, and more inclusive industrial policy design will be key to enabling a more integrated, resilient, and competitive transatlantic cleantech ecosystem.

Stakeholder recommendations:

- **Focus on EU-US strengths to support global competitiveness:** Policymakers should acknowledge the impact collaboration and cooperation across the Atlantic have, both in countering China's dominance in cleantech and in ensuring mutual global competitiveness. This partnership must be a key consideration when developing industrial policies – particularly those with protectionist elements.
- **Maintain dialogue to prevent trade tensions from escalating**: While trade relations may not improve in the coming years, EU policymakers should try to keep lines of dialogue open and avoid escalating tensions with one-sided protectionist measures where possible.

5. Financing Constraints

A large majority of respondents (77%) find general financing constraints to be at least a moderately significant barrier in increasing their role in the transatlantic marketplace. These can be split into respondents who see financing constraints as a moderately significant barrier (31%) to those that describe it as a significant to very significant barrier (46%).

When referring to financing constraints, both survey respondents and interviewees highlighted that the principal challenge is a widespread difficulty for companies in accessing private and public capital. This is particularly an issue for start-ups and other firms specialising in emerging technologies, as the lack of access to capital hampers their ability to scale up and substantively participate in the clean transatlantic marketplace. Particularly for SMEs "importing and exporting across the Atlantic is just not an option due to cost and profitability concerns," says one respondent.

As Mario Draghi states in his report[5] on the future of European competitiveness, the investment needs in the EU must be met by a combination of private and public capital. This also applies to the development of the broader clean transatlantic marketplace, which will necessitate both public and private financing support on both sides of the Atlantic. However, stakeholders in the EU and US both find inadequacies with current financing solutions available to them. On one hand, stakeholders find public funding earmarked to support the development of clean technologies to be inaccessible and overly complex, especially in the EU. On the other hand, companies face significant barriers accessing private capital due to specific capital market rules as well as non-regulatory barriers, such as a heightened perception of risk associated with the sector.

Inaccessible public funding is a problem in the EU

Compared to the US, the EU must step up its public support for cleantech companies. Amongst respondents, a clear trend emerged pointing out the shortcomings of the myriad of EU funding mechanisms and member state (MS) solutions, compared to the US' IRA.

The principal challenge identified by stakeholders in relation to the EU's public financial support for clean technologies was the complexity and rigidity of navigating public (EU and MS) funding schemes. For instance, some respondents see the EU's strict state aid policy, as well as the prohibition of stacking EU and MS funding, as diect impediments to scaling cleantech. Others point out how the abundance and accessibility of cleantech financing in the US' IRA contrasts with what exists in the EU. **The EU's Innovation Fund and the measures put forth under the Net Zero Industry Act (NZIA) are seen as steps in the right direction, but stakeholders, including investors, argue that the EU still lacks clear and accessible funding opportunities**. This dynamic can result in an overreliance on state aid while simultaneously restricting co-investment opportunities, hindering institutional investors from providing the capital to scale start-ups. Stakeholders also pointed to overly burdensome, duplicative, and time-consuming processes for accessing EU funds as a critical barrier policymakers must address.

Simplifying and streamlining access to the EU's funding mechanisms would significantly benefit stakeholders looking to scale their activities in the transatlantic marketplace. Improved access would not only provide companies with crucial financial support but also attract and unlock private capital.

Difficulty in securing private financing by those who need it most

5 The future of European competitiveness: Report by Mario Draghi, September 2024, https://commission.europa.eu/document/download/97e481fd-2dc3-412d-be4c-f152a8232961_en

In addition to the indirect impacts of inefficient or ineffective public funding programmes on private capital, survey respondents and **interviewees see diverging capital market rules as a direct barrier for the transatlantic flow of private capital into cleantech.** 69% of survey respondents see capital market rules, or rather their divergence between the relevant jurisdictions, at least as a moderately significant barrier to the development of the transatlantic marketplace for cleantech. While considered less significant than regulatory fragmentation on other elements, differing capital market rules are perceived particularly by the demand side of capital (particularly emerging companies) as an impediment to access necessary capital. Notably, respondents highlighted that having to navigate differing listing and reporting rules across the EU and US jurisdictions, and even within the EU itself, creates significant administrative burden. Similarly, stakeholders argue that these divergences not only discourage companies seeking funding from listing across different markets, but it also limits (smaller cleantech focused) investors becoming active across both markets, due to the increased difficulty of having to navigate (at least) two sets of capital market rules, thus generally limiting the potential pool of interested investors in cleantech projects.

In addition, another important factor that hinders access to private capital is the high risk perception of the sector amongst private financiers. For instance, players involved with hydrogen technologies, a sector still in its early stages, explain that obtaining financing from banks is extremely expensive and often impossible without accompanying risk guarantees, due to the high level of risk involved. This leaves equity financing as the only viable option which is not always guaranteed, especially due to the often very long-term horizons of projects (particularly deep tech projects), and which don't always match the return of investment (ROI) horizons of investors as well as high-upfront costs.

While financing challenges exist for both companies in the EU and US, the risk-averse nature of European financial institutions, the underdeveloped venture capital sector, and the comparatively limited involvement of pension funds in long-term project financing in the EU exacerbate the problem for the European cleantech sector. This enhances the challenges of companies obtaining financing in the EU. For instance, in the commercial fusion sector, the largest US player in the space (Commonwealth Fusion System) raised $1.8 billion by the end of 2021, while the largest fund raised in the EU thus far failed to reach €100 million, underlining the issues at the EU level.

Nevertheless, regardless of the US' comparative advantage over the EU, both the US and the EU's financing capabilities of cleantech are dwarfed by China's recent involvement[6]. Some interviewees framed these concerns as a growing geopolitical issue, pointing to China's significant financial investments in its cleantech sector, including nuclear, solar, wind, and hydrogen technologies, as a potential threat to EU and US energy sovereignty and security. Given that public investment alone will not be enough to ensure the competitiveness of their respective cleantech sectors in the EU and US, respondents noted that public money should be deployed in a targeted manner to facilitate and increase private investment.

Stakeholder recommendations:

- **Improve public funding mechanisms:** In the EU, there must be a continued effort to streamline and facilitate EU funding. The European Commission's commitment, outlined in mission letters and political guidelines, to simplify and better target MFF financing is a promising step forward.
- **Simplify listing and reporting rules for cleantech SMEs:** The EU could strive to align and simplify listing and reporting rules for emerging companies in the cleantech space, enabling greater access to capital and market opportunities.
- **Develop public guarantees to de-risk investments:** The EU should strengthen efforts to attract private capital by creating public guarantee schemes for cleantech projects, particularly those supporting the transatlantic marketplace, thereby de-risking investments. The European Investment Bank (EIB) should continue to play a key role in this initiative.

6 Strategic Perspective's recent report (The global net-zero industrial race is on) finds that "China alone accounts for 39% of (global cleantech) investment" while its cleantech manufacturing sector benefits from "heavy subsidies".

The role of the UK

Although it wasn't the primary focus of the project, the UK elections and the country's renewed commitment to cooperation and decarbonisation prompted us to expand its scope to include the UK. As the UK navigates establishing its regulatory framework post-Brexit, it has become a unique and evolving player in this field. The Labour Party's 2024 victory and its pledge to transform the UK into a clean energy superpower by 2030 further highlight its importance. Understanding the UK's approach is crucial for assessing how its developing policies and market strategies can align with broader transatlantic efforts.

The UK can act as a key broker between the EU and US: The UK is uniquely positioned to act as a strategic bridge between the EU and the US, leveraging its understanding of both jurisdictions to serve as a key liaison between the two powers. This pivotal role includes maintaining strong political relationships across the Atlantic, while also establishing itself as a hub for transatlantic investment and trade. Many US companies base their EMEA headquarters in the UK, and for EU companies, the UK serves as a gateway to global markets, including the US. As highlighted by interview material, stakeholders noted the UK's ability to avoid the EU's more stringent state aid rules, enabling it to pump capital into the cleantech sector more expediently. This gives the UK an advantage in facilitating market activities across both the US and EU while balancing regulatory requirements. Playing this bridging role not only strengthens the UK's global influence post-Brexit, but also opens the door to increased foreign investment, access to emerging markets, and a stronger leadership position in setting global standards for the energy transition.
With deep historical, cultural, and economic ties to both regions, the UK is well-placed to broker stronger cleantech cooperation and innovation. Interviewees also pointed out that the UK's flexibility in pursuing industrial policies like those outlined in the Labour Party's proposals gives it an opportunity to engage more dynamically with both the EU and US, without being overly restricted by traditional frameworks.

By facilitating collaboration, the UK can play a role in aligning cleantech standards and regulations, making it easier for businesses to operate seamlessly across all three regions. Its role as a base for many US and EU companies positions the UK as an attractive hub for cleantech investment, especially if it fosters favourable business conditions.

Additionally, the UK can serve as a crucial link between EU manufacturing capabilities and US innovation, streamlining supply chains and accelerating product development. Stakeholders reflected optimism about the UK Labour government's industrial policy

stance, anticipating a more proactive role in the cleantech sector. With its strong research institutions and industrial expertise, the UK is well-suited to host joint EU-US initiatives to drive advancements in areas like green hydrogen and offshore wind. Furthermore, the UK's understanding of both markets enables it to mediate trade and regulatory challenges, helping to create a more unified cleantech ecosystem. By leveraging these strengths, the UK can play a central role in connecting the EU and US to support cleantech growth and strengthen transatlantic energy security.

Path forward- What can be done? And who must step up?

As demonstrated by the survey and interview results, stakeholders on both sides of the Atlantic face tangible and significant barriers that hamper the progress of the transatlantic marketplace for cleantech. Notably, while impacting different sections of the cleantech transatlantic marketplace value chain in different ways, all five of the identified barriers in this report have the same ultimate consequence: they prevent otherwise willing and interested business stakeholders from establishing a transatlantic footprint in the first place or further developing their existing transatlantic activity. By discouraging trade and investment in the cleantech marketplace, these obstacles stifle the growth of transatlantic collaboration in this sector.

All barriers either (1) introduce additional costs, whether at the financing stage, during manufacturing, or at the point of sale, or (2) increase uncertainty and instability, limiting stakeholders' ability to plan long-term and secure investment. As discussed in section 3, the first group includes direct trade barriers, such as tariffs, along with duplicative requirements, administrative burdens, and disruptions to a smooth financing environment. Similarly, the lack of stability and certainty for entities stems from navigating contrasting legal and regulatory frameworks, along with the absence of long-term political commitments to a clear net-zero transition path. This uncertainty fuels concerns about policy reversals and undermines the stable, long-term regulatory environment needed by stakeholders to invest in cleantech through the transatlantic marketplace.

What can be done?

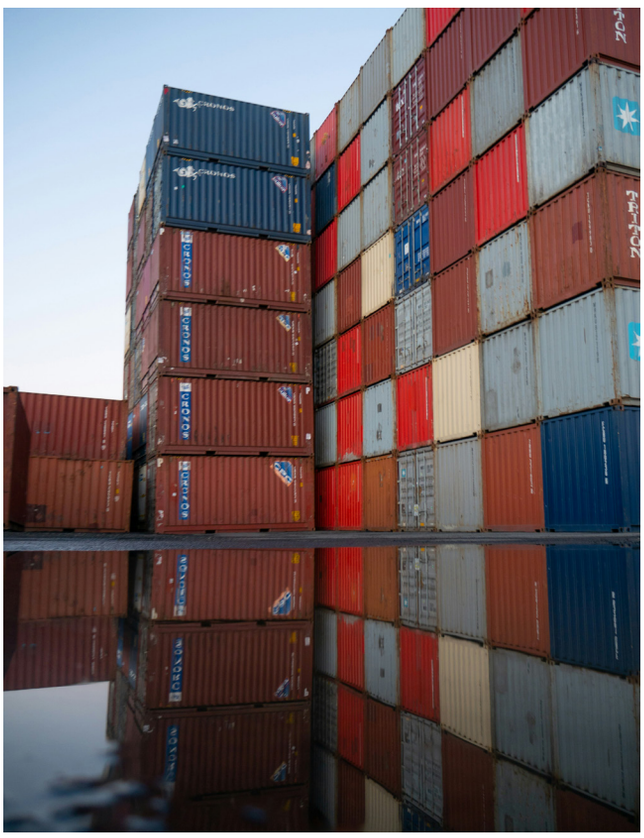
Nonetheless, while the current political climate on both sides of the Atlantic may not be ideal for transatlantic collaboration, given factors such as the Trump administration's renewed climate scepticism, aggressive tariff escalations, threats to clean energy subsidies, and the rise of protectionist industrial strategies across the EU, UK, and US, there is still significant potential to strengthen the development of the cleantech transatlantic marketplace. The UK in particular can serve as a vital link in fostering cooperation between the EU and US to overcome these barriers.

The EU and UK should independently focus on fostering investment, manufacturing, and deployment of cleantech, as such an environment would naturally attract international stakeholders, driving activity in the transatlantic marketplace for cleantech. To that end, on their own initiative, the EU and UK should: (1) continue to pursue regulatory burden reduction efforts, which streamline legislations without watering down decarbonisation commitments; (2) enhance access to private financing, particularly for cleantech start-ups and SMEs, by de-risking investments via public guarantees, (3) streamline access to public funding and encourage green investments via green public procurement clauses, as well as (4) ensure the long-term stability of a regulatory framework that secures required clean energy supplies.

Despite ongoing high-level political tensions between the US and the EU/UK–which are likely to continue in the coming years–cooperation and collaboration remain possible. Through bilateral engagement or through the participation in international fora, we anticipate that there will still be sufficient scope for collaboration and cooperation at the technical policy level, between the three jurisdictions. These technical fora could focus on developing common standards, whether at the international or bilateral level, or on improving the interoperability of regulatory frameworks, such as aligning non-financial or sustainability reporting regimes for companies.

Who must step up?

The further enhancement of the transatlantic marketplace for cleantech, is not just a driver for the net-zero transition, but would also generally bring about competitive benefits for the entities engaged in it. In fact, the transatlantic marketplace for cleantech can be seen as a driver for the competitiveness of EU, UK and US businesses at a global level, due to the potential larger market access, and related achievable economies of scale, enabled by the transatlantic marketplace[7]. In that sense, in the (expected) absence of political momentum to explicitly develop a stronger transatlantic marketplace, we see a vacuum that must be filled by the private sector. Businesses should take existing opportunities to expand the transatlantic marketplace for cleantech where there is economic benefit but also put pressure domestically and via international fora on policymakers to facilitate investment in, manufacturing and deployment of cleantech as part of the EU's broader competitiveness efforts. Eventually, if investment, manufacturing and deployment conditions in the EU, UK and US are conducive to a competitive business environment for cleantech, cross-jurisdictional trade and investment should occur regardless of the tensions at political level.



7 Breakthrough Energy and Cleantech Group report on Transatlantic Cleantech Investment (Transatlantic Cleantech)

Conclusion

Through our research, we engaged with stakeholders across the US, UK, and EU, uncovering significant barriers to the growth of the transatlantic marketplace for cleantech. These challenges, spanning technology, supply chains, regulatory frameworks, and more, ultimately discourage trade and investment, stifling collaboration and innovation. Each jurisdiction faces barriers that either increase costs or introduce uncertainty for stakeholders, which in turn prevents long-term planning and limits the investment necessary for transatlantic activities. Addressing these issues requires focused action at the policy level, which could be achieved regardless of the political relations between the jurisdictions.

Despite escalating trade tensions and political unpredictability, there remains critical opportunities for transatlantic cooperation particularly through technical forums and bilateral engagement where progress can be made below the surface of high-level political turmoil. In this environment, the EU has a unique opportunity to step into a leadership role, offering regulatory clarity, investment stability, and a long-term vision for clean energy that can anchor the transatlantic cleantech marketplace.

In a moment of political uncertainty, the EU can lead by advancing policy consistency, accelerating clean technology deployment, and deepening its industrial strategy. By ensuring interoperability of standards and regulatory approaches, and facilitating investments into clean energy value chains, the EU can help shape the future of the transatlantic market, even in the absence of coordinated federal leadership from the US.

Businesses operating across the EU, US, and UK must also take an active role in sustaining and expanding the transatlantic cleantech ecosystem. In the current political climate, the private sector is uniquely positioned to drive integration, scale innovation, and encourage the development of policy frameworks that enable investment and deployment. Stronger market signals in favour of clean tech from Europe can help stabilize global momentum and keep international climate and competitiveness goals within reach.

While the current political climate, particularly around tariffs, poses real challenges to transatlantic cooperation, this report demonstrates that meaningful progress remains achievable in other critical areas. Rather than focusing on politically sensitive and volatile issues, such as tariffs, we highlight structural and technical barriers where targeted policy alignment and business engagement can deliver tangible results. By reinforcing its leadership in clean energy, investing in the EU is well positioned to serve as a counterweight to instability and to anchor continued transatlantic collaboration in the cleantech space. By maintaining its commitment to clean energy leadership, fostering cross-border partnerships, and engaging constructively with subnational and private-sector actors in the US, the EU can serve as both a counterweight to volatility and a catalyst for long-term transatlantic cleantech growth. With coordinated public-private action, a resilient and future-focused marketplace can still emerge; one that supports energy security, industrial competitiveness, and global decarbonisation.

Annex 1 - Methodology

Defining the clean transatlantic marketplace: The clean transatlantic marketplace can be defined as a collaborative environment where the US, EU, and UK work together to accelerate the development and deployment of clean energy technologies. The trade of cleantech-related goods or services, or any transatlantic investments in the sector would be understood as falling within the transatlantic marketplace. Throughout the report, cleantech is understood as those technologies utilised for the production of carbon-free electricity or clean fuels and related products.

Data Gathering Process: This project employed a two-step approach: an initial written survey (mainly quantitative) followed by qualitative in-depth interviews. The survey was conducted first to capture insights from a larger audience and collect a broad range of data, offering a general overview of perceived barriers. The interview phase then allowed for more focused, detailed feedback, often centered on specific sectors or clean energy technology supply chains. Informed consent was obtained from all participants, and confidentiality was maintained throughout the study to protect their identities and responses.

1. **Survey Process:** The survey was designed to quantify the significance of various challenges and impediments to stakeholders' presence in the clean transatlantic marketplace. The survey was distributed to a diverse array of stakeholders to ensure a wide representation of perspectives including clean energy companies, venture capitalists, broader corporate representatives, and representatives of industry associations. The survey used a 5-point Likert scale, asking participants to rate the significance of specific barriers. The main question was: "On a scale of 1 to 5, please rate the extent to which the following are impediments to expanding your company's role in the Clean Transatlantic Marketplace." Participants were asked to rate impediments on a scale from 1 (irrelevant) to 5 (very significant). The selected barriers were informed by preliminary research, ensuring relevance to the stakeholders' experiences. Barriers included were:

    a. *Regulatory Fragmentation* - Refers to the divergence in regulatory approaches on cleantech policy, as well as inconsistencies in reporting requirements, leading to additional administrative burden and a lack of legal certainty for businesses.
    b. *Lack of Global Standards* - Refers to missing commonly agreed upon definitions and product/safety standards, as well as the divergence from international standardisation frameworks, preventing efficient operation across jurisdictions.
    c. *Political uncertainty and risk* - Refers to the turbulent political landscape within and between the EU and US and its impact on the future of the transatlantic relationship and commitments to net-zero.
    d. *Financing Constraints* - Refers to limitations for businesses active in the cleantech space to access the necessary financing to operate on the transatlantic marketplace. These include difficulties to access both public funding as well as private capital.
    e. *Hard Trade Barriers* - refer to traditional protectionist measures such as subsidies and local content requirements that stem from the absence of comprehensive trade agreements between the EU and US, as well as from increasingly adversarial trade policies in recent years. These measures disrupt supply chains, create market imbalances that favor domestic producers, and ultimately limit opportunities for cross-border collaboration and investment in the transatlantic cleantech sector.

    All responses were anonymized to encourage candid feedback. This structured approach ensures that the findings are both robust and representative, providing valuable insights into the barriers facing the cleantech sector.

2. **Interview Process:** Following the survey, we conducted virtual and in-person interviews with stakeholders, including investors, industry representatives, and standard-setting bodies. This selection aimed to gain deeper insights into how identified barriers impact operational strategies and to explore stakeholders' perspectives on facilitating growth in the cleantech sector.
    a. This project followed a mixed-method framework, integrating quantitative surveys with qualitative interviews to gather feedback from stakeholders engaged in the clean transatlantic marketplace. The initial survey quantifies the impact of various identified barriers on corporate participation, while subsequent interviews facilitate a nuanced exploration of these barriers, enriching the quantitative data with qualitative insights.

Participants/Sampling: The initial survey garnered responses from 24 stakeholders, representing a cross-section of the cleantech ecosystem, including investors, venture capital firms, standard-setting bodies, established corporations, and industry associations. Following the survey, 11 stakeholders were interviewed to gain deeper, sector-specific insights. This included both survey participants and new respondents where specific sectors or considerations were not yet represented in the analysis (e.g. UK companies). While the survey assessed the signif-

icance of barriers using a 5-point Likert scale, the interviews explored these barriers in greater depth, focusing on specific challenges and potential solutions.

Limitations: This report acknowledges limitations, such as potential bias in self-selection and the small sample size. Future research should aim for a broader, more diverse participant pool to enhance the generalizability of the findings.

Annex 2 - Examples of missing standards at global level

Additional Standards Examples:

Carbon Removal Standards: Effective carbon removal technologies require reliable standards. Currently, the inconsistencies in CO2 footprint and life-cycle assessment (LCA) standards create challenges in selecting genuinely effective options for CO2 reduction or removal. Many steps within an LCA process can be double-counted or left unaccounted due to poorly defined requirements or overly broad assumptions.

Electric Vehicle Standards: Differences in standards across continents, particularly in electric vehicle (EV) charging plugs, pose significant challenges. As it stands, electric vehicles require additional cables to connect with different charging stations across regions. It would be beneficial for both the US and EU to adopt uniform standards in the EV sector, including communication standards essential for smart and bi-directional charging, such as IEC 63110. It is crucial that the drafting process for this standard at the IEC level continues and is finalised promptly.

Steel Standards: In the steel industry, multiple voluntary standards exist to define 'green steel,' leading to a complex landscape that hampers the swift rollout of green public procurement measures on both sides of the Atlantic. This proliferation of standards, originating from various bottom-up initiatives, creates confusion and necessitates more centralised steering to prevent delays in transitioning towards aligned standards and definitions.

Hydrogen Production Standards: The production rules for clean hydrogen are not fully aligned between the US and EU, although recent draft US rules suggest a move towards greater alignment. The lack of harmonised standards, such as the definition of production rules for renewable hydrogen, presents a major barrier to establishing a leading transatlantic market for associated technologies. Key risks include potential competition distortion, greenwashing, increased administrative burdens on industries to certify hydrogen products, and market fragmentation that slows the development of a global hydrogen market.

Political Uncertainty in Hydrogen Standards: The current definition of green hydrogen in the US lacks clarity, which may prevent US-produced molecules from aligning with Renewable Fuels of Non-Biological Origin (RFNBO) definitions. Furthermore, there is significant legal and political uncertainty surrounding proposed US rules, which may change depending on the outcomes of upcoming elections. Additionally, the EU's lack of a low-carbon hydrogen definition could affect trade and reporting certainty under the Carbon Border Adjustment Mechanism (CBAM), with an expected definition by the end of 2024.

Safety Standards for Hydrogen: Establishing common safety standards for hydrogen is vital for ensuring safe production, transportation, and usage, thereby building trust and fostering market growth. A harmonised classification scheme is also essential to eliminate confusion about different types of hydrogen (grey, blue, green), simplifying the trading process and reducing administrative burdens. Furthermore, a common system of guarantees of origin would enhance transparency in the hydrogen trade, allowing consumers to distinguish between truly green hydrogen and less sustainable options, thereby incentivizing investment in clean production methods.

Offshore Wind Energy Standards: For the offshore wind industry, it is crucial to avoid the establishment of domestic design standards that could conflict with widely accepted international standards. This could lead to a protectionist agenda that complition. Adjustments to product generations, such as UL certification, could take 8 to 15 months and complicate entry into the US market.

Methane Product Definitions: The definition of eMethane varies significantly across global markets, including the terminology used (eMethane, eNG, SNG) and the methodologies for calculating its carbon intensity. These differences can lead to various valuations for the same product and complicate international trade.

Cement and Concrete Standards: Current standards in the cement and concrete industry create substantial market entry barriers that hinder the integration of transatlantic markets and the trade of industrial technologies. The differing marketing approaches between Europe and its trading partners create significant obstacles for clean technologies to enter the European market. This situation benefits certain European economic actors but leads to market distortions and hampers innovation and technology deployment. The EU's composition-based standards contrast with performance-based standards used elsewhere, complicating the introduction of new products in various regions.

Embedded Carbon Emissions Accounting: There is currently no global standard for accurately accounting for carbon emissions embedded in products that rely on electricity as a core input. Existing standards lack the granularity needed to ensure compatibility across different geographies, resulting in inconsistencies in carbon emission reporting.

Carbon Emission Accounting Limitations: The existing global standards for corporate carbon emissions accounting are insufficient for supporting clean electrification and the emerging transatlantic trade in clean products. They are based on outdated frameworks that do not accurately reflect physical electricity systems and power markets. The use of broad geographic boundaries for emissions reduction claims and average annual carbon emissions factors obscures the real carbon intensity associated with corporate electricity consumption. This misalignment has far-reaching implications for clean industrial electrification, international green trade, clean technology innovation, and the assessment of climate risk by investors.

Accurate electricity and carbon accounting are critical for enabling clean electrification and directing capital towards effective decarbonisation efforts. Without harmonised international standards, companies producing and exporting clean products will struggle to monetize their carbon advantages, and true distinctions between genuinely clean products and those merely labelled as such will remain elusive.

Hydrogen Standards: The absence of a global certification standard for green hydrogen complicates the verification of its environmental footprint, posing a significant barrier to the development of a transatlantic green hydrogen trade. This lack of standardisation impacts the market potential for hydrogen membrane technology that facilitates clean energy imports, leading to increased costs, additional paperwork, and complexities in verifying the origin of hydrogen. A recommended solution is to establish a harmonised classification scheme and a common guarantee of origin.

Carbon-Free Europe (CFE) is an independent NGO accelerating Europe's clean energy transition through cutting-edge energy systems modelling and acute policy engagement. Initially launched by Third Way in 2021, CFE is now an independent European organisation. We are scaling rapidly to solve Europe's most urgent energy challenges in competitiveness industrial strategy.

CFE is Built for This Moment

Europe is at a turning point. As leaders define the Clean Industrial Deal, competitiveness agenda, and the pathway to net-zero, CFE is uniquely fit for purpose. Our decision to go all-in on Europe, following a successful trial phase, was driven by a clear gap in the EU policy space: a need for robust, technology-inclusive, evidence-led energy systems analyses that connect ambition with implementation. Independence has allowed us to refocus and sharpen our mission to achieve European objectives, in a moment when transatlantic relations are unpredictable.

CFE has the most advanced, accessible modelling of Europe's energy system

CFE's unique value add is our unmatched, world-class modelling of the clean energy transition. Our Annual Decarbonisation Perspective (ADP), provides Brussels' only advanced, accessible decarbonisation modelling of Europe's energy systems. We use our findings to equip both EU and national policymakers with the insight they need to deliver pragmatic, cost-effective and tailored policy solutions to simultaneously achieve Europe's climate, competitiveness, industrial, and energy security objectives. We have an established track record of creating real change on ensuring a globally pioneering, tech-inclusive approach to policies including the Clean Industrial Deal, Net-Zero Industry Act, Electricity Market Design, RePower EU, and Member State's National Climate and Energy Plans (NECPs). Not only does a technology-neutral approach allow Member States to tailor their decarbonisation strategies to national strengths and system needs, but our data shows it is also the fastest and most affordable way for Europe to reach net-zero. Ultimately, CFE bridges the gap between data and decisions, turning complex analysis into actionable strategies for policymakers.

CARBON-FREE EUROPE
A TECHNOLOGY-INCLUSIVE CLIMATE INITIATIVE