

REPORT

# A European green Single Market

How the removal and avoidance of regulatory barriers to trade in climate goods and services can accelerate the green transition and support EU competitiveness.



The report *Reboot of the Single Market – How to support the growth of SMEs through a strong and united Single Market*, published in November 2022, listed **11 specific and impactful policy initiatives** to strengthen the effective functioning of the Single Market.

This note elaborates on recommendation #6, which encourages EU policy makers to **map and remove regulatory barriers to trade in climate goods and services within the Single Market**. The note attempts to answer the following three questions:

- **Why do something?** Chapter 1 highlights the urgency of accelerating the green transition via a deepened Single Market for climate goods and services.
- **What to do?** Chapter 2 offers a deep dive into the wind industry and points to some of the regulatory barriers that delay the green transition and make wind farms excessively costly.
- **How to do it?** Chapter 3 provides a roadmap for the removal of regulatory barriers to trade in climate goods and services.

The overall work was commissioned by Amazon and conducted by Implement Consulting Group as an independent assessment of how the removal and avoidance of regulatory barriers to trade in climate goods and services can be initiated.

We are grateful for valuable input from Siemens Gamesa Renewable Energy, Ørsted, Global Wind Service, Hitachi Energy, European Energy, WindEurope, Green Power Denmark, Confederation of Danish Industry, Global Wind Safety and Svensk Vindenergi.

## 11 specific and impactful recommendations

1. Adopt an ambitious Single Market Strategy.	Adopt a Single Market Strategy that clearly reinstates the Single Market at the forefront of the EU's integration project, green transition and innovation agenda.
2. Strengthen SOLVIT by establishing a Single Market Ombudsman in every EU Member State and commit SOLVIT to act more proactively on structural cases and to raise awareness.	Designate a Single Market Ombudsman (as head of or in collaboration with SOLVIT) in each Member State as a national, independent body with access to effective remedies. A network of Single Market Ombudsmen is to be set up under the auspices of the European Commission.
3. Conduct a data flow test of all existing and new EU regulation.	Implement a data flow test that acknowledges the supremacy of the principle of data protection in the EU but limits the risk of creating unjustified burdens when applying data protection rules.
4. Upgrade the European Semester to include recommendations on how to harmonise implementation of EU regulation and close the compliance gap.	Incentivise Member States to correctly apply and take political ownership of the correct application of EU rules, by integrating recommendations on closing the compliance gap and harmonising implementation of EU regulation into the European Semester.
5. Strengthen the use of the Better Regulation Toolbox by integrating implementation into the design of new regulation and consistently respecting impact assessment requirements.	Put more weight on integrating implementation into the design of new regulations and avoid deviations from the requirement to make impact assessments.
<b>6. Map and remove regulatory barriers to trade in climate goods and services within the Single Market.</b>	<b>Map and remove regulatory barriers to trade in climate goods and services within the Single Market to accelerate decarbonisation by structuring market signals, incentivising innovation and reducing the price of new technologies.</b>
7. Design the digital European product passport in a way that simplifies the circular work of businesses.	Introduce a well-designed Digital Product Passport based on stakeholder input, including SMEs.
8. Create a one-stop-shop to Member States' extended producer responsibility (EPR) systems.	Establish a truly harmonised approach to EPR: a centralised and up-to-date digital EPR one-stop-shop solution that would facilitate single EPR registration and reporting across all Member States at the product-level.
9. Create a single VAT ID and extend the VAT one-stop-shop.	Simplify VAT procedures by creating a single VAT ID in the EU and expanding the existing VAT one-stop-shop concept to cover all goods transactions.
10. Recognise digital labelling as a true substitute for physical labelling.	Bring EU labelling requirements to the digital era by providing manufacturers the option to choose whether to market their product digitally or physically.
11. Create conditions for the development of easy, fast, reliable and low-cost cross-border payments for both euro and non-euro payments.	Create a more competitive framework for cross-border payments to ensure that EU citizens have access to a diverse range of providers.

## Executive summary

This note aims to provide a roadmap for creating a European Green Single Market.

### Why

Chapter 1 explains that frictionless trade in climate goods and services is a prerequisite for the green transition. Regulatory fragmentation and complexity profits and erode the competitiveness of EU firms, particularly SMEs.

### What

Chapter 2 applies a bottom-up approach to identifying barriers to trade in climate goods and services on the Single Market, using the wind industry as an example. Some of the most pressing barriers for the wind industry are listed below:

- Reduce permitting bottlenecks in the EU market
- Secure access to raw materials and secondary materials
- Harmonise product requirements for lights and markings on wind turbines
- Ensure common standards, mutual recognition and transferability of training
- Ease customs procedures for offshore wind farms
- Consistent interpretation of health and safety legislation
- Impose a landfill ban on decommissioned wind turbine blades
- Ease transportation of decommissioned blades

Barriers in the wind industry are one way to illustrate challenges that are relevant to several cross-border climate goods and services.

### How

Chapter 3 offers a step-by-step approach to removing unnecessary regulatory barriers in the Single Market for climate goods and services. The iterative process is illustrated in the figure below.

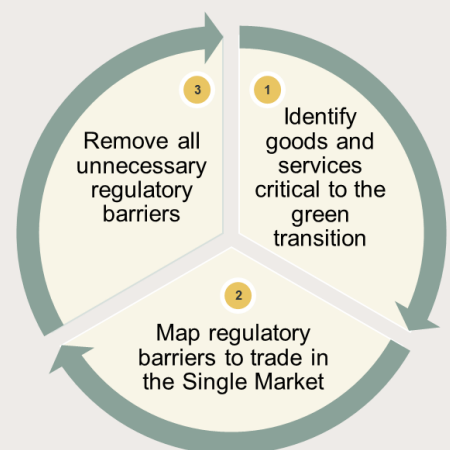
## A ROADMAP TO ACCELERATING DECARBONISATION THROUGH TRADE

We propose to take a step-by-step approach to removing unnecessary regulatory barriers to trade in climate goods and services within the Single Market.

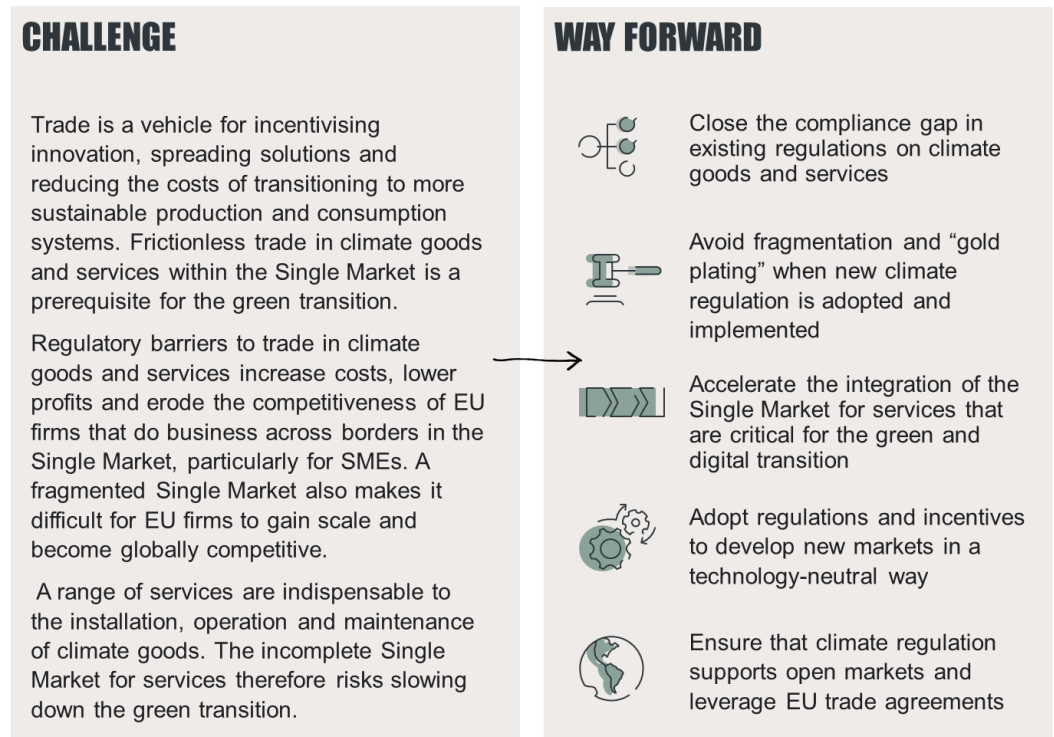
Complete the three-step process for an **initial list of climate goods and services** that are critical to the green transition and remove regulatory barriers that are unnecessarily restrictive to trade within the Single Market.

Expand the list as new innovative climate solutions emerge and repeat the three-step process.

Continuously ensure that new regulations do not create fragmentation in the Single Market for climate goods and services.



# 1 No green transition without the Single Market – why is action needed?



## 1.1 Accelerating the green transition

The report *Reboot of the Single Market – How to support the growth of SMEs through a strong and united Single Market* was published in November 2022 and introduced 11 specific and impactful policy initiatives to strengthen the effective functioning of the Single Market. Recommendation 6 has considerable potential to deliver on EU climate ambitions through an integrated, innovative and globally oriented Single Market for climate goods and services.

Recent developments have added to the urgency of accelerating decarbonisation in Europe. The recent IPCC report shows the critical need for urgent action, considering the energy crisis and the risk of entire supply chains relocating outside the EU because of attractive incentives on other continents (for example the Inflation Reduction Act). This underlines the need for accelerating the transition to low carbon solutions in Europe.<sup>1</sup>

Besides having the potential to accelerate the green transition, removing barriers to trade in climate goods and services can also create new jobs and export opportunities for EU firms that are able to use the Single Market to scale up and become globally competitive. But progress is slow, and a wealth of barriers hinder the creation of a true European Green Single Market.

## 2 Examples of regulatory barriers in the wind industry – what should be done?

CHALLENGE	WAY FORWARD
<p>Barriers in the Green Single Market risk slowing down decarbonisation and job creation in Europe. This is the case for wind energy, which is used as an example to underline the need for removing barriers to trade in climate goods and services.</p> <p>Wind energy covers 15% of Europe's electricity today but is set to grow to 43% by 2030. The European Commission wants wind energy to provide 50% of Europe's electricity in 2050. The wind industry currently employs 300,000 people and is expected to reach 450,000 by 2030.</p> <p>This chapter points to areas where EU harmonisation and standardisation can strengthen the supply chain around the wind industry and enhance the international competitiveness of its actors. The examples are non-exhaustive, and a more detailed mapping is needed to get an overview of the cumulative obstacles. A similar mapping of regulatory barriers to trade in other key climate goods and services should be done.</p>	<p>Map and remove regulatory barriers in the EU wind supply chain. For example, initiatives can aim to:</p> <ul style="list-style-type: none"> <li>● Reduce permitting bottlenecks in the EU market</li> <li>● Secure access to raw materials and secondary materials</li> <li>● Harmonise requirements for lights and markings on wind turbines</li> <li>● Ensure common standards, mutual recognition and transferability of training</li> <li>● Ease customs procedures for offshore wind farms</li> <li>● Consistent interpretation of health and safety legislation</li> <li>● Impose a landfill ban on decommissioned wind turbine blades</li> <li>● Ease transportation of decommissioned blades</li> </ul>

### 2.1 A look at the wind industry and inspiration for further action

This chapter takes a closer look at the wind industry and the regulatory fragmentation facing EU firms that do business across borders in the Single Market. The wind industry has been selected due to its key role in delivering on EU climate ambitions, the industry's strong competitive position in delivering the solutions needed in the global transition to more renewable energy and the significance of EU suppliers (particularly SMEs) in every step of the value chain. It should be emphasised that other technologies and industries listed in Chapter 3 are also of critical importance for the green transition. The note therefore aims to inspire the European Commission to **take a similar approach in all important areas of climate action**.

The chapter provides concrete examples of areas where EU harmonisation and standardisation can reduce costs, uncertainties and delays throughout the value chain. Examples from individual Member States are being used to illustrate the challenges and fragmentations in the Single Market, but it is important to emphasise that **mapping national requirements in other Member States would show a similar lack of harmonisation and standardisation of regulation**.



It is also important to highlight that many EU firms in the wind industry are globally oriented and in a strong position to compete for the large public investments in renewable energy expected during the next decade. Common regulatory requirements in the EU often deviate from regulations in other large markets. The industry representatives interviewed as part of this research therefore **urge policy makers to seek international standards and solutions.**



The chapter lists examples from the wind industry and should not be considered exhaustive. Besides regulatory initiatives, R&D financing and trade policy interventions (such as chapters in EU free trade agreements on climate goods and services) can also be considered but are outside the scope of this study.

This report focuses on action that can be taken at the EU level to strengthen the Single Market, but **national governments also play an important role**, e.g., by removing permitting bottlenecks, publishing national auction schedules and securing grid connections. Also, the complex business models associated with (onshore and offshore) installation and servicing of wind turbines expose service providers to the regulatory fragmentation still prevalent in the Single Market for services, as illustrated in the box below.


**THE COMPLEXITY OF CROSS-BORDER SERVICE DELIVERY**

Global Wind Service offers full scope project solutions for onshore and offshore installation and servicing of wind turbines around the world. The company has +1,700 employees with approximately 35 different nationalities.

Securing compliance with national regulations related to posting of workers abroad is a significant driver of cost and uncertainty for the company. This is because:

-  A project is often staffed by workers of more than **10 different nationalities** that live with their families in their home country, have Denmark as their legal workplace and provide services across Europe
-  A worker can easily work on projects in **6-8 countries** within the same year

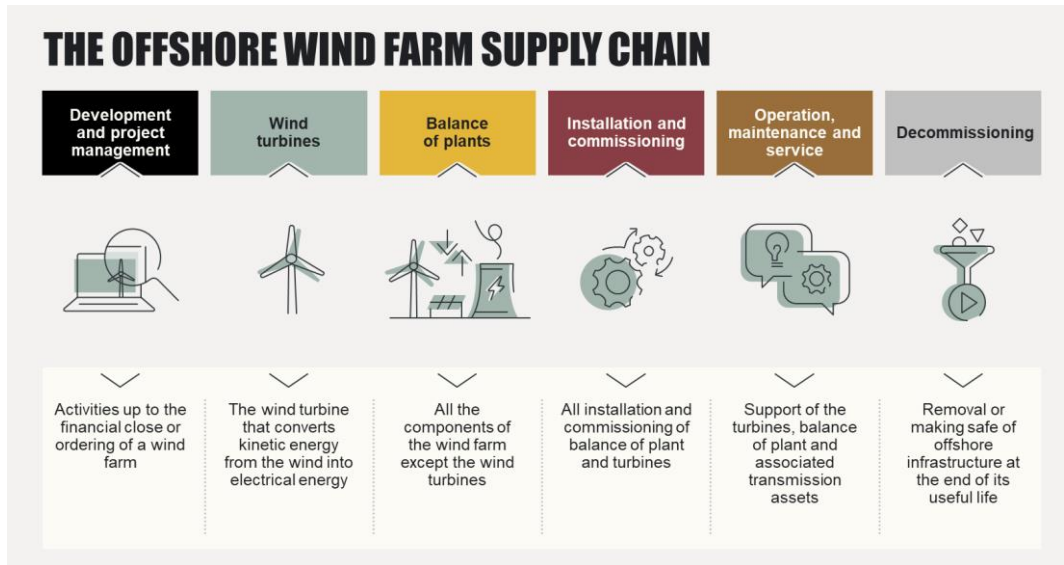
For example, **national income taxation legislation and double taxation treaties** related to pan-European-staffed projects are highly complex, and securing compliance is costly. In 2022 alone, the company estimates that the costs of tax advisory services and foregone tax reimbursements amount to several million euro.



## 2.2 Regulatory fragmentation cumulates through the value chain

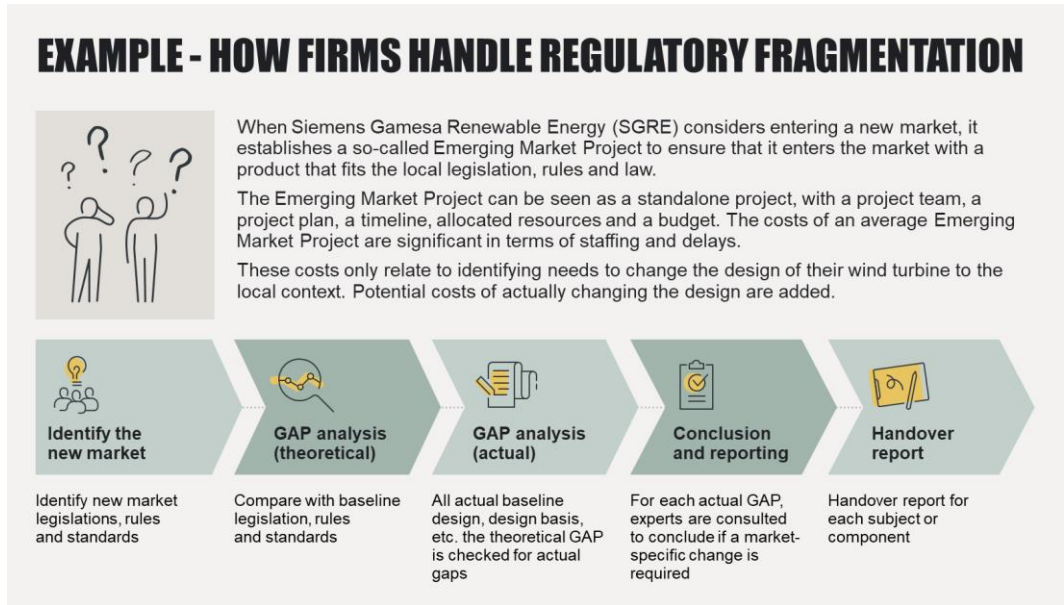
The value chain associated with the wind industry includes all activities from development and project management to decommissioning of the turbines, infrastructure and equipment. An overview of the value chain associated with an offshore wind farm is provided in the figure below.<sup>2</sup>

Nearly all wind turbines installed in Europe are also manufactured in Europe. The industry furthermore exports €8bn worth of equipment around the world every year. It currently employs 300,000 people, and WindEurope expects this figure to reach 450,000 by 2030.<sup>3</sup>



The global orientation and competitiveness of the wind industry means that most EU firms in the industry deliver solutions that comply with international standards. Therefore, all gaps in national requirements related to wind turbines, installation, operation, maintenance, etc. compared to international standards need to be factored into the bid price and proposed project plan.

An example of how firms handle regulatory fragmentation is illustrated in the box below, based on an interview with Siemens Gamesa Renewable Energy (SGRE). When SGRE considers entering a new market (be it European or non-European), it establishes a so-called Emerging Market Project to ensure that it enters the market with a product that fits the national legislation, rules and law. The costs of such a project are significant and must be covered before the project has been won. In addition to this come the potential costs associated with changing the design of the product to ensure compliance.





## 2.3 Examples of regulatory barriers facing the wind industry

### Reduce permitting bottlenecks in the EU market

#### Background

Member States will need to deploy 480 GW of wind by 2030, up from 190 GW today, to fulfill the EU target for renewable energy. Because of the long and cumbersome permitting procedures, the EU deployed only 11 GW of wind energy in 2021, whereas the EU needs 35 GW per year to deliver on its climate targets.

One problem is that the **permit-granting process involves several decisions that involve many different administrative bodies and layers of administration**. The process also encompasses many different permits (construction permits, grid connection, energy license, transport permits, etc.). The complexity of administrative procedures, the overlap of competences of different bodies, and a lack of staff and resources are significant hurdles to the permitting process.<sup>4</sup>

#### Solution

The Commission has developed the EU Permitting Guidance, recapping best practices across countries on the simplification and acceleration of renewables permitting. Initiatives have also been taken in the RePowerEU Plan, the Net Zero Industry Act and the Green Deal Industrial Plan to speed up permitting and simplify administration.<sup>5</sup> The deadlines proposed in these acts should be quickly agreed upon and enacted.

### Secure access to raw materials and secondary materials

#### Background

The supply chain associated with wind turbines faces **challenges due to disruptions of global supply chains for raw materials and significant dependency on individual third countries for the supply of these materials**.<sup>6</sup> The Commission has recently presented its EU Critical Raw Materials Act (CRMA).

#### Solution

The wind industry welcomes that the CRMA includes increased access to several critical materials used in wind turbines. However, for the wind industry, the list of essential raw materials is not limited to materials like rare earths, nickel, manganese and copper; it also includes aluminium, steel, glass and carbon fibres.<sup>7</sup> Therefore, it is important that other legislative acts, like the Net Zero Industry Act, take a look at the whole supply chain for crucial net zero or close to net zero technologies, including important procurement flows, and ensure access to these.

### Harmonise requirements for lights and markings on wind turbines

#### Background

Lights and markings of wind turbines follow the recommendations and regulations of the UN International Civil Aviation Organization (ICAO), the EU European Aviation Safety Agency (EASA), and the regulations issued by national authorities. ICAO Standards and Recommended Practices (SARPs) recommend lighting and markings on obstacles, and they provide guidelines for aviation lighting and its location, colour and model.

**National regulations for lights and markings on wind turbines vary significantly across Member States.** ICAO SARPs are implemented in Member States through their national regulations. EASA requirements are directly applicable as national law and reflect the ICAO rules. However, the EASA regulations are limited to obstacles at aerodromes. Thus, it is possible for Member States to have different legislation and requirements regarding wind turbine lighting and marking outside aerodrome boundaries, **to the disadvantage of both the wind turbine manufactures and the aviation industry.**<sup>8</sup>

The box below provides some examples of national requirements from Ireland and Sweden that deviate from international standards.<sup>9</sup> Similar deviations are seen in other Member States, and the national requirements should be considered illustrative of a common problem.

### EXAMPLE – NATIONAL REQUIREMENTS ON MARKING AND LIGHTING



An analysis of gaps between the international standard and the Irish requirements shows several differences for aviation and navigation marking and lightning systems. The Irish standard, for example, specifies a high intensity light requirement that differs from the international standard, and the **requirement must be tested and implemented, which adds costs and delays.** Also, the required nacelle (the machine house on top of the tower) can be a technical challenge as the lights must be installed on the outside of the tower, which often requires new brackets and interfaces to the tower compared to international standards. Further, this can lead to blade strikes under certain circumstances, which is critical to the annual energy production of a wind turbine.



For a wind power plant to receive a permit in Sweden, the municipality concerned must approve the environmental assessment. A common reason for rejection is that the obstacle lights of the wind turbines risk disturbing nearby residents.

**A comparison of Swedish lighting requirements with international standards shows several differences.** For wind turbines with a total height of over 150 meters, for example, the Swedish high-intensity white obstruction light is required around the clock.

Both ICAO and FAA have concluded that daytime obstacle lights on wind turbines have no significance for flight safety and therefore cannot be justified in view of the disruption and additional cost they cause to society. Medium-intensity obstacle lights up to a total height of 315 meters are therefore recommended.

### Solution

Simplification and harmonisation of product requirements related to obstacle lighting and marking (ideally in line with international standards) can potentially reduce the costs of constructing wind turbines. Examples of potential harmonisation of the national regulations include:

- Design and positioning of paint-based markings
- Positioning, number and types of lights
- Height of wind turbines – standard categories
- Lighting and light intensity control
- Harmonisation between single wind turbines and wind farms, both offshore and onshore

## Ensure common standards, mutual recognition and transferability of training

### Background

The Global Wind Organisation (GWO) was launched by the wind industry in 2012. GWO has developed Basic Safety Training (BST), Basic Technical Training (BTT) as well as a range of more specialist modules. In addition to the defined training modules, local occupational health and safety legislation or related rules sometimes add to or restrict the scope of training that can be delivered.

Examples include the requirement for annual work at height training in Germany, restrictions on automated external defibrillator (AED) training in France, specific first aid training requirements in Ireland and mandatory basic electrical safety training in Poland.<sup>10</sup> These variations may serve no material safety benefit in the wind farm project, and so the opportunities to address these differences, possibly in partnership with health and safety regulators, could reduce costs without compromising safety.

### Solution

The wind industry itself is strongly encouraged to continue communicating and explaining the purpose and intent of wind-specific training. EU policy makers could help this process by taking initiative to:<sup>11</sup>

- Identify where minimum training requirements differ between Member States and seek to minimise these differences through enhanced regulator co-operation and collaboration. This recommendation seeks to reach a common set of training requirements for wind industry workers, which would support the development of new training standards, reduce the need for additional training to meet specific local requirements and remove barriers to the movement of personnel between wind projects and Member States.
- Where differences in minimum training requirements remain, continue to develop processes for incorporating local content/requirements into existing standards to enhance transferability between markets.

## Ease customs procedures for offshore wind farms

### Background

Approximately 60% of the EU's offshore wind capacity is in a so-called Exclusive Economic Zone (EEZ). While the EU Member State in question has special rights to establish wind farms, the area is not part of the EU Customs Territory, and EU rules relating to customs, VAT and excise do not apply in the EEZ.<sup>12</sup> When moving goods to offshore wind farms for servicing and installation activities (exporting), businesses therefore need to:

- Stocktake goods loaded onto each vessel
- Generate "proforma invoice for customs purposes only", "load manifests" or other docs for every single vessel
- Start customs clearing process
- Wait for green light from customs if no simplified procedure is used

Similar procedures are in place when moving goods back (importing). The estimated **cost for service providers can amount to EUR 1-3 million for every 50 WTGs erected in the EEZ.**<sup>13</sup> The proportion of EU wind capacity in EEZs is expected to increase into the

future, and EU firms will increasingly be exposed to barriers to the movement of goods when providing servicing and installation activities to EU offshore wind farms.

### Solution

One way forward is to change the Union Customs Code (UCC) to get exemptions from the following requirements:<sup>14</sup>

- Conveyance to the appropriate place
- Presentation of goods
- Export and import declaration of goods for exporting and importing WTGs and parts thereof into the EEZ or continental shelf of an EU Member State for the purposes of their construction, repair, maintenance or conversion

## Consistent interpretation of health and safety legislation

### Background

According to WindHarmony (2020), the wind industry has reported multiple examples of inconsistent and sometimes incorrect interpretation of occupational health and safety (OHS) legislation as applied to wind turbines and/or projects. Inconsistencies mainly relate to key definitions – including those of “machinery”, “structures”, “building” and “workplace”. The most notable examples relate to the national implementation and interpretation related the **Machinery Directive** and the **Temporary and Mobile Construction Sites Directive**. The box below provides some examples from France and Sweden.<sup>15</sup>

### EXAMPLE – INCONSISTENT IMPLEMENTATION OF EU DIRECTIVES



In France, machinery operators must hold a driving authorisation issued by the employer. Since there is no European licence allowing equivalence with the French CACES, French employers will need to issue a gap study of additional training requirements or commission a third party operator assessment when working with non-French operators. Also, the French authorities require technicians to use certain specific tools when working on high voltage and specific testing devices on low voltage installations that are not standard for the EU.

In addition, a growing number of inconsistencies in the applicability of labour laws have been registered by actors in the wind industry, particularly in offshore wind projects. Examples relate mainly to differences in the application and interpretation of the Working Time Directive and the Maritime Labour Convention, which create variations in the hours certain employees or crew are allowed to work in different Member States.

If offshore employees are asked to perform onshore work in France, for example, the French Employment Code will apply instead of the Code of Transport. This implies a weekly maximum working time of 48 hours instead of 84 and a daily maximum working time of 10 hours instead of 12. For operators, this means that more people are required to fulfil a given number of manhours. This is a problem for an industry that is lacking qualified workers.



In a market inspection by the Swedish Work Environment Authority, it was investigated whether manufacturers of wind turbines meet the basic health and safety requirements of the Machinery Directive. The inspection brought forward several cases of unclear interpretation of the Machinery Directive, and the turbine manufacturers felt that it has been difficult to establish a good dialogue with the Work Environment Agency.

### **Solution**

A possible solution is the establishment of a forum for wind industry regulators, to improve information sharing, raise awareness of the health and safety issues specific to the wind industry, and secure a consistent/harmonized approach to the interpretation and enforcement of applicable health and safety obligations.<sup>16</sup>

## Impose a landfill ban on decommissioned wind turbine blades<sup>17</sup>

### **Background**

Today, the standard lifetime of an onshore wind farm is around 20-25 years. 85-90% of the total mass of a wind turbine can already be recycled, as most of the components – such as steel, cement, copper wire, electronics and gearing – have established recycling circles. However, wind turbine blades are more challenging to recycle. They contain complex composite materials that allow for lighter and longer blades with optimized aerodynamics, but their configuration also poses challenges for recycling. The first turbines in the EU are reaching the end of their operational life, and WindEurope expects around 25,000 tonnes of blades to reach the end of their operational life annually by 2025. Europe's wind industry has committed to re-use, recycle or recover 100% of decommissioned blades.

New technologies have become available to recycle the composite materials in blades, and an increasing number of companies offer composite recycling services. Many of these solutions need to mature to become widely available at industrial scale and/or become cost competitive. Making these technologies commercially viable will require collaboration between policy makers, other composite users, the recycling industry and others.

### **Solution**

Governments can play a role in driving the circularity of wind turbine blades. One way forward is to **impose an EU-wide landfill ban on decommissioned wind turbine blades**. A landfill ban would further accelerate the development of sustainable recycling technologies for composite materials. Governments may also increase funding on R&D in the commercialization and scale-up of different blade recycling technologies. Regulation can furthermore help support the creation of viable recycling value chains and to incentivize a market for recycled materials.

## Ease the transportation of decommissioned blades

### **Background**

If a ban on landfilling wind turbine blades becomes effective in 2025 (as requested by the wind industry), efforts to make recycling and recovery options both available and commercially viable should be expected over the coming years. Facilities established to convert glass fibre composites into, e.g., construction elements, skis, noise barriers, etc. will expectedly need to source materials from neighbouring countries to secure a steady supply.

Transport companies usually declare the Basel code of the type of waste they carry. Decommissioned blades are currently categorized as waste, but there is currently no Basel Code for the composite materials that are used in the blades. Today, this seems to be a voluntarily measure. But if transport companies are stopped and found to carry unclassified waste, it would automatically be considered dangerous waste, and the company would have to pay a ~EUR 10,000 fine.

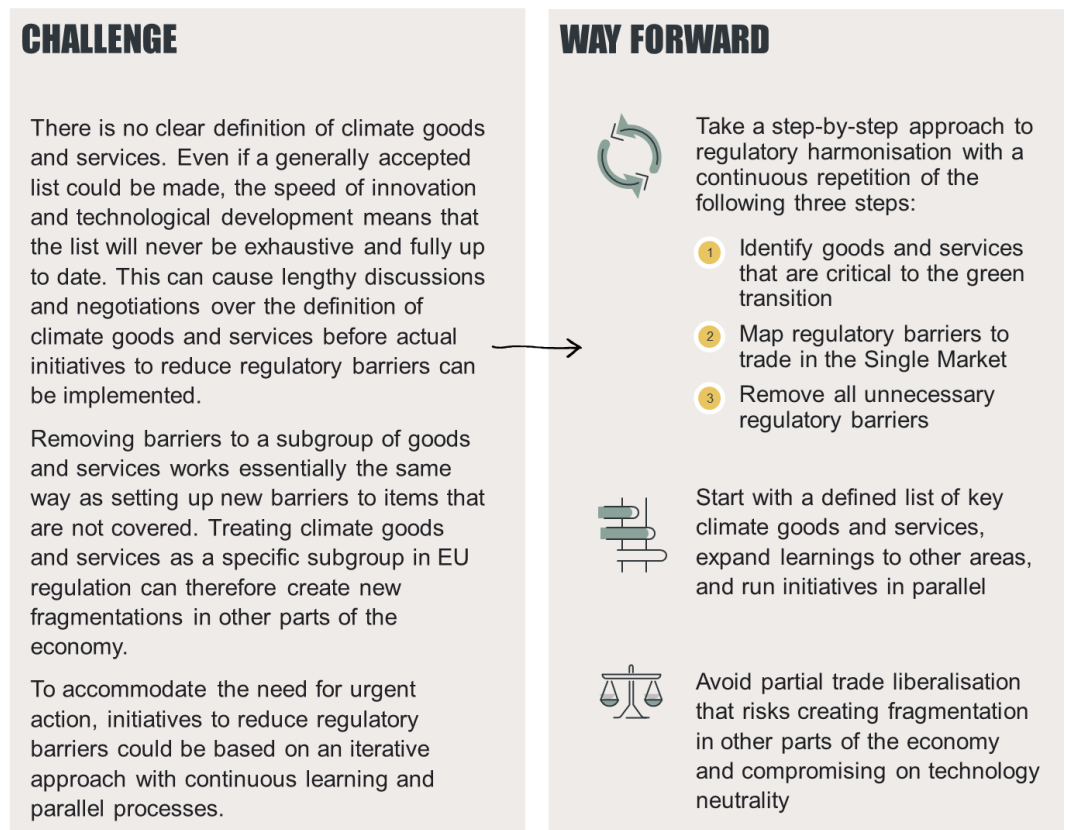


**Solution**

The wind industry calls for action in two alternative directions:

- 1) Update the existing legislation with a Basel Code that covers the glass fibre composites used in wind turbine blades, so blades are included on the “Green List”, or
- 2) Regard a decommissioned blade as a material to be used in a new product and not categorised as waste.

### 3 A step-by-step approach to reducing green barriers – how to do it?

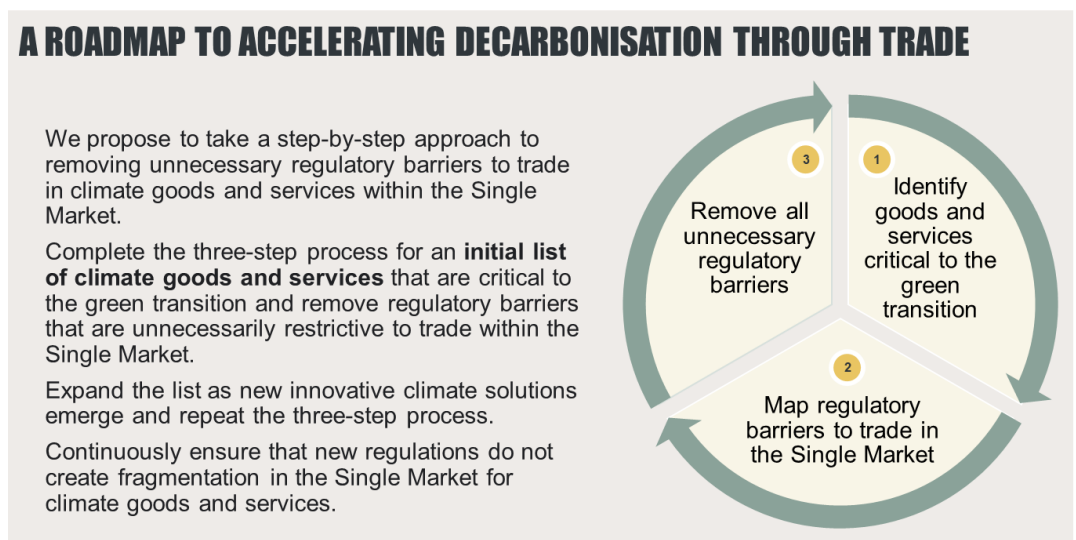


#### 3.1 Take a step-by-step approach to regulatory harmonisation

It is difficult to formulate an exact definition of climate goods and services, and there is a risk that the complexity of the problem ends up stalling progress and perhaps even hindering the dismantling of regulatory barriers to trade within the Single Market. We therefore propose that a process be set up, where the European Commission applies a “step by step” approach to regulatory harmonisation with the following three steps:

- **Step 1** | Define an initial list of climate goods and services. A preliminary list is offered in the next section, which could be a starting point for the work. This could be a minimum list of climate goods and services that are generally accepted as being critical for the green transition.
- **Step 2** | Map regulatory barriers that hinder free trade in the defined climate goods and services across borders in the Single Market (see the examples in the previous chapter). The mapping should be exhaustive and cover the full business and consumer journey. The mapping should also aim to cover all sources of regulatory barriers, such as lack of compliance with EU regulation, fragmentation in the national implementation of EU regulation, intellectual property rights, uneven access to public procurement, etc.
- **Step 3** | Take bold steps to remove unnecessary or unjustified regulatory barriers to trade in climate goods and services that are hindering the green transition at both the EU and national level. Build a culture of trust and compliance (for inspiration, see recommendation #4 and #5 from the report *Reboot of the Single Market* in first part of this note).

The iterative process is illustrated in the figure below.





### 3.2 Get started and expand learnings

To get the process started, the European Commission can take the recent research from the National Board of Trade Sweden and the World Economic Forum as a starting point (see Appendix 1 for details and references). This research identifies 25 climate goods, three groups of climate services and a range of services that are indispensable to the trade in and adoption of key climate goods.

The European Commission can add climate goods and services that are deemed of strategic importance for meeting EU climate targets to this list, such as nuclear power, electric aviation, e-fuels, electrified shipping, large-scale hydropower, etc.

## A PRELIMINARY LIST OF CRITICAL CLIMATE GOODS AND SERVICES

 <p><b>Climate goods</b></p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 25 key climate goods defined by the World Economic Forum</li> <li><input type="checkbox"/> Additional climate goods of strategic importance for the EU</li> <li><input type="checkbox"/> New climate goods under development</li> </ul>
 <p><b>Climate services</b></p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Traditional climate services defined by the World Economic Forum</li> <li><input type="checkbox"/> Additional climate services of strategic importance for the EU</li> <li><input type="checkbox"/> Services indispensable to the uptake of key climate goods</li> </ul>

Climate goods under development can also be added, such as new technologies that have received EU innovation funding. In this case, the mapping of regulatory barriers should not only cover the existing regulation but also gaps in the existing regulation that cause uncertainty, higher costs, slower market development, etc., and where new regulatory initiatives may be needed. For example, the energy transition requires a significant investment in renewable energy, and the energy transition will require a bigger role for tools and regulations that ensure stability of the system, such as investments in energy storage and baseload capacity.

### 3.3 Look at existing knowledge from a climate perspective

The European Commission has identified several practical obstacles and barriers for EU firms that deliver climate goods and services in the non-harmonised areas of the Single Market.<sup>18</sup> Climate services are faced with barriers such as restrictive market entry and exercise requirements, complex administrative procedures, lack of information on rules, and divergent rules and regulations (often referred to as regulatory heterogeneity). Barriers that often cause additional costs for consumers and may limit cross-border sales.<sup>19</sup>

Examples of issues that could be resolved to reduce the fragmentation in national climate regulation are listed below (selected from the complete list of 83 obstacles and barriers listed by the European Commission).

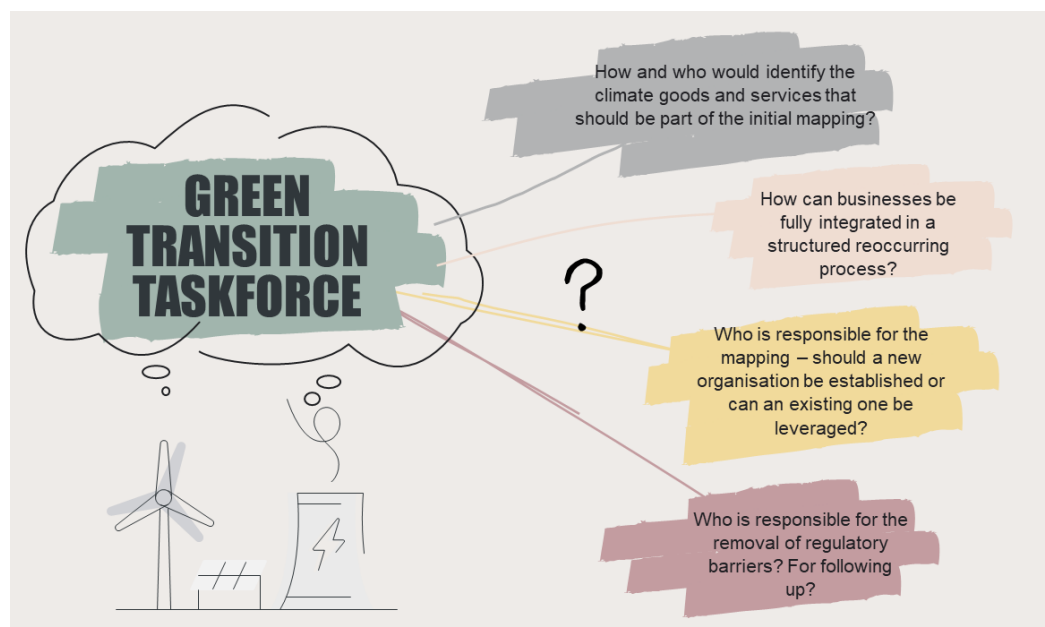
Main category	Examples of burdensome national climate regulation
Waste management	<ul style="list-style-type: none"> <li>• Lack of information on the availability of materials (79)</li> <li>• Non-harmonised end-of-waste criteria (80)</li> <li>• Absence of standardised system to demonstrate the performance of recycled materials (81)</li> <li>• Insufficient enforcement of European environmental legislation on the shipment of waste (82)</li> <li>• Heterogeneity of Extended Producer Responsibility (EPR) schemes in Member States (83)</li> </ul>
Energy	<ul style="list-style-type: none"> <li>• Insufficient unbundling that can create market distortions (45)</li> <li>• Access to markets for demand response aggregators (46)</li> <li>• Retail price regulation that hinders free competition, uncertainty concerning future regulatory developments (47)</li> <li>• Data critical for operations is difficult to access or of low quality (48)</li> <li>• Flat taxes and charges reduce importance of price signals for end users (49)</li> </ul>

<p><b>Other professional technical and business services</b></p>	<ul style="list-style-type: none"> <li>• Market entry rules (e.g., rules on professional qualifications, authorisation schemes and rules relating to the establishment of a company) (34, 56)</li> </ul>
<p><b>Construction</b></p>	<ul style="list-style-type: none"> <li>• Market access and exercise requirements (38)</li> <li>• Burdensome and complex building permit procedures (39)</li> <li>• Posting of workers and cross-border service provision by self-employed persons (40)</li> <li>• Late payments (41)</li> <li>• Additional national requirements on construction products (42)</li> </ul>
<p><b>Digital services</b></p>	<ul style="list-style-type: none"> <li>• Fragmentation of rules for digital services (2)</li> <li>• Insufficient internet and cloud infrastructure (10)</li> </ul>

Some of the listed barriers are well-known obstacles, and their removal is part of the economic potential from achieving a more integrated Single Market for services. However, **the key role of these services for the green transition adds additional weight to the economic business case of their removal.**

### 3.4 Secure a clear delegation of roles and responsibilities

The responsibility to map and remove regulatory barriers to trade in climate goods and services should be clearly delegated, and sufficient resources must be allocated to secure speed, capacity as well as quality. An effective setup will also require access to business perspectives and solutions. One option is to establish a **Green Single Market Acceleration Taskforce as part of the SMET (Single Market Enforcement Taskforce)**. The Green Taskforce could be responsible for identifying the climate goods and services that could be part of the initial mapping, drawing horizontal lessons and rolling out the approach to other important areas of climate action. The Taskforce could also be responsible for finding the most suitable solution (based on the Better Regulation Toolbox) and following up on the implementation and compliance.



The mapping and removal of barriers to trade in climate goods and services can be aligned with ongoing initiatives, such as the work already undertaken by the SMET. In 2022, SMET took initiative in the following areas that, upon completion, may also address barriers to trade in climate goods and services:<sup>20</sup>

- Streamlining permitting procedures for wind and solar energy projects
- Streamlining administrative requirements for cross-border service providers
- Easing cross-border restrictions for professionals for temporary and occasional service provision
- Liability-insurance-related problems when providing cross-border services
- Barriers in the ecosystem of electric vehicle charging stations





## Appendix 1 – Climate goods and services

Recent research by the World Economic Forum<sup>21</sup> (based on prework by the National Board of Trade Sweden<sup>22</sup>) offers a comprehensive definition of both climate goods and services. The latter distinguishes between “traditional” climate services and “non-traditional” climate services that are indispensable to the adoption of climate goods. The European Commission can take the list of climate goods and services offered by this research as a starting point for mapping regulatory barriers to trade in climate goods and services within the Single Market.

### Climate goods

The World Economic Forum lists 25 key climate technologies that will play an essential role in reaching net-zero emissions (listed below in a non-prioritised order).

Main category	Main climate good category
Refrigerant management	1. Alternative refrigerants (refrigerant recovering and reclaiming units). Practices to better manage fluorinated gases that are widely used as refrigerants currently.
Renewable energy and energy efficiency	2. Onshore wind power 3. Offshore wind power 4. Utility scale PV 5. Distributed solar PV 6. Concentrated solar power 7. Biomass 8. Geothermal 9. Small hydropower 10. Tidal systems 11. Biogas stoves 12. High-efficiency heat pumps 13. Waste-to-energy systems (transition solutions) 14. Solar water heaters 15. Efficient motors (rated international efficiency 3 or higher) 16. LED lighting 17. Solar cookstoves
Fuels	18. Hydrogen
Buildings	19. High-performance glass 20. Insulation materials 21. Thermostats (smart) 22. Building automation systems
Transport	23. Electric trains 24. Electric cars
Carbon capture and storage (CCS)	25. Carbon capture and storage

## Traditional climate services

Traditional climate services are environmental in nature, meaning that their end-use is purely environmental. The World Economic Forum defines three groups of traditional climate services:<sup>23</sup>

- **Sewage services** | These refer to removal, treatment and disposal services. Equipment used are waste pipes, sewers or drains, cesspools or septic tanks. Processes utilised may be dilution, screening and filtering, sedimentation, chemical precipitation, etc.
- **Refuse collection and disposal services** | These refer to collection services for garbage, trash, rubbish and waste (whether from households or from industrial and commercial establishments), transport services, and disposal services by incineration or by other means. Waste reduction services are also included.
- **Sanitation services** | These include the collection, removal, disposal, purification or treatment of human excreta, domestic wastewater, waste and sewage effluent.

## Non-traditional climate services

A range of services have dual use. In some cases, they are indispensable to the installation, operation and maintenance of climate goods. In other cases, they serve other purposes than the green transition. The World Economic Forum provides the following examples of indispensable services that support trade in climate goods and their adoption:

Main category	Examples of mitigation options	Example of indispensable services
Refrigerants management	Refrigeration performance improvement	Engineering design services for mechanical and electrical installations for buildings
Renewable energy, energy efficiency and grid	Renewable energy	Engineering services for power projects; general construction services of power plants; financial services, expert investment banking, insurance services and pension services; management consulting and management services, information technology services; data transmission services; general construction services of dams; and maintenance and repair services of electrical machinery and apparatus.
	Grid/network	General construction services of long-distance pipelines; general construction services of long-distance communication and power lines; general construction services of local pipelines; general construction services of local cables and related works; and structural steel erection services.
	Energy efficiency	Engineering services for industrial and manufacturing projects, and heating equipment installation services.
Buildings	Design, urban form and standards	Architectural services and advisory services, and environmental consulting services.
	Exemplary new buildings	General construction services of residential buildings/installation services.

	Insulation/retrofit existing buildings	Insulation services.
	Energy efficient windows	Joinery and carpentry services (for prefabricated, insulated doors and double- or triple-paned windows).
<b>Transport</b>	Infrastructure for modal shifts	Engineering services, transportation and general construction services of railways.
	Urban transport planning	Urban planning services.
	Water transport services	Other coastal and transoceanic water transport services of other freight (coastal and transoceanic water transportation of components of offshore renewable energy plants and equipment for installing, repairing or maintaining them).
<b>Carbon capture and storage</b>	CO <sub>2</sub> capture and storage from industrial sites or power plants	Site preparation services, other technical testing, and analysis services. Other examples: identification of a suitable geological formation or CO <sub>2</sub> capture at the point of emission, transport to the reservoir and storage on a long-term basis.

The three “non-traditional” environmental service categories that appear most frequently across the five sectors in the proposed climate services list are:

- **Other professional technical and business services** | Engineering services (entail advisory, design, consulting and project management functions) are key in this category due to their importance for effective electricity generation, transmission and distribution.
- **Construction services** | Construction services implement various mitigation options across multiple sectors, including energy supply, transport, buildings, industry and waste.
- **Digital services** | Digital services (telecommunication, broadcasting and information supply services) can help consumers make greener choices – such as through eco-routing in digital maps, making emissions from transport and energy use more visible, cloud-based computing, smart electricity networks and after-sales services powered by ICT (e.g., through sensors and big data aggregation that facilitate better monitoring, parts replacement and so on).

## List of endnotes

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- <sup>1</sup> European Commission (2022), *Letter from President Leuven*, Brussels, 14 December 2022.
  - <sup>2</sup> The illustrations of the offshore wind farm value chain are based on BVG Associates (2019), *Guide to an offshore wind farm*. The report was published on behalf of The Crown Estate and the Offshore Renewable Energy Catapult.
  - <sup>3</sup> WindEurope (2022), *The EU Raw Materials Act – WindEurope’s contribution to the European Commission consultation*. Besides these more structural issues, WindEurope has also recommended a set of market design measures that they consider necessary for supporting the investment trajectory towards renewables-based electrification. See WindEurope (2022), *WindEurope position on Market Design – Driving investments towards a climate-neutral and energy secure Europe*.
  - <sup>s4</sup> Open letter to Ursula von der Layen from Enercon, GE Renewable Energy, Nordex, Siemens Gamesa Renewable Energy, Vestas Wind Systems A/S, and WindEurope.
  - <sup>5</sup> REPowerEU aims to reduce the EU’s dependence on Russian fossil fuels and to fast-forward the green transition. The European Green Deal Industrial Plan is an initiative for the EU to sharpen its competitive edge through clean-tech investment and to continue to lead the way to climate neutrality.
  - <sup>6</sup> WindEurope (2022), *The EU Raw Materials Act – WindEurope’s contribution to the European Commission consultation*.
  - <sup>7</sup> WindEurope (2023), *Ensuring access to critical materials for steel and wind sectors essential for EU clean-tech economy*, WindEurope press release 26 January 2023.
  - <sup>8</sup> Danish Transport, Construction and Housing Authority (2019), *Mapping of national regulations for lights and markings on wind turbines – North Sea countries*, study conducted by SNC Lavalin and Atkins.
  - <sup>9</sup> The examples are based on interviews with business associations and actors within the wind industry.
  - <sup>10</sup> WindHarmony (2020), *Qualification, assessment and prioritisation of potential harmonisation or alignment at European level – application of methodologies and recommendations for intervention*. The Wind Harmony project from 2020 (commissioned by the European Commission and conducted by Eclareon, WindEurope, and the Renewables Consulting Group) analysed the potential for harmonising health & safety regulations, standards and procedures & analyses at EU-level.
  - <sup>11</sup> WindHarmony (2020), *Qualification, assessment and prioritisation of potential harmonisation or alignment at European level – application of methodologies and recommendations for intervention*.
  - <sup>12</sup> An Exclusive Economic Zone (EEZ), as prescribed by the 1982 United Nations Convention on the Law of the Sea, is an area of the sea in which a sovereign state has special rights regarding the exploration and use of marine resources, including energy production from water and wind. An EEZ begins from 12 nautical miles off the state in questions. WindEurope (2021), *EEZ note*, internal note prepared for public consultations.
  - <sup>13</sup> WindEurope (2021), *EEZ note*, internal note prepared for public consultations.
  - <sup>14</sup> WindEurope (2021), *EEZ note*, internal note prepared for public consultations.
  - <sup>15</sup> The examples are based on interviews with business associations and actors within the wind industry.
  - <sup>16</sup> WindEurope (2021), *WindEurope response to the revision of the EU Waste Framework Directive*.
  - <sup>17</sup> WindHarmony (2020), *Qualification, assessment and prioritisation of potential harmonisation or alignment at European level – application of methodologies and recommendations for intervention*.
  - <sup>18</sup> European Commission (2020), *Business journey on the Single Market: practical obstacles and barriers*.
  - <sup>19</sup> National Board of Trade Sweden (2022), *Green services in the Single Market: facilitating the transition of the EU’s industrial ecosystems*.
  - <sup>20</sup> The Single Market Emergency Taskforce (2022), *Report 2021-2022*.
  - <sup>21</sup> The World Economic Forum (2022), *Accelerating decarbonisation through trade in climate goods and services*.
  - <sup>22</sup> National Board of Trade Sweden (2022), *Green services in the Single Market: facilitating the transition of the EU’s industrial ecosystems*.
  - <sup>23</sup> See the UN Classification on Economic Statistics at <https://unstats.un.org/unsd/classifications/Econ/Detail/EN/9/94020>.

# About us

Implement Economics is the economics expert unit of Implement Consulting Group. Our experts are advisers to corporate and government decision-makers within regulation, trade, digitisation, decarbonisation, and globalisation.

The team has conducted several studies on the Single Market and provided a series of studies for the European Commission and governments in Europe, Asia, and the Americas.

The team applies economic modelling, data analytics and econometrics to help solve worthwhile problems.

Headquartered in Copenhagen and with offices in Aarhus, Stockholm, Malmö, Gothenburg, Oslo, Zurich, Munich, Hamburg, and Raleigh (NC), Implement Consulting Group employs more than 1,000 consultants working for multinational clients on projects worldwide.

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