Carbon contracts for difference schemes for industrial decarbonisation under the CEEAG – State aid Guidance for Member States

Disclaimer

This guidance does not express a legally binding approach, neither for the European Commission (thereafter 'Commission') nor for the Member States. It does not create any further rights, nor imposes any new obligations, in addition to those laid down in the Treaty on the Functioning of the European Union, the Procedural Regulation[1], the Implementing Regulation[2] and the Code of Best Practices for the conduct of State aid control procedures[3], as well as the Climate, Environmental protection, and Energy Aid Guidelines ('CEEAG')[4], as interpreted by the Union Courts.

This guidance aims at supporting Member States in designing carbon contracts for difference ("CCfD") and other direct carbon abatement support schemes for industrial decarbonisation, in line with the CEEAG. This guidance does not cover contracts for difference for energy production[5]. It does not concern in any way CCfDs that the Commission would administer directly itself. Where relevant, it provides examples from the Commission case practice[6], but does not prevent Member States from opting for different design options better suited to their needs and specificities, nor does it prejudge the Commission's assessment or decision.

The aim of this guidance, as announced in the European Steel and Metals Action Plan[7], is to support Member States in designing CCfD-based aid schemes in compliance with the CEEAG, by clarifying the main applicable compatibility criteria. This would facilitate the setting up of such aid schemes as well as a quicker assessment. This complements the simplified rules for investment aid schemes[8] for industrial decarbonisation provided in the Clean Industrial Deal State Aid Framework – CISAF[9], adopted on 25 June 2025.

[1] OJ L 248, 24.9.2015, p. 9.
[2] OJ L 325, 10.12.2015, p. 1.
[3] OJ C 2810, 13.6.2025, p. 1.
[4] OJ C 80, 18.2.2022, p. 1
5 Commission guidance on the design of two-way contracts for difference, C/2025/8479 OJ C, C/2025/6701, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52025XC06701&qid=1767881386609
[6] The features of the following approved schemes were considered to prepare this guidance: the modified Dutch SDE++ scheme for greenhouse gas reduction projects, including renewable energy (SA.104448, approved on 10 July 2023, published); the first and second auctions of the German Climate Protection Contracts scheme (SA.104880, approved on 16 February 2024, published, and SA.116065, approved on 24 March 2025, soon to be published); the Swedish biogenic CCS auction (SA.107009, approved on 2 July 2024, published); the Austrian '*Transformation der Industrie'* scheme (SA.109730, approved on 19 September 2024, published); the French '*Grands projets industriels de décarbonation'* scheme (SA.112361, published).
[7] COM(2025)125 https://single-market-economy.ec.europa.eu/document/download/7807ca8b-10ce-4ee2-9c11-357afe163190_en?filename=Communication%20-%20Steel%20and%20Metals%20Action%20Plan.pdf
[8] The distinction between investment aid and operating aid (including CCfD-based aid) in this note is not directly linked to the nature of the costs being compensated but to the design of the aid. Investment aid is granted in function of a given investment, typically *ex ante.* Investment aid does not vary in function of the amount of GHG emissions abated, even though a minimum amount can be required. Investment aid can take account of both investment costs and costs linked to operation, in particular when determined based on a funding gap analysis.
[9] OJ C 3602, 4.7.2025, p. 1.

Contents

1. Introduction

What are carbon contracts for differences?

A **Carbon Contract for Difference (CCfD)** is a subsidy agreement between a granting authority and a beneficiary to help reduce greenhouse gas (GHG) emissions stemming for their industrial activity by financially derisking decarbonisation projects.

Typically, a CCfD ensures a fixed remuneration (**strike price**) for every tonne of CO_2 the beneficiary avoids emitting. If the market price (ETS allowance price or carbon removal credits) is lower than the strike price, the granting authority pays the difference to the beneficiary. Conversely, if the market price is higher than the strike price, the beneficiary may have to pay back the difference (in a two-way CCfD) or allowed to keep the extra revenue (in a one-way CCfD). CCfDs can also take other forms and present other modalities.

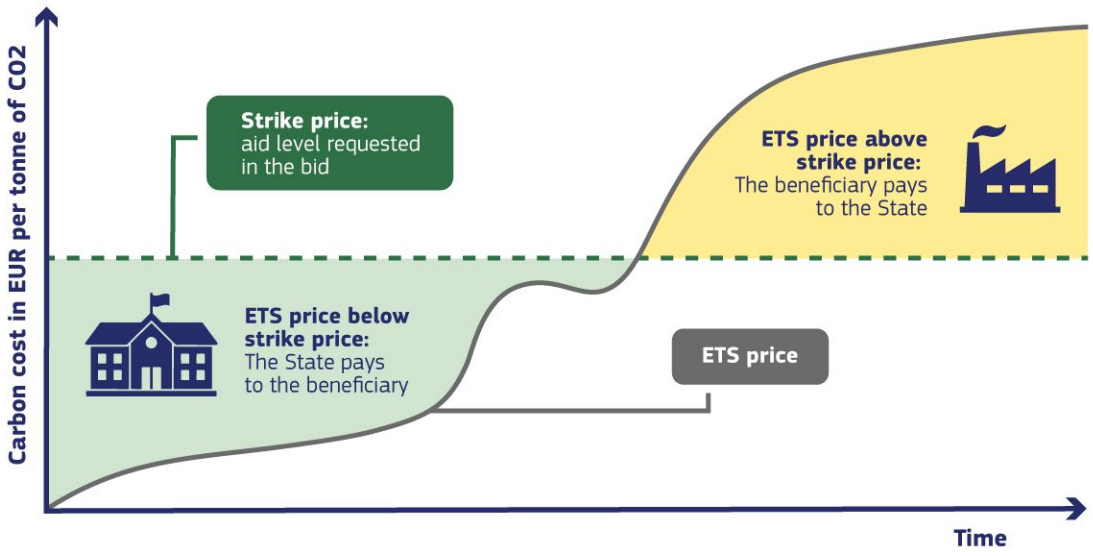

Figure 1: Illustration of a two-way CCfD

Benefits of CCfDs

Thanks to their derisking impact, CCfDs can play an important role in achieving the objectives of the Clean Industrial Deal by simultaneously accelerating decarbonisation in Europe's industrial sectors and boosting their competitiveness. By providing long-term price certainty for CO_2 reductions, CCfDs help de-risk high-cost decarbonisation investments — such as hydrogen, electrification, and carbon capture — making them financially viable despite higher capital or operational expenses. Thanks to CCfDs, many decarbonisation projects may become viable even when their CO_2 abatement costs are higher than current ETS prices. This ensures that EU industries can adopt low-carbon technologies without facing an unfair cost disadvantage compared to global competitors relying on cheaper, high-emission production methods. At the same time, CCfDs stimulate innovation and efficiency, as beneficiaries receive support in function of CO2 emission

reductions effectively achieved. These contracts can also prevent carbon leakage, strengthening Europe's strategic autonomy and industrial resilience in line with the Clean Industrial Deal's goals.

Supporting CCfDs under the CEEAG

Section 4.1 of the CEEAG ('Aid for the reduction and removal of greenhouse gas ('GHG') emissions including through support for renewable energy and energy efficiency') gives Member States flexibility in designing aid for industrial decarbonisation while providing for adequate safeguards to ensure that competition distortions remain limited. As one among several possible forms of aid, Member States may set up direct carbon abatement support schemes, where the aid is paid out in function of the projects' greenhouse gas emission savings realised during their operation phase, often in the form of a CCfD or a comparable contractual arrangement[10] . For the sake of simplicity all these forms of aid are referred to as CCfD-based schemes in this document.

CCfD-based schemes are powerful but sophisticated subsidy instruments with a strong derisking potential and a strong incentive potential to accelerate decarbonisation projects. They can constitute important public policy instruments; at the same time, they are likely to require detailed preparations and exchanges with potential future beneficiaries, in particular through a public consultation on the scheme's proposed design. While in principle such aid schemes can be effective de-risking tools, they can – if their design is not well calibrated – also significantly distort market signals and competition. Member States that envisage to implement a CCfD-based aid scheme are encouraged to reach out to the services of DG Competition early in the process of designing such scheme.

Carbon Contracts for Difference - Experiences so far

CCfD-based aid schemes for industrial decarbonisation projects provide support per tonne of CO_2 equivalent ('CO_2e') effectively avoided[11]. The aid is paid directly in function of CO_2e avoided and therefore increases the more tonnes of CO_2e are avoided (see however below explanations on a two-way CCfD)

Support under these schemes is typically calculated as the difference between, on the one hand, a so-called 'strike price' or 'basic aid amount' expressed in EUR per tonne of CO_2e avoided and, on the other hand, the carbon price observed on the markets (e.g., the price of the EU Emissions Trading Scheme ('ETS') allowances), reflecting thereby the ETS allowance cost savings of the aid beneficiaries[12] or, where relevant (e.g. in the case of CCS for biogenic emissions), the price of carbon dioxide removal[13] credits, reflecting

[10] The Commission has also approved schemes which, instead of ETS market prices, use a fixed CO2 price trajectory established ex ante by the granting authority.

[11] An eligible, verified volume of emission reduction has to be determined, such as emissions reductions against a defined baseline or a benchmarked emissions-intensity improvement applied to actual output. The eligible volume can also be limited to *direct* emissions avoided, i.e. for simplicity reasons the decarbonisation performance (i.e. the eligible amount of CO_{2eq} emissions abated) considered for calculating the aid amount does not have to include the *indirect* emissions generated by the supported projects. Indirect emissions must however be considered by Member States in order to ensure compliance with i.a. point 116 CEEAG.

[12] The Commission has also approved schemes which, instead of ETS market prices, use a fixed CO2 price trajectory established ex ante by the granting authority.

[13] Carbon dioxide removal refers to the capture and storage of atmospheric or biogenic carbon for several centuries. Today, there are voluntary markets for the exchange of carbon removal certificates or credits. The Carbon Removals and Carbon Farming (CRCF) Regulation (EU/2024/3012) was published in the Official Journal of the EU on 6 December 2024, creating the first EU-wide voluntary framework for certifying carbon removals, carbon farming and carbon storage in products across Europe.

their market value. The difference corresponds then to the net abatement costs per tonne of CO_2e avoided of the beneficiary, taking into account also risk premia and financing costs.

CCfD-based aid schemes can require the beneficiary to make a payment back to the State if carbon prices are above the strike price ('**two-way CCfDs**') or not ('one-way CCfDs').

The strike price typically corresponds to the beneficiary's bid in the **competitive bidding process**, where bids are ranked by the amount of aid requested per tonne of CO_2e avoided. In principle, a competitive bidding process provides a reliable estimate of the minimum aid required by potential beneficiaries. This ensures that the aid corresponds to the minimum required for the beneficiary to operate in a more sustainable way, so that the objectives of the measure can be attained in a proportionate manner minimising distortions of competition and trade.

More complex designs have been observed that included **adjustment mechanisms.** An adjustment mechanism can lead to **upward adjustments** of the yearly aid payments, in the event that the beneficiaries' costs are higher than initially foreseen. The Commission already approved schemes with a so-called 'dynamisation component' included in the aid calculation formula that reflects the evolution of the costs of the sustainable energy carriers used in the beneficiary projects, proportionally to their consumption by each project. Unabated fossil fuel-based energy sources (such as natural gas) were not dynamised. The need for such adjustment mechanisms should be justified with a reference to relevant market failures for the respective energy inputs, for example related to uncertainty in nascent decarbonisation technologies. While this mechanism can lead to upward adjustments in yearly aid grants, when costs are lower than foreseen, the adjustment mechanism can also lead to a downward adjustment.

Conversely, the Commission also approved schemes where the basic aid amounts are **revised downwards** if the beneficiary projects incur less costs or unforeseen revenues compared to the initial forecasts. However, such revision should not remove incentives for efficient operation. i.e. it should not cover 100% of the variations.

Even where adjustments apply, they should only provide **partial hedging** to ensure that price signals and efficient operating incentives are not removed. The adjustment should not compensate for full cost variations, as doing so would remove incentives for efficient operations[14].

Typically, emissions reductions are validated as reductions insofar as they go beyond ETS benchmarks[15], which guarantees that the scheme goes beyond what the ETS can achieve by itself.

[14] Whenever possible, the adjustment should be based on market-wide price indices rather than compensating individual costs and revenues. Therefore, reliable price indexes should be established *ex ante* to track the evolution of costs and/or revenues.

[15] 'Since the start of phase 3 of the EU ETS (2013-2020), free allocation has been based on benchmarks, which constitute an important element of the allocation formula. Benchmarks are expressed as GHG emission intensity (tonnes of GHG emitted per tonne of product produced) and should represent the performance of the 10% best installations covered by the EU ETS producing the product.' (Extracted from Update of benchmark values for the years 2021 – 2025 of phase 4 of the EU ETS.
https://climate.ec.europa.eu/system/files/2021-10/policy_ets_allowances_bm_curve_factsheets_en.pdf)

2. Incentive effect

2.1. State aid can be granted only if it has an incentive effect, which occurs when the aid induces beneficiaries to change their behaviour. More specifically, in the case of a scheme supporting industrial decarbonisation, Member States need to demonstrate that the aid measure is determinant in the beneficiaries' decisions to transition towards more environmentally friendly production processes.

2.2. In this regard, following point 28 CEEAG, '*proving an incentive effect entails the identification of the factual scenario and the likely counterfactual scenario in the absence of aid. The Commission will examine this based on the quantification referred to in Section 3.2.1.3.*' This condition is generally met where the Member States show that reference projects[16] would not be carried out without the aid. Such reference projects have to (i) cover the categories of decarbonisation solutions expected to be represented in the scheme and (ii) display either negative net present values, calculated based on financial assumptions consistent across projects (for instance with the same energy cost forecasts for all projects, and considering the same market intelligence sources) or levelised CO_2e abatement costs[17] above projected carbon prices. Data on reference projects is one of the main ways to demonstrate the necessity and the incentive effect of the aid,- in particular if the scheme can also cover new capacities for which the necessity of the aid to improve environmental protection is more difficult to assess (see below 3.3 and 0), to test the competitiveness of the bidding process (in particular when different sectors with varied decarbonisation costs compete) and to show that the risk of strategic bidding is low (see below 0 0). When the scheme follows up on the organisation of previous bidding rounds, the funding needs or levelised CO_2e abatement costs can be inferred from the bid curve of the previous bidding round. Evidence other than quantified reference projects can also serve to show incentive effect. Such evidence may include market studies, investor plans, financial reports, internal business plans, expert opinions, information about comparable projects in other regions, including bids made by similar projects in recent comparable competitive bidding processes.

2.3. Furthermore, point 29 CEEAG stipulates that aid does not normally present an incentive effect in cases where works on the projects started prior to the aid application. As a result, in the case of bidding processes, projects should not have started works[18] before applying to the bidding process.

3. Necessity

3.1. Before an aid measure is put in place under section 4.1 of the CEEAG, Member States need to demonstrate that the reference project would not be carried out in the absence of aid. For industrial decarbonisation this means verifying that State aid is necessary to trigger the greenhouse gas emissions reductions they plan to achieve.

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[16] A 'reference project' is defined in the CEEAG as an example project that is representative of the average project in a category of eligible beneficiaries for an aid scheme.

[17] i.e. the cost of reducing one ton of CO2e emissions in the reference projects.

[18] 'Start of work' is defined in the CEEAG as the first firm commitment (for example, to order equipment or start construction) that makes an investment irreversible. The buying of land and preparatory works such as obtaining permits and conducting preliminary feasibility studies are not considered as start of works. For take-overs, 'start of works' means the moment of acquiring the assets directly linked to the acquired establishment.

3.2. In doing so, Member States have to show the need for aid despite the existence of ETS and other similar policy measures already in place to induce decarbonisation: Point 89 CEEAG requires in this respect Member States to '*identify the policy measures already in place to reduce greenhouse gas emissions. However, while the Union's ETS and related policies and measures internalise some of the costs of greenhouse gas emissions, they may not yet fully internalise those costs*.' The Commission has found in schemes targeting sectors subject to the ETS[19] that the incentives provided by the ETS are duly accounted for by restricting the eligibility to projects achieving GHG emissions reductions beyond the relevant benchmark[20] for free allocation set out in the relevant Commission Implementing Regulation[21] ('ETS benchmark')[22]. Additionally, in some schemes, the decarbonisation performance considered in the calculation of each beneficiary's aid has been computed as the difference between the relevant benchmark value and the level of emission reached during the support period. This a clear way to show that the aid only supports beneficiaries for the decarbonisation abatement efforts that are not already incentivised by the ETS[23]. As regards the demonstration of necessity for new entrants in ETS sectors, in some schemes this was assumed where new entrants were required to reach emission levels 60% below those of the relevant benchmark.

3.3. More generally, Member States should show that the decarbonisation projects in question would not be carried out without the aid, because they are not profitable: According to Point 38 CEEAG, Member States must '*show that the project, or in the case of schemes, the reference project, would not be carried out without the aid. The Commission will assess this based on the quantification referred to in Section 3.2.1.3 or specific evidence-based analysis submitted by the Member State showing the necessity of the aid*.' Point 90 CEEAG provides that this demonstration must take into account '*the counterfactual situation as well as relevant costs and revenues including those linked to the ETS and related policies and measures identified in point 89.*' Compliance with points 38 and 90 CEEAG can be ensured, for example, by submitting representative reference projects as described in section 2.2, displaying negative net present values or levelised CO_2e abatement costs above projected carbon prices.

4. Eligibility to the scheme

4.1. Point 95 CEEAG explains that decarbonisation measures targeting specific activities which compete with other unsubsidised activities can be expected to lead to greater distortions of

[19] For the purpose of this point, the installation's GHG emissions should be measured at the level of the ETS relevant industrial product benchmark sub-installation(s), as defined in Article 2(2) of 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.).

[20] In terms of scope, emissions are evaluated at the level of the corresponding sub-installation when the installation concerns more than one benchmark.

[21] Commission Implementing Regulation (EU) 2021/447 of 12 March 2021 determining revised benchmark values for free allocation of emission allowances for the period from 2021 to 2025 pursuant to Article 10a(2) of Directive 2003/87/EC of the European Parliament and of the Council (OJ L 87, 15.3.2021, p. 29).

[22] For projects that do not bring emissions below benchmarks, this may also be ensured by deducting the full ETS allowance costs when calculating net abatement costs.

[23] Other approved schemes compute the aid the performance with respect to historical emissions while still requiring that emissions go below ETS benchmarks.

competition, compared to measures open to all competing activities. As such, Member State should give reasons for measures that do not include all technologies and sectors that are in competition. Point 96 CEEAG provides a non-exhaustive list of circumstances where the Commission will find that a more limited eligibility does not unduly distort competition, for instance where a Member State identifies reasons to expect that eligible sectors or innovative technologies have the potential to make an important and cost-effective contribution to environmental protection and deep decarbonisation in the longer term. The Commission already found that the requirements of points 95 and 96 CEEAG are met by CCfD-based schemes with technology-neutral eligibility scopes covering all manufacturing activities subject to the EU ETS only, because (i) such restriction can enable Member States to target companies with the highest emissions and therefore the highest emission reduction potential, and (ii) relying on the ETS methodology can be useful for monitoring projects' implementation. The Commission has also accepted in certain cases a limitation to certain technologies.[24]

5. Public consultation

5.1. Following point 99 CEEAG, Member States must organise a public consultation on the competition impacts and the proportionality of the decarbonisation measures they wish to implement. Point 99 CEEAG further specifies the parameters on which Member States must consult stakeholders, while point 101 CEEAG details the formalities that are required. It should be noted that the public consultation is a crucial tool for Member States to test and improve the design of their schemes. Through providing evidence on the technological and sectoral diversity that can be expected from future applicant projects, the public consultation can help to identify relevant reference projects (see sections 2 and 3) and to gauge the participation rate and possible oversubscription of the auction (see below 0), its competitiveness (see below 0); the weight of the non-price criteria in the future project ranking (see below 0); as well as the amount of indirect GHG emissions beneficiaries will produce (see below 8.1).

6. Proportionality and competitive bidding

6.1. Under section 4.1 of the CEEAG, in order to ensure the proportionality of the aid, i.e. that it is limited to the minimum required to bring about the desired behaviour change, beneficiaries should be selected through a competitive bidding process.

6.2. In order to be competitive, point 49(a) CEEAG requires the bidding process to, *inter alia*:

a) *Be non-discriminatory*: This entails that the method used by Member States to compare and calculate the applicant projects' CO_2e savings does not discriminate against any technology or sector within the scope of the scheme. This also entails that when the scheme foresees a maximum implementation period, it should be the same for projects of

[24] In a scheme where the scope was limited to biogenic carbon capture and storage ('CCS') projects, the Commission found that such limited eligibility was justified by objective reasons relating to the focus on innovative technologies with the potential to make an important and cost-effective contribution to environmental protection and deep decarbonisation in the longer term, in line with point 96(d) CEEAG.

the same type to ensure level playing field in the bidding process. This further entails that earlier, concomitant or subsequent support is either not allowed or made transparent and deducted from the payment of the aid (or added to the bid), see also section 6.9 below.

b) *Minimise the risk of strategic bidding*. Strategic bidding refers to bid choices that take into account both the auction rules and the expected behaviour of other bidders, rather than reflecting only the bidder's own valuation. This risk is particularly relevant in situations where companies have market power or where some bidders benefit from asymmetric information over the other bidders (due to their market position). Hence, the market structure as well as the range of abatement costs displayed by reference projects (see point 2.2) in different sectors can provide an indication whether strategic bidding is likely to occur, for example, when abatement costs differ largely between sectors or technologies. Certain design choices[25] can minimise this risk; depending on the setting, this could include e.g. bid caps for different categories (see also section 6.7 below), a limitation to one bid per company, a penalty for uncompleted projects, see also point 9.1, using bidding criteria that are robust against straw bids[26], the introduction of different baskets or – when other solutions do not seem available - checking bids against a funding gap calculation. Finally, the cumulation of public support, when authorised, can also lead to a distortion of the bid merit order and specific safeguards might be needed in this respect (see also section 6.9 below).

   While related, strategic bidding should be distinguished from *bidding above cost*, as companies with lower abatement cost may find it rational to bid above their cost even without strategic intentions. Bidding above cost gives rise to infra-marginal rents, which Member States may be interested to minimise through the use of e.g. bid caps or sectoral baskets (see sections 6.6 and 6.7), in order to increase short-term cost efficiency. Depending on the case and the difficulty of assessing true cost structures, Member States may also decide to tolerate such rents in order to avoid administrative costs and to provide incentives for developing more efficient decarbonisation technologies in the longer term.

6.3. Point 49(b) CEEAG requires the bidding criteria to be published sufficiently far in advance of the deadline for submitting applications to enable effective competition. This will usually be the case with a minimum of six weeks, but for particularly complex or novel processes, it may need to be longer.

6.4. Point 49(c) CEEAG requires the competitive bidding process to be designed based on a budget or volume that constitutes a binding constraint. This implies that it can be expected that not all bidders will receive aid and that the expected number of bidders is sufficient to ensure effective competition. In this regard, data collected during the public consultation, and in particular the number of likely participants (given the planned scope of the bidding process), the levels of their possible bids and the volume of GHG emissions they plan to abate thanks to their projects, can enable Member States to forecast the expected bidding volume and eventually show that it exceeds the budget of the measure.

[25] See also Section 6.6 c) and Footnote 29.
[26] Straw bids are bids submitted not to win an auction, but to affect its result.

6.5. Point 49(d) CEEAG provides that *ex post* adjustments to the bidding process outcome must be avoided as they undermine the efficiency of the process' outcome. This implies that:

a) the public authority is not authorised to modify the bid submitted by an applicant (be it through subsequent negotiations on bid results or rationing of the bid)[27]

b) the public authorities should avoid ex post adjustments by which, for instance, the 20% worst-ranked bids are eliminated[28]

In this regard, schemes where the strike price/basic aid amount corresponds to the bid submitted by the beneficiary, with no further adjustment, have typically been found to comply with this condition.

6.6. To increase the competitive pressure of a bidding process, enable a cost-effective allocation of aid and reduce competition distortions, point 104 CEEAG sets out that the bidding process should, in principle, be open to all eligible beneficiaries. However, there can be justified departures from this principle so that categories of beneficiaries with similar costs or subject to similar market dynamics compete against each other only. For example:

a) If a significant deviation between bid levels of different categories of beneficiaries is expected, for instance due to significant cost differences, then separate competitive bidding processes may be used.

b) Several schemes previously approved included a sectoral limitation, whereby only a certain maximum share of the total budget could be allocated to a cluster of sectors displaying similar features, for instance based on NACE codes. This ensures a diversification of the support across sectors and additionally discourages strategic bidding, as otherwise applicants in sectors with low average decarbonisation costs might be certain of being selected ahead of competitors in other sectors.

c) In the case of auctions where Member States expect to receive bids from both large projects, able to achieve economies of scale, and smaller projects without such cost advantages, it may be necessary to adjust the design in order to preserve the incentives for big projects to place bids that reflect their true costs -rather than seeking infra-marginal rents by bidding above cost-, and for small projects to participate in the bidding process.[29]

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[27] This does not exclude negotiated procedures in the context of public procurement rules, which can exceptionally be found compatible with 49(d) CEEAG, provided that it is demonstrated that such procedure does not jeopardise the efficiency of the process's outcome, that these procedures remain fully transparent and non-discriminatory.

[28] However, in certain cases, for example when there is high uncertainty regarding the number of applicants that might be expected, a mechanism adjusting the awarded volume to the volume of bids received can be appropriate to ensure that the budget represents a binding factor.

[29] For instance, the Commission approved a scheme where Member States identified such a risk and decided to mitigate it by dividing the total budget between a 'basic funding volume' and an 'additional funding volume'. Any project selected under the scheme could only be awarded a pre-determined maximum amount from the basic funding volume, with any remaining budget need being covered by the additional funding volume. Following the order of the bid ranking, a project is selected if the basic funding volume is not already exhausted and if the remaining budget of the additional funding volume is sufficient to cover the project's budget need beyond the maximum budget amount

6.7. Furthermore, point 106 CEEAG allows Member States to use, where appropriate, bid caps to limit the maximum bid from individual bidders in particular categories to avoid overcompensation of cheaper technologies. Bid caps must be justified with reference to the quantification for reference projects. However, where bid ranges from different categories are expected to overlap significantly, bid caps could trigger coordination effects, i.e., incentivising bids to approach the level of the cap[30] and, therefore, should not be used.

6.8. To ensure proportionality, the CEEAG also impose certain requirements on the choice of selection criteria for the bidding process: Point 50 CEEAG provides that '*the selection criteria used for ranking bids and, ultimately, for allocating the aid in the competitive bidding process should as a general rule put the contribution to the main objectives of the measure in direct or indirect relation with the aid amount requested by the applicant.*". This implies that the bids (and the aid) should generally be expressed in EUR per tonne of CO_2e abated and ranked accordingly from lowest to highest.

However, point 50 CEEAG allows to include other justified selection criteria that are not directly or indirectly related to the main objectives of the measure (i.e. GHG emissions abatement), as long as these do not account for more than 30% of the weighting of the selection criteria. To show that this requirement is met, Member States must detail the scoring system that will be used to combine price and non-price criteria for the ranking of bids. The scoring formula must limit the weight of non-price criteria to not more than 30%. *Member states are invited to provide simulations of the expected results of a competitive bidding process to show that this condition is met.* [31].

6.9. To ensure the proportionality of the total level of support granted to beneficiary projects and ensure an undistorted, non-discriminatory competitive bidding process, Member States need to implement certain safeguards linked to cumulation of public funding: Point 56 CEEAG explains that when Member States allow aid under one measure to be cumulated with aid under other measures, Member States must specify the method used to ensure that the total amount of aid for a project or an activity does not lead to overcompensation or exceed the maximum aid amount allowed under the CEEAG. Point 57 CEEAG requires that where Union funding is combined with State aid, it has to be ensured that the total amount of public funding granted in relation to the same eligible costs does not lead to overcompensation. An easy way to ensure compliance with points 56 and 57 CEEAG is to prohibit any cumulation whatsoever. Alternatively, schemes previously approved were found compatible with points 56 and 57 CEEAG by including the following parameters:

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secured from the basic funding volume. (Note that for this scheme, a previous bidding round had taken place that provided important information allowing to calibrate the parameters to expected demand; this mechanism might not be replicable or appropriate in other cases.)

[30] For example, consider a scheme with two different project categories competing for the same budget for which bid ranges are expected at 80 to 90 and 85 to 95 respectively. A bid cap set at 90 for the first category could incentivise all projects in that category to submit bids just below 90.

[31] To make a convincing case, Member States should test different auction scenarios (e.g., with varying bid levels) and demonstrate that, in each scenario, non-price criteria don't account for more than 30% of the overall selection criteria weighting.

a) Any other public support (be it State aid or Union funding) awarded to a project before the latter applied to the scheme was either:

   i. added to the bid price submitted by the applicant for the purpose of calculating the cost efficiency of the bid (i.e. before applying non-price criteria); or

   ii. deducted from the aid at the time of disbursement; and

b) Any other public support awarded to the project after the latter applied to the scheme was deducted from the aid calculation at the time of disbursement.

7. Transparency of the CO2 abatement costs

7.1. According to point 115 CEEAG, the subsidy per tonne of CO_2e emissions avoided must be estimated for each reference project, and the assumptions and methodology for that calculation must be provided. To the extent possible, that calculation should identify the net emission reduction from the activity, taking into account life-cycle emissions created or reduced.

8. Ensuring a net decrease in emissions

8.1. According to point 116 CEEAG, '*to deliver positive environmental effects in relation to decarbonisation, the aid must not merely displace the emissions from one sector to another and must deliver overall greenhouse gas emissions reductions*.' This entails ensuring that the indirect emissions stemming from the selected projects do not exceed the direct emission savings enabled by those projects and, on balance, such savings remain sizeable even after deduction of increased indirect emissions. The two following aspects have been particularly important in schemes approved so far:

a) *Indirect emissions stemming from the use of hydrogen and biomass*: in the schemes already approved, projects can only use hydrogen which is produced from renewable energy sources in accordance with the methodologies set out for renewable liquid and gaseous transport fuels of non-biological origin in Directive (EU) 2018/2001 and its implementing or delegated acts ('renewable hydrogen'); or use either renewable hydrogen or hydrogen which qualifies as low-carbon hydrogen as defined in Article 2(11) of Directive (EU) 2024/1788 of the European Parliament and of the Council of 13 June 2024 on common rules for the internal markets for renewable gas, natural gas and hydrogen[32] and its implementing or delegated acts. In those schemes and following point 80 CEEAG, biomass was also required to comply with sustainability and greenhouse gas emissions saving criteria in Directive (EU) 2018/2001 and its implementing or delegated acts.

b) *Indirect emissions stemming from the use of electricity*: a straightforward way to minimise those emissions is to restrict the eligibility scope to projects demonstrating, through well-

[32] Directive (EU) 2024/1788 of the European Parliament and of the Council of 13 June 2024 on common rules for the internal markets for renewable gas, natural gas and hydrogen, amending Directive (EU) 2023/1791 and repealing Directive 2009/73/EC (recast) (OJ L, 2024/1788, 15.7.2024).

defined methodologies, that indirect emissions are markedly lower than direct emissions savings. Specifically:

i. Member States may address this category of emissions directly in the design of the scheme, with approaches based on the time and quantity of electricity consumption: for example, by limiting the number of operating hours that can be supported.

ii. Member States may provide calculations of the volume of indirect emissions that they expect the projects to generate, based on simulations of the bidding process outcome (prepared with the results of the public consultation) and considering the emission intensity of the grid as planned[33] . These calculations should show that the indirect emissions generated by the aided projects would remain lower than the direct emissions avoided thanks to the scheme.

8.2. *Reduction of direct emissions:* According to point 117 CEEAG, '*To avoid the risk of double subsidies and ensure the verification of the greenhouse gas emissions reductions, aid for the decarbonisation of industrial activities must reduce the emissions directly resulting from that industrial activity*'. This means that, for existing installations, the emissions of that installation itself must be reduced. However, for new installations, the emissions must be reduced compared to the emission levels the installation would have if it were built without the aid. Emission reductions realised only indirectly, e.g. a mere change in the sourcing of electricity towards renewable suppliers or claimed downstream emission reductions enabled by the produced outputs, do not meet this requirement.

8.3. *Increase of production capacity:* schemes that are only open to projects replacing existing facilities (i.e. the decarbonisation of existing plants), with no increase of production capacities, ensure that direct emissions will be reduced. Exceptionally, the Commission has also found that schemes open to projects involving new capacities can also lead to a reduction of direct emissions. In the approved schemes, the Commission observed that beneficiaries already operating one or several plant(s) in the same sector as the project had to commit to reducing these existing plants' total production capacity by at least 90% of the production capacity of the project benefitting from the scheme, by the time when the scheme starts disbursing aid. As for projects entailing entirely new production capacity, emission levels of the new installations had to be significantly below the relevant ETS benchmarks (e.g., 60% below), thus below the level of emissions that a new capacity in these hard to abate sectors would have been expected to achieve in the counterfactual situation.

9. Guarantees for the actual implementation of the projects

9.1. Point 120 CEEAG requires Member States to demonstrate that reasonable measures will be taken to ensure that aided projects will actually be developed. This condition has been found to be fulfilled in schemes requiring all projects to be operational within the same, reasonable,

[33] In several cases, Member States have considered a conservative scenario where the electricity mix would not further decarbonise, showing that even with such conservative approach, indirect emissions do not offset direct emissions savings.

timeframe[34] defined in advance by Member States. Some schemes additionally prescribed flat-rate penalties for each month of delay and included a penalty system in case of deviations from emission intensities reduction trajectories submitted by beneficiaries in their applications, kicking in beyond a 10% deviation and proportional to the magnitude of the deviation.

10. Favouring climate-friendly operations and preserving market signals

10.1. Following point 121 CEEAG, '*aid for decarbonisation can take a variety of forms including upfront grants and contracts for ongoing aid payments such as contracts for difference. Aid which covers costs mostly linked to operation rather than investment should only be used where the Member State demonstrates that this results in more environmentally friendly operating decisions*.' As, under CCfD-based schemes, aid is paid per CO_2 abatement effectively achieved, they can provide a stronger incentive to reduce CO_2, in particular if the project's economic feasibility is particularly sensitive to carbon prices or if beneficiary can use the supported equipment in different manners which affect the volume of abated CO_2. However, whether a CCfD-based scheme will actually result in more environmentally friendly operations depends on the design of the scheme. Generally, CCfD-based schemes only shield beneficiaries from ETS price variations, leaving them exposed to certain price signals that incentivise an environmentally friendly operation (e.g. electricity prices, which tend to be higher when the emissions intensity of the grid is higher). However, some schemes include conditions limiting the number of operating hours to further ensure environmentally friendly operations. Schemes that include a so-called 'dynamisation' component that compensates for price variations in energy carriers can also comply with point 121 CEEAG through restricting hedging to certain energy carriers (e.g. excluding hedging for natural gas) and providing a broader hedging for renewable-based energy carriers than for low-carbon alternatives.

10.2. Point 123 CEEAG indicates that '*the aid must be designed to prevent any undue distortion to the efficient functioning of markets and, in particular, preserve efficient operating incentives and price signals*.' In other words, the design of CCfD-based schemes should not fully hedge beneficiaries against the price volatility of energy carriers, so that companies are not entirely shielded against ordinary business risks and remain incentivised to act as efficient market operators. Conversely, when Member States introduce mechanisms aimed at reducing the aid in case of cost decrease, they should not entirely adjust the amount of aid to the cost decrease in order to keep incentives for undertakings to act efficiently and safe costs (for example the aid adjustment is triggered only once the observed cost decrease exceeds a certain level).

11. Phasing-out fossil fuels and fostering clean technologies

11.1. As set out in point 127 CEEAG, aid measures may not stimulate or prolong the consumption of fossil-based fuels and energy, thereby hampering the development of cleaner alternatives and significantly reducing the overall environmental benefits of the investment.

[34] Some schemes allowed a longer period between the granting of the aid and the operational start of the project depending on beneficiaries' circumstances, particularly in regard to the duration of infrastructure approval procedures.

Member States should explain how they intend to avoid that risk, including by way of binding commitments to use mainly renewable or low-carbon fuels or phase out fossil fuel sources.

11.2. Several schemes approved by the Commission are open to projects resorting to carbon capture and storage ('CCS') or carbon capture and use ('CCU') technologies, subject to conditions ensuring compliance with point 127 CEEAG, such as supporting the use of CCS or CCU only where these technologies are applied mostly to process-inherent emissions (e.g. from chemical reactions in which natural gas is used as feedstock, from calcination of limestones or from calcium carbonate in cement production) or to very high temperature processes (e.g. steam crackers) for which cleaner technologies such as electrification, biomass or hydrogen are not yet technically or economically feasible.

11.3. Point 128 CEEAG states that measures that incentivise new investments in energy or industrial production based on the most polluting fuels, such as coal, diesel, lignite, oil, peat and oil shale, increase the negative environmental externalities in the market and will therefore not be considered to have any positive environmental effects. A scheme that prohibits support to new equipment using the most polluting fuels complies with point 128 CEEAG[35].

11.4. Following point 129 CEEAG, for investments in projects using natural gas to be seen as having positive environmental effects, Member States must explain how a lock in of gas-fired energy generation or gas-fired production equipment will be avoided. In several schemes previously approved by the Commission, the use of natural gas was restricted to projects where electrification is not technically possible and where cleaner alternatives such as biomass or hydrogen are not yet technically or economically feasible.

11.5. Member States should set out how they will avoid lock-in effects associated with gas-fired energy generation or production equipment. To this end, Member States should underpin such support with robust and credible frameworks. Some Member States' schemes require project holders to commit to implement CCS or CCU technologies or include a natural gas phase-out plan in their applications showing how they were planning to reduce natural gas use over the years, e.g. by replacing it with renewable or low-carbon gas. In addition, in some schemes, the natural gas lock-in risk was mitigated by a 90% remission reduction requirement applying to all beneficiaries over the duration of their projects.

[35] The Commission has approved schemes allowing the application of CCUS to an existing industrial production installation, including where it is technically necessary to adjust the existing installation for the achievement of the decarbonisation objective of the measure as, for example, when such adjustments enable a higher carbon capture rate. The same schemes prohibited mere replacement or production capacity increases based on the most polluting fossil fuels.

Potential model for Carbon Contract for Difference schemes

The following table presents a summary of design features of CCfD-based schemes, which were found compatible with the CEEAG in already approved schemes and following a relatively short assessment timeframe. As the rest of the guidance, it does not prevent Member States from opting for different design options better suited to their needs and specificities, nor does it prejudge the Commission's assessment or decision.

Eligibility	*No start of works before aid application.* *Open to all stationary installations referred to in chapter III of the ETS Directive and all competing decarbonisation technologies.* *Only projects reducing emissions beyond the ETS benchmarks are eligible.* *Projects reduce emissions directly resulting from the activity of the beneficiary.* *Projects reduce emissions by a certain minimum percentage before the end of the project with intermediate milestones* *All projects should be subject to the same deadline for starting their operations.* *The use of CCUS is limited to hard-to-abate sectors.* *Investments in production based on most polluting fossil fuels (coal, oil, etc.) is excluded.* *Projects adding production capacity or using unabated natural gas are either excluded or strictly required to (1) deliver significant CO_2 emissions reductions from the start (e.g. 60%) and very ambitious reductions (e.g. 90%) over the duration of the support period and (2) show that electrification is not technically possible and that cleaner alternatives such as biomass or hydrogen are not yet technically or economically feasible .*
Modality	*Two-way contract for differences linked to the ETS price.* *Only reductions beyond the ETS benchmarks are rewarded.* *No coverage for price variations of inputs other than ETS allowances.*
Auction design	*Auction design based on a sound data collection, possibly as part of the mandatory public consultation. Data and evidence-based reference projects clearly show negative net present values or levelised CO_2 abatement costs above projected carbon prices* *Budget will act as a binding constraint given the expected volume of bids and their expected level.* *Methodologies to compute CO_2 savings do not discriminate against any technology.* *No risk of strategic bidding was identified.* *No general bid caps.* *Re-evaluation of the auction model after first round(s) and taking results into account.* *No negotiated procedures.*
Selection criteria	*Price-only*
Cumulation	*No cumulation allowed. In the alternative, any aid granted in advance is added to the bid price submitted by the applicant for the purpose of calculating the cost efficiency of the bid.* *Aid received thereafter should be deducted at the moment of payment.*
Guarantees for realisation	*Penalties for projects which are not realised, or which do not deliver on their planned emission reductions, except in case of* force majeure *or reasons beyond the control of the beneficiary (e.g. delays in permitting or access to third-party infrastructure)*

Indirect emissions	*Projects using hydrogen or derivatives: only RFNBOs or low carbon fuels in line with sectoral legislation* *Projects using biomass: only biomass in line with sustainability and greenhouse gases emissions saving criteria in sectoral legislation* *Electrification projects: Member States require projects to prove, through well-defined methodologies, that indirect emissions are notably lower than direct emissions savings or limit the number of operating hours or show that, at the level of the scheme, indirect emissions remain limited compared to direct emissions savings according to an established GHG accounting methodology*

Summary of CEEAG points applying to CCfD-based schemes

Requirement		Relevant points in CEEAG	This note
Positive condition: must facilitate economic activity	Facilitate economic activity	23-25	-
	Incentive effect	26-32	Section 1
	No breach of relevant Union law	33	-
Negative condition: must not unduly affect trading conditions to an extent contrary to the common interest	Necessity	89-92, 38	Section 2
	Appropriateness	93	-
	Eligibility (and scope conditions)	95-97	Section 3
	Public consultation	98-102	Section 4
	Proportionality and cumulation	103-113, 47-57	Section 5
	Competition and trade	114-133, 70	Sections 6-10
Weighing up the positive and negative effect		134	-