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**NOTE**

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From: Presidency  
To: Delegations

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Subject: Regulation of the European Parliament and of the Council establishing a  
carbon border adjustment mechanism (CBAM)  
- Compromise text

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Delegations will find attached the latest available text of the draft CBAM Regulation.

**REGULATION (EU) .../...**  
**OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**  
**of**  
**establishing a carbon border adjustment mechanism**

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 192(1) thereof,

Having regard to the proposal from the European Commission,

After transmission of the draft legislative act to the national parliaments,

Having regard to the opinion of the European Economic and Social Committee<sup>1</sup>,

Having regard to the opinion of the Committee of the Regions<sup>2</sup>,

Acting in accordance with the ordinary legislative procedure,

Whereas:

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<sup>1</sup> OJ C, , p. . [OP please insert the number of the opinion]

<sup>2</sup> OJ C, , p. . [OP please insert the number of the opinion]

- (1) The Commission has, in its communication on the European Green Deal<sup>3</sup>, set out a new growth strategy that aims to transform the Union into a fair and prosperous society, with a modern, resource-efficient and competitive economy, where there are no net emissions (emissions after deduction of removals) of greenhouse gases ('GHG emissions') **at the latest by 2050** and where economic growth is decoupled from resource use. The European Green Deal also aims to protect, conserve and enhance the EU's natural capital, and protect the health and well-being of citizens from environment-related risks and impacts. At the same time, that transformation must be just and inclusive, leaving no one behind. The Commission also announced in its EU Action Plan: Towards Zero Pollution for Air, Water and Soil<sup>4</sup> the promotion of relevant instruments and incentives to better implement the polluter pays principle as set out in Article 191(2) of the Treaty on the Functioning of the European Union ('TFEU') and thus complete the phasing out of 'pollution for free' with a view to maximising synergies between decarbonisation and the zero pollution ambition.
- (2) The Paris Agreement<sup>5</sup>, adopted in December 2015 under the United Nations Framework Convention on Climate Change ('UNFCCC') entered into force in November 2016. The Parties to the Paris Agreement, in its Article 2, have agreed to hold the increase in the global average temperature well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels. ***Under the Glasgow Climate Pact, adopted on 13 November 2021, the Parties also recognised that limiting the increase in the global average temperature 1.5 °C above pre-industrial levels would significantly reduce the risks and impacts of climate change, and committed to strengthen the 2030 targets by the end of 2022 to close the ambition gap.***
- (3) Tackling climate and other environmental-related challenges and reaching the objectives of the Paris Agreement are at the core of the European Green Deal. The value of the European Green Deal has only grown in light of the very severe effects of the COVID-19 pandemic on the health and economic well-being of the Union's citizens.

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<sup>3</sup> Communication from the Commission of 11 December 2019 on the European Green Deal (COM(2019) 640 final).

<sup>4</sup> Communication from the Commission of 12 May 2021 on Pathway to a Healthy Planet for All (COM(2021) 400).

<sup>5</sup> OJ L 282, 19.10.2016, p.4.

- (4) The Union is committed to reducing its economy-wide GHG emissions by at least 55 per cent by 2030 below 1990 levels, as set out in the submission to the UNFCCC on behalf of the European Union and its Member States on the update of the nationally determined contribution of the European Union and its Member States<sup>6</sup>.
- (5) Regulation (EU) 2021/1119 of the European Parliament and of the Council<sup>7</sup> has enshrined in legislation the target of economy-wide climate neutrality **at the latest** by 2050. That Regulation also establishes a binding Union reduction commitment of GHG emissions of at least 55 per cent below 1990 levels by 2030.
- (6) The Special Report of the Intergovernmental Panel on Climate Change (IPCC) on the impacts of global temperature increases of 1.5°C above pre-industrial levels and related global GHG emission pathways<sup>8</sup> provides a strong scientific basis for tackling climate change and illustrates the need to step up climate action. That report confirms that in order to reduce the likelihood of extreme weather events, GHG emissions need to be urgently reduced, and that climate change needs to be limited to a global temperature increase of 1.5°C. ***Moreover, if mitigation pathways, consistent with limiting global warming to 1.5°C above pre-industrial levels, are not rapidly activated, much more expensive and complex adaptation measures will have to be taken to avoid the impacts of higher levels of global warming. The Contribution of Working Group I to the Sixth Assessment Report of the IPCC recalls that climate change is already affecting every region on Earth and projects that in the coming decades climate changes will increase in all regions. This report stresses that unless there are immediate, rapid and large-scale reductions in GHG emissions, limiting warming close to 1.5°C or even 2°C will be beyond reach.***

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<sup>6</sup> Council of the European Union ST/14222/1/20/REV1.

<sup>7</sup> Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 ('European Climate Law') (OJ L 243, 9.7.2021, p. 1).

- (7) The Union has been pursuing an ambitious policy on climate action and has put in place a regulatory framework to achieve its 2030 GHG emissions reduction target. The legislation implementing that target consists, inter alia, of Directive 2003/87/EC of the European Parliament and of the Council<sup>8</sup>, which establishes a system for GHG emission allowance trading within the Union ('EU ETS') and delivers harmonised pricing of GHG emissions at Union level for energy-intensive sectors and subsectors, Regulation (EU) 2018/842 of the European Parliament and of the Council<sup>9</sup>, which introduces national targets for reduction of GHG emissions by 2030, and Regulation (EU) 2018/841 of the European Parliament and of the Council<sup>10</sup>, which requires Member States to compensate GHG emissions from land use with removals of emissions from the atmosphere.
- (7a) ***While the Union has substantially reduced its domestic GHG emissions, the GHG emissions embedded in imports to the Union have been increasing, thereby undermining the Union's efforts to reduce its global GHG emissions footprint. The Union has a responsibility to continue playing a leading role in global climate action.***

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<sup>8</sup> Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a system for greenhouse gas emission allowance trading within the Union and amending Council Directive 96/61/EC (OJ L 275, 25.10.2003, p. 32).

<sup>9</sup> Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013 (OJ L 156, 19.6.2018, p. 26).

<sup>10</sup> Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU (OJ L 156, 19.6.2018, p. 1).

- (8) As long as a significant number of the Union's international partners have policy approaches that do not *achieve* the same level of climate ambition, there is a risk of carbon leakage. ***As the Union increases its climate ambition, that risk of carbon leakage could undermine the effectiveness of Union emission reduction policies.*** Carbon leakage occurs if, for reasons of costs related to climate policies, businesses in certain industry sectors or subsectors were to transfer production to other countries or imports from those countries would replace equivalent but less GHG emissions intensive products. That could lead to an increase in their total emissions globally, thus jeopardising the reduction of GHG emissions that is urgently needed if the world is to keep the global average temperature to well below 2°C above pre-industrial levels ***and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels.***
- (9) The initiative for a carbon border adjustment mechanism ('CBAM') is a part of the 'Fit for 55 Package'. That mechanism is to serve as an essential element of the EU toolbox to meet the objective of a climate-neutral Union ***at the latest*** by 2050 in line with the Paris Agreement by addressing risks of carbon leakage resulting from the increased Union climate ambition. ***It can also contribute to promoting decarbonisation in third countries.***
- (10) Existing mechanisms to address the risk of carbon leakage in sectors or sub-sectors at risk of carbon leakage are the transitional free allocation of EU ETS allowances and financial measures to compensate for indirect emission costs incurred from GHG emission costs passed on in electricity prices respectively laid down in Articles 10a(6) and 10b of Directive 2003/87/EC. ***Free allocation at the level of best performers has been a policy instrument for certain industrial sectors to address the risk of carbon leakage.*** However, ***these weaken*** the price signal that the system provides, compared to full auctioning, and thus affects the incentives for investment into further abatement of emissions.

- (11) The CBAM seeks to replace these existing mechanisms by addressing the risk of carbon leakage in a different way, namely by ensuring equivalent carbon pricing for imports and domestic products. To ensure a gradual transition from the current system of free allowances to the CBAM, the CBAM should be progressively phased in while free allowances in sectors covered by the CBAM are phased out. The combined and transitional application of EU ETS allowances allocated free of charge and of the CBAM should in no case result in more favourable treatment for Union goods compared to goods imported into the customs territory of the Union.
- (11a) *Carbon price is rising and companies need long-term visibility, predictability and legal certainty to make their decisions on investment in the decarbonisation of industrial processes. Therefore, in order to strengthen the legal framework for fighting carbon leakage, a clear pathway for gradual further extension of the scope of CBAM to products, sectors and subsectors at risk of carbon leakage should be established.*
- (12) While the objective of the CBAM is to prevent the risk of carbon leakage, this Regulation would also encourage the use of more GHG emissions-efficient technologies by producers from third countries, so that less emissions are generated. *For that reason the CBAM is expected to effectively support reduction of emissions in third countries.*
- (13) As an instrument to prevent carbon leakage and reduce GHG emissions the CBAM should ensure that imported products are subject to a regulatory system that applies carbon costs equivalent to the ones borne under the EU ETS, *resulting in an equivalent carbon pricing for imports and domestic products.* The CBAM is a climate measure which should *support the reduction of global emissions and prevent the risk of carbon leakage*, while ensuring compatibility *with WTO rules.*
- (14) This Regulation should apply to goods imported into the customs territory of the Union from third countries, except where their production has already been subject to the EU ETS, whereby it applies to third countries or territories, or to a carbon pricing system fully linked with the EU ETS.

- (15) In order to exclude from the CBAM third countries or territories fully integrated into, or linked, to the EU ETS in the event of future agreements, the power to adopt acts in accordance with Article 290 of TFEU should be delegated to the Commission in respect of amending the list of countries in Annex II. Conversely, those third countries or territories should be **removed** from the list in Annex II and be subject to CBAM **where** they do not effectively charge the ETS price on goods exported to the Union. ***The Commission will monitor possible practices of circumvention in third countries.***
- (15a) ***With a view to ensuring that the transition to carbon-neutral economy is continuously accompanied by economic and social cohesion, upon future revision of this Regulation, account should be taken of the special characteristics and constraints of the outermost regions as well as of island States which are part of the customs territory of the Union, without undermining the integrity and the coherence of the Union legal order, including the internal market and common policies.***
- (16) ***With a view to preventing the risk of carbon leakage in offshore installations, this Regulation should apply to the goods, or processed products from those goods as resulting from the inward processing procedure, that are brought to an artificial island, a fixed or floating installation, or any other structure on the continental shelf or in the exclusive economic zone of a Member State that are adjacent to the customs territory of the Union. Implementing powers should be conferred on the Commission to lay down detailed conditions for the application of the CBAM to such goods in those cases.***



- (17) The GHG emissions to be regulated by the CBAM should correspond to those GHG emissions covered by Annex I to the EU ETS in Directive 2003/87/EC, namely carbon dioxide ('CO<sub>2</sub>') as well as, where relevant, nitrous oxide ('N<sub>2</sub>O') and perfluorocarbons ('PFCs'). The CBAM should initially apply to direct emissions of those GHG from the production of goods up to the time of import into the customs territory of the Union, **mirroring the scope of the EU ETS to ensure coherence. The CBAM should also apply to indirect emissions. Those emissions are the emissions arising from the generation of electricity used to produce the goods to which this Regulation applies, as their inclusion would further enhance the environmental effectiveness of the CBAM and its ambition to contribute to fighting climate change. Indirect emissions should, however, not be calculated initially for the goods in respect of which financial measures to compensate for indirect emissions costs incurred from GHG emission costs passed on in electricity prices are applied. Those goods are identified in Annex IA to this Regulation. Future revisions of the EU ETS in Directive 2003/87/EC, and in particular the revisions of the indirect costs compensation measures should be appropriately reflected as regards the scope of application of the CBAM. During the transitional period data should be collected for the purpose of defining the methodology for calculation of indirect emissions. That methodology should take into account the quantity of electricity used for the production of the goods listed in Annex I, as well as the country of origin, the generation source, and the emission factors related to that electricity.**
- (18) The EU ETS and the CBAM have a common objective of pricing GHG emissions embedded in the same sectors and goods through the use of specific allowances or certificates. Both systems have a regulatory nature and are justified by the need to curb GHG emissions, in line with the **binding** environmental objective set out in Union law<sup>11</sup> to **reduce the Union's net GHG emissions by at least 55 per cent below 1990 levels by 2030 and to reach economy-wide climate neutrality at the latest by 2050.**

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<sup>11</sup> **Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 ('European Climate Law') (OJ L 243, 9.7.2021, p. 1).**

- (19) However, while the EU ETS sets an absolute cap on the GHG emissions from the activities under its scope and allows tradability of allowances (so called ‘cap and trade system’), the CBAM should not establish quantitative limits to import, so as to ensure that trade flows are not restricted. Moreover, while the EU ETS applies to installations based in the Union, the CBAM should be applied to certain goods imported into the customs territory of the Union.
- (20) The CBAM system has some specific features compared with the EU ETS, including on the calculation of the price of CBAM certificates, on the possibilities to trade certificates and on their validity over time. These are due to the need to preserve the effectiveness of the CBAM as a measure preventing carbon leakage over time and to ensure that the management of the system is not excessively burdensome in terms of obligations imposed on the operators and of resources for the administration, while at the same time preserving an equivalent level of flexibility available to operators under the EU ETS. ***Ensuring such an appropriate balance is of particular importance to small and medium-sized enterprises (SMEs) concerned.***
- (21) In order to preserve its effectiveness as a ***measure preventing*** carbon leakage ■, the CBAM needs to reflect closely the EU ETS price. While on the EU ETS market the price of allowances ***released into the market*** is determined through auctions, the price of CBAM certificates should reasonably reflect the price of such auctions through averages calculated on a weekly basis. Such weekly average prices reflect closely the price fluctuations of the EU ETS and allow a reasonable margin for importers to take advantage of the price changes of the EU ETS while at the same ***time*** ensuring that the system remains manageable for the administrative authorities.

- (22) Under the EU ETS, the total number of allowances issued (the ‘cap’) determines the supply of emission allowances and provides certainty about the maximum emissions of GHG. The carbon price is determined by the balance of this supply against the demand of the market. Scarcity is necessary for there to be a price incentive. As it is not *intended* to impose a cap on the number of CBAM certificates available to importers, if importers had the possibility to carry forward and trade CBAM certificates, this could result in situations where the price for CBAM certificates would no longer reflect the evolution of the price in the EU ETS. That would weaken the incentive for decarbonisation between domestic and imported goods, favouring carbon leakage and impairing the overarching climate objective of the CBAM. It could also result in different prices for operators of different countries. Therefore, the limits to the possibilities to trade CBAM certificates and to carry them forward is justified by the need to avoid undermining the effectiveness and climate objective of the CBAM and to ensure even handed treatment to operators from different countries. However, in order to preserve the possibility for importers to optimise their costs, this Regulation should foresee a system where authorities can re-purchase a certain amount of excess certificates from the importers. Such amount is set at a level which allows a reasonable margin for importers to leverage their costs over the period of validity of the certificates whilst preserving the overall price transmission effect, ensuring that the environmental objective of the measure is preserved.
- (23) Given that the CBAM applies to imports of goods into the customs territory of the Union rather than to installations, certain adaptations and simplifications would also need to apply in the CBAM regime. One of those simplifications should consist in a *simple and accessible* declarative system where importers should report the total verified GHG emissions embedded in goods imported in a given calendar year. A different timing compared to the compliance cycle of the EU ETS should also be applied to avoid any potential bottleneck resulting from obligations for accredited verifiers under this Regulation and the EU ETS.

- (24) In terms of *penalties*, Member States should apply penalties to infringements of this Regulation and ensure that they are implemented. *More specifically, the amount of penalties for the failure of an authorised CBAM declarant to surrender CBAM certificates* should be identical to penalties currently applied within the Union in case of infringement of EU ETS according to Article 16(3) and (4) of Directive 2003/87/EC. *However, where the goods are introduced into the Union by a person other than an authorised CBAM declarant without complying with the obligations of this Regulation, the amount of those penalties should be higher in order to be effective, proportionate and dissuasive, also taking into account the fact that such person is not obliged to surrender CBAM certificates. The application of penalties under this Regulation is without prejudice to application of penalties that may be imposed under Union or national law for the infringement of other relevant obligations, in particular as regards customs rules.*
- (25) While the EU ETS applies to certain production processes and activities, the CBAM should target the corresponding imports of goods. That requires clearly identifying imported goods by way of their classification in the Combined nomenclature<sup>12</sup> ('CN') and linking them to embedded GHG emissions.
- (26) The product coverage of the CBAM should reflect the activities covered by the EU ETS as that scheme is based on quantitative and qualitative criteria linked to the environmental objective of Directive 2003/87/EC and is the most comprehensive GHG emissions regulatory system in the Union.
- (27) Setting a product scope for the CBAM reflecting the activities covered by the EU ETS would also contribute to ensuring that imported products are granted a treatment that is not less favourable than that accorded to like products of domestic origin.

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<sup>12</sup> Council Regulation (EEC) No 2658/87 of 23 July 1987 on the tariff and statistical nomenclature and on the Common Customs Tariff (OJ L 256, 7.9.1987, p. 1).

- (28) Whilst the ultimate objective of the CBAM is a broad product coverage, it would be prudent to start with a selected number of sectors with relatively homogeneous products where there is a risk of carbon leakage. Union sectors deemed at risk of carbon leakage are listed in Commission Delegated Decision 2019/708<sup>13</sup>.
- (29) The goods under this Regulation should be selected after a careful analysis of their relevance in terms of cumulated GHG emissions and risk of carbon leakage in the corresponding EU ETS sectors while limiting complexity and administrative burden *on the operators concerned*. In particular, the actual selection should take into account basic materials and basic products covered by the EU ETS with the objective of ensuring that *emissions embedded in emission-intensive products imported* into the Union are *subject to a carbon price that is equivalent to that applied to* EU products<sup>14</sup>, and to mitigate risks of carbon leakage. *The* relevant criteria to narrow the selection should be: firstly, relevance of sectors in terms of emissions, namely whether the sector is one of the largest aggregate emitters of GHG emissions; secondly, sector's exposure to significant risk of carbon leakage, as defined pursuant to Directive 2003/87/EC; thirdly, the need to balance broad coverage in terms of GHG emissions while limiting complexity and administrative effort.
- (30) The use of the first criterion allows listing the following industrial sector in terms of cumulated emissions: iron and steel, refineries, cement, *aluminium*, organic basic chemicals, *hydrogen*, and fertilisers.
- (31) However, certain sectors listed in Commission Delegated Decision (EU) 2019/708 should not at this stage be addressed in this Regulation, due to their particular characteristics.

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<sup>13</sup> Commission Delegated Decision (EU) 2019/708 of 15 February 2019 supplementing Directive 2003/87/EC of the European Parliament and of the Council concerning the determination of sectors and subsectors deemed at risk of carbon leakage for the period 2021 to 2030 (OJ L 120, 8.5.2019, p. 2).

- (32) In particular, organic chemicals are not included in the scope of this Regulation due to technical limitations that **currently** do not allow to clearly define the embedded emissions of imported goods. For these goods the applicable benchmark under the EU ETS is a basic parameter, which does not allow for an unambiguous allocation of emissions embedded in individual imported goods. A more targeted allocation to organic chemicals will require more data and analysis.
- (33) Similar technical constraints apply to refinery products, for which it is not possible to unambiguously assign GHG emissions to individual output products. At the same time, the relevant benchmark in the EU ETS does not directly relate to specific products, such as gasoline, diesel or kerosene, but to all refinery output.
- (34) **Aluminium products should be included in the CBAM as they are highly exposed to carbon leakage. Moreover, in several industrial applications they are in direct competition with steel products because of characteristics closely resembling those of steel products.**
- (34a) Currently, imports of hydrogen into the EU stand at relatively low levels. However, that situation is foreseen to change significantly in the coming years as the “Fit for 55” package will promote the use of renewable hydrogen. For the decarbonisation of industry as a whole, the demand for renewable hydrogen will increase, and consequently lead to non-integrated production processes in downstream products where hydrogen is a precursor. The inclusion of hydrogen in the scope of CBAM is the appropriate means to further foster the decarbonisation of hydrogen.***
- (35) Similarly, **certain products** should be included in the scope of the CBAM despite their low level of embedded emissions **occurring during their production process**, as their exclusion would increase the likelihood of circumventing the enclosure of steel products in the CBAM by modifying the pattern of trade towards downstream products.

- (36) Conversely, this Regulation should not *initially* apply to certain products whose production does not entail meaningful emissions like ferrous scrap, *some* ferro-alloys and certain fertilisers.
- (37) Import of electricity should be included in the scope of this Regulation, as this sector is responsible for 30 per cent of the total GHG emissions in the Union. The enhanced Union climate ambition would increase the gap in carbon costs between electricity production in the Union and abroad. That increase combined with the progress in connecting the Union electricity grid to that of its neighbours would increase the risk of carbon leakage due to increased imports of electricity, a significant part of which is produced by coal-fired power plants.
- 37a) *In order to avoid excessive burden as regards competent national administrations and importers, it is appropriate to define limited cases under which the obligations under this Regulation should not apply. This de minimis provision, however, is without prejudice to a continued application of the provisions under Union or national law that are necessary to ensure compliance with the obligations under this Regulation as well as, in particular, with the customs rules, including prevention of fraud.*
- (38) As importers of goods covered by this Regulation should not have to fulfil their CBAM obligations under this Regulation at the time of importation, specific administrative measures should be applied to ensure that the obligations are fulfilled at a later stage. Therefore, importers should only be entitled to import CBAM goods after they have been granted an authorisation by competent authorities responsible for the application of this Regulation.

- (38a) *The customs authorities should not allow the importation of goods by any other person than an authorised CBAM declarant. In accordance with Article 46 and 48 of Regulation (EU) No 952/2013, the customs authorities may carry out checks on the goods, including with respect to the identification of the authorised CBAM declarant, the eight-digit CN code, the quantity and the country of origin of the imported goods, the date of declaration and the customs procedure. The Commission should include the risks relating to CBAM in the design of the common risk criteria and standards pursuant to Article 50 of Regulation (EU) No 952/2013.*
- (38b) *During the transitional period, the customs authorities should inform customs declarants of the need to report information, so as to contribute to the gathering of information as well as to the awareness on the need to request the status of authorised declarant when applicable. Such information by the customs authorities should be communicated in an appropriate manner to ensure that customs declarants are made aware of such need.*
- (39) The CBAM should be based on a declarative system where an authorised **CBAM** declarant, who may represent more than one importer, submits annually a declaration of the embedded emissions in the goods imported to the customs territory of the Union and surrenders a number of CBAM certificates corresponding to those declared emissions.
- (40) An authorised **CBAM** declarant should be allowed to claim a reduction in the number of CBAM certificates to be surrendered corresponding to the carbon price already *effectively* paid for those emissions in other jurisdictions.



- (41) The embedded declared emissions should be verified by a person accredited by a national accreditation body appointed in accordance with Article 4(1) of Regulation No 765/2008 of the European Parliament and of the Council<sup>14</sup> or pursuant to Commission Implementing Regulation (EU) 2018/2067<sup>15</sup>.
- (42) The system should allow operators of production installations in third countries to register in *the CBAM registry* and to make their verified embedded GHG emissions from production of goods available to authorised *CBAM* declarants. An operator should be able to choose not to have its name, address and contact details in the *CBAM registry* made accessible to the public.
- (43) CBAM certificates differ from EU ETS allowances for which daily auctioning is an essential feature. The need to set a clear price for CBAM certificates makes a daily publication excessively burdensome and confusing for operators, as daily prices risk becoming obsolete upon publication. Thus, the publication of CBAM prices on a weekly basis would accurately reflect the pricing trend of EU ETS allowances *released into the market* and pursue the same climate objective. The calculation of the price of CBAM certificates should therefore be set on the basis of a longer timeframe (on a weekly basis) than in the timeframe established by the EU ETS (on a daily basis). The Commission should be tasked to calculate and publish that average price.

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<sup>14</sup> Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93 (OJ L 218, 13.8.2008, p. 30).

<sup>15</sup> Commission Implementing Regulation (EU) 2018/2067 of 19 December 2018 on the verification of data and on the accreditation of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council (OJ L 334, 31.12.2018, p. 94).

- (44) In order to give the authorised **CBAM** declarants flexibility in complying with their CBAM obligations and allow them to benefit from fluctuations in the price of EU ETS allowances, the CBAM certificates should be valid for a **limited period of time** from the date of purchase. The authorised **CBAM** declarant should be allowed to re-sell a portion of the certificates bought in excess. The authorised **CBAM** declarant should build up during the year the amount of certificates required at the time of surrendering, with thresholds set at the end of each quarter.
- (45) The physical characteristics of electricity as a product, in particular the impossibility to follow the actual flow of electrons, justifies a slightly different design for the CBAM. Default values should be used **under clearly defined conditions** and it should be possible for authorised **CBAM** declarants to claim the calculation of their CBAM obligations based on actual emissions. Electricity trade is different from trade in other goods, notably because it is traded via interconnected electricity grids, using power exchanges and specific forms of trading. Market coupling is a densely regulated form of electricity trade which allows to aggregate bids and offers across the Union.
- (46) To avoid risks of circumvention and improve the traceability of actual CO<sub>2</sub> emissions from import of electricity and its use in goods, the calculation of actual emissions should only be permitted through a number of strict conditions. In particular, it should be necessary to demonstrate a firm nomination of the allocated interconnection capacity and that there is a direct contractual relation between the purchaser and the producer of the renewable electricity, or between the purchaser and the producer of electricity having lower than default value emissions.
- (46a) To reduce the risk of carbon leakage the Commission should take action to address practices of circumvention. The Commission should evaluate the risk of circumvention in all sectors to which this Regulation applies, and, under certain circumstances, the Commission should be empowered to adopt, where appropriate, delegated acts to strengthen anti-circumvention measures by amending Annex I to this Regulation.***

- (47) Contracting Parties to the Treaty establishing the Energy Community<sup>16</sup> or Parties to Association Agreements including Deep and Comprehensive Free Trade Areas are committed to decarbonisation processes that should eventually result in the adoption of carbon pricing mechanisms similar or equivalent to the EU ETS or in their participation in the EU ETS.
- (48) Integration of third countries into the Union electricity market is an important drive for those countries to accelerate their transition to energy systems with high shares of renewable energies. Market coupling for electricity, as set out in Commission Regulation (EU) 2015/1222<sup>17</sup>, enables third countries to better integrate electricity from renewable energies into the electricity market, to exchange such electricity in an efficient manner within a wider area, balancing supply and demand with the larger Union market, and reduce the carbon intensity of their electricity generation. Integration of third countries into the Union electricity market also contributes to the security of electricity supplies in those countries and in the neighbouring Member States.
- (49) Once third countries will be closely integrated into the Union electricity market via market coupling, technical solutions should be found to ensure the application of the CBAM to electricity exported from such countries into the customs territory of the Union. If technical solutions cannot be found, third countries that are market coupled should benefit from a time limited exemption from the CBAM until at the latest 2030 with regard solely to the export of electricity, provided that certain conditions are satisfied. However, those third countries should develop a roadmap and commit to implement a carbon pricing mechanism providing for an equivalent price as the EU ETS, and should commit to achieving carbon neutrality *at the latest* by 2050 ■ as well as ■ to align with Union legislation in the areas of environment, climate, competition and energy. That exemption should be withdrawn at any time if there are reasons to believe that the country in question does not fulfil its commitments or it has not adopted by 2030 an ETS equivalent to the EU ETS.

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<sup>16</sup> Council Decision 2006/500/EC of 29 May 2006 on the conclusion by the European Community of the Energy Community Treaty (OJ L 198, 20.7.2006, p. 15).

<sup>17</sup> Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management (OJ L 197, 25.7.2015, p. 24).

- (50) Transitional **provisions** should apply *for a limited period of time*. A CBAM without financial adjustment should apply, with the objective to facilitate a smooth roll out of the mechanism hence reducing the risk of disruptive impacts on trade. **Importers** should have to report on a quarterly basis the **embedded emissions** in goods imported during *that quarter of a calendar year*, detailing direct and indirect emissions as well as any carbon price *effectively* paid abroad.
- (51) To facilitate and ensure a proper functioning of the CBAM, the Commission should provide support to the competent authorities responsible for the application of this Regulation in carrying out their obligations. *The Commission should coordinate, issue guidelines and support the exchange of best practices.*
- (51a) *For a cost-efficient application of this Regulation, the Commission should manage the CBAM registry containing data on the authorised CBAM declarants, operators and installations in third countries.*
- (51b) *For the sale and re-purchase of CBAM certificates a common central platform should be established. For the purpose of oversight of the transactions on the common central platform, the Commission should facilitate the exchanges of information and the cooperation between competent authorities, and between those authorities and the Commission. Additionally, a swift flow of information between the common central platform and the CBAM registry should be established.*
- (51c) *To contribute to an effective application of this Regulation, the Commission should carry out risk-based controls and should review the content of CBAM declarations accordingly.*

- (51d) *In order to further enable an uniform application of this Regulation, the Commission should, as a preliminary input, make available to the national competent authorities its own calculations regarding the CBAM certificates to be surrendered, on the basis of its review of the CBAM declarations. Such preliminary input should be provided for indicative purposes only and without prejudice to the definitive determination to be made by the national competent authority. In particular, no right of appeal or other remedial measure should be possible against such preliminary input by the Commission.*
- (51e) *For enforcement purposes, Member States may also carry out reviews of individual CBAM declarations. The conclusions of the reviews of individual CBAM declarations should be shared with the Commission and should be made available to other competent authorities in the CBAM registry.*
- (51f) *Member States should be responsible for the correct establishment and collection of revenues arising from the application of this Regulation.*
- (52) The Commission should **regularly** evaluate the application of this Regulation and report to the European Parliament and the Council. The **reports** of the Commission should in particular focus on possibilities to enhance climate actions towards **reaching** the objective of a climate-neutral Union **at the latest** by 2050. The Commission should, as part of that **reporting**, collect **the** information necessary **with a view to the further extension of** the scope **of this Regulation** to indirect emissions **for goods listed in Annex Ia as soon as possible**, as well as to other goods and services **that may be** at risk of carbon leakage, **such as downstream products**, and to develop methods of calculating embedded emissions based on the environmental footprint methods<sup>18</sup> **That reporting should also contain an assessment of the impact of the mechanism on carbon leakage, including in relation to exports, and the economic, social and territorial impact throughout the Union, taking into account also the special characteristics and constraints of outermost regions and island States which are part of the customs territory of the Union.**

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<sup>18</sup> Commission Recommendation 2013/179/EU of 9 April 2013 on the use of common methods to measure and communicate the life cycle environmental performance of products and organisations (OJ L 124, 4.5.2013, p. 1).

- (52a)** *Practices of circumvention of this Regulation should be monitored and addressed, including where economic operators could slightly modify their goods without altering their essential characteristics, or artificially split shipments, in order to avoid the obligations of this Regulation. Situations where goods would be sent to a country or region prior to their importation to the EU market, with the aim of avoiding the obligations of this Regulation, or where countries would export their less GHG emissions intensive products to the Union and keep more GHG emissions intensive products for other markets, or reorganisation by exporters or producers of their patterns and channels of sale and production, or any other kinds of dual production and dual sale practices, with the aim of avoiding the obligations of this Regulation, should also be kept under review.*
- 52b)** *While the principles set out above are to be respected, work on extending of the scope of this Regulation should be aimed at including, by 2030, all sectors covered by Directive 2003/87/EC. Therefore, when reviewing and evaluating the application of this Regulation, the Commission should maintain reference to this timeline, and give priority to inclusion into the scope of this Regulation GHG emissions embedded in goods that are most exposed to carbon leakage and are most carbon intensive, as well as in downstream products that contain a significant share of at least one of the goods in the scope of this Regulation. Should the Commission not submit a proposal for such an extension, by 2030, of the scope of this Regulation, it should inform the European Parliament and the Council of the reasons and take the necessary steps towards achieving the objective of including, as soon as possible, all sectors covered by Directive 2003/87/EC.*
- (52c)** *The Commission should also present a report to the European Parliament and the Council on the application of this Regulation two years after the end of the transitional period, and every two years thereafter. The reports should follow the timetables on the functioning of the carbon market pursuant to Article 10(5) of Directive 2003/87/EC. These reports should contain an assessment of the impacts of the mechanism.*

- (52d) *In order to allow for a rapid and effective response to unforeseeable, exceptional and unprovoked circumstances that have destructive consequences for the economic and industrial infrastructure of one or more third countries subject to the CBAM, the Commission should put forward a legislative proposal, as appropriate, amending this Regulation. Such a legislative proposal should set out the measures that are most appropriate in light of the circumstances that the third country or countries are facing, while preserving the objectives of this Regulation. Those measures should be limited in time.*
- (53) In light of the above, a dialogue with third countries should continue and there should be space for cooperation and solutions that could inform the specific choices that will be made on the details of the design of the measure during the implementation, in particular during the transitional period.
- (54) The Commission should strive to engage in an even handed manner and in line with the international obligations of the EU, with the third countries whose trade to the EU is affected by this Regulation, to explore possibilities for dialogue and cooperation with regard to the implementation of specific elements of the Mechanism set out this Regulation and related implementing acts. It should also explore possibilities for concluding agreements to take into account their carbon pricing mechanism. *The EU should provide technical assistance to developing countries and Least Developed Countries for these purposes.*

- (54a)** *The establishment of the CBAM calls for the development of bilateral, multilateral and international cooperation with third countries. For this purpose, a forum of countries with carbon pricing instruments or other comparable instruments ('Climate Club') should be set up, in order to promote the implementation of ambitious climate policies in all countries and pave the way for global carbon pricing framework. The 'Climate Club' should be open, voluntary, non-exclusive and particularly directed at aiming for high climate ambition in line with the Paris Agreement. The 'Climate Club' could function under the auspices of a multilateral international organization and should facilitate the comparison and, where appropriate, coordination of relevant measures with an impact on emission reduction. The Climate Club should also support the comparability of relevant climate measures by ensuring the quality of climate monitoring, reporting and verification among its members and providing means for engagement and transparency between the Union and its trade partners.*
- (54b)** *In order to further support the achievement of the goals of the Paris Agreement in third countries, it is desirable that the Union continues to provide financial support through the Union budget to support climate mitigation and adaptation in least developed countries' including their efforts towards the de-carbonization and transformation of their manufacturing industries. The Union support should also contribute to facilitating the adaptation of the industries concerned to the new regulatory requirements stemming from this Regulation.*



- (55) As the CBAM aims to encourage cleaner production<sup>19</sup>, the EU *is committed* to work with *and support* low and middle-income countries towards the de-carbonisation of their manufacturing industries *as part of the external dimension of the Green deal and in line with the Paris Agreement*. The Union should *continue supporting these* countries *through the EU budget, especially Least Developed Countries (LDCs) as identified by the United Nations*, in order to *contribute to ensuring* their adaptation to the new obligations established by this Regulation *and to support climate mitigation and adaptation in these countries including their efforts towards the de-carbonisation and transformation of their manufacturing industries, within the ceiling of the Multiannual Financial Framework and the financial support provided by the Union to international climate finance. The Union works towards introducing a new own resource based on the revenues generated by the sale of CBAM*.
- (56) The provisions of this Regulation are without prejudice to Regulation (EU) 2016/679 of the European Parliament and of the Council<sup>19</sup> and 2018/1725 of the European Parliament and of the Council<sup>20</sup>.
- (57) In the interest of efficiency, the provisions of Council Regulation (EC) No 515/97<sup>21</sup> should apply *mutatis mutandis to this Regulation*.
- (58) *To reduce the risk of carbon leakage the Commission should take action to address practices of circumvention in all sectors to which this Regulation applies.*

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<sup>19</sup> Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (OJ L 119, 4.5.2016, p. 1).

<sup>20</sup> Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC (OJ L 295, 21.11.2018, p. 39).

<sup>21</sup> Council Regulation (EC) No 515/97 of 13 March 1997 on mutual assistance between the administrative authorities of the Member States and cooperation between the latter and the Commission to ensure the correct application of the law on customs and agricultural matters (OJ L 82, 22.3.1997, p. 1).

- (58a) In order to remedy circumvention of the provisions of this Regulation, the power to adopt acts in accordance with Article 290 of TFEU should be delegated to the Commission in respect of supplementing the list of goods in Annex I.
- (59) It is of particular importance that the Commission *carries* out appropriate consultations during its preparatory work, including at expert level, and that those consultations be conducted in accordance with the principles laid down in the Interinstitutional Agreement on Better Law-Making of 13 April 2016<sup>22</sup>. In particular, to ensure equal participation in the preparation of delegated acts, the European Parliament and the Council receive all documents at the same time as Member States' experts, and their experts systematically have access to meetings of Commission expert groups dealing with the preparation of delegated acts.
- (59a) *Such consultations should be conducted in a transparent manner and may include prior consultation with stakeholders, such as competent bodies, industry (including SMEs), social partners such as trade unions, civil society organisations and environmental organisations.*
- (60) In order to ensure uniform conditions for the implementation of this Regulation, implementing powers should be conferred on the Commission. Those powers should be *exercised* in accordance with Regulation (EU) No 182/2011 of the European Parliament and of the Council<sup>23</sup>.

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<sup>22</sup> Interinstitutional Agreement between the European Parliament, the Council of the European Union and the European Commission on Better Law-Making (OJ L 123, 12.5.2016, p. 1).

<sup>23</sup> Regulation (EU) No 182/2011 of the European Parliament and of the Council of 16 February 2011 laying down the rules and general principles concerning mechanisms for control by the Member States of the Commission's exercise of implementing powers (OJ L 55, 28.2.2011, p. 13).

- (61) The financial interests of the Union should be protected through proportionate measures throughout the expenditure cycle, including the prevention, detection and investigation of irregularities, the recovery of funds lost, wrongly paid or incorrectly used and, where appropriate, administrative and financial penalties. ***The CBAM should therefore rely on appropriate and effective mechanisms for avoiding losses of revenues.***

HAVE ADOPTED THIS REGULATION:

**Chapter I**  
**Subject matter, scope and definitions**

*Article 1*  
*Subject matter*

1. This Regulation establishes a carbon border adjustment mechanism (the ‘CBAM’) for addressing greenhouse gas emissions embedded in the goods ***listed*** in Annex I, upon their importation into the customs territory of the Union, in order to prevent the risk of carbon leakage ***and thereby reduce global carbon emissions and support the goals of the Paris Agreement by also incentivising the reduction of emissions by operators in third countries.***
2. The CBAM complements the system **■** for greenhouse gas emission allowance trading within the Union ***established*** by Directive 2003/87/EC by applying an equivalent set of rules to imports into the customs territory of the Union of goods referred to in Article 2 ***of this Regulation.***
3. The mechanism ***is set to replace*** the mechanisms established under Directive 2003/87/EC to prevent the risk of carbon leakage, ***by reflecting the extent to which EU ETS allowances are allocated*** free of charge in accordance with Article 10a of that Directive.

## Article 2

### Scope

1. This Regulation applies to goods listed in Annex I originating in a third country, *where* those goods, or processed products from those goods as resulting from the inward processing procedure referred to in Article 256 of Regulation (EU) No 952/2013 of the European Parliament and of the Council<sup>24</sup>, are imported into the customs territory of the Union.
2. This Regulation *also* applies to goods listed in Annex I originating in a third country, where those goods, or processed products from those goods as resulting from the inward processing procedure referred to in Article 256 of Regulation (EU) No 952/2013 of the European Parliament and of the Council, are brought to an artificial island, a fixed or floating installation, or any other structure on the continental shelf or in the exclusive economic zone of a Member State that are adjacent to the customs territory of the Union. *The Commission shall adopt implementing acts laying down detailed conditions for the application of the CBAM to such goods, in particular as regards notions equivalent to those of importation into the customs territory of the Union and of release into free circulation, as regards the procedures relating to the submission of the CBAM declaration in respect of such goods and the controls to be carried out by customs authorities. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 29(2).*

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<sup>24</sup> Regulation (EU) No 952/2013 of the European Parliament and of the Council of 9 October 2013 laying down the Union Customs Code (OJ L 269, 10.10.2013, p. 1).

- 2a. **By way of derogation from paragraphs 1 and 2, this Regulation shall not apply to:**
- a) **goods listed in Annex I and imported into the customs territory of the Union the intrinsic value of which does not exceed, per consignment, the value specified for goods of negligible value in Article 23 of Council Regulation (EC) No 1186/2009 of 16 November 2009 setting up a Community system of reliefs from customs duty;**
  - b) **goods contained in the personal luggage of travellers coming from a third country provided the intrinsic value of such goods does not exceed the value specified for goods of negligible value in Article 23 of Council Regulation (EC) No 1186/2009;**
  - c) **goods to be moved or used in the context of military activities pursuant to Article 1(49) of the Commission Delegated Regulation (EU) 2015/2446.**
3. By way of derogation from paragraphs 1 and 2, this Regulation **shall** not apply to goods originating in countries and territories listed in Annex II, Section A.
4. Imported goods shall be considered as originating in third countries in accordance with non-preferential rules of origin as defined in Article 59 of Regulation (EU) No 952/2013.
5. Countries and territories shall be listed in Annex II, Section A, subject to the cumulative fulfilment of the following conditions:
- (a) the EU ETS established pursuant to Directive 2003/87/EC applies to that country or territory or an agreement has been concluded between that third country or territory and the Union fully linking the EU ETS and the **emission trading system of that** third country or territory ;
  - (b) the **carbon** price paid in the country **in which** the goods **originate** in is effectively charged on **the emissions embedded in** those goods without any rebate beyond those also applied in the EU ETS.

7. If a third country or territory has an electricity market which is integrated with the Union internal market for electricity through market coupling, and *there is no* technical solution for the application of the CBAM to the importation of electricity into the Union, from that third country or territory, such importation of electricity from the country or territory shall be exempt from the application of the CBAM, provided all of the following conditions are *assessed by the Commission as being* satisfied *in accordance with paragraph 8*:
- (a) the third country or territory has concluded an agreement with the Union, setting out an obligation to apply the Union law in the field of electricity, including the legislation on the development of renewable energy sources, as well as other rules in the field of energy, environment and competition;
  - (b) the *domestic legislation* in that third country or territory implements the main provisions of the Union electricity market legislation, including on the development of renewable energy sources and the coupling of electricity markets;
  - (c) the third country or territory has submitted a roadmap to the Commission, containing a timetable for the adoption of measures to implement the conditions set out in points (d) and (e);
  - (d) the third country or territory has committed to climate neutrality by 2050 and has accordingly formally formulated and communicated, where applicable, to the United Nations Framework Convention on Climate Change a mid-century, long-term low greenhouse gas emissions development strategy aligned with that objective, and has implemented that obligation in its domestic legislation;

- (e) the third country or territory has, when implementing the roadmap pursuant to point (c), demonstrated **fulfillment of the set deadlines and** substantial progress towards the alignment of domestic legislation with Union law in the field of climate action on the basis of that roadmap, including towards carbon pricing at an equivalent level as the Union at least insofar as the generation of electricity is concerned. The implementation of an **emissions** trading system for electricity, with a price equivalent to the EU ETS, shall be finalised by 1 January 2030;
- (f) the third country or territory has put in place an effective **system** to prevent indirect import of electricity in the Union from other third countries not meeting the requirements set out in points (a) to (e).
8. A third country or territory satisfying the conditions set out in paragraph 7, points (a) to (f), shall be listed in Annex II, Section B, **■** and shall submit two reports on the fulfilment of the conditions pursuant to paragraph 7, points (a) to (f), one before 1 July 2025 and another before **31 December 2027**. By 31 December 2025 and by **1 July 2028**, the Commission shall assess, notably on the basis of the roadmap pursuant to paragraph 7, point (c), and the reports received from the third country or territory, whether that third country or territory continues to respect the conditions set out in paragraph 7.
9. A third country or territory listed in Annex II, Section B **■**, shall be removed from that list:
- (a) if the Commission has reasons to consider that the country or territory has not shown sufficient progress to comply with one of the requirements listed in paragraph 7, points (a) to (f), or if the country or territory has taken action incompatible with the objectives set out in the Union climate and environmental legislation;
- (b) if the third country or territory has taken steps contrary to its decarbonisation objectives, such as providing public support for the establishment of new generation capacity that emits more than 550 **grammes** of CO<sub>2</sub> of fossil fuel origin per **kilowatt-hour** of electricity.

*(ba) if the Commission has evidence that, as a result of increased exports of electricity to the Union, the emissions per kilowatt-hour of electricity produced in that country or territory have increased by 5% compared to start of the definitive period.*

10. The Commission is empowered to adopt delegated acts in accordance with Article 28 to **supplement this Regulation by setting** out requirements and procedures for countries or territories that are deleted from the list in Annex II, Section B, to ensure the application of this Regulation to their territories with regard to electricity. If in such cases market coupling remains incompatible with the application of this Regulation, the Commission may decide to exclude the third countries or territories from Union market coupling and require explicit capacity allocation at the border between the Union and the third country, so that the CBAM can apply.
11. The Commission is empowered to adopt delegated acts in accordance with Article 28 to amend the lists *of third countries or territories set out* in Annex II, Sections A or B, *by either adding or removing a third country or territory,* depending on whether the conditions *set out* in paragraphs 5, 7 or 9 are *fulfilled in respect of that third country or territory*.
12. The Union █ may conclude agreements with third countries with a view to take account of carbon pricing mechanisms in *such* countries in the application of Article 9.



*Article 3*  
*Definitions*

For the purposes of this Regulation, the following definitions apply:

- (1) ‘goods’ mean goods listed in Annex I;
- (2) ‘greenhouse gases’ mean greenhouse gases as specified in Annex I in relation to each of the goods listed in that Annex;
- (3) ‘emissions’ mean the release of greenhouse gases into the atmosphere from the production of goods;
- (4) ‘importation’ means the release for free circulation provided for in Article 201 of Regulation (EU) No 952/2013;
- (5) ‘EU ETS’ means the system for greenhouse gas emissions allowance trading within the Union in respect of activities listed in Annex I to Directive 2003/87/EC other than aviation activities;
- (5a) ‘customs territory’ means the territory as defined in Article 4 of Regulation (EU) 952/2013;**
- (6) ‘third country’ means a country or territory outside the customs territory of the Union;
- (7) ‘continental shelf’ means the continental shelf as defined in the United Nations Convention on the Law of the Sea;
- (8) ‘exclusive economic zone’ means the exclusive economic zone as defined in the United Nations Convention on the Law of the Sea and which has been declared as exclusive economic zone by a Member State pursuant to that convention;
- (8a) ‘intrinsic value’ means the intrinsic value for commercial goods as defined in Article 1(48) of Commission Delegated Regulation (EU) 2015/2446;**

- (9) ‘market coupling’ means allocation of transmission capacity via an Union system which simultaneously matches orders and allocates cross-zonal capacities as set out in Commission Regulation (EU) 2015/1222;
- (10) ‘explicit capacity allocation’ means the allocation of cross-border transmission capacity separate from the trade of electricity;
- (11) ‘competent authority’ means the authority, designated by each Member State in accordance with Article 11 of this Regulation;
- (12) ‘customs authorities’ mean the customs administrations of Member States as defined in Article 5(1) of Regulation (EU) No 952/2013;
- (13) ‘**importer**’ means *either the* person lodging a customs declaration for release for free circulation *of goods* in its own name *and on its own behalf* or, *where the customs declaration is lodged by an indirect customs representative in accordance with Article 18 of Regulation (EU) No 952/2013*, the person *on* whose *behalf* such a declaration is lodged ;
- (13a) ‘**customs declarant**’ means *the declarant as defined in Article 5(15) of Regulation (EU) No 952/2013 lodging a customs declaration for release for free circulation of goods in its own name or the person in whose name such a declaration is lodged*;
- (13b) ‘**authorised CBAM declarant**’ is *a person authorised by the competent authority in accordance with Article 17*;
- (14) ‘person’ means a natural person, a legal person and any association of persons which is not a legal person but which is recognised under Union or national law as having the capacity to perform legal acts;

- (14a) *‘person established in a Member State’ means:*
- (a) *in the case of a natural person, any person who has his or her residence in the Member State;*
  - (b) *in the case of a legal person or an association of persons, any person having its registered office, central headquarters or a permanent business establishment in the Member State;*
- (14b) *‘Economic Operators Registration and Identification number’ (EORI number) shall be the number as assigned by the customs authority during the registration for customs purposes in accordance with Article 9 of Regulation (EU) No 952/2013;*
- (15) *‘direct emissions’ mean emissions from the production processes of goods including emissions from the production of heating and cooling consumed during the production processes, regardless of the location of the production of the heating and cooling;*
- (16) *‘embedded emissions’ mean direct emissions released during the production of goods and indirect emissions from the production of electricity consumed during the production processes, calculated in accordance with the methods set out in Annex III and further specified in the implementing acts adopted pursuant to Article 7(6);*
- (17) *‘tonne of CO<sub>2</sub>e’ means one metric tonne of carbon dioxide (‘CO<sub>2</sub>’), or an amount of any other greenhouse gas listed in Annex I with an equivalent global warming potential;*
- (18) *‘CBAM certificate’ means a certificate in electronic format corresponding to one tonne of embedded emissions in goods;*
- (19) *‘surrender’ means offsetting of CBAM certificates against the declared embedded emissions in imported goods or against the embedded emissions in imported goods that should have been declared;*

- (20) ‘production processes’ mean the chemical and physical processes carried out to produce goods in an installation;
- (21) ‘default value’ means a value that is calculated or drawn from secondary data representing embedded emissions in goods;
- (22) ‘actual emissions’ mean the emissions calculated based on primary data from the production processes of goods **and from the production of electricity consumed during such processes pursuant to the methods set out in Annex III**;
- (23) ‘carbon price’ means the monetary amount paid in a third country, **under a carbon emissions reduction scheme, either** in the form of a tax, **levy, fee** or emission allowances under a greenhouse gas emissions trading system, calculated on greenhouse gases covered by such a measure, and released during the production of goods;
- (24) ‘installation’ means a stationary technical unit where a production process is carried out;
- (25) ‘operator’ means any person who operates or controls an installation in a third country;
- (26) ‘national accreditation body’ means a national accreditation body as appointed by each Member State in accordance with Article 4(1) of Regulation (EC) No 765/2008;
- (27) ‘EU ETS allowance’ means an allowance referred to in Article 3(a) of Directive 2003/87/EC in respect of activities listed in Annex I of that Directive other than aviation activities;
- (28) ‘indirect emissions’ mean emissions from the production of electricity, **■** which is consumed during the production processes of goods, **regardless of the location of the production of the consumed electricity**.

**Chapter II**  
**Obligations and rights of authorised *CBAM* declarants**

*Article 4*  
*Importation of goods*

Goods shall only be imported into the customs territory of the Union by *an* authorised *CBAM* declarant.

*Article 5*  
*Application for an authorisation*

1. Any *importer established in a Member State* shall, prior to importing goods into the customs territory of the Union, *apply for the status of authorised *CBAM* declarant*.  
*Where such importer is using indirect representation in accordance with Article 18 of Regulation (EU) No 952/2013 and where the indirect customs representative agrees to act as an authorised *CBAM* declarant, the application shall be submitted by such indirect customs representative.*
- 1a. *Where the importer is not established in a Member State, the application referred to in paragraph 1 shall be submitted by the indirect customs representative.*
- 1b. *The application in paragraph 1 and 1a shall be submitted through the *CBAM* registry established in accordance with Article 14.*

2. By way of derogation from paragraph 1, where transmission capacity for the import of electricity is allocated via explicit capacity allocation, the person to which capacity has been allocated for import and which nominates this capacity for import shall, for the purposes of this Regulation, be regarded as an authorised **CBAM** declarant in the Member State where the person declares *in customs declaration* the import of electricity. Imports are to be measured per border for time periods not longer than one hour and no deduction of export or transit in the same hour is possible.

***The competent authority of the Member State in which the custom declaration has been lodged shall register the person in the CBAM registry.***

3. The application for an authorisation shall include the following information about the **applicant**:
- (a) name, addresses and contact information;
  - (b) **EORI number**;
  - (c) main economic activity carried out in the Union;
  - (d) certification by the tax authority in the Member State where the **applicant** is established that the **applicant** is not subject to an outstanding recovery order for national tax debts;
  - (e) declaration on honour that the **applicant** was not involved in any serious infringements or repeated infringements of *either* customs legislation, taxation rules *or* market abuse rules during the five years preceding the year of the application, including that it has no record of serious criminal offences relating to its economic activity;

- (f) information necessary to demonstrate the *applicant's* financial and operational capacity to fulfil its obligations under this Regulation and, if decided by the competent authority on the basis of a risk assessment, supporting documents confirming that information, such as the profit and loss account and the balance sheet for up to the three last financial years for which the accounts were closed;
- (g) estimated monetary value and volume of imports of goods *into* the customs territory of the Union by ■ type of goods, for the calendar year during which the application is submitted, and for the following calendar year;
- (h) names and contact information of the persons on behalf of whom the *applicant* is acting, if applicable.
4. The applicant may at any time withdraw its application.
5. The authorised *CBAM* declarant shall inform the competent authority, *via the CBAM registry*, without delay of any changes *to* the information provided under paragraph 3 *of this Article that has occurred* after the decision *granting the status of authorised CBAM declarant has been adopted* pursuant to Article 17 *and that may influence that decision or the content of the authorisation granted thereunder*.
6. The Commission is empowered to adopt implementing acts, *regarding the communication between the applicant, the competent authority, and the information of the Commission*, concerning the standard format of the application and the *procedures to submit applications through the CBAM registry, the procedure to be followed by the competent authority, and the deadlines to comply with* when processing applications for authorisation in accordance with paragraph 1, and the rules for identification by the competent authority of the *authorised CBAM* declarants for the importation of electricity. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 29(2).

*Article 6*  
*CBAM declaration*

1. By 31 May of each year, each authorised **CBAM** declarant shall *use the CBAM registry referred to in Article 14 to submit a CBAM declaration for the preceding* calendar year.
2. The CBAM declaration shall contain the following:
  - (a) the total quantity of each type of goods imported during the *preceding* calendar year **■**, expressed in megawatt-hours for electricity and in tonnes for other goods;
  - (b) the total embedded emissions *in those goods*, expressed in tonnes of CO<sub>2e</sub> emissions per megawatt-hour of electricity or, for other goods, *in tonnes* of CO<sub>2e</sub> emissions per tonne of each type of goods, calculated in accordance with Article 7 *and verified in accordance with Article 8*;
  - (c) the total number of CBAM certificates *to be surrendered*, corresponding to the total embedded emissions *referred to in paragraph 2, point (b)* after the reduction due on the account of the carbon price paid in a country of origin in accordance with Article 9 and the adjustment necessary *to reflect* the extent to which EU ETS allowances are allocated free of charge in accordance with Article 31.
  - (d) *a copy of the verification report issued by the accredited verifier under Article 8 and Annex V.*
3. Where **■** processed products resulting from the inward processing procedure as referred to in Article 256 of Regulation (EU) No 952/2013 *are imported*, the authorised **CBAM** declarant shall report in the CBAM declaration the **■** emissions embedded in the goods *that were* placed under the inward processing procedure *and resulted in the imported processed products*, even if the processed *products are* not listed in **■** *Annex I to this Regulation. This provision shall also apply where the processed products resulting from the inward processing procedure are returned goods as referred to in Article 205 of Regulation (EU) No 952/2013.*



4. Where the imported goods *listed in Annex I* are processed products resulting from the outward processing procedure as referred to in Article 259 of Regulation (EU) No 952/2013, the authorised **CBAM** declarant shall report in the CBAM declaration only the emissions of the processing operation undertaken outside the customs territory of the Union.
5. Where the imported goods are returned goods as referred to in Article 203 of Regulation (EU) No 952/2013, the authorised **CBAM** declarant shall report separately, in the CBAM declaration, ‘zero’ for the total embedded emissions corresponding to those goods.
6. The Commission is empowered to adopt implementing acts concerning the standard format *, including detailed information per installation and country of origin and type of goods to be reported supporting the totals referred to in paragraph 2, in particular as regards embedded emissions and carbon price paid,* and the procedure for submitting the CBAM declaration *through the CBAM registry,* and the arrangements for surrendering *the* CBAM certificates *mentioned* in paragraph 2, point (c), *in compliance with Article 22(1), in particular as regards the process and the selection by the authorised CBAM declarant of certificates to be surrendered.* Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 29(2).

#### *Article 7*

#### *Calculation of embedded emissions*

1. Embedded emissions in goods shall be calculated pursuant to the methods set out in Annex III.

*For goods listed in Annex IA only direct emissions shall be calculated and taken into account.*

2. Embedded emissions in goods other than electricity shall be determined based on the actual emissions in accordance with the methods set out in Annex III, points 2 and 3. When actual emissions cannot be adequately determined, *as well as in the case of indirect emissions*, the embedded emissions shall be determined by reference to default values in accordance with the methods set out in Annex III, point 4.■
3. Embedded emissions in imported electricity shall be determined by reference to default values in accordance with the method set out in Annex III, point 4.2, unless the authorised **CBAM** declarant *justifies that the criteria* to determine the embedded emissions based on the actual emissions *listed in Annex III, point 5 are met*.
- 3a. *Embedded indirect emissions shall be calculated in accordance with the method set out in Annex III, point 4.3. and further specified in the implementing acts adopted pursuant to Article 7(6), unless the authorised CBAM declarant justifies that the criteria listed in Annex III, point 5A are met to determine the embedded emissions based on the actual emissions*
4. The authorised **CBAM** declarant shall keep records of the information required to calculate the embedded emissions in accordance with the requirements laid down in Annex IV. Those records shall be sufficiently detailed to enable verifiers accredited pursuant to Article 18 to verify the embedded emissions in accordance with Article 8 and Annex V and to enable the competent authority to review the CBAM declaration in accordance with Article 19(1).
5. The authorised **CBAM** declarant shall keep those records of information referred to in paragraph 4, including the report of the verifier, until the end of the fourth year after the year in which the CBAM declaration has been or should have been submitted.

6. The Commission is empowered to adopt implementing acts concerning *the application of* the elements of the calculation methods set out in Annex III, including determining system boundaries of production processes *and relevant precursor materials*, emission factors, installation-specific values of actual emissions and default values and their respective application to individual goods as well as laying down methods to ensure the reliability of data on the basis of which the default values shall be determined, including the level of detail and the verification of the data, *and including further specification of goods that are to be considered as "simple goods" and "complex goods" for the purpose of Annex III, point 1. Those implementing acts shall also define under which conditions it is deemed that actual emissions cannot be adequately determined, as well as the elements of evidence, demonstrating that the criteria listed in Annex III point 5 and point 5A are met that are required to justify the use of actual emissions for electricity consumed in the production processes of goods for the purpose of paragraph 2. The Commission is empowered to adopt implementing acts concerning the application of the elements of the calculation methods pursuant to paragraph 3A in accordance with Annex III, point 4.3. Where objectively justified, those acts shall provide that* ■ default values can be adapted to particular areas, regions or countries to take into account specific objective factors *that affect emissions, such as prevailing energy sources or industrial processes. Those* implementing acts shall build upon existing legislation for the *monitoring and* verification of emissions and activity data for installations covered by Directive 2003/87/EC, in particular *Commission Implementing Regulation (EU) No 2018/2066, the Commission Delegated Regulation (EU) 2019/331 and Commission* Implementing Regulation (EU) ■ 2018/2067.
7. The implementing acts referred to in paragraph 6 *of this Article* shall be adopted in accordance with the examination procedure referred to in Article 29(2).

*Article 8*

*Verification of embedded emissions*

1. The authorised **CBAM** declarant shall ensure that the total embedded emissions declared in the CBAM declaration submitted pursuant to Article 6 are verified by a verifier accredited pursuant to Article 18, based on the verification principles set out in Annex V.
2. For embedded emissions in goods produced in registered installations in a third country in accordance with Article 10, the authorised **CBAM** declarant may choose to use verified information disclosed to it in accordance with Article 10(7) to fulfil the obligation referred to in paragraph 1.
3. The Commission is empowered to adopt implementing acts *for the application of* the principles of verification referred to in paragraph 1 as regards:
  - a) the possibility to waive, *in duly justified circumstances and without putting at risk reliable estimation of embedded emissions*, the obligation for the verifier to visit the installation where relevant goods are produced,
  - b) the *definition of* thresholds for deciding whether misstatements or non-conformities are material, and
  - c) the supporting documentation needed for the verification report, *including its format*.

*In so doing, the Commission shall seek equivalence and coherence with the procedures set out in Commission Implementing Regulation (EU) No. 2018/2067. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 29(2).*

Article 9

Carbon price paid in a **third country**

1. An authorised **CBAM** declarant may claim in its CBAM declaration a reduction in the number of CBAM certificates to be surrendered in order for the carbon price paid in the country of origin for the declared embedded emissions to be taken into account. ***The reduction may be claimed only if the carbon price has been effectively paid in the country of origin. In such a case, any rebate or other form of compensation available in that country that would have resulted in a reduction of that carbon price shall be taken into account.***
2. The authorised **CBAM** declarant shall keep records of the documentation required to demonstrate that the declared embedded emissions were subject to a carbon price in the country of origin of the goods ***that has been effectively paid as referred to in paragraph 1. The authorised CBAM declarant shall in particular keep evidence related to available rebates or any other form of compensation, in particular references to the relevant legislation of that country. This documentation shall be certified by a person independent from the authorised CBAM declarant and independent from the authorities of the country of origin. The name and contact details of that independent person shall appear on the documentation. The authorised CBAM declarant shall also keep evidence of the actual payment of the carbon price.***
3. The authorised **CBAM** declarant shall keep ***the*** records referred to in paragraph 2 until the end of the fourth year after the year during which the CBAM declaration has been or should have been submitted.

4. The Commission is empowered to adopt implementing acts *concerning the conversion of the yearly average carbon price effectively paid in accordance with paragraph 1 into a corresponding reduction of the number of CBAM certificates to be surrendered, including the conversion of the carbon price effectively paid in foreign currency into euro at the yearly average exchange rate, the evidence required of the actual payment of the carbon price, examples of relevant rebates or other forms of compensation referred to in paragraph 1, and* the qualifications of the independent person referred to in paragraph 2 *and conditions to ascertain independence*. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 29(2).

#### Article 10

##### *Registration of operators and installations in third countries*

1. The Commission shall, upon request by an operator of an installation located in a third country, register the information on that operator and on its installation in *the CBAM registry as* referred to in Article 14 .
2. The request for registration referred to in paragraph 1 shall include the following information to be included in the *CBAM registry* upon registration:
  - (a) the name, address and contact details of the operator;
  - (b) the location of each installation including *the* complete address and *geographical* coordinates expressed in longitude and latitude including 6 decimals;
  - (c) the main economic activity of the installation ;
3. The Commission shall notify the operator *of* the registration in the *CBAM registry*. The registration shall be valid for a period of five years from the date of its notification to the operator of the installation.

4. The operator shall inform the Commission without delay of any changes in the information referred to in paragraph 2 arising after the registration and the Commission shall update the relevant information.
5. The operator shall :
- (a) determine the embedded emissions calculated in accordance with the methods set out in Annex III, by type of goods produced at the installation referred to in paragraph 1;
  - (b) ensure that the embedded emissions referred to in point (a) are verified in accordance with the verification principles set out in Annex V by a verifier accredited pursuant to Article 18;
  - (c) keep a copy of the *verification* report as well as records of the information required to calculate the embedded emissions in goods *in accordance with the requirements* laid down in Annex IV for a period of four years after the verification has been performed.
6. The records referred to in paragraph 5, point (c), shall be sufficiently detailed to enable the verification *of the embedded emissions* in accordance with *Article 8 and Annex V*, and to enable *the* review, in accordance with Article 19, *of* the CBAM declaration made by an authorised *CBAM* declarant to whom the relevant information was disclosed in accordance with paragraph 7.
7. An operator may disclose the information on the verification of embedded emissions referred to in paragraph 5 to an authorised *CBAM* declarant. The authorised *CBAM* declarant shall be entitled to avail itself of that disclosed information to fulfil the obligation referred to in Article 8.

8. The operator may, at any time, ask to be deregistered from the database. ***The Commission shall, upon such request, and after notifying the national competent authorities, deregister the information on that operator and on its installation from the central database, provided such information is not necessary for the review of CBAM declarations submitted. The Commission may, after having given the operator the possibility to be heard and having consulted with relevant national competent authorities, also deregister the information if it finds the information is no longer being accurate. The Commission shall inform the competent authorities of Member States of such deregistrations.***

### **Chapter III**

#### **Competent authorities**

##### *Article 11*

##### *Competent authorities*

1. Each Member State shall designate the competent authority to carry out the obligations under this Regulation and inform the Commission thereof.

The Commission shall make available to the Member States a list of all competent authorities and publish ***that*** information in the *Official Journal of the European Union and in the CBAM registry*.

2. ***Competent*** authorities ***shall*** exchange any information that is essential or relevant to the exercise of their functions and duties ***under this Regulation***.



*Article 12*  
*Commission*

***In addition to the tasks that the Commission exercises under the other provisions of this Regulation, the Commission shall assist the competent authorities in carrying out their obligations under this Regulation and coordinate their activities by supporting the exchange of and issuing guidelines on the best practices in this domain, and by promoting an adequate exchange of information and cooperation between competent authorities, and between competent authorities and the Commission.***

*Article 13*  
*Professional secrecy and disclosure of information*

- 1. All information acquired by the competent authority or the Commission in the course of performing their duties which is by its nature confidential or which is provided on a confidential basis shall be covered by the obligation of professional secrecy. Such information shall not be disclosed by the competent authority or the Commission without the express permission of the person or authority that provided it or by virtue of provisions laid down by Union or national law.***
  
- 2. Competent authorities and the Commission may, however, share such information with each other, with the customs authorities, with the authorities in charge of administrative or criminal sanctions, and with the European Public Prosecutors Office, for the purposes of ensuring compliance of persons with their obligations under this Regulation and the application of customs legislation. Such shared information shall itself be covered by professional secrecy and may not be disclosed to any other person or authority except by virtue of provisions laid down by Union or national law.***

*Article 14*

***CBAM registry***

1. The ***Commission*** shall establish a ***CBAM*** registry of authorised ***CBAM declarants*** in the form of a standardised electronic database containing the data regarding the CBAM certificates of those ***authorised CBAM*** declarants. ***The Commission shall make the information in that registry available automatically and in real time to customs authorities and competent authorities from Member States.***
2. The ***CBAM registry*** referred to in paragraph 1 shall contain accounts with information about each authorised ***CBAM*** declarant, in particular:
  - (a) the name and contact details of the authorised ***CBAM*** declarant;
  - (b) the EORI number of the authorised ***CBAM*** declarant;
  - (c) the CBAM account number;
  - (d) the number, the price of sale, the date of purchase, the date of surrender, or the date of re-purchase, or that of the cancellation of CBAM certificates for each authorised ***CBAM*** declarant.
3. ***The CBAM registry shall also contain, in a separate section of the registry the information about the operators and installations in third countries, registered in accordance with Article 10(2).***
4. The ***information in the CBAM registry referred to in paragraphs 2 and 3 shall be confidential, with the exception of*** the names, addresses and contact details of the operators and the location of installations in third countries. An operator may choose not to have its name, address and contact details ***made*** accessible to the public. ***Public information in the CBAM registry shall be made accessible in an interoperable format.***

5. *The Commission shall publish, on a yearly basis, for the each of the goods listed in Annex I, the aggregated emissions embedded into the imported goods.*
6. *The Commission shall adopt implementing acts concerning the infrastructure and specific processes of the CBAM registry, including the risk analysis referred to in Article 15, the electronic databases containing the information referred to in paragraphs 2 and 3, the data of the accounts in the CBAM registry referred to in Article 16, the transmission to the CBAM registry of the information on the sale, re-purchase and cancellation of CBAM certificates referred to in Article 20(0), and the cross check of information referred to in Article 25(2a). Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 29(2).*

#### *Article 15*

#### *Risk Analysis*

1. The Commission shall *carry out risk-based controls on the data and the transactions recorded in the CBAM registry, referred to in Article 14, to ensure that there are no irregularities in the purchase, holding, surrender, re-purchase and cancellation of CBAM certificates.*
2. If irregularities are identified as a result of the controls carried out under paragraph 1, the Commission shall inform the *competent authorities of the* Member State or Member States concerned for further investigation in order to correct the identified irregularities.

Article 16

Accounts in the **CBAM** registry

1. The **Commission** shall assign to each authorised **CBAM** declarant a unique CBAM account number.
2. Each authorised **CBAM** declarant shall be granted access to its account in the *central* registry.
3. The **Commission** shall set up the account as soon as the authorisation referred to in Article 17(1) is granted and notify the authorised **CBAM** declarant thereof.
4. If the authorised **CBAM** declarant has ceased its economic activity or its authorisation *has been* revoked, the **Commission** shall close the account of that *authorised CBAM* declarant, *provided that the authorised CBAM declarant has complied with all its obligations under this Regulation.*

Article 17

Authorisation

0. *Where an application for the status of authorised CBAM declarant is submitted in accordance with Article 5, the competent authority in the Member State where the applicant is established shall grant the status of authorised CBAM declarant where the criteria set out in paragraph 1 are complied with. The status of authorised CBAM declarant shall be recognised in all Member States.*

*Before granting the status of an authorised CBAM declarant, the competent authority shall conduct a consultation procedure on the application via the CBAM registry. The consultation procedure shall involve the competent authorities in the other Member States and the Commission and shall not exceed 15 working days.*

1. The *criteria for granting the status of authorised CBAM* declarant *shall be* the following **■** :
- (a) the *applicant* has not been involved in a serious infringement or repeated infringements of customs legislation, taxation rules, market abuse rules *or CBAM rules, in particular it* has no record of serious criminal offences relating to its economic activity during the five years preceding the application;
  - (b) the *applicant* demonstrates its financial and operational capacity to fulfil its obligations under this Regulation.
  - (c) *the applicant is established in a Member State; and*
  - (d) *the applicant has been assigned an EORI number in accordance with Article 9 of Regulation (EU) No 952/2013.*
2. Where the competent authority finds that the conditions listed in paragraph 1 are not fulfilled, or where the applicant has failed to provide **■** information listed in Article 5(3), the *granting* of the *status of authorised CBAM* declarant shall be refused. *Such decision shall provide the reasons for the refusal and include information on the possibility to appeal.*
- 
4. A decision of the competent authority *granting the status of authorised CBAM* declarant shall *be registered in the CBAM registry and shall* contain the following information:
- (a) the name, address *and contact information* of the authorised *CBAM* declarant;
  - (b) the EORI number of the authorised *CBAM* declarant;

- (c) the CBAM account number *assigned to the authorised CBAM declarant in accordance with Article 16(1)*.
- (d) *the guarantee required in accordance with paragraph 6.*

6. *For the purpose of complying with the criteria set out in paragraph 1(b), the* competent authority shall require the provision of a guarantee **■**, if the *applicant* was not established throughout the two financial years *preceding* the year when the application in accordance with Article 5(1) was submitted.

The competent authority shall fix the amount of such guarantee at the **■** amount *calculated*, as **■** the value of the CBAM certificates that the *authorised CBAM declarant would* have to surrender **■** in accordance with Article 22 *in respect of the imports of goods reported in accordance with Article 5(3)(g)*. *The guarantee shall be provided as a bank guarantee, payable at first demand, by a financial institution operating in the Union or as another form of guarantee which provides equivalent assurance.*

- 7. **■** Where the competent authority establishes that the guarantee provided does not ensure, or is no longer **■** sufficient to ensure the **■** CBAM obligations *of the authorised CBAM declarant*, it shall require the authorised *CBAM declarant to* either **■** provide an additional guarantee or **■** replace the initial guarantee with a new guarantee, according to *the authorised CBAM declarant's* choice.
- 8. The competent authority shall release the guarantee immediately after 31 May of the second year in which the authorised *CBAM declarant* has surrendered CBAM certificates in accordance with Article 22.

9. The competent authority shall revoke *the status of authorised CBAM declarant where the authorised CBAM declarant so requests. The competent authority shall also revoke the status of authorised CBAM declarant where the authorised CBAM declarant* ■ no longer meets the *criteria set out in paragraphs 1 or 7 of this Article*, or *has been involved in a serious or repeated infringement of the obligation to surrender CBAM certificates referred to in Article 22(1) or of the obligation to ensure a sufficient number of CBAM certificates on its account in the CBAM registry at the end of each quarter referred to in Article 22(2).*

*Before revoking the status of authorised CBAM declarant, the competent authority shall give the authorised CBAM declarant the possibility to be heard and shall conduct a consultation procedure on the possible revocation of such status. The consultation procedure shall involve the competent authorities in the other Member States and the Commission and shall not exceed 15 working days .*

*Any decision of revocation shall contain the justification as well as information about the right to appeal.*

- 10. *The competent authority shall register in the CBAM registry information on the applicants whose application for the granting of the status of authorised CBAM declarant has been refused in accordance with paragraph 2 of this Article, and the persons whose status of authorised CBAM declarants has been revoked in accordance with paragraph 9 of this Article.***
- 11. *The Commission shall adopt, by means of implementing acts, the conditions for the application of the criteria referred to in paragraph 1, including the criterion of not having been involved in a serious infringement or repeated infringements under paragraph 1(a), and for the application of the guarantee referred to in paragraphs 6 to 8; for the application of the criteria of a serious or repeated infringement referred to in paragraph 9; and for the consequences of the revocation of the status of authorised CBAM declarant, and the detailed delays and forms of the consultation procedure referred to in paragraphs 0 and 9. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 29(2).***



Article 18

Accreditation of verifiers

1. Any person accredited *in accordance with Commission* Implementing Regulation (EU) **2018/2067 for a relevant group of activities** shall be regarded as an accredited verifier under this Regulation. *The Commission is empowered to adopt implementing acts for identifying relevant groups of activities by providing an alignment of qualifications of an accredited verifier necessary to perform verifications under this Regulation with the relevant group of activities listed in Annex I of Commission Implementing Regulation (EU) No. 2018/2067 and indicated in the accreditation certificate. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 29(2).*
2. In addition to paragraph 1, a national accreditation body may on request accredit a person as a verifier under this Regulation *where it considers, on the basis of* the documentation *submitted, that such person has a* capacity to apply the verification principles referred to *in* Annex V to perform the obligations of control of the embedded emissions established in Articles 8 **and 10**.
3. The Commission is empowered to adopt delegated acts in accordance with Article 28 *in order to supplement this Regulation by specifying conditions* for the *granting of the* accreditation referred to in paragraph 2, **for the control and oversight of accredited verifiers, for the withdrawal of accreditation and for mutual recognition and peer evaluation of the accreditation bodies.**

Article 19

Review of CBAM declarations

0. *The Commission shall have the oversight role in the review of CBAM declarations.*
1. The **Commission** may review **CBAM declarations, in accordance with a review strategy including risk factors**, within the period ending with the fourth year after the year in which the **declarations** should have been submitted.

The review may consist in verifying the information provided in the CBAM declaration **and in verification reports** on the basis of the information communicated by the customs authorities in accordance with Article 25, any other relevant evidence, and on the basis of any audit deemed necessary, including at the premises of the authorised **CBAM** declarant.

*The Commission shall communicate the initiations and the conclusions of the review to the competent authority of the Member State where the CBAM declarant is established, by means of the CBAM registry.*

*The competent authority of the Member State where the authorised CBAM declarant is established may also review a CBAM declaration within the same period of time.*

*The competent authority shall communicate the initiations and the conclusions of a review to the Commission, by means of the CBAM registry.*

- 1a. *The Commission shall periodically set out specific risk factors and attention points, based on an analysis of risks in relation to the CBAM implementation at the EU level, taking into account information contained in the CBAM registry, data communicated by customs authorities, and other relevant information sources, including the controls and checks referred to in Articles 15(2) and 25.*

*The Commission shall also facilitate the exchange of information with competent authorities about fraudulent activities and the application of penalties to authorised CBAM declarants.*

2. Where *an authorised CBAM declarant fails to submit a CBAM declaration* in accordance with Article 6, *or where the Commission considers, on the basis of its review under paragraph 1, that the declared number of CBAM certificates is incorrect*, the *Commission* shall assess the CBAM obligations of that *authorised CBAM* declarant on the basis of the information at its disposal, *and shall establish a preliminary calculation of the total number of CBAM certificates, which should have been surrendered*, at the latest by the 31 December of the **█** year following that when the CBAM declaration should have been submitted. *The Commission shall provide such preliminary calculation, for indicative purposes and without prejudice to definitive calculation established by the competent authority of the Member State where the authorised CBAM declarant is established.*
3. Where the competent authority *concludes* that the declared number of CBAM certificates to be surrendered is incorrect, or that no CBAM declaration has been submitted *in accordance with Article 6*, it shall *determine* the number of CBAM certificates due by the authorised *CBAM* declarant, *taking into account the information submitted by the Commission.*

The competent authority shall notify the authorised *CBAM* declarant of the *number of CBAM certificates determined and request that* the authorised *CBAM* declarant *surrenders* the additional CBAM certificates within one month.

*Such decision shall contain the justification as well as information about the right to appeal. The decision shall also be notified through the CBAM registry.*

*Where the competent authority, after receiving the preliminary calculation from the Commission in accordance with paragraphs 1 and 2, decides not to take any action, the competent authority shall inform the Commission accordingly, by means of the CBAM registry.*

**█**

5. Where *the competent authority has established that the number of* CBAM certificates **■** surrendered *is* in excess of the number due, the competent authority shall, without delay, *inform the Commission. The* CBAM certificates surrendered in excess *shall be re-purchased in accordance with the procedures provided for in Article 23.*

#### Chapter IV CBAM certificates

##### Article 20

##### *Sale of CBAM certificates*

0. *Member States shall sell CBAM certificates to authorised CBAM declarants established in their Member State. For that purpose, CBAM certificates shall be sold on a common central platform that shall be established by the Commission following a joint procurement procedure between the Commission and the Member States, and that shall be managed by the Commission.*

*The Commission and the competent authorities shall have access to the information in the common central platform.*

*The information on the sale, re-purchase and cancellation of CBAM certificates shall be transferred to the CBAM registry at the end of each day.*

1. **■** CBAM certificates *shall be sold* to *authorised CBAM* declarants **■** at the price calculated in accordance with Article 21.
2. The *Commission* shall ensure that each CBAM certificate is assigned a unique **■** identification *number* upon its creation and shall register the unique unit identification number *and* the price and date of sale of the certificate in the *CBAM* registry in the account of the authorised *CBAM* declarant purchasing it.

3. ***The Commission shall adopt delegated acts in accordance with Article 28 to further define the timing, administration and other aspects of the sale and re-purchase of CBAM certificates, seeking coherence with the procedures of Commission Regulation (EU) No 1031/2010.***

*Article 21*

*Price of CBAM certificates*

1. The Commission shall calculate the price of CBAM certificates as the average **■** of the closing prices of EU ETS allowances on the common auction platform in accordance with the procedures laid down in Commission Regulation (EU) No 1031/2010<sup>25</sup> for each calendar week.

For those calendar weeks in which there are no auctions scheduled on the common auction platform, the price of CBAM certificates shall be the average **■** of the closing prices of EU ETS allowances of the last week in which auctions on the common auction platform took place.

2. This average price shall be published by the Commission on its website ***or in any other appropriate manner*** on the first working day of the following calendar week and shall be applied from the following working day to the first working day of the following calendar week.
3. The Commission is empowered to adopt implementing acts ***for the application of*** the methodology ***provided for in paragraph 1*** to calculate the average price of CBAM certificates and ***the*** practical arrangements for the publication of the price. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 29(2).

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<sup>25</sup> Commission Regulation (EU) No 1031/2010 of 12 November 2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC (OJ L 302, 18.11.2010, p. 1).

Article 22

*Surrender of CBAM certificates*

1. By 31 May of each year, the authorised **CBAM** declarant shall surrender *through the CBAM registry* a number of CBAM certificates ■ that corresponds to the embedded emissions declared in accordance with Article 6(2), *point* (c) and verified in accordance with Article 8 for the calendar year preceding the surrender.

*For that purpose, the authorised CBAM declarant shall ensure that the required number of CBAM certificates is available on its account in the CBAM registry. The Commission shall remove those CBAM certificates from the CBAM registry.*

2. ■ The authorised ■ CBAM ■ declarant shall ensure that the number of CBAM certificates on its account in the **CBAM** registry at the end of each quarter corresponds to at least 80 per cent of the embedded emissions, determined by reference to default values in accordance with the methods set out in Annex III, in all goods it has imported since the beginning of the calendar year.

3. Where the **Commission** finds that the number of CBAM certificates in the account of an authorised **CBAM** declarant is not in compliance with the obligations pursuant to paragraph 2, *it shall inform the competent authority of the Member State where the authorised CBAM declarant is established, through the CBAM registry.*

*The competent authority shall notify the authorised CBAM declarant of the need to ensure a sufficient number of CBAM certificates in its account within one month.*

*The notification and the authorised CBAM declarant response shall be registered by the competent authority in the CBAM registry.*

## Article 23

### Re-purchase of CBAM certificates

1. On request by **an authorised CBAM declarant**, excess CBAM certificates remaining on the account of the declarant in the **CBAM registry** after the certificates have been surrendered in accordance with Article 22 **shall be re-purchased by the Member State where the authorised CBAM declarant is established**.

*For that purpose, the Commission shall purchase such certificates through the common central platform referred to in Article 20 on behalf of the Member State where the authorised CBAM declarant is established. The re-purchase request shall be submitted by 30 June of each year during which CBAM certificates were surrendered.*

2. The number of certificates subject to re-purchase as referred to in paragraph 1 shall be limited to one third of the total **number of** CBAM certificates purchased by the authorised **CBAM declarant** during the previous calendar year.
3. The re-purchase price for each CBAM certificate shall be the price paid by the authorised **CBAM declarant** for that certificate at the time of purchase.

## Article 24

### Cancellation of CBAM certificates

By 30 June of each year, the **Commission** shall cancel any CBAM certificates that were purchased during the year before the previous calendar year and that remained in the **account of an authorised CBAM declarant** in the **CBAM registry**. **Those CBAM certificates shall be canceled without any compensation.**

*Where the number of CBAM certificates to be surrendered is contested in a pending dispute in a Member State, the Commission shall suspend the cancellation of the CBAM certificates to the extent corresponding to the disputed amount. The competent authority of the Member State where the authorised CBAM declarant is established shall without delay communicate any information that is relevant in this respect to the Commission.*

## Chapter V

### *Rules applicable to the importation of goods*

#### *Article 25*

#### *Rules applicable to the importation of goods*

1. The customs authorities shall not allow the importation of goods *by any other person than an authorised CBAM declarant*.
2. The customs authorities shall periodically *and automatically, notably by means of the surveillance mechanism established pursuant to Article 56(6) of Regulation (EU) No 952/2013*, communicate *to the Commission specific* information on the goods declared for importation. *That information* shall include the EORI number and the CBAM account number of the *authorised CBAM* declarant, the 8-digit CN code of the goods, the quantity, the country of origin, the date of declaration and the customs procedure **█**.
- 2a. *The Commission shall communicate the information referred to in paragraph 2 to the competent authority of the Member State where the authorised CBAM declarant is established and shall, for each CBAM declarant, cross check that information with the data in the CBAM registry pursuant to Article 14.*



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4. The customs authorities may communicate, in accordance with *and as referred to in* Article 12(1) of Regulation (EU) No 952/2013, confidential information acquired by the customs authorities in the course of performing their *duties*, or provided *to the customs authorities* on a confidential basis, to *the Commission and* the competent authority of the Member State *that* has *granted the status of the* authorised *CBAM declarant*.
- 4a. *The provisions of Regulation (EC) No 515/97 shall apply mutatis mutandis to this Regulation.*
5. The Commission is empowered to adopt implementing acts defining the information, *the periodicity*, the timing and the means for communicating the information pursuant to paragraph 2 *of this Article*. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 29(2).

## Chapter VI Enforcement

### Article 26

#### Penalties

1. An authorised **CBAM** declarant who fails to surrender, by 31 May of each year, *the* number of CBAM certificates *that corresponds* to the emissions embedded in goods imported during the *preceding* year shall be *held* liable *for the payment of* a penalty. *Such penalty shall be* identical to the excess emissions penalty set out in Article 16(3) of Directive 2003/87/EC *and* increased pursuant to Article 16(4) of that Directive, *applicable* in the year of importation of the goods. *It shall apply* for each CBAM certificate that the authorised **CBAM** declarant *has not* surrendered.
2. *Where a* person other than an authorised **CBAM** declarant *introduces* goods into the customs territory of the Union without *complying with the obligations of* this Regulation, *that person* shall be *held* liable *for the payment of a penalty. Such a penalty shall be effective, proportionate and dissuasive and shall, depending in particular on the duration, gravity, scope, intentional nature and repetition of such non-compliance and the level of cooperation of the person with the competent authority, amount to three to five times* the penalty referred to in paragraph 1, *applicable* in the year of introduction of the goods, for each CBAM certificate that the person *has not* surrendered.

3. Payment of the penalty shall **not** release the authorised **CBAM** declarant from the obligation to surrender the outstanding number of CBAM certificates in a given year .
4. If the competent authority determines, *in light of the preliminary calculations by the Commission in accordance with Article 19*, that an authorised **CBAM** declarant has failed to comply with the obligation to surrender CBAM certificates as specified in paragraph 1, or that a person has introduced goods into the customs territory of the Union *without complying with the obligations of this Regulation* as specified in paragraph 2, the competent authority shall impose the penalty *pursuant to paragraph 1 or 2, as applicable*.

*To that end, the competent authority shall* notify the authorised **CBAM** declarant or, *where paragraph 2 applies*, the person:

- (a) that the competent authority has concluded that the authorised **CBAM** declarant or the person *failed* to comply with the obligation *under this Regulation*;
- (b) of the reasons for its conclusion;
- (c) of the amount of the penalty imposed on the authorised **CBAM** declarant or on the person;
- (d) of the date from which the penalty is due;
- (e) of the action *that* the authorised **CBAM** declarant or the person *referred to in paragraph 2 is to* take to *pay the penalty*; and
- (f) of the right of the authorised **CBAM** declarant or of the person to appeal under national rules.

5. *Where the penalty has not been paid within the prescribed period, the competent authority shall secure payment of that amount by all means available to it under the law of the Member State concerned.*
6. *Member State shall communicate the decisions on penalties referred to in paragraph 1 and 2, to the Commission and register the final payment referred to in paragraph 5 in the CBAM registry.*

*Article 27*  
*Circumvention*

1. The Commission shall take action *in accordance with this Article*, based on relevant and objective data, █ to address practices of circumvention of this Regulation.
2. Practices of circumvention *shall be defined as* a change in the pattern of trade in █ goods, *which stems from a practice, process or work, for which there is insufficient due cause or economic justification other than avoiding, wholly or partially, any of the obligations* █ laid down in this Regulation. *Such practice, process or work may consist of, but is not limited to:*
- (a) *slightly modifying the goods concerned to make those goods fall under CN codes which are not listed in Annex I, except where the modification alters their essential characteristics;*
- (b) *artificially splitting shipments into consignments the intrinsic value of which does not exceed the threshold referred to in Article 2(2a) of this Regulation.*

3. *The Commission shall continually monitor, at Union level, the situation with a view to identifying practices of circumvention, including by way of market surveillance or on the basis of any relevant source of information, such as submissions by and reporting from civil society organisations.*
4. A Member State or any party affected or benefitted by *any of* the situations described in paragraph 2 may notify the Commission if it is confronted *with practices of circumvention. Interested parties other than directly affected parties, such as environmental organisations and non-governmental organisations, which find concrete evidence of practices of circumvention, may also notify the Commission.*
4. The notification referred to in paragraph 4 shall state the reasons on which it is based and shall include relevant data and statistics *to support the claim of circumvention of this Regulation. The Commission shall initiate an investigation into such a claim set out in a notification by a Member State, an affected party or an interested party, provided that the notification meets the requirements referred to in this paragraph, or where the Commission itself determines that such an investigation is necessary. In carrying out the investigation, the Commission may be assisted by the competent authorities and customs authorities. The Commission shall conclude the investigation within nine months from the date of notification. Where an investigation has been initiated, the Commission shall notify all competent authorities.*
6. Where the Commission, taking into account the relevant data, reports and statistics, including *that* provided by the customs authorities ■ , has sufficient reasons to believe that the circumstances referred to in paragraph 2(a) are occurring in one or more Member States *according to an established pattern*, it is empowered to adopt delegated acts in accordance with Article 28 to *amend Annex I by adding the relevant* slightly modified products *referred to in paragraph 2(a)* for anti-circumvention purposes.

**Chapter VII**  
**Exercise of delegation and committee procedure**

*Article 28*

*Exercise of the delegation*

1. The power to adopt delegated acts is conferred on the Commission subject to the conditions laid down in this Article.
2. The power to adopt delegated acts referred to in Articles 2(10), 2(11), 18(3), **20(3)** and 27(6) shall be conferred on the Commission for *a* period of **five years from [date of the entry into force]**. *The Commission shall draw up a report in respect of the delegation of power not later than nine months before the end of the five year period. The delegation of power shall be tacitly extended for further periods of identical duration, unless the European Parliament or the Council opposes such extension not later than three months before the end of each such period.*
3. The delegation of power referred to in Articles 2(10), 2(11), 18(3), **20(3)** and 27(6) may be revoked at any time by the European Parliament or by the Council.
4. A decision to revoke shall put an end to the delegation of the power specified in that decision. It shall take effect the day following the publication of the decision in the *Official Journal of the European Union* or at a later date specified therein. It shall not affect the validity of any delegated act already in force.

5. Before adopting a delegated act, the Commission shall consult experts designated by each Member State in accordance with the principles laid down in the Inter-institutional Agreement on Better Law-Making of 13 April 2016.
6. As soon as it adopts a delegated act, the Commission shall notify it simultaneously to the European Parliament and to the Council.
7. A delegated act adopted pursuant to Articles 2(10), 2(11), 18(3), **20(3)** and 27(**6**) shall enter into force only if no objection has been expressed either by the European Parliament or by the Council within a period of two months of notification of that act to the European Parliament and to the Council or if, before the expiry of that period, the European Parliament and the Council have both informed the Commission that they will not object. That period shall be extended by two months at the initiative of the European Parliament or of the Council.

*Article 29*

*Exercise of implementing powers by the Commission*

1. The Commission shall be assisted by the CBAM Committee. **That** committee shall be a committee within the meaning of Regulation (EU) No 182/2011.
2. Where reference is made to this paragraph, Article 5 of Regulation (EU) No 182/2011 shall apply.

**Chapter VIII**  
**Reporting and review**

*Article 30*

*Review and reporting by the Commission*

1. The Commission, **in consultation with relevant stakeholders**, shall collect the information necessary with a view to **the extension of** the scope of this Regulation **as indicated pursuant to paragraph 2(a), and to the development of** methods of calculating embedded emissions based on environmental footprint methods.
2. Before the end of the transitional period **referred to in Article 36**, the Commission shall present a report to the European Parliament and the Council on the application of this Regulation.

The report shall contain **an** assessment of:

- (a) the **possibility** to **█** extend the scope **to**:
  - i. **embedded** indirect emissions **to the sectors listed in Annex Ia**;
  - ii. **embedded emissions in the transport of goods listed in Annex I and transporation services**;



- iii. other goods at risk of carbon leakage than those *listed in Annex I, and specifically organic chemicals and polymers;*
- iv. *other precursor materials for the goods listed in Annex I;*

- (b) *the criteria to be used to identify the goods to be included in Annex I based on the sectors at risk of carbon leakage as identified in [Article 10b of] Directive 2003/87/EC. The assessment shall be accompanied by a timetable ending in 2030 for the gradual inclusion of the goods of this Regulation, taking into account in particular the level of their respective carbon leakage risk;*
- c) *the technical requirements for calculating embedded emissions for other goods to be included in Annex I;*
- d) *the progress made in international discussions regarding climate action;*
- e) *the governance system, including the administrative costs;*
- f) *the impact of this Regulation on goods listed in Annex I imported from developing countries with special interest to the least developed countries and on the effects of the technical assistance given;*
- g) *the methodology for the calculation of indirect emissions pursuant to Article 7(6) and Annex III point 4.3.*

2a. *At least one year before the end of the transitional period, the Commission shall present a report identifying products that are further down the value chain of the goods listed in Annex I and that are recommended to be considered to be included in the scope of application of this Regulation. To that end, the Commission shall develop, on time, a methodology that should be based on the relevance in terms of cumulated GHG emissions and risk of carbon leakage.*

3. The *reports referred to in paragraph 2 and 2a* shall, if appropriate, be accompanied by a legislative proposal *by the end of the transitional period, including a detailed impact assessment, in particular with a view to extending the scope of this Regulation on the basis of the conclusions drawn in those reports.*
4. *Every two years from the end of the transitional period, as part of its annual report to the European Parliament and to the Council pursuant to Article 10(5) of Directive 2003/87/EC, the Commission shall assess the effectiveness of the CBAM in addressing the carbon leakage risk for goods produced in the Union for export to third countries which do not apply the EU ETS or a similar carbon pricing mechanism. The report shall in particular assess the development of Union exports in CBAM sectors and the developments as regards trade flows and the embedded emissions of those goods on the global market. Where the report concludes that there is a carbon leakage risk for goods produced in the Union for export to such third countries which do not apply the EU ETS or a similar carbon pricing mechanism, the Commission shall, where appropriate, present a legislative proposal to address that carbon leakage risk in a manner that is compliant with WTO rules and takes into account the decarbonisation of installations in the Union.*

6. *The Commission shall monitor the functioning of CBAM with a view of evaluating the impacts and possible adjustments to the application.*

*Before 1 January 2028, as well as every two years thereafter, the Commission shall present a report to the European Parliament and the Council on the application of this Regulation and functioning of CBAM. The report shall contain at least the following:*

- a) *an assessment of the impact of the mechanism on:*
  - i. *carbon leakage; including in relation to exports,*
  - ii. *the sectors covered;*
  - iii. *internal market, economic and territorial impact throughout the Union;*
  - iv. *inflation and the price of commodities*
  - v. *the effect on industries using goods in Annex I;*
  - vi. *international trade, including resource shuffling, and*
  - vii. *on least developed countries;*
  
- b) *an assessment of:*
  - i. *the governance system, including an assessment of the implementation and administration of the authorisation of CBAM declarants by different Member States;*
  - ii. *the scope of the Regulation;*
  - iii. *circumvention practices;*
  - iv. *the application of penalties in Member States;*

- c) *results of investigations and penalties applied;*
- d) *aggregated information on the emission intensity per country of origin for the different products listed in Annex I.*
7. *Where an unforeseeable, exceptional and unprovoked event outside the control of one or more third countries subject to CBAM has occurred, and that event has destructive consequences on the economic and industrial infrastructure of the countries concerned, the Commission shall assess the situation and submit to the European Parliament and to the Council a report, accompanied, if appropriate, by a legislative proposal, to amend this Regulation by setting out the necessary provisional measures to address those exceptional circumstances.*
8. *From the end of the transitional period, as part of annual reporting pursuant to Article 41 of the Regulation (EU) 2021/947 establishing the Neighbourhood, Development and International Cooperation Instrument, the Commission should evaluate and report on how the financing under that Regulation has contributed to the decarbonisation of the manufacturing industry in the least developed countries.*

## **Chapter IX**

### **Coordination with free allocation of allowances under the EU ETS**

#### *Article 31*

#### *Free allocation of allowances under the EU ETS and obligation to surrender CBAM certificates*

1. The CBAM certificates to be surrendered in accordance with Article 22 shall be adjusted to reflect the extent to which EU ETS allowances are allocated free of charge in accordance with Article 10a of Directive 2003/87/EC to installations producing, within the Union, the goods listed in Annex I.

2. The Commission is empowered to adopt implementing acts laying down *detailed rules for the calculation of the adjustment* referred to in paragraph 1. *Such detailed rules shall be elaborated by reference to the principles applied in the EU ETS for the free allocation of allowances to installations producing, within the Union, the goods listed in Annex I, taking account of the different benchmarks used in the EU ETS for the free allocation with a view to combining them into corresponding values for the concerned goods, and taking into account relevant input materials.* Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 29(2).

## **Chapter X**

### **Transitional provisions**

#### *Article 32*

#### *Scope of the transitional period*

During the transitional period *from 1 October 2023 until 31 December 2025, the obligations of the importer under of this Regulation shall be limited to the reporting obligations* set out in Articles 33 to 35. *Where such importer is established in a Member State and uses indirect representation in accordance with Article 18 of Regulation (EU) No 952/2013, and where the indirect customs representative so agrees, the reporting obligations shall apply to such indirect customs representative. Where the importer is not established in a Member State, the reporting obligations shall apply to the indirect customs representative.*

*Article 33*  
*Importation of goods*

2. The customs authorities shall ***inform the customs declarant of the reporting obligation referred to in Article 35***, at the ***latest at the*** moment of the release of goods for free circulation .
3. The customs authorities shall ***periodically and automatically, notably*** by means of the surveillance mechanism established pursuant to Article 56(5) of Regulation (EU) No 952/2013 ***or by electronic means of data transmission***, communicate to the ***Commission*** information on imported goods, including processed products resulting from the outward processing procedure. Such information shall include the EORI number of the ***customs declarant, and of the importer***, the ***eight***-digit CN code, the quantity, the country of origin, the ***customs declarant*** , the date of declaration and the customs procedure.
4. ***The Commission shall communicate the information referred to in paragraph 3 to the competent authorities of the Member States where the customs declarant, and where applicable the importer, are established.***

*Article 34*

*Reporting obligation for certain customs procedures*

1. ***Where*** processed ***products*** resulting from the inward processing procedure as referred to in Article 256 of Regulation (EU) No 952/2013 ***are imported***, the reporting obligation referred to in Article 35(1) shall include the ***information on the*** goods ***that were*** placed under the inward processing procedure ***and resulted in the imported processed products***, even if the processed ***products are*** not listed in **■ Annex I to this Regulation. This provision shall also apply where the processed products resulting from the inward processing procedure are returned goods as referred to in Article 205 of Regulation (EU) No 952/2013.**
  
2. The reporting obligation ***referred to in Article 35(1)*** shall not apply to ***the*** import of:
  - (a) processed products resulting from the outward processing procedure as referred to in Article 259 of Regulation (EU) No 952/2013;
  
  - (b) **■** goods qualifying as returned goods in accordance with Article 203 of Regulation (EU) No 952/2013.

Article 35

Reporting obligation

1. Each **importer having imported goods during a given** quarter of a calendar year **shall, for that quarter**, submit a report ('CBAM report') containing information on the goods imported during that quarter, to the **Commission**, no later than one month after the end of each quarter.
2. The CBAM report shall include the following information:
  - (a) the total quantity of each type of goods, expressed in megawatt hours for electricity and in tonnes for other goods, specified per installation producing the goods in the country of origin;
  - (b) the actual total embedded emissions, expressed in tonnes of CO<sub>2</sub>e emissions per megawatt-hour of electricity or for other goods in **tonnes** of CO<sub>2</sub>e emissions per tonne of each type of goods, calculated in accordance with the method set out in Annex III;
  - (c) the **total indirect emissions** calculated in accordance with **the** implementing act referred to in paragraph 6;
  - (d) the carbon price due in a country of origin for the embedded emissions in the imported goods, **taking into account relevant rebates or any other forms** of compensation **.**
4. The **Commission** shall **periodically** communicate **to the competent authorities a list of importers established in their Member State, in respect of which it has reasons to believe that they have failed to comply with the obligation to submit a CBAM report as specified in paragraph 1, and the corresponding justifications.**



**4a.** *Where the CBAM report is incomplete or incorrect, the Commission shall communicate to the competent authority of the Member State in which the customs declaration has been lodged the additional data and information that it considers necessary for the correction of that report. Such information is provided for indicative purposes and is without prejudice to the definitive appreciation of the competent authority of the Member State in which the customs declaration has been lodged. To initiate the procedure for corrections, the competent authority of the Member State in which the customs declaration has been lodged shall notify to the importer the additional data and information needed for the correction of that report. The importer shall submit where appropriate a corrected report to the that authority and to the Commission.*

**5.** *When the competent authority of the Member State where the importer is established initiate a correction procedure, including in consideration of information received in accordance with paragraph 4 and 4a, that an importer has failed to comply with the obligation to submit a CBAM report referred to in paragraph 1, or has not taken the necessary steps to correct the CBAM report referred to in paragraph 4a, it shall impose an effective, proportionate and dissuasive penalty on the importer. To that end, the competent authority shall notify the importer of the following and shall inform the Commission thereof:*

- (a) that the competent authority has concluded that the *importer failed* to comply with the obligation of submitting a report for a given quarter;
- (b) of the reasons for its conclusion;
- (c) of the amount of the penalty imposed on the *importer*;
- (d) of the date from which the penalty is due;
- (e) of the action *that the importer is to take to pay the penalty*; and
- (f) of the right of the *importer* to appeal under national rules.

- 5a. *Where the competent authority, after receiving the information from the Commission under this Article, decides not to take any action, the competent authority shall inform the Commission accordingly.*
6. The Commission is empowered to adopt implementing acts concerning the information to be reported, the *means and format for the reporting including detailed information per country of origin and type of goods supporting the totals* referred to in paragraph 2, *examples of relevant rebates or other forms of compensation referred to in paragraph 2(d), the indicative range of penalties to be applied pursuant to paragraph 5* and the *criteria to take into account for determining the actual amount, including the gravity and duration of the failure to report, and detailed rules regarding the conversion of the yearly average carbon price due in foreign currency referred to in paragraph 2(d) into euro at the yearly average exchange rate.* The Commission is also empowered to adopt implementing acts *concerning detailed rules regarding the elements of the calculation methods* set out in Annex III, including determining system boundaries of production processes, emission factors, installation-specific values of actual emissions and their respective application to individual goods as well as laying down methods to ensure the reliability of data, including the level of detail **■** . The Commission is further empowered to adopt implementing acts *on the means and format for the reporting requirements* for indirect emissions **■** in imported goods. *That format shall include the quantity of electricity used for the production of the goods listed in Annex I, as well as the country of origin, generation source and emission factor related to that electricity.*
7. *Those* implementing acts **■** shall be adopted in accordance with the examination procedure referred to in Article 29(2) *and shall apply during the transitional period referred to in Article 32. They shall build upon existing legislation for installations covered by Directive 2003/87/EC.*

**Chapter XI**  
**Final provisions**

*Article 36*

*Entry into force*

1. This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.
2. It shall apply from 1 **October** 2023.
3. By way of derogation from paragraph 2:
  - (a) Articles **5 and 17** shall apply *from 31 December 2024*.
  - (b) *Articles 2(2), 4, 6, 7, 8, 9, 14, 15, 16, 19, 20, 21, 22, 23, 24, 25, 26, 27 and 31* shall apply *from 1 January 2026*.
  - (c) Articles **33, 34** and **35(1), (2), (3), (4), (6) and (7)** shall apply *until 31 December 2025*.

**I**

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels,

*For the European Parliament*  
*The President*

*For the Council*  
*The President*

**ANNEX I**  
**List of goods and greenhouse gases**

1. For the purpose of the identification of goods, this Regulation shall apply to goods listed in the following sectors currently falling under the combined nomenclature ('CN') codes listed below, and shall be those of Council Regulation (EEC) No 2658/87 <sup>(26)</sup>.
2. For the purposes of this Regulation, the greenhouse gases relating to goods falling in the sectors listed below, shall be those listed below for each type of goods.

**Cement**

<b>CN code</b>	<b>Greenhouse gas</b>
<i>2507 00 80 – Kaolin and other kaolinic clays, calcined</i>	<i>Carbon dioxide</i>
2523 10 00 – Cement clinkers	Carbon dioxide
2523 21 00 – White Portland cement, whether or not artificially coloured	Carbon dioxide
2523 29 00 – Other Portland cement	Carbon dioxide
<i>2523 30 00 – Aluminous cement</i>	<i>Carbon dioxide</i>
2523 90 00 – Other hydraulic cements	Carbon dioxide

**Electricity**

<b>CN code</b>	<b>Greenhouse gas</b>
2716 00 00 – Electrical energy	Carbon dioxide

<sup>26</sup> Council Regulation (EEC) No 2658/87 of 23 July 1987 on the tariff and statistical nomenclature and on the Common Customs Tariff (OJ L 256, 7.9.1987, p. 1).

### Fertilisers

CN code	Greenhouse gas
2808 00 00 – Nitric acid; sulphonitric acids	Carbon dioxide and nitrous oxide
2814 – Ammonia, anhydrous or in aqueous solution	Carbon dioxide
2834 21 00 - Nitrates of potassium	Carbon dioxide and nitrous oxide
3102 – Mineral or chemical fertilisers, nitrogenous	Carbon dioxide and nitrous oxide
3105 – Mineral or chemical fertilisers containing two or three of the fertilising elements nitrogen, phosphorus and potassium; other fertilisers; goods of this chapter in tablets or similar forms or in packages of a gross weight not exceeding 10 kg - Except: 3105 60 00 – Mineral or chemical fertilisers containing the two fertilising elements phosphorus and potassium	Carbon dioxide and nitrous oxide

## Iron and Steel

CN code	Greenhouse gas
<p>72 – Iron and steel</p> <p>Except:</p> <p><i>7202 2 – Ferro silicon</i></p> <p><i>7202 3 – Ferro-silico-manganese</i></p> <p><i>7202 50 00 – Ferro-silico-chromium</i></p> <p><i>7202 70 00 – Ferro-molybdenum</i></p> <p><i>7202 80 00 – Ferro-tungsten and ferro-silico-tungsten</i></p> <p><i>7202 91 00 – Ferro-titanium and ferro-silico-titanium</i></p> <p><i>7202 92 00 – Ferro-vanadium</i></p> <p><i>7202 93 00 – Ferro-niobium</i></p> <p><i>7202 99 – Other:</i></p> <p><i>7202 99 10 – Ferro-phosphorus</i></p> <p><i>7202 99 30 – Ferro-silico-magnesium</i></p> <p><i>7202 99 80 – Other</i></p> <p>7204 – Ferrous waste and scrap; remelting scrap ingots and steel</p>	Carbon dioxide
<i>2601 12 00 – Agglomerated iron ores and concentrates, other than roasted iron pyrites</i>	<i>Carbon dioxide</i>
7301- Sheet piling of iron or steel, whether or not drilled, punched or made from assembled elements; welded angles, shapes and sections, of iron or steel	Carbon dioxide
7302 – Railway or tramway track construction material of iron or steel, the following: rails, check-rails and rack rails, switch blades, crossing frogs, point rods and other crossing pieces, sleepers (cross-ties), fish- plates, chairs, chair wedges, sole plates (base plates), rail clips, bedplates, ties and other material specialised for jointing or fixing rails	Carbon dioxide

7303 00 – Tubes, pipes and hollow profiles, of cast iron	Carbon dioxide
7304 – Tubes, pipes and hollow profiles, seamless, of iron (other than cast iron) or steel	Carbon dioxide
7305 – Other tubes and pipes (for example, welded, riveted or similarly closed), having circular cross-sections, the external diameter of which exceeds 406,4 mm, of iron or steel	Carbon dioxide
7306 – Other tubes, pipes and hollow profiles (for example, open seam or welded, riveted or similarly closed), of iron or steel	Carbon dioxide
7307 – Tube or pipe fittings (for example, couplings, elbows, sleeves), of iron or steel	Carbon dioxide
7308 – Structures (excluding prefabricated buildings of heading 9406) and parts of structures (for example, bridges and bridge-sections, lock-gates, towers, lattice masts, roofs, roofing frameworks, doors and windows and their frames and thresholds for doors, shutters, balustrades, pillars and columns), of iron or steel; plates, rods, angles, shapes, sections, tubes and the like, prepared for use in structures, of iron or steel	Carbon dioxide
7309 – Reservoirs, tanks, vats and similar containers for any material (other than compressed or liquefied gas), of iron or steel, of a capacity exceeding 300 l, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment	Carbon dioxide

7310 – Tanks, casks, drums, cans, boxes and similar containers, for any material (other than compressed or liquefied gas), of iron or steel, of a capacity not exceeding 300 l, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment	Carbon dioxide
7311 – Containers for compressed or liquefied gas, of iron or steel	Carbon dioxide
<i>7318 – Screws, bolts, nuts, coach screws, screw hooks, rivets, cotters, cotter pins, washers (including spring washers) and similar articles, of iron or steel</i>	<i>Carbon dioxide</i>
<i>7326 – Other articles of iron or steel</i>	<i>Carbon dioxide</i>

#### Aluminium

<b>CN code</b>	<b>Greenhouse gas</b>
7601 – Unwrought aluminium	Carbon dioxide and perfluorocarbons
7603 – Aluminium powders and flakes	Carbon dioxide and perfluorocarbons
7604 – Aluminium bars, rods and profiles	Carbon dioxide and perfluorocarbons
7605 – Aluminium wire	Carbon dioxide and perfluorocarbons
7606 – Aluminium plates, sheets and strip, of a thickness exceeding 0,2 mm	Carbon dioxide and perfluorocarbons
7607 – Aluminium foil (whether or not printed or backed with paper, paper-board, plastics or similar backing materials) of a thickness (excluding any backing) not exceeding 0,2 mm	Carbon dioxide and perfluorocarbons



7608 – Aluminium tubes and pipes	Carbon dioxide and perfluorocarbons
7609 00 00 – Aluminium tube or pipe fittings (for example, couplings, elbows, sleeves)	Carbon dioxide and perfluorocarbons
<i>7610 – Aluminium structures (excluding prefabricated buildings of heading 9406) and parts of structures (for example, bridges and bridge-sections, towers, lattice masts, roofs, roofing frameworks, doors and windows and their frames and thresholds for doors, balustrades, pillars and columns); aluminium plates, rods, profiles, tubes and the like, prepared for use in structures</i>	<i>Carbon dioxide and perfluorocarbons</i>
<i>7611 00 00 – Aluminium reservoirs, tanks, vats and similar containers, for any material (other than compressed or liquefied gas), of a capacity exceeding 300 litres, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment</i>	<i>Carbon dioxide and perfluorocarbons</i>
<i>7612 – Aluminium casks, drums, cans, boxes and similar containers (including rigid or collapsible tubular containers), for any material (other than compressed or liquefied gas), of a capacity not exceeding 300 litres, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment</i>	<i>Carbon dioxide and perfluorocarbons</i>

<i>7613 00 00 – Aluminium containers for compressed or liquefied gas</i>	<i>Carbon dioxide and perfluorocarbons</i>
<i>7614 – Stranded wire, cables, plaited bands and the like, of aluminium, not electrically insulated</i>	<i>Carbon dioxide and perfluorocarbons</i>
<i>7616 – Other articles of aluminium</i>	<i>Carbon dioxide and perfluorocarbons</i>

*Chemicals*

<i>CN code</i>	<i>Greenhouse gas</i>
<i>2804 10 000 - Hydrogen</i>	<i>Carbon dioxide</i>

ANNEX IA

List of goods for which only direct emissions will be taken into account, pursuant to Article 7(1).

*Iron and Steel*

<i>CN code</i>	<i>Greenhouse gas</i>
<i>72 – Iron and steel</i> <i>Except:</i> <i>7202 2 – Ferro silicon</i> <i>7202 3 – Ferro-silico-manganese</i> <i>7202 50 00 – Ferro-silico-chromium</i> <i>7202 70 00 – Ferro-molybdenum</i> <i>7202 80 00 – Ferro-tungsten and ferro-silico-tungsten</i> <i>7202 91 00 – Ferro-titanium and ferro-silico-titanium</i> <i>7202 92 00 – Ferro-vanadium</i> <i>7202 93 00 – Ferro-niobium</i> <i>7202 99 – Other:</i> <i>7202 99 10 – Ferro-phosphorus</i> <i>7202 99 30 – Ferro-silico-magnesium</i> <i>7202 99 80 – Other</i> <i>7204 – Ferrous waste and scrap; remelting scrap ingots and steel</i>	<i>Carbon dioxide</i>
<i>7301 – Sheet piling of iron or steel, whether or not drilled, punched or made from assembled elements; welded angles, shapes and sections, of iron or steel</i>	<i>Carbon dioxide</i>

<p><i>7302 – Railway or tramway track construction material of iron or steel, the following: rails, check-rails and rack rails, switch blades, crossing frogs, point rods and other crossing pieces, sleepers (cross-ties), fish- plates, chairs, chair wedges, sole plates (base plates), rail clips, bedplates, ties and other material specialised for jointing or fixing rails</i></p>	<p><i>Carbon dioxide</i></p>
<p><i>7303 00 – Tubes, pipes and hollow profiles, of cast iron</i></p>	<p><i>Carbon dioxide</i></p>
<p><i>7304 – Tubes, pipes and hollow profiles, seamless, of iron (other than cast iron) or steel</i></p>	<p><i>Carbon dioxide</i></p>
<p><i>7305 – Other tubes and pipes (for example, welded, riveted or similarly closed), having circular cross-sections, the external diameter of which exceeds 406,4 mm, of iron or steel</i></p>	<p><i>Carbon dioxide</i></p>
<p><i>7306 – Other tubes, pipes and hollow profiles (for example, open seam or welded, riveted or similarly closed), of iron or steel</i></p>	<p><i>Carbon dioxide</i></p>
<p><i>7307 – Tube or pipe fittings (for example, couplings, elbows, sleeves), of iron or steel</i></p>	<p><i>Carbon dioxide</i></p>

<p><i>7308 – Structures (excluding prefabricated buildings of heading 9406) and parts of structures (for example, bridges and bridge-sections, lock-gates, towers, lattice masts, roofs, roofing frameworks, doors and windows and their frames and thresholds for doors, shutters, balustrades, pillars and columns), of iron or steel; plates, rods, angles, shapes, sections, tubes and the like, prepared for use in structures, of iron or steel</i></p>	<p><i>Carbon dioxide</i></p>
<p><i>7309 – Reservoirs, tanks, vats and similar containers for any material (other than compressed or liquefied gas), of iron or steel, of a capacity exceeding 300 l, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment</i></p>	<p><i>Carbon dioxide</i></p>
<p><i>7310 – Tanks, casks, drums, cans, boxes and similar containers, for any material (other than compressed or liquefied gas), of iron or steel, of a capacity not exceeding 300 l, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment</i></p>	<p><i>Carbon dioxide</i></p>

<i>7311 – Containers for compressed or liquefied gas, of iron or steel</i>	<i>Carbon dioxide</i>
<i>7318 – Screws, bolts, nuts, coach screws, screw hooks, rivets, cotters, cotter pins, washers (including spring washers) and similar articles, of iron or steel</i>	<i>Carbon dioxide</i>
<i>7326 – Other articles of iron or steel</i>	<i>Carbon dioxide</i>

*Aluminium*

<i>CN code</i>	<i>Greenhouse gas</i>
<i>7601 – Unwrought aluminium</i>	<i>Carbon dioxide and perfluorocarbons</i>
<i>7603 – Aluminium powders and flakes</i>	<i>Carbon dioxide and perfluorocarbons</i>
<i>7604 – Aluminium bars, rods and profiles</i>	<i>Carbon dioxide and perfluorocarbons</i>
<i>7605 – Aluminium wire</i>	<i>Carbon dioxide and perfluorocarbons</i>
<i>7606 – Aluminium plates, sheets and strip, of a thickness exceeding 0,2 mm</i>	<i>Carbon dioxide and perfluorocarbons</i>
<i>7607 – Aluminium foil (whether or not printed or backed with paper, paper-board, plastics or similar backing materials) of a thickness (excluding any backing) not exceeding 0,2 mm</i>	<i>Carbon dioxide and perfluorocarbons</i>
<i>7608 – Aluminium tubes and pipes</i>	<i>Carbon dioxide and perfluorocarbons</i>
<i>7609 00 00 – Aluminium tube or pipe fittings (for example, couplings, elbows, sleeves)</i>	<i>Carbon dioxide and perfluorocarbons</i>

<p><i>7610 – Aluminium structures (excluding prefabricated buildings of heading 9406) and parts of structures (for example, bridges and bridge-sections, towers, lattice masts, roofs, roofing frameworks, doors and windows and their frames and thresholds for doors, balustrades, pillars and columns); aluminium plates, rods, profiles, tubes and the like, prepared for use in structures</i></p>	<p><i>Carbon dioxide and perfluorocarbons</i></p>
<p><i>7611 00 00 – Aluminium reservoirs, tanks, vats and similar containers, for any material (other than compressed or liquefied gas), of a capacity exceeding 300 litres, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment</i></p>	<p><i>Carbon dioxide and perfluorocarbons</i></p>
<p><i>7612 – Aluminium casks, drums, cans, boxes and similar containers (including rigid or collapsible tubular containers), for any material (other than compressed or liquefied gas), of a capacity not exceeding 300 litres, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment</i></p>	<p><i>Carbon dioxide and perfluorocarbons</i></p>



<i>7613 00 00 – Aluminium containers for compressed or liquefied gas</i>	<i>Carbon dioxide and perfluorocarbons</i>
<i>7614 – Stranded wire, cables, plaited bands and the like, of aluminium, not electrically insulated</i>	<i>Carbon dioxide and perfluorocarbons</i>
<i>7616 – Other articles of aluminium</i>	<i>Carbon dioxide and perfluorocarbons</i>

*Chemicals*

<i>CN code</i>	<i>Greenhouse gas</i>
<i>2804 10 000 – Hydrogen</i>	<i>Carbon dioxide</i>

## **ANNEX II**

### **Countries and territories outside the scope of this Regulation for the purpose of Article 2**

#### **1. SECTION A- COUNTRIES AND TERRITORIES OUTSIDE THE SCOPE OF THIS REGULATION**

This Regulation shall not apply to goods originating in the following countries:

- Iceland
- Liechtenstein
- Norway
- Switzerland

This Regulation shall not apply to goods originating in the following territories:

- Büsingen
- Heligoland
- Livigno
- Ceuta
- Melilla

#### **2. SECTION B - COUNTRIES AND TERRITORIES OUTSIDE THE SCOPE OF THIS REGULATION WITH REGARD TO THE IMPORTATION OF ELECTRICITY INTO THE CUSTOMS TERRITORY OF THE UNION**

[Currently empty]

**ANNEX III**  
**Methods for calculating embedded emissions for the purpose of Article 7**

**1. DEFINITIONS**

For the purposes of this Annex and *of Annexes IV and V*, the following definitions apply:

- (a) ‘simple goods’ means goods produced in a production process requiring exclusively input materials and fuels having zero embedded emissions;
- (b) ‘complex goods’ means goods **■** other *than* simple goods **■** ;
- (c) ‘specific embedded emissions’ means the embedded emissions of one tonne of goods, expressed as tonnes of CO<sub>2e</sub> emissions per tonne of goods;
- (d) ‘CO<sub>2</sub> emission factor’, means the weighted average of the CO<sub>2</sub> intensity of electricity produced from fossil fuels *within* a geographic area. The CO<sub>2</sub> emission factor is the result of the division of the CO<sub>2</sub> emission data of the *electricity* sector **■** by the gross electricity generation based on fossil fuels *in the relevant geographic area*. It is expressed in *tonnes* of CO<sub>2</sub> per megawatt-hour;
- (da) ‘emission factor’ for electricity means the default value, expressed in CO<sub>2e</sub>, representing the emission intensity of electricity consumed in production of goods.*
- (e) ‘power purchase agreement’ means a contract under which a person agrees to purchase electricity directly from an electricity producer;
- (f) ‘*transmission system operator*’ means an operator as defined in Article 2(35) of Directive (EU) 2019/944 of the European Parliament and of the Council (<sup>27</sup>).

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<sup>27</sup> Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (OJ L 158, 14.6.2019, p. 125).

## 2. DETERMINATION OF ACTUAL SPECIFIC EMBEDDED EMISSIONS FOR SIMPLE GOODS

For determining the specific actual embedded emissions of simple goods produced in a given installation, direct *and, where applicable, indirect* emissions shall be accounted for. For this purpose, the following equation is to be applied:

$$SEE_g = \frac{AttrEm_g}{AL_g}$$

Where  $SEE_g$  are the specific embedded emissions of goods  $g$ , in terms of CO<sub>2</sub>e per tonne,  $AttrEm_g$  are the attributed emissions of goods  $g$ , and  $AL_g$  is the activity level of the goods, *being the quantity* of the goods produced in the reporting period in that installation.

‘Attributed emissions’ mean the part of the installation’s emissions during the reporting period that are caused by the production process resulting in goods  $g$  when applying the system boundaries of the *production* process defined by the implementing acts adopted pursuant to Article 7(6). The attributed emissions shall be calculated using the following equation:

$$AttrEm_g = DirEm + IndirEm$$

Where  $DirEm$  are the direct emissions, resulting from the production process, expressed in tonnes of CO<sub>2</sub>e, within the system boundaries referred to in the implementing act *adopted* pursuant to Article 7(6) *and where IndirEm are the indirect emissions resulting from the production of electricity consumed in the production processes of goods, expressed in tonnes of CO<sub>2</sub>e, within the system boundaries referred to in the implementing act adopted pursuant to Article 7(6).*

### 3. DETERMINATION OF ACTUAL EMBEDDED EMISSIONS FOR COMPLEX GOODS

For determining the specific actual embedded emissions of complex goods produced in a given installation, the following equation is to be applied:

$$SEE_g = \frac{AttrEm_g + EE_{ImpMat}}{AL_g}$$

Where AttrEm<sub>g</sub> are the attributed emissions of goods *g*, AL<sub>g</sub> the activity level of the goods, being the *quantity* of goods produced in the reporting period in that installation, and EE<sub>ImpMat</sub> are the embedded emissions of the input materials (precursors) consumed in the production process. Only input materials listed as relevant to the system boundaries of the production process as specified in the implementing act adopted pursuant to Article 7(6) are to be considered. The relevant EE<sub>ImpMat</sub> are calculated as follows:

$$EE_{ImpMat} = \sum_{i=1}^n M_i \cdot SEE_i$$

Where M<sub>i</sub> is the mass of input material *i* used in the production process, and SEE<sub>i</sub> *are the* specific embedded emissions for the input material *i*. For SEE<sub>i</sub> the operator of the installation shall use the value of emissions resulting from the installation where the input material was produced, provided that that installation's data can be adequately measured.

#### 4. DETERMINATION OF DEFAULT VALUES REFERRED IN ARTICLES 7(2) AND (3)

For the purpose of determining default values, only actual values shall be used for the determination of embedded emissions. In the absence of actual data, literature values may be used. The Commission shall publish guidance for the approach taken to correct for waste gases or greenhouse gases used as process input, before collecting the data required to determine the relevant default values for each type of goods listed in Annex I. Default values shall be determined based on the best available data. ***Best available data shall be based on reliable and publicly available information. Default values shall be revised periodically through the implementing acts adopted pursuant to Article 7(6) based on the most up-to-date and reliable information, including on the basis of information provided by a third country or group of third countries.***

##### 4.1. Default values referred to in Article 7(2)

When actual emissions cannot be adequately determined by the authorised **CBAM** declarant, default values shall be used. ***Those*** values shall be set at the average emission intensity of each exporting country and for each of the goods listed in Annex I other than electricity, increased by a ***proportionately designed*** mark-up. ***This mark-up shall be determined in the implementing acts adopted pursuant to Article 7(6) of this Regulation and shall be set at an appropriate level to ensure the environmental integrity of the mechanism, building on the most up-to-date and reliable information, including on the basis of information gathered during the transitional period.*** When reliable data for the exporting country cannot be applied for a type of goods, the default values shall be based on the average emission intensity of the ***X*** per cent worst performing EU **ETS** installations for that type of goods. ***The value of X shall be determined in the implementing acts adopted pursuant to Article 7(6) of this Regulation and shall be set at an appropriate level to ensure the environmental integrity of the mechanism, building on the most up-to-date and reliable information, including on the basis of information gathered during the transitional period.***

## 4.2. Default values for imported electricity referred to in Article 7(3)

Default values for imported electricity shall be determined ■ for a third country, group of third countries or region within a third country *based on either specific default values, in accordance with point 4.2.1*, or, if those values are not available, on *alternative* default values, *in accordance with* point 4.2.2.

*Where the electricity is produced in a third country, group of third countries or region within a third country, and transits through third countries, groups of third countries or regions within a third country, or Member States with the purpose of being imported into the Union, the default values to be used are the ones from the third country, group of third countries or region within a third country where the electricity was produced.*

### 4.2.1. Specific default values for a third country, group of third countries or region within a third country

Specific default values shall be *set at the* CO<sub>2</sub> emission factor in ■ the third country, group of third countries or region within a third country, *based on the best data available to the Commission*.

### 4.2.2. Alternative default values

Where *a* specific default value *is not available* for a third country, a group of third countries, or a region within a third country, the *alternative* default value for electricity shall *be set at* the CO<sub>2</sub> emission factor in the EU ■ .

Where ■ it can be demonstrated, on the basis of reliable data, that the ■ CO<sub>2</sub> emission factor ■ in a third country ■ group of third countries, *or a region within a third country*, is lower than the ■ specific default value *determined by the Commission or lower than the CO<sub>2</sub> emission factor in the EU*, an alternative default value based on that CO<sub>2</sub> emission factor *may be used* for that country, group of countries, or *region* within *a* third country.

### **4.3 Default values for embedded indirect emissions**

*Default values for the Indirect emissions embedded in a good produced in a third country shall be determined on a default value calculated on the average of either the emission factor of the EU electricity grid, or the emission factor of the country of origin electricity grid or the CO<sub>2</sub> emission factor of price-setting sources in the country of origin, of the electricity used for the production of this good.*

*Where a third country, or a group of third countries, demonstrate to the Commission, on the basis of reliable data, that the average electricity mix emission factor or CO<sub>2</sub> emission factor of price-setting sources in the third country or group of third countries is lower than the default value for indirect emissions, an alternative default value based on this average CO<sub>2</sub> emission factor shall be established for this country or group of countries.*

*The Commission shall adopt, no later than (6 months before the end of the transitional period) an implementing act in accordance with Article 7(6) to further specify which of the calculation methods defined in subparagraph 1 shall apply for the calculation of default values. For that purpose, the Commission shall base itself on the most up-to-date and reliable data, including on data gathered during the transitional period, as regards the quantity of electricity used for the production of the goods listed in Annex I, as well as the country of origin, generation source and emission factors related to that electricity. The specific calculation method shall be determined on the basis of the most appropriate way to achieve both of the following criteria:*

- *the prevention of carbon leakage*
- *ensuring the environmental integrity of the mechanism*



## 5. CONDITIONS FOR APPLYING ACTUAL EMBEDDED EMISSIONS IN IMPORTED ELECTRICITY

An authorised *CBAM* declarant may apply actual embedded emissions instead of default values for the calculation referred to in Article 7(3) if the following cumulative criteria are met:

- (a) *the amount of electricity for which the use of actual embedded emissions is claimed is covered by a power purchase agreement between the authorised CBAM declarant and a producer of electricity located in a third country* ;
- (b) the installation producing electricity is either directly connected to the EU transmission system or it can be demonstrated that at the time of export, there was no physical network congestion at any point in the network between the installation and the EU transmission system;
- (bb) *the installation producing electricity does not emit more than 550 grammes of CO<sub>2</sub> of fossil fuel origin per kilowatt-hour of electricity*;
- (c) *the amount of electricity for which the use of actual embedded emissions is claimed has been firmly nominated to the allocated interconnection capacity by all responsible transmission system operators in the country of origin, the country of destination and, if relevant, each country of transit, and the nominated capacity and the production of electricity by the installation refer to the same period of time which shall not be longer than one hour*;
- (d) meeting the above criteria is certified by an accredited verifier. The verifier shall receive at least monthly interim reports demonstrating how the above criteria are fulfilled.

*The accumulated amount of electricity under the power purchase agreement and its corresponding actual embedded emissions shall be excluded from the calculation of the country emission factor, or, respectively, CO<sub>2</sub> emission factor used for the purpose of the calculation of indirect electricity embedded emissions in goods in accordance with point 4.3 above.*

**5A. CONDITIONS TO APPLYING ACTUAL EMBEDDED EMISSIONS FOR INDIRECT EMISSIONS**

*An authorised CBAM declarant may apply actual embedded emissions instead of default values for the calculation referred to in Article 7(3A) if he can demonstrate a direct link to the electricity generation source or if he has concluded a power purchase agreement with a producer of electricity located in a third country for an amount of electricity that is equivalent to the amount for which the use of a specific value is claimed.*

**6. ADAPTATION OF DEFAULT VALUES REFERRED TO IN ARTICLE 7(2) BASED ON REGION-SPECIFIC FEATURES**

Default values can be adapted to particular areas, regions of countries where specific characteristics prevail in terms of objective *emission* factors **■**. When data adapted to those specific local characteristics are available and **■** more targeted default values *can be defined*, the latter may be used **■**.

Where declarants for goods originating in a third country, **■** a group of third countries, *or a region within a third country*, can demonstrate, on the basis of reliable data, that alternative region specific *adaptations* of default values are lower than the default values defined by the Commission, the former can be used.

## ANNEX IV

### **Book-keeping requirements for data used for the calculation of embedded emissions for the purpose of Article 7(4)**

#### **1. MINIMUM DATA TO BE KEPT BY AN AUTHORISED *CBAM* DECLARANT FOR IMPORTED GOODS:**

##### 1. Data identifying the authorised *CBAM* declarant:

- (a) name;
- (b) *CBAM account number*;

##### 2. Data on imported goods:

- (a) type and quantity of each type of goods;
- (b) country of origin;
- (c) actual emissions or default values.

#### **2. MINIMUM DATA TO BE KEPT BY AN AUTHORISED *CBAM* DECLARANT FOR EMBEDDED EMISSIONS IN IMPORTED GOODS THAT ARE DETERMINED BASED ON ACTUAL EMISSIONS**

For each type of *imported* goods *where embedded emissions are determined based on actual emissions*, the following additional data *shall* be kept:

- (a) identification of the installation where the goods were produced;
- (b) contact information of the operator of the installation where the goods were produced;
- (c) the *verification report* as set out in Annex V;
- (d) the specific embedded emissions of the goods.

## ANNEX V

### Verification principles and content of **■** verification reports for the purpose of Article 8

#### 1. PRINCIPLES OF VERIFICATION

The following principles shall apply **■** :

- (a) verifiers shall carry out verifications with an attitude of professional scepticism;
- (b) *the total embedded emissions to be declared in the CBAM declaration* shall be considered as verified **■** only if the verifier finds with reasonable assurance that the *verification* report is free of material misstatements and of material non-conformities regarding the calculation of *embedded emissions in accordance with the* rules of Annex III;
- (c) installation visits by the verifier shall be mandatory except where specific criteria for waiving the installation visit are met;
- (d) for deciding whether misstatements or non-conformities are material, the verifier shall use thresholds given by the implementing acts adopted in accordance with Article 8.

For parameters for which no such thresholds are defined, the verifier shall use expert judgement *as to* whether misstatements *or non-conformities*, individually or when aggregated with other misstatements *or non-conformities*, justified by their size and nature, have to be considered material **■** .

#### 2. CONTENT OF A VERIFICATION REPORT

*The verifier shall prepare* a verification report *establishing the embedded emissions of the goods and specifying all issues relevant to the work carried out and including*, at least, the following information:

- (a) identification of the *installations* where the goods were produced;
- (b) contact information of the operator of the *installations* where the goods were produced;
- (c) the applicable reporting period;
- (d) name and contact information of the verifier;
- (e) **■** accreditation *number of the verifier, and* name of the *accreditation body*;

- (f) the date of the *installations visits*, if applicable, or the reasons for not carrying out an installation visit;
- (g) quantities of each type of declared goods produced in the reporting period;
- (h) *quantification of* direct emissions of the installation during the reporting period;
- (i) a description on how the installation's emissions are attributed to different types of goods;
- (j) quantitative information on the goods, emissions and energy flows not associated with those goods;
- (k) in case of complex goods:
- i. quantities of *each* input materials (precursors) used;
  - ii. the specific embedded emissions *associated with each of the input materials (precursors) used*;
  - iii. *if* actual emissions are used: the identification of the *installations* where the input material (*precursor*) has been produced and the actual emissions from the production *of* that material.
- (l) the *verifier's statement confirming that he or she finds with reasonable assurance that the report is free of material misstatements and of material non-conformities regarding the calculation rules of Annex III*;
- (m) information on material misstatements found and **■** corrected, **■** ;
- (n) information of *material* non-conformities with calculation rules set out in Annex III *found and corrected*.
-

**T.C. Ticaret Bakanlığı**  
**Uluslararası Anlaşmalar ve AB Genel Müdürlüğü**  
**AB Tek Pazar ve Yeşil Mutabakatı Dairesi**

**Yeşil Mutabakat Sanayi Planı**

Avrupa'nın net sıfır emisyon hedefini sağlamak, sanayi rekabet gücünü artırmak ve iklim nötr hedefine hızlı geçişi desteklemek için 1 Şubat 2023 tarihinde Avrupa Komisyonu Başkanı Ursula von der Leyen tarafından "Yeşil Mutabakat Sanayi Planı" açıklanmış olup, Sanayi Planı'nın amacının,

- AB'nin yeşil teknolojilerin gelişimi için lider konumunun korunması ve yatırım için cazibesinin muhafaza edilmesi,
- 2030 yılına kadar yılda yaklaşık, günümüz seviyesinin üç katından fazla olan 600 Milyar Euro değerine ulaşacağı öngörülen yenilenebilir enerji ve fosil yakıtsız hidrojen kaynağının kullanılması gibi temiz enerji pazarına yönelik yatırımların yapılarak, uluslararası iş birliklerinin geliştirilmesi
- Yeşil dönüşüm projelerine 2032 yılına kadar 330 Milyar Euro kaynak ayıracak olan ABD ve 140 milyar kaynak ayıracak olan Japonya başta olmak üzere, Hindistan, Birleşik Krallık, Kanada gibi ülkelerin yeşil dönüşüme yönelik teknolojik gelişmeler için ayırdıkları kaynağın gerisinde kalınmaması,
- Yeşil teknoloji ve sanayii için beş yıllık plan dahilinde 260 Milyar Euro kaynak ile AB'den GSYİH oranına göre iki kat devlet yardımı veren Çin gibi ülkelerin rekabeti bozucu sübvansiyonların engellenmesine yönelik adımlar ile Tek Pazar'ın korunması için ticari savunma araçlarından yararlanmaya devam edilmesi,
- Yeşil dönüşüm sürecinde rekabetçiliğin sağlanmasına yönelik politikaların ve finansman mekanizmalarının şekillendirilmesi olduğu görülmektedir.
- Ayrıca, sanayi sektörünün yeşil dönüşümü ve rekabet edebilirliğini ve ekonominin dönüşümüne yönelik yatırımları sağlamak için, Avrupa Komisyonu tarafından daha öncesinde açıklanan Batarya ve Batarya Atıkları Tüzük Taslağı ve Sürdürülebilir Ürünler için Eko Tasarım Tüzüğü Taslağı gibi düzenlemeleriyle birlikte net bir politika çerçevesi sağlanmış olup; planın, Avrupa Yeşil Mutabakatı, AB Sanayi stratejisi ve özellikle Döngüsel Ekonomi Eylem Planı kapsamında sanayiyi dönüştürmeye yönelik sürdürülen çabaları tamamlaması öngörülmektedir.

Yeşil Mutabakat Sanayi Planı, öngörülebilir, uyumlu ve basitleştirilmiş bir idari çerçeve, finansmana erişimin kolaylaştırılması, becerilerin geliştirilmesi ve dayanıklı tedarik zincirleri için açık ticaret başlıkları olmak üzere dört temel eksenden oluşmaktadır.

**Öngörülebilir, Uyumlu ve Basitleştirilmiş Bir İdari Çerçeve** oluşturulması başlığında,

2023 bahar aylarında Avrupa Komisyonu tarafından reform ihtiyacına dayanan endüstriyel rekabet edebilirlik için üç temel öneri sunacağı belirtilmiş olup bu kapsamda,

- **Net Sıfır Sanayi Yasası** hazırlanarak, bataryalar, yel değirmenleri, ısı pompaları, güneş enerjisi, elektrolizörler, karbon yakalama ve depolama teknolojileri gibi iklim nötr olma hedeflerini karşılamak için önemli olan ürünlerin üretim kapasiteleri için basitleştirilmiş

- düzenleyici çerçeve sağlanması, 2030 yılına kadar sanayi kapasitesine yönelik hedefler belirlenerek, öncelikli alanlarda izin prosedürlerinin öngörülebilir olacak şekilde kolaylaştırılması amaçlanmaktadır. Kesin ürün kapsamı henüz tanımlanmamakla birlikte, teknoloji tarafsızlığını bir başlangıç noktası olarak alan yasanın; farklı net-sıfır ürün türlerinin üretim yatırımlarının stratejik önemine ve bu yatırımların belirlenen ihtiyaçlarına dayanması öngörülmektedir.
- AB'nin üçüncü ülkelerden gelen tedariklere olan bağımlılığını azaltmak ve döngüsel ekonomideki kaliteli işleri ve büyümeyi artırmak için kaynak bulmayı çeşitlendirme ve hammaddelerin geri dönüştürülmesi de dahil olmak üzere, AB net-sıfır teknolojilerinin üretiminin ilgili kritik ham maddelere erişim sağlandığında mümkün olabileceği belirtilmiştir. Bu kapsamda Avrupa Komisyonu tarafından daha önce temel prensipleri açıklanmış **“Kritik Hammadde Yasası”** teklif edilerek yüksek çevre standartlarının temininin ve kritik hammaddelere ilişkin arz güvenliğinin; sürekli olarak araştırma ve yenilik sağlanarak, uluslararası katılım güçlendirilerek; kritik hammaddenin çıkarma, işleme ve geri dönüşümünü kolaylaştırılarak sağlanması amaçlanmaktadır.
- 2023 yılı Mart ayında Avrupa Komisyonu'nun, **Elektrik Piyasası Tasarımı Reform** önerisi ile uzun dönemli fiyat kontratları yapılarak, enerji fiyatlarındaki istikrarsızlığı ele almak ve tüketicilerin daha uygun maliyetli yenilenebilir enerji kaynaklarından yararlanmasını sağlanması, **yeni Batarya mevzuatı ve Sürdürülebilir Ürünler için Eko-Tasarım** ile mevzuat taslaklarının net-sıfır teknolojilerine destek olunması hedeflenmektedir.
- Ulaştırma için Trans- Avrupa Ağında (TEN-T) şarj ve yeniden dolun altyapısının geliştirilmesi, Avrupa hidrojen temelinin kurulması, Enerji için Trans-Avrupa Ağında (TEN-E) yüksek miktarda yenilenebilir enerji taşıyabilecek akıllı elektrik şebekelerinin güçlendirilmesi ve Alternatif Yakıt Altyapısı Tüzüğü'nün kabul edilmesi amaçlanmaktadır.
- Ayrıca, kamu alımlarında uyumlaştırılmış sürdürülebilirlik ve döngüsellik gerekliliklerinin kullanılmasının, net sıfır ürün ve çözümler için daha öngörülebilir bir talep yaratılmasına yardımcı olabileceği ve Komisyon'un mevcut ve gelecekteki eko tasarım çalışma planları kapsamında net sıfır teknolojiler üzerinde çalışmaya yüksek öncelik vereceği vurgulanmaktadır.

#### **Finansmana Erişimin Kolaylaştırılması** başlığında,

- Kamu finansmanının, Avrupa Sermaye Piyasaları Birliği'nde daha fazla ilerlemeyle bağlantılı olarak, yeşil geçiş için gerekli olan çok yüksek miktarlarda özel finansmanın kilidini açabilecektir. Bu çerçevede, Komisyon tarafından, standart geri ödeme programları aracılığıyla enerji verimliliği ve yenilenebilir projelerin tasarımını ve geri ödemelerini hızlandırmak da dahil olmak üzere, Net-Sıfır Sanayi Planını desteklemek için **“Uyum Yatırımlarının”** hızla harekete geçirilmesi amaçlanmaktadır.
- 2022 yılında Komisyon tarafından yenilenebilir enerji ve sanayinin karbonsuzlaştırılması projelerine yönelik olarak 51 Milyar Euro tutarında devlet yardımının onaylandığı belirtilerek, **“Rekabet Stratejisinin”** bir parçası olarak, **2025 yılı sonuna kadar üye ülkeler tarafından verilecek devlet yardımları prosedürlerinin kolaylaştırılması** ve esnekliklerin genişletilmesi ile bu tutarın artırılması amaçlanmaktadır. Bu kapsamda AB'nin devlet yardımları alanında diğer ülkelere ve

- küresel finansman kapasitelerine göre eksikliklerinin giderilmesine yönelik politika belirlenmesi ve Tek Pazar içinde eşit şartların tesis edilmesi amaçlanmaktadır.
- Buna göre Komisyon'un, Üye Devletleri güncellenmiş bir "**Geçici Devlet Yardımı Krizi ve Geçiş Çerçevesi**" konusunda dahil edeceği ve **Yeşil Mutabakat Genel Blok Muafiyet Kuralları** güncelleyerek yeşil yatırımlara yönelik yardım için bildirim düzeylerini yükselteceği, Ortak Avrupa Çıkarı için Önemli Projeler (IPCEI) projelerine esneklik sağlanmasının amaçlandığı belirtilmiştir. Avrupa Komisyonu tarafından 1 Şubat 2023 tarihinde açıklanan Geçici Kriz ve Geçiş Çerçevesi ile, Tek Pazar'ın bütünlüğü ve Tek Pazar içerisinde eşit rekabet koşulları korunurken, yenilenebilir enerji yatırımlarının artırılması, endüstrinin karbondan arındırılması ve net sıfır emisyonla geçiş için gerekli ekipmanların üretiminin desteklenmesinin amaçlanmaktadır.
- Komisyonun ayrıca temiz teknolojinin geliştirilmesini, üretimini ve kullanımını finanse etmek için halihazırda mevcut olan AB fonlarının kullanılmasını kolaylaştıracağı; yatırım ihtiyaçlarına göre, net sıfır teknoloji üretimine yönelik yatırımları teşvik etmek için AB düzeyinde ortak finansmanı artırmanın amaçlandığı ve kısa vadede REPowerEU, InvestEU ve İnovasyon Fonu gibi fonlara odaklanarak hızlı ve odaklanmış destek sunmak için Üye Devletlerle çözüm üzerinde işbirliği yapacağı belirtilmektedir..
- Şimdiye kadar yeşil dönüşüm projeleri için NextGenerationEU fonundan 250 Milyar Euro, Horizon Europe fonundan 40 Milyar Euro, Uyum Politikaları fonundan 100 Milyar Euro sağlandığı, projelerin finansman imkanının genişletilmesi amacıyla önümüzdeki dönemde RePowerEU inisiyatifi ile Toparlanma ve Güçlenme Fonundan (*Recovery and Resilience Fund- RRF*) 20 milyar Euro hibe ile 225 Milyar Euro ön-finansman imkanı sağlanacağı, Brexit Uyum Reserinde bulunan 5,4 Milyar Euro'nun da kullanılabileceği, InvestEU tarafından sağlanan 372 Milyar Euro'luk kaynak ile batarya teknolojileri, kritik hammaddelerin geri dönüşümü, elektrikli araç bataryaları, hidrojen sevki teknolojileri, bio yakıt ve çelik üretimine ilişkin ileri üretim teknolojilerinin destekleneceği, İnovasyon Fonu'ndan ise 40 Milyar Euro'luk kaynak sağlanacağı, ilk etapta 2023 yılının sonbahar aylarında 800 Milyon Euro bütçelik yenilenebilir hidrojen üretimine yönelik bir ihaleye çıkılması öngörülmektedir.
- 2023 yazından önce Çok Yıllı Mali Çerçeve gözden geçirildiğinde, Avrupa Komisyonu orta vadeli yatırım taleplerine yapısal bir yanıt olarak bir "**Avrupa Egemenlik Fonu**" önermeyi planladığı belirtilmektedir.
- Sermaye Piyasası Birliği kurularak AB'li şirketler için finansman ve yatırım fırsatlarının iyileştirilmesi amacıyla bireysel sermaye piyasalarının boyutunu ve bunların sınır ötesi entegrasyonunun artırılması ve yatırım ihtiyaçlarının banka finansmanına ihtiyaç duymadan karşılanması hedeflenmektedir.

#### **Becerilerin Geliştirilmesi** başlığında,

- Komisyon'un, yaş ve cinsiyet konularını dikkate alarak yeşil geçiş için çok önemli alanlarda iş ve becerilere yönelik arz ve talebi izlemek için hedefler ve göstergeler oluşturmak üzere Üye Devletler ile iş birliği yaptığı,
- Geleceğe hazır becerileri sağlamak için gerekli olan üniversiteler için Avrupa stratejisini uygulamak amacıyla Komisyon'un, Üye Devletler ve yüksek öğretim sektörü ile iş birliği yapmakta olduğu



- Özellikle bilim, teknoloji, mühendislik ve matematik alanlarında (STEM) uluslararası öğrencilerin ve araştırmacılarının Avrupa'ya gelmeleri için yeni yollar açılmaya çalışılacağı,
- İstihdamın %35 ila %40'ının yeşil dönüşüm sürecinden etkilenmesinin beklendiği dikkate alınarak, iyi ücretli ve kaliteli işler için gereken becerilerin geliştirilmesinin bir öncelik olması, net-sıfır hedeflerine ulaşmak için stratejik endüstrilerde beceri kazandırma programları başlatmak için "**Net-Sıfır Endüstri Akademileri**" ve sürdürülebilir inşaat için bir akademi kurulmasının önerildiği,
- Komisyonun, üçüncü ülke vatandaşlarının niteliklerinin tanınmasına ilişkin bir teklif sunacağı ve öncelikli sektörlerde AB işgücü piyasalarına erişimlerini kolaylaştırmak için bir AB Yetenek havuzunun oluşturulmasının incelendiği,
- Ayrıca beceri geliştirme için kamu ve özel finansmanın uyumlu hale getirilmesinin desteklenerek; Genel Blok Muafiyet Yönetmeliği kapsamında KOBİ'lerin eğitime yönelik devlet yardımı üst sınırının artırılması ve şirketlerin eğitim harcamalarının şirket hesaplarında bir maliyet yerine bir yatırım olarak ele alınması gibi eğitim ve araştırma önlemlerine daha fazla yatırım yapılmasını teşvik edileceği belirtilmiştir.
- Bu çerçevede gerçekleştirilecek projeler için çeşitli AB fonlarından 75,1 Milyar Euro bütçe ayrılması hedeflenmektedir.

#### **Dayanıklı tedarik zincirleri için açık ticaret başlığında,**

- Küresel iş birliği ve yeşil dönüşüm için ticaretin desteklenmesi amacıyla AB'nin ikili Anlaşmaları ve Dünya Ticaret Örgütü'nün (DTÖ) çalışmalarına bağlı kalmayı sürdüreceği,
- Avrupa Komisyonun etkin uygulama ve yürütme yoluyla halihazırda mevcut olanlardan en iyi şekilde yararlanırken, AB'nin Serbest Ticaret Anlaşmaları ağını güçlendirmeye devam edeceği, bu kapsamda Avustralya ile müzakerelerin 2023 yazına kadar sonuçlandırılması, Hindistan ve Endonezya ile önemli ilerleme kaydedilmesi, Şili, Meksika ve Yeni Zelanda ile yapılan anlaşmaların onaylanması ve Mercosur ile onay sürecinde ilerleme kaydedilmesinin hedeflendiği ve ortaklarla geleneksel ticaret anlaşmalarının ötesinde başka iş birliği biçimleri geliştirmeye devam ederek temiz geçişi destekleyeceği,
- Komisyonun Enflasyon Düşürme Yasasına ilişkin AB-ABD Görev Gücü gibi yeşil geçişi desteklemek için ortaklarla iş birliği yapmaya devam edeceği,
- Rekabetçi ve çeşitlendirilmiş bir endüstriyel temel aracılığıyla küresel tedarik güvenliğini sağlamak için hammadde tüketicileri ile kaynak açısından zengin ülkeleri bir araya getirecek bir "**Kritik Hammaddeler Kulübü**" kurmak için Komisyonun, benzer düşünen ortaklarla hammadde sektöründeki ortaklıkların araştırılmasının amaçlandığı,
- Komisyonun, küresel temiz enerji geçişini sağlamada AB endüstriyel yeteneklerinin rolünü desteklemek ve temiz teknolojilerin küresel ölçekte benimsenmesini teşvik etmek için Temiz Teknoloji/Net-Sıfır Endüstriyel Ortaklıklarını araştırmasının hedeflendiği,

- Ayrıca, Komisyon'un ticari savunma araçlarını kullanarak, AB dışı ülkelerin sübvansiyonlarının temiz teknoloji sektörü de dahil olmak üzere Tek Pazar'daki rekabeti bozmamasının sağlanarak; Tek Pazarın, temiz teknoloji sektöründeki haksız ticaretten de korunacağı, Yabancı Sübvansiyonlar Tüzüğü, Uluslararası Kamu Alımları Enstrümanı gibi araçlarla AB'nin rekabetçiliğinin korunmasına yönelik tedbirlerin alınacağı vurgulanmaktadır.

Anılan Plana ilişkin AB basınında, kısa dönemde yeni fon imkanının sunulmamasının eleştiri konusu olarak gündeme geldiği görülmekte ve bu kapsamda AB'nin kazanamayacağı bir sübvansiyon yarışına girdiği; sadece 20 milyar Avroluk yeni bir finansman imkanının eklendiği; pandemi ve Ukrayna'daki savaşın ardından üç yıldır gevşetilmiş olan acil devlet yardımı kurallarına daha fazla esnekler sağlanmasının bloğun en zengin ülkelerine daha fazla kredi imkanı sağlayarak Tek Pazar'ın adil işleyişine zarar verebileceği, sübvansiyon yarışlarına yol açabileceği ve bunun sonucunda bölgesel kalkınmanın zayıflayabileceği vurgulanmaktadır.



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**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN  
PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN  
ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE  
REGIONS**

**A Green Deal Industrial Plan for the Net-Zero Age**

## 1. INTRODUCTION: A GREEN DEAL INDUSTRIAL PLAN FOR THE NET-ZERO AGE

**This decade will be decisive for the world to limit the rise in global temperatures and to take the necessary steps towards net-zero.** The stakes are high and the challenges complex – but there is a once in a generation opportunity to use this imperative to act as a catalyst to invest in the clean energy economy and industry of the net-zero age.

**The European Green Deal sets in stone our green transition ambitions, including our climate targets towards net-zero by 2050.** The Fit for 55 package provides a concrete plan to put the European economy firmly on track, with the REPowerEU Plan accelerating the move away from fossil fuels. Alongside the Circular Economy Action Plan, this sets the framework for the transformation of the EU's industry for the net-zero age.

**In the next few years, the economic shape of the net-zero age will be firmly set.** New markets will have been created, breakthrough clean technologies will have been innovated, developed, and brought to market, and our energy systems transformed. Therefore, those who invest first and faster today will secure their place in this new economy and create jobs for a newly skilled workforce, rejuvenate industrial manufacturing bases, lower costs for people and businesses and be in a prime position to support other parts of the world to decarbonise their own economies.

The scale of the opportunity for European industry puts this need in sharp focus. The International Energy Agency estimates that the global market for key mass-manufactured clean energy technologies will be worth around USD 650 billion a year by 2030 (approximately EUR 600 billion) – more than three times today's level. The related energy manufacturing jobs could more than double in the same time period<sup>1</sup>. The net-zero industry globally is growing strongly, to the extent of demand sometimes outpacing supply.

**The EU is well equipped to step up and seize the net-zero opportunity.** Europe's economic model, built on its Single Market, has brought rising prosperity over the past decades. Europe is a leading player on innovation, venture capital and deployment of net-zero technologies and sustainable products. It has a strong starting point – an industry with a track record as a proven trend-setter and standard-setter, with growing levels of digitalisation. Manufacturing high quality and innovative products that are used across the world. It has world-leading scientists and researchers, consistently developing breakthrough solutions or refining existing technologies.

The EU has also shown how the **green transition can strengthen competitiveness.** The phase-out of Russian fossil fuels has accelerated a new industrial revolution aimed at ending the age of fossil fuels. A wide range of new net-zero technologies is being developed and deployed across our economy: in transport, buildings, manufacturing, energy, and even creating entirely new markets. Our net-zero ecosystem was worth over EUR 100 billion in 2021, doubling in value since 2020<sup>2</sup>.

**The EU has also proven its inbuilt resilience to continued change and challenge.** Industry is being challenged on everything from high inflation, labour shortages, demographic change, post-COVID supply chains disruptions, rising interest rates, spikes in energy costs and input prices. This is paired with strong, but not always fair, competition on the fragmented global market. Despite these headwinds, so far, the EU economy has held up remarkably and political unity is paying off. Gas and oil prices have now fallen below pre-war levels. Inflation across

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<sup>1</sup> Energy Technology Perspectives (2023), International Energy Agency.

<sup>2</sup> [The rise of European Clean Tech – Report](https://dealroom.co/uploaded/2022/04/Dealroom-Talis-Climate-Tech-Europe-2022.pdf), <https://dealroom.co/uploaded/2022/04/Dealroom-Talis-Climate-Tech-Europe-2022.pdf>

Europe dropped for the second consecutive month, and markedly, in December 2022. Unemployment is lower than before the 2008 financial crisis and labour markets continue to perform well.

**The EU is committed and convinced that it can speed up net-zero industrial transformation at home. On top of needs and opportunities such as the roll-out of renewables, the transformation of energy and transport infrastructures such as grids, the massive switch to fossil-free hydrogen as a storage medium, fuel and feedstock, the EU can also be a leading player in the net-zero industries of the future. We can also create new forms of clean tech cooperation with our partners abroad.** By working together with partners on developing net-zero technologies, diversifying and strengthening supply chains, and supporting others on their green transition, the race to net-zero can be good for the planet and for business.

**And the encouraging signs are that Europe's partners are also beginning to seize the net-zero industrial opportunities.** The United States' Inflation Reduction Act will mobilise over USD 360 billion by 2032 (approximately EUR 330 billion). Japan's green transformation plans aim to raise up to JPY 20 trillion (approximately EUR 140 billion) – through 'green transition' bonds. India has put forward the Production Linked Incentive Scheme to enhance competitiveness in sectors like solar photovoltaics and batteries. The UK, Canada and many others have also put forward their investment plans in clean tech technologies. Europe is committed to working with all of those partners for the greater good.

**However, trade and competition on net-zero industry must be fair.** Some of our partners' initiatives can have undesired collateral effects on our own net-zero industries. More fundamentally, China's subsidies have long been twice as high as those in the EU, relative to GDP<sup>3</sup>. This has distorted the market and ensured that the manufacturing of a number of net-zero technologies is currently dominated by China, which has made subsidising clean tech innovation and manufacturing a priority of its Five-Year Plan. China's pipeline of announced investments in clean technologies exceeds USD 280 billion (approximately EUR 260 billion). Europe and its partners must do more to combat the effect of such unfair subsidies and prolonged market distortion. Where the public footprint in private markets is outsized, distortions create an unlevelled playing field and unfair competition emerges. The Commission will continue to make full use of trade defence instruments (TDI) to defend the Single Market, and rules-based international trade, from unfair trade practices like dumping and distortive subsidies.

Going forward, competitiveness challenges remain. The era of cheap fossil fuels is now over, calling for an acceleration of the green transition to ensure industry has access to abundant and affordable clean energy. The EU needs to build on its greatest strength, the Single Market, and avoid fragmentation. Therefore the Commission is committed to come forward with a comprehensive European approach, based on common strategic priorities and an investment needs assessment. This will require to explore various options to secure a common EU response, including EU funding. More also needs to be done to facilitate businesses' access to private funding, notably by completing the Capitals Market Union. Greater competitiveness must go hand in hand with well-paid quality jobs and investment in human capital.

**The net-zero industrial age will be framed by the decisions taken today. The EU must be ready to lead the way, with speed, ambition and a shared sense of direction. A common response, anchored in EU policies and instruments, will be far more effective than the addition of 27 national approaches.**

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<sup>3</sup> [Chinesische Subventionspolitik: Effekte auf deutsche Unternehmen \(vbw-bayern.de\)](https://www.vbw-bayern.de/Chinesische-Subventionspolitik-Effekte-auf-deutsche-Unternehmen)

## 2. A GREEN DEAL INDUSTRIAL PLAN – STAYING AHEAD OF THE GAME

**Against this backdrop of seismic opportunity and challenge, Europe needs a new Green Deal Industrial Plan. The Plan will form part of the European Green Deal, which set us on the path to climate neutrality, and will enable Europe to lead the way globally in the net-zero industrial age.**

The starting point for the Plan is the need to massively increase the technological development, manufacturing production and installation of net-zero products and energy supply in the next decade, and the value added of an EU-wide approach to meet this challenge together. This is made more difficult by the global competition for raw materials and skilled personnel. The Plan aims to address this dichotomy by focusing on the areas where Europe can make the biggest difference. It also seeks to avert the risk of replacing our reliance on Russian fossil fuels with other strategic dependencies that could impede our access to key technologies and inputs for the green transition, through a mix of diversification and own development and production. The Plan will complement ongoing efforts to transform industry under the European Green Deal and the EU Industrial strategy, in particular the Circular Economy Action Plan. Modernising and decarbonising energy-intensive industries also remains a top priority, as does ensuring job transitions and quality job creation through training and education.

This is why a strong joint European response to boost the net-zero industry is needed. The Green Deal Industrial Plan will play to our strengths: openness, innovation, inclusiveness and sustainability. With the right conditions, the net-zero industry in Europe will play a vital role in transforming the continent into a green economy - delivering prosperity in the EU and leading globally both on technology and on combatting climate change and environmental pollution.

This outline for a new **Green Deal Industrial Plan is based on four pillars:**

- **a predictable and simplified regulatory environment;**
- **faster access to sufficient funding;**
- **skills; and**
- **open trade for resilient supply chains.**

### 2.1. A predictable, coherent and simplified regulatory environment

The EU has traditionally relied on a strong regulatory environment for setting conducive conditions for business, for providing quality employment for our workforce and a high level of protection for our environment. These three dimensions can be mutually reinforcing, if regulation is balanced and smartly designed, which requires continuous attention. This is why this year the Commission has introduced an additional 'competitiveness check' on all new regulation to ensure that all potential competitiveness impacts are addressed and unnecessary burdens avoided. A simple, predictable and clear regulatory environment is key to promoting investment. Action at EU level prevents fragmentation between 27 regulatory approaches.

This spring, the Commission will table three key proposals for industrial competitiveness, rooted in the need for reform:

**First, as part of the Green Deal Industrial Plan, the Commission proposes to put forward a Net-Zero Industry Act to underpin industrial manufacturing of key technologies in the EU. The act would provide a simplified regulatory framework for production capacity of products that are key to meet our climate neutrality goals, such as batteries, windmills, heat**

pumps, solar, electrolysers, carbon capture and storage technologies<sup>4</sup>. The Net-Zero Industry Act would in particular:

- Following sector-specific analysis, identify **goals for industrial capacity by 2030** where necessary to ensure that strategic dependencies do not put the green transition at risk. It will consider the whole supply and value chain across borders, so that supplies do not become a bottleneck;
- Reduce the length and enhance the predictability of **permitting** processes by defining specific time limits for different stages of permitting, and significantly reinforce Member States' administrative capacity, e.g. by introducing a '**one-stop-shop**' - a sole point of contact for investors and industrial stakeholders during the entire administrative process.

As European value chains are highly integrated and interconnected in the Single Market (see Figure 1), the Net-Zero Act would define simple and operational criteria for identifying net-zero supply chain projects of strategic interest. This should ensure that all Member States continue benefiting from innovative industrial deployment by promoting **strategic projects, including multi-country projects, accessible to both developed and less developed regions**. These projects could benefit from accelerated permitting procedures and attract private as well as EU and national public funding<sup>5</sup>.

European standards can help to promote the roll-out of clean and digital technologies. In particular for new industrial value chains, anticipating and developing high-quality European standards could provide EU industries an important competitive advantage – including at global level. They could demonstrate 'marketability' and attract investment in firms that adhere to them. European standards would allow EU industries to scale up their technologies across the Single Market – this is very important for start-ups and SMEs.

- The Act could enable the Commission to request **European standards** promoting the fast roll-out of key technologies<sup>6</sup>.

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<sup>4</sup> The precise product scope remains to be defined. Taking technology neutrality as a starting point, the Act would build on an assessment of strategic importance and identified needs of manufacturing investment in different types of net-zero products. Those technologies may go beyond the strategic net-zero technologies that will be eligible for the specific type of support available under the State aid Temporary Crisis and Transition Framework.

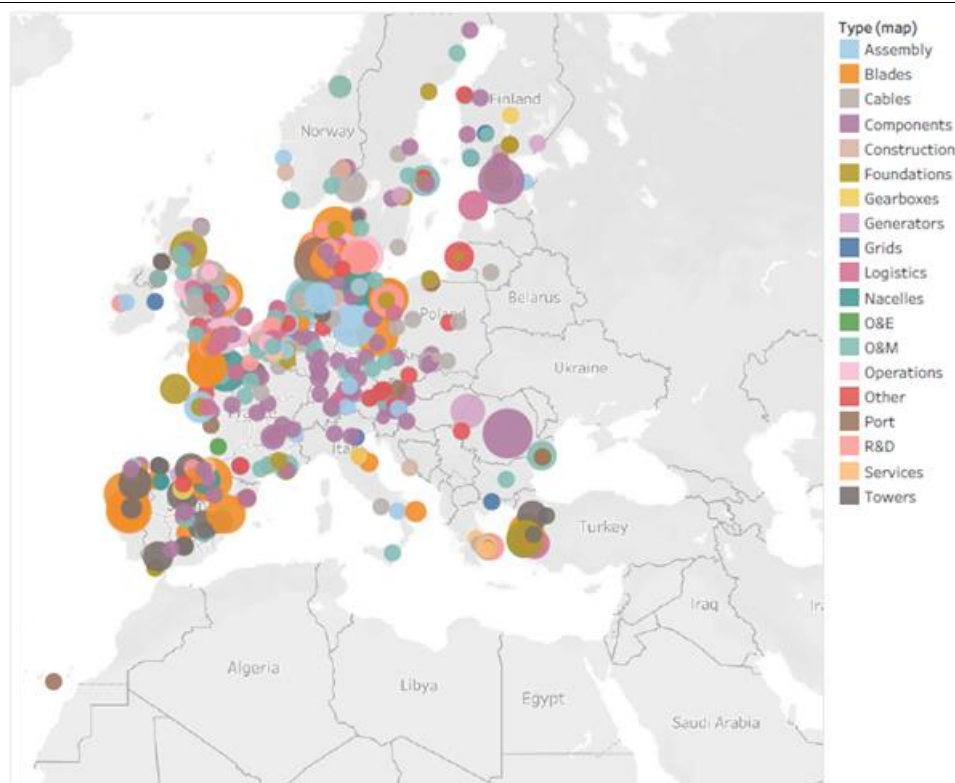
<sup>5</sup> National public funding constituting state aid shall be in line with the TCTF.

<sup>6</sup> For example, the recycling of raw materials for solar panels or the installation of wind turbines could be facilitated by complying with European standards developed in these fields. It is already possible to develop a standard for the collection, transport and treatment of batteries to enable fast-tracking and simplified procedure for recycling installations complying with that standard.

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**Figure 1 Wind supply chains and jobs are highly integrated in the EU and Europe**

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Source: Wind Europe. The map presents EU wind manufacturing facilities across its segments.

The circles size is proportional to the number of jobs per facility (small circles: 10-50 employees; big circles: over 1000 employees).

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To foster innovation, the Commission will assess the possibility to establish **regulatory sandboxes** to allow for rapid experimentation and disruptive innovation to test new technologies.<sup>7</sup> Such regulatory sandboxes may also pave the way for simplification of the process of authorisation/certification for placing products in the market. These procedures can now be lengthy, slowing the introduction of innovative products and representing a significant burden especially for SMEs and start-ups. The Commission will continue funding testing facilities as one important step to bring technology to market.

To further stimulate the demand for net-zero products at large scale, various forms of **public action such as public procurement, concessions and incentives to business and end users to use net-zero technologies based on sustainability and circularity can play a big role.** Public authorities in the EU spend around 14% of GDP (around EUR 2 trillion per year) on the purchase of services, works and products. Procurement policy and other public support can play a role in maximising public-interest returns on public money while fostering security of supply through diversification of sources. To this end, the Commission would define sustainability characteristics and possible requirements for net-zero products, using available legal tools and existing EU standards. It would promote a more predictable and uniform demand for net-zero solutions and allow public authorities to set out ambitious sustainability requirements.

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<sup>7</sup> The Commission intends to publish a guidance showcasing the relevant use cases of regulatory sandboxes, test beds and living labs in order to support policymakers and innovators in their approach to experimentation in the EU by summer 2023.



Second, the Commission will propose a **Critical Raw Materials Act**. The manufacturing of EU net-zero technologies is only possible if access to relevant critical raw materials is ensured, including by diversifying sourcing and by recycling raw materials to lower the EU's dependence on highly concentrated supplies from third countries and boost quality jobs and growth in the circular economy. This act will aim to provide the EU security of supply, including by strengthening international engagement, facilitating extraction (where relevant), processing and recycling, while ensuring high environmental standards and continuing research and innovation, e.g. to reduce material use and to develop bio-based substitutes. There have already been tangible successes: today, some EU companies are using lignin stemming from wood in batteries, instead of graphite.

Third, **energy**. Russia's weaponisation of energy was a major wake-up call for security of supply and tackling dependencies. The competitiveness of many companies has been severely weakened by high energy prices and the disruptions in several supply chains. This has particularly been the case of the energy-intensive industries<sup>8</sup>. To address the high costs of energy and replace costly fossil fuels with cheaper renewables, important steps have been taken in line with the REPowerEU plan. For example, in 2022 wind and solar renewable energy production capacity in the EU exceeded 400 GW, an increase of over 25% compared to 2020.<sup>9</sup> We have set up the EU energy platform to pool gas demand, coordinate infrastructure use and negotiate with international partners, made savings, filled storages and put in place a cap on short-term markets. Several infrastructure projects and interconnections have been completed in both electricity and gas. **In March, the Commission will present a reform of the electricity market design**, for which a public consultation is currently ongoing. Long-term price contracts could play an important role to enable all electricity users to benefit from more predictable and lower costs of renewable power. As set out in the REPowerEU Plan, boosting industrial competitiveness will require both transforming industrial processes, massive speed-up and scale-up of renewable energy and stronger efforts for energy efficiency and reduction of energy demand as well as reskilling and upskilling of the workforce.

The new **EU regulatory framework for batteries** is a crucial element in the EU's transition to a climate neutral economy, by securing competitive and resilient value chains for battery production, reuse and recycling in the EU. Going forward, **the Ecodesign for Sustainable Products Regulation**<sup>10</sup> will apply to a broader range of products and further expand the range of sustainability requirements, in which EU industry excels. The Commission will give a high priority to work on net-zero technologies under the existing and future Ecodesign working plans.

Furthermore, it is key that consumers can make their choices based on transparent and reliable information on the sustainability, durability and carbon footprint of the products. Market transparency is a tool facilitating uptake of technologically and environmentally superior net-zero products. For example, the Commission will propose a **unified energy label** for heat pumps to allow users to compare different technologies<sup>11</sup> by the end of this year. The Commission proposal on empowering consumers for the green transition also works in this direction.

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<sup>8</sup> Such as producers of polysilicon used in solar PV or of battery cells manufacturers.

<sup>9</sup> Commission estimates based on data from International Renewable Energy Agency (Irena) and industrial stakeholders.

<sup>10</sup> The EU's ecodesign policy sets harmonized rules for energy-related products on aspects such as energy consumption, water consumption, emission levels and material efficiency, stimulating both demand and supply for more sustainable products.

<sup>11</sup> For heat pumps thanks to the energy labelling database EPREL <https://eprel.ec.europa.eu/screen/home>

Finally, **infrastructure** is key to the conducive net-zero business environment that the Green Deal Industrial Plan seeks to establish. Full coverage of the TEN-T networks with charging and refueling infrastructure and development and strengthening of a European hydrogen backbone and the extension and strengthening of smart electricity grids to accommodate large quantities of renewables on the TEN-E network require large investment<sup>12</sup>. but also a strengthening of our regulatory framework. Now is the time to map the infrastructure needed with a European mindset. The Commission urges co-legislators to adopt the Alternative Fuels Infrastructure Regulation (AFIR) as soon as possible, to help create a future-proof charging and refueling network. To develop and strengthen hydrogen and electricity infrastructure the Commission will further examine the resource needs of the Connecting Europe Facility and will use the full scope of the revised TEN-E Regulation to accelerate the planning, financing and deployment of crucial (cross-border) infrastructure. Notably the development and implementation of the cross-border infrastructure needs to be accelerated in the coming years. The Commission will also consider further ways, including possible legislative action, to make sure that Member States deliver cross-border energy infrastructure, so that there are no undue delays to the roll-out of the strategic infrastructure.

The Green Deal Industrial Plan will succeed in boosting competitiveness if all actors (authorities, social partners, investors, consumers) join forces towards the same objectives. The recently established Clean Tech Europe Platform, the Clean Energy Industrial Forum, together with other relevant stakeholders, would support the plan, coordinate action to meet the investment and manufacturing targets and further promote matchmaking opportunities. The Commission will continue to engage closely with the European Parliament to make the Green Deal Industrial Plan a success.

## 2.2. Speeding up access to finance

Global net-zero industry has experienced strong growth, with clean energy investments up by 10% in 2022 year on year. The EU's net-zero industry is competitive in some sectors, such as wind energy or heat pumps, even in our relatively high-energy-price environment, while it has limited footholds in other segments, such as solar PV panels. Moreover, ensuring a timely transition to a net-zero economy requires faster development of those sectors. **The EU industry's market shares are under strong pressure, to a great extent because subsidies abroad are unleveling the playing field. This calls for access to funding for net-zero industry to be extended and accelerated.** This is the second pillar of the Green Deal Industrial Plan.

Targeted public funding must also play its role. Already today, the EU and national funding play an important role in fostering net-zero innovation, manufacturing, roll-out and related strengthening of grids and infrastructure. Private funding will be key to unlock investments for the net-zero industry.

Under NextGenerationEU, the 27 national recovery and resilience plans funded by the Recovery and Resilience Facility (RRF) already make available EUR 250 billion for green measures, including investments supporting the decarbonisation of industry. Horizon Europe dedicates EUR 40 billion to Green Deal research and innovation, also in partnership with industry.

**Cohesion policies** make around EUR 100 billion available for green transition, including the Just Transition Fund. The Commission will further facilitate the swift mobilisation of Cohesion

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<sup>12</sup> Regarding the investment needs, see Staff Working Document REPowerEU <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022SC0230&from=EN>

investments in support of the Net-Zero Industrial Plan, including by speeding up the design and reimbursements of energy efficiency and renewable projects through standard reimbursement schemes.

To date, these EU funding sources have largely benefitted research and innovation and deployment of renewable energy and related infrastructures, rather than targeting manufacturing capacity in the sector.

Funding for net-zero industrial value chains can be stepped up in scale and speed through targeted state aid. But to avoid fragmenting the Single Market due to varying levels of national support – and varying capacities to grant such support – there also needs to be adequate EU-level funding to facilitate the flourishing of such industrial value chains across the Union as a whole.

### 2.2.1 National funding

**Starting with state aid: EU competition policy** provides tools to support the development and deployment of key cutting edge technologies strategic for the green and digital transitions, while preserving the integrity of the Single Market and respecting EU's international obligations. In 2022 alone, the Commission approved aid schemes with an overall budget of EUR 51 billion to deploy new renewable energy production capacity and decarbonise industrial production across the Union. As early as March 2022, following Russia's aggression against Ukraine, the Commission adopted a Temporary Crisis Framework providing a tool for Member States to remedy the negative economic effects created by the war and facilitate structural adjustments to better respond to the resulting economic situation. The Framework has been amended twice and already includes specific provisions on simplified support for renewable energy, decarbonisation technologies and energy efficiency measures.

**The Commission now intends to allow further flexibility for the Member States to grant aid** limited to carefully defined areas and on a temporary basis. The Commission will consult Member States on a proposal to adapt State aid rules on a temporary basis, until end 2025, to further speed up and simplify, with easier calculations, simpler procedures, and accelerated approvals. These changes will also assist Member States in delivering on specific projects under National Recovery Plans which fall within their scope.

The Commission intends to **adapt state aid rules along five axes**, subject to conditions necessary to limit distortions to the Single Market, to avoid greater regional disparities and to ensure compliance with international obligations. Four of these will be implemented through the proposed amendment of the Temporary Crisis Framework (TCF), which will be transformed into the **Temporary Crisis and Transition Framework (TCTF)** for State aid:

1. Simplification of aid for renewable energy deployments;

The TCF has already simplified aid for renewable deployments. The draft TCTF would go further, by:

- extending the provisions to **all renewable technologies** (under RED II) and to renewable hydrogen and biofuel **storage**;
- eliminating the need for open tenders for **less mature technologies** (for which tenders may work less well); and
- **extending deadlines to complete projects**.

2. Simplification of aid for decarbonising industrial processes ;

Decarbonisation aid to industry had already been simplified by the TCF. The TCTF would go further with a number of provisions, such as:

- allowing aid by reference to **standard percentages of investment costs**, based on case experience – for hydrogen use, energy efficiency and electrification.
  - More **flexible aid ceilings** per beneficiary in schemes fulfilling specific conditions.
3. Enhanced investment support schemes for production of strategic net-zero technologies, including the possibility of granting higher aid to match the aid received for similar projects by competitors located outside of the EU while ensuring the proportionality of such aid;
  4. More targeted aid for major new production projects in strategic net-zero value chains, taking into account global funding gaps.

The draft TCTF would aim to ensure a level playing field with other jurisdictions and within the internal market, targeted to those sectors where a third-country delocalisation risk has been identified, and proportionate in terms of aid amounts. The TCTF would enable Member States to put in place schemes **to support new investments in production facilities in defined, strategic net-zero sectors, including via tax benefits**. The permitted aid amount would be modulated with higher aid intensities and aid amount ceilings if the investment is located in assisted areas, in order to contribute to the goal of convergence between Member States and regions. Appropriate conditions would be required to verify the concrete risks of diversion of the investment outside the EEA and that there is no risk of relocation within the EEA. Member States can **align their national fiscal incentives** along a common scheme that the Commission stands ready to prepare, and thereby create **a common scheme** offering greater transparency and predictability to businesses across the EU.

In addition, Member States would also be able to match the aid offered by a third country, for individual initial investments in the same targeted sectors relevant to net-zero technology leadership, subject to conditions, such as being part of a multi-country cooperation, with material positive spillovers across Member States and with particular consideration for assisted areas. Such aid should address substantiated risks of certain investments being diverted in favour of third countries outside the EEA, and it should not facilitate relocation of production activities between Member States. The aid would be limited to what is necessary for the project to take place in the EEA.

The Commission will remain committed to fast procedures under the TCTF, as is already the case for aid approved under the Temporary Crisis Framework, where median approval time has been 19 days.

5. Significantly increasing notification thresholds for state aid in these fields

The Commission will adapt the State Aid rules on this fifth axis by further revising the **Green Deal General Block Exemption Regulation**. In addition to provisions linked to IPCEI projects (see below), this would give Member States more flexibility:

- to support measures in key sectors, such as hydrogen, carbon capture and storage, zero-emission vehicles and energy performance of buildings, by further increasing thresholds triggering notification to the Commission.
- enlarge the scope of investment aid for recharging and refuelling infrastructures,
- further facilitating training aid for skills.

Today, the EU has five **Important Projects of Common European Interest (IPCEI)**, large development projects undertaken by several Member States to fund new technologies in strategic areas, with strong positive spillovers across borders and for innovation, workers and customers: one in microelectronics, two in batteries and two in hydrogen, with more projects in

preparation<sup>13</sup>. Public support of EUR 18 billion for approved IPCEIs is expected to unlock an additional EUR 36 billion in private investments, a leveraging factor of 2.

**To accelerate the roll-out of new projects, the approval of IPCEI related projects will be further streamlined and simplified;**

- A code of good practices for a transparent, inclusive and faster design of IPCEIs will allow for a streamlined assessment and is to be endorsed by the Member States and the Commission this spring.
- The Commission is also preparing to **speed up the implementation of smaller, IPCEI-related, innovative projects**, in particular by small and medium-sized enterprises, through higher notification thresholds and greater aid intensities under the General Block Exemption Regulation.

### 2.2.2 EU funding

To support the transition reaching the EU's net-zero objectives and REPowerEU targets with diversified sources and secure supplies, the EU will have to continue to rely on a competitive net-zero industry. Greater investments are needed by 2030 in the manufacturing of net-zero technologies given the European ambitious EU targets and international competition..

Important disparities exist within the EU in terms of support by Member States. For example, while in 2020, 0.57% of EU GDP was allocated to support renewable energy sources, one country allocated almost 1% of its GDP and ten others spent less than half the EU average.<sup>14</sup>

**To avoid fragmenting the Single Market due to varying levels of national support, facilitate the green transition across the Union as a whole, avoid exacerbating regional disparities and address the gap between funding currently available and the financing needs for scaling up the net zero industry, we must also step up EU funding.** Accompanying the Green Deal Industry Plan, the EU budget will continue to contribute to targeted and swift funding of the EU's net-zero industry. REPowerEU is our dedicated vehicle, and is boosted by other EU funds.

The Commission will continue to provide support to Member States to design, develop and implement reforms as well as help strengthen the administrative capacity of Member States to ensure effective implementation of the funding.

### **REPowerEU**

Thanks to the agreement reached end of 2022, the EU support to the transition will now be increased with the additional funding brought to the RRF by the REPowerEU initiative: additional RRF grants (EUR 20 billion) will be available to Member States to promote the greening of industry, to support EU net-zero industry projects, and to assist energy-intensive industries in the face of high energy prices. Member States will also be able to dedicate grants of the Brexit Adjustment Reserve (EUR 5.4 billion) to these objectives. Furthermore, they will be able to use the remaining RRF loans (EUR 225 billion) with substantial pre-financing for these investments and reforms<sup>15</sup>.

In order to assist the Member States in implementing the RRF and its REPowerEU component,

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<sup>13</sup> Such as additional batteries and hydrogen, or possibly solar or heat pumps.

<sup>14</sup> [Study on energy subsidies and other government interventions in the European Union - Publications Office of the EU \(europa.eu\)](#). Public support measures include direct transfers to business and consumers; tax expenditures (e.g. tax credits, VAT reduction); income or price support; Research & Development (R&D) support.

<sup>15</sup> This comes on top of the existing transfer possibilities of 5% from the cohesion policy funds (up to EUR 17.9 billion).

the Commission published today the **Guidance on Recovery and Resilience Plans**. The Guidance provides flexibility to adjust the plans to the current context, and to prepare REPowerEU chapters. It acknowledges issues arising from the disruption of supply chains, energy prices and inflation and offers to Member States effective solutions to maintain the ambition of the initial plans. The Commission strongly encourages Member States to include in their modified RRP simple and effective measures to provide immediate support to companies and boost their competitiveness:

- (i) **one-stop-shops** for the permitting of renewables and net-zero projects to accelerate, digitalize and streamline the processes for obtaining the necessary approvals and permits for building and operating net-zero-tech projects; coupled with dedicated strengthening of administrative capacity to eliminate administrative bottlenecks in permitting;(ii) **tax breaks** or other forms of support for green net-zero technologies investments undertaken by businesses, taking the form of either a tax credit, an accelerated depreciation or a subsidy linked to the acquisition or improvement of green investment assets;
- (iii) and investing in equipping the workforce with **skills** necessary for this industrial transition.

The European Investment Bank (EIB) Group will support the achievement of all the objectives of the [RePowerEU Plan](#) with additional loans and equity<sup>16</sup>. The Commission and the EIB Group will continue working together to explore how the EIB Group could step up its clean tech and other activities contributing to the Green Deal.

### **InvestEU Programme**

The InvestEU Programme is well placed to boost net-zero investments in the EU. InvestEU is the Union’s instrument for catalysing private investments in EU priority areas. Through the EIB, the EIF, the EBRD and 14 other implementing partners, the EU supports public and private investments in net-zero tech and industrial innovation. Examples of projects that can be supported are RDI of battery technologies, critical raw materials recycling, demonstration plants for manufacturing materials in the supply chain of electric vehicle batteries, hydrogen propulsion technologies, innovative advanced biofuels plants, advanced manufacturing technology equipment in steel processing. InvestEU can mobilise over EUR 372 billion of financing – public, but mainly private - through the backing of the EU budget guarantee of EUR 26.2 billion.

To date the Commission has signed InvestEU guarantee agreements for a total value of EUR 21 billion. On the back of these guarantee agreements, the EIF has already signed InvestEU guarantee agreements with 48 financial intermediaries from 19 Member States for EUR 2.3 billion lending to European SMEs and small mid-caps, and 54 agreements with funds from 14 Member States for equity investments worth EUR 1.9 billion<sup>17</sup>.

Examples of InvestEU-supported investments by the EIB and the EIF in the area of clean technology:

- A EUR 37 million investment by the EIB in a p-CAM (precursor cathode active material)

<sup>16</sup> EIB boosts clean energy financing in support of REPowerEU Plan. Press release available at:

<https://www.eib.org/en/press/all/2022-450-eib-boosts-clean-energy-financing-in-support-of-repowereu-plan>

<sup>17</sup> In addition, by December 2022 the EIB had signed agreements for 29 operations in 9 Member States for EUR 2.3 billion under InvestEU for financing projects in research and innovation, as well as in sustainable infrastructure and also for social investment and skills.

commercial demonstration production plant. P-Cam is used in the supply chain of electric vehicle batteries (high tech lithium-ion battery cells).

- A EUR 315 million loan by the EIB to a joint venture for technology and product developments of hydrogen automotive propulsion technologies, and active safety systems.
- A EUR 32 million investment by the EIB in support of R&D projects of a manufacturing company in electrification technologies for agricultural machinery and power transmission systems for tractors and off-road vehicles.
- A EUR 101 million guarantee by the EIF to a fund in support of early-stage technology companies (venture capital), high growth potential industrial companies; and decarbonisation sector companies (renewable energy projects and sustainability companies).
- A EUR 125 million loan to a greenfield production facility for cathode materials. The cathode materials will be supplied to battery manufacturers of high-tech lithium-ion batteries that are primarily used in electric vehicles.

**To ensure a timely delivery on the objectives of the Green Deal Industrial Plan, InvestEU procedures, should be simplified, and its products aligned to current needs.** Guarantee agreements and financial products need to be aligned with the revised state aid framework, while specific provisions of the GBER will significantly simplify state aid aspects for national compartments in InvestEU. The Commission will continue to work with the EIB, the EU's bank, and other partners to address in an efficient and timely way the financing needs of priority projects, such as IPCEIs.

**Funding through InvestEU is heavily frontloaded, as the biggest part of the funding comes from NextGenerationEU.** By end 2023 EUR 14.83 billion of the EU guarantee needs to be committed, leaving only EUR 11.37 billion for the period 2024-2027. At the same time, one can expect a significant increase in the demand for InvestEU support, given the revised eligibility conditions foreseen under the forthcoming Temporary Crisis and Transition Framework (TCTF). In particular, lifting current financing limitations on manufacturing projects in the areas covered by the TCTF would give rise to an increased demand and use of the EU guarantee by implementing partners. Therefore, the Commission is assessing how the overall funding for InvestEU could be increased, in particular for the period covering 2024 until 2027.

## **Innovation Fund**

The Innovation Fund supports the development and first-of-a-kind deployment of technologies and solutions that decarbonise energy intensive industry, boost renewable energy and energy storage (including batteries and hydrogen) and strengthen net-zero supply chains by supporting the manufacturing of critical components for batteries, wind and solar energy, electrolysers, fuel cells and heat pumps. Over the decade, an estimated EUR 40 billion will be available under the Innovation Fund.

The revised and upgraded Emission Trading System directive, as agreed at the end of 2022 as part of the Fit for 55 package, allows the Innovation Fund to subsidise, through competitive bidding, 100% of the funding gap for scaling up clean tech deployment and manufacturing. The Innovation Fund can thus act as a European one-stop-shop for such support, thereby reducing the difficulties for investors in stacking different revenue streams and funding sources.

**The Commission will launch in autumn 2023 a first auction – or competitive bid - for supporting the production of renewable hydrogen.** Winners of this auction will receive a fixed premium for each kg of renewable hydrogen produced over a period of 10 years. This will

have a similar impact as the production tax credit in the US IRA, the difference being that the premium, based on the received bids, will make EU support cost-effective, fast and administratively light. Terms and conditions for this first pilot auction, with an indicative budget of EUR 800 million, will be announced in June 2023. This pilot auction will be followed by further auctions or other forms of support for hydrogen production and use that contribute towards the REPowerEU hydrogen targets, thereby covering the EU domestic part of the Hydrogen Bank.

Further building on this experience, the Commission considers extending the new competitive bidding mechanism for scaling up manufacturing of components for solar and wind energy, batteries and electrolyzers, based on an analysis of EU net-zero sector needs, market sizing, and potential project pipeline. Also here, the Innovation Fund support would take the form of a production subsidy, instead of the 60% share of relevant cost that is the current practice of the Fund.

The EU emission trading system revenues will increase in the coming years. The greater part of this amount will constitute national revenues that Member States must use for climate action. The Commission encourages Member States to devote a share of those revenues to scaling up manufacturing of net-zero technologies. A share of the increased ETS revenues could also underpin the reinforcement of an efficient EU net-zero investment vehicle, such as the Innovation Fund.<sup>18</sup>

**Numerous funds are thus available, mostly geared to innovation and deployment.** The Commission is exploring avenues to achieve greater common financing at EU level to support investments in manufacturing of net-zero technologies, based on an ongoing investment needs assessment. Delivering on a comprehensive European approach will be essential in order to preserve the Single Market from fragmentation and realise maximum synergies and scale. The Commission will work with Member States in the short term, with a focus on the aforementioned instruments – REPowerEU, InvestEU and the Innovation Fund - on a bridging solution to provide fast and targeted support where it is most needed, in complement to the temporary and targeted state aid changes outlined above. While the operationalisation of these different elements may not come at the same time, we are committed to deliver on this comprehensive European approach.

For **the mid-term**, the Commission intends to give a structural answer to the investment needs, by proposing a **European Sovereignty Fund** in the context of the review of the Multi-annual financial framework before summer 2023. The aim is preserving a European edge on critical and emerging technologies relevant to the green and digital transitions, from computing-related technologies, including microelectronics, quantum computing, and artificial intelligence, to biotechnology and biomanufacturing and net-zero technologies. This structural instrument will build on experience of coordinated multi-country projects under the IPCEIs and seek to enhance all Member States' access to such projects, thereby safeguarding cohesion and the Single Market against risks caused by unequal availability of state aids. The Commission will work with Member States in the design of the Sovereignty Fund to ensure that it addresses their respective needs.

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<sup>18</sup> This is without compromising the overall ETS revenues available for the repayment of the NGEU debt



### 2.2.3 Private funding

**By far the greater part of the investments needed for the net-zero transition will have to come from private funding. Public funding can crowd-in private investments, but it will not be sufficient to close the investment-gap needs.** For successful net-zero transformation, we need vast amounts of private-sector financing in particular, financing raised through capital markets from a broad range of investors, including small retail investors as well as big institutional ones. **Well-functioning capital markets and the sustainable finance framework** are thus essential. The EU must ensure that its capital markets can support the necessary volume and variety of funding for EU companies, in particular in strategic industrial segments.

**The EU must intensify its efforts to create a fully developed Capital Markets Union (CMU).** The CMU aims at increasing the size of individual capital markets and their cross-border integration to improve financing and investment opportunities for individuals and companies, including those operating in the clean tech sector.

A deeper and truly integrated single market for capital would provide EU companies the means to finance themselves, to scale up and become less dependent on bank financing and to obtain financing to manage the green transition. Advancing the Capital Markets Union is thus an essential contribution to the Commission's political objectives of green and digital global competitiveness of European firms and the EU's open strategic autonomy.

Achieving a fully integrated EU capital market requires greater ambition and commitment from all key stakeholders in reaching **swift agreement on the Commission's legislative proposals implementing the 2020 CMU Action Plan.**

**The EU sustainable finance framework supports investors and businesses efforts to scale up their investments that would be aligned with the European Green Deal targets.** EU sustainable-finance policies will support the green transition by making private funding of green projects and companies easier to obtain and more attractive, as recalled in the Renewed Sustainable Finance Strategy<sup>19</sup>.

## 2.3. Enhancing Skills

**The green transition must be people-centred** and inclusive to ensure equitable and just outcomes, generating quality jobs and leaving no-one behind. The European economy counted 4.5 million green jobs in 2019<sup>20</sup> up from 3.2 million in 2000. The green transition will amplify demands for new skills at all levels, requiring a large-scale up-skilling and re-skilling of the workforce. The battery industry alone estimates it will need an extra 800 000 workers by 2025. In the next decade, there will be fierce competition for talents. The productivity of our industry, the prosperity of our society and our ability to meet the net-zero objectives will depend on our ability to retain and attract workers. **This is why the third pillar of the Green Deal Industrial Plan must focus on skills - green and digital, at all levels and for all people, with**

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<sup>19</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0390>

<sup>20</sup> Based on Eurostat definition of green jobs ('Employment in the environmental goods and services sector'), Eurostat 'Environmental economy - statistics on employment and growth', data, [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental\\_economy\\_%E2%80%93\\_statistics\\_on\\_employment\\_and\\_growth&id=583805#Development\\_of\\_key\\_indicators\\_for\\_the\\_environmental\\_economy](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_economy_%E2%80%93_statistics_on_employment_and_growth&id=583805#Development_of_key_indicators_for_the_environmental_economy).

## **inclusiveness of women<sup>21</sup> and youth<sup>22</sup> at the heart of the Plan.**

Demand for talent is acute. Labour shortages, as proxied by the vacancy rate,<sup>23</sup> have doubled in sectors considered key for the green transition<sup>24</sup> between 2015 and 2021 and green transition technical skills are in growing demand<sup>25</sup>. As it is estimated that between 35% and 40% of all jobs would contribute to the twin transition, technical - including digital - skills requirements and education levels in the green economy outpace the economy overall<sup>26</sup>. Overall labour productivity is higher in the green sectors, with for example **productivity in the clean energy sector about 20% higher than on average across the economy**, rendering green skills even more important for future prosperity.<sup>27</sup>

The EU is taking action to address skills related challenges posed by the twin green and digital transition through its overarching framework - the **European Skills Agenda**, which runs in synergy with the **European Education Area**<sup>28</sup>. The **European Pact for Skills**, which recently celebrated its second anniversary, supports 14 large-scale partnerships in European industrial ecosystems helping them to equip the workforce with the skills necessary for the transition towards a carbon-neutral and digital economy. The partnerships promote coordinated action by companies, workers, public authorities, social partners, education and training providers and employment services. Over 1,000 members have so far signed up, including large multinational companies, SMEs, local training providers, and chambers of commerce. Collectively, **they have pledged to help upskill and reskill 6 million people**. In addition, the Clean Energy Industrial Forum commits to stepping up efforts and investments in the development of skills.

The Digital Education Action Plan, the Digital Decade and the Structured Dialogue for Digital Education and Skills that took place in 2022 have prepared the ground for speeding up actions in reforming education systems and the provision of basic and advanced digital skills across the economy and at all ages. This provides a strong starting point to ensure that the society and businesses alike, can use digital skills for more precision and efficient use of natural resources, for a more positive impact on the environment.

The recent Communication on **harnessing talents in Europe's regions** supports policies to help acquire and develop the skills required for the green transition in all EU regions<sup>29</sup>.

**The European Year of Skills 2023 is a unique opportunity to develop the skills needed to thrive in a rapidly changing economy and to step up efforts.** It is time for the EU and its Member States to be bolder and more ambitious in bringing about step changes in the education and

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<sup>21</sup> Female employment rate was 69.5% in Q2 2022 compared to 80.2% for men and 74.9% on average. Employment rate of people aged between 60 to 64 was 48.2% compared to 74.9% on average for the age group 20-64.

<sup>22</sup> Whilst the unemployment rate decreased to a record-low 6,0% in November 2022, youth unemployment (under 25 years) stands at 2,5 times of general unemployment.

<sup>23</sup> Vacancy rate is the proportion of empty vacancies in the total number of vacancies and is considered as one of the best possible measures to indicate labour shortage in a sector.

<sup>24</sup> These sectors include the electricity, steam, gas and air conditionings, transportation, construction and Manufacturing sectors. Data for the Water supply, sewerage, waste management and remediation activities sector that is also regarded as key for the transition are unfortunately not available at the EU level.

<sup>25</sup> Based on the narrow Eurostat definition of green jobs ('Employment in the environmental goods and services sector'). Labour shortages, as proxied by the vacancy rate, have doubled in sectors considered key for the green transition between 2015 and 2021.

<sup>26</sup> ILO report 2019: Skills for a greener future: a global overview, available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_emp/documents/publication/wcms\\_732214.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_732214.pdf)

<sup>27</sup> JRC Clean Energy Technology Observatory (CETO): Overall Strategic Analysis of Clean Energy Technology–2022 Status Report: <https://publications.jrc.ec.europa.eu/repository/bitstream/JRC131001/2022.5375.pdf>

<sup>28</sup> COM (2022) 625

<sup>29</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions, Harnessing talent in Europe's regions, COM(2023)32 final.

skills agenda, and to implement opportunities presented by the EU framework<sup>30</sup>:

- The Commission is working with Member States to set targets and indicators to **monitor supply and demand** in skills and jobs **in the sectors relevant for the green transition**. A gender gap continues to prevail in the net-zero technologies sector. For example, women are under-represented in vocational and higher education in Science, Technology, Engineering, and Mathematics (STEM) sub-fields that are highly relevant for the energy sector.<sup>31</sup> In the renewables sector, women account only for one third of the workforce<sup>32</sup>, so there is a clear opportunity for harnessing female talent there.
- The Commission is working with Member States and the higher education sector to implement the **European strategy for universities**<sup>33</sup>, which plays a key role in ensuring future-proof skills. The EU provides substantial financial support for this purpose, including through the Erasmus+ European Universities initiative (EUR 1.1 billion).
- Furthermore, we need to attract, and retain top talent to Europe, especially in Science, technology, engineering, and mathematics (STEM). We need to open new pathways for international STEM students and researchers to come to Europe.
- A **large-scale skills partnership for onshore renewable energy** under the Pact for Skills will be established by February 2023. The partnership will identify commitments and targets and develop a vision of concrete upskilling and reskilling needs for the renewable energy sector in Europe.
- A **Heat Pumps skills partnership** will be established by the end of this year and efforts are under way to create a skills partnership on energy efficiency.
- Modelled on the European Battery Alliance Academy<sup>34</sup>, the Commission will propose to establish **Net-Zero Industry Academies** to roll out up-skilling and re-skilling programmes in strategic industries for the green transition, such as raw materials, hydrogen and solar technologies. The Commission will initiate an Academy to offer on- and offline trainings for sustainable construction with a focus on the use of biobased materials, circularity and digital technologies.

**Validation of skills**, alongside efforts to support the recognition of qualifications across Member States and from third countries, as well as labour mobility policies, can facilitate matching people's skills to employers' needs. People learn in multiple ways and in different contexts outside of formal education and training structures. In order to support this:

- As part of the EU's Skills Agenda, the Commission will **facilitate recognition of qualifications**. This could allow for a "fast track" to recognition and reduce administrative by supporting quick authentication of qualifications by employers and training providers.
- The Commission will further consider how to combine a '**Skills-first**' approach **recognizing actual skills with existing approaches based on qualifications, in the interests** of EU mobile citizens and third-country nationals.
- In particular, to attract talent from outside the EU, the Commission is examining a skills-

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<sup>30</sup> For example: micro-credentials, individual learning accounts, digital skills and education recommendations.

<sup>31</sup> This translates to lower share of patent applications with women inventors (only 20% in all patent classes in 2021 and just over 15% for climate change mitigation technologies), lower share of start-ups founded or co-founded by women (less than 15% in the EU in 2021), and lower amounts of capital invested into women-led companies (only 2% in all-female start-ups and 9% in mixed teams in the EU in 2021). Source: CETO: Overall Strategic Analysis of Clean Energy Technology in the European Union – 2022 Status Report

<sup>32</sup> 32% in 2019, according to the Clean Industry Energy Forum, Joint declaration on skills in the clean tech sector, [https://commission.europa.eu/system/files/2022-06/ceif\\_joint\\_statement\\_on\\_skills.pdf](https://commission.europa.eu/system/files/2022-06/ceif_joint_statement_on_skills.pdf)

<sup>33</sup> COM (2022) 16

<sup>34</sup> The European Battery Academy will train, reskill and upskill approximately 800 000 workers by 2025.

based approach to facilitate access of third country nationals to EU labour markets in priority sectors through the development of **an EU Talent Pool** and present a proposal on recognition of qualifications of third-country nationals.

More can be done to support people in acquiring new skills. The EU has robust policy frameworks to **financially support skills development**, with Council Recommendations supporting a number of skills reforms in the areas of individual learning accounts and micro-credentials, to quality and effective apprenticeships and vocational education and training. Making these policy reforms deliver concrete results in a coordinated fashion across Europe requires both **public and private funding to align, which could include:**

- The General Block Exemption Regulation ceiling for aid to SMEs for training will increase from EUR 2 million to EUR 3 million.
- Measures providing opportunities to skill workers as part of an IPCEI will be taken into account in assessing state aid compliance of such projects.<sup>35</sup>
- To stimulate increased investment in training in new net-zero technologies and production processes, the Commission will explore the treatment of training expenditure by companies as an investment rather than as an expense or operating cost.

EU funding is also available. The Multiannual Financial Framework 2021-2027 and NextGenerationEU support investments of around EUR 64.8 billion in skilling, re-skilling and up-skilling.<sup>36</sup> Out of those EUR 64.8 billion, cohesion policy, through the **European Social Fund + (ESF+)** is the main EU instrument to support investments in skills and is making EUR 5.8 billion available for green skills and green jobs. **European Regional Development Fund (ERDF)** complements ESF+ with investments in skills, education and training, including infrastructure. The **Just Transition Mechanism (JTM)** supports with EUR 3 billion training and skills development of workers to adapt to the green transition.

The **Recovery and Resilience Facility** is providing a significant financial support. 14 Member States are including measures for training on green skills and jobs in their national Recovery and Resilience Plans that, together, amount to around EUR 1.5 billion.

## 2.4. Trade and resilient supply chains

The EU welcomes initiatives conducted across the world on the road to climate neutrality and environmental sustainability. The goal of net zero can be best achieved if net-zero technologies incentives are underpinned by principles of fair competition and open trade. **The fourth pillar of the Green Deal Industrial Plan consists of global cooperation and making trade work for the clean transition.**

The EU draws competitive and political strength from being a trading powerhouse. The EU remains an attractive destination for global investment. We would have not achieved our resilience and overcome the challenges of the past years without the efficiencies that trade brings and the win-win partnerships we developed with third countries. At the same time, an increase in unfair and coercive practices have required us to develop new tools and enforce our

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<sup>35</sup> Point 18 of the Guidelines on IPCEIs: Communication from the Commission - Criteria for the analysis of the compatibility with the internal market of State aid to promote the execution of important projects of common European interest - OJ C 528, 30.12.2021, p. 10–18.

<sup>36</sup> European Social Fund +, Erasmus, Horizon Europe, European Regional Development Fund, Digital Europe Programme, Recovery and Resilience Facility and the Just Transition Fund.

rights, in order to maintain a level playing field<sup>37</sup>. Altogether, this reflects the EU's drive towards Open Strategic Autonomy.

**Trade openness is an essential element of our strategy** to maintain the EU's position as a leader in net-zero technologies. Trade policy keeps the Single Market connected to growth poles outside of our continent while securing access to the inputs critical for the green transition. On the one hand, open trade creates opportunities for our industry by opening new export markets and creating economies of scale. On the other hand, it provides access to raw materials, parts, components as well as services that our industry needs, given that two-thirds of our imports consists of intermediates.

The EU will work with its partners to promote stability in international trade and strengthen legal certainty for investors and companies by continuing to **support the World Trade Organization (WTO)**, including through its reform. The WTO has a role in supporting climate neutrality by providing a forum for deliberations on trade aspects of the green transition, by clarifying how to promote green investments in a manner that minimises trade distortions, as well as by reinforcing disciplines on subsidies that negatively impact both trade and the climate.

The Commission will also continue to advance the EU's network of **Free Trade Agreements**, while making the most of those already in place through effective implementation and enforcement. In particular, the Commission will work to conclude negotiations with Australia by summer 2023 and make significant progress with India and Indonesia, while exploring possibilities with other partners in the Indo-Pacific. The Commission will also put forward for ratification the agreements with Chile, Mexico and New Zealand and seek to make progress with Mercosur. The Commission will also aim to finalise its Economic Partnership Agreement with Kenya.

The Commission will support the clean transition by continuing to develop other forms of cooperation with partners, beyond more traditional trade agreements. The Trade and Technology Council with the US, and that under preparation with India, establish a new tool for cooperation. Through the work of the dedicated **EU-US Task Force on the Inflation Reduction Act**, the EU and the US are working towards pragmatic solutions to EU concerns, with a view to maintaining and reinforcing Transatlantic value chains and ensuring positive cooperation on the shared interest to achieve net-zero.

The EU has developed **Sustainable Investment Facilitation Agreements (SIFA)** in particular with partners in Africa, in order to make it easier to attract and expand investments while integrating environment and labour right commitments. Climate and energy is a key area for partnerships under **Global Gateway**, the EU's contribution to narrowing the global investment gap worldwide. Moreover, the EU will support developing countries in their efforts to adapt and comply with the EU's autonomous sustainability requirements. The EU will further develop its policy dialogue and concrete actions on research and innovation with the Union for the Mediterranean and the African Union to promote co-operation on renewable energies and green hydrogen<sup>38</sup>. The Commission proposes that investments in other key partnership areas such as digital or transport should be further aligned with the goal of net-zero. The Commission will continue to support sustainable investments in energy, transport and digital connectivity through the implementation of Economic and Investment Plans for the Western Balkans, the Eastern Partnership and the Southern Neighbourhood.

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<sup>37</sup> This requires, along other things, strengthening the EU's capacity to control and protect the EU border, which is a key objective of the upcoming Customs reform.

<sup>38</sup> The EU has launched under Horizon Europe a dedicated "Africa initiative" and a "Mediterranean Initiative", each with a total EU investment of around EUR 300 million.

A number of **new initiatives** will also be developed:

- We will work with like-minded partners to establish a **Critical Raw Materials Club** to deliver on a secure, sustainable and affordable global supply of raw materials essential to our green and digital transition with a competitive and diversified industrial base. Building on existing international initiatives, the Club will develop principles to bring together raw material 'consumers' and resource-rich countries and foster co-operation to allow resource-rich developing countries to move up the value chain.
- We will develop **Clean Tech/Net-zero Industrial Partnerships**<sup>39</sup> promoting the adoption of net-zero technologies globally and supporting the role of EU industrial capabilities in paving the way for the global clean energy transition.
- We will develop an **export credits strategy** including an **EU export credit facility** and **enhanced coordination of EU financial tools**. These can foster coherence with EU policies such as the European Green Deal or Global Gateway which pledged to invest in infrastructures aligned with pathways towards net-zero emissions.

**Openness only thrives where fairness survives.** Countries around the world have developed new initiatives to support the green transition. Where the public footprint in private markets is outsized, distortions create an unlevelled playing field and unfair competition emerges. A particular concern exists in respect of non-market economies. The EU wants to lead a robust response to address these trends.

In the first place, the Commission will continue to make full use of **trade defence instruments** (TDI) to defend the Single Market from unfair trade practices like dumping and distortive subsidies, with a focus on sectors that are key for achieving the EU's net-zero goal. We will also take further steps to ensure that our measures are not circumvented.

As green incentives proliferate around the world, the Commission will ensure that foreign subsidies do not undermine the competitiveness of the European industry unfairly. The **Regulation on Foreign Subsidies** entered into force on 12 January 2023 and provides an additional tool to investigate subsidies granted by third countries, by considering their specific impact in the internal market. The EU will also work with partners to identify and address distortive subsidies or unfair trading practices relating to IP theft or forced technology transfer in non-market economies, such as China.

The Commission will also promote reciprocity for access to public procurement markets. The Commission stands ready to deploy the **International Procurement Instrument** for the first time in 2023, in order to make the case for the EU companies to have equal access to procurement markets in third countries.

Finally, at the time of rising geopolitical tensions, the EU and its Member States should act together to defend their interests. The **EU framework for screening of foreign direct investment** enables effective coordination to safeguard key European assets and protect collective security. We are reviewing the functioning of the mechanism and assessing how its effectiveness can be further improved without jeopardizing our openness to FDI. At the same time, we will coordinate with allies, including in the work programme on economic security put forward by Japan, which holds the Presidency of the G7. The EU's **Anti-Coercion Instrument** will, once adopted, provide proper tools to rapidly respond to economic intimidation.

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<sup>39</sup> As developed by the Coalition of trade ministers for climate:  
[https://ec.europa.eu/commission/presscorner/detail/en/IP\\_23\\_248](https://ec.europa.eu/commission/presscorner/detail/en/IP_23_248)

### 3. CONCLUSIONS

**The EU remains an attractive destination for sustainable investments.** The European Single Market over the last 30 years has delivered very significant economic benefits, raising annual EU GDP by 8-9% on average.<sup>40</sup> The European business model is based on openness, the European social model provides education, social protection of workers, as well as health and environmental protection. We offer a business-friendly environment (e.g. quality of infrastructure, rule of law). Together with fair competition and an unparalleled regulatory framework geared towards the twin digital and green transitions, this is helping to provide the necessary predictability for investors.

**The Green Deal Industrial Plan aims to simplify, accelerate and align incentives to preserve the competitiveness and attractiveness of the EU as an investment location for the net-zero industry. Together, the EU and its Member States can send a strong signal to business, while also accelerating the twin transitions.**

In the short term, and especially facing unfair competition against the background of high energy prices, temporary and targeted additional measures are warranted to support European industry. The regulatory environment has to be adapted for a new reality. It should be simpler and faster to better serve the objectives of the EU towards a sustainable net zero economy and society.

This Communication is a further step in the implementation of the Versailles Agenda<sup>41</sup>. It presents the Commission's response to the short-term challenges European industry is facing. The Commission will also heed the European Council's call to present before its March meeting a broader strategy to boost long-term competitiveness in the Single Market, as it celebrates its 30<sup>th</sup> anniversary. The Commission also calls on Member States for agreement on the Economic Governance Review.

The Commission stands ready to support industry and society in its transition towards sustainability, promoting investments in new technologies and providing funding where possible and necessary. Investments in a skilled population require training and education to be a crucial part of our future. Because we live in an interconnected world and because the green transition is a reality beyond the EU's borders, the Commission will keep engaging and working with our trade partners, in an open but assertive approach.

**The Commission calls on leaders, governments, lawmakers and social partners to support the implementation of this plan and is ready to translate it into concrete proposals based on the ongoing needs assessment before the March European Council.**

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<sup>40</sup> Discussion Paper 094: [Quantifying the Economic Effects of the Single Market in a Structural Macromodel \(europa.eu\)](#), Jan in't Veld, 2019.

<sup>41</sup> Informal meeting of the Heads of State or Government, Versailles Declaration, 11 March 2022.

### **Avrupa Kimya Endüstrisi Geçiş Yol Haritası**

Avrupa Komisyonu, 2020 yılında Sürdürülebilirlik için Kimyasallar Stratejisini kabul etmiş olup bahis konusu Strateji, toksik madde içermeyen malzeme döngülerinin ve temiz geri dönüşümün teşvik edilmesi de dahil olmak üzere Avrupa Kimya Endüstrisi Geçiş Yol Haritasına dayanak oluşturmaktadır.

Bu kapsamda, Avrupa Komisyonu tarafından, 27 Ocak 2023 tarihinde kimya endüstrisine yönelik bir geçiş yol haritası yayımlanmıştır. Çeşitli başlıklar altında tanımlanan eylemlerin uygulanmasıyla AB kimya sektörünün, Avrupa Yeşil Mutabakatına (AYM) uygun olarak, yeşil ve dijital dönüşümünü tamamlaması; kendi dayanıklılığını, sürdürülebilirliğini ve döngüsellikliğini geliştirmesi amaçlanmaktadır. Yol haritasının ilk aşamasının 2023 ilkbaharında başlatılacağı ve bu süreçte belirli konuları ele almak üzere çalışma gruplarının kurulabileceği; üstlenilen eylemlerin envanterini çıkarmak için de yıllık bir paydaş toplantısı düzenlenebileceği belirtilmektedir.

Avrupa Komisyonu ve paydaşlar tarafından kimya endüstrisinin ikiz dönüşümünü sağlayabilmek amacıyla belirlenen 8 ana başlık, bir takvime<sup>1</sup> göre sıralanmış olup; yenilik için işbirliği, temiz enerji kaynağı ve hammadde çeşitlendirmeye dayalı “**eylem odaklı**” bileşen; ikiz dönüşüme katkı olarak teknolojiyle ilgili biyokütle, elektrifikasyon, atık, karbon yakalama kullanma ve depolama gibi çeşitli konuları ele alan “**teknoloji**” bileşeni ve kimya endüstrisindeki gelişmeleri etkileyen başlıca Ar-Ge girişimleri dahil olmak üzere mevcut mevzuatı toplayan “**düzenleyici**” olmak üzere üç bileşenden oluşan bir yol haritası oluşturulmuştur.

Avrupa kimya endüstrisinin, her başlık altında belirlenen eylemlerin uygulanmasıyla, AYM’na uygun olarak ikiz dönüşümünü hızlandırması, sürdürülebilirliğini ve döngüsellikliğini geliştirmesi öngörülmekte olup, Geçiş Yol Haritası, Avrupa’daki AB yasama gündeminin tüm parçalarını bir araya getirmekte ve döngüsellik, dijitalleşme, iklim nötrlüğü ve daha güvenli/sürdürülebilir kimyasallar olmak üzere dört temel hedefi içermektedir.

Bu çerçevede, “Avrupa Kimya Endüstrisi Geçiş Yol Haritası” 8 ana başlıkta özetle aşağıdaki hususları ele almaktadır:

- **Sürdürülebilir Rekabet Gücü**- Hızla yükselen enerji ve hammadde fiyatları, son yıllarda endüstrinin küresel rekabet gücünde düşüş ve belirli faaliyetlerin AB dışına kaydırılmasının, AB'nin tüm ekonomisinde dalgalanma etkileriyle kimyasal değer zincirlerini de etkileyeceği ve AB'de üretilen mallar için gerekli olan üretim sürecinde aynı çevre ve güvenlik standartlarını karşılamayan bazı ithal ürünlerin AB iç pazarına girmeye devam etmesinin eşit bir küresel oyun alanı sağlamayı gerektirdiğine atıfla, kimya endüstrisinin rekabetçiliğini güçlendirebilmek için, uluslararası rekabet edebilirliği geliştirmek gerektiği ve bu bağlamda sürdürülebilir ürünler için pazarın teşvik edilmesi; mevcut uluslararası ortaklıklardan en iyi şekilde yararlanılması ve kaynak verimliliğinin artırılması gibi hedeflerle tedarik zinciri güvenlik açıklarını azaltmak; ürün tasarımı ve yeniden tasarım gibi hedeflerle kimyasalların ve malzemelerin güvenliğini ve



sürdürülebilirliğini geliştirmeye devam etmek; KOBİ'lerin yenilikçiliğini ve büyümesini sürdürmek ve yeni sinerjileri teşvik etmek gibi hedefler belirlenmiştir.

- **Yatırımlar ve Finansman-** Güvenli ve sürdürülebilir alternatiflerin geliştirilmesi de dahil olmak üzere iklim nötr, daha güvenli, sıfır kirlilik ve döngüsel bir kimya endüstrisine geçişin, büyük Ar-Ge yatırımları gerektireceği; üye devletlerin şu anda güncellemede olduğu ulusal enerji ve iklim planlarının hem yatırımcı güvenini hem de yatırımların öngörülebilirliğini artırmada önemli bir role sahip olduğu belirtilmektedir. Bu kapsamda, yeşil yatırımlar için finansman ve finansmana erişim doğrultusunda hedefler belirlenmiştir.
- **AR-GE, Teknikler Ve Teknolojik Çözümlere Destek-** Güvenlik ve sürdürülebilirlik yaklaşımlarının teşvik edilmesi ve endüstriyel teknoloji yol haritalarının geliştirilmesinin yoluyla yeni tekniklerin ve teknik çözümlerin daha iyi kavramsallaştırılması, iş birliği ve ortaklıkların teşvik edilmesi, destekler yoluyla yeni teknik ve teknolojik çözümlerin geliştirilmesi ve bu yeni teknik ve teknolojik çözümlerin uygulanması gibi hedefler yer almaktadır.
- **Düzenleme ve Kamu Yönetimi (Mevzuat)-** Daha etkili ve öngörülebilir dikey ve yatay olarak uyumlu mevzuat ve bunların etkili ve verimli uygulamasıyla ilgili olarak, mevcut ve gelecekteki mevzuatın, ikiz dönüşümün ilerlemesini engelleyen yeni yasama tekliflerinin takvimlerinin öngörülebilir olmaması; AB mevzuatı ile ulusal mevzuat arasındaki uyum ve tutarlılık eksikliği (dikey tutarlılık) ve tüm ekonomik/endüstriyel sektörlerde veya tüm değer zincirlerinde yasal uyumlaştırma eksikliği (yatay tutarlılık) gibi bazı önemli engelleri içerebileceği belirtilmekte ve bunu önlemeye yönelik eylemleri içermektedir. Daha etkili ve öngörülebilir mevzuat kapsamında, her kimyasal için hangi AB mevzuatının geçerli olduğunu belirten; şirketlerin ve özellikle KOBİ'lerin kimyasalların AB'de nasıl düzenlendiğini ve yasal yükümlülüklerinin neler olduğunu öğrenmelerini sağlayan AB Kimyasallar Mevzuatı Bulucu (EUCLEF) arama motorunun düzenli olarak güncellenmesi; sektörel yol haritalarının oluşturulması; "geri dönüştürülmüş içerik" (recycled content) ve "atık durumunun sona ermesi" (end-of-waste) gibi son AB mevzuatları ve politika belgeleri tarafından getirilen yeni kavramların tanımlanması gibi eylemler yer almaktadır.
- **Enerji ve Hammaddeye Erişim-** Enerji ve ham madde kaynaklarının tedariki için uzun vadeli ihtiyaçları öngörebilmek amacıyla, enerji fiyatlarındaki artışların etkilerinin değerlendirilmesi, gelecekte alternatif enerji ve hammadde ihtiyacının tahmin edilmesi, jeopolitik faktörleri dikkate alan temiz enerji ve stratejik hammadde tedariki için bir strateji geliştirilmesi gibi eylemler yer almaktadır. Ayrıca, ekonomik olarak uygun temiz enerji alımının desteklenmesi; biyokütle, atık ve CO<sub>2</sub> gibi alternatif hammaddelerin geliştirilmesi, yeni ve sürdürülebilir hammadde kaynaklarının belirlenmesi ve geliştirmesi; üretim süreçlerinin iyileştirilmesi için endüstriyel simbiyozun teşvik edilmesi gibi önlemler de bu başlık altında yer almaktadır.
- **Altyapı -**Kimya endüstrisinin enerji ve ham maddeye ve özellikle elektrik, hidrojen, atık, CO<sub>2</sub> ve biyokütleyle erişimini güvence altına almak için gerekli altyapısının inşa edilmesi veya ölçeğinin büyütülmesi gerekliliği belirtilmektedir. Büyük ölçekli elektrik ve hidrojen altyapısının gelişimini iyileştirmek için ülkeler arası serbest enerji akışının sağlanması ve AB düzeyinde ayrı hidrojen altyapısının geliştirilmesi; geri dönüşüm tesisleri ve biyo-rafinerilerin iyileştirilmesi yoluyla yeni ve sürdürülebilir üretim

tesislerinin geliştirilmesi ve hammaddelerin ve kimyasalların sürdürülebilir ulaşım fırsatlarının artırılması gibi hedefler yer almaktadır. Bunun yanı sıra, endüstrinin yüksek hızlı ve güvenilir dijital altyapıya ihtiyaç duyduğu ve bu bağlamda kimyasal üretimde yeni ve mevcut teknolojilerin geliştirilmesini ve uygulanmasının desteklenmesine yönelik eylemler belirlenmiştir. Ayrıca malzemelerin geri dönüşümü ve yeniden kullanımı için altyapı geliştirmek için organik ve inorganik atık toplama, ayırma ve değer zincirlerine yatırım yapmak gerekeceği; atıkların düzenli depolama, yakma ve ihracatından kaçınmak için yerel ve bölgesel mevzuatın güncellenmesi gerekliliği de yol haritasında belirtilmektedir.

- **Beceriler-** Kimya endüstrisinin yeniden beceri kazanması ve ilave beceriler edinmesini desteklemek için sürdürülebilir odaklı beceriler geliştirilmesi amacıyla yeşil ve sürdürülebilir kimya, kimyasallar yönetmeliği ve güvenlik eğitimi de dahil olmak üzere sektöre özel eğitimler oluşturulması; kimya alanında eğitim programlarına sürdürülebilir kimya, yeşil kimya gibi ilkeler üzerine dersler eklenerek endüstri ihtiyaçlarına uygun bir şekilde eğitim verilmesi gibi eylemler yer almaktadır.
- **Sosyal Boyut-** Çalışanlar ve tüketiciler üzerindeki olumsuz etkilerinden kaçınmak için bölgesel uyum ve işçilerin güvenliği gibi ve buna ek olarak toplumsal cinsiyet eşitliğinin geliştirilmesine yönelik eylemler belirlenmiştir.

Bahis konusu Kimya Endüstrisi Geçiş Yol Haritası'nın içerdiği başlıklar değerlendirildiğinde AYM ile uyumlu olacak şekilde hammaddeden mesleki beceri eğitimlerine, finansmandan sosyal etkilere kadar döngüsel ekonominin gereği olan tüm alanların birlikte ele alındığı görülmektedir. Bu itibarla, daha önceden REACH/CLP gibi teknik mevzuat ile yalnızca ürüne ait teknik gerekleri içerecek şekilde düzenlenen AB kimyasallar mevzuatının, yeşil ve ikiz dönüşümün sektörün tüm paydaşlarına olası etkilerini pazara giriş koşullarına ekleyeceği bir yapıya dönüşeceği görülmektedir.



European  
Commission



# Transition Pathway for the Chemical Industry

**EUROPEAN COMMISSION**

Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs  
Directorate F — Ecosystems I: Chemicals, Food, Retail  
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## LEGAL NOTICE

This publication by the European Commission's Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs summarises the discussions with European chemical sector stakeholders on the twin transition of the chemical industry. The content of this document, however, does not necessarily represent the position or endorsement of all stakeholder groups nor the position of individual Member States or the European Commission. This document is without prejudice to Commission's future initiatives in the field of chemicals. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of the information contained in this document.

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## EXECUTIVE SUMMARY

The 2020 industrial strategy<sup>1</sup> included a list of actions to support the green and digital (twin) transition of EU industry. However, the COVID-19 pandemic affected the speed and scale of this twin transition. To address this disruption, in the **updated 2021 industrial strategy, the Commission proposed a series of transition pathways** to be developed jointly with EU Member States, industry and other stakeholders. These pathways identify the actions needed to achieve the twin transition, giving a better understanding of the scale, benefits and conditions required. A transition that will also strengthen resilience of the industry largely affected by the Russian war of aggression against Ukraine.

In the spring of 2022, the Commission launched the 'co-development' process for the **transition pathway for the European chemical industry, along with EU Member States, the chemical industry itself, social partners, NGOs and academia**. The outcome of this process is a group of topics and actions to be implemented by each of the involved actors. These most relevant ones are presented as a **roadmap** composed of:

1. An **action-oriented** component grouping the topics under three cross-cutting themes: collaboration for innovation; clean energy supply; and feedstock diversification. These actions are expected to contribute towards the transition and are set against a timeline.
2. A **technology** component identifying electrification, hydrogen, biomass, waste, Carbon Capture and Utilization (CCU) & Carbon Capture and Storage (CCS), as well as process efficiency as key technological contributors to the transition pathway.
3. A **regulatory** component that collects the existing legislation, including major research and innovation (R&I) initiatives, influencing digital and sustainable development of the chemical industry.

By implementing the actions identified under each topic, the chemical sector is expected to succeed in its twin transition and improve its own resilience, sustainability and 'circularity' (i.e. its functioning in line with the principles of the circular economy), in line with the European Green Deal.

The co-implementation of the transition pathway for the chemical industry will be the next step. This entails disseminating the pathway to all relevant stakeholders, who would then present their commitments specifying the actions and topics to which they will contribute to. The proposals in the final chapter will be discussed and agreed on during the co-implementation process expected to start in spring 2023.

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<sup>1</sup> COM(2021) 350 final. Updating the 2020 New Industrial Strategy: building a stronger Single Market for Europe's recovery <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2021:350:FIN>.

## I/ INTRODUCTION

**The chemical sector has a strategic role in the European economy.** Most goods that are manufactured in Europe rely on chemicals for a wide range of various functions. Chemicals are at the heart of Europe's major value chains, including pharmaceuticals, electronics, batteries for electric vehicles, construction materials, etc. The chemical value chain is typically made up of: (i) chemicals producers; (ii) mixture manufacturers; and (iii) producers of articles. Each of these actors in the chemical supply chain has their own needs and will make their own contributions to the future objectives of the green and digital transition of EU industry and its achievement of the twin transition. It has a major focus on producers of chemicals.

**The twin transition covers several dimensions for the EU chemical industry:** a 'toxic-free' environment, climate neutrality, circularity (the green transition), and digitalisation (the digital transition). All these dimensions must be addressed to support the resilience of the chemical industry<sup>2</sup>.

**The EU-27 is the second largest chemicals producer in the world,** with EUR 499 billion in sales in 2020. The chemical industry is also the fourth largest industry in the EU, accounting for around 7% of manufacturing output by turnover<sup>3</sup>. The industry directly employs 1.2 million highly skilled workers and supports 3.6 million jobs indirectly. It also supports a further 19 million jobs across all other value supply chains in the EU<sup>4</sup>. The EU chemical industry has 67% greater labour productivity than the average for the manufacturing sector.

**Nevertheless, the chemical industry is the third emitter of carbon dioxide (CO<sub>2</sub>) emissions in the EU** (925Mt CO<sub>2</sub> in 2021<sup>5</sup>), behind only the cement and iron/steel industry. As reported by the International Energy Agency (IEA), this is largely because around half of the chemical subsector's energy input is consumed as feedstock – fuel used as a raw material input rather than as a source of energy. Immediate emission reductions are therefore necessary, as highlighted by the latest Intergovernmental Panel on Climate Change's (IPCC's) contribution to the 6th Assessment Report<sup>6</sup>. The IEA's 'net zero' emission scenario by 2050<sup>7</sup> relies on a clear reduction in CO<sub>2</sub> emissions from primary chemicals production<sup>8</sup>.

In this regard, the EU chemical industry has already made progress. Despite an increase in production of more than 47% since 1990, greenhouse-gas (GHG) emissions from EU-27 chemical production have decreased by 54% in comparison to 1990 levels. Over the same period, energy consumption in the EU-27's chemical industry has fallen by 21%. **The 2030 and 2050 legally-binding EU climate targets represent the next important step for the chemical industry's emission-reduction efforts, as part of the climate component of the Green Deal.**

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<sup>2</sup> See [https://research-and-innovation.ec.europa.eu/research-area/industry/industry-50\\_en](https://research-and-innovation.ec.europa.eu/research-area/industry/industry-50_en).

<sup>3</sup> CEFIC, 2022. [The European chemical industry: a vital part of Europe's future. Facts & Figures 2022.](#)

<sup>4</sup> [https://ec.europa.eu/growth/sectors/chemicals\\_en](https://ec.europa.eu/growth/sectors/chemicals_en).

<sup>5</sup> IEA Tracking Report, September 2022: <https://www.iea.org/reports/chemicals>.

<sup>6</sup> IPCC, 2021. Sixth Assessment Report. <https://www.ipcc.ch/assessment-report/ar6/>.

<sup>7</sup> IEA Report, [Net Zero Emissions by 2050 Scenario \(NZE\) – World Energy Model](#).

<sup>8</sup> Primary chemicals are substances obtained in its compounds in the natural state or by intensive manufacturing processes requiring massive amounts of fossil energy.



**In 2020, the Commission adopted the Chemicals Strategy for Sustainability (CSS)<sup>9</sup>**, which ‘strives for a toxic-free environment, where chemicals are produced and used in a way that maximises their contribution to society including achieving the green and digital transition, while avoiding harm to the planet and to current and future generations’. The strategy identifies initiatives to support the transition, including the promotion of toxic-free material cycles and ‘clean’ recycling.

**The EU chemical industry’s investment and innovative capacity will be crucial to achieving the goals of the CSS** to: (i) provide chemicals and materials that are safe and sustainable by design; and (ii) offer new ways to produce chemicals and materials. It has been reported that the chemical industry is the second largest R&I investor in the chemical industry globally, with EUR 9.4 billion invested every year<sup>10</sup>. This investment and innovation will support the twin transition of our economy and society. The chemical industry will also play a central role in achieving a circular economy in many value chains.

**Given its size and strategic relevance, the chemical industry is therefore at the centre of the European Green Deal** and is a major contributor to achieving its ambition and objectives. Furthermore, the digital transformation is an enabling opportunity for the industry to meet the above objectives, while retaining its competitiveness and keeping pace with societal developments<sup>11</sup>.

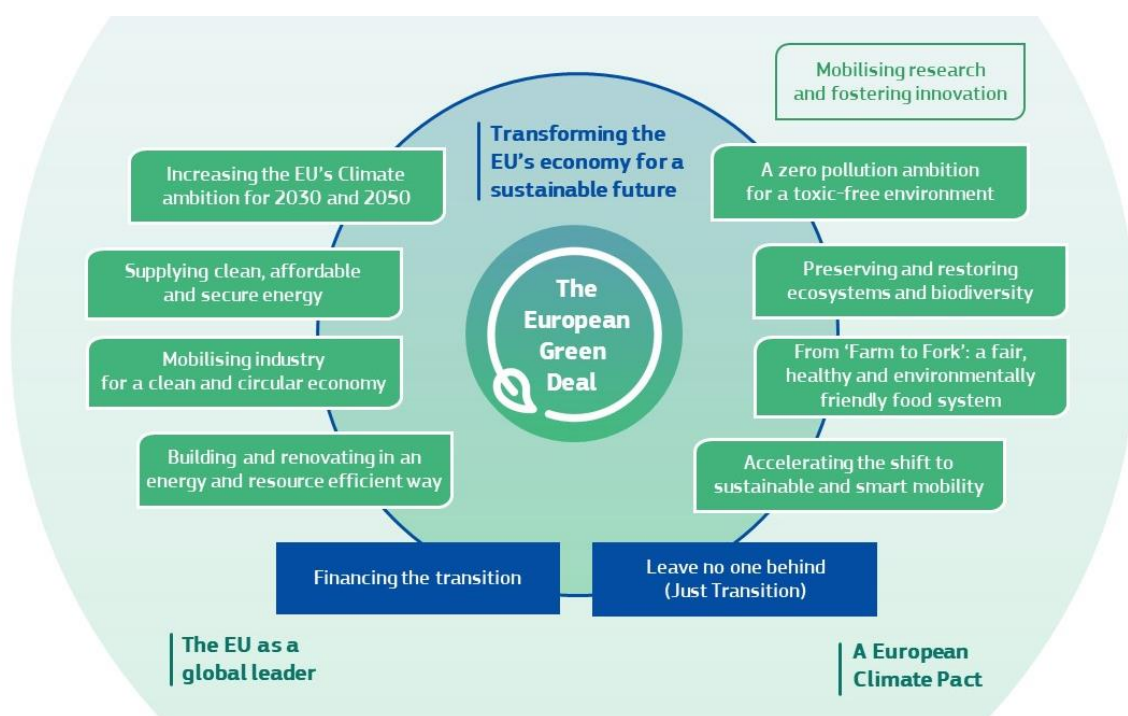


Figure 1 - The European Green Deal elements, including its ambition and objectives

<sup>9</sup> COM (2022) 667 final. Chemicals Strategy for Sustainability Towards a Toxic-Free Environment <https://europa.eu/!vt94Yr>.

<sup>10</sup> OECD and Cefic Chemdata International.

<sup>11</sup> See [Decision \(EU\) 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade Policy Programme 2030, OJ L 323, 19.12.2022, p. 4–26](#), and in particular the digitalization of business.

The chemical industry clearly understands that it needs to do more and is greatly determined to be at the forefront of the necessary transformative process required by the twin transition. However, the industry stresses that this journey of transformation depends on its ability to stay competitive and to attract global investment.

**Other relevant players in the EU's economy that have a crucial role are small and medium-sized enterprises (SMEs)**, which constitute 96% of European chemical companies<sup>12</sup>. SMEs are present at every level of a chemical supply chain. These companies have diverse roles related to chemicals, and they include manufacturers of raw materials, formulators, distributors, and users of chemicals. SMEs employ two thirds of the EU's workforce and account for 55% of added value in the EU. Furthermore, SMEs play an important part in the EU's vocational system by providing many young people with the opportunity to learn a profession. SMEs are therefore an integral part of the twin transition and resilience of the industry.

**The EU chemicals industry is highly integrated into many complex international value chains that are sensitive to the geopolitical context and its sudden developments**, such as the Russian war of aggression against Ukraine which started in February 2022. The new Temporary Crisis Framework for State Aid adopted by the Commission on 23 March 2022 includes the chemicals industry among the sectors and sub-sectors that are 'particularly affected' by the war. Although it is difficult to predict the longer-term impact of the war on the EU economy, its initial effects are already visible: accelerated inflation; more fragile supply chains with potential disruptions to supplies of fossil feedstocks and energy sources; temporary curtailment of the operation of chemicals plants; and a drastically weakened outlook for growth, as reported by the industry. Chemical manufacturing, using natural gas as fuel and feedstock is under unprecedented economic pressure, raising fundamental questions about the medium/long-term prospects for energy-intensive manufacturing in Europe.

**The current crisis therefore brings into closer focus the objective for resilience set by the updated EU industrial strategy**<sup>13</sup>. This strategy emphasised the benefit of increasing the resilience of the chemical industry, i.e. its capacity to absorb external shocks due to a fragile geopolitical situation and a challenging competitive environment, with surging prices of energy and raw materials. It includes a list of actions to support the green and digital (twin) transition of EU industry and its resilience, amongst which a series of transition pathways to be developed jointly with EU Member States, industry and other stakeholders. These pathways identify the actions needed to achieve the twin transition, giving a better understanding of the scale, benefits and conditions required. A transition that will also strengthen resilience of the industry.

**This report presents high-level transition pathway for the chemical industry to achieve the twin transition and its resilience. The outcome of this pathway is a three-part roadmap. The roadmap is the result of a co-creation process with stakeholders** who discussed with the Commission each of the building blocks that make up the transition pathway structure developed by the Industrial Forum<sup>14</sup>. In addition, the

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<sup>12</sup> Cefic, 2018. Economic Outlook (July-2018).

<sup>13</sup> COM(2020) 102 final. A New Industrial Strategy for Europe <https://europa.eu/!ghHBCV>.

<sup>14</sup> Industrial Forum, 2022. [Blueprint for the development of transition pathways](#).

stakeholders considered recommendations made by the High-Level Roundtable on the Chemical Strategy for Sustainability<sup>15</sup>. For each building block, the stakeholders identified a series of actions and initiatives that would contribute to the achievement of the twin transition and the resilience of the chemical industry. Each action also specified the timeframe for implementation as well as the main actors responsible for implementation. For example, actions being coordinated by EU institutions refer to initiatives and proposals already announced in official Commission documents that were then clustered by topics and integrated into an indicative timeline. This gave direction to some major aspects that require sequencing as part of a co-implementation process (the sequencing is presented in the final chapter).

**This transition pathway and the resulting roadmap** have been developed as **part of the transition pathway for** the broader group of industries (of which the chemical industry is a part of) categorised as **energy-intensive industries (EIIs)** which refers to the [Masterplan for a Competitive Transformation of EU Energy-intensive Industries Enabling a Climate-neutral, Circular Economy by 2050](#).

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<sup>15</sup> See [https://environment.ec.europa.eu/news/first-meeting-chemicals-strategy-roundtable-2021-05-05\\_en](https://environment.ec.europa.eu/news/first-meeting-chemicals-strategy-roundtable-2021-05-05_en).

## II/ BUILDING BLOCKS

The aim of this chapter is to describe the actions needed to accelerate the EU chemical industry's green and digital transitions while also making the industry resilient. It follows the structure of the blueprint developed by the [Industrial Forum Task Force 2](#)<sup>16</sup> on transition pathways, and is based on a building block approach, where each building block covers a key aspect of the twin transition and the desired move to greater resilience<sup>17</sup>. In addition to the seven building blocks defined by the Industrial Forum, stakeholders agreed to also include a building block on "access to energy and feedstock". The figure below presents them all.

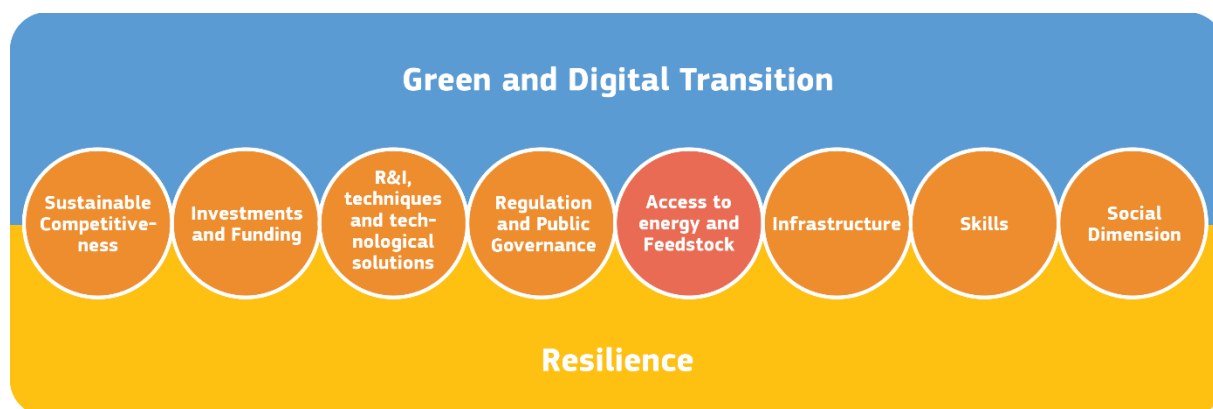


Figure 2 - The 8 building blocks considered to develop the transition pathway for the chemical industry

For each topic listed under the respective building blocks, a list of actions has been identified by stakeholders, together with a timeframe for implementation: short-term, medium-term or long-term. Indicatively, 'S' (i.e. short-term) indicates activities that should start as soon as possible; 'M' indicates activities that should start in the medium-term (i.e. by 2030); while 'L' indicates the long-term, i.e. activities that should be launched and completed by 2050. An overview of topics against a timeline is presented in the following sections.

Each action also mentions the main actor responsible for its implementation, according to the stakeholders participating to the co-development process. 'EU/MS' means that the responsible actor should be either the EU – e.g. via an EU level legislation – or the Member States with a legislative initiative at national level<sup>18</sup>. 'Industry' designates an action that should be coordinated and implemented by industrial actors.

### 1) SUSTAINABLE COMPETITIVENESS

The EU chemical industry faces unprecedented challenges that include increased international competition; skyrocketing prices of energy and feedstock; a decline in the industry's global competitiveness over recent decades; and a shift of certain activities to outside the EU would

<sup>16</sup> The blueprint matrix including the different building blocks for all ecosystems on transition pathways was developed by the Industrial Forum (Task Force 2 – Support to the development of transition pathways).

<sup>17</sup> The task force identified seven building blocks: sustainable competitiveness; investments and funding; research & innovation (R&I) techniques and technological solutions; regulation and public governance; infrastructure; skills; and the social dimension. As part of this transition pathway, stakeholders agreed to include an additional building block on 'access to energy and feedstock', which will be instrumental for the chemical industry's transformation.

<sup>18</sup> As stated in the disclaimer and legal notice, results of the stakeholder co-creation process presented in this report do not necessarily represent the position of all stakeholder groups nor the position of individual Member States or the Commission.

affect chemical value chains, with ripple effects across the EU’s entire economy. Furthermore, some imported products not meeting the same environmental and safety standards in the production process required for goods manufactured in the EU continue to enter in the internal market. Ensuring a level global playing field is key to creating a market advantage for safe and sustainable chemicals.

Stakeholders conclude that to strengthen the competitiveness of the chemical industry, it is necessary to improve international competitiveness; to reduce existing unsustainable dependencies and supply chain vulnerabilities while avoiding new ones; to continue enhancing the safety and sustainability of chemicals and materials; to pursue the innovation and growth of SMEs; and to foster new synergies.

Improving the international competitiveness of the EU chemical industry implies a better understanding of the recent geopolitical developments and the economic consequences for the industry. To this end, stakeholders suggest undertaking an analysis of the medium-to-long-term impacts of the energy crisis caused by Russia’s war of aggression in Ukraine on both: (i) the sustainable competitiveness of the EU’s chemical industry; and (ii) the industry’s ability to develop and innovate. The outcome could better define existing and new initiatives by the global industry<sup>19</sup> to further promote EU environmental and safety standards globally. Finally, stakeholders recommend setting Key Performance Indicators (KPIs) and sustainable development indicators to measure and compare the international competitiveness of the EU’s objectives for the chemical industry and the progress made towards climate neutrality; and to achieve safe and sustainable by design (SSbD), processes, and derived products, followed by regular progress reports. These should be embedded with existing key performance indicators and indicator sets.

There also seems to be a need for promotion of the market for sustainable products. This implies the development, commercialisation, deployment and promotion of the uptake of SSbD substances and materials. Stakeholders suggest achieving this through financial support – especially to SMEs – under Horizon Europe, cohesion policy, the LIFE programme, other relevant EU funding and private investment instruments, and public-private partnerships. It implies also the need to develop ‘market pull’ measures and incentives encouraging customers (including public procurers) to purchase sustainable products, despite their higher costs.

The table below summarises actions proposed by stakeholders on international competitiveness.

<b>Topic 1: International competitiveness</b>		
<b>Actions</b>	<b>Actors</b>	<b>Timeframe</b>
<b>1.1 Drive international competitiveness</b>		
<ul style="list-style-type: none"> <li>Analyse medium to long-term impacts of energy crisis on sustainable competitiveness and ability to develop</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>Set key performance indicators and sustainable development indicators (<i>Linked to Topic 3.1</i>)</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>Global industry initiatives (new and existing) to further promote EU environmental and safety standards globally</li> </ul>	Industry and EU/MS	S/M

<sup>19</sup> For example, the [Responsible Care Initiative](#) by the ICCA, the International Council of Chemical Associations.

## 1.2 Promote the market for sustainable products

<ul style="list-style-type: none"> <li>Develop, commercialise, deploy and promote the uptake of SSbD substances and materials</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>Ensure that hazardous chemicals banned in the European Union are not produced for export including by amending relevant legislation if and as needed</li> </ul>	EU	S
<ul style="list-style-type: none"> <li>Develop 'market pull' measures and incentives to purchase sustainable products with higher costs</li> </ul>	EU/MS	M

For several chemicals, including chemicals essential for strategic value chains, the EU relies heavily on a limited number of suppliers located outside the EU, because manufacturers can no longer profitably produce them or because the chemical industry's customers are no longer producing in Europe. This impacts the EU's open strategic autonomy, as seen during the pandemic. To avoid further shrinkage of the market and to limit the dependence of EU value chains on manufacturers outside the EU, the chemical industry is investing in innovation in raw-material value chains. This is an area that remains untapped despite its great potential. Further information on supply chains seems therefore necessary. To this end, stakeholders suggest undertaking a strategic foresight exercise for the chemical industry with a specific focus on the EU's open strategic autonomy<sup>20</sup>. This exercise should also link with the EU's current activities on securing access to critical raw materials. An assessment of the need to build up and maintain strategic stocks of critical raw materials within the EU is also recommended.

The chemical industry is one of the most globalised industrial sectors in the EU and is therefore highly dependent on open and fair trade. The COVID-19 crisis and Russia's war of aggression against Ukraine have shown that the EU is still import-dependent for supplies of energy, metals, several speciality chemicals, and many raw materials, all of which are essential for strategic value chains<sup>21</sup>. The EU supports efficient, transparent and cost-effective approaches to chemicals management with its trading-partner countries, within a level global playing field. Stakeholders state that closer international cooperation and coordination can be promoted by the EU at a global level (e.g. via multilateral and bilateral fora) and in particular by expanding initiatives on developing and implementing global standards to ensure that the current regulatory gap and divergence do not widen between the EU and the rest of the world.

Free-trade agreements (FTAs) remain a cornerstone of EU trade policy, focusing on: (i) the elimination of tariffs and non-tariff barriers; (ii) the facilitation of cross-border trade; (iii) striving for the simplest customs procedures; (iv) rules of origin; (v) digitalisation of all required documentation; and (vi) making logistics systems as flexible as possible. Stakeholders suggest that FTAs should be ratified and ideally include a dedicated section on cooperation in the regulation of chemicals, for example in an annex.

Further integration of the EU's single market for energy, and an open single market for plastic waste and secondary raw materials will also strengthen the resilience and autonomy of the

<sup>20</sup> COM(2021) 750 final. 2021 Strategic Foresight Report. The EU's capacity and freedom to act <https://europa.eu/!743jQV> and ongoing study on foresight for chemicals by EU4Chem project.

<sup>21</sup> SWD(2022) 41 final. Commission Staff Working Document on EU strategic dependencies and capacities: second stage of in-depth reviews <https://ec.europa.eu/docsroom/documents/48878>.

EU and its chemical industry. It will also reduce the EU's dependence on chemicals from countries outside the EU.

To reduce unsustainable dependencies on countries outside the EU and the chemical industry's own vulnerability to external shocks, stakeholders suggest actions in the table below.

Topic 2: Reduction of unsustainable dependencies and supply-chain vulnerabilities		
Actions	Actors	Timeframe
<b>2.1 Gather supply-chain information</b>		
<ul style="list-style-type: none"> <li>Undertake a strategic foresight exercise focusing on the EU open strategic autonomy (link with critical raw materials)</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>Assess the need to build up and maintain strategic stocks of critical raw materials within the EU</li> </ul>	Industry and MS	S/M
<b>2.2 Increased collaboration within sub-sectors</b>		
<ul style="list-style-type: none"> <li>Secure long-term supply contracts for critical raw minerals/metals, while assessing and accounting for any environmental and socioeconomic implications of the critical raw materials and their long-term sourcing plans</li> </ul>	Industry and EU/MS	M
<b>2.3 Make the most of existing international partnerships, including FTAs</b>		
<ul style="list-style-type: none"> <li>Start or strengthen international (regulatory) economic cooperation (e.g. making use of OECD and WTO mechanisms), especially with the EU's most important trading partners. Prevent potential barriers to market access (e.g. related to the use of waste as feedstock) <i>(Linked to Topic 1.1 and Topic 13)</i></li> </ul>	Industry and EU/MS	M
<b>2.4 Increase resource efficiency</b>		
<ul style="list-style-type: none"> <li>Apply 'energy-efficiency first' as a key principle and prevent losses of materials by increasing circularity according to the '3R' principle (reduce, re-use, recycle), without hampering the implementation of new low-carbon processes (e.g. electrification, CCU (carbon capture and utilisation), CCS (carbon capture and storage), etc.)</li> </ul>	Industry	S/M
<ul style="list-style-type: none"> <li>Support the circular economy. Take into consideration whole value chains when designing 'circular' industrial processes and ensure that all raw materials are included in these processes (including plastic waste, bio-based/biomass products and CO/CO<sub>2</sub> emissions) to close loops, ensure resource efficiency and reduce dependencies, with public policy supporting 'end-of-waste' concept</li> </ul>	Industry & EU/MS	S/M

To ensure the 'circularity' of chemicals, it is crucial to apply safe and sustainable by design principles and to have design principles that are safe and sustainable and to consider the specificities in each lifecycle step when developing chemicals and materials. For this purpose, the Commission is developing a detailed and workable framework and criteria to develop new chemicals and materials, optimise or redesign production processes and the use of substances currently on the market to improve their safety and sustainability for ensuring that industrial

processes are SSbD<sup>22</sup>. This will promote economic growth and foster innovation in substances, mixtures and materials. This in turn will advance the transition towards a circular economy, and a zero-pollution and climate-neutral society by 2050.

Finally, digital product passports can be an important enabler for the deployment of sustainable and 'circular' products. This is because digital product passports would make it possible to communicate information on chemicals and their sustainability characteristics within the value chain, while complying with competition rules and rules on the confidentiality of data. Stakeholders suggest that digital tools could provide added value for the circular economy while guaranteeing efficient implementation, considering solutions that are already available on the market.

To support the market uptake of SSbD chemicals, stakeholders recommended taking the actions in the table below.

Topic 3: Safety and Sustainability		
Actions	Actors	Timeframe
<b>3.1 Develop a detailed and workable framework and criteria for ensuring that industrial processes are SSbD</b>		
<ul style="list-style-type: none"> <li>Maintain an EU-wide SSbD support network to promote cooperation and the sharing of information across sectors and the value chain, and provide technical expertise on alternatives</li> </ul>	EU/MS	S / M
<ul style="list-style-type: none"> <li>Industry and MSs should engage in the testing phase of the SSbD framework</li> </ul>	Industry and EU/MS	S/M
<b>3.2 Improve collaboration in value chains</b>		
<ul style="list-style-type: none"> <li>Engage in Hubs4Circularity as well as a Circular Cities and Regions Initiative (Horizon Europe)</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>Explore the potential role of digital innovation hubs in the chemical industry</li> </ul>	EU and Industry	S
<ul style="list-style-type: none"> <li>Use data spaces to improve resource allocation, supply chain resilience and the manageability of circular processes.</li> </ul>	EU, Industry and MS	S/M
<ul style="list-style-type: none"> <li>Promote interregional collaboration along sustainable value chains in the chemical industry through smart specialisation to accelerate the development of joint investment projects</li> </ul>	EU	M
<ul style="list-style-type: none"> <li>Set up and invest in 'reverse logistics' to ensure that materials are not turned to waste</li> </ul>	Industry and MS	M
<b>3.3 Support substitution to safer chemicals as well as product design and re-design</b>		
<ul style="list-style-type: none"> <li>Implement and enforce the Ecodesign for Sustainable Products Regulation (ESPR), as part of the new circular economy action plan (CEAP)<sup>23</sup></li> </ul>	EU/MS	S/M

<sup>22</sup> Commission Recommendation (EU) 2022/2510 of 8 December 2022 establishing a European assessment framework for 'safe and sustainable by design' chemicals and materials <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022H2510>.

<sup>23</sup> COM(2020) 98 final. A new Circular Economy Action Plan for a cleaner and more competitive Europe <https://europa.eu/!Tg93Ug>.



<ul style="list-style-type: none"> <li>Proposals to extend the generic approach to risk management to ensure that consumer products do not contain chemicals that cause cancers, gene mutations, affect the reproductive or the endocrine system, or are persistent and bioaccumulative and toxic; assess the modalities and timing to extend the same approach to further chemicals including those affecting the immune, neurological or respiratory systems and chemicals toxic to a specific organ; proposal to restrict PFAS under REACH for all non-essential uses including in consumer products</li> </ul>	EU	S
<ul style="list-style-type: none"> <li>Support the uptake of new business models (e.g. facilitate the chemical 'leasing' concept within public tendering; engage and/or support projects on digital product passports that aim at passing along information on chemicals and other sustainability assets within the value chain)</li> </ul>	Industry	S/M
<ul style="list-style-type: none"> <li>Develop digital infrastructure for data spaces to share high-quality data on products' environmental footprint, including the GHG footprint of products and applications (up to 'scope 3' emissions) and chemical-hazard profiles</li> </ul>	Industry and EU/MS	S/M

Although the EU chemical industry includes many well-known large companies, most chemical companies are SMEs. Although both large companies and SMEs face common challenges, SMEs face particular difficulties when confronting both the twin transition and the war in Ukraine. SMEs often depend on single chemical products and limited portfolios in their offering of products for sale. They are also often deeply rooted in the region where they operate and cannot easily move production or swiftly re-design products, or introduce completely different business models. Accessing EU funding for research and innovation is also more complex for SMEs, as they often lack the time, experience and skilled staff necessary to successfully apply for this funding. As they typically have few employees, SMEs rarely have dedicated staff to manage regulatory changes. Furthermore, SMEs face particular challenges to digitalisation, including a lack of knowledge about which technologies to adopt and who should provide them, where to get digitalisation advice and support and how to access finance for digitalisation. They also often lack the (digital and managerial) skills needed to digitalise the business and make the necessary organisational changes to accommodate them. To address these challenges and support the digitalisation of SMEs, the European Commission and the Member States are jointly investing EUR 1.5 billion (e.g. Digital Europe Programme/RRF/ERDF) over the next 7 years in a network of European Digital Innovation Hubs (EDIH). The EDIH are one-stop-shops providing SMEs (and public sector organisations) with tailor-made advice and support (training, "test-before-invest", access to financing, match-making services etc.) to aid their successful digital transformation. "Test-before-Invest" opportunities are particularly important to support digitalisation in the Chemical industry as it allows companies to see first-hand if and how technologies can benefit their business. Therefore, reducing uncertainties and risks associated in investing in expensive new technologies. The network, which is just starting its work, will cover all EU regions and address the digitalisation needs of SMEs in all sectors, including chemicals.

Data spaces are not only used in mechanical engineering, but also in the process industry. The benefits of data spaces are similar in the different industrial sectors; they are about increased transparency and efficiency of processes. The European Data Spaces provide the necessary infrastructure and governance models, which also allow for effective and fair

involvement of SMEs. Through cross-company data exchange, the participants of Catena-X, for example, expect to improve the predictability, plannability and resilience of supply chains as well as the manageability of circular processes and the cost-efficient fulfilment of regulatory requirements. The table below summarises actions that could unleash the innovation and growth potential of SMEs according to stakeholders.

Topic 4: Innovation and growth of SMEs		
Actions	Actors	Timeframe
<b>4.1 Strengthen cooperation with the start-up ecosystem</b>		
<ul style="list-style-type: none"> <li>Develop tools and policies to promote cooperative buying in compliance with competition rules</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>Support SMEs in their supply chains also by connecting to <a href="#">EIT Knowledge and Innovation communities</a></li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Improve communication by fostering information exchange to promotion success stories</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>Strengthen the Enterprise Europe Network</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Develop modular production processes to enable local and regional chemical economies</li> </ul>	Industry	M
<b>4.2 Support the successful implementation of the network of European Digital Innovation Hubs (EDIH)</b>		
<ul style="list-style-type: none"> <li>Provide information to and encourage SMEs to make use of the digitalisation support services provided by the EDIH network.</li> </ul>	Industry/MS	S/M
<ul style="list-style-type: none"> <li>Ensure the EDIH are appropriately funded</li> </ul>	EU/MS	S/M
<b>4.3 Strengthen initiatives with SMEs under the European Innovation Council (EIC)</b>		
<ul style="list-style-type: none"> <li>Encourage SMEs to make use of open innovation test beds<sup>24</sup>, which can bring both co-development and the testing of new substances and advanced materials within the reach of companies and users</li> </ul>	Industry/MS	M
<ul style="list-style-type: none"> <li>Further support access for SMEs to national funding opportunities, which can complement funding received from the EIC programme</li> </ul>	EU/MS	M
<b>4.4 Support compliance with legislation and funding for new technologies</b>		
<ul style="list-style-type: none"> <li>Communicate on funding opportunities (Linked to Topic 7.1)</li> </ul>	Industry (trade federations)	S
<ul style="list-style-type: none"> <li>Assess the need for – and develop, if needed – regulatory sandboxes for regulatory testing and learning</li> </ul>	Industry/MS	S
<ul style="list-style-type: none"> <li>Promote access to risk finance, in particular for SMEs and start-ups, and consider facilitating industrial research, e.g. through increased building of skills at local and regional level</li> </ul>	EU/MS	S/M

<sup>24</sup> Sustainable production processes. See [https://research-and-innovation.ec.europa.eu/research-area/industrial-research-and-innovation/sustainable-production-processes\\_en](https://research-and-innovation.ec.europa.eu/research-area/industrial-research-and-innovation/sustainable-production-processes_en)

(Linked to Topic 7.1)		
<ul style="list-style-type: none"> <li>Develop and promote 'plug-and-play' technologies with an appropriate regulatory framework and standards, and support from Member States</li> </ul>	Industry/EU/MS	M

Maintaining existing synergies and developing new synergies will contribute to the sustainable competitiveness of the chemical industry. These synergies can be promoted by activities such as: (i) encouraging a high level of integration in chemical plants and within the sector more broadly; and (ii) further integrating projects in the chemical industry with projects in other sectors that contribute directly to resilience and the twin transition. In particular, greater integration between the chemical industry and the waste sector, (or other energy-intensive industries such as the steel, cement and energy sectors,) will be key to further increasing circularity, resource efficiency and energy efficiency.

Additionally, stakeholders suggest there is a need to improve the processes for designing chemicals and a need to adopt a full 'lifecycle' approach from the start, by increasing cooperation among the different value chains with manufacturers of end-products. The table below summarises actions suggested by stakeholders for the creation of new synergies.

Topic 5: New synergies		
Actions	Actors	Timeframe
<b>5.1 Facilitate the exchange of information</b>		
<ul style="list-style-type: none"> <li>Maintain the <a href="#">Euroclusters initiative</a>, which aims to create partnerships of cluster organisations</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Facilitate cooperation in value chains and sectors through the ongoing revision of antitrust rules</li> </ul>	EU/MS	S
<b>5.2 Increase collaboration to de-risk investments</b>		
<ul style="list-style-type: none"> <li>Increase the number of joint projects to de-risk investments (e.g. joint projects on CCS and the electrification of crackers)</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Increase cross-border projects on the generation and supply of energy and feedstock, such as grids, pipelines, renewable carbon, and CO<sub>2</sub> transport</li> </ul>	EU/MS	M
<ul style="list-style-type: none"> <li>Consider incentivising processes that would increase the value of industrial waste and the CO<sub>2</sub> emissions it generates</li> </ul>	EU/MS	M
<b>5.3 Support the development of partnerships for innovation</b>		
<ul style="list-style-type: none"> <li>Ensure shared access to the research and technology infrastructures as part of the European Research Area</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Undertake joint cross-sectoral projects that could qualify as important projects of common European interest (IPCEIs)<sup>25</sup></li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Strengthen and develop synergies with all players in the chemicals value chain<sup>26</sup></li> </ul>	Industry	M

<sup>25</sup> E.g. chemicals and waste, chemicals and steel, etc. to reduce emissions in the chemical industry in line with EU objectives. IPCEIs are a State aid instrument and have to comply with State aid rules, in particular the Communication from the Commission on criteria for the analysis of the compatibility with the internal market of State aid to promote the execution of important projects of common European interest (C/2021/8481 final) <https://europa.eu/!NWcVp3>.

<sup>26</sup> Producers of chemicals and materials, manufacturers of end-products, and the waste sector (e.g. in construction, textiles, transport, electronics, digital, renewables, aerospace, and defence).

- Support new data-driven business models based on Common European Data Spaces

Industry &  
EU/MS

M

## 2) INVESTMENTS AND FUNDING

The transition to a climate-neutral, safer, zero-pollution, and 'circular' chemical industry, including the development of safe and sustainable alternatives for substances of concern, will require major R&I investments (see textbox below). The development of new products and the implementation of the supply chain for their manufacture can easily take 5 years or more, especially for complex formulations.

Industry reports that one of the key hurdles for investing in the chemical industry's transformation is the risk linked to 'first-of-a-kind' solutions, and the risk of not being able to scale up. These two risks are driven by a changing regulatory context and the uncertain financial return from making these investments. The chemical industry requires high CAPEX for initial investments, combined with significantly higher OPEX to modify its production processes and to purchase energy and feedstock from alternative sources. Increasing the industry's confidence that these investments will produce a positive return would boost funding for innovative products and/or processes, and also foster the market for new products. In this respect, additional attention must be paid to the international competitiveness of EU companies.

### ***Estimations by Process4Planet***

*The Processes4Planet Partnership (P4P) under Horizon Europe estimates that EU-wide investments needed to develop the first of a kind commercial low-carbon and circular technologies in the chemical industry are in the region of EUR 218-238 billion<sup>27</sup>. It also estimates that additional investments in the order of trillions<sup>28</sup> are needed to fully deploy these technologies across Europe including also electric-power production, supply chains and transport. The P4P partnership also estimates that ensuring the operation of industrial plants based on low-carbon technologies will require an average additional investment of EUR 3.9-5.5 billion per year<sup>29</sup>. The gradual transition from one system to another will require some degree of parallel production systems, with dual investments required in both systems for a period as a result (transition costs). From the mid-2030s, a need for increased investments will be expected driven by higher intrinsic CAPEX associated with some low-carbon processes and with CCS (Carbon Capture and Sequestration).*

The chemical industry possesses significant physical assets, but investments are needed to secure the long-term sustainability of these assets. Major equipment or plant retrofitting demand long-term planning (including an R&I plan) and large capital investments.

The dismantling, retrofitting or rebuilding of existing assets may be opposed by shareholders if existing assets are not fully depreciated and still generate revenues (stranded assets). 'Drop-in' solutions may allow the prolonged use of existing assets and thereby enable fast retrofitting and minimise stranded assets. An action plan should be developed with the authorities to manage these existing assets and convert them or replace them with more sustainable

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<sup>27</sup> See [Processes4Planet SRIA, October 2021](#), p. 96 "A more accurate estimation of investment needs for deployment would require more detailed analysis, and the overall figure will depend on the investments included" [...].

<sup>28</sup> See [Processes4Planet SRIA, October 2021](#), p. 97 and 18.

<sup>29</sup> See: European Commission, 2021. [ERA industrial technology roadmap for low-carbon technologies in EIIs](#), p. 5, Figure 26. Investments needs across the 3 pathways to net-zero.

alternatives. Investment timelines must take into consideration the industry’s long investment cycles and the need for pilot and demonstration plants. New business models will have to be scaled up and proven to win the confidence of investors.

**Summary of discussion on chain-of-custody principles emerged during the co-development meetings**

*Industry also points out the lack of officially acknowledged chain-of-custody principles. Industry stakeholders say that these principles would be an effective instrument in helping to finance the extra cost of sustainable feedstocks and energy. There is already strong existing consumer demand for more sustainable products, and products produced according to chain-of-custody principles could help to attract consumers to pay a premium. Chain-of-custody models, such as the mass-balance-credit method, may enable new sustainable and circular industrial models to emerge, making it possible to process different raw materials (fossil feedstock, CO2 from industrial emissions, biomass and recycled waste) in the same installation or plant. These are typically installations that already exist, and chain-of-custody principles makes it possible to allocate different raw materials to specific products that can bear the extra cost. This gradual feedstock shift would allow the timely conversion of chemical production plants to environmentally sustainable production processes. The mass-balance-credit method could become the key enabler for a significant demand-driven and consumer-financed step in the transition to a sustainable chemicals industry. Some stakeholders and civil-society representatives note that, for the mass-balance approach to be honest, transparent, traced and credible when applied to the chemicals industry: (i) there must be a physical connection between the waste and the desired end-product; and (ii) the claimed percentage of recycled content must correlate to the actual content. Consumers could be misled if there are no standards on traceability and transparency<sup>20</sup>. The application of the mass-balance-credit approach to chemicals remains controversial and under discussion at EU level, notably as part of Renewable Energy Directive (RED) revision.*

National energy and climate plans, which Member States are currently updating<sup>31</sup>, have a crucial role to play in increasing both investor confidence and the predictability of investments. They provide a good framework for planning and encouraging reductions in the use of fossil fuels and resources, thus providing more certainty and predictability overall. The table below summarises actions supporting funding for green investments proposed by stakeholders.

Topic 6: Fund for Green Investments		
Actions	Actors	Timeframe
<b>6.1 EU Taxonomy to support the CSS</b>		
<ul style="list-style-type: none"> <li>Consider drawing up delegated acts and FAQs to support the Taxonomy Regulation implementation ensuring the consistent interpretation of the relevant economic activities</li> </ul>	EU	S

<sup>30</sup> E.g. see ZeroWasteEurope, 2021. [Determining recycled content with the 'mass balance approach'](#).

<sup>31</sup> In accordance with the [Regulation \(EU\) 2018/1999 on the Governance of the Energy Union and Climate Action](#); Member States have to update their national plans for 2021-2030 in a draft version by June 2023 and in their final version by June 2024.

<ul style="list-style-type: none"> <li>Continue fostering global dialogue and coordination on sustainability taxonomies through the <a href="#">International Platform on Sustainable Finance</a></li> </ul>	EU	M
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## 6.2 Develop hub structures

<ul style="list-style-type: none"> <li>Develop hub structures to increase investment in the development and uptake of cross-sectoral low-carbon industrial technologies<sup>32</sup></li> </ul>	Industry and EU/MS	M
<ul style="list-style-type: none"> <li>Consider drawing up meaningful, harmonised and applicable sustainability-assessment methodologies and tools to stimulate collaborative innovation, with hubs as the entity charged with promoting these methodologies and tools (e.g. Hubs4Circularity [Horizon Europe], Circular Cities and Regions Initiative) (<i>Linked to topic 3.2 and 5.2</i>)</li> </ul>	EU/MS	M

## 6.3 Manage and convert existing assets

<ul style="list-style-type: none"> <li>Adopt a transition plan on the conversion or replacement of existing assets, while taking investment cycles into account (<i>Linked to Topic 11.2</i>)</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Facilitate and accelerate permitting procedures for plant investments and participate in communities of practice on permits<sup>33</sup> (<i>Linked to Topic 10.2</i>)</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Support (incl. financial) for retrofits and transformation that aim at effective and innovative low-carbon technologies and sustainable solutions</li> </ul>	EU/MS	M

Public funding can be an efficient way to limit the risk of investment and can also be a useful complement when market incentives and regulation are not sufficient to drive investments. For instance, the EIC supports breakthrough and transformative innovation under the Horizon Europe programme. Through its tailored approach for start-ups and SMEs<sup>34</sup>; the EIC addresses innovators regardless of the maturity of the technology that they are developing. The overall funding of the EIC for 2021-2027 is EUR 10.1 billion. Industry associations stress that access to those funding mechanisms should generally be made easier and that all subsidies linked to the European Green Deal should be increased. Additionally, the ETS Innovation Fund<sup>35</sup> supports the commercial demonstration and de-risking of innovative low-carbon technologies, including projects in the chemicals sector. The fund will provide around EUR 38 billion of support from 2020 to 2030 (at a carbon price of EUR 75 per tCO<sub>2</sub>). Resources for industrial transformation are also available through other funds, as the Just Transition Fund, the Recovery and Resilience Fund and the Modernisation Fund. Finally, the European Social Fund is well suited to focus on reskilling of the workforce for such a transition.

SMEs play a significant role in creating further synergies at industry level to develop and promote the widespread use of new industrial technologies. They should continue to do so in the future while driving the transition of energy-intensive industries to climate neutrality.

<sup>32</sup> See: European Commission, 2022. [ERA industrial technology roadmap for low-carbon technologies in EIIs](#), p. 144.

<sup>33</sup> See: European Commission, 2022. [ERA industrial technology roadmap for low-carbon technologies in EIIs](#).

<sup>34</sup> At least 70% of EIC budget shall be dedicated to SMEs, including start-ups.

<sup>35</sup> See [https://climate.ec.europa.eu/eu-action/funding-climate-action/innovation-fund\\_en](https://climate.ec.europa.eu/eu-action/funding-climate-action/innovation-fund_en)

The consultations carried out by the Commission<sup>36</sup> reveal that excessively high investment costs are the most frequent barrier preventing SMEs from adopting new environmental technologies, followed by a lack of finance<sup>37</sup>. SMEs tend to access less favourable borrowing terms than larger companies in the same industry and are often exposed to greater risk of failure, particularly when they attempt to pioneer new products and processes. The reporting requirements necessary to secure such funding can also be onerous. Improved assistance from local and regional authorities could enable a greater success rate for access to public funding by SMEs. Stakeholders also proposed the creation of a bespoke chemical SMEs fund, backed by a consortium of all major EU commercial banks, to be able to support investment by SMEs. To improve access to public and private funding, stakeholders suggest the following actions.

Topic 7: Access to Funding		
Actions	Actors	Timeframe
<b>7.1 Strengthen communication channels for European funding</b>		
<ul style="list-style-type: none"> <li>Communicate on funding opportunities <i>(Linked to Topic 4.3)</i></li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Increase skills-building at local and regional levels to support SMEs in funding opportunities <i>(Linked to Topic 4.3)</i></li> </ul>	Industry and MS	S
<ul style="list-style-type: none"> <li>Help industry to become frontrunners in sustainable innovations</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>Keep informing Member States on the existing funding opportunities and conditions<sup>38</sup></li> </ul>	EU/MS	S/M
<b>7.2 Provide a coordinated platform for funding</b>		
<ul style="list-style-type: none"> <li>Cooperate with the public sector to complement public-private partnerships for R&amp;I. Provide a broad and open platform to draw up strategic roadmaps and efficiently coordinate research, development and innovation investment plans for technologies in particular ecosystems (see <a href="#">updated industrial strategy</a>), including national use of Recovery and Resilience Facility.</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Consider cutting red-tape (at EU and national level), and improve coordination to facilitate access to funding for industry through a 'single window' approach<sup>39</sup></li> </ul>	EU/MS	S

<sup>36</sup> DG R&I has run a series of consultations targeting SMEs. See Annex 1 of ERA industrial technology roadmap for low-carbon technologies in energy-intensive industries, 2022, <https://data.europa.eu/doi/10.2777/92567>.

<sup>37</sup> *Idem*.

<sup>38</sup> Such as the EIC, the [European Institute of Innovation and Technology](#), [InnovFin](#) (EIB), the [European Structural and Investment Fund](#), the [Just Transition Mechanism](#) (JTM), [InvestEU](#), the Innovation Fund, the [European Fund for Strategic Investments](#), [React-EU](#), [Horizon Europe](#), and the [Digital Europe Programme](#). See extensive overviews in ERA industrial-technology roadmaps on low-carbon technologies and (end of 2022) circular technologies and business models: ERA Common Industrial Technologies Roadmaps (europa.eu).

<sup>39</sup> A 'single window' means that companies and other users of official IT systems only have to submit their data once.



### 3) SUPPORT TO R&I, TECHNIQUES AND TECHNOLOGICAL SOLUTIONS

According to the International Energy Agency (IEA), if the right technologies reach the market in time for the next 25-year retrofitting cycle – due to start around 2030 – they can prevent nearly 60 Gt CO<sub>2</sub> – or 38% of projected emissions – from existing equipment in energy-intensive industries<sup>40</sup>. This is a once-in-a-generation opportunity to shape the future.

To boost its sustainability – including safety, circularity and resilience – the EU chemical industry also needs to adopt new techniques and technological solutions developed and scaled up through a well-supported policy agenda for R&I and development. The principles of co-creation, diffusion, updating, transformation and directionality should guide this R&I agenda<sup>41</sup>. However, there are barriers to the development of this agenda<sup>42</sup>. Specific actions are therefore required to address these barriers at different stages of R&I.

The manufacturing and transport of chemicals is energy intensive, but the industry is constantly innovating to become more energy efficient and to use more low-carbon technologies. Industry representatives report that the EU chemical industry is investing in innovation in advanced materials where the EU must maintain its lead position. They demand regulatory certainty, predictability and incentives to prioritise investments to Europe.

Essentially, there are actions fostering a better conceptualisation of new techniques and technical solutions. Once the conceptualisation is finalised, the development phase follows before the full deployment of new techniques and technological solutions.

A better conceptualisation includes sharing expertise in the implementation of SSbD frameworks considering existing criteria initiatives (e.g. among the IRISS project, the PARC partnership, the OECD, and the World Business Council for Sustainable Development)<sup>43</sup> and innovating safety testing and chemical-risk assessment to reduce dependence on animal testing while improving the quality, efficiency and speed of chemical hazard and risk assessments<sup>44</sup>. This should make it possible to promote assessments early on in a chemical's design cycle. Better conceptualisation is also a result of sharing knowledge on and encouraging the use of digital maturity assessment frameworks, such as the European Commission's Digital Maturity Assessment<sup>45</sup>, to support the successful digital transformation of businesses in the chemical industry.

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<sup>40</sup> IEA, 2021. Net Zero by 2050. A Roadmap for the Global Energy Sector.

<sup>41</sup> These principles refer to '[Science, Research and Innovation performance of the EU, 2022 \(SRIP\) Report](#)':

- Co-creation, working and acting together for a better society;
- Diffusion, sharing knowledge across society, territories and people;
- Uptake, turning research into sustainable solutions with social and economic value;
- Transformation, changing the way we consume and produce; and
- Directionality, with R&I leading the way.

<sup>42</sup> Stakeholders suggest classifying barriers as: (i) financial; (ii) related to legislation; (iii) related to knowledge and digital gaps (e.g. not sufficiently reflecting scientific progress or missing a balanced consideration of gains and risks); (iv) related to technologies; or (v) as related to high barriers to entry.

<sup>43</sup> One stakeholder suggests also including the sharing of experiences: (i) on sustainability assessment (including lifecycle assessments); and (ii) on the use of ProScale and UseTOX to assess the toxicological potentials of product systems.

<sup>44</sup> E.g. predictive toxicology based on improved data and algorithms and increased 'super-performance' or 'high performance' computing power (e.g. leading to the development of virtual human platforms; p.21 [Chemicals Strategy for Sustainability](#)).

<sup>45</sup> The [Digital Maturity Assessment \(DMA\)](#) framework was developed by the European Commission to support and monitor the digitalisation of businesses using the services of the [European Digital Innovation Hubs network](#). The questionnaire which has

The development of [industrial technology roadmaps](#) could also support the conceptualisation of new techniques and technical solutions. This tool promoted by the Commission aims to accelerate the transfer of research and innovation results into the market for the green and digital transformation of industries across the EU. The roadmaps will address the way forward for research and innovation in the industry in key areas at European and national level. They will have a particular focus on closing the innovation divide between EU countries and making better use of research and innovation results. Stakeholders propose therefore to publish additional technology roadmaps on the circular economy, including roadmaps that focus on the specific needs of the chemical industry as part of [ERA](#); and to develop national roadmaps for a low-carbon or circular chemical sector, where not existing<sup>46</sup>.

A summary of the actions suggested by stakeholders is available in the table below. These actions are grouped by Technology readiness levels (TRLs); which scales the maturity of technologies<sup>47</sup>.

Topic 8: Better conceptualisation of new techniques and technical solutions (TRL 1 to 5)		
Actions	Actors	Timeframe
<b>8.1 Promote safety and sustainability-assessment approaches</b>		
<ul style="list-style-type: none"> <li>Share expertise in the implementation of SSbD frameworks considering existing criteria initiatives</li> </ul>	Industry and MS	M
<ul style="list-style-type: none"> <li>Innovate safety testing and chemical-risk assessment</li> </ul>	Industry and EU/MS	S/M
<b>8.2 Promote the use of Digital Maturity Assessment Frameworks</b>		
<ul style="list-style-type: none"> <li>Share knowledge on and encourage the use of digital maturity assessment frameworks</li> </ul>	Industry and EU/MS	S/M
<b>8.3 Development of an <a href="#">industrial technology roadmap</a></b>		
<ul style="list-style-type: none"> <li>Publish additional technology roadmaps on circular economy</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>Consider developing national roadmaps for a low-carbon or circular chemical sector, where not existing</li> </ul>	Industry and MS	S

The next significant stage is the development of new technologies, especially for energy and feedstock sourced from renewable sources and the circular economy. Stakeholders suggest fostering collaboration and partnerships, while also receiving support for the development. For example, by receiving appropriate financial and regulatory support between high TRLs – in particular demonstration and first-of-their-kind plants (e.g. via Innovation Fund) – and lower TRLs (e.g. via Horizon Europe), needed for the development of new breakthroughs.

The table below summarises the conclusions agreed among stakeholders.

been developed, enables the assessment of an SMEs state of digital development before and after the support of the Hub, therefore enabling an identification of the businesses service needs prior to an intervention and the subsequent impact of the support received.

<sup>46</sup> See executive summary in [ERA Industrial technology roadmap for low-carbon technologies in EIIs](#).

<sup>47</sup> See [https://ec.europa.eu/research/participants/data/ref/h2020/wp/2014\\_2015/annexes/h2020-wp1415-annex-g-trl\\_en.pdf](https://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/annexes/h2020-wp1415-annex-g-trl_en.pdf)

Topic 9: Developing new techniques and technological solutions (TRL 6 to 7)		
Actions	Actors	Timeframe
<b>9.1 Foster collaboration and partnerships</b>		
<ul style="list-style-type: none"> <li>Increase cooperation between research institutions and universities and industry, fostering applied research and targeting key enabling technologies for industry</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Engage in public-private partnerships (e.g. Processes4Planet, Circular Bio-based Europe) to develop and demonstrate energy efficiency and climate neutral, circularity and zero pollution chemical industry processes (<i>link with topic 5.3.</i>)</li> </ul>	Industry and EU/MS	M
<ul style="list-style-type: none"> <li>Develop Chemical Data Spaces with the support of the Data Spaces Support Centre to leverage the potential of data exchange for more transparency and manageability</li> </ul>	Industry	S
<b>9.2 Support for development</b>		
<ul style="list-style-type: none"> <li>Appropriate financial and regulatory support between different levels of technology readiness, including by establishing a community of practice to facilitate the authorisation for first-of-a-kind installations for low-carbon industrial technologies<sup>48</sup></li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Co-implement the strategic research and innovation plan (SRIP) for safe and sustainable chemicals and materials to guide future R&amp;I priorities</li> </ul>	Industry and EU/MS	S

Once technical solutions are demonstrated on an industrial scale, these solutions will need to be efficiently deployed across the industry to meet the objectives of the twin transition. Stakeholders highlighted the role of permitting and commercialisation to this end. In particular, this includes active contribution of the chemical industry in the information exchange organised by the Innovation Centre for Industrial Transformation and Emissions (INCITE) set-up under the revised Industrial Emissions Directive (IED). The Centre will identify emerging techniques worldwide for decarbonisation, depollution and/or increasing circularity in large agro-industrial installations. INCITE will evaluate these new processes and techniques and, if they are deemed ready for use at an industrial scale within a short timescale, will incorporate them in the Best Available Techniques Reference documents drawn up under the Sevilla Process to establish environmental norms for those installations.

Then, stakeholders suggested to assess the potential for cooperation among future potential users to address the investment gap so that innovative low-carbon technologies can timely be brought to the market<sup>49</sup>. Support the development, commercialisation, deployment and uptake (including through 'market pull' and pre-commercial procurement<sup>50</sup>) of new techniques and technological solutions. A summary of the actions suggested by stakeholders is available in the table below.

<sup>48</sup> As indicated in the ERA Industrial technology roadmap for low-carbon industrial technologies in energy-intensive industries, mentioned above.

<sup>49</sup> See [ERA Industrial technology roadmap for low-carbon technologies in EIIs](#), action 7.2. ('broad and open platform') above, and the German proposal at COMPET 29 September 2022 to set up a 'platform for transformation technologies'.

<sup>50</sup> Pre-commercial procurement (PCP) is an approach to public procurement of research and development (R&D) services that is outlined in the [PCP communication](#).

## Topic 10: Deployment of new techniques and technological solutions (TRL 8 to 9)

Actions	Actors	Timeframe
<b>10.1 Permitting and commercialisation</b>		
<ul style="list-style-type: none"> <li>Active involvement of INCITE on emerging processes or techniques for decarbonisation, depollution and/or increasing circularity in the sector</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>Assess the potential for – and design the scope of – cooperation among future potential users to address the investment gap so that innovative low-carbon technologies can timely be brought to the market</li> </ul>	Industry and EU/MS	M
<ul style="list-style-type: none"> <li>Support the development, commercialisation, deployment and uptake (including through ‘market pull’ and pre-commercial procurement) of new techniques and technological solutions</li> </ul>	EU/MS	M/L

## 4) REGULATION AND PUBLIC GOVERNANCE (LEGISLATION)

The new legislation adopted and soon to be adopted under the European Green Deal covers all aspects of the industry's operating environment. It is an example of how, for the twin transition to be successful and to lead to increased resilience for the EU chemical industry, legislation plays a fundamental enabling role. The '[better regulation](#)' agenda already ensures evidence-based and transparent EU law-making that considers the views of those that may be affected by new legislation. The Commission continuously evaluates and improves EU laws, focusing on changes to laws that will have the greatest impact. Existing and future legislation can address some of the major barriers that currently prevent the twin transition from proceeding. Stakeholders say that these barriers include: (i) the lack of predictability for the timelines of new legislative proposals; (ii) the lack of coherence and consistency between EU legislation and national legislation ('vertical' coherence); and (iii) the lack of legislative harmonisation across entire economic/industrial sectors or across entire value chains ('horizontal' coherence).

More effective and predictable legislation could address these barriers, according to stakeholders. To this end, policymakers and the industry could act on definitions, concepts, and methods. For example, stakeholders appreciated the information on chemical legislation available in the EUCLEF portal<sup>51</sup> and suggested to continuously update the information. Industry also pledges to continue to actively engage in the work of EU public authorities, such as the participation to public stakeholder consultations and expert groups, so that definitions of new concepts recently introduced in the EU legislation can be made available and applied. Meanwhile, stakeholders invited EU and national policymakers to define and explain new concepts introduced by recent EU legislation and policy documents. Finally, stakeholders proposed to develop a sectoral roadmap towards achieving the climate-neutrality objective<sup>52</sup>. Specific actions on more effective and predictable legislation that stakeholders suggested are presented in the table below.

Topic 11: More effective and predictable legislation		
Actions	Actors	Timeframe
<b>11.1 Definitions and concepts</b>		
<ul style="list-style-type: none"> <li>Continuously update the <a href="#">EUCLEF</a> portal with information on chemicals legislation</li> </ul>	EU	M/L
<ul style="list-style-type: none"> <li>Continue to engage actively in the work of public authorities proposing the definition of key concepts mentioned in recent EU legislation and policy documents (CSS, IED, etc.)</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Define and explain new concepts introduced by recent EU legislation and policy documents<sup>53</sup></li> </ul>	EU/MS	S

<sup>51</sup> The EU Chemicals Legislation Finder (EUCLEF) is a tool funded by COSME and powered by the ECHA (European Chemicals Agency) that helps to identify which pieces of legislation apply to each substance. It consists of a search engine for regulatory information on chemicals enabling companies, and especially SMEs, to find out how their substances are being regulated in the EU and what their legal obligations are: <https://echa.europa.eu/legislation-finder>.

<sup>52</sup> In line with Article 10 of the European Climate Law: 'The Commission shall engage with sectors of the economy within the Union that choose to prepare indicative voluntary roadmaps towards achieving the climate-neutrality objective set out in Article 2(1). The Commission shall monitor the development of such roadmaps. Its engagement shall involve the facilitation of dialogue at Union level, and the sharing of best practice among relevant stakeholders'. <https://europa.eu/!b9jcXm>.

<sup>53</sup> A stakeholder suggested some examples: definition of 'recycled content' and definition of 'end-of-waste'.

<ul style="list-style-type: none"> <li>Develop a sectoral roadmap towards achieving the climate-neutrality objective</li> </ul>	Industry and EU	S
<ul style="list-style-type: none"> <li>Take note of the proposals suggested by stakeholders on future chemicals legislation listed in <a href="#">Annex 4</a></li> </ul>	EU	M

## 11.2 Methods

<ul style="list-style-type: none"> <li>Propose targeted amendments to the REACH Regulation as per the CSS, including reform of the REACH authorisation and restriction processes based on key findings from its practical implementation</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Continue to consider the <a href="#">‘think-small-first’ principle</a> giving full consideration to SMEs at the early policy development stage</li> </ul>	EU/MS	S/M

Stakeholders formulated actions that could improve the coherence and consistency between EU legislation and national legislation (the so-called ‘vertical’ coherence). For example, the industry proposes drawing up a comprehensive and integrated overview of the regulatory framework applied to the EU chemical industry at EU and national level. This overview should include a comparison with key competing regions to suggest to policymakers’ options to harmonise regulations and remove obstacles to circularity. Similarly, stakeholders proposed actions improving the legislative harmonisation across entire economic/industrial sectors or across entire value chains (the so-called ‘horizontal’ coherence). For example, the industry wishes to contribute to the development of technical guidance that promote harmonised implementation and better enforcement of legislation on occupational safety and health.

The table below collects actions identified by stakeholders as being likely to increase coherence and clarity about how different pieces of EU legislation and national legislation interact with each other.

Topic 12: Vertically and horizontally coherent legislation		
Actions	Actors	Timeframe
<b>12.1 Horizontal coherence of legislation</b>		
<ul style="list-style-type: none"> <li>Propose to remove legislative obstacles for the re-use of data. Better streamline the flow of chemical data between EU and national authorities. Extend the principle of ‘open data’ and the relevant transparency principles from the EU’s food-safety sector to other pieces of chemical legislation</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Propose drawing up a comprehensive and integrated overview of the regulatory framework applied to the EU chemical industry at EU and national level. This overview should include a comparison with key competing regions to suggest to policymakers’ options to harmonise regulations and remove obstacles to circularity</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Consider revisiting legislation on occupational safety and health to ensure it is future-proof and promotes the safe use of chemicals in professional and industrial settings [<a href="#">COM(2021) 323 final</a>]</li> </ul>	EU/MS	S

## 12.2 Vertical coherence of legislation

<ul style="list-style-type: none"> <li>Continue to update <a href="#">PACT (the Public Activities Coordination Tool)</a> to provide an up-to-date overview of all planned and ongoing initiatives on chemicals by authorities across different pieces of legislation</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Suggest technical guidance to promote harmonised implementation and better enforcement of legislation on occupational safety and health</li> </ul>	Industry	M

Finally, stakeholders reflected on means to improve the enforceability of existing legislation; focusing in particular on imported products allowing authorities to detect when these products do not comply with EU standards; especially for online sales of consumer products. Under the Market Surveillance Regulation, the Commission proposes to lay down uniform conditions and frequencies of checks for certain products where specific risks or serious breaches of applicable EU harmonisation legislation have been continuously identified. It also wishes to explore the use of digital tools to support market-surveillance and customs authorities and to improve the compliance of products containing chemicals that are sold online to European consumers. Implementation of legislation can also be improved by fully deploying existing synergies and further developing existing public-private partnerships or by creating specific support to help SMEs implement legislation. Technical guidance may also help to explain regulatory requirements and harmonise interpretation and implementation.

The table below summarises proposals made by stakeholders on enforcement.

Topic 13: Effective and efficient enforcement		
Actions	Actors	Timeframe
<ul style="list-style-type: none"> <li>Consider developing analytical methods to support enforcement. Increase available resources for enforcement</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>Share for Member States consideration, successful non-regulatory enforcement measures (e.g. voluntary actions, schemes and stewardship initiatives) that make the enforcement of legislation more efficient and more effective</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Lay down – under the Market Surveillance Regulation – uniform conditions and frequencies of checks for certain products where specific risks or serious breaches of applicable EU harmonisation legislation have been continuously identified</li> </ul>	EU	S
<ul style="list-style-type: none"> <li>Explore the use of digital tools to support market-surveillance and customs authorities and to improve the compliance of products containing chemicals that are sold online to European consumers</li> </ul>	EU	S/M
<ul style="list-style-type: none"> <li>Encourage MS to use the Recovery and Resilience Facility to invest in strengthening market-surveillance infrastructures and digitalisation</li> </ul>	EU/MS	S/M
<ul style="list-style-type: none"> <li>Extend the scope of action of the European Anti-Fraud Office in coordination and investigation, so it can help to tackle the circulation of illicit chemical products in the EU</li> </ul>	EU	S/M

During the co-development process, stakeholders expressed their willingness for the Commission to develop a comprehensive and integrated overview of the legislation applied to the chemical industry at EU level. This could provide industry with a better understanding of the upcoming regulatory framework, as well as the opportunities available at European level.

The resulting regulatory roadmap became a third component of the transition pathway for the chemical industry. This overview of existing legislation and major R&I initiatives relevant to the chemical industry has been developed using the best available knowledge at the time of writing. It includes the latest publicly available information and best-scenario assumptions about the ongoing legislative and non-legislative procedures. However, the timeline of this roadmap remains purely indicative; especially for those proposals whose content is still under development.

The overview does not include all financial opportunities supporting the implementation of the legislation (where it exists) and/or the transition of the industry. It also does not include all supportive EU documents, such as the guidance on boosting circular business models referred to in the ESPR. However, it aims to be a tool to help decision-makers in the chemical industry and other stakeholders.



## 5) ACCESS TO ENERGY AND FEEDSTOCK

Around half of the chemical subsector's energy input is consumed as feedstock with fuel used as a raw material input rather than as a source of energy. Upstream processes are the most emissions intensive but in a 'linear' economy (i.e. an economy that uses new raw materials which are then discarded as waste and not recycled), the carbon embedded in products also creates substantial emissions at the products' end of life. To reach the EU's climate goals, the chemical industry should move progressively away from primary fossil-based feedstocks. The European gas-demand-reduction plan, published in response to sanctions against Russia, greatly affects the chemical sector, as it is heavily reliant on gas consumption both as a fuel and as a feedstock. This reliance on Russian gas makes the transition to greener alternatives even more important. Furthermore, the EU objective to be climate-neutral by 2050 will need to address the challenge of both direct and indirect emissions (e.g. 'scope 3' emissions<sup>54</sup>).

Products from the chemical industry that are used in a variety of applications can help consumers and end-users to support EU actions. For example, products from the chemical industry are used for wind energy, solar energy, electromobility, energy efficiency in buildings, etc. However, the production of these chemicals necessary for the twin transition relies on: (i) cheap and readily available energy (which should be renewable and/or clean); and (ii) alternative feedstocks. Alternative fuels such as renewable hydrogen or e-ammonia and e-methanol have much lower energy density than fossil fuels. Producing these alternative fuels will require massive amounts of electricity sourced from clean energy. However, converting renewable electricity to renewable fuels may also result in a loss of energy. There could be a risk that the industry's transition to climate neutrality results in higher levels of final energy consumption. Moreover, because of the trend towards electrification of boilers and furnaces (as argued below), the sector's electricity demand is expected to grow significantly.

According to the industry's initial estimations as part of the iC2050 modelling project<sup>55</sup>, annual electricity demand from the chemical industry will be well above 200TWh in 2030 and could reach up to 700TWh in 2050, which is a level four times higher than today. Some stakeholders stress the need to reconsider our energy needs and move towards a 'sufficiency' approach. According to the same iC2050 modelling estimations, total demand for biomass is also set to increase significantly over the coming years and decades, reaching 22Mt in 2030 and 88Mt in 2050. Several other sectors (e.g. transport and heating) will depend on the same limited resource, and if sustainably available biomass is scarce, prices risk becoming uncompetitive.

The 2022 progress report on the EU's bioeconomy strategy<sup>56</sup> reflects on the increased importance of the bioeconomy in the new policy context and in the context of the EU Green Deal. It outlines the need for policy coordination and action areas to address the demand for – and availability of – biomass for different applications, ensuring biomass is used in a way that contributes to addressing the biodiversity and climate crises.

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<sup>54</sup> 'Scope 1' indicates direct greenhouse gas (GHG) emissions that are from sources owned or controlled by the reporting entity. 'Scope 2' indicates indirect GHG emissions associated with the production of electricity, heat, or steam purchased by the reporting entity. 'Scope 3' indicates all other indirect emissions, i.e., emissions associated with the extraction and production of purchased materials, fuels, and services, including transport in vehicles not owned or controlled by the reporting entity, outsourced activities, waste disposal, etc. (source: IPCC, 2014. Glossary. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change).

<sup>55</sup> CEFIC, 2021. [Towards implementing the Climate Law](#).

<sup>56</sup> European Commission, 2022. [EU Bioeconomy Strategy Progress Report](#).

To ensure the supply of energy and feedstocks, long-term needs have to be anticipated as suggested by stakeholders and presented in the table below.

Topic 14: Anticipate long-term needs for the supply of energy and feedstock resources		
Actions	Actors	Timeframe
<ul style="list-style-type: none"> <li>Estimate the future needs for energy and alternative feedstock to ensure continued production of chemicals</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>Evaluate the impact of increases in energy prices</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>Consider developing a strategy for the competitive supply of clean energy and strategic raw materials to the EU that takes geopolitical factors into consideration. (REPowerEU). Consider evaluating the potential role of eliminating tariffs for supplies of key resources <i>(Linked to Topic 2.3 and 15.2)</i></li> </ul>	EU/MS	S

The sixth strategic energy and technology (SET) action plan<sup>57</sup> intends to record the agreements between stakeholders on actions to *'increasing efforts to make EU industry less energy, resource and emissions intensive and more competitive'*. It prioritises R&I activities with the highest potential for reducing both carbon emissions and the consumption of energy/resources. The bullet points below outline in more detail two out of the six policy areas in which the action plan identifies a pressing need for R&I activities.

- **Electrification**

Chemical industry requires the possibility to purchase cost competitive climate-neutral electricity. In chemical processes, electricity can be introduced either directly or indirectly. This indirect use of electricity can be considered for generating heat and steam or low- and high-temperature processes (e.g. e-crackers). Direct use of electricity can be done via electrochemistry<sup>58</sup> or alternative forms of energy (e.g. ultrasound and plasma).

- **Integrated production of hydrogen with a low-carbon footprint**

Large supplies of electricity will also be essential for hydrogen production. The chemical industry is both a major producer and a major consumer of hydrogen. The hydrogen-production method most commonly used in the EU is the reforming of natural gas or the bottom fraction of crude oil. This method emits significant quantities of CO<sub>2</sub>. Meanwhile, technologies such as methane pyrolysis or photo-electrocatalysis are under development for cost competitive production of hydrogen, in addition to water electrolysis.

Renewable hydrogen<sup>59</sup> must be affordable and should be prioritised when replacing unabated fossil-based hydrogen<sup>60</sup>. It should be seen as part of a broader set of options leading the chemical industry towards climate neutrality. Stakeholders stress that regulatory barriers to the procurement of green electricity for hydrogen self-production should be avoided, and that

<sup>57</sup> SET-Plan ACTION n°6 - Declaration of Intent ['Continue efforts to make EU industry less energy intensive and more competitive'](#).

<sup>58</sup> Electrochemistry refers to the relationship between electrical and chemical energy and the conversion of one to the other.

<sup>59</sup> JRC, 2021. [Cleaning up hydrogen production with local renewables](#).

<sup>60</sup> According to the EU hydrogen strategy, unabated hydrogen is hydrogen produced through a variety of processes using fossil fuels as a feedstock, mainly the reforming of natural gas or the gasification of coal.

regulation should prioritise renewable hydrogen for the chemical industry. On energy supply, direct electrification (when possible) should be prioritised over hydrogen, which is by nature less energy efficient for the moment.

These sources of hydrogen must be economically viable and priced at a level that the chemical industry can afford. Thus, chemicals produced with low-carbon methods or renewable hydrogen should be supported and priced so that they reflect robust GHG-accounting rules. The difference in cost between zero-emissions chemicals-production technologies and other more polluting alternatives in global market prices are still significant. This difference could be bridged through several options, such as carbon contracts for difference (where the EU would subsidise producers so that it would pay for any covering the difference in cost between zero-carbon technologies and more polluting ones) and entering into long-term contracts for clean energy. REPowerEU sets up an action plan for a massive scaling-up and speeding-up of this clean energy in power generation.

To support the economically viable purchase of clean energy, the actions set out in the following table could be taken.

Topic 15: Economically viable purchases of clean energy		
Actions	Actors	Timeframe
<b>15.1 Channel investments for clean energy</b>		
<ul style="list-style-type: none"> <li>Adopt a social climate fund to support small business in the transition (REPowerEU)</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Channel investments to players committed to the green transition and to becoming 'frontrunners' in the use of novel sustainable technologies (<i>Linked to Topic 6.1</i>)</li> </ul>	Industry and EU/MS	S/M
<ul style="list-style-type: none"> <li>Strengthen the funding and de-risking measures (e.g. contracts for difference, robust investment-protection policies) to support the deployment of green and smart technologies and the sourcing of clean energy up to demonstration plants and first-of-their-kind plants – e.g. via the Innovation Fund</li> </ul>	EU/MS	M
<b>15.2 Ensure the competitive supply of clean energy</b>		
<ul style="list-style-type: none"> <li>Reassess electricity-market rules with the aim of making electrification cost-competitive for energy-intensive industries</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Implement the EU solar strategy to double solar photovoltaic capacity</li> </ul>	EU/MS	S/M
<ul style="list-style-type: none"> <li>Consider setting up 'go-to' areas for renewables with shortened and simplified permitting processes (<i>Linked to Topic 4.3, 6.3, 10.2, 11.2 and 14.2</i>)</li> </ul>	MS	S/M
<b>15.3 Improve power-purchase agreements (PPAs)</b>		
<ul style="list-style-type: none"> <li>Publish guidance to Member States on PPAs</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Set up EU certifications and standards for feedstock (addressing energy and chemicals, including hydrogen)</li> </ul>	Industry and EU/MS	S

<ul style="list-style-type: none"> <li>• Set up risk-sharing facilities to support micro-firms &amp; SMEs (<i>Linked to Topic 4.3</i>)</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>• Introduce an electricity-price system for industry that ensures internationally competitive energy prices and supports the transition towards climate neutrality. Consider increasing the number of renewable-energy PPAs</li> </ul>	EU/MS	M/L
<ul style="list-style-type: none"> <li>• Ensure diversification of sources and the strategic autonomy of the EU for essential power supply while safeguarding competitive supply</li> </ul>	EU	M/L

The production of chemicals and materials still relies heavily on fossil-based feedstocks, and therefore solutions for substitution need to be implemented alongside the management of demand for these alternatives.

- **Biomass as an alternative feedstock**

Various types of biomass can be considered for producing chemicals (e.g. from sugars, sustainably sourced vegetable oils, residues, and agricultural or forest-based lignocellulosic biomass and residues). The value chains being created to make bio-based chemicals and materials include a large portfolio of technologies roughly categorised into pre-treatment, conversion, and downstream processing. These technologies make possible the processing of a broad range of biomass feedstocks into an array of high-value products. Actors in the bioeconomy seek to extract value from all fractions of the biomass raw material, including those that might formerly have been considered as waste or residues (secondary biomass). Innovative process technologies are promising in that they raise the possibility of using residual biomass to produce commodity chemicals.

The challenge is firstly to ensure that this biomass is sustainably sourced, in line with the approach of the EU Bioeconomy Strategy and the Green Deal. The next challenge is to link all bio-based processing steps into integrated value-chain networks while ensuring that production is resource efficient, energy efficient, cost efficient, and contributes to the zero-pollution ambition. In this context, R&I is key to contribute to the sustainability of bio-based processes.

The design and production of bio-based chemicals, along with dedicated infrastructure for supply and production (e.g. bio-refineries, bio-based supply chains) should support the production of chemicals and materials, creating quality jobs and added value. This added value should come by turning responsibly and sustainably sourced biomass into high-value products (cascading use of biomass). Nonetheless, future scenarios of biodiversity loss and climate change mean that the forecasts for biomass availability (for both energy and chemical uses) remain a key challenge in transitioning away from fossil-based feedstocks. According to some stakeholders, facilitating imports of biomass may help overcome any potential biomass shortages. However, the impact of biomass sourcing in non-EU countries would need to be fully sustainable and should not aggravate environmental degradation nor promote unsustainable practice or increase strategic dependencies.

The prospect of the chemical sector becoming largely bio-based remains challenging. It will be difficult to achieve given: (i) the limited availability of sustainable primary biomass in the EU; (ii) the fierce competition for biomass resources from other sectors (in particular, the energy and transport sectors); and (iii) the sheer scale of demand. Increased pressure on

biomass demand therefore requires careful assessment of trade-offs<sup>61</sup> by adopting the biomass-use prioritisation principle on the national or EU level<sup>62</sup>. The 'cascading' principle for biomass as proposed in RED III (the revised version of the Renewable Energy Directive, which has yet to become law) ensures that biomass is used first where it has the highest economic added value and the lowest environmental impact.

- **Waste as an alternative feedstock**

Organic and inorganic waste<sup>63</sup> can be used as an alternative feedstock for chemicals. For instance, some petrochemical companies collect used cooking oil as organic waste to generate biofuel. The re-use of inorganic waste (e.g. plastics, iron, steel, and aluminium<sup>64</sup>) is of strategic importance to environmental protection and to achieving the circular economy. Chemical-recycling<sup>65</sup> technologies break down the chemical structure of polymeric waste and other input materials such as plastic or textile waste into monomers and chemical building blocks. These technologies then transform the monomers and chemical building blocks into valuable secondary raw materials, and dedicated and drop-in intermediates for manufacturing new products. Outputs include chemicals and other products, some of which are fuels. Stakeholders state that fuel use is excluded from the definition of 'recycling' in the Waste Framework Directive. These new products include chemicals and plastics (but do not include the use of these products for energy recovery and incineration)<sup>66</sup>. Chemical-recycling processes each have their own requirements regarding the inputs used and result in different outputs. These processes are typically depolymerisation, pyrolysis and gasification. These three techniques offer a solution for best dealing with the deteriorating quality of the polymer chains after each cycle of mechanical recycling. A fourth technique is solvolysis, which makes it possible to separate polymers from other materials.

Certain breakthrough 'upcycling' technologies are now commercially scalable. These technologies involve recycling with a high yield a broad range of plastic waste, including hard-to-recycle plastics, into high-purity products (such as waxes, oils and solvents) that can be used across a variety of different industries. These innovative and sustainable business cases only require plastic waste as a feedstock, thereby enabling the circular production of fossil-free chemicals.

Despite these promising niche applications of chemical-recycling processes, some stakeholders report significant hurdles to scaling up these technologies. They stress the need for more transparency and evidence around mass flows, chemical use, and the viability of processes in real-life waste-management circumstances. Moreover, clear standards for

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<sup>61</sup> See action on 'Integrated Bioeconomy Land Use Assessments' in COM(2021) final <https://europa.eu/!9xCx8D>.

<sup>62</sup> COM(2022) 283 final. EU Bioeconomy Strategy Progress Report: stocktaking and future developments [europa.eu/!dGJMKR](https://europa.eu/!dGJMKR).

<sup>63</sup> EEA Glossary: Waste composed of material other than plant or animal matter, such as sand, dust, glass and many synthetics <https://www.eea.europa.eu/help/glossary/eea-glossary/inorganic-waste>.

<sup>64</sup> The Commission is preparing a set of end-of-waste criteria for priority waste streams under the [Waste Framework Directive](#).

<sup>65</sup> ISO, 2008 Definition: Chemical recycling: 'conversion to monomers or production of new raw materials by changing the chemical structure of plastics waste through cracking, gasification or depolymerization, excluding energy recovery and incineration'.

<sup>66</sup> Article 3(17) of the [Waste Framework Directive](#): 'recycling' means any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

environmental sustainability and safety should be set for the energy required for these transformation processes.

To meet the ambitious European objectives for sustainability and circularity, increased volumes of plastic waste must be recycled and a broader range of markets need to be served with plastic products containing higher recycled content. However, stakeholders say that the chemical industry faces increasing barriers to intra-EU cross-border shipments of waste and that there is a need for harmonised application of 'end-of-waste' criteria. Some stakeholders point out that the EU framework is not yet applicable to local and regional waste laws and directives in individual Member States. They also argue that waste-as-feedstock technology is not being implemented on a large scale and still partly involves the use of large amounts of energy.

- **CO<sub>2</sub> as an alternative feedstock<sup>67</sup>**

Carbon from CO<sub>2</sub> captured from concentrated sources (e.g. industrial sources, biogenic gaseous carbon) is a potential alternative to virgin fossil feedstock. In the longer-term, CCU technologies may mitigate climate change by removing CO<sub>2</sub> from the atmosphere or using carbon-containing (not only from CO<sub>2</sub>, but also from CO for example) flue gases (industrial off-gases, including from fermentation processes from food, beverages, etc.). These flue gases are captured directly at point sources so that they do not enter the atmosphere and can instead be converted into chemicals. In December 2021, the Commission adopted the Sustainable Carbon Cycles<sup>68</sup> communication, which sets out an action plan on: (i) how to develop sustainable industrial solutions to increase carbon removals (using direct air capture and bio-based products with long lifetimes); and (ii) key actions to support the industrial capture, use and storage of CO<sub>2</sub> (CCU and CCS). Carbon capture (CCS/CCU) technologies are key technological pathways for the decarbonisation of energy-intensive industries, including the chemical industry. Their application potential has been identified as particularly high for the chemical sector (both CO<sub>2</sub> and CO)<sup>69</sup>. However, these technologies still face some challenges. The two main challenges are listed in the bullet points below.

- It is complex and costly to collect and purify CO<sub>2</sub> directly from the air.
- There is not a lot of carbon-free renewable energy (e.g. to produce green hydrogen required to produce chemical feedstocks from CO<sub>2</sub>). Transforming CO<sub>2</sub> via electrolysis for CCU requires a lot of energy, preferably from renewable sources.

The CO<sub>2</sub> captured can also be stored either permanently in geological sites or in long-lasting products.

Today the industry is already working on four fronts to play its role in the circular economy. These four fronts are set out in the four bullet points below.

- Firstly, the industry is seeking to improve processes (e.g. optimisation of mechanical recycling) including by using fewer resources and less energy (e.g. through energy recovery, waste recovery, and innovative recycling technologies).
- Secondly, the industry is seeking to design and re-design chemical products and materials to reduce waste from the outset, improve circularity, and improve recycling

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<sup>67</sup> Including CO capture from 'industrial waste gases'.

<sup>68</sup> COM(2021) 800 final. Commission communication on Sustainable Carbon Cycles, p.19 <https://europa.eu/!9xCx8D>.

<sup>69</sup> See chapter 2 (p. 28) in [ERA Industrial technology roadmap for low-carbon technologies in EIIs](#).

end-products (e.g. using new recyclable composites for windmill blades). It is possible to develop a circular model for chemicals that pose certain risks to health and ecosystems.

- Thirdly, the industry is making progress towards turning second-generation, primary, secondary and waste biomass into valuable inputs for bio-based chemistry.
- Fourthly, the industry is making progress towards using CO<sub>2</sub> from industrial off-gases and fermentation as a valuable input for chemical feedstocks. The industry is also working on the direct air capture of gaseous effluent chemicals to turn them into a valuable feedstock input.

Based on these elements, stakeholders presented a series of actions aimed at identifying and developing new and sustainable sources of feedstock; as well as at further developing alternative feedstocks such as biomass, waste and CO<sub>2</sub>. The table below summarises these actions as suggested by the stakeholders.

Topic 16: Feedstock Substitution		
Actions	Actors	Timeframe
<b>16.1 Identify and develop new and sustainable sources of feedstock</b>		
<ul style="list-style-type: none"> <li>● Consider setting targets for renewable/non-fossil content to stimulate demand</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>● Consider harmonising EU and international certification systems for the sustainable sourcing of biomass feedstock (including secondary biomass) and standards irrespective of the feedstock's end-use</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>● Assess further the economic and technical potential of aquatic biomass (third-generation biomass)</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>● Provide a detailed definition of 'non-fossil sources' and a methodology to calculate the share of total feedstock in carbon sources. Make statistical data more detailed to support the calculation of this share<sup>70</sup>.</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>● Increase reporting of scope-3 GHG emissions and explore opportunities to use feedstock from waste and recycled materials</li> </ul>	Industry	M
<ul style="list-style-type: none"> <li>● Consider promoting projects on turning alternative sources into valuable feedstock inputs, partly through joint agreements &amp; interdisciplinary cooperation; ensuring SMEs participation</li> </ul>	EU/MS	S/M
<ul style="list-style-type: none"> <li>● Harmonise criteria and methodologies – and make sure they also apply to SMEs – to assess the environmental and socioeconomic performance of bio-based systems (integrating biodiversity for example). Ensure that these criteria and methodologies are aligned with the future SSbD framework.</li> </ul>	Industry and EU/MS	S/M

<sup>70</sup> See 'Industrial Sustainable Carbon challenge' in COM(2021) 800 final. Sustainable Carbon Cycles <https://europa.eu/!9xCx8D>.

<ul style="list-style-type: none"> <li>Accelerate the market deployment of existing circular and bio-based solutions (whether they are mature or innovative) – e.g. via the Innovation Fund</li> </ul>	Industry and EU/MS	S/M
<b>16.2 Biomass as an alternative feedstock</b>		
<ul style="list-style-type: none"> <li>Create a balance and prioritisation between the different uses of biomass by providing a set of sustainability criteria (e.g. considering deforestation risk) and develop concrete incentives for the use of these criteria</li> </ul>	Industry and EU/MS	S/M
<ul style="list-style-type: none"> <li>Further improve methodologies to monitor the environmental performance of biomass as a feedstock</li> </ul>	Industry and EU/MS	S/M
<ul style="list-style-type: none"> <li>Increase the efficiency and transparency of biomass supply chains</li> </ul>	Industry and EU/MS	M/L
<b>16.3 Waste as an alternative feedstock</b>		
<ul style="list-style-type: none"> <li>Promote setting targets for recycled and bio-based content in order to stimulate demand</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Suggest improvements on transparency – and ending restrictions on transparency – in the use of ‘substances of concern’ to clean up material cycles (ESPR) at national level</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Advocate for promotion of early international cooperation on standards to prevent potential barriers to market access barriers from arising</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Advocate for chemical recycling as a complementary option for waste that cannot be recycled mechanically, if it causes less environmental burden than incineration and virgin plastic production</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Increase the recyclability of products to boost the use of upcycled resources instead of virgin materials</li> </ul>	Industry	S/M
<ul style="list-style-type: none"> <li>Phase out the most harmful substances from consumer products, unless they are essential for society, as per the CSS</li> </ul>	Industry	S/M
<b>16.4 CO<sub>2</sub> as an alternative feedstock</b>		
<ul style="list-style-type: none"> <li>Consider using circular carbon sourced from CO<sub>2</sub> as a feedstock</li> </ul>	EU/MS	S/M
<ul style="list-style-type: none"> <li>Support the economic and technological development of CO<sub>2</sub> as a feedstock</li> </ul>	EU/MS	S/M
<ul style="list-style-type: none"> <li>Consider developing an impact assessment on the CO<sub>2</sub> footprint of the increased demand for strategic metals <i>(Linked to Topic 2.1)</i></li> </ul>	Industry and EU/MS	S/M
<ul style="list-style-type: none"> <li>Consider harmonising the EU regulatory framework for cross-border CO<sub>2</sub> transport</li> </ul>	EU/MS	M



New business models and more efficiently produced materials could help reduce emissions by about 65Mt CO<sub>2</sub> per year across the value chain<sup>71</sup>. The opportunities in this area include: (i) improving design; (ii) reducing waste during the production of chemicals; (iii) having higher-performance materials; (iv) reducing over-specification; and (v) encouraging higher intensity use of chemicals. The chemical industry must also consider new business models. Chemical leasing<sup>72</sup> for instance, could address the over-consumption of chemicals by charging customers based on functions performed by the chemicals rather than by the volume of chemicals purchased.

Process intensification (e.g. by changing reactor designs, or by developing new catalysts) can also provide major opportunities for resource and energy efficiency. With these new processes, chemical reactions can be achieved at optimal conditions with significantly fewer side reactions, creating fewer by-products, and using fewer auxiliary materials. As catalysts are key enablers for higher selectivity and reduced energy consumption, novel catalysts must be designed to accommodate more complex feedstocks and/or more variable feedstock quality (e.g. biomass, waste, CO<sub>2</sub>). Intensified separation technologies and their control technologies must complement higher selectivity of the reactions. Further innovation in this area is required to significantly reduce energy consumption and costs. However, the development of a new generation of catalysts relies on the availability of certain raw materials<sup>73</sup>. The increased demand for energy infrastructure (electricity, hydrogen), transport, and deployment of digital technologies will require large volumes of several strategic metals. These raw materials needed for the transformation of EU industries will mostly come from mining and refining.

Process efficiency can be complemented at plant and site level with the implementation of other optimisation measures such as energy recovery, including energy recovery from low-temperature energy streams. Industrial symbiosis will make it easier to implement some of the above-mentioned options, for example through exchange of material or energy flows for heat integration. Digital technologies could also play a role in efficient production processes, starting as early as the virtual planning and simulation phase of new production-line processes. The table below summarises actions stakeholders suggest on process and resource efficiency.

Topic 17: Process and resource efficiency		
Actions	Actors	Timeframe
<ul style="list-style-type: none"> <li>Re-think business models and identify potential enablers for these new business models</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>Support the development of advanced and alternative separation technologies</li> </ul>	Industry and EU/MS	S/M
<ul style="list-style-type: none"> <li>Promote industrial symbiosis as a commonplace approach for advancing the circular economy <i>(Linked to Topic 18.1)</i></li> </ul>	Industry and EU/MS	S/M
<ul style="list-style-type: none"> <li>Invest in the development of novel catalysts</li> </ul>	Industry	M/L

<sup>71</sup> Materials Economics, 2019. [Industrial transformation 2050: Pathways to Net-Zero Emissions from EU Heavy Industry](#), p. 26.

<sup>72</sup> Chemical leasing is a business model that intends to shift the focus from increasing sales volume of chemicals towards a value-added approach.

<sup>73</sup> See SRIA: Innovation Priorities for EU Global Challenges. Priorities include the design and scalable production of catalysts with reduced consumption of critical raw materials and preferably starting from abundant and accessible raw materials.

## 6) INFRASTRUCTURE

Access to energy and feedstock and the corresponding infrastructure is of essential importance. The necessary infrastructure will need to be built or scaled up to secure the chemical industry's access to energy and feedstock, and in particular to electricity, hydrogen, waste, CO<sub>2</sub>, and biomass. Infrastructure will also support both industrial symbiosis<sup>74</sup> and better integration of processes within industrial clusters (e.g. capturing, storing and transporting CO<sub>2</sub> from an emitting plant to the chemical industry). The development of such structures is being slowed down by: (i) the lack of infrastructure around certain industrial sites, especially on inland locations and in central and eastern Europe; and (ii) the slow approval procedures at Member State level for energy and industrial processes. The necessary permits and infrastructure for energy transition and feedstock diversification must still be put in place.

Expanding the gas and electricity grid is necessary to access low-carbon energy from all sites, not only those sites close to electricity-generation plants. Bottlenecks in the gas grid must be abolished, and cross-border interconnectors must be put in place to enable the free flow of energy between countries. Existing sources of gas must be adapted so that they respond to demand and provide flexible generation units and storage. Progress must be made in new sources of flexibility such as power to-X<sup>75</sup> and new types of storage (e.g. for renewable or low-carbon hydrogen and ammonia).

Finally, the availability and deployment of ample CCS and CCU capacity are essential enablers for climate neutrality. For this reason, bilateral agreements could be concluded between countries that ship captured CO<sub>2</sub> and those that receive it to facilitate the access of landlocked production sites to CO<sub>2</sub> storage sites.

Industry stakeholders speak of both the stringent safety standards requirements for hydrogen infrastructure and the public protests against these large-scale developments. In October 2021, a report<sup>76</sup> was published on barriers to – and mitigation measures for – clean hydrogen projects.

To overcome these barriers, the [European Clean Hydrogen Alliance](#) supports the large-scale deployment of clean hydrogen technologies by 2030 by bringing together: (i) renewable and low-carbon hydrogen production; (ii) demand from industry, mobility and other sectors; and (iii) the transmission and distribution of hydrogen. Together with ammonia producers, the chemical sector is projected to be one of the EU's industrial champions in the use of clean hydrogen, as shown by an analysis<sup>77</sup> of around 1 052 specific investment projects which have been submitted as part of the European Clean Hydrogen Alliance. In addition, the industry already produces vast amounts of hydrogen that is completely used in internal manufacturing processes.

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<sup>74</sup> Industrial symbiosis is the process by which waste or by-products from an industry or industrial process become the raw materials for another.

<sup>75</sup> Technology that converts renewable electricity from solar or wind farms into other forms of energy (e.g. renewable hydrogen, renewable methanol).

<sup>76</sup> European Hydrogen Alliance, 2021. Reports of the alliance roundtables on barriers and mitigation measures [https://ec.europa.eu/growth/document/download/5b759bcc-db55-49ad-b0d4-bf0e16255aab\\_en](https://ec.europa.eu/growth/document/download/5b759bcc-db55-49ad-b0d4-bf0e16255aab_en).

<sup>77</sup> European Commission, 2021. 'European Clean Hydrogen Alliance: Overview of projects collected' presentation at the Hydrogen Forum, 17-18/06/2021 <https://prod5.assets-cdn.io/event/6779/assets/8375992644-bc85860f7c.pdf>.

If the RED III is adopted as proposed by the European Commission, it will mandate a 50% share of green hydrogen (RFNBO) in the total hydrogen consumption of the chemical industry. The EU and Member States should ensure the necessary infrastructure is in place to supply this hydrogen to each point of consumption (e.g. each plant) to make this target attainable. The hydrogen and decarbonised-gas market package<sup>78</sup>, published in December 2021, puts forward policy measures required to support the creation of: (i) optimal and dedicated infrastructure; and (ii) efficient markets. This package aims to remove barriers and create the conditions for a more cost-effective transition. In her 2022 State of the Union speech, President of the Commission Ursula von der Leyen also announced the creation of a market for hydrogen through a new European Hydrogen Bank, dedicated to investing EUR 3 billion to power the economy of the future.

To improve the development of large-scale electricity and hydrogen infrastructure, the actions set out in the table below should be taken.

<b>Topic 18: Large-scale electricity and hydrogen infrastructure</b>		
Actions	Actors	Timeframe
<b>18.1 Enable the free flow of energy between countries</b>		
<ul style="list-style-type: none"> <li>Identify preliminary hydrogen-infrastructure needs by March 2023, based on the TEN-E Regulation (REPowerEU)</li> </ul>	EU / MS	S
<ul style="list-style-type: none"> <li>Set up a dedicated workstream on joint, renewable hydrogen purchasing under the EU Energy Platform<sup>79</sup></li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Develop an infrastructure outreach programme to non-EU countries via the EU global gateway strategy<sup>80</sup></li> </ul>	EU/MS	S/M
<ul style="list-style-type: none"> <li>Abolish electricity-grid bottlenecks and increase the number of cross-border interconnectors</li> </ul>	Industry and EU/MS	M
<b>18.2 Develop separate hydrogen infrastructure at EU level</b>		
<ul style="list-style-type: none"> <li>Re-dedicate current gas pipelines and refineries and construct new pipelines dedicated to hydrogen infrastructure</li> </ul>	Industry and EU/MS	M
<ul style="list-style-type: none"> <li>Invest in new harbour-storage capacity in key EU ports or in relocating industrial harbours to more suitable locations</li> </ul>	Industry and EU/MS	M
<ul style="list-style-type: none"> <li>Support and drive investments in appropriately sized dedicated hydrogen grids (including local grids, highly interlinked grids, high-capacity grids and digitalised grids) with an extended electricity grid to support hydrogen</li> </ul>	EU/MS	M
<ul style="list-style-type: none"> <li>Develop a certification system for the import of low-carbon hydrogen</li> </ul>	Industry and EU/MS	M

<sup>78</sup> Hydrogen and decarbonised gas market package <https://europa.eu/YPpd33> .

<sup>79</sup> [https://energy.ec.europa.eu/topics/energy-security/eu-energy-platform\\_en](https://energy.ec.europa.eu/topics/energy-security/eu-energy-platform_en).

<sup>80</sup> [https://ec.europa.eu/info/strategy/priorities-2019-2024/stronger-europe-world/global-gateway\\_en#key-areas-of-partnership](https://ec.europa.eu/info/strategy/priorities-2019-2024/stronger-europe-world/global-gateway_en#key-areas-of-partnership).

Designing and building a demonstration plant and deploying solutions on an industrial scale are major challenges for developing many abatement technologies and solutions. It also often requires collaboration between different industries and partners on a regional level and across borders. The investment returns from building a demonstration plant and deploying solutions on an industrial scale are uncertain and there is the risk of technological 'lock-in' and stranded investments. Security planning is also often hampered by long and complex permitting procedures, which create uncertainty around new infrastructure projects. This issue of uncertainty affects both questions about the viability of the chemical facility itself and questions about how to guarantee the supply of resources to it.

To support the development of new sustainable and decentralised production models to ensure resilience, the actions set out in the table below should be taken.

Topic 19: Development of new and sustainable production facilities		
Actions	Actors	Timeframe
<b>19.1 Develop recycling facilities and bio-refineries</b> (and exploit synergies with the chemical industry)		
<ul style="list-style-type: none"> <li>Launch pilot projects to develop sustainable infrastructures</li> </ul>	Industry and EU/MS	S/M
<b>19.2 Accelerate and improve permitting</b>		
<ul style="list-style-type: none"> <li>Facilitate and accelerate approval procedures for production plants and products, notably via the ongoing revision of the IED</li> </ul>	EU/MS	S/M
<ul style="list-style-type: none"> <li>Publish an annual comparative report to identify Member States' best practices in planning and permitting law; create an exchange of best practices</li> </ul>	EU/MS	S

A pan-European rail infrastructure would enable a significant modal shift from roads to rail for the transport of feedstock and chemical products. The development of such infrastructure is currently being held back by: (i) the lack of an integrated system for managing international rail-freight traffic and capacity; and (ii) the poor quality of rail transport in general. Regulations have been put in place to support: (i) the development of energy interconnections and energy infrastructure (the Trans-European Networks for Energy TEN-E); and (ii) the Green Deal ambitions for modal shift and improvements in freight-transport efficiency (Trans-European Networks for Transport TEN-T).

To support the development of sustainable transport of raw materials and chemical products, the actions set out in the table below should be taken.

Topic 20: Sustainable transport of raw materials and chemical products		
Actions	Actors	Timeframe
<b>20.1 Increase the availability and capacity of multi-modal terminals that are close to industrial clusters</b>		
<ul style="list-style-type: none"> <li>Support investment in rail and inland waterway transport through public-private partnerships</li> </ul>	Industry	S

<ul style="list-style-type: none"> <li>Develop a framework for trusted, secure and resilient B2B transport and logistics for data sharing (DTLF)</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Set up sustainable and resilient value-chain logistics for the sustainable supply of alternative feedstock (e.g. following the 'Hubs4Circularity' concept (Horizon Europe) and the EU global gateway strategy)</li> </ul>	Industry	M
<ul style="list-style-type: none"> <li>Support the development of a multi-modal single European transport area through the Cohesion Fund (TEN-T)<sup>81</sup></li> </ul>	EU/MS	M

## 20.2 Improve use of rail transport

<ul style="list-style-type: none"> <li>Adopt in 2023 a legislative package on greening freight transport (REPowerEU)</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Improve reliability, rail punctuality, and rail-infrastructure coordination between different national railway systems</li> </ul>	MS	S

The digital transformation of the chemical industry and the deployment of available technologies for production and distribution will accelerate the industry's path towards the digital, green and resilience objectives.

The chemical industry must increase its deployment rate of digital technologies (e.g. the 'internet of things', big data, artificial intelligence, automation, smart sensors, digital twins and robotics) for product design, process design, production and logistics (e.g. paperless transport; real-time logistics planning and steering; and reducing idle transport capacity).

To take full advantage of the enabling power of digitalisation, the industry requires high-speed and reliable digital infrastructure. Industry associations say that there is a need for new standards for digital platforms to make possible the exchange of information on chemicals. These standards must be set in a way that promotes greater technical and semantic interoperability, while the governance systems for these digital platforms should also be designed in a way that ensures the protection of confidential business information. The Commission's new standardisation strategy<sup>82</sup> aims to support these goals by focusing on standardisation needs in strategy areas and improving the overall governance and integrity of the European standardisation system. This digital shift brings with it both cybersecurity risks and the problem of human resistance to change. The Commission fosters innovations – such as this one in standards – by creating investment programmes such as the InvestEU or the [Digital Europe Programme](#).

To support the development and deployment of new and available technologies for the digitalisation of chemical manufacturing, the actions set out in the table below should be taken building upon in particular the policies, measure and actions set in the European Strategy for data<sup>83</sup>.

<sup>81</sup> Trans-European Transport Network (TEN-T) [https://transport.ec.europa.eu/transport-themes/infrastructure-and-investment/trans-european-transport-network-ten-t\\_en](https://transport.ec.europa.eu/transport-themes/infrastructure-and-investment/trans-european-transport-network-ten-t_en).

<sup>82</sup> [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_22\\_661](https://ec.europa.eu/commission/presscorner/detail/en/ip_22_661).

<sup>83</sup> See COM(2020)66 final. A European strategy for data. <https://europa.eu/!BB46Mq>.

Topic 21: Deployment of digital technologies		
Actions	Actors	Timeframe

### 21.1 Deploy safe, high-speed and reliable digital infrastructure

<ul style="list-style-type: none"> <li>Development of an open data platform data space for chemicals to ensure seamless access and combination of data and tools complying with GDPR, IP, confidential business information and access rights (CSS and SRIP)</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>Consider drawing up standards for both data interoperability and governance to protect confidential business information based on the developments in the context of common European Data Spaces</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>Provide data on product carbon footprints for chemicals, and feed-in data for wider sectoral KPIs being developed within the CSS in alignment with the Digital Product Passport</li> </ul>	Industry and EU/MS	S/M

### 21.2 Deploy technologies to improve chemical manufacturing processes and data gathering

<ul style="list-style-type: none"> <li>Extend partnerships with innovative actors offering digital solutions (<i>Linked to Topic 8.1</i>)</li> </ul>	Industry	S/M
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To develop infrastructure for the recycling and re-use of materials, it will be necessary to invest in organic and inorganic waste collection, sorting, and value chains. This will improve access to important alternative sources of feedstock. Local and regional legislation must also be updated to avoid the landfilling, incineration and export of waste. Nonetheless, there remain strong economic barriers to this circularity project, in particular: (i) the price competitiveness of virgin materials compared to material recycled via mechanical recycling processes (virgin materials are often cheaper); and (ii) the lack of support for creating post-consumer recycled end-markets. Outdated 'linear' support for waste incineration, landfilling and shipment will have to be changed, and this change should be incentivised by law – including at municipal level – to engage the full circular value chain. The new circular economy action plan shows the path to a climate-neutral competitive economy by changing the way we produce and consume along with initiatives to modernise and transform our economy while protecting the environment.

The deployment of CCU and CCS<sup>84</sup> technologies also require the scale-up of reliable infrastructure for transporting and storing CO<sub>2</sub>. The main barrier preventing the chemical industry from deploying these technologies is insufficient access to CO<sub>2</sub> pipes and storage as well as the lengthy and complex implementation process, especially in this phase of the transition. The ETS Innovation Fund provides support to small- and large-scale projects focusing on scaling up the construction of CCU and CCS technologies and infrastructure. In addition, through local industrial symbiosis (the [Hubs4Circularity](#) concept), the CO<sub>2</sub> produced

<sup>84</sup> Carbon capture and storage (CCS) is a set of technologies aimed at capturing, transporting, and storing CO<sub>2</sub> emitted from power plants and industrial facilities.

See: [https://energy.ec.europa.eu/topics/oil-gas-and-coal/carbon-capture-storage-and-utilisation\\_en#:~:text=Carbon%20capture%20and%20storage%20\(CCS,Strategy%20\(2020%2D2024\).](https://energy.ec.europa.eu/topics/oil-gas-and-coal/carbon-capture-storage-and-utilisation_en#:~:text=Carbon%20capture%20and%20storage%20(CCS,Strategy%20(2020%2D2024).)

by an energy-intensive industry (e.g. the steel industry), can be used by a chemical facility nearby, avoiding the need to scale up infrastructure for transporting and using CO<sub>2</sub>.

To increase the development of infrastructure that promotes recycling and re-use, stakeholders recommend that the actions set out in the table below should be taken.

Topic 22: Circularity: recycling and re-use of infrastructure		
Actions	Actors	Timeframe
<b>22.1 Set a regulatory framework for the transport of waste</b>		
<ul style="list-style-type: none"> <li>Ensure the harmonised EU implementation of the <a href="#">Basel Convention</a> through the Waste Shipment Regulation</li> </ul>	EU/MS	S
<b>22.2 Improve the management of logistics for waste feedstock</b>		
<ul style="list-style-type: none"> <li>Increase the coordination of waste-management infrastructure with Hubs4Circularity (Horizon Europe) (e.g. mechanical treatment of waste management) <i>(Linked to Topic 3.2.)</i></li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Use the Innovation Fund to support the deployment and upscaling of CCS technologies and infrastructure, aimed at capturing, transporting, and storing CO<sub>2</sub> emission</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Implement the Waste Framework Directive and Waste Shipment Regulation; encourage cooperation between municipalities</li> </ul>	MS	S
<ul style="list-style-type: none"> <li>Enforce the regulation of illegal imports to avoid contamination of the recycling loop <i>(Linked to Topic 13)</i></li> </ul>	MS	S
<ul style="list-style-type: none"> <li>Consider participating in infrastructure projects<sup>85</sup></li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Invest in the management of waste feedstock</li> </ul>	Industry	M

<sup>85</sup> e.g. Porthos, Antwerp at Sea, North Sea Port.

## 7) SKILLS

Some SMEs have only limited capacity to upskill and reskill their workforce in-house. At the same time, other SMEs are an integral part of the vocational educational system, where most of the EU's retraining, upskilling and re-skilling opportunities occur. Nevertheless, SMEs are especially vulnerable to the risk of employees leaving the workplace after completing the vocational education, which is often a significant investment for a company. Skills partnerships for stakeholders in the chemical industry (and skills partnerships under the Pact for Skills) will provide opportunities to investigate the existing and emerging skills needs across the chemical industry, including the skills needs for people working in or managing SMEs. The EU's Pact for Skills, for example, could provide common support, leadership and monitoring for the development of skills in the chemical industry among stakeholders in the EU chemical industry. This would help to reskill and upskill the workforce for the twin transition in line with the targets set in the Digital Decade Policy Programme. Moreover, the SRIP<sup>86</sup> for safe and sustainable chemicals and materials identifies the skills that will be critical for: (i) training a new generation of researchers; and (ii) improving sustainability management in industry, and specifically in R&I. Additional sources for skills support are set out in the two bullet points below.

- The digital education action plan aims to support the sustainable and effective adaptation of the education and training systems of Member States to the digital context. This action plan could be used to help identify the main gaps and necessary actions in the chemical industry.
- The European strategy for universities provides actions that also contribute to the transition pathway for the EU chemical industry since the strategy aims to help universities adapt to changing conditions, and to contribute to Europe's resilience and recovery.

To support the re-skilling and upskilling of the chemical workforce, stakeholders suggested the actions set out in the table below.

Topic 23: Education (re-skilling/upskilling the workforce)		
Actions	Actors	Timeframe
<b>23.1 Develop skills with a sustainability focus</b>		
<ul style="list-style-type: none"> <li>• Develop a roadmap for skills, including the social dimension</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>• Set up sector-specific training, including training on green and sustainable chemistry, chemicals regulation, and safety</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>• Identify and address SSbD skills mismatches and skills gaps in the field of SSbD in the chemical industry. Ensure appropriate skills at all levels – including in vocational and tertiary education, in research, in industry, and among regulators</li> </ul>	Industry and EU/MS	S
<ul style="list-style-type: none"> <li>• Increasing awareness of the European Digital Innovation Hubs in the sector and digital technology training they offer</li> </ul>	EU	S

<sup>86</sup> COM, 2022. [Science, Research and Innovation Performance of the EU \(SRIP\) report](#).



<ul style="list-style-type: none"> <li>Participate in the EU blueprint for sectoral cooperation on skills, including the Blueprint Alliance on energy-intensive industries/industrial symbiosis</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Develop a more effective compensation scheme for SMEs that contribute to vocational education</li> </ul>	Industry and EU/MS	S/M

### 23.2 Adapt secondary, post-secondary and university education

<ul style="list-style-type: none"> <li>Contribute to the activities of the European Year of Youth in cooperation with national associations of chemical employers</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Adapt university curricula to industry needs, by adding courses on regulation, sustainable chemistry, green chemistry and the principles of SSbD to university programmes in chemistry. Adapt apprenticeships and vocational education and training programmes to teach future-proof knowledge</li> </ul>	EU/MS	S/M
<ul style="list-style-type: none"> <li>Develop and ensure broad science, technology, engineering and mathematics (STEM) education across all education sectors</li> </ul>	EU/MS and social partners	M
<ul style="list-style-type: none"> <li>Make use of tools and initiatives under the European Skills Agenda, such as the EU Pact for Skills</li> </ul>	EU/MS	M

New, effective and inclusive training approaches are essential in swiftly integrating new workers into the job market. It is also important that workers benefit from training opportunities combined with actual work tasks. This will require the modernisation of teaching methods and training programmes. Considering their great importance in vocational education, SMEs should play a central role in achieving these objectives. Stakeholders report that the chemical industry will lack skilled workers, in particular in technical fields, digital/IT fields, R&I, production, logistics, chemical safety, chemical regulation, etc. This lack of skilled workers is especially acute in the area of digital skills. Re-skilling workers should be a priority to avoid overall job losses and to benefit the chemical sector. Specific attention should be given to training university students on the regulatory and safety aspects of the chemical industry.

To ensure sufficient high-quality jobs at technical level, the actions in the following table should be taken.

Topic 24: Sufficient supply of jobs at technical level		
Actions	Actors	Timeframe

#### 24.1 Increase corporate training

<ul style="list-style-type: none"> <li>Foster/organise regional training programmes and centres where in-company training is difficult (e.g. in small companies), in line with existing programmes</li> </ul>	EU/MS and Industry	S
<ul style="list-style-type: none"> <li>Further promotion of lifelong learning</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Forecast and address the challenges connected to skills needed to introduce new technologies, with full contribution from workers' representatives (including digital skills)</li> </ul>	Industry	S/M

<ul style="list-style-type: none"> <li>• Provide company-based training, and reskill workers so they are prepared for the professions of the future. Link this training to job-to-job transition plans</li> </ul>	Industry	S/M
<ul style="list-style-type: none"> <li>• Provide in-company training opportunities, career paths, and apprenticeships</li> </ul>	Industry	S/M
<ul style="list-style-type: none"> <li>• Invest in the re-skilling of workers, especially by ensuring financial support for SMEs</li> </ul>	Industry	M

#### **24.2 Increase the attractiveness of the sector**

<ul style="list-style-type: none"> <li>• Ensure good communication by company managers with their workers, notably about the risks linked to the transition. This will reduce existing uncertainties and help workers to embrace the transformation of the industry in which they work</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>• Provide attractive employment conditions, such as flexible working hours, digital technologies, job sharing, etc.</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>• Increase the exposure of young scientists to R&amp;D carried out in industry as well as in academia. 'Industry led' research is also science that should be given equal value/status in education</li> </ul>	EU/MS	M

## 8) SOCIAL DIMENSION

The European Green Deal and the EU digital strategy pay particular attention to supporting those regions, industries, workers, households and consumers that will face the greatest challenges coming from the social impact of the twin transition. This impact varies according to sector, occupation, region and country, and will entail job changes within industrial sectors, and changes to investment patterns and staff numbers across these sectors.

This requires appropriate anticipation of change and socially responsible restructuring where necessary<sup>87</sup>. Through the responsible care initiative, the EU chemical industry has already demonstrated its focus on workers' health. For the industry, particular attention should also be paid to regional cohesion, the industry's impact on workforce and consumers, and improving gender equality and diversity in the sector. The twin transitions will likely shift jobs away from some places and towards others, creating job losses in some sectors, but increasing staff numbers in others.

The green transition must be fair and inclusive, putting people first, and paying particular attention to supporting those workers, households and consumers that will face the greatest challenges. Social dialogue should play an important role in this context.

Sustainable products will soon become the norm, and this will make it easier for consumers to take 'sustainable' decisions. Higher production costs will ultimately be borne by consumers but are expected to be minimal, as they will be spread very broadly. In any case, potential negative social consequences should be avoided. To avoid negative impacts on workers and consumers, stakeholders suggested that the following actions be taken.

Topic 25: Impact on workers and consumers		
Actions	Actors	Timeframe
<b>25.1 Regional cohesion</b>		
<ul style="list-style-type: none"> <li>Monitor and assess the environmental and economic impact of chemical production in the region</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Inform the public about the impacts and risks linked to the transition. This will reduce existing uncertainties and help encourage the public to embrace the transition</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Conduct a detailed investigation of employment in industries at <a href="#">NUTS 2 and 3 levels</a> to identify where jobs are being created, transformed and lost in order to target support and cohesion policies</li> </ul>	EU/MS	M
<ul style="list-style-type: none"> <li>Support active regional labour market policies, including policies to increase workers' skills</li> </ul>	EU/MS	M/L
<b>25.2 Safety and social security of workers</b>		
<ul style="list-style-type: none"> <li>Continue to adapt safety protocols before introducing new technologies.</li> </ul>	Industry	S

<sup>87</sup> Industrial Forum, 2022. [Blueprint for the development of transition pathways.](#)

<ul style="list-style-type: none"> <li>Develop 'job transition plans' (based on social lifecycle assessments (e.g. SEE balance<sup>88</sup>), and dialogue at company, local and sectoral levels)</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Take business decisions with workers' representatives involved to ensure that the decisions incorporate occupational safety and health, work organisation, training needs etc.</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Ensure social dialogue at company, sectoral and regional/national levels through an appropriate legal framework (EMPL Committee 2013 Cercas report) and make public funding for transition projects dependent on the involvement of workers and their representatives in these projects</li> </ul>	EU/MS	M
<ul style="list-style-type: none"> <li>Share best practices and develop synergies among sectors on clean and smart production processes</li> </ul>	Industry and EU/MS	S/M

Gender equality, inclusion and diversity are among the EU's founding values. In a sector that has historically been gender unbalanced such as the chemicals sector, actions and initiatives to address this shortcoming and lack of diversity are therefore necessary to increase the proportion of women in the sector. As reported by the EIB<sup>89</sup>, more investment in women entrepreneurs is the right thing to do socially and ethically. When eliminating barriers for women to access the chemical industry and develop a career path within it, due attention must be paid to the principle of fairness: one size does not fit all.

Measures should also be taken to address the existing knowledge gap on certain aspects of the chemical industry. For example, there is a need to: (i) increase the collection of data on the differentiated risks affecting working women; and (ii) provide an exhaustive assessment of such data. It is also important to address the lack of extended data on exposure to chemicals that are detailed enough to show the risks that women in particular face when exposed to certain chemicals.

The following table summarises actions proposed by the stakeholders on improving gender equality and diversity in the sector.

Topic 26: Improve gender diversity and equality in the sector		
Actions	Actors	Timeframe
<ul style="list-style-type: none"> <li>Follow-up on the outcomes of the 2022 report on equal participation of women in the EU chemical industry and on the e-platform '<a href="#">Children – Care – Career</a>'</li> </ul>	Industry	S
<ul style="list-style-type: none"> <li>Further implement the EU gender-equality strategy, with policy objectives and actions to make significant progress by 2025 towards a gender-equal Europe</li> </ul>	EU/MS	S
<ul style="list-style-type: none"> <li>Encourage women into chemistry and chemical engineering programmes and raise awareness of careers for women in the chemicals industry at high schools</li> </ul>	Industry and EU/MS	M

<sup>88</sup> A methodology designed by BASF to measure all the three pillars of sustainability – environment, society and economy.

<sup>89</sup> EIB, 2022. [Women entrepreneurs are our best opportunity](#).

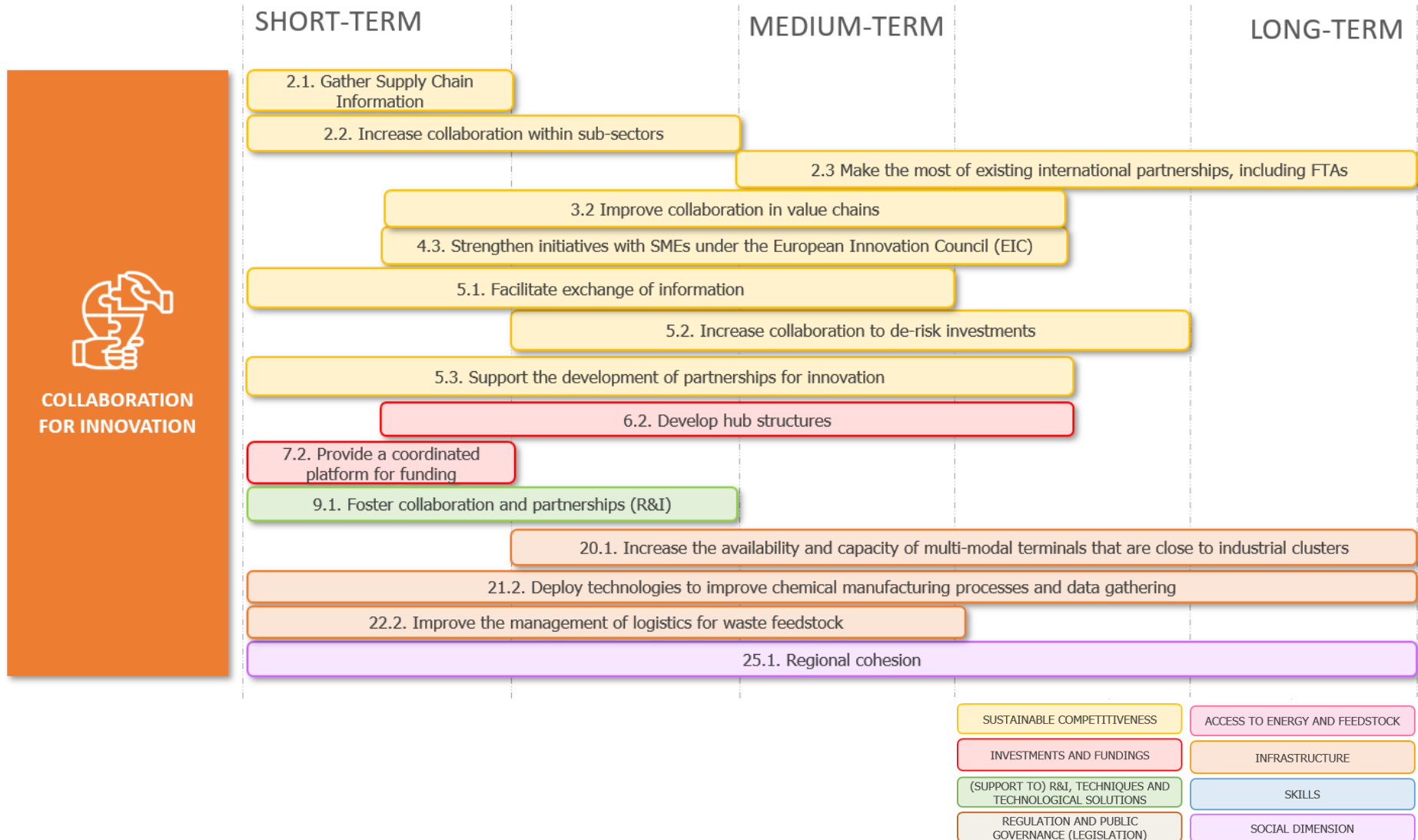
### III/ ROADMAP

The Commission and stakeholders used the key topics of the eight building blocks to develop a roadmap for the EU chemical industry to achieve the twin transition and resilience of the industry. These key topics were sequenced against a timeline. The outcome is a roadmap composed of three components as set out below.

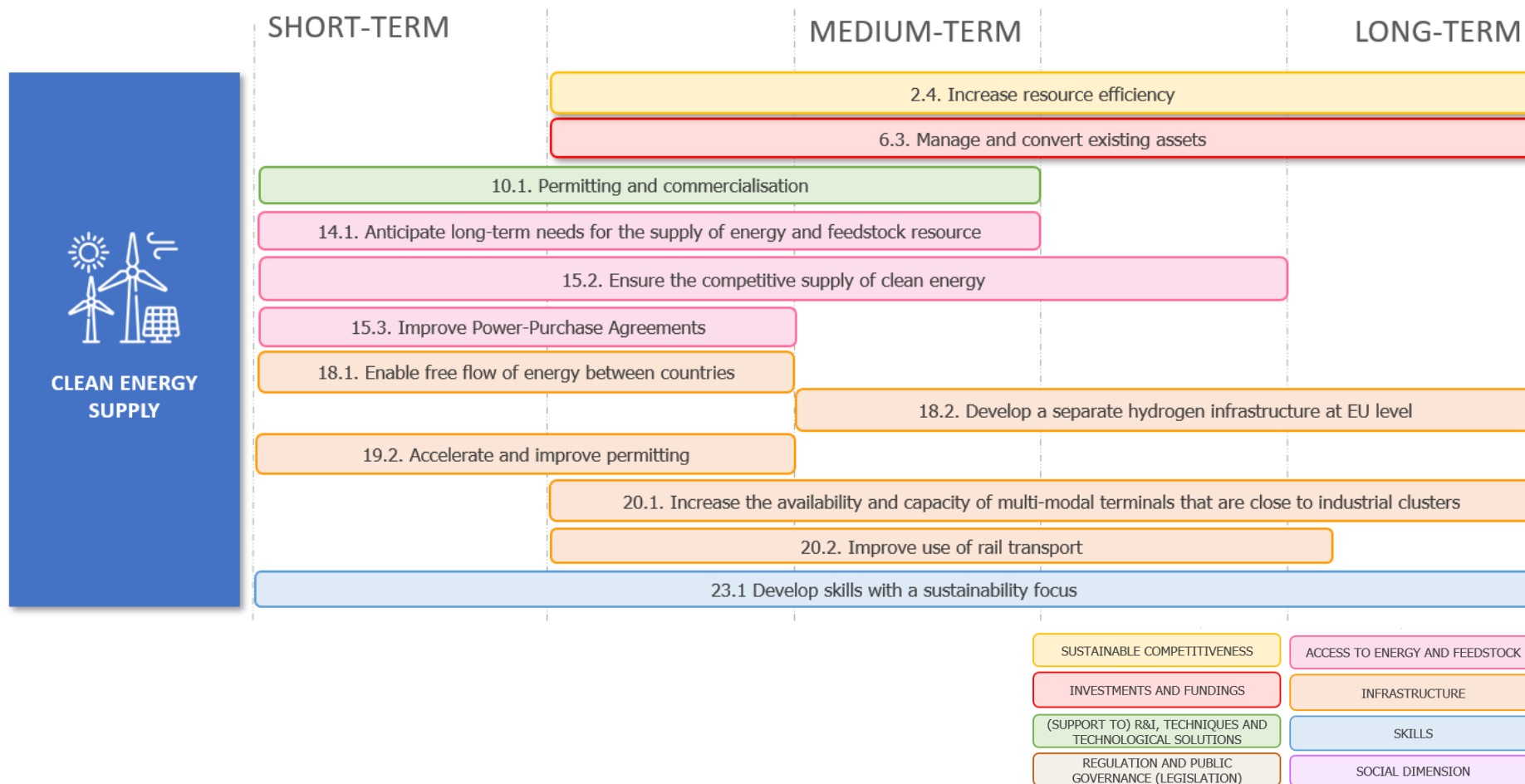
1. **An action-oriented component** grouping the topics under three cross-cutting themes: collaboration for innovation; clean-energy supply; and feedstock diversification. The choice of these themes was informed by analysis of the existing literature and discussion with stakeholders.
2. **A technology component** that provides an overview of the different topics that are related to technology as a contribution to the twin transition and resilience. The basis for this roadmap is the SET action plan, its supportive actions and EU initiatives.
3. **A regulatory component** that collects the existing legislation – including major R&I initiatives influencing developments in the chemical industry.

By implementing actions identified under each topic, the chemical industry will accelerate the twin transition and improve its resilience, sustainability and circularity in line with the European Green Deal.

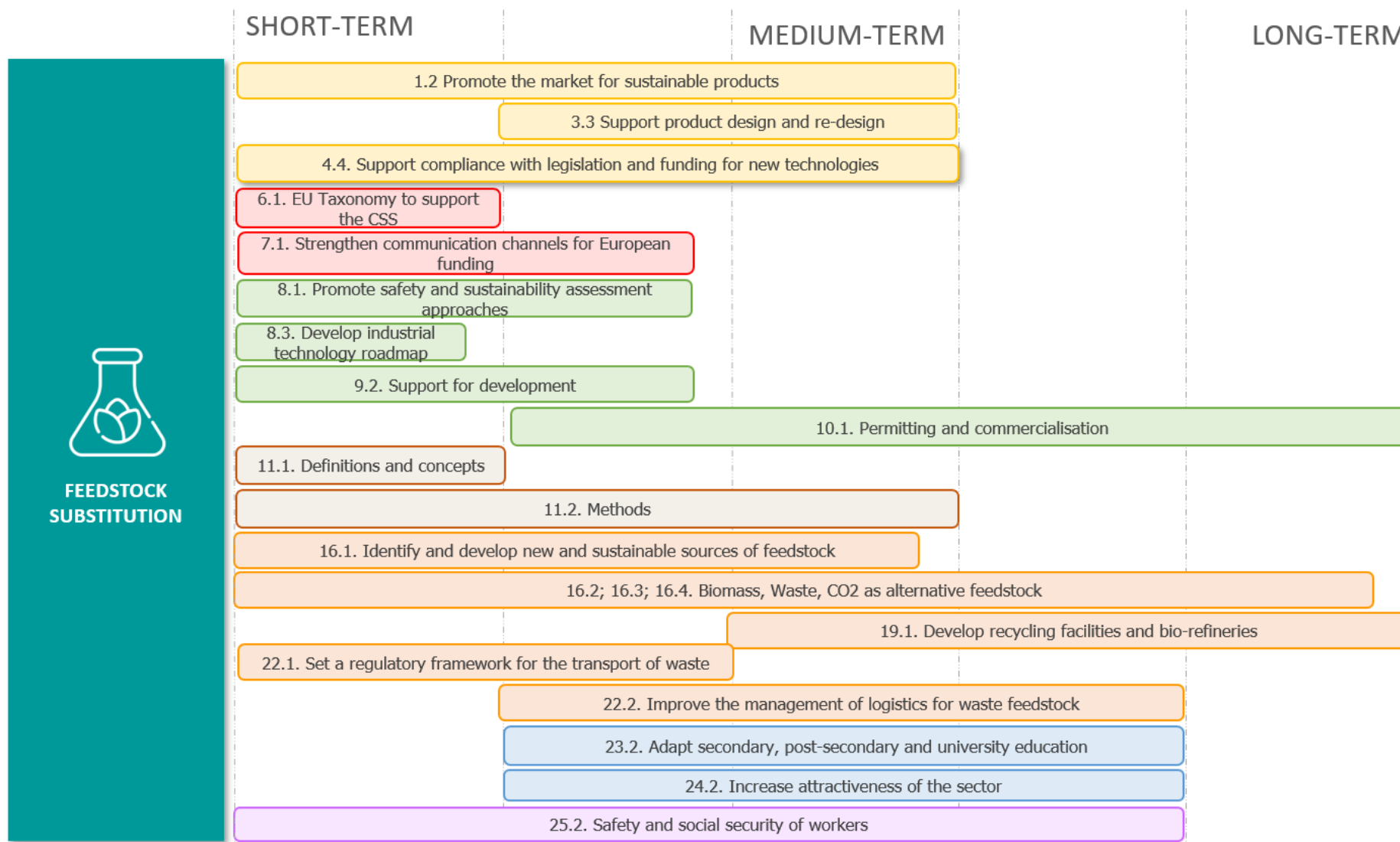
# 1) ACTION-ORIENTED ROADMAP



The [REPowerEU plan](#) sets out a series of measures to rapidly reduce the EU's dependence on Russian fossil fuels well before 2030 by accelerating the clean-energy transition. The REPowerEU plan is based on saving energy, producing clean energy, and diversifying the EU's energy supplies. As part of its plan to scale up the use and production of renewable energy, the Commission proposes to increase the target for the use of renewable energy to 45% of all energy used in the EU by 2030. The supply and availability of clean energy is therefore key to the chemical industry's transformation. The graph below lists actions aiming to facilitate the supply of clean energy in the EU.









Feedstock substitution is a key aspect that must be developed in order to achieve the objectives of the twin transition. The replacement of feedstock that uses a lot of fossil carbon is essential and will be driven by the deployment of current technologies and development of new ones.





## 2) TECHNOLOGY ROADMAP

<b>EU Initiatives supporting Technological Transition</b> <i>(SET Action Plan)</i>	<b>Actions</b> <i>(as presented in Building Blocks – Part II)</i>	<b>EU Initiatives</b>
 <b>A) ELECTRIFICATION</b>	6.2. Develop hub structures 8.3. Development of an industrial technology roadmap 14. Anticipate I-t needs for the supply of energy and feedstock resource 15.1. Channel investments for clean energy 15.2. Ensure competitive supply of clean energy 15.3. Improve Power-Purchase Agreements 18.1. Enable the free flow of energy between countries 20.1. Increase availability and capacity of multi-modal terminals close to industrial clusters 20.2. Improve use of rail transport	<ul style="list-style-type: none"> <li>• REPowerEU</li> <li>• EU Renewable Directive</li> <li>• TEN-E Regulation</li> <li>• Proposal for a directive on Energy Efficiency</li> </ul>
 <b>B) HYDROGEN</b>	6.2. Develop hub structures 6.3. Manage and convert existing assets 15.1. Channel investments for clean energy 15.2. Ensure the competitive supply of clean energy 18.2. Develop a separate hydrogen infrastructure at EU level	<ul style="list-style-type: none"> <li>• European Clean Hydrogen Alliance</li> <li>• Hydrogen and decarbonised gas market package</li> </ul>
 <b>C) BIOMASS</b>	4.3. Strengthen initiatives with SMEs under the EIC 8.1. Promote safety and sustainability assessment approaches 9.1. Foster collaboration and partnerships 16.2. Biomass as an alternative feedstock 19.1. Develop recycling facilities and bio-refineries (and exploit synergies with the chemical industry)	<ul style="list-style-type: none"> <li>• Revision of the Renewable Energy Directive</li> <li>• INCITE (Industrial Emissions Directive)</li> </ul>
 <b>D) WASTE</b>	3.2. Improve collaboration in value chains 3.3. Support product design and re-design 8.1. Promote safety and sustainability assessment approaches 11.1. Definitions and concepts 11.2. Methods 16.3. Waste as an alternative feedstock 22.1. Set a regulatory framework for the transport of waste 22.2. Improve the management of logistics for waste feedstock	<ul style="list-style-type: none"> <li>• Hubs4Circularity</li> <li>• Waste Framework Directive</li> <li>• Landfill Directive</li> </ul>
 <b>E) CCU &amp; CCS</b>	6.3. Manage and convert existing assets 9.2. Support for development 16.4. CO <sub>2</sub> as an alternative feedstock 22.2. Improve the management of logistics for waste feedstock	<ul style="list-style-type: none"> <li>• Hubs4Circularity</li> <li>• Sustainable Carbon Cycle</li> </ul>
 <b>F) PROCESS EFFICIENCY</b>	3.2. Improve collaboration in value chains 3.3. Support product design and re-design 5.1. Facilitate exchange of information (new synergies) 5.3. Support the development of Partnerships for Innovation 6.3. Manage and convert existing assets 17. Process efficiency 19.1. Develop recycling facilities and bio-refineries (and exploit synergies with the chemical industry) 20.1. Increase the availability and capacity of multi-modal terminals that are close to industrial clusters 21.2. Deploy technologies to improve chemical manufacturing processes and data gathering 25.2. Safety and social security of workers	<ul style="list-style-type: none"> <li>• REPowerEU</li> <li>• Industrial Symbiosis</li> <li>• Revision of the Industrial Emission Directive</li> </ul>

The SET action plan prioritises technologies to be developed to reach the objectives of resilience and the twin transition. The table below summarises general EU initiatives and actions to support the SET action plan.

In addition, the ERA industrial technology roadmap for low-carbon technologies sketches out the key technologies and the means to transfer them to the industrial ecosystem for energy-intensive industries at EU and national level. See [page 28, Table 3 - Overview of technological pathways, TRLs and application potential by sector](#).

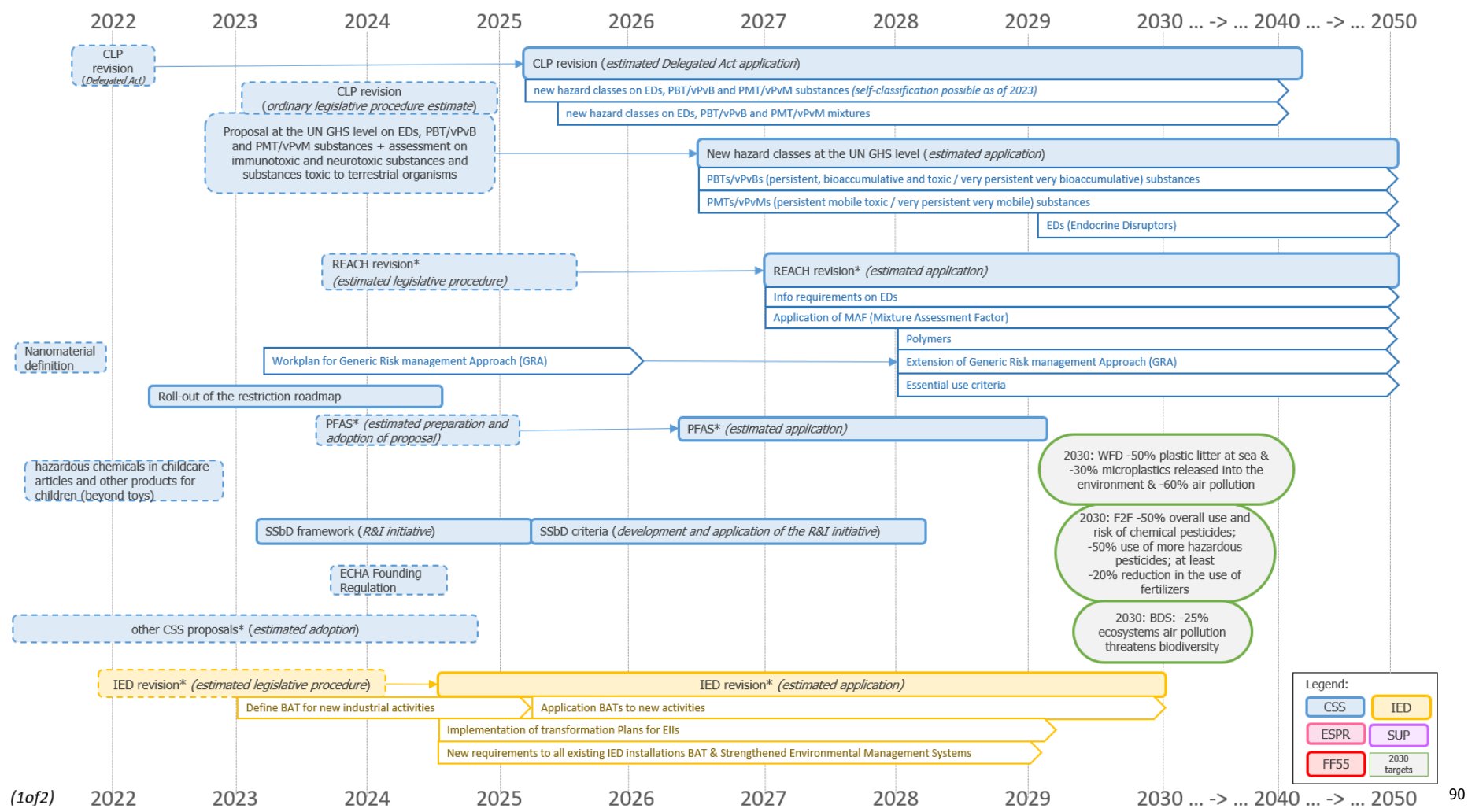
### 3) REGULATORY ROADMAP (INCLUDING R&I INITIATIVES)

This overview of existing legislation and major R&I initiatives relevant to the chemical industry has been developed using the best available knowledge at the time of writing. It includes the latest publicly available information and best-scenario assumptions about the ongoing legislative and non-legislative procedures, as proposed by the Commission. However, the timeline of this roadmap remains purely indicative – especially for those proposals whose content is still under development.

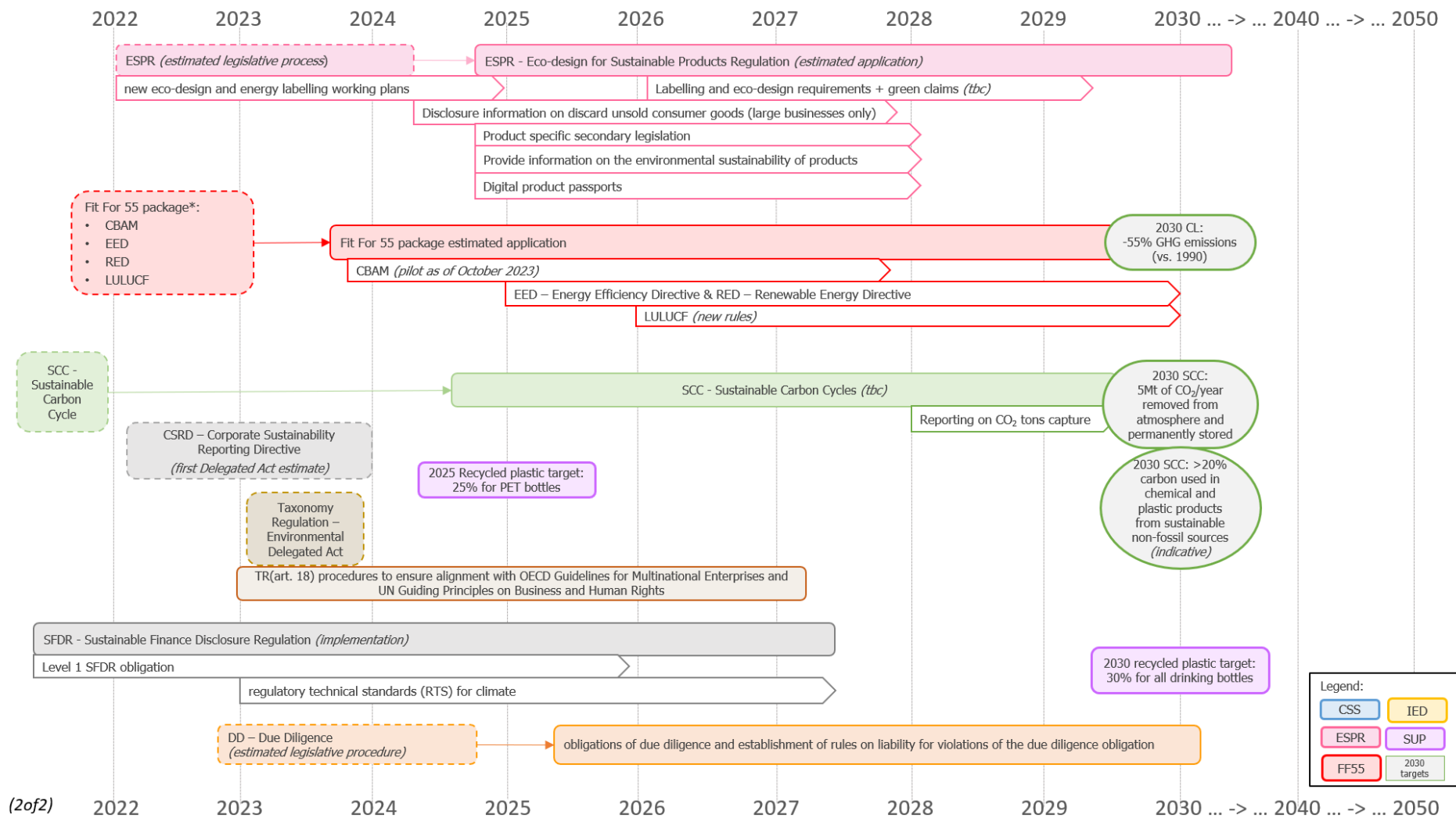
The overview does not include all financial opportunities supporting the implementation of the legislation (where it exists) and/or the transition of the industry. It also does not include all supportive EU documents, such as the guidance on boosting circular business models referred to in the ESPR. However, it aims to be a tool to help decision-makers and other stakeholders in the chemical industry.

In the figures below, boxes surrounded by a dashed outline indicate the timeframe for the estimated development and adoption of the proposal. Boxes with solid outlines indicate the estimated timeframe for application. However, the period in which the legislation will be valid is expected to go beyond the end of the box.

A full list of the acronyms used in the figure below is available in [Annex 2](#), while additional information after the figure covers elements that are part of the proposals for which a detailed timeline is still not available.



<sup>90</sup> Minimise the presence of substances of concern in products by introducing requirements, also as part of the SPRI, giving priority to those product categories that affect vulnerable populations as well as those product categories with the highest potential for circularity, such as textiles, packaging (including food packaging), furniture, electronics, ICT, equipment, construction and buildings.



(2of2)

\*PFAS – *additional elements* [COM\(2020\) 667 final](#):

- Restriction under REACH for all non-essential uses including in consumer products.
- Add PFAS where possible as a group in the review of annexes of the Environmental-Quality Standards Directive and Groundwater Directive.
- Proposal to address the emissions of PFAS from the waste stage including through the revision of the Sewage Sludge Directive.
- Address the presence of PFAS in food by introducing limits in the Food Contaminants Commission Regulation.
- Address PFAS concerns at a global scale via proposals under the Stockholm Convention and the Basel Convention.

\*REACH revision – *additional elements* [COM\(2020\) 667 final](#):

- Authorisation and restriction processes + requirements for registration.
- Amend Article 68(2) to include professional users.
- Introduce MAFS in Annex I.
- 'One substance, one assessment' process.
- Draft a restrictions roadmap of CMRs, EDs, PBT/vPvBs, immunotoxicants, neurotoxicants, substances toxic to specific organs and respiratory sensitisers.
- Amend REACH Article 57 to add EDs, PMT and vPvM substances to the list of substances of very high concern.

\*Other proposals (according to Annex CSS):

- 2021: [EU Strategic Framework on Health and Safety at work - Occupational safety and health in a changing world of work.](#)
- 2022: EU repository of human and environmental health-based limit values.
- 2023: Creation of an open platform on chemical-safety data and tools for accessing relevant academic data.
- 2023: General proposal to: (i) remove legislative obstacles to the re-use of data; (ii) streamline data flows across legislation; and (iii) extend the open-data and transparency principles from the EU food-safety sector to other pieces of chemical legislation.
- 2023: Proposals to allow EU and national authorities to commission testing and monitoring of substances as part of the regulatory framework.

\*IED revision – *additional elements* [COM\(2022\) 156 final](#):

- Permits – reviewing and updating permits, depending on the status of the receiving environment, and/or planning measures to comply with environmental-quality standards, objectives, plans and programmes under water legislation.
- More detailed reporting of pollutants at installation level.
- Indirect release of polluting substances – clarifying the rules that apply to the indirect release of polluting substances into water through urban wastewater treatment plants.
- Fostering innovation will help address persistent chemical substances and substances newly identified as being of concern, including PFAS, microplastics and pharmaceuticals.
- BREFs – ‘exchange of information’ process under the IED to draw up and review best-available-technique reference documents (BREFs). These BREFs should take account of the identification of substances of concern under EU water legislation. In particular, these include ‘watch lists’ of substances for groundwater and surface water, and substances identified as possibly posing a significant risk to or via the aquatic environment at EU level.
- Setting additional and updated criteria to support the EU Taxonomy on sustainable investments.
- List of pollutants replaced by Annex II on pollutants of E-PRTR Regulation (as amended).
- Strengthened provisions on sanctions + specified minimum content of penalties.
- Extension to large-scale battery production (manufacture of lithium-ion batteries with a production capacity of 3.5 GWh or more per year) and mining.

\*Fit For 55 package – *additional elements* [COM\(2021\) 550 final](#):

- **CBAM** broadening of the scope to include organic chemicals, plastics, hydrogen, ammonia and indirect emissions.
- **EED** – Energy Efficiency Directive: Annual energy-savings obligations for MSs of more than 0.8% (2021-2023) & annual energy savings obligations for MSs of more than 1.5% (2024-2030).
- **RED** – Revision of the Renewable Energy Directive to increase the binding EU minimum share of renewable energy sources in final energy consumption to 40% by 2030, in effect doubling the share of renewable energy sources in the energy mix over the course of a single decade (2021-2030). The proposal would also set a comprehensive framework for the deployment of renewable energy sources across all sectors of the economy, with a particular focus on sectors where progress has been slow (transport, buildings and industry). The

binding EU headline target of 40% would be supported by a series of higher EU and national targets for these different sectors, and the promotion of hydrogen consumption in transport and industry.

- **[Energy taxation](#)**: main changes include the following points:
  - fuels will start being taxed according to their energy content and environmental performance rather than their volume, helping businesses and consumers alike to make cleaner, more climate-friendly choices;
  - according to this ranking, conventional fossil fuels, such as gas oil and petrol will be taxed at the highest rate and electricity at the lowest rate;
  - products are categorised for taxation purposes in a simplified way to ensure that fuels most harmful to the environment are taxed the most;
  - exemptions for certain products and home heating will be phased out (thus, fossil fuels can no longer be taxed below minimum rates);
  - fossil fuels used as fuel for intra-EU air transport, maritime transport and fishing should no longer be fully exempt from energy taxation in EU.
- **[ESR – Effort Sharing Regulation](#)**.
- **[LULUCF proposal](#)** for: (1) moving away from the 'no-debit' rule (where GHG emissions cannot exceed GHG removals within the sector) from 2026; (2) increasing the carbon-sink potential to deliver GHG removals in the current decade; (3) strengthening Member States' obligation to submit integrated mitigation plans for the land sector; (4) improving monitoring requirements using digital technologies supported by the European Environment Agency and the Copernicus programme; (5) alignment with other key biodiversity and bioenergy policy initiatives; (6) expanding the scope of the regulation to cover the whole land sector from 2031 by including non-CO<sub>2</sub> emissions from the agriculture sector; and (7) setting a value on mitigation actions by introducing a carbon-removal certification scheme and the possibility to trade in certificates.
- **[SCF – Social Climate Fund](#)**.

## IV/ NEXT STEPS

The co-creation process with stakeholders has shown how relevant it is to work together to support the twin transition. However, the cooperation must not stop when the transition pathway is published. It should continue with a co-implementation process involving all interested stakeholders, accompanied by structures and participatory processes to bring forward the agreed actions and monitor progress on the industry's transition.

The co-implementation process will start by the publication of the transition pathway and by disseminating this pathway to all relevant stakeholders. Then, the Commission services could organise a first co-implementation meeting. The aim of this meeting would be the discussion of – and agreement on – the approach to follow for such co-implementation.

The co-implementation process will consider policy coordination necessary across EU Member States. Indeed, the support of the EU Member States for the transition is crucial, to guide and provide support at regional and local levels and to implement regulatory changes in a coordinated and harmonised manner.

The specific approach will be discussed and agreed with stakeholders participating in the co-implementation once the final version of the transition pathway for the chemical industry is published. Stakeholders should consider the following points:

- Organising an annual plenary meeting for a stocktaking exercise on the co-implementation of the transition pathway. During this meeting, participants will also identify topics and actions to tackle in the coming months. They may wish also to agree on a prioritisation for carrying out specific actions before others and announce pledges. This meeting would be also an opportunity to prepare yearly conclusions on the implementation progress of the transition pathway for the chemical industry.
- Adopting an annual progress report to be shared and discussed with the [Competitiveness Council](#) and all relevant EU and national institutional stakeholders.
- If necessary, creating specific task forces dedicated to topics of high priority that require additional discussion. Actions set out for these topics in the transition pathway will then be allocated to these task forces to follow and guide. These task forces would self-organise their work, and with the support of Commission services, they would prepare each year a summary of the progress made on the actions which would be presented at the annual meeting.
- Distributing an annual survey for stakeholders who have made specific commitments to help implement transition-pathway actions and objectives. Such commitments will be as quantifiable as possible, with an appropriate engagement level by different actors. These commitments will also mention an indicative timeframe for implementation. The updated status of commitments would be published online to inform and encourage other stakeholders.
- This Pathway may be updated to take account of new developments and the evolution of EU legislation.



# ANNEXES

## Annex 1 - Overview of Green Deal objectives impacting the chemical industry

This Annex collects the objectives for the green and digital transition, as well as for resilience of the chemicals sector, based on existing EU documents; including strategies, actions plan, etc.

Green objectives	Source <sup>91</sup>
<i>Climate neutrality by 2050</i>	
No net emission of greenhouse gas emissions in EU by 2050	GD
Net reduction of GHG emissions by at least 55% (By 2030 vs. 1990 level)	CL1
5Mt of CO <sub>2</sub> to be annually removed from the atmosphere and permanently stored through frontrunner projects by 2030	SCC1
<i>Energy</i>	
EU gross final consumption of energy to be at least 45% from renewable energy sources (2030) <i>{binding target}</i>	RED II
At least 32.5% improvement in energy efficiency by 2030 (2007 projects for 2030)	EED1
Reducing primary (39%) and final (36%) energy consumption by 2030	EED2
Annual energy savings obligations by MSs: 2021-2023: >0.8% and 2024-2030: >1.5%	EED3
<i>Environment and Health</i>	
Improving water quality by reducing waste, plastic litter at sea (by 50%) and microplastics released into the environment (by 30%) (2030)	ZPAP1
Reduction in air pollution (60%, 2030)	ZPAP2
Reducing the EU ecosystems where air pollution threatens biodiversity (25%)	ZPAP3/BD
Reducing the overall use and risk of chemical pesticides (50%) and the use of more hazardous pesticides (50%) by 2030 and at least 20% reduction in the use of fertilizers (2030)	F2F
<i>Circularity</i>	
Increasing municipal waste recycling: >55% by weight by 2025 >60% by weight by 2035	WFD
Restrict landfilling of waste recyclable or suitable for energy recovery (2030)	LD
Content recycling target (2025): 25% for PET bottles 30% for all drinking bottles	SUPD
75% target for recycling of packaging waste (2030)	PPWD

<sup>91</sup> See [Annex 2](#) for the full list of abbreviations.

Reduce transport-related greenhouse gas emissions by 90% by 2050	GD
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Green objectives: Industry Level	Rf
<i>Climate</i> <sup>92</sup>	
At least 20% of carbon used in the chemical and plastic products to be from sustainable non-fossil sources by 2030 (indicative)	SCC2
Reporting every ton of CO <sub>2</sub> captured, transported, used and stored and accounting it by fossil, biogenic or atmospheric origin (2028)	SCC3
<i>Environment and Health</i>	
Stepping up innovation for the green transition of the chemical industry and its value chains.	CSS(G1)
Making the EU chemicals policy evolve and establish safe and sustainable chemicals as an EU global benchmark, securing international competitiveness.	CSS(G2)
Most harmful substances banned for consumer products unless they are essential for society.	CSS(G3)

Digital objectives	Rf
Development of digital tools and instruments towards safer and sustainable chemicals	CSS(D)
Digitalisation of chemical production (e.g. through internet of things, big data, artificial intelligence, smart sensors and robotics exploitation, digital product passports, data sharing across supply chains, etc.) building upon the actions, initiatives and measures for the digitalization of business set in Digital Decade Policy Programme.	SCC(D1)
Paperless chemicals transport based on data sharing across the supply chain, and multimodal optimisation of transportation capacity.	SCC(D2)
Exploitation of digital tools for faster action on enforcements and optimal use of resources, including of market surveillance authorities, and foster digital innovations for advanced tools, methods and models, and data analysis capacities to also move away from animal testing.	SCC(D3)

Resilience objectives	Rf
Strengthening EU's open strategic autonomy by notably promoting the EU's resilience of supply and sustainability of critical chemicals	CSS(R)
Substitution of alternative feedstock, integration of renewable energies and increase in energy efficiency (reduce EU energy consumption) in order to avoid dependencies from Russian gas to be fastened as announced in REPowerEU	REP(R)

<sup>92</sup> This list does not include indications from impact assessments and are Commission's working documents. For example, the IA SWD(2020) 176 final mentions "Industry to reduce GHG emissions between 20.3% & 25.15 by 2030 (vs 2015 level)".

## Annex 2 - Overview of initiatives impacting the chemical industry

Non-exhaustive list of initiatives that include green and digital objectives for the chemical industry, as identified by stakeholders:

Annex 1 source	Full reference	URL
BDS	EU Biodiversity Strategy for 2030	<a href="https://europa.eu/!vw76Rn">https://europa.eu/!vw76Rn</a>
CL1	European Climate Law	<a href="https://europa.eu/!b9jcXm">https://europa.eu/!b9jcXm</a>
CL2	SWD(2020) 176 final - Impact Assessment accompanying document for COM/2020/562 final.	<a href="https://europa.eu/!gC43Cr">https://europa.eu/!gC43Cr</a>
CSS	Chemicals Strategy for Sustainability Towards a Toxic-Free Environment	<a href="https://europa.eu/!Vt94Yr">https://europa.eu/!Vt94Yr</a>
EED II	Proposal for a Directive on energy efficiency (recast) – COM(2021) 558 final	<a href="https://europa.eu/!w4jVHV">https://europa.eu/!w4jVHV</a>
F2F	Farm to Fork Strategy	<a href="https://europa.eu/!rt73kQ">https://europa.eu/!rt73kQ</a>
GD	The European Green Deal	<a href="https://europa.eu/!DG37Qm">https://europa.eu/!DG37Qm</a>
GT <sup>93</sup>	EU taxonomy for sustainable activities	<a href="https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en">https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en</a>
IS II	A New Industrial Strategy for Europe	<a href="https://europa.eu/!ghHBCV">https://europa.eu/!ghHBCV</a>
LD	Landfill Directive	<a href="https://europa.eu/!F88pXB">https://europa.eu/!F88pXB</a>
PPWD	Packaging and Packaging Waste Directive	<a href="https://europa.eu/!qYCFN7">https://europa.eu/!qYCFN7</a>
RED III	Renewable Energy Directive (recast) – COM(2021) 557 final	<a href="https://europa.eu/!TBQJtY">https://europa.eu/!TBQJtY</a>
REP	REPowerEU	<a href="https://europa.eu/!WDnDq6">https://europa.eu/!WDnDq6</a>
SCC	Sustainable Carbon Cycle	<a href="https://europa.eu/!9xCx8D">https://europa.eu/!9xCx8D</a>
SUPD	Single-Use Plastics directive	<a href="https://europa.eu/!RD46Uw">https://europa.eu/!RD46Uw</a>
WFD	Waste Framework Directive	<a href="https://europa.eu/!TW93TN">https://europa.eu/!TW93TN</a>
ZPAP	Pathway to a Healthy Planet for All EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil'	<a href="https://europa.eu/!wRCWv9">https://europa.eu/!wRCWv9</a>

Additional policy initiatives impacting chemical industry's twin transition:

- [The Eco-design for Sustainable Products Regulation](#)
- [Revision of REACH](#)

<sup>93</sup> In the case of the EU Green Taxonomy, it is not an objective but rather a system to classify which parts of the economy may be marketed as sustainable investments.

- [Revision of CLP - Classification, Labelling and Packaging](#)
- Implementation of EU ETS - Phase 4
- Definition of sectorial targets for GHG emissions reduction by 2030 and by 2050 (vs. 1990 levels)
- Bioeconomy Strategy and Bioeconomy Action Plan
- [Circular Economy and Action Plan](#)
- [EU Methane Strategy](#)
- [Corporate Sustainability reporting Directive](#)
- [Initiative on substantiating green claims](#)

Additional policy initiatives that will have an impact on the industry resilience:

- ❖ European Critical Raw Materials Act
- ❖ [Corporate Sustainability Due Diligence](#)
- ❖ [EU Advanced Materials manifesto and the critical raw material strategy](#)
- ❖ [Review of EU strategic dependencies and capacities](#)
- ❖ [EU's Trade strategy](#)
- ❖ [IED – Industrial Emissions Directive's revision](#)
- ❖ [Revision of the Environmental Crime Directive.](#)

## Annex 3 – Summary of the topics under each building block

Building Blocks	Topics
<a href="#">Sustainable Competitiveness</a>	<p><b>Topic 1:</b> International Competitiveness</p> <p><b>Topic 2:</b> Reduction of unsustainable dependencies and supply chains vulnerabilities</p> <p><b>Topic 3:</b> Safety and Sustainability</p> <p><b>Topic 4:</b> Innovation and growth of SMEs</p> <p><b>Topic 5:</b> New synergies</p>
<a href="#">Investments and Funding</a>	<p><b>Topic 6:</b> Fund for Green Investments</p> <p><b>Topic 7:</b> Access to Funding</p>
<a href="#">R&amp;I, Techniques and Technological Solutions</a>	<p><b>Topic 8:</b> Better conceptualisation of new techniques and technical solutions (TRL 1 to 5)</p> <p><b>Topic 9:</b> Developing new techniques and technological solutions (TRL 6 to 7)</p> <p><b>Topic 10:</b> Deployment of new techniques and technological solutions (TRL 8 to 9)</p>
<a href="#">Regulation and Public Governance (legislation)</a>	<p><b>Topic 11:</b> More effective and predictable legislation</p> <p><b>Topic 12:</b> Vertically and horizontally coherent legislation</p> <p><b>Topic 13:</b> Effective and efficient enforcement</p>
<a href="#">Access to energy and feedstock</a>	<p><b>Topic 14:</b> Anticipate long-term needs for Energy and Resource Supply</p> <p><b>Topic 15:</b> Economically viable purchase of clean energy</p> <p><b>Topic 16:</b> Feedstock Substitution</p> <p><b>Topic 17:</b> Process and resource efficiency</p>
<a href="#">Infrastructure</a>	<p><b>Topic 18:</b> Large-scale electricity and hydrogen infrastructure</p> <p><b>Topic 19:</b> Development of new sustainable production facilities</p> <p><b>Topic 20:</b> Sustainable transport of raw materials and chemical products</p> <p><b>Topic 21:</b> Deployment of digital technologies</p> <p><b>Topic 22:</b> Circularity: recycling and reuse infrastructure</p>
<a href="#">Skills</a>	<p><b>Topic 23:</b> Education (reskilling/upskilling the workforce)</p> <p><b>Topic 24:</b> Sufficient supply of jobs at technical level</p>
<a href="#">Social Dimension</a>	<p><b>Topic 25:</b> Impact on workforce and consumers</p> <p><b>Topic 26:</b> Improve gender diversity and equality in the sector</p>

## Annex 4 – Additional actions on legislation suggested by stakeholders

Stakeholders suggested additional actions to those included in the chapter “regulation and public governance (legislation)” as potential contributors to the transition of the chemical industry towards green and digital objectives, as well as its resilience. These proposals are not part of the final roadmap of the EU chemicals transition pathway because it only includes actions and measures deriving from existing legislation.

To make the EU legislation more effective and predictable, stakeholders propose:

- To deepen the climate component of the transition pathway by developing a sectoral roadmap to meet the climate neutrality objective of the chemicals sector; in line with the European Climate Law (art.10);
- To develop and to implement – with the support of Member States - a plan of work proposed by Commission services for staged implementation of the GRA (Generic Risk Assessment) under REACH revision, differentiating substances, consumer mixtures and articles, and distinguishing professional uses according to exposure patterns;
- To develop OECD testing schemes and testing methods for the safety assessment of polymers in cooperation with the authorities (linked to the REACH revision);
- To create new regulations to require an increasing proportion of materials to be reused, recycled or from renewable materials and to be designed for circularity (binding goals, not just for packaging; adoption of a “mass-balance” methodology in support of recycling<sup>94</sup>;
- Consider the use of predictive toxicology, such as QSAR by the OECD, to fill the gaps in (eco)toxicity data needed for the assessment of chemicals hazard;
- Inclusion in the Better Regulation of a balance between requests for data and costs for the industry in collecting and reporting the requested data;
- Do not hamper the use of digital technologies by the chemical industry under the ongoing legislative initiatives on digital. For example, in the definition of “high risk AI – Artificial Intelligence” consider the potential negative impact on including some of the chemical industry appliances.

To improve the coherence of legislation vertically and/or horizontally, stakeholders proposed:

- Establishing a coordination mechanism within the Commission services to agree and synchronise – to the extent possible – legislation on chemicals. For example, revision of the Waste Framework Directive to happen before Packaging and Packaging Waste Directive review<sup>95</sup>. This would avoid an “all in once” implementation of the legislation. A link between PACT and such mechanism should also be explored;

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<sup>94</sup> This may include verification and certification protocols for mass balance systems, clear definitions of recycled content and chemical-recycling technologies and a harmonized EU implementation of the Basel Convention.

<sup>95</sup> A stakeholder suggests also improving the interplay between OSH legislation and other chemicals legislation and strengthen their enforcement to promote the safer use of chemicals as well as the use of safer and more sustainable chemicals to support a harmonised enforcement in Member States.

- To align chemicals, waste and product legislation<sup>96</sup> on key definitions such as “recycling”;
- Harmonisation of rules on the end-of-waste criteria in the revision of the EU Waste Framework Directive;
- Revision of Block Exemption Regulations and of antitrust rules to facilitate value chain cooperation for the development and implementation of techniques and technical solutions largely contributing to the twin transition. This could include using “regulatory sandboxes”<sup>97</sup>.

Finally, to ameliorate the enforcement and implementation of existing legislation, stakeholders proposed:

- Explore the use of digital tools to support market surveillance and customs authorities, as well as to improve the compliance of products containing chemicals sold online to European consumers;
- Include in bilateral and multilateral trade agreements a cooperation on enforcement of chemicals legislation and on capacity building necessary for enforcement;
- Proposal for carbon leakage protection for export and across the entire value chain;
- Support the deployment of synergies to exploit between industry and health authorities, occupation and epidemiological databases as a basis for future regulatory action;
- Consider reattribution of technical and scientific work on chemicals performed under the relevant pieces of legislation to European agencies, including work of SCHEER and SCCS<sup>98</sup> as also proposed in the Commission’s Chemicals Strategy for Sustainability;
- Foresee a “warning” mechanism providing an advice service to SMEs before sanctioning the company in case of non-compliance with EU legislation due to regulatory overburden;
- Propose a new partnership mechanism to support development of high-quality REACH registration dossiers and support SMEs for safety assessment;
- Provide incentives to the downstream users and customers, help the uptake of new technological solutions via Green Public Procurement<sup>99</sup> or eco-modulated EPR fees<sup>100</sup>, among others.

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<sup>96</sup> This includes, among others, Eco-design for Sustainable Products Regulation, Waste Framework Directive, Waste Shipment Regulation and Packaging and Packaging Waste Directive.

<sup>97</sup> European Commission, TOOL #21. Research & Innovation, Better Regulation Toolbox; European Commission 6783/20 (COM (2020)103); Council conclusions 13026/20 Annex.

<sup>98</sup> A stakeholder suggests allowing EU and national authorities to commission testing and monitoring of substances. Another strengthening and formalize the role of the ECHA Enforcement Forum.

<sup>99</sup> GPP is a voluntary instrument, it has a key role to play in the EU's efforts to become a more resource-efficient economy. It can help stimulate a critical mass of demand for more sustainable goods and services which otherwise would be difficult to get onto the market. GPP is therefore a strong stimulus for eco-innovation.

<sup>100</sup> OECD, 2021. Modulated fees for extended producer responsibility schemes (EPR) [https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP\(2021\)16&docLanguage=En](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP(2021)16&docLanguage=En)

## Annex 5 – Additional actions on R&I suggested by stakeholders

In addition to product (re-)design, main R&I priorities to decrease GHG emissions, increase resource efficiency and circularity as well as safety in the chemical industry include:

- The integration of climate-neutral energy through direct and indirect electrification (e.g. electrification of heat); steam generation or upgrade; electrification of chemical processes in particular through electrochemical processes; or alternative energy forms like plasma and photons
- The use of alternative carbon feedstock (see [the energy and feedstock building block](#))
- The production of hydrogen with a reduced carbon footprint for existing and expected higher future use, either as chemical feedstock, or in the future, as an energy carrier
- Process efficiency, including process intensification and advanced separation technologies
- Carbon capture and storage.

Such priorities require new process technologies and their combination will be essential to reach the 2050 EU climate-neutrality objective. Advanced tools supporting decision-making from the design phase to production, supported by digital technologies as well as advanced materials, will also be key enabling priorities for the chemical sector.

Stakeholders suggested a series of initiatives to further strengthen the role of R&I in the twin transition and economic resilience of the EU chemical industry. These actions include:

- A dedicated Horizon Europe Innovation Programme on the CSS (focus on SSbD for most impacted value chains), a joint public-private programme supporting projects with higher TRL to avoid “valley of death”;
- Development of different project assessment’s criteria for higher TRLs (from TRL7 upwards) in European funding;
- Involve industry closely to ensure transfer of knowledge into innovation;
- Support faster co-creation of new digital technologies and related collaborations as well as early adopters of digital technologies through appropriate risk sharing and funding measures for the chemical industry;
- Propose a framework on how to exchange data at EU level (incl. IPRs implications across EU technology platforms and activities) via innovation platforms;
- Simplified and coordinated access to EU and national research programmes (especially for SMEs);
- Further strengthen the agility and effectiveness of the EU project funding process;
- Develop methodologies for chemical risk assessment that consider the whole life cycle of substances, materials and products;
- Develop effective Risk-Sharing Instruments with appropriate evaluation at all TRLs including for demonstration plant and first-of-its-kind (FOAK) plant;



## Annex 6 – Glossary

### **Carbon Border Adjustment Mechanism (CBAM)**

Carbon Border Adjustment Mechanism (CBAM) is a system designed in compliance with World Trade Organization (WTO) rules and other international obligations of the EU. EU importers will buy carbon certificates corresponding to the carbon price that would have been paid, had the goods been produced under the EU's carbon pricing rules. Conversely, once a non-EU producer can show that they have already paid a price for the carbon used in the production of the imported goods in a third country, the corresponding cost can be fully deducted for the EU importer. The CBAM will help reduce the risk of carbon leakage by encouraging producers in non-EU countries to green their production processes.

### **Carbon Capture and Storage**

Carbon Capture and Storage (CCS) technologies aim to capture as much as 85% - 90% of CO<sub>2</sub> emissions from power plants and heavy industry before transporting it by pipeline or ship and storing it permanently and safely at least 800 metres below the earth's surface.

### **Carbon Capture and Utilisation**

Carbon capture and utilisation technologies may mitigate climate change by removing CO<sub>2</sub> from the atmosphere and converting it into other materials such as fuels, chemicals and plastics.

### **Circular economy**

A circular economy aims to maintain the value of products, materials and resources for as long as possible by returning them into the product cycle at the end of their use, while minimising the generation of waste.

### **Circular Economy Action Plan**

It's one of the main building blocks of the European Green Deal, Europe's new agenda for sustainable growth. The EU's transition to a circular economy will reduce pressure on natural resources and will create sustainable growth and jobs. It is also a prerequisite to achieve the EU's 2050 climate neutrality target and to halt biodiversity loss.

### **Cohesion Fund**

The Cohesion Fund provides support to Member States with a gross national income (GNI) per capita below 90% EU-27 average to strengthen the economic, social and territorial cohesion of the EU. It supports investments in the field of environment and trans-European networks in the area of transport infrastructure.

### **Digital Innovation Hubs**

European Digital Innovation Hubs (EDIHs) are one-stop shops supporting companies to respond to digital challenges and become more competitive. More information is available at the webpage <https://digital-strategy.ec.europa.eu/en/activities/edihs>

### **Energy and Industry Geography Lab (EIGL)**

The Energy and Industry Geography Lab is a tool for geographical data related to energy, industry and infrastructure. The tool makes it possible to find and filter energy-related data, and create and share maps displaying this data. It enables analyses and assessments that support Europe's transition to climate neutrality.

### **Energy-intensive industries**

Energy-intensive industries (EIIs), embedded in many strategic value chains, make up more than half of the energy consumption of the EU industry. EIIs produce goods and materials that enable reduction of emissions in other sectors of the economy, including transport, construction and power generation.

### **ERA industrial technology roadmap**

Industrial technology roadmap under the new European research area (ERA) provides an evidence base on the state of play of low-carbon technologies in energy-intensive industries in the EU and available support instruments, and points to possible research and innovation action in view of accelerating development and uptake of these technologies. These possible ways forward build on contributions from industry, other research and innovation stakeholders, Member States, and relevant European partnerships. This roadmap will feed into the transition pathway for the energy-intensive industries ecosystem under the EU industrial strategy and supports the work to accelerate the green and digital transitions under the ERA policy agenda.

### **EU Chemicals Strategy for Sustainability**

The EU's chemicals strategy aims to better protect citizens and the environment and boost innovation for safe and sustainable chemicals. Its main actions are banning the most harmful chemicals in consumer products - allowing their use only where essential, boosting the investment and innovative capacity for production and use of chemicals that are safe and sustainable by design.

### **Euroclusters**

Clusters are groups of firms, related economic actors, and institutions located near each other and with sufficient scale to develop specialised expertise, services, resources, suppliers and skills. Together, SMEs can be more innovative, create more jobs, and

register more international trademarks and patents than alone. There are over 1500 clusters located in more than 200 EU-27 regions. Clusters account for almost 25% of total EU employment.

### **European Digital Innovation Hubs (EDIHs)**

They help companies dynamically respond to the digital challenges and become more competitive. By providing access to technical expertise and experimentation as well as the possibility to 'test before invest', EDIHs help companies improve business/production processes, products, or services using digital technologies. They also provide innovation services, such as financing advice, training, and skills development that are needed for a successful digital transformation. Environmental issues are also considered, regarding energy consumption and low carbon emissions.

### **European Green Deal**

The European Green Deal will transform the EU into a modern, resource-efficient and competitive economy in order to overcome challenges as climate change and environmental degradation that are an existential threat to Europe and the world.

### **Green Public Procurement (GPP)**

Green Public Procurement (GPP) is defined in the Communication "Public procurement for a better environment" ([COM \(2008\) 400 final](#)) as "a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured." GPP is a voluntary instrument, which means that Member States and public authorities can determine the extent to which they implement it.

### **Horizon Europe Research & Innovation Programme**

Horizon Europe is the EU's key funding programme for research and innovation with a budget of €95.5 billion from 2021 to 2027. It tackles climate change, helps to achieve the UN's Sustainable Development Goals and boosts the EU's competitiveness and growth. The programme facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies while tackling global challenges. It supports creating and better dispersing of excellent knowledge and technologies. It creates jobs, fully engages the EU's talent pool, boosts economic growth, promotes industrial competitiveness and optimises investment impact within a strengthened European Research Area. Legal entities from the EU and associated countries can participate.

### **Hubs4Circularity**

The Hubs 4 Circularity (H4C) are key instruments to advance the research and innovation agenda of European industries towards the Green Deal's objectives. H4Cs have a strong technological focus and industrial dimension, but their implementation leverages elements well beyond research and innovation. Specific implementation (including funding) strategies will have to be co-designed, ensuring the participation of all stakeholders; industry, Small and medium-sized enterprises (SMEs), research and technology organizations (RTOs), local authorities, educational institutions and civil society.

### **Industrial symbiosis**

Industrial symbiosis is the process by which wastes or by-products of an industry or industrial process become the raw materials for another. Application of this concept allows materials to be used in a more sustainable way and contributes to the creation of a circular economy.

### **Intergovernmental Panel on Climate Change**

The Intergovernmental Panel on Climate Change is the United Nations body for assessing climate change science. It produces regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation. These reports inform governments in the development of climate policy as well as guiding the UN's international climate change negotiation.

### **Just Transition Fund (JTF)**

The Just Transition Fund is a new instrument with an overall budget of €17.5 billion, of which €7.5 billion are coming from the Multiannual Financial Framework (MFF) and €10 billion from the NextGenerationEU. The JTF is a key element of the European Green Deal and the first pillar of the Just Transition Mechanism (JTM). It aims to alleviate the social and economic costs resulting from the transition towards a climate-neutral economy, through a wide range of activities directed mainly at diversifying the economic activity and helping people adapt in a changing labour market.

### **Just Transition Mechanism (JTM)**

The Just Transition Mechanism (JTM) is a key tool to ensure that the transition towards a climate-neutral economy happens in a fair way, leaving no one behind. It provides targeted support to help mobilise around €55 billion over the period 2021-2027 in the most affected regions, to alleviate the socio-economic impact of the transition.

### **Open Innovation Test Beds**

It is a set of entities, established in at least three Member States or Associated Countries, providing common access to physical facilities, capabilities and services required for the development, testing and upscaling of nanotechnology and advanced materials in industrial environments. Its objective is to bring nanotechnologies and advanced materials within the reach of companies and users advancing from validation in a laboratory to prototypes in industrial environments.

### **Private-Public Partnerships**

Long term contractual arrangements between the government and a private partner whereby the latter delivers and funds public services using a capital asset, sharing the associated risks. This broad definition shows that PPPs can be designed to achieve a wide array of objectives in various sectors, such as transport, social housing and healthcare, and can be structured under different approaches.

### **QSAR**

The JRC QSAR Model Database is a historical archive providing information on the validity of Quantitative Structure-Activity Relationship (QSAR) models that were submitted to JRC's EU Reference Laboratory for Alternatives to Animal Testing (EURL ECVAM).

### **Safe and sustainable-by-design**

A process to accelerate widespread market uptake of new and alternative chemical products and technologies that deliver greater consumer confidence in their safety, environmental and societal benefits and advance the transition towards a circular economy and climate-neutral society.

### **Social Life Cycle Assessment**

Social Life Cycle Assessment (S-LCA) is a method that can be used to assess the social and sociological aspects of products, their actual and potential positive as well as negative impacts along the life cycle. This looks at the extraction and processing of raw materials, manufacturing, distribution, use, reuse, maintenance, recycling and final disposal.

### **Sustainable Products Initiative (SPI)**

It aims to make products placed on the EU market more sustainable. Consumers, the environment and the climate will benefit from products that are more durable, reusable, repairable, recyclable, and energy efficient.

### **Trans-European Networks for Energy**

The Trans-European Networks for Energy (TEN-E) is a policy that is focused on linking the energy infrastructure of EU countries. As part of the policy,

nine priority corridors and three priority thematic areas have been identified.

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Council of the  
European Union

Brussels, 27 January 2023  
(OR. en)

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**Interinstitutional File:  
2021/0211(COD)**

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5768/23  
ADD 1

LIMITE

CLIMA 34  
ENV 69  
ENER 43  
TRANS 26  
COMPET 48  
ECOFIN 76  
CODEC 79

**NOTE**

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From: General Secretariat of the Council  
To: Permanent Representatives Committee

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Subject: Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757  
- Analysis of the final compromise text with a view to agreement

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In view of the Coreper meeting on 8 February 2023, delegations find attached the final compromise text of the proposal for amending Directive 2003/87/EC and Decision (EU) 2015/1814 (ETS general proposal).

2021/0211(COD)

**DIRECTIVE (EU) 2023/...**  
**OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**

of ...

**amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union and Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme**

**I**

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 192(1) thereof,

Having regard to the proposal from the European Commission,

After transmission of the draft legislative act to the national parliaments,

Having regard to the opinion of the European Economic and Social Committee<sup>1</sup>,

Having regard to the opinion of the Committee of the Regions<sup>2</sup>,

Acting in accordance with the ordinary legislative procedure<sup>3</sup>,

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<sup>1</sup> OJ C 152, 6.4.2022, p. 175.

<sup>2</sup> OJ C 301, 5.8.2022, p. 116.

<sup>3</sup> *Position of the European Parliament of ... (not yet published in the Official Journal) and decision of the Council of ...*

Whereas:

- (1) The Paris Agreement, adopted in December 2015 under the United Nations Framework Convention on Climate Change (UNFCCC) entered into force in November 2016 (‘the Paris Agreement’)<sup>4</sup>. Its Parties have agreed to hold the increase in the global average temperature well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1,5 °C above pre-industrial levels. ***This has been reinforced with the adoption of the Glasgow Climate Pact in November 2021, in which the Conference of the Parties recognises that the impacts of climate change will be much lower at the temperature increase of 1,5 °C, compared with 2 °C, and resolve to pursue efforts to limit the temperature increase to 1,5 °C.***
- (1a) ***The urgency of the need to keep the Paris Agreement goal of 1,5 °C alive has become more significant following the findings of the IPCC Sixth Assessment Report, that global warming can only be limited to 1,5 °C, if strong and sustained reductions in global greenhouse gas (GHG) emissions within this decade are immediately undertaken.***
- (2) Tackling climate and environmental-related challenges and reaching the objectives of the Paris Agreement are at the core of the Communication on “The European Green Deal”, adopted by the Commission on 11 December 2019<sup>5</sup>.

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<sup>4</sup> Paris Agreement (OJ L 282, 19.10.2016, p. 4).

<sup>5</sup> COM(2019)640 final.



- (3) The European Green Deal combines a comprehensive set of mutually reinforcing measures and initiatives aimed at achieving climate neutrality in the EU by 2050, and sets out a new growth strategy that aims to transform the Union into a fair and prosperous society, with a modern, resource-efficient and competitive economy, where economic growth is decoupled from resource use. It also aims to protect, conserve and enhance the Union's natural capital, and protect the health and well-being of citizens from environment-related risks and impacts. ***This transition affects workers from various sectors differently.*** At the same time, ***that transition has gender equality aspects as well as a particular impact on some disadvantaged and vulnerable groups, such as older people, persons with disabilities, persons with a minority racial or ethnic background and low and lower-middle income individuals and households. It also imposes greater challenges on certain regions, in particular structurally disadvantaged and peripheral regions, as well as islands.*** It must therefore be ensured that the transition is just and inclusive, leaving no one behind.
- (3a) ***On 17 December 2020, the Union submitted its nationally determined contribution (NDC) to the UNFCCC, following their approval by the Council. Directive (EU) 2003/87/EC as last amended by Directive 2018/410 is one of the instruments cited, subject to revision in light of the enhanced target, in the general description of the target in the Annex to that submission. The Council stated in its conclusions of 24 October 2022 that it stands ready, as soon as possible after the conclusions of the negotiations on the essential elements of ‘Fit for 55’ package, to update, as appropriate, the NDC of the EU and its Member States, in line with § 29 of the Glasgow Climate Pact to reflect how the final outcome of the essential elements of ‘Fit for 55’ package implements the EU headline target as agreed by the European Council in December 2020. As the EU ETS is a cornerstone of the Union’s climate policy and constitutes its key tool for reducing greenhouse gas emissions in a cost-effective way, the amendments to Directive 2003/87, including with regard to the scope thereof, adopted through this Directive are part of the essential elements of the “Fit for 55” package.***

- (4) The necessity and value of **delivering on** the European Green Deal have only grown in light of the very severe effects of the COVID-19 pandemic on the health, living and working conditions and well-being of the Union's citizens, which have shown that our society and our economy need to improve their resilience to external shocks and act early to prevent or mitigate them **in a manner that is just and results in no one being left behind, including those at risk of energy poverty**. European citizens continue to express strong views that this applies in particular to climate change<sup>6</sup>.
- (5) The Union committed to reduce the Union's economy-wide net greenhouse gas emissions by at least 55 % by 2030 below 1990 levels in the updated nationally determined contribution submitted to the UNFCCC Secretariat on 17 December 2020<sup>7</sup>.
- (6) In Regulation (EU) 2021/1119 of the European Parliament and of the Council<sup>8</sup> the Union has enshrined **in legislation** the target of economy-wide climate neutrality by 2050, **at the latest, and the aim to achieve negative emissions thereafter**. That Regulation also establishes a binding Union domestic reduction commitment of net greenhouse gas emissions (emissions after deduction of removals) of at least 55 % below 1990 levels by 2030. **That Regulation also establishes that the Commission should endeavour to align all future legislative and budgetary proposals with the objectives and targets set out in that Regulation and, in any case of non-alignment, provide the reasons as part of the impact assessment accompanying those proposals**.

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<sup>6</sup> Special Eurobarometer 513 on Climate Change, 2021 ([https://ec.europa.eu/clima/citizens/support\\_en](https://ec.europa.eu/clima/citizens/support_en)).

<sup>7</sup> [https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/European%20Union%20First/EU\\_NDC\\_Submission\\_December%202020.pdf](https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/European%20Union%20First/EU_NDC_Submission_December%202020.pdf)

<sup>8</sup> Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law') (OJ L 243, 9.7.2021, p. 1).

- (7) All sectors of the economy need to contribute to achieving those emission reductions. Therefore, the ambition of the EU Emissions Trading System (EU ETS), established by Directive 2003/87/EC of the European Parliament and of the Council<sup>9</sup>, ***should be adjusted to be in line with the economy-wide net greenhouse gas emissions reduction commitment for 2030, and be in line with the objective of achieving climate neutrality by 2050 at the latest, and the aim to achieve negative emissions thereafter, as laid down in Article 2(1) of Regulation (EU) 2021/1119.***
- (8) The EU ETS should incentivise production from installations that partly or fully reduce greenhouse gas emissions. Therefore, the description of some categories of activities in Annex I to Directive 2003/87/EC should be amended to ensure ***that installations performing an activity listed in Annex I and meeting the capacity threshold related to the same activity but not emitting any greenhouse gases are included in the scope of the EU ETS and therefore to ensure*** an equal treatment of installations in the sectors concerned. In addition, free allocation for the production of a product should ***take into account the circular use potential of materials and*** be independent of the ***feedstock or the type of*** production process, ***where the production processes have the same purpose.*** It is therefore necessary to modify the definition of the products and of the processes and emissions covered for some benchmarks to ensure a level playing field for ***installations using new technologies that partly or fully reduce greenhouse gas emissions*** and existing technologies. ***Notwithstanding the guiding principles, the revised benchmarks for 2026 to 2030 should continue to distinguish between primary and secondary production of steel and aluminium.*** It is also necessary to decouple the update of the benchmark values for refineries and for hydrogen to reflect the increasing importance of production of hydrogen, ***including green hydrogen,*** outside the refineries sector.

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<sup>9</sup> Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a system for greenhouse gas emission allowance trading within the Union and amending Council Directive 96/61/EC (OJ L 275, 25.10.2003, p. 32).

- (8a) *Following the modification of the definitions of the products and of the processes and emissions covered for some benchmarks, it is necessary to ensure that producers do not receive double compensation for the same emissions with both free allocation and indirect costs compensation, and thus to adjust the financial measures to compensate indirect costs passed on in electricity prices accordingly.*
- (9) Council Directive 96/61/EC<sup>10</sup> was repealed by Directive 2010/75/EU of the European Parliament and of the Council<sup>11</sup>. The references to Directive 96/61/EC in Article 2 of Directive 2003/87/EC and in its Annex IV should be updated accordingly. Given the need for urgent economy-wide emission reductions, Member States should be able to act to reduce greenhouse gas emissions that are under the scope of the EU ETS through other policies than emission limits adopted pursuant to Directive 2010/75/EU.
- (10) In its Communication ‘Pathway to a Healthy Planet for All’<sup>12</sup>, the Commission calls for steering the EU towards zero pollution by 2050, by reducing pollution across air, freshwaters, seas and soils to levels which are no longer expected to be harmful for health and natural ecosystems. Measures under Directive 2010/75/EU, as the main instrument regulating air, water and soil pollutant emissions, will often also enable emissions greenhouse gases to be reduced. In line with Article 8 of Directive 2003/87/EC, Member States should ensure coordination between the permit requirements of Directive 2003/87/EC and those of Directive 2010/75/EU.

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<sup>10</sup> Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control (OJ L 257, 10.10.1996, p. 26).

<sup>11</sup> Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (OJ L 334, 17.12.2010, p. 17).

<sup>12</sup> Communication from the Commission to the European Parliament, the Council, the European Economic And Social Committee and the Committee of the Regions Pathway to a Healthy Planet for All, EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil' (COM/2021/400 final).

- (11) Recognising that new innovative technologies will often allow reducing emissions of both greenhouse gases and pollutants, it is important to ensure synergies between policies delivering reductions of emissions of both greenhouse gases and pollutants, namely Directive 2010/75/EU, and review their effectiveness in this regard.
- (12) The definition of electricity generators was used to determine the maximum amount of free allocation to industry in the period from 2013 to 2020, but led to different treatment of cogeneration power plants compared to industrial installations. In order to incentivise the use of high efficiency cogeneration and to *level the playing field for* all installations receiving free allocation for heat production and district heating, all references to electricity generators in Directive 2003/87/EC should be deleted. In addition, Commission Delegated Regulation (EU) 2019/331<sup>13</sup> specifies the eligibility of all industrial processes for free allocation. Therefore, the provisions on carbon capture and storage in Article 10a(3) of Directive 2003/87/EC have become obsolete and should be deleted.

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<sup>13</sup> Commission Delegated Regulation (EU) 2019/331 of 19 December 2018 determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council (OJ L 59, 27.2.2019, p. 8).

- (13) Greenhouse gases that are not directly released into the atmosphere should be considered emissions under the EU ETS and allowances should be surrendered for those emissions unless they are stored in a storage site in accordance with Directive 2009/31/EC of the European Parliament and of the Council<sup>14</sup>, or they are permanently chemically bound in a product so that they do not enter the atmosphere under normal use ***and any normal activity taking place after the end of the life of the product***. The Commission should be empowered to adopt ***delegated*** acts specifying the conditions where greenhouse gases are to be considered as permanently chemically bound in a product so that they do not enter the atmosphere under normal use ***and any normal activity after the end of life***, including obtaining a carbon removal certificate, where appropriate, in view of regulatory developments with regard to the certification of carbon removals. ***The normal activity after the end of life of the product should be understood broadly, covering all the activities taking place after the end of life of the product, including disposal, reuse, remanufacturing, recycling, incineration, and landfill.***

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<sup>14</sup> Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006 (OJ L 140, 5.6.2009, p. 114).

- (14) International maritime transport activity, consisting of voyages between ports under the jurisdiction of two different Member States or between a port under the jurisdiction of a Member State and a port outside the jurisdiction of any Member State, has been the only means of transportation not included in the Union's past commitments to reduce greenhouse gas emissions. Emissions from fuel sold in the Union for journeys that depart in one Member State and arrive in a different Member State or a third country have grown by around 36 % since 1990. Those emissions represent close to 90 % of all Union navigation emissions as emissions from fuel sold in the Union for journeys departing and arriving in the same Member State have been reduced by 26 % since 1990. In a business-as-usual scenario, emissions from international maritime transport activities are projected to grow by around 14 % between 2015 and 2030 and 34 % between 2015 and 2050. If the climate change impact of maritime transport activities grows as projected, it would significantly undermine reductions made by other sectors to combat climate change ***and therefore to achieve the economy-wide net greenhouse gas emissions reduction target for 2030, the Union's climate-neutrality objective by 2050, at the latest, and the aim of achieving negative emissions thereafter as laid down in Article 2(1) of Regulation (EU) 2021/1119 and the goal of the Paris Agreement.***

- (15) In 2013, the Commission adopted a strategy for progressively integrating maritime emissions into the Union's policy for reducing greenhouse gas emissions. As a first step in this approach, the Union established a system to monitor, report and verify emissions from maritime transport in Regulation (EU) 2015/757 of the European Parliament and of the Council<sup>15</sup>, to be followed by the laying down of reduction targets for the maritime sector and the application of a market based measure. In line with the commitment of the co-legislators expressed in Directive (EU) 2018/410 of the European Parliament and of the Council<sup>16</sup>, action by the International Maritime Organization (IMO) or the Union should start from 2023, including preparatory work on adoption and implementation of a measure ensuring that the sector duly contributes to the efforts needed to achieve the objectives agreed under the Paris Agreement and due consideration being given by all stakeholders.
- (16) Pursuant to Directive (EU) 2018/410, the Commission should report to the European Parliament and to the Council on the progress achieved in the IMO towards an ambitious emission reduction objective, and on accompanying measures to ensure that the maritime transport sector duly contributes to the efforts needed to achieve the objectives agreed under the Paris Agreement. Efforts to limit global maritime emissions through the IMO are under way and should be encouraged, ***including the rapid implementation of the IMO Initial Strategy on Reduction of Greenhouse Gas Emissions from Ships, adopted in 2018, which also refers to possible market-based measures to incentivise greenhouse gas emission reductions from international shipping.*** However, while ***there recently has been progress in the IMO, this has so far not been*** sufficient to achieve the objectives of the Paris Agreement. ***Given the international character of shipping, it is important that the Member States and the Union within their respective competences work with third countries to step up diplomatic efforts to strengthen global measures and make progress on the development of a global market-based measure at the IMO level.***

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<sup>15</sup> Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC (OJ L 123, 19.5.2015, p. 55).

<sup>16</sup> Directive (EU) 2018/410 of the European Parliament and of the Council of 14 March 2018 amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/1814 (OJ L 76, 19.3.2018, p. 3).



(17) ***CO<sub>2</sub> emissions from the maritime sector account for around three to four percent of Union emissions.*** In the European Green Deal, the Commission stated its intention to take additional measures to address greenhouse gas emissions from the maritime transport sector through a basket of measures to enable the Union to reach its emissions reduction targets. In this context, Directive 2003/87/EC should be amended to include the maritime transport sector in the EU ETS in order to ensure this sector contributes ***its fair share*** to the increased climate objectives of the Union as well as to the objectives of the Paris Agreement, which requires developed countries to take the lead by undertaking economy-wide emission reduction targets, while developing countries are encouraged to move over time towards economy-wide emission reduction or limitation targets<sup>17</sup>. Considering that emissions from international aviation outside Europe should be capped from January 2021 by global market-based action while there is no action in place that caps or prices maritime transport emissions, it is appropriate that the EU ETS covers a share of the emissions from voyages between a port under the jurisdiction of a Member State and port under the jurisdiction of a third country, with the third country being able to decide on appropriate action in respect of the other share of emissions. The extension of the EU ETS to the maritime transport sector should thus include half of the emissions from ships performing voyages arriving at a port under the jurisdiction of a Member State from a port outside the jurisdiction of a Member State, half of the emissions from ships performing voyages departing from a port under the jurisdiction of a Member State and arriving at a port outside the jurisdiction of a Member State, emissions from ships performing voyages arriving at a port under the jurisdiction of a Member State from a port under the jurisdiction of a Member State, and emissions ***within*** a port under the jurisdiction of a Member State. This approach has been noted as a practical way to solve the issue of Common but Differentiated Responsibilities and Capabilities, which has been a longstanding challenge in the UNFCCC context. The coverage of a share of the emissions from both incoming and outgoing voyages between the Union and third countries ensures the effectiveness of the EU ETS, notably by increasing the environmental impact of the measure compared to a geographical scope limited to voyages within the EU, while limiting the risk of evasive port calls and the risk of delocalisation of transshipment activities outside the Union. To ensure a smooth inclusion of the sector in the EU ETS, the

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<sup>17</sup> Paris Agreement, Article 4(4).

surrendering of allowances by shipping companies should be gradually increased with respect to verified emissions reported for the period **2024** to **2025**. To protect the environmental integrity of the system, to the extent that fewer allowances are surrendered in respect of verified emissions for maritime transport during those years, once the difference between verified emissions and allowances surrendered has been established each year, a corresponding ■ number of allowances should be cancelled. As from 2026, shipping companies should surrender the number of allowances corresponding to all of their verified emissions. *While the climate impact of maritime transport is mainly due to carbon dioxide emissions, non-CO<sub>2</sub> emissions represent a significant share of shipping emissions. According to the Fourth IMO Greenhouse Gas Study<sup>18</sup>, methane emissions increased significantly over the period 2012-2018. Methane and nitrous oxide emissions will likely grow over time, notably with the development of vessels powered by liquefied natural gases or other energy sources. The inclusion of methane and nitrous oxide emissions would be beneficial for environmental integrity and incentivising good practices. These emissions should first be included in Regulation (EU) 2015/757 as from 2024 and they should be included in the EU ETS as from 2026.*

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*International Maritime Organization, Fourth IMO Greenhouse Gas Study 2020, p. 110.*

- (17a)** *The extension of the scope of Directive 2003/87/EC to maritime transport will lead to changes in the cost of shipping. All parts of the Union will be affected by this as the goods transported to and from ports within the Union by maritime transport have their origin or destination in the different Member States, including in landlocked Member States. The allocation of allowances to be auctioned by the Member States should therefore, in principle, not change as a consequence of the inclusion of maritime activities and include all Member States. However, Member States will be affected to different extents. Notably Member States with a high reliance on shipping will be most exposed to the effect of the extension. Member States with a large maritime sector compared to their relative size will be more affected by the extension of the EU ETS to maritime transport. It is therefore appropriate to provide additional time-limited assistance to those Member States in the form of additional allowances to support decarbonisation of maritime activities and for the administrative costs incurred. The assistance should be gradually introduced in parallel with the introduction of surrender obligations and thus with the increased effect on those Member States. Within the context of the review of Directive 2003/87/EC, the Commission should consider the relevance of this additional assistance in light, notably, of the development in the shipping companies under the responsibility of different Member States.*
- (17b)** *The EU ETS should contribute significantly to reducing greenhouse gas emissions from maritime activities and to increasing efficiency. The use of EU ETS revenues pursuant to Article 10(3) of the Directive should include, inter alia, the promotion of climate friendly transport and public transport in all sectors.*
- (17c)** *Renewing fleets of ice-class ships and developing innovative technology that reduces the emissions of such ships will take time and require financial support. Currently, the design enabling ice-class ships to sail in ice conditions, leads to such ships consuming more fuel and emitting more than ships of similar size designed for sailing only in open water. Therefore, a flag-neutral method should be implemented under this Directive allowing for a reduction of allowances to be surrendered by shipping companies on the basis of their ships' ice class until 31 December 2030.*

- (17d)** *Islands with no road or rail link with the mainland are more dependent on maritime transport than the other regions and depend on maritime links for their connectivity. In order to assist islands with a smaller population to remain connected following the inclusion of maritime activities in the scope of Directive 2003/87/EC it is appropriate to provide for the possibility to provide for a temporary derogation from the surrender obligations under that Directive for certain maritime transport activities with islands with a population lower than 200 000 inhabitants.*
- (17e)** *It should be possible for Member States to request that transnational public service contract or a transnational public service obligation between two Member States should be temporarily exempted from certain obligations under Directive 2003/87/EC. The possibility should be limited to connections between a Member State without a land-border with another Member State and the geographically closest Member State, such as the maritime connection between Cyprus and Greece, which has been absent for over two decades. This temporary derogation contributes to the compelling need to provide a service of general interest and ensure connectivity as well as economic, social and territorial cohesion.*
- (17f)** *Taking into account the special characteristics and permanent constraints of the outermost regions of the Union as recognised in Article 349 of the Treaty, and given their heavy dependence on maritime transport, special consideration should be given to preserving their accessibility and efficient connectivity by maritime transport. Therefore, a temporary derogation from certain obligations pursuant to Directive 2003/87/EC should be provided for emissions from maritime transport activities between a port located in an outermost region of a Member State and a port located in the same Member State, including ports located in the same outermost region and in another outermost region of the same Member State.*

- (18) The provisions of Directive 2003/87/EC as regards maritime transport activities should be kept under review in light of future international developments and efforts undertaken to achieve the objectives of the Paris Agreement, including the second global stocktake in 2028, and subsequent global stocktakes every five years thereafter, intended to inform successive nationally determined contributions, ***and in the event of the adoption by the IMO of a global market-based measure to reduce greenhouse gas emissions from maritime transport. To this end, the Commission should present a report to the European Parliament and to the Council within 18 months of the adoption of such a measure and before it becomes operational. The Commission should in that report examine that global market-based measure as regards its ambition in light of the objectives of the Paris Agreement, its overall environmental integrity, including compared to the provisions of this Directive covering maritime transport, and any issue related to the coherence of the EU ETS and that measure, in particular taking into account the level of participation in that global market-based measure, its enforceability, transparency, penalties for non-compliance, the processes for public input, monitoring, reporting and verification of emissions, registries and accountability. Where appropriate, the report should be accompanied by a legislative proposal to amend this Directive in a manner that is consistent with the Union 2030 climate target and the climate-neutrality objective as set out in Regulation (EU) 2021/1119 and with the aim of preserving the environmental integrity and effectiveness of Union climate action, to ensure coherence between the implementation of a global market-based measure adopted by the IMO, while avoiding any significant double burden, and thereby recalling the Union's competence to regulate its share of emissions from international shipping voyages, in line with the obligations of the Paris Agreement.***

- (18a) *With the increased costs of shipping which the extension of Directive 2003/87/EC to maritime shipping activities entails, there is in the absence of a global measure a risk of circumvention. Evasive port calls to ports outside of the Union and relocation of transshipment activities to ports outside of the Union will not only diminish the environmental benefits of internalising the cost of emissions from maritime activities but may lead to additional emissions due to the extra distance travelled to evade application of Directive 2003/87/EC. It is therefore appropriate to exclude from the concept of port of call certain stops at non-Union ports. That exclusion should be targeted to ports in the Union's vicinity where the risk of evasion is the largest. A limit of 300 nautical miles from a port under the jurisdiction of a Member State constitutes a proportionate response to evasive behaviour, balancing the additional burden and the risk of evasion. Moreover, the exclusion from the concept of port of call should only target stops by containerships at certain non-Union ports, where the transshipment of containers accounts for most container traffic. For such shipments, the risk of evasion, in the absence of mitigating measures, also consists in a shift of port hub to ports outside the Union, aggravating the effects of the evasion. To ensure the proportionality and equal treatment of the measure, account should be taken to measures in third countries that have an effect equivalent to Directive 2003/87/EC.*
- (19) The Commission should review the functioning of Directive 2003/87/EC in relation to maritime transport activities in the light of experience of its application, including *detecting evasive behaviour in order to prevent them at an early stage*, and should then propose measures to ensure its effectiveness. *Such measure could include increased surrender requirements for voyages where the evasion risk is higher, such as to and from a port that is located in the Union's vicinity, in a third country that has not adopted measures similar to Directive 2003/87/EC.*

- (19a) *Shipping emissions from vessels below 5 000 gross tonnage represent less than 15 % of shipping emissions, taking into account the scope of application of this Directive, but are emitted by a large number of ships. The inclusion of these vessels from the start of the inclusion of maritime transport in the EU ETS is too early for reasons of administrative practicability, but their inclusion in the future would improve the effectiveness of the ETS and potentially reduce evasive behaviour with the use of vessels below the 5 000 gross tonnage threshold. Therefore, no later than 31 December 2026, the Commission should present a report to the European Parliament and to the Council in which it should examine the feasibility and economic, environmental and social impacts of the inclusion in this Directive of emissions from ships below 5 000 gross tonnage, including offshore ships.*
- (20) The person or organisation responsible for the compliance with the EU ETS should be the shipping company, defined as the **ship owner** or any other organisation or person, such as the manager or the bareboat charterer, that has assumed the responsibility for the operation of the ship from the **ship owner** and that, on assuming such responsibility, has agreed to take over all the duties and responsibilities imposed by the International Management Code for the Safe Operation of Ships and for Pollution Prevention. This definition is based on the definition of ‘company’ in Article 3, point (d) of Regulation (EU) 2015/757, and in line with the global data collection system established in 2016 by the IMO.

**(20a)** *The emissions from a ship depend inter alia on the vessel energy efficiency measures taken by the ship-owner and the fuel, the cargo carried, the route and the speed of the ship which may be under the control of a different entity than the ship-owner. The responsibilities for purchasing fuel or taking operational decisions that affect the greenhouse gas emissions of the ship may be assumed by an entity other than the shipping company under a contractual arrangement. At the point of contract negotiation, mainly the latter aspects would not be known and thus the ultimate emissions from the ship covered by Directive 2003/87/EC would be uncertain. However, without a pass-through of carbon costs to the entity operating the ship, the incentives to implement operational measures for fuel efficiency would be limited. In line with the polluter pays principle and to encourage the adoption of efficiency measures and the uptake of cleaner fuels, the shipping company should therefore be entitled, under national law, to claim reimbursement for the costs arising from the surrender of allowances from the entity that is directly responsible for the decisions affecting the greenhouse gas emissions of the ship. While such a mechanism of reimbursement could be subject to a contractual arrangement, Member States should, to reduce administrative costs, not be obliged to ensure or control the existence of such contracts but should instead provide, in national law, a statutory entitlement for the shipping company to be reimbursed and the corresponding access to justice to enforce that entitlement. For the same reasons, this entitlement, including any possible conflict relating to the reimbursement between the shipping company and the entity operating the ship, should not affect the obligations of the shipping company vis-à-vis the administering authority nor the enforcement measures that might be necessary against such a company to ensure the full compliance with Directive 2003/87/EC. At the same time, as the purpose served by the provision concerning the entitlement to reimbursement is closely connected with the Union, in particular in relation to the compliance with obligations under this Directive by a shipping company vis-a-vis a given Member State, it is important that this entitlement is observed throughout the Union, in all contractual relations that allow another entity than the ship owner to determine the cargo carried and/or the route and the speed of the ship, in a manner that safeguards undistorted competition in the internal market, which can include provisions preventing parties to such contractual agreements from circumventing the entitlement to reimbursement by a choice of law clause.*



- (21) In order to reduce the administrative burden on shipping companies, one Member State should be responsible for each shipping company. The Commission should publish an initial list of shipping companies that performed a maritime activity falling within the scope of the EU ETS, which specifies the administering authority in respect of each shipping company. The list should be updated *regularly and* at least every two years to reattribute shipping companies to another administering authority as relevant. For shipping companies registered in a Member State, the administering authority should be that Member State. For shipping companies registered in a third country, the administering authority should be the Member State in which the shipping company had the greatest estimated number of port calls from voyages falling within the scope of Directive 2003/87/EC in the last *four* monitoring years. For shipping companies registered in a third country and which did not perform any voyage falling within the scope of Directive 2003/87/EC in the last *four* monitoring years, the administering authority should be the Member State ■ where *a ship of* the shipping company *arrived or* started its first voyage falling within the scope of that Directive. The Commission should publish and update on a biennial basis a list of shipping companies falling within the scope of Directive 2003/87/EC, *as relevant*, specifying the administering authority for each shipping company. In order to ensure equal treatment of shipping companies, Member States should follow harmonised rules for the administration of shipping companies for which they have responsibility, in accordance with detailed rules to be established by the Commission.
- (22) Member States should ensure that the shipping companies that they administer comply with the requirements of Directive 2003/87/EC. In the event that a shipping company fails to comply with those requirements and any enforcement measures taken by the administering authority have failed to ensure compliance, Member States should act in solidarity. As a last resort measure, Member States should be able to refuse entry to the ships under the responsibility of the shipping company concerned, except for the Member State whose flag the ship is flying, which should be able to detain that ship.

- (23) Shipping companies should monitor and report their aggregated emissions data from maritime transport activities at company level in accordance with the rules laid down in Regulation (EU) 2015/757. The reports on aggregated emissions data at company level should be verified in accordance with the rules laid down in that Regulation. When performing the verifications at company level, the verifier should not verify the emissions report at ship level and the report referred to in Article 11(2) of that Regulation, as those reports at ship level would have been already verified.
- (24) Based on experience from similar tasks related to environmental protection, the European Maritime Safety Agency (EMSA) or another relevant organisation should, as appropriate and in accordance with its mandate, assist the Commission and the administering authorities in respect of the implementation of Directive 2003/87/EC. Owing to its experience with the implementation of Regulation (EU) 2015/757 and its IT tools, EMSA *should* assist the administering authorities notably as regards the monitoring, reporting and verification of emissions generated by maritime activities under the scope of this Directive by facilitating the exchange of information or developing guidelines and criteria. *The Commission, assisted by the European Maritime Safety Agency, should endeavour to develop appropriate monitoring tools, as well as guidance to facilitate and coordinate verification and enforcement activities related to the application of this Directive to maritime transport. As far as practicable, such tools should be made available to the Member State and the verifiers in order to better ensure robust enforcement of this Directive.*
- (24a) *In parallel to the adoption of this Directive, Regulation (EU) 2015/757 is being amended to provide for monitoring, reporting and verification rules that are necessary for an extension of the EU ETS to maritime transport activities and to provide for the monitoring, reporting and verification of emissions of additional greenhouse gases and ship types.*

- (25) Regulation (EU) 2017/2392 of the European Parliament and of the Council<sup>19</sup> amended Article 12(3) of Directive 2003/87/EC to allow all operators to use all allowances that are issued. The requirement for greenhouse gas emissions permits to contain an obligation to surrender allowances, pursuant to Article 6(2), point (e), of that Directive, should be aligned accordingly.
- (26) Achieving the Union's emissions reduction target for 2030 will require a reduction in the emissions of the sectors covered by the EU ETS of **62 %** compared to 2005. The Union-wide quantity of allowances of the EU ETS needs to be reduced to create the necessary long-term carbon price signal and drive for this degree of decarbonisation. ***The total quantity of allowances should be reduced in 2024 and 2026 to bring it more in line with the actual emissions. Moreover, the linear reduction factor should be increased in 2024 and in 2028, also taking into account the inclusion of emissions from maritime transport. The steeper cap trajectory resulting from these changes will lead to significantly greater levels of cumulative emission reductions up to 2030 than would have occurred pursuant to Directive (EU) 2018/410 of the European Parliament and of the Council. The figures relating to the maritime inclusion should be derived from the emissions from maritime transport activities that are addressed in Article 3g of Directive 2003/87/EC and reported in accordance with Regulation (EU) 2015/757 for 2018 and 2019 in the Union and the EEA-EFTA States, adjusted, from 2021 until 2024, by the linear reduction factor for the year 2024. The linear reduction factor will be applied in 2024 to the increase of the Union-wide quantity of allowances in that year.***

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<sup>19</sup> Regulation (EU) 2017/2392 of the European Parliament and of the Council of 13 December 2017 amending Directive 2003/87/EC to continue current limitations of scope for aviation activities and to prepare to implement a global market-based measure from 2021 (OJ L 350, 29.12.2017, p. 7).

- (28) Achieving the increased climate ambition will require substantial public *and private* resources in the EU as well as *in Member States* to be dedicated to the climate transition. To complement and reinforce the substantial climate-related spending in the EU budget, all auction revenues *or the equivalent financial value* that are not attributed to the Union budget *in the form of own resources* should be used for climate-related purposes, *with the exception of the revenues used for the compensation of indirect carbon costs. The list of climate-related purposes in Article 10(3) of Directive 2003/87/EC should be expanded to cover additional purposes with a positive environmental impact.* This includes the use for financial support to address social aspects in lower- and middle-income households by reducing distortive taxes *and targeted reductions of duties and charges for renewable electricity. Member States should report annually on the use of auctioning revenues in accordance with Article 19 of Regulation (EU) 2018/1999 of the European Parliament and of the Council, specifying, as appropriate, if revenues are used to implement their integrated national energy and climate plans and their territorial just transition plans.*
- (28a) *Member States' auctioning revenue will increase as a result of the inclusion of the maritime sector under the EU ETS. Therefore, Member States are encouraged to increase the use of EU ETS revenues pursuant to Article 10(3) of Directive 2003/87/EC to contribute to the protection, restoration and better management of marine-based ecosystems, in particular marine protected areas.*
- (28b) *Significant financial resources are needed to implement the goals of the Paris Agreement in developing countries and the Glasgow Climate Pact urges developed country Parties to urgently and significantly scale up their provision of climate finance. The Council conclusions on the Preparations for the 27th Conference of the Parties (COP 27) of the UNFCCC recall that the EU and its Member States are the largest contributor to international public climate finance and have more than doubled their contribution to climate finance to support developing countries since 2013. It also renews the strong commitment made by the EU and its Member States to continue scaling up their international climate finance towards the developed countries' goal of mobilising at least USD 100 billion per year as soon as possible and through to 2025 from a wide variety of sources, expecting the goal to be met in 2023.*

- (28c) *To address distributional and social effects of the transition in low-income Member States, an additional amount of 2,5 % of the Union-wide quantity of allowances from 2024 to 2030 should be used to fund the energy transition of the Member States with a gross domestic product (GDP) per capita below 75 % of the Union average in 2016-2018, through the Modernisation Fund referred to in Article 10d of Directive 2003/87/EC.*
- (28d) *The beneficiary Member States should be able to use the resources allocated to the Modernisation Fund to finance investments involving the adjacent EU border regions when this is relevant to the energy transition of beneficiary Member States.*
- (29) Further incentives to reduce greenhouse gas emissions by using cost-efficient techniques should be provided. To that end, the free allocation of emission allowances to stationary installations from 2026 onwards should be conditional on investments in techniques to increase energy efficiency and reduce emissions, *in particular for large energy users. The Commission should ensure that the application of the conditionality does not jeopardise a level playing field, environmental integrity and equal treatment between installations across the Union. The Commission should therefore without prejudice to the rules applicable under Directive 2012/27/EU of the European Parliament and of the Council<sup>20</sup>, adopt delegated acts supplementing this Directive to address any issue identified in particular on the above mentioned principles and provide for administratively simple rules for the application of the conditionality. These rules should be part of the general rules for free allocation, using the established procedure for national implementing measures, and provide timelines, criteria for the recognition of implemented energy efficiency measures as well as for alternative measures reducing GHG emissions. In addition, incentives to reduce greenhouse gas emissions should be further reinforced for installations with high greenhouse gas emission intensities. To that end, from 2026 onwards, the free allocation of emission allowances to the 20 % stationary installations with the highest emission intensities under a given product benchmark should also be conditional on the set-up and implementation of climate neutrality plans.*

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<sup>20</sup> *Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (OJ L 315, 14.11.2012, p. 1).*

- (30) The Carbon Border Adjustment Mechanism (CBAM), established under Regulation (EU) 2023/1815 of the European Parliament and of the Council<sup>21</sup> [*CBAM Regulation*], is *set to replace the mechanisms established under Directive 2003/87/EC* to *prevent* the risk of carbon leakage. To the extent that sectors and subsectors are covered by that measure, they should not receive free allocation. However, a transitional phasing-out of free allowances is needed to allow producers, importers and traders to adjust to the new regime. The reduction of free allocation should be implemented by applying a factor to free allocation for CBAM sectors, while the CBAM is phased in. *The CBAM factor* should be equal to 100 % *for the* period between the entry into force of *that* Regulation *and the end of* 2025, *and subject to the application of provisions referred to in Article 36(3), point (b), of that Regulation, should be equal to 97,5 % in 2026, 95 % in 2027, 90 % in 2028, 77,5 % in 2029, 51,5 % in 2030, 39 % in 2031, 26,5 % in 2032 and 14 % in 2033. From 2034, no CBAM factor should apply.* The relevant delegated acts on free allocation should be adjusted accordingly for the sectors and subsectors covered by the CBAM. The free allocation no longer provided to the CBAM sectors based on this calculation (CBAM demand) *will be added* to the Innovation Fund, so as to support innovation in low carbon technologies, carbon capture and utilisation ('CCU'), carbon capture and geological storage ('CCS'), renewable energy and energy storage, in a way that contributes to mitigating climate change. *In this context*, special attention should be given to projects in CBAM sectors. To respect the proportion of the free allocation available for the non-CBAM sectors, the final amount to *be deducted* from the free allocation and *made available under the Innovation Fund* should be calculated based on the proportion that the CBAM demand represents in respect of the free allocation needs of all sectors receiving free allocation.

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<sup>21</sup> [please insert full OJ reference]

- (30a) *In order to mitigate potential carbon leakage risks related to goods subject to CBAM and produced in the Union for export to third countries which do not apply the EU ETS or a similar carbon pricing mechanism, an assessment should be carried out before the end of the transitional period under Regulation (EU) 20.../nn [CBAM Regulation]. Where the report concludes that there is such a carbon leakage risk, the Commission should, where appropriate, present a legislative proposal to address that carbon leakage risk in a manner that is compliant with WTO rules. Moreover, Member States should be allowed to use auction revenues to address any residual risk of carbon leakage in CBAM sectors and in accordance with State aid rules. Where allowances due to a reduction of free allocation in application of the conditionality rules are not fully used to exempt the installations with the lowest greenhouse gas emission intensity from the cross-sectoral correction, 50 % of these residual allowances should be added to the Innovation Fund, while the other 50 % should be auctioned on behalf of Member States, which they should be able to use to address any residual risk of carbon leakage in CBAM sectors.*
- (31) In order to better reflect technological progress ■ while ensuring emission reduction incentives and properly rewarding innovation, *the minimum adjustment of the benchmark values should be increased from 0,2 % to 0,3 % per year, and the maximum adjustment ■ should be increased from 1,6 % to 2,5 % per year.* For the period from 2026 to 2030, the benchmark values should thus be adjusted within a range of 6 % to 50 % compared to the value applicable in the period from 2013 to 2020. *In order to provide predictability to installations, the Commission should adopt the implementing acts determining the revised benchmark values for free allocation as soon as possible before the start of the period from 2026 to 2030.*
- (31a) *To incentivise new breakthrough technologies in the steel industry and to avoid a significantly disproportionate reduction of the benchmark value and in light of the particular situation of the steel industry such as the high emission intensity and the international and Union market structure, it is necessary to exclude from the calculation of the hot metal benchmark value for the period 2026-2030 installations that were operational during the reference period 2021-2022 and that would otherwise be included in that calculation due to the review of its definition.*

- (31b)** *To reward best performers and innovation, installations whose greenhouse gas emission levels are below the average of the 10 % most efficient installations under a given benchmark should be excluded from the application of the cross-sectoral correction factor. Allowances that are not allocated due to a reduction of free allocation in application of the conditionality rules should be used to cover the deficit in the reduction of free allocation resulting from excluding best performers from the application of the cross-sectoral correction factor.*
- (31c)** *In order to speed up the decarbonisation of the economy while strengthening EU industrial competitiveness, an additional 20 million allowances from the quantity which could otherwise be allocated for free and an additional 5 million allowances from the quantity which could otherwise be auctioned should be made available to the Innovation Fund. When reviewing the timing and sequencing of the auctioning of the Innovation Fund established in Commission Regulation (EU) No 1031/2010 in view of the changes introduced by this Directive, the Commission should consider making available larger amounts of resources in the first years of implementation of the revised Directive 2003/87/EC to boost the decarbonisation of relevant sectors.*
- (32)** A comprehensive approach to innovation is essential for achieving the objectives *of Regulation (EU) 2021/1119*. At EU level, the necessary research and innovation efforts are supported, among others, through Horizon Europe which include significant funding and new instruments for the sectors coming under the ETS. *Consequently, the Commission should seek synergies with Horizon Europe and, where relevant, with other Union funding programmes.*
- (32a)** *The Innovation Fund should support innovative techniques, processes and technologies, including the scaling up of such techniques, processes and technologies, with a view to their broad roll-out across the EU. Breakthrough innovation should be prioritized in the selection of projects supported through grants.*



- (33) The scope of the Innovation Fund referred to in Article 10a(8) of Directive 2003/87/EC should be extended to support innovation in **zero- and** low-carbon technologies and processes that concern the consumption of fuels in the sectors of buildings and road transport, **including collective forms of transport such as public transport and coach services**. In addition, the Innovation Fund should serve to support investments to decarbonise the maritime transport sector, including investments in **energy efficiency of ships, ports, short-sea shipping, in electrification of the sector, in** sustainable alternative fuels, such as hydrogen and ammonia that are produced from renewables, as well as zero-emission propulsion technologies like wind technologies, **and innovations in regard to ice-class ships. Special attention should be** given to innovative projects **contributing to decarbonize the maritime sector and reduce all of its climate impacts, including black carbon emissions. In that respect, the Commission should foresee dedicated topics in Innovation Fund calls for proposals. The calls should take biodiversity protection, noise and water pollution issues into account. As far as maritime transport is concerned, projects with clear EU added value should be eligible.**
- (34) Pursuant to Article 10 of Commission Regulation (EU) No 2019/1122<sup>22</sup>, where aircraft operators no longer operate flights covered by the EU ETS, their accounts are set to excluded status, and processes may no longer be initiated from those accounts. To preserve the environmental integrity of the system, allowances which are not issued to aircraft operators due to their closure should be used to cover any shortfall in surrenders by those operators, and any leftover allowances should be used to accelerate action to tackle climate change by being placed in the Innovation Fund.

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<sup>22</sup> [Commission Delegated Regulation \(EU\) 2019/1122 of 12 March 2019 supplementing Directive 2003/87/EC of the European Parliament and of the Council as regards the functioning of the Union Registry \(OJ L 177, 2.7.2019, p. 3\).](#)

- (34a)** *Technical assistance from the Commission focused on Member States from which few or no projects have been submitted so far would contribute to achieving a high number of project applications for funding by the Innovation Fund across all Member States. This assistance should among others support activities aimed at improving the quality of proposals for projects located in the Member States mentioned, for example through sharing information, lessons learned and best practice and at boosting the activities of National Contact Points. Other measures serving the same aim would be raising awareness of funding options and increasing the capacity of those Member States to identify and support potential project applicants. Project partnerships across Member States and matchmaking between potential applicants, in particular for large-scale projects, should also be promoted.*
- (34b)** *In order to improve the role of Member States in the governance of the Innovation Fund and increase transparency, the Commission should report to the Climate Change Committee on the implementation of the Innovation Fund, providing an analysis of the expected impact of awarded projects by sector and by Member State. The Commission should also provide the report to the Council and the European Parliament and make it public. Subject to the agreement of applicants, following the closure of a call for proposals, the Commission should inform Member States of the applications for funding of projects in their respective territories and should provide them with detailed information of those applications in order to facilitate the Member States' coordination of the support to projects. In addition, the Commission should inform the Member States about the list of pre-selected projects prior to the award of the support. Member States should ensure that the national transposition provisions do not hamper innovations and are technologically neutral, while the Commission should provide technical assistance, in particular to Member States with low effective participation, in order to improve the effective geographical participation in the Innovation Fund and increase the overall quality of submitted projects. The Commission should also ensure comprehensive monitoring and reporting, including information on progress towards effective, quality-based geographical coverage across the Union and appropriate follow up.*

- (34c) *In order to align with the comprehensive nature of the European Green Deal, the selection process of projects supported through grants should give priority to projects addressing multiple environmental impacts. In order to support the replication and the faster market penetration of the supported technologies or solutions, projects funded by the Innovation Fund should share knowledge with other relevant projects as well as with Union-based researchers having a legitimate interest.*
- (35) *Contracts for Difference (CDs), Carbon Contracts for Difference (CCDs) and fixed premium contracts are ■ important elements to trigger emission reductions in industry by up-scaling new technologies, offering the opportunity to guarantee investors in innovative climate-friendly technologies a price that rewards CO<sub>2</sub> emission reductions above those induced by the prevailing carbon price level in the EU ETS. The range of measures that the Innovation Fund can support should be extended to provide support to projects through price-competitive bidding, leading to the award of CDs, CCDs or fixed premium contracts. Competitive bidding would be an important mechanism for supporting the development of decarbonisation technologies and optimising the use of available resources. It would also offer certainty to investors in these technologies. In view of minimising any contingent liability for the Union budget, risk mitigation should be ensured in the design of CDs and CCDs and appropriate coverage by a budgetary commitment should be provided with full coverage at least for the first two rounds with appropriations resulting from the proceeds of auctioning of allowances allocated pursuant to Article 10a(8) of Directive 2003/87/EC. No such risks exist for fixed premium contracts, because the legal commitment will be covered by a matching budgetary commitment. In addition, the Commission should conduct, after concluding the first two rounds of CDs and CCDs, and each time it is necessary afterwards, a qualitative and quantitative assessment of the financial risks arising from their implementation. By a delegated act based on the results of that assessment, the Commission should be allowed to decide to use an appropriate provisioning rate rather than full coverage for further rounds of CDs or CCDs. Such an approach should take into account any elements that may reduce the financial risks for the Union budget, in addition to the allowances available in the Innovation Fund, such as possible sharing of liability with Member States, on a voluntary basis, or a possible re-insurance mechanism*

*from the private sector. It is therefore necessary to allow for derogations from parts of Title X of Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council<sup>23</sup>. The provisioning rate for the first two rounds of bidding should be 100 %. However, derogating from Article 210(1), 211(1), 211(2) and 218(1) of that Regulation, a minimum provisioning rate of 50 % as well as a maximum share of revenue from the Innovation Fund to be used for provisioning of 30 % should be set in this Directive for later rounds and the Commission should be able to specify the provisioning rate necessary on the basis of the experience from the first two calls and the amount of revenue to be used for provisioning. The total financial liability borne by the Union budget should thus not exceed 60 % of the proceeds from auctioning for the Innovation Fund. Moreover, as provisioning will come, in general, from the Innovation Fund, derogations should be made from rules in Article 212 to 214 of that Regulation relating to the common provisioning fund established by Article 212 of that Regulation. The novel nature of CDs and CCDs might also necessitate derogations from Articles 209(2)(d) and (h) of that Regulation, given that they do not rely on leverage/multipliers nor depend entirely on an ex ante assessment, from Article 219(3), due to the link to Article 209(2)(d), and from Article 219(6) thereof as implementing partners will not have credit/equity exposures under a guarantee. The use of any derogation from that Regulation should be limited to what is necessary. The Commission should be empowered to amend the maximum share of revenue from the Innovation Fund to be used for provisioning by no more than a total of 20 percentage points above what is provided for in this Directive.*

- (35a)** *The Innovation Fund is subject to the general regime of conditionality for the protection of the Union budget established by Regulation (EU, Euratom) 2020/2092.*

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<sup>23</sup> *Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council of 18 July 2018 on the financial rules applicable to the general budget of the Union, amending Regulations (EU) No 1296/2013, (EU) No 1301/2013, (EU) No 1303/2013, (EU) No 1304/2013, (EU) No 1309/2013, (EU) No 1316/2013, (EU) No 223/2014, (EU) No 283/2014, and Decision No 541/2014/EU and repealing Regulation (EU, Euratom) No 966/2012 (OJ L 193, 30.7.2018, p. 1).*

- (36) Where an installation's activity is temporarily suspended, free allocation is adjusted to the activity levels which are mandatorily reported annually. In addition, competent authorities can suspend the issuance of emission allowances to installations that have suspended operations as long as there is no evidence that they will resume operations. Therefore, operators should no longer be required to demonstrate to the competent authority that their installation will resume production within a specified and reasonable time in case of a temporary suspension of the activities.
- (37) Corrections of free allocation granted to stationary installations pursuant to Article 11(2) of Directive 2003/87/EC can require granting additional free allowances or transferring back surplus allowances. The allowances set aside for new entrants under Article 10a(7) of Directive 2003/87/EC should be used for those purposes.
- (37a) Since 2013, electricity producers have been obliged to purchase all the allowances they need to generate electricity. Nevertheless, in accordance with Article 10c of Directive 2003/87/EC, some Member States have the option to provide transitional free allocation for the modernisation of the energy sector for the period 2021 to 2030. Three Member States have chosen to use this option. Given the need for rapid decarbonisation, especially in the energy sector, the Member States concerned should only be able to provide this transitional free allocation for investments carried out until 31 December 2024. They should be able to add any remaining allowances for the period 2021 to 2030 that are not used for such investments, in the proportion they determine, to the total quantity of allowances that the Member State concerned receives for auctioning, or use them to support investments within the framework of the Modernisation Fund. With the exception of the deadline for notification thereof, allowances transferred to the Modernisation Fund should be subject to the same rules concerning investments that are applicable to the allowances already transferred pursuant to Article 10d(4) of Directive 2003/87/EC. To ensure predictability and transparency with regard to the volumes of allowances either available for auctioning or for the transitional free allocation, and with regard to the assets managed by the Modernisation Fund, Member States should inform the Commission of the respective amounts of remaining allowances to be used for each purpose by 15 May 2024.***

- (38) The scope of the Modernisation Fund should be aligned with the most recent climate objectives of the Union by requiring that investments are consistent with the objectives of the European Green Deal and Regulation (EU) 2021/1119, and eliminating the support to any investments related to *energy-generation based on fossil fuels, except as regards the support for such investments with revenue from allowances voluntarily transferred to the Modernisation Fund in accordance with Article 10d(4) of the ETS Directive. In addition, limited support for such investments should continue to be possible with revenue from the allocations referred to in the third subparagraph of Article 10(1) of the ETS Directive under certain conditions, in particular where the activity qualifies as environmentally sustainable under Regulation (EU) 2020/852 and as regards the allowances auctioned until 2027. For the latter category of allowances the downstream uses of non-solid fossil fuels should, in addition, not be supported with revenue from allowances auctioned after 2028. Furthermore*, the percentage of the Modernisation Fund that needs to be devoted to priority investments should be increased to 80 % *for the Modernisation Fund allowances transferred in accordance with Article 10d(4) of the ETS Directive and referred to in the third subparagraph of Article 10(1) thereof, and to 90 % for the additional amount of 2,5 % from the Union-wide quantity of allowances. Energy efficiency including in industry, transport, buildings, agriculture and waste; heating and cooling from renewable sources; as well as* support of households to address energy poverty, including in rural and remote areas, should be included within the scope of the priority investments. *In order to increase transparency and better assess the impact of the Modernisation Fund, the Investment Committee should report annually to the Climate Change Committee on experience with the evaluation of investments, notably in terms of emission reductions and abatement costs.*
- (38a) *Directive (EU) 2018/410 introduced provisions relating to the cancellation by Member States of allowances from their auction volume in respect of closures of electricity-generation capacity in their territory. In view of the increased climate ambition of the Union and the resulting accelerated decarbonisation of the electricity sector, this cancellation has become increasingly relevant. Therefore, the Commission should assess whether the use by Member States of cancellation can be facilitated by amending the relevant delegated acts adopted pursuant to Article 10(4).*

- (38b) *Adjustments to free allocation introduced in Directive 2018/410 and operationalized in Commission Implementing Regulation (EU) 2019/1842 improved the efficiency and incentives provided by free allocation, but increased the administrative work and made the historical date of issuance of free allocation of 28 February not operational. In order to better take into account the adjustments to free allocation, it is relevant to make adjustments to the compliance cycle. The deadline for competent authorities to grant free allocation should therefore be postponed from 28 February to 30 June and the deadline for operators to surrender allowances should be postponed from 30 April to 30 September.***
- (39) Commission Implementing Regulation (EU) 2018/2066<sup>24</sup> lays down rules on the monitoring of emissions from biomass which are consistent with the rules on the use of biomass laid down in the Union legislation on renewable energy. As the legislation becomes more elaborate on the sustainability criteria for biomass with the latest rules established in Directive (EU) 2018/2001 of the European Parliament and of the Council<sup>25</sup>, the conferral of implementing powers in Article 14(1) of Directive 2003/87/EC should be explicitly extended to the adoption of the necessary adjustments for the application in the EU ETS of sustainability criteria for biomass, including biofuels, bioliquids and biomass fuels. In addition, the Commission should be empowered to adopt implementing acts to specify how to account for the storage of emissions from mixes of zero-rated biomass and biomass that is not from zero-rated sources.

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<sup>24</sup> Commission Implementing Regulation (EU) 2018/2066 of 19 December 2018 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council and amending Commission Regulation (EU) No 601/2012 (OJ L 334, 31.12.2018, p. 1).

<sup>25</sup> Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (OJ L 328, 21.12.2018, p. 82).

- (40) Renewable liquid and gaseous fuels of non-biological origin and recycled carbon fuels can be important to reduce greenhouse gas emissions in sectors that are hard to decarbonise. Where recycled carbon fuels and renewable liquid and gaseous fuels of non-biological origin are produced from captured carbon dioxide under an activity covered by this Directive, the emissions should be accounted under that activity. To ensure that renewable fuels of non-biological origin and recycled carbon fuels contribute to greenhouse gas emission reductions and to avoid double counting for fuels that do so, it is appropriate to explicitly extend the empowerment in Article 14(1) to the adoption by the Commission of implementing acts laying down the necessary adjustments for how to account for the eventual release of carbon dioxide, ***in a way that ensures that all emissions are accounted for, including where such fuels are produced from captured carbon dioxide outside the Union, while avoiding double counting and ensuring*** appropriate incentives are in place ***for capturing emissions***, taking also into account the treatment of these fuels under Directive (EU) 2018/2001.
- (41) As carbon dioxide is also expected to be transported by means other than pipelines, such as by ship and by truck, the current coverage in Annex I to Directive 2003/87/EC for transport of greenhouse gases for the purpose of storage should be extended to all means of transport for reasons of equal treatment and irrespective of whether the means of transport are covered by the EU ETS. Where the emissions from the transport are also covered by another activity under Directive 2003/87/EC, the emissions should be accounted for under that other activity to prevent double counting.



- (42) The exclusion of installations using exclusively biomass from the EU ETS has led to situations where installations combusting a high share of biomass have obtained windfall profits by receiving free allowances greatly exceeding actual emissions. Therefore, a threshold value for zero-rated biomass combustion should be introduced above which installations are excluded from the EU ETS. *The introduction of a threshold will provide more certainty as to which installations are under the ETS scope and will enable free allowances to be more evenly distributed to sectors more at risk of carbon leakage in particular.* The threshold *should be set at a 95 % level to balance the advantages and disadvantages for installations to remain under the scope of the EU ETS. Therefore, installations that have retained the physical capacity to burn fossil fuels, should not be incentivised to revert to the use of such fuels. A threshold at 95 % ensures that if an installation uses fossil fuels with the purpose of remaining within the scope of the ETS to benefit from free allocation allowances, the carbon costs related to the use of those fossil fuels will be sufficiently important to act as a disincentive. That threshold will also ensure that installations using a sizeable quantity of fossil fuels will remain within the monitoring obligations of the EU ETS, thus avoiding potential circumvention of existing monitoring, reporting and verification obligations. At the same time such installations which combust a lower share of zero-rated biomass should continue to be encouraged, through a flexible mechanism, to reduce fossil fuels combustion further while remaining under the scope of the ETS until their use of sustainable biomass is so substantial that the inclusion under the ETS is no longer justified. In addition, past experience has shown that the exclusion of installations exclusively using biomass, effectively being a 100 % threshold except for the combustion of fossil fuels during start-up and shut-down phases, requires a reassessment and more precise definition. The 95 % threshold allows for the combustion of fossil fuels during start-up and shut-down phases.*
- (42a) *In order to incentivise the uptake of zero- and low-carbon technologies, Member States should provide operators the option to remain in the scope of the EU ETS until the end of the current and next five year period referred to in Article 11(1) if the installation changed its production process to reduce its greenhouse gas emissions and no longer meets the threshold of 20 MW of total rated thermal input.*

**(42b) *The European Securities and Markets Authority (ESMA) published its final report on emission allowances and associated derivatives on 28 March 2022. The report is a comprehensive analysis of the integrity of the European carbon market and has provided expertise and recommendations in relation to upholding the proper functioning of the carbon market. In order to continuously monitor market integrity and transparency, the reporting by ESMA should be conducted on a regular basis. ESMA is already assessing market developments and, where necessary, providing recommendations in the area of its competence in their report on trends, risks and vulnerabilities in accordance with Article 32 (3) of Regulation (EU) No 1095/2010 of the European Parliament and of the Council<sup>26</sup>. Analysis of the European carbon market, which includes the auctions of emission allowances, on-venue and over-the-counter trading in emission allowances and derivatives thereof, should be part of this annual reporting. This obligation will streamline the reporting done by ESMA and allow for cross-market comparisons, in particular due to strong linkages between the ETS and commodity derivative markets. This regular analysis should in particular monitor any market volatility and price evolution, the operation of the auctions and trading operations on the markets, liquidity and the volumes traded, and the categories and trading behaviour of market participants, including speculative activity significantly impacting on prices. The assessment should, where relevant, include recommendations to improve market integrity and transparency as well as reporting obligations, and to enhance the prevention and detection of market abuse and help in maintaining orderly markets for emission allowances and derivatives thereof. The Commission should take due account of the assessments and recommendations in the context of the annual carbon market report and, where necessary, in the reports to ensure the better functioning of the carbon market.***

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<sup>26</sup> ***Regulation (EU) No 1095/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Securities and Markets Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/77/EC (OJ L 331, 15.12.2010).***

- (42c) *In order to further incentivise investments required for the decarbonisation of district heating and to address social aspects related to high energy prices and the high greenhouse gas emission intensity of district heating installations, in Member States with a very high share of emissions from district heating in comparison with the size of the economy, operators should be able to apply for additional transitional free allocation to district heating installations in such Member States and the additional value of the free allocation be invested to significantly reduce emissions before 2030. To ensure these reductions take place, the additional transitional free allocation should be conditional to investments made and to emissions reductions achieved as laid down in climate neutrality plans to be drawn up by operators for their relevant installations.*
- (42d) *Unexpected or sudden excessive price increases in the carbon market can negatively affect market predictability, which is essential for the planning of decarbonisation investments. Therefore, the measure which applies in the event of excessive price fluctuations in the market for emissions covered under Chapters II and III of Directive 2003/87/EC, should be strengthened in a careful manner to improve its reactivity to unwarranted price evolutions. If the concrete triggering conditions based on the increase in the average allowance price are met, this rule-based safeguard measure should be triggered automatically, whereby a predetermined number of allowances will be released from the Market Stability Reserve. The triggering conditions should be closely monitored by the Commission and published monthly in order to improve transparency. To ensure the orderly auctioning of the allowances released from the Market Stability Reserve pursuant to this safeguard measure and to improve market predictability, this measure should not apply again until at least twelve months after the end of the previous release of allowances in the market under the measure.*

- (43) The Communication of the Commission on Stepping up Europe’s 2030 climate ambition<sup>27</sup>, underlined the particular challenge to reduce the emissions in the sectors of road transport and buildings. Therefore, the Commission announced that a further expansion of emissions trading could include emissions from road transport and buildings **while indicating that covering all emissions of fuel combustion would present important benefits**. Emissions trading **should be applied to fuels used for combustion in buildings, road transport and industrial activities not covered by Annex I of Directive 2003/87/EC, such as heating of industrial facilities**. For these ■ sectors, **a separate but adjacent emissions trading system should be established to avoid any disturbance of the well-functioning emissions trading system for stationary installations and aviation**. The new system is accompanied by complementary policies ■ shaping expectations of market participants and aiming for a carbon price signal for the whole economy **while providing measures to avoid undue price impacts**. Previous experience has shown that the development of the new **system** requires setting up an efficient monitoring, reporting and verification system. In view of ensuring synergies and coherence with the existing Union infrastructure for the EU ETS■, it is appropriate to set up emissions trading for the road transport, buildings **and additional** sectors via an amendment to Directive 2003/87/EC.
- (44) In order to establish the necessary implementation framework and to provide a reasonable timeframe for reaching the 2030 target, emissions trading in the ■ new sectors should start in 2025. During the first **years**, the regulated entities should be required to hold a greenhouse gas emissions permit and to report their emissions for the years 2024 **to 2026**. The issuance of allowances and compliance obligations for these entities should be applicable as from **2027**. This sequencing will allow starting emissions trading in the sectors in an orderly and efficient manner. It would also allow the ■ measures to be in place to ensure a socially fair introduction of the EU emissions trading into the **new** sectors so as to mitigate the impact of the carbon price on vulnerable households and transport users.

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<sup>27</sup> COM(2020)562 final.

- (45) Due to the very large number of small emitters in the *new* sectors ■, it is not possible to establish the point of regulation at the level of entities directly emitting greenhouse gases, as is the case for stationary installations and aviation. Therefore, for reasons of technical feasibility and administrative efficiency, it is more appropriate to establish the point of regulation further upstream in the supply chain. The act that triggers the compliance obligation under the new emissions trading should be the release for consumption of fuels which are used for combustion in the sectors of buildings and road transport, including for combustion in road transport of greenhouse gases for geological storage, *as well as in the additional sectors, which correspond to industrial activities not covered by Annex I of Directive 2003/87/EC*. To avoid double coverage, the release for consumption of fuels which are used in ■ activities under Annex I to *that* Directive ■ should not be covered.
- (46) The regulated entities in the ■ new sectors and the point of regulation should be defined in line with the system of excise duty established by Council Directive (EU) 2020/262<sup>28</sup>, with the necessary adaptations, as that Directive already sets a robust control system for all quantities of fuels released for consumption for the purposes of paying excise duties. End-users of fuels in those sectors should not be subject to obligations under Directive 2003/87/EC.
- (47) The regulated entities falling within the scope of the emissions trading in the *new* sectors ■ should be subject to similar greenhouse gas emissions permit requirements as the operators of stationary installations. It is necessary to establish rules on permit applications, conditions for permit issuance, content, and review, and any changes related to the regulated entity. In order for the new system to start in an orderly manner, Member States should ensure that regulated entities falling within the scope of the new emissions trading have a valid permit as of the start of the system in 2025.

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<sup>28</sup> Council Directive (EU) 2020/262 of 19 December 2019 laying down the general arrangements for excise duty (OJ L 58, 27.2.2020, p. 4).

- (48) The total quantity of allowances for the new emissions trading *system* should follow a linear trajectory to reach the 2030 emissions reduction target, taking into account the cost-efficient contribution of buildings and road transport of **43 %** emission reductions by 2030 compared to 2005 *and of the additional sectors, a combined cost-efficient contribution of 42 % emission reductions by 2030 compared to 2005*. The total quantity of allowances should be established for the first time in **2027**, to follow a trajectory starting in 2024 from the value of the 2024 emissions limits **■**, calculated in accordance with Article 4(2) of Regulation (EU) 2018/842 of the European Parliament and of the Council<sup>29</sup> on the basis of the reference emissions for *the covered* sectors for **2005 and** the period from 2016 to 2018 *as determined under Article 4(3) of that Regulation*. Accordingly, the linear reduction factor should be set at **5,10 %**. From 2028, the total quantity of allowances should be set on the basis of the average reported emissions for the years 2024, 2025 and 2026, and should decrease by the same absolute annual reduction as set from 2024, which corresponds to a **5,38 %** linear reduction factor compared to the comparable 2025 value of the above defined trajectory. If those emissions are significantly higher than this trajectory value and if this divergence is not due to small-scale differences in emission measurement methodologies, the linear reduction factor should be adjusted to reach the required emissions reduction in 2030.
- (49) The auctioning of allowances is the simplest and the most economically efficient method for allocating emission allowances, which also avoids windfall profits. Both the buildings and road transport sectors are under relatively small or non-existent competitive pressure from outside the Union and are not exposed to a risk of carbon leakage. Therefore, allowances for buildings and road transport should only be allocated via auctioning without there being any free allocation.

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<sup>29</sup> Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013 (OJ L 156, 19.6.2018, p. 26).

- (50) In order to ensure a smooth start *of the new* emissions trading *system* and taking into account the need of the regulated entities to hedge or buy ahead allowances to mitigate their price and liquidity risk, a higher amount of allowances should be auctioned early on. In **2027**, the auction volumes should therefore be 30 % higher than the total quantity of allowances for **2027**. This amount would be sufficient to provide liquidity, both if emissions decrease in line with reduction needs, and in the event emission reductions only materialise progressively. The detailed rules for this front-loading of auction volume are to be established in a delegated act related to auctioning, adopted pursuant to Article 10(4) of Directive 2003/87/EC.
- (51) The distribution rules on auction shares are highly relevant for any auction revenues that would accrue to the Member States, especially in view of the need to strengthen the ability of the Member States to address the social impacts of a carbon price signal in the buildings and road transport sectors. Notwithstanding the fact that the *new* sectors have very different characteristics, it is appropriate to set a common distribution rule similar to the one applicable to stationary installations. The main part of allowances should be distributed among all Member States on the basis of the average distribution of the emissions in *road transportation, commercial and institutional buildings and residential buildings*, during the period from 2016 to 2018.

(52) The introduction of the carbon price in road transport and buildings should be accompanied by effective social compensation, especially in view of the already existing levels of energy poverty. About 34 million Europeans, *nearly 6,9 %* of the Union population, have said that they cannot afford to heat their home sufficiently in a *2021* EU-wide survey<sup>1</sup>. To achieve an effective social and distributional compensation, Member States should be required to spend the auction revenues *from emissions trading for the buildings, road transport and additional sectors* on the climate and energy-related purposes already specified for the existing emissions trading, *giving priority to activities that can contribute to address social aspects of the emission trading in the new sectors, or* for measures added specifically to address related concerns for the new sectors<sup>2</sup>, including related policy measures under Directive 2012/27/EU<sup>3</sup>. A new Social Climate Fund will provide dedicated funding to Member States to support the<sup>4</sup> most affected *vulnerable groups, especially households in energy or transport poverty*. This Fund will promote fairness and solidarity between and within Member States while mitigating the risk of energy and *transport* poverty during the transition. It will build on and complement existing solidarity mechanisms, *in synergy with other EU spending programmes and Funds. 50 million allowances of the EU ETS pursuant to Article 10a(8b) and 150 million allowances from emissions trading in the buildings, road transport and additional sectors, and revenue generated from the auctioning of allowances concerning the new sectors, up to EUR 65 000 000 000 altogether, should be used for the financing of the Social Climate Fund in the form of external assigned revenue on a temporary and exceptional basis, pending the discussions and deliberations on the Commission's proposal 2021/0430 for a Council Decision amending Decision (EU, Euratom) 2020/2053 on the system of own resources of the European Union of 22 December 2021 concerning the establishment of a new own resource based on ETS in accordance with Article 311(3) TFEU. It is necessary to provide that in case a decision is adopted in accordance with Article 311(3) TFEU establishing that new own resource, the same revenue should cease to be externally assigned when such a decision enters into force. With regard to the SCF, the Commission is in case of adoption of such a decision, to present, as appropriate, the necessary proposals in accordance with Article 24(5a) of the SCF Regulation. This is without prejudice to the outcome of the post 2027 Multiannual Financial Framework negotiations.*



(53) Reporting on the use of auctioning revenues should be aligned with the current reporting established by Regulation (EU) 2018/1999 of the European Parliament and of the Council<sup>30</sup>.

(55) Regulated entities covered by the **new** emissions trading should surrender allowances for their verified emissions corresponding to the quantities of fuels they have released for consumption. They should surrender allowances for the first time for their verified emissions in **2027**. In order to minimise the administrative burden, a number of rules applicable to the existing emissions trading system for stationary installations and aviation should be made applicable to **the new** emissions trading for buildings, road transport **and additional sectors**, with the necessary adaptations. This includes, in particular, rules on transfer, surrender and cancellation of allowances, as well as the rules on the validity of allowances, penalties, competent authorities and reporting obligations of Member States.

**(55a) *Certain Member States already have national carbon taxes that apply to the buildings, road transport and additional sectors covered by Annex III to Directive 2003/87/EC. Therefore, a temporary derogation should be introduced until the end of 2030. To ensure the objectives of Directive 2003/87/EC and the coherence of the new emissions trading system, the option to apply that derogation should only be available where the national tax rate is higher than the average auctioning price for the relevant year and only apply to the surrender obligation of the regulated entities paying such a tax. To ensure stability and transparency of the system, the national tax, including the relevant tax rates, should be notified to the Commission at the end of the transposition period of this Directive. The derogation should not affect the externally assigned revenue for the Social Climate Fund or, if established in accordance with Article 311(3) TFEU, an own resource based on the auctioning revenue from the ETS in the buildings, road transport and additional sectors.***

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<sup>30</sup> Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council (OJ L 328, 21.12.2018, p. 1).

- (56) For emissions trading in the buildings, road transport **and additional** sectors to be effective, it should be possible to monitor emissions with high certainty and at reasonable cost. Emissions should be attributed to regulated entities on the basis of fuel quantities released for consumption and combined with an emission factor. Regulated entities should be able to reliably and accurately identify and differentiate the sectors in which the fuels are released for consumption, as well as the final users of the fuels, in order to avoid undesirable effects, such as double burden. ***In the small number of cases where double counting between emissions in the existing ETS and the new system for the road transport, buildings and additional sectors cannot be excluded, or where costs arise due to surrender of allowances for emissions outside activities included in this Directive, Member States should use such revenue to compensate for the unavoidable double counting or other such costs outside the road transport, building and additional sectors in accordance with Union law and implementing powers should therefore be conferred on the Commission to ensure uniform conditions. To further mitigate any issues of double counting, the deadlines for monitoring and surrendering in the new emission trading system should come one month after the deadlines in the existing system for stationary installations and aviation.*** To have sufficient data to establish the total number of allowances for the period from 2028 to 2030, the regulated entities holding a permit at the start of the system in 2025 should report their associated historical emissions for 2024.
- (56a) ***Transparency on carbon costs and to which extent they are passed on to consumers is of key importance for enabling swift and cost-efficient emission reductions in all sectors of the economy. This is of particular importance in an emission trading system which is based on upstream obligations. The new emissions trading is meant to incentivise regulated entities to reduce the carbon content of the fuels and they should not make undue profits by passing on more carbon costs to consumers than they incur. While full auctioning of emissions allowances under the emissions trading system for buildings, road transport and additional sectors already limits the occurrence of such undue profits, the Commission should monitor the extent to which regulated entities pass through carbon costs so that windfall profits are avoided. In relation to Chapter IVa, the Commission should report annually where possible by type of fuel on the average level of the carbon costs which have been passed on to European consumers.***

- (57) It is appropriate to introduce measures to address the potential risk of excessive price increases, which, if particularly high at the start of the *new* emissions trading, may undermine the readiness of households and individuals to invest in reducing their greenhouse gas emissions. These measures should complement the safeguards provided by the Market Stability Reserve established by Decision (EU) 2015/1814 of the European Parliament and of the Council<sup>31</sup> and that became operational in 2019. While the market will continue to determine the carbon price, safeguard measures will be triggered by rules-based automatism, whereby allowances will be released from the Market Stability Reserve only if concrete triggering conditions based on the increase in the average allowance price are met. This additional mechanism should also be highly reactive, in order to address excessive volatility due to factors other than changed market fundamentals. The measures should be adapted to different levels of excessive price increase, which will result in different degrees of the intervention. The triggering conditions should be closely monitored by the Commission and the measures should be adopted by the Commission as a matter of urgency when the conditions are met. This is without prejudice to any accompanying measures that Member States may adopt to address adverse social impacts.
- (57a) *In order to increase certainty for citizens that the carbon price in the initial years of the new emissions trading system does not go above EUR 45, it is appropriate to include an additional price stability mechanism to release allowances from the Market Stability Reserve in case the carbon price exceeds that level. In principle, the measure should apply once during a period of 12 months. However, it should also be able to apply again during the same period of 12 months in case the Commission, assisted by the Climate Change Committee, considers that the evolution of the price justifies another release of allowances. In view of the aim of this mechanism to ensure stability in the initial years, the Commission should assess its functioning and whether it should be continued after 2029.*

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<sup>31</sup> Decision (EU) 2015/1814 of the European Parliament and of the Council of 6 October 2015 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and amending Directive 2003/87/EC (OJ L 264, 9.10.2015, p. 1).

- (57b) *As an additional safeguard mechanism ahead of the start of emissions trading in buildings, road transport and additional sectors, it should be possible to delay the application of the cap and the surrendering obligations in case gas or oil wholesale prices are exceptionally high compared to historical trends. The mechanism should be automatic, whereby the application of the cap and the surrendering obligations should be delayed by one year if concrete energy price triggers are met. The reference prices should be determined on the basis of benchmark contracts in the gas and oil wholesale markets which are immediately available and the most relevant for end consumers. Separate trigger conditions for gas and oil prices should be envisaged, as their price developments follow different historical trends. In order to ensure market certainty, the Commission should provide clarity on the application of the delay sufficiently in advance through a notice in the Official Journal.*
- (58) The application of emissions trading in the buildings, road transport **and additional** sectors should be monitored by the Commission, including the degree of price convergence with the existing ETS, and, if necessary, a review should be proposed to the European Parliament and the Council to improve the effectiveness, administration and practical application of emissions trading for those sectors on the basis of acquired knowledge as well as increased price convergence. The Commission should be required to submit the first report on those matters by 1 January 2028.
- (59) In order to ensure uniform conditions for the implementation of Articles *3g(1a), 3gd(2), 3gd(3), 10b(4), 12(3-d), 12(3-c), 14(1), 30f(2a), 30f(4) and 30h(4)* of Directive 2003/87/EC, implementing powers should be conferred on the Commission. To ensure synergies with the existing regulatory framework, the conferral of implementing powers in Articles 14 and 15 of that Directive should be extended to cover the **■** road transport, buildings **and additional sectors**. Those implementing powers should be exercised in accordance with Regulation (EU) No 182/2011 of the European Parliament and of the Council<sup>32</sup>.

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<sup>32</sup> Regulation (EU) No 182/2011 of 16 February 2011 laying down the rules and general principles concerning mechanisms for control by the Member States of the Commission's exercise of implementing powers (OJ L 55, 28.02.2011, p. 13).

- (59a)** *In order to achieve the objectives laid down in this Directive and other Union legislation, particularly those in Regulation (EU) 2021/1119, the Union and its Member States should make use of the latest scientific evidence while implementing policies. Therefore, when the Scientific Advisory Board on Climate Change provides scientific advice and issues reports regarding the EU ETS, the Commission should take those into account, in particular, as regards the need for additional Union policies and measures to ensure compliance with the objectives and targets of Regulation (EU) 2021/1119, and additional Union policies and measures in view of the ambition and environmental integrity of global market-based measures for aviation and maritime transport.*
- (59b)** *To acknowledge the contribution of EU ETS revenues to the climate transition, an EU ETS label should be introduced. Among other measures to ensure the visibility of funding from the EU ETS, Member States and the Commission should ensure that projects and activities supported through the Modernisation Fund and the Innovation Fund are clearly indicated as coming from EU ETS revenues by displaying an appropriate label.*

**(59c) *With a view to achieving the climate-neutrality objective set out in Article 2(1) of Regulation (EU) 2021/1119, a Union-wide climate target for 2040 should be set, based on a proposal from the Commission. The EU ETS should be reviewed to align it with the Union 2040 climate target. As a result, by July 2026 the Commission should report on several aspects of the EU ETS to the European Parliament and to the Council, accompanying the report, where appropriate, by a legislative proposal and impact assessment. In line with Regulation (EU) 2021/1119, priority should be given to direct emissions reductions, which will have to be complemented by increased CO<sub>2</sub> removals in order to achieve climate neutrality. Therefore, among other aspects, by July 2026 the Commission should report to the European Parliament and to the Council on how emissions removed from the atmosphere and safely and permanently stored, for example through direct air capture, could potentially be covered by emissions trading, without offsetting necessary emissions reductions. For as long as not all stages of the life of a product in which captured carbon is used are subject to carbon pricing, in particular at the stage of waste incineration, reliance on accounting of emissions at the point of their release from products into the atmosphere would result in emissions being undercounted. In order to regulate the capture of carbon in a way that reduces net emissions, ensures that all emissions are accounted for and that double counting is avoided, while generating economic incentives, the Commission should assess by July 2026, whether all greenhouse gas emissions covered by Directive 2003/87/EC are effectively accounted for, and whether double counting is effectively avoided. In particular, it should assess the accounting of the greenhouse gas emissions which are considered to have been captured and utilised in a product in a way other than that referred to in paragraph 3b of Article 12 and take into account the downstream stages, including disposal and waste incineration. Finally, the Commission should also report on to the Council and the European Parliament on the feasibility of lowering the 20 MW total rated thermal input thresholds for the activities in Annex I of Directive 2003/87/EC, taking into account the environmental benefit and administrative burden.***

**(59d) *By July 2026, the Commission should also assess and report to the European Parliament and to the Council on the feasibility of including municipal waste incineration installations in the EU ETS, including with a view to their inclusion from 2028 and with an assessment of the potential need for a possibility for a Member State to opt out until the end of 2030, taking into account the importance of all sectors contributing to emission reductions. Inclusion of municipal waste incineration installations in the EU ETS would contribute to the circular economy by encouraging recycling, reuse and repair of products, while also contributing to economy-wide decarbonisation. The inclusion of municipal waste incineration installations would reinforce incentives for sustainable management of waste in line with the waste hierarchy and would create a level playing field between the regions that have included municipal waste incineration under the scope of the EU ETS. To avoid deviation of waste from municipal waste incineration installations towards landfills in the Union, which create methane emissions, and exports of waste to third countries, with a potentially negative impact on the environment, in its report the Commission should take into account the potential diverting towards disposal of waste by landfilling in the Union and waste exports to third countries. The Commission should also take into account the effects on the internal market, potential distortions of competition, environmental integrity, alignment with the objectives of the Waste Framework Directive and robustness and accuracy with respect to the monitoring and calculation of emissions. Considering the methane emissions from landfilling and to avoid creating an uneven playing field, the Commission should also assess the possibility of including other waste management processes, such as landfilling, fermentation, composting and mechanical-biological treatment, in the EU ETS, when assessing the feasibility of including municipal waste incineration installations.***

(60) In order to adopt non-legislative acts of general application to supplement or amend certain non-essential elements of a legislative act, the power to adopt acts in accordance with Article 290 of the Treaty on the Functioning of the European Union should be delegated to the Commission in respect of Articles 10(4), 10a(8), **10a(8a)**, **12(3b)**, and **30j** of that Directive. Moreover, to ensure synergies with the existing regulatory framework, the delegation in **Article** 10(4) of Directive 2003/87/EC should be extended to cover the sectors of road transport and buildings. It is of particular importance that the Commission carry out appropriate consultations during its preparatory work, including at expert level, and that those consultations be conducted in accordance with the principles laid down in the Interinstitutional Agreement on Better Law-Making of 13 April 2016. In particular, to ensure equal participation in the preparation of delegated acts, the European Parliament and the Council receive all documents at the same time as Member States' experts, and their experts systematically have access to meetings of Commission expert groups dealing with the preparation of delegated acts.



**(60a)** *The provisions relating to the existing EU ETS and its extension to maritime transport should apply from 2024 in line with the need for urgent climate action and for all sectors to contribute to emission reductions in a cost-effective manner. Consequently, Member States should transpose the provisions relating to those sectors by 31 December 2023 at the latest. However, the deadline for transposing the provisions relating to the emissions trading system for buildings, road transport and additional sectors should be 30 June 2024, as the rules on monitoring, reporting, verification and permitting for those sectors apply from 1 January 2025, and require sufficient lead time for orderly implementation. As an exception, to guarantee transparency and robust reporting, Member States should transpose the obligation to report on historical emissions for those sectors by 31 December 2023, as this obligation relates to the emissions of the year 2024. In accordance with the Joint Political Declaration of 28 September 2011 of Member States and the Commission on explanatory documents<sup>33</sup>, Member States have undertaken to accompany, in justified cases, the notification of their transposition measures with one or more documents explaining the relationship between the components of a directive and the corresponding parts of national transposition instruments. With regard to this Directive, the legislator considers the transmission of such documents to be justified.*

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<sup>33</sup> OJ C 369, 17.12.2011, p. 14.

- (61) A well-functioning, reformed EU ETS comprising an instrument to stabilise the market is a key means for the Union to ***achieve the economy-wide net greenhouse gas emissions reduction target for 2030, the Union’s climate-neutrality objective by 2050, at the latest, and the aim of achieving negative emissions thereafter as laid down in Article 2(1) of Regulation (EU) 2021/1119 and the goal of the Paris Agreement.*** The Market Stability Reserve seeks to address the imbalance between supply and demand of allowances in the market. Article 3 of Decision (EU) 2015/1814 provides that the reserve is to be reviewed three years after it becomes operational, paying particular attention to the percentage figure for the determination of the number of allowances to be placed in the Market Stability Reserve, the threshold for the total number of allowances in circulation (TNAC) that determines the intake of allowances, and the number of allowances to be released from the reserve. ***The current threshold determining the placing of allowances in the Market Stability Reserve was established in 2018, with the last review of the EU ETS, while the linear reduction factor is being increased with this Directive. Therefore, as part of the regular review of the functioning of the Market Stability Reserve, the Commission should also assess the need for a potential adjustment of this threshold, in line with the linear factor referred to in Article 9 of Directive 2003/87/EC.***
- (62) Considering the need to deliver a stronger investment signal to reduce emissions in a cost-efficient manner and with a view to strengthening the EU ETS, Decision (EU) 2015/1814 should be amended so as to increase the percentage rate for determining the number of allowances to be placed each year in the Market Stability Reserve. In addition, for lower levels of the TNAC, the intake should be equal to the difference between the TNAC and the threshold that determines the intake of allowances. This would prevent the considerable uncertainty in the auction volumes that results when the TNAC is close to the threshold, and at the same time ensure that the surplus reaches the volume bandwidth within which the carbon market is deemed to operate in a balanced manner.

- (63) Furthermore, in order to ensure that the level of allowances that remains in the Market Stability Reserve after the invalidation is predictable, the invalidation of allowances in the reserve should no longer depend on the auction volumes of the previous year. The number of allowances in the reserve should, therefore, be fixed at a level of 400 million allowances, which corresponds to the lower threshold for the value of the TNAC.
- (64) The analysis of the impact assessment accompanying the proposal for this Directive has also shown that net demand from aviation should be included in the total number of allowances in circulation. In addition, since aviation allowances can be used in the same way as general allowances, including aviation in the reserve would make it a more accurate, and thus a better tool to ensure the stability of the market. The calculation of the total number of allowances in circulation should include aviation emissions and allowances issued in respect of aviation as of the year following the entry into force of this Directive.
- (65) To clarify the calculation of the total number of allowances in circulation (TNAC), Decision (EU) 2015/1814 should specify that only allowances issued and not put in the Market Stability Reserve are included in the supply of allowances. Moreover, the formula should no longer subtract the number of allowances in the Market Stability Reserve from the supply of allowances. This change would have no material impact on the result of the calculation of the TNAC, including on the past calculations of the TNAC or on the reserve.
- (66) In order to mitigate the risk of supply and demand imbalances associated with the start of emissions trading for the buildings, road transport *and additional* sectors, as well as to render it more resistant to market shocks, the rule-based mechanism of the Market Stability Reserve should be applied to those new sectors. For that reserve to be operational from the start of the system, it should be established with an initial endowment of 600 million allowances for emissions trading in the road transport, buildings *and additional* sectors. The initial lower and upper thresholds, which trigger the release or intake of allowances from the reserve, should be subject to a general review clause. Other elements such as the publication of the total number of allowances in circulation or the quantity of allowances released or placed in the reserve should follow the rules of the reserve for other sectors.

- (67a) *Since the objectives of this Directive to promote reductions of greenhouse gas emissions in a cost-effective and economically efficient way in a manner commensurate with this economy-wide net greenhouse gas emissions reduction target for 2030 through an extended and amended Union wide market based mechanism cannot be sufficiently achieved by the Member States but can rather, by reason of its scale and effects, be better achieved at Union level, the Union may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union. In accordance with the principle of proportionality as set out in that Article, this Directive does not go beyond what is necessary in order to achieve those objectives.*
- (68) Directive 2003/87/EC *and* Decision (EU) 2015/1814 ■ should therefore be amended accordingly,

HAVE ADOPTED THIS DIRECTIVE:

## Article 1


### Amendments to Directive 2003/87/EC

Directive 2003/87/EC is amended as follows:

**(-1) in Article 1, the second paragraph is replaced by the following:**

***“This Directive also provides for the reductions of greenhouse gas emissions to be increased so as to contribute to the levels of reductions that are considered scientifically necessary to avoid dangerous climate change. It contributes to the achievement of the Union’s climate-neutrality objective and its climate targets as laid down in Regulation (EU) 2021/1119 and thereby to the objectives of the Paris Agreement.”;***

**(1) in Article 2, paragraphs 1 and 2 are replaced by the following:**

**“1. This Directive shall apply to the activities listed in Annexes I and III, and to the  greenhouse gases listed in Annex II. Where an installation that is included in the scope of the EU ETS due to the operation of combustion units with a total rated thermal input exceeding 20 MW changes its production processes to reduce its greenhouse gas emissions and no longer meets that threshold, *the Member State shall provide the operator with the options to remain in the scope of the EU ETS until the end of the current and next five year period referred to in Article 11(1), second subparagraph, following the change to its production process. The operator of that installation may decide that the installation remains in the scope of the EU ETS until the end of that current five year period only or also in the next five year period, following the change to its production process. The Member State concerned shall notify to the Commission changes compared to the list submitted to the Commission pursuant to Article 11(1).***

2. This Directive shall apply without prejudice to any requirements pursuant to Directive 2010/75/EU of the European Parliament and of the Council(\*).

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(\* ) Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (OJ L 334, 17.12.2010, p. 17).”;

(2) Article 3 is amended as follows:

(a) point (b) is replaced by the following:

“(b) ‘emissions’ means the release of greenhouse gases from sources in an installation or the release from an aircraft performing an aviation activity listed in Annex I or from ships performing a maritime transport activity listed in Annex I of the gases specified in respect of that activity, or the release of greenhouse gases corresponding to the activity referred to in Annex III;”;

(b) point (d) is replaced by the following:

“(d) ‘greenhouse gas emissions permit’ means the permit issued in accordance with Articles 5, 6 and 30b;”;

(c) point (u) is deleted;

(d) the following points (v) to (z) are added:

“(v) ‘shipping company’ means the shipowner or any other organisation or person, such as the manager or the bareboat charterer, that has assumed the responsibility for the operation of the ship from the shipowner and that, on assuming such responsibility, has agreed to take over all the duties and responsibilities imposed by the International Management Code for the Safe Operation of Ships and for Pollution Prevention, set out in Annex I to Regulation (EC) No 336/2006 of the European Parliament and of the Council(\*);

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(\*) Regulation (EC) No 336/2006 of the European Parliament and of the Council of 15 February 2006 on the implementation of the International Safety Management Code within the Community and repealing Council Regulation (EC) No 3051/95 (OJ L 64, 4.3.2006, p. 1).

*(va) ‘voyage’ means a voyage as defined in Article 3, point (c), of Regulation (EU) 2015/757 of the European Parliament and of the Council(\*);*

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*(\*) Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC (OJ L 123, 19.5.2015, p. 55).*

(w) ‘administering authority in respect of a shipping company’ means the authority responsible for administering the EU ETS in respect of a shipping company in accordance with Article 3gd;

- (wa) *‘port of call’ means the port where a ship stops to load or unload cargo or to embark or disembark passengers, or the port where an offshore ship stops to relieve the crew, considering that stops for the sole purposes of refuelling, obtaining supplies, relieving the crew of a ship other than an offshore ship, going into dry-dock or making repairs to the ship and/or its equipment, stops in port because the ship is in need of assistance or in distress, ship-to-ship transfers carried out outside ports, stops for the sole purpose of taking shelter from adverse weather or rendered necessary by search and rescue activities, and stops of containerships in a neighbouring container transshipment port listed in the implementing act adopted pursuant to Article 3g(1a) are excluded;*
- (wb) *‘cruise passenger ship’ means a passenger ship not having a cargo deck, designed exclusively for commercial transportation of passengers in overnight accommodation on a sea voyage;*
- (wc) *‘Contract for Difference (CD)’ means a contract between the Commission and the producer of a low- or zero-carbon product who has been selected through a competitive bidding mechanism such as an auction, whereby the contract provides the producer with support from the Innovation Fund covering the difference between the winning price (the strike price) on the one hand and a reference price, as derived from the price of the produced low- or zero-carbon product, the market price of a close substitute or a combination of those two on the other hand;*
- (wd) *‘Carbon Contract for Difference (CCD)’ means a contract between the Commission and the producer of a low- or zero-carbon product who has been selected through a competitive bidding mechanism such as an auction, whereby the contract provides the producer with support from the Innovation Fund covering the difference between the winning price (the strike price) on the one hand and a reference price, as derived from an average price of the allowances on the other hand;*



- (we) *‘fixed premium contract’ means a contract between the Commission and the producer of a low- or zero-carbon product who has been selected through a competitive bidding mechanism such as an auction, whereby the contract provides the producer with support in the form of a fixed amount per unit of the produced product;*
- (x) ‘regulated entity’ for the purposes of Chapter IVa shall mean any natural or legal person, except for any final consumer of the fuels, that engages in the activity referred to in Annex III and that falls within one of the following categories:
- (i) where the fuel passes through a tax warehouse as defined in Article 3(11) of Council Directive (EU) 2020/262(\*), the authorised warehouse keeper as defined in Article 3(1) of that Directive, liable to pay the excise duty which has become chargeable pursuant to Article 7 of that Directive;
  - (ii) if point (i) is not applicable, any other person liable to pay the excise duty which has become chargeable pursuant to Article 7 of Directive (EU) 2020/262 **or Article 21(5), first subparagraph, of Council Directive 2003/96/EC** in respect of the fuels covered by this Chapter;
  - (iii) if points (i) and (ii) are not applicable, any other person which has to be registered by the relevant competent authorities of the Member State for the purpose of being liable to pay the excise duty, including any person exempt from paying the excise duty, as referred to in Article 21(5), fourth sub-paragraph, of Council Directive 2003/96/EC(\*\*);
  - (iv) if points (i), (ii) and (iii) are not applicable, or if several persons are jointly and severally liable for payment of the same excise duty, any other person designated by a Member State.

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(\*) Council Directive (EU) 2020/262 of 19 December 2019 laying down the general arrangements for excise duty (OJ L 058 27.2.2020, p. 4).

(\*\*) Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity (OJ L 283 31.10.2003, p. 51).

(y) ‘fuel’ for the purposes of Chapter IVa shall mean any **energy product referred to in Article 2(1) of Directive 2003/96/EC, including the fuels** listed in Table-A and Table C of Annex I to **that** Directive **■**, as well as any other product **intended for use**, offered for sale **or used** as motor fuel or heating fuel as specified in Article 2(3) of that Directive, **including for the production of electricity**;

(z) ‘release for consumption’ for the purposes of Chapter IVa shall have the same meaning as in Article 6(3) of Directive (EU) 2020/262;

(za) **‘TTF gas price’ for the purposes of Chapter IV shall mean the price of the gas futures month-ahead contract traded at the Title Transfer Facility (TTF) Virtual Trading Point, operated by Gasunie Transport Services B.V.;**

(zb) **‘Brent crude oil price’ for the purposes of Chapter IV shall mean the futures month-ahead price for crude oil used as a benchmark price for the purchases of oil.’;**

(3) the title of Chapter II is replaced by the following:

“AVIATION AND MARITIME TRANSPORT”

(4) Article 3a is replaced by the following:

“Article 3a

Scope

Articles 3b to 3f shall apply to the allocation and issue of allowances in respect of the aviation activities listed in Annex I. Articles 3g to 3ge shall apply in respect of the maritime transport activities listed in Annex I.”

(5) Articles 3f and 3g are replaced by the following:

“Article 3f

Monitoring and reporting plans

The administering Member State shall ensure that each aircraft operator submits to the competent authority in that Member State a monitoring plan setting out measures to monitor and report emissions **■** and that such plans are approved by the competent authority in accordance with the acts referred to in Article 14.

Article 3g

Scope of application to maritime transport activities

1. The allocation of allowances and the application of surrender requirements in respect of maritime transport activities shall apply in respect of fifty percent (50 %) of the emissions from ships performing voyages departing from a port *of call* under the jurisdiction of a Member State and arriving at a port *of call* outside the jurisdiction of a Member State, fifty percent (50 %) of the emissions from ships performing voyage departing from a port *of call* outside the jurisdiction of a Member State and arriving at a port *of call* under the jurisdiction of a Member State, one hundred percent (100 %) of emissions from ships performing voyages departing from a port *of call* under the jurisdiction of a Member State and arriving at a port *of call* under the jurisdiction of a Member State and one hundred percent (100 %) of emissions from ships *within a port of call under the jurisdiction of a Member State*.

*1a. The Commission shall by 31 December 2023 by means of implementing acts establish a list of the neighbouring container transshipment ports and update this list before 31 December every two years thereafter.*

*Those implementing acts shall list neighbouring container transshipment ports where the share of transshipment of containers, measured in twenty-foot equivalent unit, exceeds 65 % of the total container traffic of that port during the most recent twelve-month period for which relevant data are available located outside the Union but less than 300 nautical miles of a port under the jurisdiction of a Member State. For the purpose of this paragraph containers shall be considered as transhipped when they are unloaded from a ship to the port for the sole purpose of loading them on another ship. The list shall not include ports located in a third country that effectively apply measures equivalent to this Directive.*

*Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 22a(2).*

2. Articles 9, 9a and 10 shall apply to maritime transport activities in the same manner as they apply to other activities covered by the EU ETS *with the following exception with regard to the application of Article 10.*

*Until 31 December 2030, a share of allowances shall be attributed to Member States with a ratio of shipping companies that would have been under their responsibility according to Article 3gd compared to population in 2020 and based on data available for the period 2018-2020, above 15 shipping companies per million inhabitants. The quantity of allowances shall correspond to 3,5 % of the additional quantity of allowances due to the increase in the cap for maritime transport referred to in Article 9, third sub-paragraph in the relevant year. For the years 2024 to 2026, the quantity of allowances shall in addition be multiplied by the percentages applicable to the relevant year pursuant to Article 3ga, points (a) to (c). The revenue from the auctioning of this share of allowances should be used for the purposes referred to in Article 10(3) point (g), with regard to the maritime sector, and points (f) and (i). 50 % of the quantity of allowances shall be distributed among the relevant Member States based on the share of shipping companies under their responsibility and the remainder distributed in equal shares between them.”*

(6) the following Articles 3ga to 3ge are added:

“Article 3ga

Phase-in of requirements for maritime transport

Shipping companies shall be liable to surrender allowances according to the following schedule:

- (a) **40 %** of verified emissions reported for **2024 that would be subject to surrender requirements in accordance with Article 12;**
- (b) **70 %** of verified emissions reported for **2025 that would be subject to surrender requirements in accordance with Article 12;**
- (c) **100 %** of verified emissions reported for **2026 and each year thereafter in accordance with Article 12.**

■

To the extent that fewer allowances are surrendered compared to the verified emissions from maritime transport for the years ■ 2024 and 2025, once the difference between verified emissions and allowances surrendered has been established in respect of each year, a corresponding quantity of allowances shall be cancelled rather than auctioned pursuant to Article 10.

**Article 3gaa**

***Provisions for transfer of the costs of the ETS from the shipping company to another entity***

***Member States shall take the necessary measures to ensure that when the ultimate responsibility for the purchase of the fuel and/or the operation of the ship is assumed by a different entity than the shipping company pursuant to a contractual arrangement, the shipping company is entitled to reimbursement from that entity for the costs arising from the surrender of allowances.***

***Operation of the ship for the purposes of this Article means determining the cargo carried and/or the route and the speed of the ship. The shipping company remains the responsible entity for surrendering allowances as required under Article 3ga and Article 12 of this Directive and for overall compliance with the provisions of national law transposing this Directive. Member States shall ensure that shipping companies under their responsibility comply with their obligations to surrender allowances, notwithstanding their entitlement to be reimbursed by the commercial operators for the costs arising from the surrender.***

Article 3gb

Monitoring and reporting of emissions from maritime transport

In respect of emissions from maritime transport activities listed in Annex I, the administering authority ***in respect of a shipping company*** shall ensure that a shipping company under its responsibility monitors and reports the relevant parameters during a reporting period, and submits aggregated emissions data at company level to the administering authority in line with Chapter II of Regulation (EU) 2015/757 of the European Parliament and of the Council (\*).

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(\*) Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC (OJ L 123, 19.5.2015, p. 55).

## Article 3gc

### Verification and accreditation of emissions from maritime transport

The administering authority in respect of a shipping company shall ensure that the reporting of aggregated emissions data at shipping company level submitted by a shipping company pursuant to Article 3gb is verified in accordance with the verification and accreditation rules set out in Chapter III of Regulation (EU) 2015/757 (\*).

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(\*) Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC (OJ L 123, 19.5.2015, p. 55).

## Article 3gd

### Administering authority in respect of a shipping company

1. The administering authority in respect of a shipping company shall be:
  - (a) in the case of a shipping company registered in a Member State, the Member State in which the shipping company is registered;
  - (b) in the case of a shipping company that is not registered in a Member State, the Member State with the greatest estimated number of port calls from voyages performed by that shipping company in the last *four* monitoring years and falling within the scope set out in Article 3g;
  - (c) in the case of a shipping company that is not registered in a Member State and that did not carry out any voyage falling within the scope set out in Article 3g in the preceding *four* monitoring years, the administering authority shall be the Member State **█** where *a ship of* the shipping company has *arrived or* started its first voyage falling within the scope set out in Article 3g.

**█**

2. Based on the best available information, the Commission shall ***establish by means of implementing acts***:
- (a) before 1 February 2024, **■** a list of shipping companies which performed a maritime activity listed in Annex I that fell within the scope defined in Article 3g on or with effect from 1 January **2024**, specifying the administering authority for each shipping company in accordance with paragraph 1;
  - (b) ***before 1 February*** every two years thereafter, ***an updated*** list to reattribute shipping companies ***registered in a Member State*** to another administering authority ***if they changed the Member State of registration within the Union in accordance with paragraph 1(a) of this Article*** or to include shipping companies which have subsequently performed a maritime activity listed in Annex I that fell within the scope defined in Article 3g ***in accordance with paragraph 1(c) of this Article; and***
  - (c) ***before 1 February every four years thereafter, an updated list to reattribute shipping companies that are not registered in a Member State to another administering authority in accordance with paragraph 1(b) of this Article.***
- 2a. ***The administering authority that according to the list established pursuant to paragraph 2 is responsible for a shipping company shall retain that responsibility regardless of subsequent changes in the shipping company's activities or registration until those changes are reflected in an updated list.***
3. The Commission shall adopt implementing acts to establish detailed rules relating to the administration of shipping companies by administering authorities under this Directive. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 22a(2).



Article 3ge

Reporting and review

1. ***In the event of*** the adoption by the International Maritime Organization (***IMO***) of a global market-based measure to reduce greenhouse gas emissions from maritime transport, ***the Commission shall review this Directive in light of that adopted measure.***

***To this end, the Commission shall present a report to the European Parliament and to the Council within 18 months of the adoption of such a measure and before it becomes operational. In that report the Commission shall examine the global market-based measure as regards:***

- (a) its ambition in light of the objectives of the Paris Agreement;***
- (b) its overall environmental integrity, including compared to the provisions of this Directive covering maritime transport; and***
- (c) any issue related to the coherence between the EU ETS and that measure.***

***Where appropriate, the Commission may accompany that report with a legislative proposal to amend this Directive in a manner that is consistent with the Union 2030 climate target and the climate-neutrality objective as set out in Regulation (EU) 2021/1119 and with the aim of preserving the environmental integrity and effectiveness of Union climate action, to ensure coherence between the implementation of a global market-based measure adopted by the IMO and the EU ETS, while avoiding any significant double burden.***

**1a. In the event that the International Maritime Organization does not adopt by 2028 a global market-based measure to reduce greenhouse gas emissions from maritime transport in line with the objectives of the Paris Agreement and at least to a level comparable to that resulting from the Union measures taken under this Directive, the Commission shall present a report to the European Parliament and to the Council in which it shall examine *the need to apply the allocation of allowances and surrender requirements in respect of more than fifty percent (50 %) of the emissions from ships performing voyages between a port of call under the jurisdiction of a Member State and a port of call outside the jurisdiction of a Member State, in light of the objectives of the Paris Agreement. In that report, the Commission shall in particular consider progress at IMO level and examine whether any third country has a market-based measure equivalent to this Directive and assess the risk of an increase in evasive practices, including through a shift to other modes of transport or a shift of port hubs to ports outside the Union.***

***Where appropriate, the report shall be accompanied by a legislative proposal to amend this Directive*** .

**2. The Commission shall monitor the implementation of this Chapter *in relation to maritime transport, in particular to detect evasive behaviour in order to prevent this at an early stage, including consideration of outermost regions, and report biennially from [the year following the entry into force of this amending Directive] on the implementation of this Chapter* and possible trends as regards companies seeking to avoid being bound by the requirements of this Directive. *The Commission shall also monitor impacts as regards, inter alia, possible transport cost increases, market distortions and changes in port traffic such as port evasion and shifts of transshipment hubs, the overall competitiveness of the maritime sector in the Member States, and in particular impacts on those shipping services that provide essential services of territorial continuity.* If appropriate, the Commission shall propose measures to *ensure the effective implementation of this Chapter, in particular measures to address these trends as regards companies seeking to evade the requirements of this Directive.***

2a. *No later than 30 September 2028, the Commission shall assess the appropriateness of extending the application of the second subparagraph of Article 3g(2) beyond 31 December 2030 and, if appropriate, submit a legislative proposal to that effect.*

3. *No later than 31 December 2026, the Commission shall present a report to the European Parliament and to the Council in which it shall examine the feasibility and economic, environmental and social impacts of the inclusion in this Directive of emissions from ships, including offshore ships, below 5000 gross tonnage but not below 400 gross tonnage building notably on the analysis accompanying the review of Regulation (EU) 2015/757 due by end of 2024.*

*That report shall also consider the interlinkages between this Directive and Regulation (EU) 2015/757 and draw on experiences from the application thereof. In that report, the Commission shall also examine how this Directive can best account for the uptake of renewable and low-carbon maritime fuels on a lifecycle basis. If appropriate, the report may be accompanied by legislative proposals.”;*

(7) Article 3h is replaced by the following:

“Article 3h  
Scope

The provisions of this Chapter shall apply to greenhouse gas emissions permits and the allocation and issue of allowances in respect of activities listed in Annex I other than aviation and maritime transport activities.”;

(8) in Article 6(2), point (e) is replaced by the following:

“(e) an obligation to surrender allowances equal to the total emissions of the installation in each calendar year, as verified in accordance with Article 15 *and in accordance with the deadline provided in Article 12(3).*”;

(9) Article 8 is amended as follows:

(a) the words “of the European Parliament and of the Council(1)” and footnote (1) are deleted;

(b) the following paragraph is added:

“The Commission shall review the effectiveness of synergies with Directive 2010/75/EU. Environmental and climate relevant permits should be coordinated to ensure efficient and speedier execution of measures needed to comply with EU climate and energy objectives. The Commission may submit a report to the European Parliament and the Council in the context of any future review of this Directive.”;

(10) in Article 9, the following *paragraphs are* added:

“In **2024**, the Union-wide quantity of allowances shall be decreased by **90** million allowances █. In **2026**, the Union-wide quantity of allowances shall be *decreased* by **27** million allowances █. In **2024**, *the Union-wide quantity of allowances shall be increased by 78,4 million allowances for maritime transport*. The linear factor shall be **4,3 % from 2024 to 2027 and 4,4 % from 2028**. *The linear factor shall also apply to the allowances corresponding to the maritime transport activities’ average emissions reported in accordance with Regulation (EU) 2015/757 for 2018 and 2019 that are addressed in Article 3g*. The Commission shall publish the Union-wide quantity of allowances within 3 months of [date of entry into force of the amendment to be inserted].’

*From 1 January 2026 and 1 January 2027 respectively, the quantity of allowances shall be increased to take into account the coverage of other greenhouse gas emissions than CO<sub>2</sub> emissions from maritime and the coverage of emissions of offshore ships, based on their emissions for the most recent year for which data is available. Notwithstanding Article 10(1), the allowances resulting from that increase shall be made available to support innovation in accordance with Article 10a(8).*”;

(11) Article 10 is amended as follows:

(a) in paragraph 1, the third subparagraph is replaced by the following:

“2 % of the total quantity of allowances between 2021 and 2030 shall be auctioned to establish a fund to improve energy efficiency and modernise the energy systems of certain Member States (‘the beneficiary Member States’) as set out in Article 10d (‘the Modernisation Fund’). The beneficiary Member States for this amount of allowances shall be the Member States with a GDP per capita at market prices below 60 % of the Union average in 2013. The funds corresponding to this quantity of allowances shall be distributed in accordance with Part A of Annex IIb.

In addition, 2,5 % of the total quantity of allowances between **2024** and 2030 shall be auctioned for the Modernisation Fund. The beneficiary Member States for this amount of allowances shall be the Member States with a GDP per capita at market prices below **75 %** of the Union average during the period 2016 to 2018. The funds corresponding to this quantity of allowances shall be distributed in accordance with Part B of Annex IIb.”;

(b) in paragraph 3, the first and second sentence are replaced by the following:

“3. Member States shall determine the use of revenues generated from the auctioning of allowances *referred to in paragraph 2*, except for the revenues established as own resources in accordance with Article 311(3) TFEU and entered in the Union budget. Member States shall use *those* revenues **■** with the exception of the revenues used for the compensation of indirect carbon costs referred to in Article 10a(6), *or the equivalent in financial value of these revenues*, for one or more of the following:”;

***(ba) in paragraph 3, first subparagraph, points (b) to (f) are replaced by the following:***

- (b) to develop renewable energies and grids for electricity transmission to meet the commitment of the Union to renewable energies and the Union targets on interconnectivity, as well as to develop other technologies that contribute to the transition to a safe and sustainable low-carbon economy, and to help to meet the commitment of the Union to increase energy efficiency, at the levels agreed in relevant legislative acts, including the production of electricity from renewables self-consumers and renewable energy communities;***
- (c) measures to avoid deforestation and support the protection and restoration of peatland, forests and other land or marine based ecosystems, including measures that contribute to the protection, restoration and better management thereof, in particular as regards marine protected areas, and increase biodiversity-friendly afforestation and reforestation, including in developing countries that have ratified the international agreement on climate change, and measures to transfer technologies and to facilitate adaptation to the adverse effects of climate change in those countries;***
- (d) forestry and soil sequestration in the Union;***
- (e) the environmentally safe capture and geological storage of CO<sub>2</sub>, in particular from solid fossil fuel power stations and a range of industrial sectors and subsectors, including in third countries, and innovative technological carbon removal methods, such as Direct Air Capture ('DAC') and its storage;***

**(f) to invest in and accelerate the shift to forms of transport which contribute significantly to the decarbonisation of the sector , including the development of climate-friendly passenger and freight rail transport and bus services and technologies, measures to decarbonise the maritime sector, including the improvement of the energy efficiency of ships, ports, innovative technologies and infrastructure, and sustainable alternative fuels, such as hydrogen and ammonia that are produced from renewables, and zero-emission propulsion technologies, and to finance measures to support airports’ decarbonisation in accordance with Regulation (EU) .../... [deployment of alternative fuels infrastructure], and Regulation (EU) .../... [ensuring a level playing field for sustainable air transport];”;**

(c) in paragraph 3, point (h) is replaced by the following:

**“(h) measures intended to improve energy efficiency, district heating systems and insulation, *efficient and renewable heating and cooling systems*, or to *support the deep and staged deep renovation of buildings in accordance with Article 2, points (19) and (20), of Directive (EU) .../... [Recast EPBD], starting with the renovation of the worst-performing buildings;*”;**

**(ca) in paragraph 3, first subparagraph, the following points are inserted:**

**“(ha) to provide financial support in order to address social aspects in lower- and middle-income households, including by reducing distortive taxes, and targeted reductions of duties and charges for renewable electricity;**

**(hb) to finance national climate dividend schemes with a proven positive environmental impact as documented in the annual report referred to in Article 19(2) of Regulation (EU) 2018/1999 of the European Parliament and of the Council;”;**

**(cb) in paragraph 3, first subparagraph, point (k) is replaced by the following:**

***“(k) to promote skill formation and reallocation of labour in order to contribute to a just transition to a climate-neutral economy, in particular in regions most affected by the transition of jobs, in close coordination with the social partners and invest in upskilling and re-skilling of workers potentially affected by the transition, including workers in the maritime transport sector;***

***(l) to address any residual risk of carbon leakage in the sectors covered by Annex I of Regulation (EU) 20.../nn [CBAM Regulation], supporting the transition and promoting their decarbonisation in accordance with State aid rules.”;***

**(cc) in paragraph 3, the following subparagraph is inserted after the first subparagraph:**

***“When determining the use of revenues generated from the auctioning of the allowances, Member States shall take into account the need to continue scaling-up international climate finance in vulnerable third countries referred to in point (j) of the first subparagraph.”;***

**(cd) in paragraph 3, the second subparagraph is replaced by the following:**

***“Member States shall be deemed to have fulfilled the provisions of this paragraph if they have in place and implement fiscal or financial support policies, including in particular in developing countries, or domestic regulatory policies, which leverage financial support, established for the purposes set out in the first subparagraph and which have a value equivalent to the revenues referred to in the first subparagraph.”;***



(ce) *in paragraph 3, the third subparagraph is replaced by the following:*

*“Member States shall inform the Commission as to the use of revenues and the actions taken pursuant to this paragraph in their reports submitted under Article 19(2) of Regulation (EU) 2018/1999, specifying where relevant and as appropriate, which revenues and the actions are undertaken to implement their integrated national energy and climate plan submitted in accordance with Regulation (EU) 2018/1999, and their territorial just transition plan prepared in accordance with Article 11 of Regulation (EU) 2021/1056 of the European Parliament and of the Council.*

*The reporting shall be sufficiently detailed to enable the Commission to assess the Member States compliance with Article 10(3), first paragraph.”;*

(d) *in paragraph 4, the first sentence is replaced by the following:*

*“4. The Commission is empowered to adopt delegated acts in accordance with Article 23 to supplement this Directive concerning the timing, administration and other aspects of auctioning, including the modalities **of the auctioning which are made necessary** for the transfer of a share of revenues to the Union budget **as externally assigned revenue in accordance with Article 30d(3a) or as own resources in accordance with Article 311(3) TFEU**, in order to ensure that it is conducted in an open, transparent, harmonised and non-discriminatory manner.”*

(da) paragraph 5 is replaced by the following:

***“5. The Commission shall monitor the functioning of the European carbon market. Each year, it shall submit a report to the European Parliament and to the Council on the functioning of the carbon market and on other relevant climate and energy policies, including the operation of the auctions, liquidity and the volumes traded, and summarising the information provided by the European Securities and Markets Authority (ESMA) in accordance with paragraph 6 of this Article and the information provided by Member States on the financial measures referred to in Article 10a(6). If necessary, Member States shall ensure that any relevant information is submitted to the Commission at least two months before the Commission adopts the report.”;***

*(db) the following paragraph is added:*

**“6. ESMA shall regularly monitor the integrity and transparency of the European carbon market, in particular with respect to market volatility and price evolution, the operation of the auctions and trading operations on the market of emission allowances and derivatives thereof, including over-the-counter trading, liquidity and the volumes traded, and the categories and trading behaviour of market participants, including positions of financial intermediaries. ESMA shall include the relevant findings and, where necessary, make recommendations in its assessments to the European Parliament, to the Council, to the Commission and to the European Systemic Risk Board in accordance with Article 32(3) of Regulation (EU) No 1095/2010 of the European Parliament and of the Council (\*). For the purposes of the tasks referred to in the first sentence, ESMA and the relevant competent authorities shall cooperate and exchange information on details of all types of transactions in accordance with Article 25 of Regulation (EU) No 596/2014 of the European Parliament and of the Council (\*\*).**

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**(\*) Regulation (EU) No 1095/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Securities and Markets Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/77/EC (OJ L 331 15.12.2010, p. 84).**

**(\*\*) Regulation (EU) No 596/2014 of the European Parliament and of the Council of 16 April 2014 on market abuse (market abuse regulation) and repealing Directive 2003/6/EC of the European Parliament and of the Council and Commission Directives 2003/124/EC, 2003/125/EC and 2004/72/EC (OJ L 173 12.6.2014, p. 1).”;**

(12) Article 10a is amended as follows:

(a) paragraph 1 is amended as follows:

(i) the following ■ subparagraphs are inserted after the second subparagraph:

***“If an installation is covered by the obligation to conduct an energy audit or to implement a certified energy management system under Article 8 of Directive 2012/27/EU of the European Parliament and of the Council(\*) and if the recommendations of the audit report or of the certified energy management system are not implemented, unless the pay-back time for the relevant investments exceeds three years or unless the costs of those investments are disproportionate, then the amount of free allocation shall be reduced by 20 %. The amount of free allocation shall not be reduced if an operator demonstrates that it has implemented other measures which lead to greenhouse gas emission reductions equivalent to those recommended by the audit report or the certified energy management system for the installation concerned.***

***The Commission shall supplement this Directive by providing, in the acts adopted pursuant to Article 10a(1) and without prejudice to the rules applicable under the [Energy Efficiency Directive [2012/27/EU], for administratively simple harmonised rules for the application of the third subparagraph that ensures that the application of the conditionality does not jeopardise a level playing field, environmental integrity or equal treatment between installations across the Union. Those harmonized rules shall in particular provide timelines, criteria for the recognition of implemented energy efficiency measures as well as for alternative measures reducing GHG emissions, using the procedure for national implementing measures in accordance with Article 11(1).***

*In addition to the requirements set out in the third subparagraph of this paragraph, the reduction by 20 % referred to in that subparagraph shall be applied where, by 1 May 2024, operators of installations whose greenhouse gas emission levels are higher than the 80 percentile of emission levels for the relevant product benchmarks have not established a climate neutrality plan for each of those installations for its activities covered by this Directive. That plan shall contain the elements specified in Article 10b(4) and be established in accordance with the implementing act provided for in Article 10b(4). Article 10b(4) shall be read as only referring to installation level. The attainment of the targets and milestones referred to in the third subparagraph of Article 10b(4), point (b) shall be verified with respect to the period until 31 December 2025 and with respect to each period ending 31 December of each fifth year thereafter, in accordance with the verification and accreditation procedures provided for in Article 15. No free allowances beyond 80 % shall be allocated if achievement of the intermediate targets and milestones has not been verified with respect to the period up to the end of 2025 or with respect to the period 2026 to 2030.*

*Allowances that are not allocated due to a reduction of free allocation in accordance with the third and fifth subparagraphs of this Article shall be used to exempt installations from the adjustment in accordance with the first subparagraph of Article 10a(5). Where any such allowances remain, 50 % of these allowances shall be made available to support innovation in accordance with Article 10a(8). The other 50 % of these allowances shall be auctioned in accordance with Article 10(1) and Member States should use the respective revenues to address any residual risk of carbon leakage in the sectors covered by Annex I of Regulation (EU) 20.../nn [CBAM Regulation], supporting the transition and promoting their decarbonisation in accordance with State aid rules.*

No free allocation shall be given to installations in sectors or subsectors to the extent they are covered by other measures to address the risk of carbon leakage as established by Regulation (EU) 2023/1815 [ CBAM Regulation ] . The measures referred to in the first subparagraph shall be adjusted accordingly;

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- (\*) Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (OJ L 315, 14.11.2012, p. 1).”;

- (ii) the following sentence is added at the end of the third subparagraph:

“In order to provide further incentives for reducing greenhouse gas emissions and improving energy efficiency *and to ensure a level playing field for installations using new technologies that partly or fully reduce greenhouse gas emissions and existing technologies*, the determined Union-wide ex-ante benchmarks shall be reviewed *for their application in* the period from 2026 to 2030, in view of potentially modifying the definitions and system boundaries of existing product benchmarks, *considering as guiding principles the circular use potential of materials and that the benchmarks should be independent of the feedstock and the type of production process, where the production processes have the same purpose. The Commission shall endeavour to adopt the implementing acts for the purpose of determining the revised benchmark values for free allocation in accordance with the third subparagraph of paragraph 2 as soon as possible and before the start of the period from 2026 to 2030.*”;

(b) the following paragraph 1a is inserted:

“1a. ***Subject to the application of Regulation (EU) 20.../nn [CBAM Regulation],*** no free allocation shall be given in relation to the production of products listed in Annex I of ***that*** Regulation **■** .

By way of derogation from the ***first*** subparagraph, for the first years of ***application*** of Regulation (EU) 20.../nn [CBAM ***Regulation***], the production of **■** products ***listed in Annex I to that Regulation*** shall benefit from free allocation in reduced amounts. A factor reducing the free allocation for the production of ***those*** products shall be applied (CBAM factor). The CBAM factor shall be equal to 100 % for the period ***between*** the entry into force of ***that*** Regulation **■** and the end of 2025 ***and, subject to the application of provisions referred to in Article 36(3), point (b), of that Regulation, shall be equal to 97,5 % in 2026, 95 % in 2027, 90 % in 2028, 77,5 % in 2029, 51,5 % in 2030, 39 % in 2031, 26,5 % in 2032 and 14 % in 2033. From 2034, no CBAM factor shall apply.***

The reduction of free allocation shall be calculated annually as the average share of the demand for free allocation for the production of products listed in Annex I of Regulation (EU) 20.../nn [CBAM ***Regulation***] compared to the calculated total free allocation demand for all installations, for the relevant period referred to in Article 11, paragraph 1. The CBAM factor shall be applied.

Allowances resulting from the reduction of free allocation shall be made available to support innovation in accordance with Article 10a(8).

*One year before the end of the transitional period defined in Article 32 of Regulation (EU) 20.../nn [CBAM Regulation] as part of its annual report to the European Parliament and to the Council pursuant to Article 10(5) of Directive 2003/87/EC, the Commission shall assess the carbon leakage risk for goods subject to CBAM and produced in the Union for export to third countries which do not apply the EU ETS or a similar carbon pricing mechanism. The report shall in particular assess the carbon leakage risk in sectors to which CBAM will apply, in particular the role and accelerated uptake of hydrogen, and the developments as regards trade flows and the embedded emissions of goods produced by those sectors on the global market. Where the report concludes that there is a carbon leakage risk for goods produced in the Union for export to third countries which do not apply the EU ETS or an equivalent carbon pricing mechanism, the Commission shall, where appropriate, present a legislative proposal to address that carbon leakage risk in a manner that is compliant with WTO rules including Article XX of the GATT, and takes into account the decarbonisation of installations in the Union.”;*

(c) paragraph 2 is amended as follows:

(i) in the third subparagraph, point (c) is replaced by the following:

“(c) For the period from 2026 to 2030, the benchmark values shall be determined in the same manner as set out in points (a) and (d), **taking into account point (e)**, on the basis of information submitted pursuant to Article 11 for the years 2021 and 2022 and on the basis of applying the annual reduction rate in respect of each year between 2008 and 2028.”;



(ii) in the third subparagraph, the following *points are* added:

“(d) Where the annual reduction rate exceeds 2,5 % or is below **0,3 %**, the benchmark values for the period from 2026 to 2030 shall be the benchmark values applicable in the period from 2013 to 2020 reduced by whichever of those two percentage rates is relevant, in respect of each year between 2008 and 2028;

(e) *For the period from 2026 to 2030, the annual reduction rate of the product benchmark hot metal shall not be affected by the change of benchmark definitions and system boundaries applicable pursuant to the fifth subparagraph of Article 10a(1).”;*

(iii) the fourth subparagraph is replaced by the following:

“By way of derogation regarding the benchmark values for aromatics and syngas, those benchmark values shall be adjusted by the same percentage as the refineries benchmarks in order to preserve a level playing field for producers of those products.”;

(d) paragraphs 3 and 4 are deleted;

(da) *paragraph 5 is replaced by the following:*

*“In order to respect the auctioning share set out in Article 10, for every year in which the sum of free allocations does not reach the maximum amount that respects the auctioning share, the remaining allowances up to that amount shall be used to prevent or limit reduction of free allocations to respect the auctioning share in later years. Where, nonetheless, the maximum amount is reached, free allocations shall be adjusted accordingly. Any such adjustment shall be done in a uniform manner. However, installations whose greenhouse gas emission levels are below the average of the 10 % most efficient installations in a sector or subsector in the Union for the relevant benchmarks in a year when the adjustment applies shall be exempted from that adjustment.”;*

(e) in paragraph 6, the first subparagraph is replaced by the following:

“Member States should adopt financial measures in accordance with the second and fourth subparagraphs in favour of sectors or subsectors which are exposed to a genuine risk of carbon leakage due to significant indirect costs that are actually incurred from greenhouse gas emission costs passed on in electricity prices, provided that such financial measures are in accordance with State aid rules, and in particular do not cause undue distortions of competition in the internal market. The financial measures adopted should not compensate indirect costs covered by free allocation in accordance with the benchmarks established pursuant to paragraph 1. Where a Member State spends an amount higher than the equivalent of 25 % of *the* auction revenues *referred to in Article 10(3)* of the year in which the indirect costs were incurred, it shall set out the reasons for exceeding that amount.”;

(f) in paragraph 7, the second subparagraph is replaced by the following:

“From 2021, allowances that pursuant to paragraphs 19, 20 and 22 are not allocated to installations shall be added to the amount of allowances set aside in accordance with the first sentence of the first subparagraph of this paragraph.”;

(g) paragraph 8 is replaced by the following:

“8. **345** million allowances from the quantity which could otherwise be allocated for free pursuant to this Article, and **80** million allowances from the quantity which could otherwise be auctioned pursuant to Article 10, as well as the allowances resulting from the reduction of free allocation referred to in Article 10a(1a), shall be made available to a Fund with the objective of supporting innovation in *low- and zero carbon techniques, processes and technologies that contribute significantly to the decarbonisation of the sectors covered by this Directive* and contribute to zero pollution *and circularity* objectives *including projects aimed at scaling up such techniques, processes and technologies with a view to their broad roll-out across the EU. Such projects shall possess a significant greenhouse gas emissions abatement potential and contribute to energy and resource savings in line with the Union’s climate and energy targets for 2030.*

*The Commission shall frontload Innovation Fund allowances to ensure an adequate amount of resources is available to foster innovation, including upscaling.*

Allowances that are not issued to aircraft operators due to the closure of aircraft operators and which are not necessary to cover any shortfall in surrenders by those operators, shall also be used for innovation support as referred to in the first subparagraph.

*Moreover, 5 million allowances from the quantity referred to in Article 3c(5) and (6) relating to aviation allocations for 2026 shall be made available for such innovation support.*

In addition, 50 million unallocated allowances from the market stability reserve shall supplement any remaining revenues from the 300 million allowances available in the period from 2013 to 2020 under Commission Decision 2010/670/EU(\*), and shall be used in a timely manner for innovation support as referred to in the first subparagraph. <sup>34</sup>

The Innovation Fund shall cover the sectors listed in Annex I and Annex III, as well as products *and processes* substituting carbon intensive ones produced in sectors listed in Annex I, *including innovative renewable energy and energy storage technologies and environmentally safe carbon capture and utilisation ("CCU") that contributes substantially to mitigating climate change, in particular for unavoidable process emissions* and to help stimulate the construction and operation of projects aimed at the environmentally safe capture, *transport* and geological storage ("CCS") of CO<sub>2</sub>, *in particular for unavoidable industrial process emissions, and the direct capture of CO<sub>2</sub> from the atmosphere with safe, sustainable and permanent storage ('DACs')*, in geographically balanced locations. The Innovation Fund may also support break-through innovative technologies and infrastructure, *including production of low- and zero-carbon fuels*, to decarbonise the maritime, aviation, rail and road transport *sectors, including collective forms of transport such as public transport and coach service.*

*For aviation, it may also support electrification and actions to reduce the overall climate impacts of aviation.*

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*[Without prejudice to the outcome of negotiations on FuelEU Maritime: "Furthermore, the external assigned revenues referred to in Article 21(2) of Regulation (EU) [FuelEU Maritime] shall be allocated to the Innovation Fund and implemented in line with this paragraph."].*

*The Commission shall give special attention ■ to projects in sectors covered by Regulation (EU) 20.../nn [CBAM Regulation] to support innovation in low carbon technologies, CCU, CCS, renewable energy and energy storage, in a way that contributes to mitigating climate change **with the aim that over the 2021-2030 period, projects in those sectors are awarded a significant share of the equivalence in financial value of allowances mentioned in paragraph 1a of this article, and may launch before 2027 calls for proposals dedicated to the sectors covered by that Regulation.***

*The Commission shall give special attention to projects contributing to decarbonize the maritime sector and shall include topics dedicated to the decarbonisation of the maritime sector in the Innovation Fund calls for proposals, as appropriate, including to electrify maritime transport, and to address its full climate impact, including black carbon emissions. These calls shall also take particular account of the potential for also increasing biodiversity protection and for reducing noise and water pollution of projects and investments in the criteria used for the selection of projects.*

*The Innovation Fund may in accordance with paragraph 8a support projects through competitive bidding, such as CDs, CCDs or fixed premium contracts to support decarbonisation technologies for which the carbon price might not be a sufficient incentive.*

*The Commission shall seek synergies between the Innovation Fund and Horizon Europe, in particular in relation to European partnerships, and shall, where relevant, seek synergies between the Innovation Fund and other Union programmes.*

Projects in the territory of all Member States, including small-scale *and medium-scale* projects, shall be eligible, *and, for maritime activities, projects with clear EU added value*. Technologies receiving support shall be innovative and not yet commercially viable at a similar scale without support but shall represent breakthrough solutions or be sufficiently mature for application at pre-commercial scale.

The Commission shall ensure that the allowances destined for the Innovation Fund are auctioned in accordance with the principles and modalities laid down in Article 10(4). Proceeds from the auctioning shall constitute external assigned revenue in accordance with Article 21(5) of Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council(\*\*). Budgetary commitments for actions extending over more than one financial year may be broken down over several years into annual instalments.

*The Commission shall on request provide technical assistance to Member States with low effective participation for the purpose of increasing the capacities of the requesting Member State to support the efforts of project proponents in their respective territories to submit applications for funding from the Innovation Fund, in order to improve the effective geographical participation in the Innovation Fund and increase the overall quality of submitted projects. The Commission shall pursue effective, quality-based geographical coverage across the Union and ensure comprehensive monitoring of its progress and appropriate follow-up.*

*Subject to the agreement of applicants, following the closure of a call for proposals, the Commission shall inform Member States of the applications for funding of projects in their respective territories and shall provide them with detailed information of those applications in order to facilitate the Member States' coordination of the support to projects. In addition, the Commission shall inform the Member States about the list of pre-selected projects prior to the award of the support.*

Projects shall be selected *by way of a transparent selection procedure, in a technology-neutral manner in accordance with the objectives of the Innovation Fund as set out in the first subparagraph of this paragraph and* on the basis of objective and transparent criteria, taking into account *the extent to which projects provide a significant contribution to the Union's climate and energy targets while contributing to the zero pollution and circularity objectives in accordance with the first subparagraph of this paragraph, and,* where relevant, the extent to which projects contribute to achieving emission reductions well below the benchmarks referred to in paragraph 2. Projects shall have the potential for widespread application or to significantly lower the costs of transitioning towards a *climate neutral* economy in the sectors concerned. *Priority shall be given to innovative technologies and processes addressing multiple environmental impacts.* Projects involving CCU shall deliver a net reduction in emissions and ensure avoidance or permanent storage of CO<sub>2</sub>. In the case of grants provided through calls for proposals, up to 60 % of the relevant costs of projects may be supported, out of which up to 40 % need not be dependent on verified avoidance of greenhouse gas emissions, provided that pre-determined milestones, taking into account the technology deployed, are attained. In the case of support provided through competitive bidding and in the case of technical assistance support, up to 100 % of the relevant costs of projects may be supported. *The potential for emission reductions in multiple sectors offered by combined projects, including in nearby areas, shall be taken into account in the criteria used for the selection of projects.*

*Projects funded by the Innovation Fund shall be required to share knowledge with other relevant projects as well as with Union-based researchers having a legitimate interest. The terms of knowledge-sharing shall be defined by the Commission in calls for proposals.*

***The calls for proposal shall be open and transparent. In preparing the calls for proposal, the Commission shall strive to ensure that all sectors are duly covered. The Commission shall take measures to ensure that the calls are communicated as widely as possible, and especially to small and medium-sized enterprises ('SMEs').***

The Commission is empowered to adopt delegated acts in accordance with Article 23 to supplement this Directive concerning rules on the operation of the Innovation Fund, including the selection procedure and criteria, and the eligible sectors and technological requirements for the different types of support.

No project shall receive support via the mechanism under this paragraph that exceeds 15 % of the total number of allowances available for this purpose. These allowances shall be taken into account under paragraph 7.

***By 31 December 2023 and every year thereafter, the Commission shall report to the Climate Change Committee referred to in Article 22a(1), on the implementation of the Innovation Fund, providing an analysis of awarded projects by sector and by Member State, and the expected contribution of the awarded projects towards the objective of climate neutrality in the Union as set out in Regulation (EU) 2021/1119. The Commission shall provide the report to the Council and the European Parliament and the report shall be made public.***

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- (\*) Commission Decision 2010/670/EU of 3 November 2010 laying down criteria and measures for the financing of commercial demonstration projects that aim at the environmentally safe capture and geological storage of CO<sub>2</sub> as well as demonstration projects of innovative renewable energy technologies under the system for greenhouse gas emission allowance trading within the Union established by Directive 2003/87/EC of the European Parliament and of the Council (OJ L 290, 6.11.2010, p. 39).



**(\*\*) Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council of 18 July 2018 on the financial rules applicable to the general budget of the Union, amending Regulations (EU) No 1296/2013, (EU) No 1301/2013, (EU) No 1303/2013, (EU) No 1304/2013, (EU) No 1309/2013, (EU) No 1316/2013, (EU) No 223/2014, (EU) No 283/2014, and Decision No 541/2014/EU and repealing Regulation (EU, Euratom) No 966/2012 (OJ L 193, 30.7.2018, p. 1).”;**

**(ga) the following paragraphs are inserted:**

**“8a. For CDs and CCDs awarded upon conclusion of a competitive bidding procedure, appropriate coverage by budgetary commitments resulting from the proceeds of auctioning of allowances available in the Innovation Fund shall be provided and those budgetary commitments may be broken down over several years into annual instalments. For the first two rounds of the competitive bidding mechanism, coverage of the financial liability related to CDs and CCDs shall be fully ensured with appropriations resulting from the proceeds of auctioning of allowances allocated to the Innovation Fund pursuant to paragraph 8.**

**On the basis of a qualitative and quantitative assessment by the Commission of the financial risks arising from the implementation of CDs and CCDs, to be made after the conclusion of the first two rounds of competitive bidding mechanism and each time it is necessary afterwards in accordance with the principle of prudence whereby assets and profits shall not be overestimated and liabilities and losses shall not be underestimated, the Commission may, in accordance with the empowerment in the eighth subparagraph decide to cover only part of the financial liability related to CDs and CCDs and the remaining part by other means. The Commission shall aim to limit the use of other means of coverage.**

*Where the assessment leads to the conclusion that other means of coverage are necessary to realize the full potential of the CDs and CCDs, the Commission shall aim for a balanced mix of other means of coverage. By derogating from Article 210(1), the Commission shall determine the extent of the use of other means of coverage pursuant to the delegated act provided for in the eighth subparagraph.*

*The remaining financial liability shall be sufficiently covered, having regard to the principles of Title X of Regulation (EU, Euratom) 2018/1046, if necessary, adapted to the specificities of CDs and CCDs, by derogating from Articles 209(2) points d) and h), 210(1), 211(1), (2), (4), and (6), 212 to 214, 218(1) and 219(3) and (6). Where applicable, other means of coverage, the provisioning rate and the necessary derogations shall be established in a delegated act provided for in the eighth subparagraph.*

*The Commission shall not use more than 30 % of the proceeds of auctioning of allowances allocated to the Innovation Fund pursuant to paragraph 8 for provisioning for CDs and CCDs.*

*The provisioning rate shall be no lower than 50 % of the total financial liability borne by the Union budget for CDs and CCDs and when setting it out, the Commission shall take into account elements that may reduce the financial risks for the EU budget, beyond the appropriations available in the Innovation Fund, such as possible sharing of liability with Member States on a voluntary basis, or a possible re-insurance mechanism from the private sector. The Commission shall review the provisioning rate at least every 3 years from the date of application of the delegated act setting it out for the first time.*

*In order to avoid speculative applications, access to competitive bidding may be made conditional on the payment by applicants of a deposit to be forfeited in case of non-fulfilment of the contract. Such forfeited deposits shall accrue to the Innovation Fund as external assigned revenue pursuant to Article 21(5) of Regulation (EU, Euratom) 2018/1046. Any contribution paid to the granting authority by a beneficiary in accordance with the terms of the CD or CCD where the reference price is higher than the strike price (reflows) shall accrue to the Innovation Fund as external assigned revenue pursuant to Article 21(5) of Regulation (EU, Euratom) 2018/1046.*

*The Commission is empowered to adopt delegated acts in accordance with Article 23 to supplement this Directive in order to provide for and detail other means of coverage, if any, and, where applicable, the provisioning rate and the necessary additional derogations to Title X of Regulation (EU, Euratom) 2018/1046 as set out in the fourth subparagraph, and in addition the rules on the operation of competitive bidding mechanisms, in particular in relation to deposits and reflows.*

*The Commission is empowered to adopt delegated acts in accordance with Article 23 to amend the fifth subparagraph by raising the limit of 30 % referred in that subparagraph by no more than a total of 20 percentage points where necessary to respond to a demand for CDs and CCDs taking into account the experience of the first rounds of competitive bidding and considering the need to find an appropriate balance in the support from the Innovation Fund between such contracts and grants.*

*Financial support from the Innovation Fund shall be proportionate to the policy objectives set out in this Article and shall not lead to undue distortions of the internal market. To this end, support shall only be granted to cover additional costs or investment risks that cannot be borne by investors under normal market conditions.*

**8b. 40 million allowances from the quantity which could otherwise be allocated for free pursuant to this Article, and 10 million allowances from the quantity which could otherwise be auctioned pursuant to Article 10 shall be made available for the Social Climate Fund established by Regulation (EU) 20.../nn of the European Parliament and of the Council [Social Climate Fund Regulation](\*). The Commission shall ensure that the allowances destined for the Social Climate Fund are auctioned in 2025 in accordance with the principles and modalities of Article 10(4) and the delegated act adopted in accordance with that provision. The revenues from this auctioning shall constitute external assigned revenue in accordance with Article 21(5) of Regulation (EU, Euratom) 2018/1046, and shall be implemented in accordance with the rules applicable to the Social Climate Fund.”;**

(h) in paragraph 19, the first sentence is replaced by the following:

“19. No free allocation shall be given to an installation that has ceased operating.”;

(i) the following paragraph 22 is added:

“22. Where corrections to free allocations granted pursuant to Article 11(2) are necessary, these shall be carried out with allowances from, or by adding allowances to, the amount of allowances set aside in accordance with paragraph 7 of this Article.”;

**(12a) in Article 10b(4), the following subparagraphs are added:**

***“In Member States where, on average in the years 2014-2018, the share of emissions from district heating of the EU total of such emissions divided by the Member States’ share of GDP of the EU total GDP is greater than 5 for district heating for the period from 2026 to 2030, additional free allocation of 30 % of the quantity determined pursuant to Article 10a shall be given to district heating provided that an investment volume equivalent to the value of that additional free allocation received is invested to significantly reduce emissions before 2030 in accordance with climate-neutrality plans in accordance with the third sub-paragraph and that the attainment of the targets and milestones referred to in point (b) of the third subparagraph are confirmed by the verification carried out in accordance with the fourth subparagraph.***

***By 1 May 2024, operators of district heating shall establish a climate-neutrality plan for the installations for which they apply for additional free allocation in accordance with the second subparagraph. That plan shall be consistent with the climate-neutrality objective set out in Article 2(1) of Regulation (EU) 2021/1119 and shall set out:***

- (a) measures and investments to reach climate-neutrality by 2050 at installation or company-level, excluding the use of carbon offset credits;***
- (b) intermediate targets and milestones to measure, by 31 December 2025 and by 31 December of each fifth year thereafter, progress made towards reaching climate - neutrality as set out in point (a);***
- (c) an estimate of the impact of each of the measures and investments referred to in point (a) as regards the reduction of greenhouse gas emissions.***

*The attainment of the targets and milestones referred to in the third subparagraph, point (b), shall be verified with respect to the period until 31 December 2025 and with respect to each period ending 31 December of each fifth year thereafter, in accordance with the verification and accreditation procedures provided for in Article 15. No free allowances beyond what is referred to in the first subparagraph shall be allocated if achievement of the intermediate targets and milestones has not been verified with respect to the period up to the end of 2025 or with respect to the period 2026 to 2030.*

*The Commission shall adopt implementing acts in accordance with the procedure set out in Article 22a(2) to specify the minimal content of the information referred to in points a) to c) and the format of the climate-neutrality plans referred to in the third subparagraph of this paragraph and in the fifth subparagraph of Article 10a(1). The Commission shall seek synergies with similar plans as provided for in Union law.”;*

(13) in Article 10c, paragraph 7 is replaced by the following:

“Member States shall require benefiting electricity generating installations and network operators to report, by 28 February of each year, on the implementation of their selected investments, including the balance of free allocation and investment expenditure incurred and the types of investments supported. Member States shall report on this to the Commission, and the Commission shall make such reports public.”;

**(13a) the following article is inserted:**

**“Article 10ca**

**Earlier deadline for transitional free allocation for the modernisation of the energy sector**

**By way of derogation from Article 10c, the Member States concerned may only give transitional free allocation to installations in accordance with that Article for investments carried out until 31 December 2024. Any allowances available to the Member States concerned in accordance with Article 10c for the period 2021 to 2030 that are not used for such investments shall, in the proportion determined by the respective Member State:**

- (i) be added to the total quantity of allowances that the Member State concerned is to auction pursuant to Article 10(2); or**
- (ii) be used to support investments within the framework of the Modernisation Fund referred to in Article 10d in accordance with the rules applicable to the revenue from allowances referred to in Article 10d(4).**

**By 15 May 2024, the Member State concerned shall notify the Commission of the respective amounts of allowances to be used under Article 10(2)(a) and, by way of derogation from the second sentence of Article 10d(4), Article 10(d).”**

**(14) Article 10d is amended as follows:**

- (a) in paragraph 1, the first and second subparagraphs are replaced by the following:**

**“1. A fund to support investments proposed by the beneficiary Member States, including the financing of small-scale investment projects, to modernise energy systems and improve energy efficiency shall be established for the period from 2021 to 2030 (the ‘Modernisation Fund’). The Modernisation Fund shall be financed through the auctioning of allowances as set out in Article 10, for the beneficiary Member States set out therein.**

The investments supported shall be consistent with the aims of this Directive, as well as the objectives of the Communication from the Commission of 11 December 2019 on The European Green Deal (\*) and Regulation (EU) 2021/1119 of the European Parliament and of the Council (\*\*) and the long-term objectives as expressed in the Paris Agreement. ***The beneficiary Member States may, where appropriate, use the resources of the Modernisation Fund to finance investments involving the adjacent EU border regions.*** No support from the Modernisation Fund shall be provided to energy generation facilities that use fossil fuels. ***Notwithstanding the preceding sentence, revenue from allowances covered by a notification pursuant to Article 10d(4) may be used for investments involving gaseous fossil fuels. Notwithstanding the same sentence, revenue from allowances referred to in the third subparagraph of Article 10(1) may, where the activity qualifies as environmentally sustainable under Regulation (EU) 2020/852 and is duly justified for reasons of ensuring energy security, be used for investments involving gaseous fossil fuels provided that, for energy generation, the allowances are auctioned before 31 December 2027 and, for investments involving downstream uses of gas, the allowances are auctioned before 31 December 2028.***

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(\*) COM(2019) 640 final.

(\*\*) Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law') (OJ L 243, 9.7.2021, p. 1).";



(b) paragraph 2 is replaced by the following:

“2. At least 80 % of the *revenue from allowances referred to in the third subparagraph of Article 10(1) and from allowances covered by a notification pursuant to Article 10d(4), and at least 90 % of the revenue from allowances referred to in the fourth subparagraph of Article 10(1)* shall be used to support investments in the following:

- (a) the generation and use of electricity from renewable sources, *including renewable hydrogen*;
- (b) heating and cooling from renewable sources;
- (c) the *reduction of overall energy use through* energy efficiency, including in *industry*, transport, buildings, agriculture and waste;
- (d) energy storage and the modernisation of energy networks, including *demand-side management*, district heating pipelines, grids for electricity transmission, the increase of interconnections between Member States *and infrastructure for zero-emission mobility*;
- (e) the support of low-income households, including in rural and remote areas, to address energy poverty and to modernise their heating systems; and
- (f) a just transition in carbon-dependent regions in the beneficiary Member States, so as to support the redeployment, re-skilling and up-skilling of workers, education, job-seeking initiatives and start-ups, in dialogue with *civil society and social partners, consistent with and contributing to the relevant actions included by the Member States in their territorial just transition plans in accordance with Article 8(2), point (k), of Regulation (EU) 2021/1056, where relevant.*”;

*(ba) paragraph 11 is replaced by the following:*

*“11. The investment committee shall report annually to the Commission on experience with the evaluation of investments, notably in terms of emissions reductions and abatement costs. By 31 December 2024, taking into consideration the findings of the investment committee, the Commission shall review the areas for projects referred to in paragraph 2 and the basis on which the investment committee bases its recommendations.*

*The investment committee shall arrange for the publication of the annual report. The Commission shall provide this publication to the Council and the European Parliament.”;*

*(14a) the following Article is inserted:*

*“Article 10e*

*Do no significant harm principle*

*From January 2025, the beneficiary Member States and the Commission shall use the revenues from auctioning of allowances destined for the Innovation Fund pursuant to Article 10a(8), and of the allowances referred to in the third and fourth subparagraph of Article 10(1), in accordance with the ‘do no significant harm’ criteria set out in Article 17 of Regulation (EU) 2020/852(\*), where they are used for an economic activity for which technical screening criteria for determining whether an economic activity causes significant harm to one or more of the relevant environmental objective has been established pursuant to Article 10(3)(b) of that Regulation.”*

*(14b) Article 11 is amended as follows:*

*(a) in paragraph 2, "28 February" is replaced by "30 June";*

(15) Article 12 is amended as follows:

(a) paragraph 2 is replaced by the following:

“2. Member States shall ensure that allowances issued by a competent authority of another Member State are recognised for the purpose of meeting an operator’s, an aircraft operator’s or a shipping company’s obligations under paragraph 3.”;

(b) paragraph 2a is deleted;

(c) paragraph 3 is replaced by the following:

“3. The Member States, administering Member States and administering authorities in respect of a shipping company shall ensure that, by 30 *September* each year:

- (a) the operator of each installation surrenders a number of allowances that is equal to the total emissions from that installation during the preceding calendar year as verified in accordance with Article 15;
- (b) each aircraft operator surrenders a number of allowances that is equal to its total emissions during the preceding calendar year, as verified in accordance with Article 15;
- (c) each shipping company surrenders a number of allowances equal to its total emissions during the preceding calendar year, as verified in accordance with Article 3gc.

Member States, administering Member States and administering authorities in respect of a shipping company shall ensure that allowances surrendered in accordance with the first subparagraph are subsequently cancelled.”;

**(d) After paragraph 3, the following paragraphs are inserted:**

**“3-e. By way of derogation from paragraph 3, first subparagraph, point (c), shipping companies may surrender 5 % fewer allowances than their verified emissions taking place until 31 December 2030 from ice class ships, provided that these ships have the ice-class IA or IA Super or an equivalent ice class, established based on the HELCOM Recommendation 25/7.**

**To the extent that fewer allowances are surrendered compared to the verified emissions, once the difference between verified emissions and allowances surrendered has been established in respect of each year, a corresponding quantity of allowances shall be cancelled rather than auctioned pursuant to Article 10.**

**3-d. By way of derogation from paragraph 3, first subparagraph point (c) and Article 16, the Commission, shall, at the request of a Member State, provide by means of an implementing act that Member States shall consider the requirements set out in those provisions to be satisfied and that they shall take no action against shipping companies in respect of emissions taking place until 31 December 2030 from voyages performed by passenger ships, other than cruise passenger ships, and by ro-pax ships, between a port of an island under the jurisdiction of that requesting Member State with no road or rail link with the mainland and a port under the jurisdiction of that same Member State and from the activities within a port from those ships in relation to those voyages. The island shall have a permanent population of less than 200 000 permanent residents according to the latest best data available in 2022.**

**The Commission shall publish a list of islands referred to in the first subparagraph and the concerned ports and keep that list up to date.**

**3-c. *By way of derogation from paragraph 3, first subparagraph point (c) and Article 16, the Commission shall, at the joint request of two Member States, one of which having no land border with another Member State and the other Member State being the geographically closest Member State to the first, provide by means of an implementing act that Member States shall consider the requirements set out in those provisions to be satisfied and that they shall take no action against shipping companies in respect of emissions taking place until 31 December 2030 from voyages by passenger or ro-pax ships performed in the framework of a transnational public service contract or a transnational public service obligation, set out in the joint request, connecting the two Member States and from the activities within a port from those ships in relation to those voyages.***

**3-b. *An obligation to surrender allowances shall not arise in respect of emissions taking place until 31 December 2030 from voyages between a port located in an outermost region of a Member State and a port located in the same Member State, including ports within and between the Outermost Regions of the same Member State, and from the activities within a port from those ships in relation to those voyages.***

(e) in paragraph 3-a, the first sentence is replaced by the following:

“3-a. Where necessary, and for as long as is necessary, in order to protect the environmental integrity of the EU ETS, operators, aircraft operators, and shipping companies in the EU ETS shall be prohibited from using allowances that are issued by a Member State in respect of which there are obligations lapsing for aircraft operators, shipping companies and other operators.”;

(f) the following paragraph 3b is inserted:

“3b. An obligation to surrender allowances shall not arise in respect of emissions of greenhouse gases which are considered to have been captured and utilised to become permanently chemically bound in a product so that they do not enter the atmosphere under normal use, *including any normal activity taking place after the end of life of the product.*”

The Commission shall adopt *delegated acts in accordance with Article 23 to supplement this Directive* concerning the requirements to consider that greenhouse gases have become permanently chemically bound in a product so that they do not enter the atmosphere under normal use, *including any normal activity taking place after the end of the life of the product.*”;

(g) paragraph 4 is replaced by the following:

“4. *Member States shall take the necessary steps to ensure that allowances will be cancelled at any time at the request of the person holding them. In the event of closure of electricity generation capacity in their territory due to additional national measures, Member States may cancel allowances, and are strongly encouraged to do so, from the total quantity of allowances to be auctioned by them referred to in Article 10(2) up to an amount corresponding to the average verified emissions of the installation concerned over a period of five years preceding the closure. The Member State concerned shall inform the Commission of such intended cancellation, or the reasons for not cancelling, in accordance with the delegated acts adopted pursuant to Article 10(4).*”;

(16) in Article 14(1), *the* first subparagraph ■ is *replaced by the following*:

***“The Commission shall adopt implementing acts concerning the detailed arrangements for the monitoring and reporting of emissions and, where relevant, activity data, from the activities listed in Annex I, and non-CO<sub>2</sub> aviation effects on routes for which emissions are reported under this Directive, which shall be based on the principles for monitoring and reporting set out in Annex IV and the requirements set out in paragraph 2 and paragraph 2a of this Article. Those implementing acts shall also specify the global warming potential of each greenhouse gas and take into account up-to-date scientific knowledge on the effects of non-CO<sub>2</sub> aviation emissions in the requirements for monitoring and reporting of these emissions and their effects, including non-CO<sub>2</sub> aviation effects. Those implementing acts shall apply the sustainability and greenhouse gas emission saving criteria for the use of biomass established by Directive (EU) 2018/2001 of the European Parliament and of the Council(\*), with any necessary adjustments for application under this Directive, for this biomass to be zero-rated. They shall specify how to account for storage of emissions from a mix of zero-rated sources and sources that are not zero-rated. They shall also specify how to account for emissions from renewable fuels of non-biological origin and recycled carbon fuels, ensuring that these emissions are accounted for and that double counting is avoided”***;

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(\*) Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (OJ L 328, 21.12.2018, p. 82).”;

(17) the title of Chapter IV is replaced by the following:

**“PROVISIONS APPLYING TO AVIATION, MARITIME TRANSPORT, AND STATIONARY INSTALLATIONS”**;

(18) Article 16 is amended as follows:

(a) paragraph 2 is replaced by the following:

“2. Member States shall ensure the publication of the names of operators, aircraft operators and shipping companies who are in breach of requirements to surrender sufficient allowances under this Directive.”;

*(ab) in paragraph 3, the date “30 April” is replaced by “30 September”;*

(b) the following paragraph 3a is inserted:

“3a. The penalties set out in paragraph 3 shall also apply in respect of shipping companies.”;

(c) the following paragraph 11a is inserted:

“11a. In the case of a shipping company that has failed to comply with the surrender requirements for two or more consecutive reporting periods and where other enforcement measures have failed to ensure compliance, the competent authority of the Member State of the port of entry may, after giving the opportunity to the shipping company concerned to submit its observations, issue an expulsion order which shall be notified to the Commission, the European Maritime Safety Agency (EMSA), the other Member States and the flag State concerned. As a result of the issuing of such an expulsion order, every Member State, with the exception of the Member State whose flag the ship is flying, shall refuse entry of the ships under the responsibility of the shipping company concerned into any of its ports until the company fulfils its surrender obligations in accordance with Article 12. Where the ship flies the flag of a Member State *and enters or is found in one of its ports*, the Member State concerned shall, after giving the opportunity to the company concerned to submit its observations, *detain the ship until the shipping company fulfils its obligations*.



*Where a ship that flies the flag of a Member is found with a failure referred to in the first subparagraph while in one of the ports of the Member State whose flag the ship is flying, the Member State concerned may, after giving the opportunity to the company concerned to submit its observations, issue a flag detention order until the shipping company fulfils its obligations. It shall inform the Commission, the EMSA and the other Member States thereof. As a result of the issuing of such a flag detention order, every Member State shall take the same measures as following an expulsion order in accordance with the second sentence of the first subparagraph.*

This paragraph shall be without prejudice to international maritime rules applicable in the case of ships in distress.”;

(19) Article 18b is replaced by the following:

“Article 18b

Assistance from the **Commission, the** European Maritime Safety Agency and other relevant organisations

1. For the purposes of carrying out its obligations under Articles 3c(4), 3f, 3gb, 3gc, 3gd, 3ge and 18a, the Commission, **the administering Member State** and administering authorities **in respect of a shipping company** may request the assistance of the European Maritime Safety Agency or another relevant organisation and may conclude to that effect any appropriate agreements with those organisations.
2. **The Commission, assisted by the European Maritime Safety Agency, shall endeavour to develop appropriate tools and guidance to facilitate and coordinate verification and enforcement activities related to the application of this Directive to maritime transport. As far as practicable, such guidance and tools shall be made available to the Member States and the verifiers for information sharing purposes and in order to better ensure robust enforcement of this Directive.”;**

**(19a) Article 23 is amended as follows:**

**(a) paragraphs 2 and 3 are replaced by the following:**

**“2. The power to adopt delegated acts referred to in Articles 3d(3), 10(4), 10a(1), (8) and (8a), 10b(5), 12(3b), 19(3), Article 22, Articles 24(3), 24a(1), 25a(1) and Articles 28c and 30j shall be conferred on the Commission for an indeterminate period of time from 8 April 2018.**

**3. The delegation of power referred to in Articles 3d(3), 10(4), 10a(1), (8) and (8a), 10b(5), 12(3b), 19(3), Article 22, Articles 24(3), 24a(1), 25a(1) and Articles 28c and 30j may be revoked at any time by the European Parliament or by the Council. A decision to revoke shall put an end to the delegation of the power specified in that decision. It shall take effect the day following the publication of the decision in the Official Journal of the European Union or at a later date specified therein. It shall not affect the validity of any delegated acts already in force.”**

**(b) paragraph 6 is replaced by the following:**

**“6. A delegated act adopted pursuant to Articles 3d(3), 10(4), 10a(1), (8) and (8a), 10b(5), 12(3b), 19(3), Article 22, Articles 24(3), 24a(1), 25a(1) and Articles 28c and 30j shall enter into force only if no objection has been expressed either by the European Parliament or by the Council within a period of two months of notification of that act to the European Parliament and to the Council or if, before the expiry of that period, the European Parliament and the Council have both informed the Commission that they will not object. That period shall be extended by two months at the initiative of the European Parliament or of the Council.”;**

**(19b) Article 29 is replaced by the following:**

**“Article 29**

**Report to ensure the better functioning of the carbon market**

**If the regular reports on the carbon market referred to in Article 10(5) and Article 10(6) contain evidence that the carbon market is not functioning properly, the Commission shall within a period of 3 months submit a report to the European Parliament and to the Council. The report may be accompanied, if appropriate, by legislative proposals aiming at increasing transparency and integrity of the carbon market including related derivative markets and addressing the corrective measures to improve its functioning as well as to enhance the prevention and detection of market abuse activities.”**

**(19c) Article 29a is replaced by the following:**

**“Article 29a**

**Measures in the event of excessive price fluctuations**

- 1. If the average allowance price of the six preceding calendar months is more than 2,4 times the average allowance price of the preceding two years reference period, 75 million allowances shall be released from the Market Stability Reserve in accordance with paragraph 7 of Article 1 of Decision (EU) 2015/1814.**

**The allowance price referred to in the first subparagraph shall be the price of auctions carried out in accordance with the act adopted under Article 10(4) for allowances covered by Chapters II and III.**

**The preceding two years reference period referred to in the first sub-paragraph shall be the two-year period that ends before the first month of the period of six calendar months referred to in that sub-paragraph.**

**Where the condition in the first subparagraph is met and paragraph 2 is not applicable, the Commission shall publish a notice to that effect in the Official Journal indicating the date on which the condition were fulfilled.**

*The Commission shall publish within the first three working days of each month the average allowance price of the preceding six calendar months and the average allowance price of the preceding two years reference period. If the condition of paragraph 1 of this Article is not met, the Commission shall also publish the level of price that the average allowance price should reach in the next month in order to meet the condition in that paragraph.*

2. *When the condition for release of allowances from the Market Stability Reserve pursuant to paragraph 1 of this Article has been met, the condition in paragraph 1 shall not be considered to have been fulfilled again until at least twelve months after the end of the previous release.*
3. *The arrangements for the application of these provisions shall be laid down in the acts referred to in Article 10(4).”;*

(19d) *in Article 30, paragraph 1 is replaced by the following:*

- “1. *This Directive shall be kept under review in the light of international developments and efforts undertaken to achieve the long-term objectives of the Paris Agreement, and any relevant commitments resulting from the Conferences of the Parties to the United Nations Framework Convention on Climate Change.”;*

(20) *in Article 30, paragraph 2, the following sentence is added:*

*“The measures applicable to CBAM sectors shall be kept under review in light of the application of Regulation (EU) 20.../nn [ CBAM Regulation]. Before 1 January 2028, as well as every two years thereafter as part of its reports to the European Parliament and the Council pursuant to Article 30(6) of that Regulation, the Commission shall assess the impact of the mechanism on the risk of carbon leakage, including in relation to exports. The report shall assess the need for taking additional measures, including legislative measures, to address carbon leakage risks. The report shall, if appropriate, be accompanied by a legislative proposal.”;*

**(20a)** *in Article 30, paragraph 3 is replaced by the following:*

**“3.** *The Commission shall report to the European Parliament and to the Council in the context of each global stocktake agreed under the Paris Agreement, in particular with regard to the need for additional Union policies and measures in view of necessary greenhouse gas reductions by the Union and its Member States, including in relation to the linear factor referred to in Article 9. The Commission may make proposals to the European Parliament and to the Council to amend this Directive where appropriate, in particular in order to ensure compliance with the climate-neutrality objective as laid down in Article 2(1) of Regulation (EU) 2021/1119 and the Union climate targets as laid down in Article 4 of that Regulation. In making its proposal the Commission shall, to that end inter alia consider the projected indicative Union greenhouse gas budget for the 2030-2050 period as referred to in Article 4(4) of that Regulation.”;*

**(20b)** *in Article 30, the following paragraphs are added:*

**“4a.** *By 31 July 2026, the Commission shall report to the European Parliament and to the Council on the following, accompanied, where appropriate, by a legislative proposal and impact assessment:*

- (a)** *how negative emissions resulting from greenhouse gases that are removed from the atmosphere and safely and permanently stored could be accounted for and how these negative emissions could be covered by emissions trading, if appropriate, including a clear scope and strict criteria and safeguards to ensure that such removals are not offsetting necessary emissions reductions in accordance with Union climate targets as laid down in Regulation (EU) 2021/1119;*
- (b)** *the feasibility of lowering the 20 MW total rated thermal input thresholds for the activities in Annex I of this Directive from 2031;*

- (c) *whether all greenhouse gas emissions covered by this Directive are effectively accounted for, and whether double counting is effectively avoided. In particular, it shall assess the accounting of the greenhouse gas emissions which are considered to have been captured and utilised in a product in a way other than that referred to in paragraph 3b of Article 12.*
- 4b. *When reviewing this Directive, in accordance with paragraphs 1, 2 and 3 of this Article, the Commission shall analyse how linkages between the EU ETS and other carbon markets can be established, without impeding the achievement of the climate-neutrality objective and the Union climate targets as laid down in Regulation (EU) 2021/1119.*
- 4c. *By 31 July 2026, the Commission shall present a report to the European Parliament and to the Council in which it shall assess the feasibility of including municipal waste incineration installations in the EU ETS, including with a view to their inclusion from 2028 and with an assessment of the potential need for a possibility for a Member State to opt out until 31 December 2030. In that regard, the Commission shall take into account the importance of all sectors contributing to emission reductions and the potential diverting towards disposal of waste by landfilling in the Union and waste exports to third countries. The Commission shall in addition take into account relevant criteria such as the effects on the internal market, potential distortions of competition, environmental integrity, alignment with the objectives of the Waste Framework Directive<sup>35</sup> and robustness and accuracy with respect to the monitoring and calculation of emissions. The Commission shall, where appropriate and without prejudice to the provisions laid down in Article 4 of Directive 2008/98/EC, present a legislative proposal accompanying the report to apply the provisions of this Chapter to greenhouse gas emissions permits and the allocation and issue of additional allowances in respect of municipal waste incineration installations and to prevent potential diverting.*

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<sup>35</sup> *Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ L 312, 22.11.2008, p. 3).*

*In the report referred to in the first subparagraph, the Commission shall also assess the possibility of including in the EU ETS other waste management processes, in particular landfills which create methane and nitrous oxide emissions in the Union. The Commission may, where appropriate, also accompany that report with a legislative proposal to include such other waste management processes in the EU ETS.”;*

(21) the following Chapter IVa is inserted after Article 30:

“CHAPTER IVa

**EMISSIONS TRADING SYSTEM FOR BUILDINGS, ROAD TRANSPORT *AND*  
*ADDITIONAL SECTORS***

Article 30a

Scope

The provisions of this Chapter shall apply to emissions, greenhouse gas emission permits, issue and surrender of allowances, monitoring, reporting and verification in respect of the activity referred to in Annex III. This Chapter shall not apply to any emissions covered by Chapters II **■** and III.

Article 30b

Greenhouse *gas* emissions permits

1. Member States shall ensure that, from 1 January 2025, no regulated entity carries out the activity referred to in Annex III unless that regulated entity holds a permit issued by a competent authority in accordance with paragraphs 2 and 3.
2. An application to the competent authority by the regulated entity pursuant to paragraph 1 for a greenhouse gas emissions permit under this Chapter shall include, at least, a description of:
  - (a) the regulated entity;

- (b) the type of fuels it releases for consumption and which are used for combustion in the ■ sectors ■ defined in Annex III and the means through which it releases those fuels for consumption;
  - (c) the end use(s) of the fuels released for consumption for the activity referred to in Annex III;
  - (d) the measures planned to monitor and report emissions, in accordance with the acts referred to in Articles 14 and 30f;
  - (e) a non-technical summary of the information under points (a) to (d).
3. The competent authority shall issue a greenhouse gas emissions permit granting authorisation to the regulated entity referred to in paragraph 1 for the activity referred to in Annex III, if it is satisfied that the entity is capable of monitoring and reporting emissions corresponding to the quantities of fuels released for consumption pursuant to Annex III.
4. Greenhouse gas emissions permits shall contain, at least, the following:
- (a) the name and address of the regulated entity;
  - (b) a description of the means by which the regulated entity releases the fuels for consumption in the sectors covered by this Chapter;
  - (c) a list of the fuels the regulated entity releases for consumption in the sectors covered by this Chapter;
  - (d) a monitoring plan that fulfils the requirements established by the acts referred to in Article 14;
  - (e) reporting requirements established by the acts referred to in Article 14;
  - (f) an obligation to surrender allowances, issued under this Chapter, equal to the total emissions in each calendar year, as verified in accordance with Article 15, *in accordance with the deadline provided in Article 30e(2)*.



5. Member States may allow the regulated entities to update monitoring plans without changing the permit. Regulated entities shall submit any updated monitoring plans to the competent authority for approval.
6. The regulated entity shall inform the competent authority of any planned changes to the nature of its activity or to the fuels it releases for consumption, which may require updating the greenhouse gas emissions permit. Where appropriate, the competent authority shall update the permit in accordance with the acts referred to in Article 14. Where there is a change in the identity of the regulated entity covered by this Chapter, the competent authority shall update the permit to include the name and address of the new regulated entity.

#### Article 30c

##### Total quantity of allowances

1. The Union-wide quantity of allowances issued under this Chapter each year from **2027** shall decrease in a linear manner beginning in 2024. The 2024 value shall be defined as the 2024 emissions limits, calculated on the basis of the reference emissions under Article 4(2) of Regulation (EU) 2018/842 of the European Parliament and of the Council(\*) for the sectors covered by this Chapter and applying the linear reduction trajectory for all emissions within the scope of that Regulation. The quantity shall decrease each year after 2024 by a linear reduction factor of **5,10** %. By 1 January **2025**, the Commission shall publish the Union-wide quantity of allowances for the year **2027**.
2. The Union-wide quantity of allowances issued under this Chapter each year from 2028 shall decrease in a linear manner beginning from 2025 on the basis of the average emissions reported under this Chapter for the years 2024 to 2026. The quantity of allowances shall decrease by a linear reduction factor of **5,38** %, except if the conditions of point 1 of Annex IIIa apply, in which case, the quantity shall decrease with a linear reduction factor adjusted in accordance with the rules set out in point 2 of Annex IIIa. By 30 June 2027, the Commission shall publish the Union-wide quantity of allowances for the year 2028 and, if required, the adjusted linear reduction factor.

3. *The Union-wide quantity of allowances issued under this Chapter shall be adjusted for each year from the year after the start of auctioning to compensate for the quantity of allowances surrendered in cases where it was not possible to avoid double counting of emissions or where allowances have been surrendered for emissions not covered by this Chapter as referred to in Article 30f(4). The adjustment shall correspond to the total amount of allowances covered by this Chapter which were compensated for in the relevant reporting year pursuant to the acts referred to in Article 30f(4).*
4. *A Member State having unilaterally included a regulated entity pursuant to Article 30j in the emissions trading established under this Chapter shall ensure that the regulated entity concerned submits by 30 April of the relevant year to the relevant competent authority a duly substantiated report in accordance with the provisions of Article 30f. If the data submitted are duly substantiated, the competent authority shall notify the Commission thereof by 30 June of the relevant year. The quantity of allowances to be issued under paragraph 1 shall be adjusted taking into account the duly substantiated submitted report.*

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(\*) Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013 (OJ L 156, 19.6.2018, p. 26).

#### Article 30d

#### Auctioning of allowances for the activity referred to in Annex III

1. From **2027**, allowances covered by this Chapter shall be auctioned, unless they are placed in the Market Stability Reserve established by Decision (EU) 2015/1814. The allowances covered by this Chapter shall be auctioned separately from the allowances covered by Chapters II **■** and III.

2. The auctioning of the allowances under this Chapter shall start in **2027** with a volume corresponding to 130 % of the auction volumes for **2027** established on the basis of the Union-wide quantity of allowances for that year and the respective auction shares and volumes pursuant to **paragraphs 3 to 5**. The additional volumes to be auctioned shall only be used for surrendering allowances pursuant to Article 30e(2) and **may be auctioned until 31 May 2028**. **The additional volumes shall** be deducted from the auction volumes for the period from **2029 to 2031**. The conditions for these early auctions shall be set in accordance with paragraph **6** and Article 10(4).

In **2027**, 600 million allowances covered by this Chapter are created as holdings in the Market Stability Reserve pursuant to Article 1a(3) of Decision (EU) 2015/1814.

3. 150 million allowances issued under this Chapter shall be auctioned and all revenues from these auctions made available for the **Social Climate** Fund established by **Regulation (EU) 20.../nn [Social Climate Fund Regulation] until 2032**.

- 3a. From the remaining amount of allowances and in order to generate, together with the revenue from the allowances referred to in paragraph 3 and Article 10a(8b), a maximum amount of EUR 65 000 000 000, the Commission shall ensure the auctioning of an additional volume of allowances covered by this Chapter that shall be made available for the Social Climate Fund established by Regulation (EU) 20.../nn [Social Climate Fund Regulation] until 2032.**

**The Commission shall ensure that the allowances destined for the Social Climate Fund referred to in paragraph 3 and in this paragraph are auctioned in accordance with the principles and modalities of Article 10(4) and the delegated act adopted in accordance with that provision.**

**The revenues from the auctioning of the allowances referred to in paragraph 3 and in this paragraph shall constitute external assigned revenue in accordance with Article 21(5) of Regulation (EU, Euratom) 2018/1046, and shall be implemented in accordance with the rules applicable to the Social Climate Fund.**

***The annual amount allocated to the Social Climate Fund in accordance with Article 10a(8b), paragraph 3 and this paragraph shall not exceed:***

- (a) for 2026, EUR 4 000 000 000;***
- (b) for 2027, EUR 10 900 000 000;***
- (c) for 2028, EUR 10 500 000 000;***
- (d) for 2029, EUR 10 300 000 000;***
- (e) for 2030, EUR 10 100 000 000;***
- (f) for 2031, EUR 9 800 000 000;***
- (g) for 2032, EUR 9 400 000 000.***

***Where the emissions trading established in accordance with this Chapter is postponed until 2028 pursuant to Article 30k, the maximum amount to be made available to the Social Climate Fund in accordance with the first subparagraph shall be EUR 54 600 000 000. In such a case, the annual amounts allocated to the Fund shall not exceed cumulatively for 2026-2027, EUR 4 000 000 000, and for the period from 1 January 2028 until 31 December 2032, the relevant annual amount shall not exceed:***

- (a) for 2028, EUR 11 400 000 000;***
- (b) for 2029, EUR 10 300 000 000;***
- (c) for 2030, EUR 10 100 000 000;***
- (d) for 2031, EUR 9 800 000 000;***
- (e) for 2032, EUR 9 000 000 000.***

*In case revenue generated from the auctioning referred to in paragraph 4 is established as an own resource in accordance with Article 311(3) TFEU, Article 10a(8b), paragraph 3 and this paragraph shall cease to apply.*

4. The total quantity of allowances covered by this Chapter after deducting the quantities set out in *paragraphs 3 and 3a*, shall be auctioned by the Member States and distributed amongst them in shares that are identical to the share of reference emissions under Article 4(2) of Regulation (EU) 2018/842 for the *categories of emission sources referred to in paragraph 2 point (b) to (d) of Annex III* for the average of the period from 2016 to 2018, of the Member State concerned, *as comprehensively reviewed pursuant to Article 4(3) of that Regulation.*
  
5. Member States shall determine the use of revenues generated from the auctioning of allowances referred to in paragraph 4, except for the revenues *constituting externally assigned revenue in accordance with paragraph 3a or the revenues* established as own resources in accordance with Article 311(3) TFEU and entered in the Union budget. Member States shall use their revenues *or the equivalent in financial value of these revenues* for one or more of the *purposes* referred to in Article 10(3), *giving priority to activities that can contribute to address social aspects of the emission trading under this Chapter*, or for one or more of the following:
  - (a) measures intended to contribute to the decarbonisation of heating and cooling of buildings or to the reduction of the energy needs of buildings, including the integration of renewable energies and related measures according to Articles 7(11), 12 and 20 of Directive 2012/27/EU [references to be updated with the revised Directive], as well as measures to provide financial support for low-income households in worst-performing buildings;

- (b) measures intended to accelerate the uptake of zero-emission vehicles or to provide financial support for the deployment of fully interoperable refuelling and recharging infrastructure for zero-emission vehicles or measures to encourage a shift to public forms of transport and improve multimodality, or to provide financial support in order to address social aspects concerning low and middle-income transport users;
- (c) *to finance their Social Climate Plan in accordance with Article 14 of Regulation (EU) 20.../nn [Social Climate Fund Regulation];*
- (d) *to provide financial compensation to the final consumers of the fuels in cases where it was not possible to avoid double counting of emissions or where allowances have been surrendered for emissions not covered by this Chapter as referred to in Article 30f(4).*

Member States shall be deemed to have fulfilled the provisions of this paragraph if they have in place and implement fiscal or financial support policies or regulatory policies, which leverage financial support, established for the purposes set out in the first subparagraph and which have a value equivalent to the revenues *referred to in the first subparagraph* generated from the auctioning of allowances referred to in this Chapter.

Member States shall inform the Commission as to the use of revenues and the actions taken pursuant to this paragraph by including this information in their reports submitted under Regulation (EU) 2018/1999 of the European Parliament and of the Council (\*\*).

6. Articles 10(4) and 10(5) shall apply to the allowances issued under this Chapter.

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(\*) Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council (OJ L 328, 21.12.2018, p. 1).

(\*\*) [insert reference]

#### Article 30e

##### Transfer, surrender and cancellation of allowances

1. Article 12 shall apply to the emissions, regulated entities and allowances covered by this Chapter with the exception of Article 12, paragraphs (2a), (3), (3a), paragraph (4), *second* and *third* sentence, and paragraph (5). For this purpose:
  - (a) any reference to emissions shall be read as if it were a reference to the emissions covered by this Chapter;
  - (b) any reference to operators of installations shall be read as if it were a reference to the regulated entities covered by this Chapter;
  - (c) any reference to allowances shall be read as if it were a reference to the allowances covered by this Chapter.

2. From 1 January **2028**, Member States shall ensure that, by **31 May** each year, the regulated entity surrenders a number of allowances covered by this Chapter, that is equal to the total emissions, corresponding to the quantity of fuels released for consumption pursuant to Annex III, during the preceding calendar year as verified in accordance with Articles 15 and 30f, and that those allowances are subsequently cancelled.
3. *Until 31 December 2030, by way of derogation from the first and second paragraphs, where a regulated entity established in a given Member State is subject to a national carbon tax in force for the years 2027 to 2030, covering an activity referred to in Annex III, the competent authority of the Member State concerned may exempt that regulated entity from the obligation to surrender allowances under paragraph 2 for a given reference year, provided that:*
  - (a) *the Member State concerned notifies the Commission of its national carbon tax, covering an activity referred to in Annex III by 31 December 2023 and the national law setting the tax rates applicable for the years 2027 to 2030 has, at that point in time, entered into force. The Member State concerned shall notify the Commission of any subsequent change to the national carbon tax;*
  - (b) *for the reference year, the national carbon tax of the Member State concerned effectively paid by that regulated entity is higher than the average auction clearing price of the emissions trading system established under this Chapter;*
  - (c) *the regulated entity fully complies with the obligations under Article 30b on the greenhouse emissions permits and Article 30f on the monitoring, reporting and verification of its emissions;*



- (d) the Member State concerned notifies the Commission of the application of any such exemption and the corresponding volume of allowances to be cancelled in accordance with point (g) and the delegated acts adopted pursuant to Article 10(4) by 31 May of the year after the reference year;*
- (e) the Commission does not raise an objection to the application of the derogation on the ground that the measure notified is not in conformity with the conditions set out in this paragraph, within three months from a notification under point (a) or within one month after the notification for the relevant year under point (d);*
- (f) the Member State concerned does not auction the volume of allowances referred to in Article 30d(4) for a particular reference year until the quantity of volume of allowances to be cancelled under this paragraph is determined in accordance with point (g). The Member State concerned shall not auction any of the additional volume of allowances pursuant to Article 30d(2), first subparagraph.*
- (g) the Member State concerned cancels a volume of allowances from the total quantity of allowances to be auctioned by it referred to in Article 30d(4) for the reference year equal to the verified emissions of that regulated entity under this Chapter for the reference year. Where the volume of allowance that remains to be auctioned in the reference year following application of point f) is below the volume of allowances to be cancelled under this paragraph, the Member State concerned shall ensure that it cancels the volume of allowances corresponding to the difference by the end of the year after the reference year; and*

***(h) the Member State concerned commits, at the time of the first notification under point (a), to use for one or more of the measures listed or referred to in Article 30d(5), first subparagraph, an amount equivalent to the revenues to which Article 30d(5) would have applied in the absence of this derogation. The second and third subparagraph of Article 30d(5) shall apply and the Commission shall ensure that the information received pursuant thereto is in conformity with the commitment made.***

***The volume of allowances to be cancelled under point (g) shall not affect the externally assigned revenue established pursuant to Article 30d(3a) or, where it has been established pursuant to Article 311(3) TFEU, the own resources of the Union budget pursuant to Council Decision (EU, Euratom) 2020/2053 from the revenues generated from auctioning of allowances in accordance with Article 30d.***

***4. Hospitals which are not covered by Chapter III of this Directive may be provided financial compensation for the cost passed on to them due to the surrender of allowances under this Chapter. For this purpose, the provisions of this Chapter applicable to the cases of double counting shall apply mutatis mutandis.***

Article 30f

Monitoring, reporting, verification of emissions and accreditation

1. Articles 14 and 15 shall apply to the emissions, regulated entities and allowances covered by this Chapter. For this purpose:
  - (a) any reference to emissions shall be read as if it were a reference to the emissions covered by this Chapter;
  - (b) any reference to activity listed in Annex I shall be read as if it were a reference to the activity referred to in Annex III;
  - (c) any reference to operators shall be read as if it were a reference to the regulated entities covered by this Chapter;

- (d) any reference to allowances shall be read as if it were a reference to the allowances covered by this Chapter.
2. Member States shall ensure that each regulated entity monitors for each calendar year as from 2025 the emissions corresponding to the quantities of fuels released for consumption pursuant to Annex III. They shall also ensure that each regulated entity reports these emissions to the competent authority in the following year, starting in 2026, in accordance with the acts referred to in Article 14(1).
- 2a. From 1 January 2028, Member States shall ensure that, by 30 April each year until 2030, the regulated entity reports the average share of costs related to the surrender of allowances under Chapter IVa of Directive 2003/87/EC which they passed on to consumers for the preceding year. The Commission shall adopt implementing acts concerning the requirements and templates for these reports. These implementing acts shall be adopted in accordance with the examination procedure referred to in Article 22a(2). The Commission shall assess the submitted reports and annually report its findings to the European Parliament and the Council. In the case the Commission finds that improper practices exist with regard to the pass through of carbon costs, the report may be accompanied, if appropriate, by legislative proposals aimed at addressing such improper practices.*
3. Member States shall ensure that each regulated entity holding a permit in accordance with Article 30b on 1 January 2025 report their historical emissions for year 2024 by 30 April 2025.
4. Member States shall ensure that the regulated entities are able to identify and document reliably and accurately per type of fuel, the precise volumes of fuel released for consumption which are used for combustion in the ■ sectors ■ identified in Annex III, and the final use of the fuels released for consumption by the regulated entities. The Member States shall take appropriate measures to **limit the** risk of double counting of emissions covered under this Chapter and the emissions under Chapters II ■ and III, **as well as the risk of allowances being surrendered for emissions not covered by this Chapter.**

*The Commission shall adopt implementing acts concerning the detailed rules for avoiding double counting and allowances being surrendered for emissions not covered by this Chapter, as well as for providing financial compensation to the final consumers of the fuels in cases where such double counting or surrender may not be avoided. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 22a(2). The calculation of the financial compensation to the final consumers of the fuels shall be based on the average price of allowances in the auctions carried out in accordance with the act adopted under Article 10(4) in the relevant reporting year.*

5. The principles for monitoring and reporting of emissions covered by this Chapter are set out in Part C of Annex IV.
6. The criteria for the verification of emissions covered by this Chapter are set out in Part C of Annex V.
7. *Member States may allow simplified monitoring, reporting and verification measures for regulated entities whose annual emissions corresponding to the quantities of fuels released for consumption are less than 1000 tonnes of carbon dioxide equivalent, in accordance with the acts referred to in Article 14(1).*

Article 30g

Administration

Articles 13, 15a, Article 16(1), (2), (3), (4) and (12), Articles 17, 18, 19, 20, 21, 22, 22a, 23 and 29 shall apply to the emissions, regulated entities and allowances covered by this Chapter. For this purpose:

- (a) any reference to emissions shall be read as if it were a reference to emissions covered by this Chapter;
- (b) any reference to *operators* shall be read as if it were a reference to regulated entities covered by this Chapter;

- (c) any reference to allowances shall be read as if it were a reference to the allowances covered by this Chapter.

#### Article 30h

##### Measures in the event of excessive price increase

1. Where, for more than three consecutive months, the average price of **allowances** in the auctions carried out in accordance with the act adopted under Article 10(4) is more than twice the average price of **allowances** during the six preceding consecutive months in the auctions for the allowances covered by this Chapter, **50** million allowances covered by this Chapter **shall be released** from the Market Stability Reserve in accordance with Article 1a(7) of Decision (EU) 2015/1814.

*For the years 2027 and 2028, the conditions in the first sub-paragraph shall be met where, for more than three consecutive months, the average price of allowance is more than 1,5 times the average price of allowance during a reference period of the six preceding consecutive months.*

- 1a. Where the average price of allowances referred to in paragraph 1 exceeds a price of EUR 45 during a period of two consecutive months, 20 million allowances covered by this Chapter shall be released from the Market Stability Reserve in accordance with Article 1a(7) of Decision (EU) 2015/1814. The indexation to the European index of consumer prices of 2020 shall apply. The mechanism under this paragraph shall release allowances up to 31 December 2029.*

2. Where **1** the average price of **allowances referred to in paragraph 1** is more than three times the average price of allowance during the six preceding consecutive months, 150 million allowances covered by this Chapter **shall be released** from the Market Stability Reserve in accordance with Article 1a(7) of Decision (EU) 2015/1814.

- 2a. Where a condition referred to in paragraph 1a has been met on the same day as the condition in paragraphs 1 or 2, additional allowances shall be released only pursuant to paragraphs 1 or 2.*

- 2b. Before paragraph 1a ceases to apply, the Commission shall present a report to the European Parliament and to the Council in which it assesses whether the mechanism referred to in paragraph 1a has been effective and whether it should be continued. The Commission shall, where appropriate, accompany that report with a legislative proposal to the European Parliament and to the Council to amend this Directive to adjust that mechanism.**
- 3. Where a condition referred to in paragraph 1, 1a or 2 has been met and resulted in a release of allowances, additional allowances shall not be released pursuant to this Article earlier than 12 months thereafter.**
- 4. Where, within the second half of the period of 12 months referred to in paragraph 3, the condition in paragraph 1a has been met again, the Commission shall, assisted by the Committee, established by Article 44 of Regulation (EU) 2018/1999, assess the effectiveness of the measure and may by means of an implementing act decide that paragraph 3 shall not apply. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 22a(2).**
- 5. Where a condition in paragraph 1, 1a or 2 has been met and paragraph 3 is not applicable, the Commission shall promptly publish in the Official Journal the date on which the condition in paragraph 1, 1a or 2 was met.**
- 6. Member States that are subject to the obligation to provide a corrective action plan in accordance with Article 8 of Regulation (EU) 2018/842 shall take due account of the effects of the release of additional allowances pursuant to paragraph 1a during the previous two years when considering additional actions to be implemented as referred to in Article 8(1)(c) in order to meet their obligations under that Regulation.**

## Article 30i

### Review of this Chapter

By 1 January 2028, the Commission shall report to the European Parliament and to the Council on the implementation of the provisions of this Chapter with regard to their effectiveness, administration and practical application, including on the application of the rules under Decision (EU) 2015/1814<sup>1</sup>. Where appropriate, the Commission shall accompany this report with a proposal to the European Parliament and to the Council to amend this Chapter. By 31 October 2031 the Commission should assess the feasibility of integrating the sectors covered by Annex III in the Emissions Trading System covering the sectors listed in Annex 1 of Directive 2003/87/EC.

## *Article 30j*

### *Procedures for unilateral extension of the activity referred to in Annex III to other sectors not subject to Chapter II and III*

- 1. From 2027 Member States may apply emission trading in accordance with this Chapter in sectors not listed in Annex III, taking into account all relevant criteria, in particular the effects on the internal market, potential distortions of competition, the environmental integrity of the emission trading system established pursuant to this Chapter and the reliability of the planned monitoring and reporting system, provided that the extension of the activity is approved by the Commission.*

*The Commission is empowered to adopt delegated acts in accordance with Article 23 concerning the approval of an extension, authorisation for the issue of additional allowances and authorisation of other Member States to extend the activity. The Commission may also, when adopting such delegated acts, supplement the extension with further rules governing measures to address possible instances of double counting, including for the issue of additional allowances to compensate for allowances surrendered for use of fuels in activities listed in Annex I. Any financial measures by the Member States in favour of companies in sectors and subsectors which are exposed to a genuine risk of carbon leakage due to significant indirect costs that are actually incurred from greenhouse gas emission costs passed on in fuel prices due to the unilateral extension shall be in accordance with State aid rules, and shall not cause undue distortions of competition in the internal market.*

2. *Additional allowances issued pursuant to an authorisation under this Article shall be auctioned in line with the requirements laid down in Article 30d. Notwithstanding Article 30d (1) to (5) the Member States having unilaterally extended the activities shall determine the use of revenues generated from the auctioning of those additional allowances.*

#### *Article 30k*

*Postponement of emissions trading for buildings, road transport and additional sectors until 2028 in the event of exceptionally high energy prices*

1. *By 15 July 2026, the Commission shall publish in the Official Journal whether one or both of the following conditions were met:*
  - (a) *the average TTF gas price of the six calendar months ending 30 June 2026 is higher than the average TTF gas price in February and March 2022;*



- (b) the average Brent crude oil price of the six calendar months ending 30 June 2026 is more than 2 times the average Brent crude oil price during the five preceding years. The five years reference period shall be the five-year period that ends before the first month of the period of the six calendar months.*
2. *Where one or both of the conditions referred to in paragraph (1) are met, the following rules shall apply:*
- (a) by way of derogation from Article 30c(1), the first year for which the Union-wide quantity of allowances is established shall be 2028;*
- (b) by way of derogation from Articles 30d(1) and Article 30d(2), the start of auctioning of allowances under this Chapter shall be postponed to 2028;*
- (c) by way of derogation from Article 30d(2), the additional volumes of allowances for the first year of auctions shall be deducted from the auction volumes for the period from 2030 to 2032 and the initial holdings in the market stability reserve shall be created in 2028;*
- (d) by way of derogation from Article 30e(2), the deadline for initial surrendering of allowances shall be postponed to 30 April 2029 for the total emissions of the year 2028;*
- (e) by way of derogation from Article 30i, the deadline for the Commission to report to the European Parliament and to the Council shall be postponed to 1 January 2029.”;*

**(21b) the following article is inserted:**

**“Article 30ib**

**Scientific advice**

**The European Scientific Advisory Board on Climate Change established under Article 10a of Regulation (EC) No 401/2009 may, on its own initiative, provide scientific advice and issue reports regarding this Directive. The Commission shall take into account the relevant advice and reports of the Advisory Board, in particular as regards:**

- **the need for additional Union policies and measures to ensure compliance with the objectives and targets referred to in Article 30(3);**
- **the need for additional Union policies and measures in view of agreements on global measures within ICAO to reduce climate impact from aviation and the ambition and environmental integrity of the global market-based measure from the IMO referred to in Article 3ge.”;**

**(21c) the following Article is inserted after Article 30ib:**

**“Article 30ic**

**Information, communication and publicity**

1. **The Commission shall ensure the visibility of funding from EU ETS auctioning revenues referred to in Article 10a(8) (Innovation Fund) of this Directive by:**
  - (a) **ensuring that the beneficiaries of such funding acknowledge the origin of those funds and ensure the visibility of the Union funding, in particular when promoting the projects and their results, by providing coherent, effective and proportionate targeted information to multiple audiences, including the media and the public; and**

*(b) ensuring that the recipients of such funding use an appropriate label that reads ‘(co-) funded from by the EU Emissions Trading System (the Innovation Fund)’, as well as the emblem of the Union and the amount of funding. Where the use of this label is not feasible, the Innovation Fund shall be mentioned in all communication activities, including on notice boards at strategic places visible to the public.*

*The Commission shall in the delegated act referred to in Article 10a(8) set the necessary requirements to ensure the visibility of funding from the Innovation Fund, including the mentioning of that Fund.*

- 2. Member States shall ensure the visibility of funding from EU ETS auctioning revenues referred to in Article 10d (Modernisation Fund) corresponding to what is referred to in paragraph 1, points a) and b), including the mentioning of the Modernisation Fund.*
- 3. Taking into account national circumstances, the Member States shall endeavour to ensure the visibility of the source of the funding of actions or projects funded from the EU ETS auctioning revenues for which they determine the use as referred to in Articles 3d(4), 10(3) and Article 30d (5).”;*

(22) Annexes I, IIb, IV and V to Directive 2003/87/EC are amended in accordance with Annex I to this Directive, and Annexes III **and** IIIa **■** are inserted in Directive 2003/87/EC as set out in Annex I to this Directive.

Article 2  
Amendments to Decision (EU) 2015/1814

Decision (EU) 2015/1814 is amended as follows:

(1) Article 1 is amended as follows:

(a) in paragraph 4, the *first and second sentences are* replaced by the following:

*“The Commission shall publish the total number of allowances in circulation each year by 1 June of the subsequent year. The total number of allowances in circulation in a given year shall be the cumulative number of allowances issued in respect of installations and shipping companies and not put in reserve in the period since 1 January 2008, including the number that were issued pursuant to Article 13(2) of Directive 2003/87/EC as in force until 18 March 2018 in that period and entitlements to use international credits exercised by installations under the EU ETS, up to 31 December of that given year, minus the cumulative tonnes of verified emissions from installations and shipping companies under the EU ETS between 1 January 2008 and 31 December of that same given year, and any allowances cancelled in accordance with Article 12(4) of Directive 2003/87/EC.”;*

(b) the following paragraph 4a is inserted:

*“4a. As from [the year following the entry into force of this Directive], the calculation of the total number of allowances in circulation in any given year shall include the cumulative number of allowances issued in respect of aviation and the cumulative tonnes of verified emissions from aviation under the EU ETS, not including emissions from flights on routes covered by offsetting calculated pursuant to Article 12(6), between 1 January [the year following the entry into force of this Directive] and 31 of December of that year.*

The allowances cancelled pursuant to Article 3ga of Directive 2003/87/EC shall be considered as issued for the purposes of the calculation of the total number of allowances in circulation.”;

(c) paragraph 5 and 5a are replaced by the following:

“5. In any given year, if the total number of allowances in circulation is between 833 million and 1 096 million, a number of allowances equal to the difference between the total number of allowances in circulation, as set out in the most recent publication as referred to in paragraph 4 of this Article, and 833 million, shall be deducted from the volume of allowances to be auctioned by the Member States under Article 10(2) of Directive 2003/87/EC and shall be placed in the reserve over a period of 12 months beginning on 1 September of that year. If the total number of allowances in circulation is above 1 096 million allowances, the number of allowances to be deducted from the volume of allowances to be auctioned by the Member States under Article 10(2) of Directive 2003/87/EC and to be placed in the reserve over a period of 12 months beginning on 1 September of that year shall be equal to 12 % of the total number of allowances in circulation. By way of derogation from the last sentence, until 31 December 2030, the percentage shall be doubled.

Without prejudice to the total amount of allowances to be deducted pursuant to this paragraph, until 31 December 2030, allowances referred to in Article 10(2), first subparagraph, point (b), of Directive 2003/87/EC shall not be taken into account when determining Member States' shares contributing to that total amount.

5a. Unless otherwise decided in the first review carried out in accordance with Article 3, from 2023 allowances held in the reserve above 400 million allowances shall no longer be valid.”;

(d) *paragraph 7 replaced by the following:*

*“7. In any year, if paragraph 6 of this Article is not applicable and the condition in the first paragraph of Article 29a of Directive 2003/87/EC have been met, 75 million allowances shall be released from the reserve and added to the volume of allowances to be auctioned by the Member States under Article 10(2) of Directive 2003/87/EC. Where fewer than 75 million allowances are in the reserve, all allowances in the reserve shall be released under this paragraph. Where the condition in paragraph 1 of Article 29a of Directive 2003/87/EC Article 29a is fulfilled, the volumes to be released from the reserve in accordance with that provision shall be evenly distributed during a period of three months, starting no later than two months from the date when the condition in paragraph 1 of Article 29a of Directive 2003/87/EC is met as notified by the Commission in accordance with the fourth sub-paragraph thereof.”;*

(2) the following Article 1a is inserted:

“Article 1a

Operation of the Market Stability Reserve for the buildings, road transport *and additional* sectors

1. Allowances covered by Chapter IVa of Directive 2003/87/EC shall be placed in and released from a separate section of the reserve established pursuant to Article 1 of this Decision, in accordance with the rules set out in this Article.
2. The placing in the reserve under this Article shall operate from 1 September 2028. The allowances covered by Chapter IVa of Directive 2003/87/EC shall be placed in, held in, and released from the reserve separately from the allowances covered by Article 1 of this Decision.

3. In **2027**, the section referred to in paragraph 1 shall be created in accordance with Article 30d(2), second subparagraph, of Directive 2003/87/EC. By 1 January 2031, the allowances referred to in this paragraph that are not released from the reserve shall no longer be valid.
4. The Commission shall publish the total number of allowances in circulation covered by Chapter IVa of Directive 2003/87/EC each year, by **1 June** of the subsequent year separately from the number of allowances in circulation under Article 1(4). The total number of allowances in circulation under this Article in a given year shall be the cumulative number of allowances covered by Chapter IVa of Directive 2003/87/EC issued in the period since 1 January **2027**, minus the cumulative tonnes of verified emissions covered by Chapter IVa of Directive 2003/87/EC for the period between 1 January **2027** and 31 December of that same given year and any allowances covered by Chapter IVa Directive 2003/87/EC cancelled in accordance with Article 12(4) of Directive 2003/87/EC. The first publication shall take place by **1 June 2028**.
5. In any given year, if the total number of allowances in circulation, as set out in the most recent publication as referred to in paragraph 4 of this Article, is above 440 million allowances, 100 million allowances shall be deducted from the volume of allowances covered by Chapter IVa to be auctioned by the Member States under Article 30d of Directive 2003/87/EC and shall be placed in the reserve over a period of 12 months beginning on 1 September of that year.
6. In any given year, if the total number of allowances in circulation is fewer than 210 million, 100 million allowances covered by Chapter IVa shall be released from the reserve and added to the volume of allowances covered by Chapter IVa to be auctioned by the Member States under Article 30d of Directive 2003/87/EC. Where fewer than 100 million allowances are in the reserve, all allowances in the reserve shall be released under this paragraph.

7. The volumes to be released from the reserve in accordance with Article 30h of Directive 2003/87/EC shall be added to the volume of allowances covered by Chapter IVa to be auctioned by the Member States under Article 30d of Directive 2003/87/EC. ***The volumes to be released from the reserve shall be evenly distributed during a period of three months, starting no later than two months after the date on which the conditions were met according to the publication thereof in the Official Journal pursuant to Article 30h of Directive 2003/87/EC.***
8. Article 1(8) and Article 3 shall apply to the allowances covered by Chapter IVa of Directive 2003/87/EC.
9. ***By derogation from paragraphs 2 to 4, where one or both of the conditions referred to in Article 30k(1) of Directive 2003/87/EC are met, the placing in the reserve referred to in paragraph 2 shall operate from 1 September 2029 and the dates referred to in paragraphs 3 and 4 shall be postponed by one year.”.***



(2a) *Article 3 is replaced by the following:*

*“Article 3*

*Review*

*The Commission shall monitor the functioning of the reserve in the context of the report provided for in Article 10(5) of Directive 2003/87/EC. That report should consider relevant effects on competitiveness, in particular in the industrial sector, including in relation to GDP, employment and investment indicators. Within three years of the start of the operation of the reserve and at five-year intervals thereafter, the Commission shall, on the basis of an analysis of the orderly functioning of the European carbon market, review the reserve and submit a proposal, where appropriate, to the European Parliament and to the Council. Each review shall pay particular attention to the percentage figure for the determination of the number of allowances to be placed in the reserve pursuant to Article 1(5) of this Decision, the numerical value of the threshold for the total number of allowances in circulation, including with a view to a potential adjustment of this threshold in line with the linear factor referred to in Article 9 of Directive 2003/87/EC, as well as the number of allowances to be released from the reserve pursuant to Article 1(6) or (7) of this Decision. In its review, the Commission shall also look into the impact of the reserve on growth, jobs, and the Union's industrial competitiveness and on the risk of carbon leakage.”*

■

Article 3

Transposition

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with *Article 1* ■ of this Directive by 31 December 2023. *They shall apply those provisions from 1 January 2024.*

*However, Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with the following articles by 30 June 2024:*

- (i) Article 1(2), points (x) to (zb), of this Directive;*
- (ii) Article 1(21) of this Directive with the exception of Article 30f(3) of Directive 2003/87/EC as inserted by that Article; and*
- (iii) Article 1(22) of this Directive regarding Annexes III and IIIa of Directive 2003/87/EC as inserted by that Article.*

They shall *immediately inform* the Commission *thereof*.

When Member States adopt those *measures*, they shall contain a reference to this Directive or *shall* be accompanied by such **█** reference on the occasion of their official publication. *The methods of making such reference shall be laid down by Member States* **█** .

2. Member States shall communicate to the Commission the text of the main *measures* of national law which they adopt in the field covered by this Directive.

#### Article 4

##### Transitional provisions

1. When complying with their obligation set out in Article 3(1) of this Directive, Member States shall ensure that their national legislation transposing Article 3, point (u), Article 10a(3) and 10a(4), Article 10c(7) and Annex I, *points 1 and 3*, of Directive 2003/87/EC, in its version applicable on [the day before the date of entry into force of this Directive], continue to apply until 31 December 2025. *By way of derogation from the last sentence of the first subparagraph of Article 3(1), they shall apply their national measures transposing amendments to those provisions from 1 January 2026.*

**█**

## Article 5

### Entry into force *and application*

This Directive shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*. **Article 2 shall apply from 1 January 2024.**

## Article 6

### Addressees

This Directive is addressed to the Member States. █

Done at Brussels ..., ...

*For the European Parliament*

*For the Council*

*The President*

*The President*

## ANNEX

Annex I to Directive 2003/87/EC is amended as follows:

■ Points 1 and 3 are replaced by the following:

- “1. Installations or parts of installations used for research, development and testing of new products and processes **are not covered by this Directive. Installations**, where **during the preceding relevant five year period referred to in Article 11(1), second subparagraph**, emissions from the combustion of biomass that complies with the criteria set out pursuant to Article 14 contribute **on average** to more than 95 % of the total **average** greenhouse gas emissions are not covered by this Directive.
3. When the total rated thermal input of an installation is calculated in order to decide upon its inclusion in the EU ETS, the rated thermal inputs of all technical units which are part of it, in which fuels are combusted within the installation, shall be added together. These units may include all types of boilers, burners, turbines, heaters, furnaces, incinerators, calciners, kilns, ovens, dryers, engines, fuel cells, chemical looping combustion units, flares, and thermal or catalytic post-combustion units. Units with a rated thermal input under 3 MW shall not be taken into account for the purposes of this calculation.”;

■ The table is amended as follows:

(-i) *The first row is replaced by the following:*

<p><i>Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)</i></p> <p><i>From 1 January 2024, combustion of fuels in installations for the incineration of municipal waste with a total rated thermal input exceeding 20 MW, for the purposes of Articles 14 and 15.</i></p>	<p><i>Carbon dioxide</i></p>
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(i) The second row is replaced by the following:

Refining of oil, where combustion units with a total rated thermal input exceeding 20 MW are operated	Carbon dioxide";
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(ii) The fifth row is replaced by the following:

"Production of iron or steel (primary or secondary fusion) including continuous casting, with a capacity exceeding 2,5 tonnes per hour	Carbon dioxide";
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(iii) The seventh row is replaced by the following:

"Production of primary aluminium or alumina	Carbon dioxide <i>and perfluorocarbons</i> ";
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(iv) The fifteenth row of categories of activities is replaced by the following:

"Drying or calcination of gypsum or production of plaster boards and other gypsum products, with a production capacity of calcined gypsum or dried secondary gypsum exceeding a total of 20 tonnes per day	Carbon dioxide";
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(v) The eighteenth row is replaced by the following:

"Production of carbon black involving the carbonisation of organic substances such as oils, tars, cracker and distillation residues with a production capacity exceeding 50 tonnes per day	Carbon dioxide";
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(vi) The twenty-fourth row is replaced by the following:

"Production of hydrogen ( $H_2$ ) and synthesis gas with a production capacity exceeding 5 tonnes per day	Carbon dioxide";
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(vii) The twenty-seventh row is replaced by the following:

“Transport of greenhouse gases for geological storage in a storage site permitted under Directive 2009/31/EC, with the exclusion of those emissions covered by another activity under this Directive	Carbon dioxide”;
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(viii) the following row is added after the last new row, with a separation line in between:

“Maritime transport  Maritime transport activities covered by Regulation (EU) 2015/757 of the European Parliament and of the Council with the <i>exception of the maritime transport activities covered by Article 2(1a) and, until 31 December 2026, Article 2(1b) of that Regulation</i>	<i>Carbon dioxide;</i>  <i>From 1 January 2026: methane and nitrous oxide”;</i>
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(1) Annex IIb to Directive 2003/87/EC is replaced by the following:

“ANNEX IIb

Part A - DISTRIBUTION OF FUNDS FROM THE MODERNISATION FUND  
CORRESPONDING TO ARTICLE 10(1), THIRD SUBPARAGRAPH

	Share
Bulgaria	5,84 %
Czechia	15,59 %
Estonia	2,78 %
Croatia	3,14 %
Latvia	1,44 %
Lithuania	2,57 %
Hungary	7,12 %

Poland	43,41 %
Romania	11,98 %
Slovakia	6,13 %

Part B - DISTRIBUTION OF FUNDS FROM THE MODERNISATION FUND  
CORRESPONDING TO ARTICLE 10(1), FOURTH SUBPARAGRAPH

	Share
Bulgaria	<b>4,9 %</b>
Czechia	<b>12,6 %</b>
Estonia	<b>2,1 %</b>
Greece	<b>10,1 %</b>
Croatia	2,3 %
Latvia	<b>1,0 %</b>
Lithuania	1,9 %
Hungary	<b>5,8 %</b>
Poland	<b>34,2 %</b>
Portugal	<b>8,6 %</b>
Romania	<b>9,7 %</b>
Slovakia	<b>4,8 %</b>
<b>Slovenia</b>	<b>2,0 %</b>

(2) The following Annexes are inserted as Annexes III *and* IIIa █ to Directive 2003/87/EC:

“ANNEX III

ACTIVITY COVERED BY CHAPTER IVa



<p>Activity:</p> <p>1. Release for consumption of fuels which are used for combustion in the sectors of buildings and road transport <b><i>and additional sectors.</i></b></p> <p>This activity shall not include:</p> <p>(a) the release for consumption of fuels used in the activities set out in Annex I to this Directive, except if used for combustion in the activities of transport of greenhouse gases for geological storage (activity row twenty seven) <b><i>or if used for combustion in installations excluded under Article 27a of this Directive;</i></b></p> <p>(b) the release for consumption of fuels for which the emission factor is zero;</p> <p><b><i>(c) the release for consumption of hazardous or municipal waste used as fuel.</i></b></p> <p>2. The sectors of buildings and road transport shall correspond to the following sources of emissions, defined in 2006 IPCC Guidelines for National Greenhouse Gas Inventories, with the necessary modifications to those definitions as follows:</p> <p>(a) Combined Heat and Power Generation (CHP) (source category code 1A1a ii) and Heat Plants (source category code 1A1a iii), insofar as they produce heat for categories under (c) and (d) of this point, either directly or through district heating networks;</p> <p>(b) Road Transportation (source category code 1A3b), excluding the use of agricultural vehicles on paved roads;</p> <p>(c) Commercial / Institutional (source category code 1A4a);</p> <p>(d) Residential (source category code 1A4b).</p>	<p>Greenhouse gases</p> <p>Carbon dioxide (CO<sub>2</sub>)</p>
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<p><b>3. Additional sectors shall correspond to the following sources of emissions, defined in 2006 IPCC Guidelines for National Greenhouse Gas Inventories:</b></p> <p><b>(a) Energy industries (source category code 1A1), excluding the categories defined under paragraph 2 point (a) of this Annex;</b></p> <p><b>(b) Manufacturing Industries and Construction (source category code 1A2).</b></p>	
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ANNEX IIIa

ADJUSTMENT OF LINEAR REDUCTION FACTOR IN ACCORDANCE WITH ARTICLE 30c(2)

1. If the average emissions reported under Chapter IVa for the years 2024 to 2026 are more than 2% higher compared to the value of the 2025 quantity defined in accordance with Article 30c(1), and if these differences are not due to the difference of less than 5% between the emissions reported under Chapter IVa and the inventory data of 2025 Union greenhouse gas emissions from UNFCCC source categories for the sectors covered under Chapter IVa, the linear reduction factor shall be calculated by adjusting the linear reduction factor referred to in Article 30c(1).
2. The adjusted linear reduction factor in accordance with point 1 shall be determined as follows:

$$LRF_{adj} = 100\% * \left[ \frac{MRV_{[2024-2026]} - (ESR_{[2024]} - 6 * LRF_{[2024]} * ESR_{[2024]})}{5 * MRV_{[2024-2026]}} \right], \text{ where,}$$

$LRF_{adj}$  is the adjusted linear reduction factor;

MRV<sub>[2024-2026]</sub> is the average of verified emissions under Chapter IVa for the years 2024 to 2026;

ESR<sub>[2024]</sub> is the value of 2024 emissions defined in accordance with Article 30c(1) for the sectors covered under Chapter IVa;

LRF<sub>[2024]</sub> is the linear reduction factor referred to in Article 30c(1).**■** ”

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(3) Annex IV to Directive 2003/87/EC is amended as follows:

(a) in Part A, the section “Calculation” is amended as follows:

(i) in the fourth subparagraph, the last sentence “The emission factor for biomass shall be zero.” is replaced by the following:

“The emission factor for biomass that complies with the sustainability criteria and greenhouse gas emission saving criteria for the use of biomass established by Directive (EU) 2018/2001, with any necessary adjustments for application under this Directive, as set out in the implementing acts referred to in Article 14, shall be zero.”;

(ii) the sixth subparagraph is replaced by the following:

“Default oxidation factors developed pursuant to Directive 2010/75/EU shall be used, unless the operator can demonstrate that activity-specific factors are more accurate.”;

- (b) in Part B, section “Monitoring of carbon dioxide emissions”, fourth subparagraph, the last sentence “The emission factor for biomass shall be zero.” is replaced by the following:

“The emission factor for biomass that complies with the sustainability criteria and greenhouse gas emission saving criteria for the use of biomass established by Directive (EU) 2018/2001, with any necessary adjustments for application under this Directive, as set out in the implementing acts referred to in Article 14, shall be zero.”;

- (c) the following Part C is added:

“PART C — Monitoring and reporting of emissions corresponding to the activity referred to in Annex III

#### **Monitoring of emissions**

Emissions shall be monitored by calculation.

#### **Calculation**

Emissions shall be calculated using the following formula:

***Fuel released for consumption × emission factor***

Fuel released for consumption shall include the quantity of fuel released for consumption by the regulated entity.

Default IPCC emission factors, taken from the 2006 IPCC Inventory Guidelines or subsequent updates of these Guidelines, shall be used unless fuel-specific emission factors identified by independent accredited laboratories using accepted analytical methods are more accurate.

A separate calculation shall be made for each regulated entity, and for each fuel.

## Reporting of emissions

Each regulated entity shall include the following information in its report:

- A. Data identifying the regulated entity, including:
- name of the regulated entity;
  - its address, including postcode and country;
  - type of the fuels it releases for consumption and its activities through which it releases the fuels for consumption, including the technology used;
  - address, telephone, fax and email details for a contact person; and
  - name of the owner of the regulated entity, and of any parent company.
- B. For each type of fuel released for consumption and which is used for combustion in the ■ sectors ■ defined in Annex III, for which emissions are calculated:
- quantity of fuel released for consumption;
  - emission factors;
  - total emissions;
  - end use(s) of the fuel released for consumption; and
  - uncertainty.

Member States shall take measures to coordinate reporting requirements with any existing reporting requirements in order to minimise the reporting burden on businesses.”;

(4) in Annex V to Directive 2003/87/EC, the following Part C is added:

“PART C — Verification of emissions corresponding to the activity referred to in Annex III

### **General Principles**

1. Emissions corresponding to the activity referred to in Annex III shall be subject to verification.
2. The verification process shall include consideration of the report pursuant to Article 14(3) and of monitoring during the preceding year. It shall address the reliability, credibility and accuracy of monitoring systems and the reported data and information relating to emissions, and in particular:
  - (a) the reported fuels released for consumption and related calculations;
  - (b) the choice and the employment of emission factors;
  - (c) the calculations leading to the determination of the overall emissions.
3. Reported emissions may only be validated if reliable and credible data and information allow the emissions to be determined with a high degree of certainty. A high degree of certainty requires the regulated entity to show that:
  - (a) the reported data is free of inconsistencies;
  - (b) the collection of the data has been carried out in accordance with the applicable scientific standards; and
  - (c) the relevant records of the regulated entity are complete and consistent.
4. The verifier shall be given access to all sites and information in relation to the subject of the verification.
5. The verifier shall take into account whether the regulated entity is registered under the Union Eco-Management and Audit Scheme (EMAS).

## Methodology

### Strategic analysis

6. The verification shall be based on a strategic analysis of all the quantities of fuels released for consumption by the regulated entity. This requires the verifier to have an overview of all the activities through which the regulated entity is releasing the fuels for consumption and their significance for emissions.

### Process analysis

7. The verification of the information submitted shall, where appropriate, be carried out on the site of the regulated entity. The verifier shall use spot-checks to determine the reliability of the reported data and information.

### Risk analysis

8. The verifier shall submit all the means through which the fuels are released for consumption by the regulated entity to an evaluation with regard to the reliability of the data on the overall emissions of the regulated entity.
9. On the basis of this analysis the verifier shall explicitly identify any element with a high risk of error and other aspects of the monitoring and reporting procedure which are likely to contribute to errors in the determination of the overall emissions. This especially involves the calculations necessary to determine the level of the emissions from individual sources. Particular attention shall be given to those elements with a high risk of error and the abovementioned aspects of the monitoring procedure.
10. The verifier shall take into consideration any effective risk control methods applied by the regulated entity with a view to minimising the degree of uncertainty.

## Report

11. The verifier shall prepare a report on the validation process stating whether the report pursuant to Article 14(3) is satisfactory. This report shall specify all issues relevant to the work carried out. A statement that the report pursuant to Article 14(3) is satisfactory may be made if, in the opinion of the verifier, the total emissions are not materially misstated.

## Minimum competency requirement for the verifier

12. The verifier shall be independent of the regulated entity, carry out his or her activities in a sound and objective professional manner, and understand:
  - (a) the provisions of this Directive, as well as relevant standards and guidance adopted by the Commission pursuant to Article 14(1);
  - (b) the legislative, regulatory, and administrative requirements relevant to the activities being verified; and
  - (c) the generation of all information related to all the means through which the fuels are released for consumption by the regulated entity, in particular, relating to the collection, measurement, calculation and reporting of data.”.