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Guidelines on State aid for climate, environmental protection and energy 2022

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1. INTRODUCTION

1. The Commission has made the European Green Deal a top political priority, with the aim of transforming the Union into a fair and prosperous society with a modern, resource-efficient and competitive economy, where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use, while leaving no one behind. The climate ambitions of the Commission were reinforced in 2019 with the European Green Deal Communication¹, setting an objective of no net emissions of greenhouse gases by 2050. In order to set our economy and society on a fair, green and prosperous path to becoming climate neutral by 2050, the Commission has also proposed to reduce net greenhouse gas emissions by at least 55 % by 2030 compared to 1990 levels². Those ambitious targets have been enshrined in the European Climate Law³.
2. The ‘Fit for 55’ package of legislative proposals supports the achievement of those targets⁴ and puts the Union on track to climate neutrality by 2050.
3. Delivering on the objectives of climate neutrality, climate change adaptation, resource and energy efficiency and the ‘Energy Efficiency First’ principle, circularity, zero pollution and recovery of biodiversity and accompanying that green transition will require significant efforts and adequate support. To achieve the ambition set out in the European Green Deal Communication, significant investment, including in renewable energy sources, will be required. The Commission has estimated that achieving the newly increased 2030 climate, energy and transport targets will require EUR 390 billion of additional annual investment compared to the levels in 2011-2020⁵, with a further EUR 130 billion a year for the other environmental objectives estimated previously⁶. The magnitude of this investment challenge requires mobilising both the private sector and public funds in a cost-effective manner. This will affect all sectors and therefore the Union economy as a whole.
4. Competition policy, and State aid rules in particular, has an important role to play in enabling and supporting the Union in fulfilling its Green Deal policy objectives. The European Green Deal Communication specifically states that the State aid rules will be revised to take into account those policy objectives, to support a cost-effective and just

¹ 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 ‘The European Green Deal’, COM(2019) 640 final.

² Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions ‘Stepping up Europe’s 2030 climate ambition Investing in a climate-neutral future for the benefit of our people’, COM(2020) 562 final.

³ 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 (OJ L 243, 9.7.2021, p. 1).

⁴ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions ‘“Fit for 55”: delivering the EU’s 2030 Climate Target on the way to climate neutrality’, COM(2021) 550 final.

⁵ https://ec.europa.eu/info/sites/default/files/amendment-renewable-energy-directive-2030-climate-target-with-annexes_en.pdf

⁶ Communication from the Commission to the European Parliament, the Council, the European Central Bank, the European Economic and Social Committee and the Committee of the Regions ‘The EU economy after COVID-19: implications for economic governance’, COM(2021) 662 final.

transition to climate neutrality, and to facilitate the phasing out of fossil fuels, while at the same time ensuring a level-playing field in the internal market. These guidelines reflect that revision.

5. To prevent State aid from distorting or threatening to distort competition in the internal market and affecting trade between Member States, Article 107(1) of the Treaty on the Functioning of the European Union lays down the principle that State aid is prohibited. In certain cases, however, such aid may be compatible with the internal market on the basis of Article 107(2) and (3) of the Treaty.
6. Member States must notify State aid pursuant to Article 108(3) of the Treaty, with the exception of measures that fulfil the conditions laid down in a block exemption Regulation adopted by the Commission, pursuant to Article 1 of Council Regulation (EU) 2015/1588⁷.
7. These guidelines provide guidance on how the Commission will assess the compatibility of environmental protection, including climate protection, and energy aid measures which are subject to the notification requirement under Article 107(3), point (c), of the Treaty. Any reference to ‘environmental protection’ in these guidelines should be understood as a reference to environmental protection, including climate protection.
8. Under Article 107(3), point (c), of the Treaty, an aid measure may be declared compatible with the internal market provided that two conditions, one positive, one negative, are fulfilled. The positive condition is that the aid must facilitate the development of an economic activity. The negative condition is that the aid must not adversely affect trading conditions to an extent contrary to the common interest.
9. It is generally accepted that competitive markets tend to bring about efficient results in terms of prices, output and use of resources. However, State intervention may be necessary to facilitate the development of certain economic activities that would not develop at all or would not develop at the same pace or under the same conditions in the absence of aid. The intervention thereby contributes to smart, sustainable and inclusive growth.
10. In the context of environmental protection, environmental externalities, information imperfections and coordination failures mean that the costs and benefits of an economic activity might not fully be taken into account by market participants when taking consumption, investment and production decisions, in spite of regulatory interventions. Those market failures, that is to say, situations in which markets, if left to their own devices, are unlikely to produce efficient outcomes, do not lead to optimal welfare for consumers and society at large, resulting in insufficient levels of environmental protection in relation to the economic activities conducted in the absence of State support.

⁷ Council Regulation (EU) 2015/1588 of 13 July 2015 on the application of Articles 107 and 108 of the Treaty on the Functioning of the European Union to certain categories of horizontal State aid (OJ L 248, 24.9.2015, p. 1).

11. Member State authorities should ensure that the aid measure, the conditions attached to it, the procedures for adopting it and the supported activity do not contravene Union environmental law. Member State authorities should also ensure that the public concerned has the opportunity to be consulted in decision-making on aids. Finally, individuals and organisations should be given the opportunity to challenge the aid or measures implementing the aid before national courts where they can adduce evidence that the Union environmental laws are not complied with⁸.

2. SCOPE AND DEFINITIONS

2.1 Scope

12. These guidelines apply to State aid granted to facilitate the development of economic activities in a manner that improves environmental protection, as well as activities in the energy sector that are governed by the Treaty, insofar as those aid measures are covered by Section 2.2 of these guidelines. These guidelines therefore also apply to those sectors which are subject to specific Union rules on State aid, unless those specific Union rules state otherwise or contain provisions on aid for environmental protection or aid in the energy sector applying to the same measure, in which case the sector specific rules prevail. These guidelines prevail over point 17(b) of the Aviation Guidelines⁹ with regard to environmental aid measures in favour of large airports with a passenger volume of over 5 million per annum.
13. These guidelines do not apply to:
 - (a) State aid for the design and manufacture of environmentally-friendly products, machinery, equipment or means of transport with a view to operating with fewer natural resources and action taken within plants or other production units with a view to improving safety or hygiene¹⁰;
 - (b) State aid for research, development and innovation which is subject to the rules set out in the Framework for State aid for research and development and innovation¹¹;
 - (c) State aid covered by the rules on State aid in the agriculture and forestry sector¹² or in the fishery and aquaculture sector¹³;

⁸ See the Commission Notice on access to justice in environmental matters (OJ C 275, 18.8.2017, p. 1) with regard to the implementation at national level of the Aarhus Convention on access to information, public participation in decision-making and access to justice in environmental matters.

⁹ Communication from the Commission — Guidelines on State aid to airports and airlines (OJ C 99, 4.4.2014, p. 3).

¹⁰ Environmental aid is generally less distortive and more effective if it is granted to the consumer/user of environmentally-friendly products instead of the producer/manufacturer of the environmentally-friendly product. This is without prejudice to the possibility for Member States to grant environmental aid to undertakings to enhance the level of environmental protection of their manufacturing activities.

¹¹ Communication from the Commission — Framework for State aid for research and development (OJ C 198, 27.6.2014, p. 1).

¹² European Union Guidelines for State aid in the agricultural and forestry sectors and in rural areas 2014 to 2020 (OJ C 204, 1.7.2014, p. 1).

- (d) State aid for nuclear energy.
- 14. Aid for environmental protection and energy must not be awarded to undertakings in difficulty as defined by the Commission Guidelines on State aid for rescuing and restructuring non-financial undertakings in difficulty¹⁴.
- 15. When assessing aid in favour of an undertaking that is subject to an outstanding recovery order following a previous Commission decision declaring an aid illegal and incompatible with the internal market, the Commission will take account of the amount of aid still to be recovered¹⁵.

2.2 Aid measures covered by these guidelines

- 16. The Commission has identified a number of categories of environmental protection and energy measures in respect of which State aid may be compatible with the internal market under Article 107(3), point (c), of the Treaty under certain conditions:
 - (a) aid for the reduction and removal of greenhouse gas emissions, including through support for renewable energy and energy efficiency;
 - (b) aid for the improvement of the energy and environmental performance of buildings;
 - (c) aid for the acquisition and leasing of clean vehicles (used for air, road, rail, inland waterway and maritime transport) and clean mobile service equipment and for the retrofitting of vehicles and mobile service equipment;
 - (d) aid for the deployment of recharging or refuelling infrastructure for clean vehicles;
 - (e) aid for resource efficiency and for supporting the transition towards a circular economy;
 - (f) aid for the prevention or the reduction of pollution other than from greenhouse gases;
 - (g) aid for the remediation of environmental damage, the rehabilitation of natural habitats and ecosystems, the protection or restoration of biodiversity and the implementation of nature-based solutions for climate change adaptation and mitigation;
 - (h) aid in the form of reductions in taxes or parafiscal levies;
 - (i) aid for the security of electricity supply;

¹³ Communication from the Commission — Guidelines for the examination of State aid to the fishery and aquaculture sector (OJ C 217, 2.7.2015, p. 1).

¹⁴ Communication from the Commission — Guidelines on State aid for rescuing and restructuring non-financial undertakings in difficulty (OJ C 249, 31.7.2014, p. 1).

¹⁵ See judgment of the Court of First Instance of 13 September 1995, *TWD v Commission*, T-244/93 and T-486/93, ECLI:EU:T:1995:160, paragraph 56. See also Communication from the Commission — Commission Notice on the recovery of unlawful and incompatible State aid (OJ C 247, 23.7.2019, p. 1).

- (j) aid for energy infrastructure;
- (k) aid for district heating and cooling;
- (l) aid in the form of reductions from electricity levies for energy-intensive users;
- (m) aid for the closure of power plants using coal, peat or oil shale and of mining operations relating to coal, peat or oil shale extraction;
- (n) aid for studies or consultancy services on matters relating to climate, environmental protection and energy.

2.3 Structure of the guidelines

- 17. Chapter 3 sets out the compatibility criteria that apply generally to the various categories of aid covered by these guidelines. Section 3.2.1.3.1 on cumulation applies to all categories of aid covered by these guidelines. Chapter 4 sets out specific compatibility criteria that apply to the aid measures covered by the various sections of that chapter. The compatibility criteria in Chapter 3 apply unless there are more specific provisions laid down in the dedicated specific sections in Chapter 4.
- 18. The conditions set out in these guidelines apply to aid schemes and individual aid, whether based on an aid scheme or granted ad hoc, unless otherwise specified.

2.4 Definitions

- 19. For the purposes of these guidelines, the following definitions apply:
 - (1) ‘ad hoc aid’ means aid not granted on the basis of an aid scheme;
 - (2) ‘aid intensity’ means the gross aid amount expressed as a percentage of the eligible costs. All figures used must be taken before any deduction of tax or other levies. Where aid is awarded in a form other than a grant, the aid amount must be the gross grant equivalent of the aid. Aid payable in several installments must be calculated at its value at the moment of granting. The interest rate to be used for discounting purposes and for calculating the aid amount in a soft loan¹⁶ must be the reference rate applicable at the time of grant. The aid intensity is calculated per beneficiary;
 - (3) ‘assisted areas’ means areas which at the time of the granting of the aid are designated in an approved regional aid map in application of Articles 107(3), points (a) and (c), of the Treaty;
 - (4) ‘balancing’ for electricity means balancing as defined in Article 2, point (10), of Regulation (EU) No 2019/943 of the European Parliament and of the Council¹⁷;

¹⁶ A loan with a below-market interest rate.

¹⁷ Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (OJ L 158, 14.6.2019, p. 54).

- (5) ‘balance responsible party (BRP)’ means balance responsible party as defined in Article 2, point (14), of Regulation (EU) No 2019/943;
- (6) ‘biodiversity’ means biodiversity as defined in Article 2, point (15), of Regulation (EU) No 2020/852 of the European Parliament and of the Council¹⁸;
- (7) ‘biofuels’ means biofuels as defined in Article 2, point (33), of Directive (EU) 2018/2001 of the European Parliament and of the Council¹⁹;
- (8) ‘biogas’ means biogas as defined in Article 2, point (28), of Directive (EU) 2018/2001;
- (9) ‘bioliquids’ means bioliquids as defined in Article 2, point (32), of Directive (EU) 2018/2001;
- (10) ‘biomass’ means the biodegradable fraction of products, waste and residues from biological origin, as defined in Article 2, point (24), of Directive (EU) 2018/2001;
- (11) ‘biomass fuels’ means biomass fuels as defined in Article 2, point (27), of Directive (EU) 2018/2001;
- (12) ‘capacity mechanism’ means capacity mechanism as defined in Article 2, point (22), of Regulation (EU) 2019/943;
- (13) ‘carbon capture and storage’ (CCS) means a set of technologies that make it possible to capture the carbon dioxide (CO₂) emitted from industrial plants, including process-inherent emissions, or to capture it directly from ambient air, to transport it to a storage site and inject it in suitable underground geological formations for the purpose of permanent storage;
- (14) ‘carbon capture and use’ (CCU) means a set of technologies that make it possible to capture the CO₂ emitted from industrial plants, including process-inherent emissions, or to capture it directly from ambient air, and to transport it to a CO₂ consumption or utilisation site for full usage of that CO₂;
- (15) ‘CO₂ removal’ means anthropogenic activities removing CO₂ from the atmosphere and durably storing it in geological, terrestrial, or ocean reservoirs, or in products. It includes existing and potential anthropogenic enhancement of biological or geochemical sinks and direct air capture and storage, but excludes natural CO₂ uptake not directly caused by human activities;
- (16) ‘supplier obligation scheme’ means a scheme in which value is created for providing goods or services by certifying those goods or services and imposing an obligation on suppliers or consumers to buy certificates;

¹⁸ Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088 (OJ L 198, 22.6.2020, p. 13).

¹⁹ 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) ‘clean mobile groundhandling equipment’ means mobile equipment used in service activities incidental to air or maritime transport that has zero direct (tailpipe) CO₂ emissions;
- (18) ‘clean mobile service equipment’ means clean mobile terminal equipment and clean mobile groundhandling equipment;
- (19) ‘clean mobile terminal equipment’ means mobile equipment used for the loading, unloading and transshipment of goods and intermodal loading units, and for moving cargo within a terminal area, that has zero direct (tailpipe) CO₂ emissions or, in the absence of zero direct (tailpipe) CO₂ emission alternatives, that has significantly lower direct (tailpipe) CO₂ emissions than conventional terminal equipment;
- (20) ‘clean vehicle’ means:
- (a) concerning two- and three-wheel vehicles and quadricycles:
 - (i) a vehicle falling within the scope of Regulation (EU) No 168/2013 that has zero tailpipe CO₂ emissions, calculated in accordance with the requirements laid down in Article 24 of and Annex V to that Regulation;
 - (b) concerning light-duty road vehicles:
 - (i) a vehicle of category M1, M2 or N1 that has zero tailpipe CO₂ emissions, as determined in accordance with Commission Regulation (EU) 2017/1151²⁰;
 - (ii) a clean vehicle as defined in Article 4, point (4)(a), of Directive 2009/33/EC of the European Parliament and of the Council²¹;
 - (c) concerning heavy-duty road vehicles:
 - (i) a zero-emission heavy-duty vehicle as defined in Article 4(5) of Directive 2009/33/EC;
 - (ii) until 31 December 2025, a low-emission heavy-duty vehicle as defined in Article 3, point (12), of Regulation (EU) 2019/1242 of the European Parliament and of the Council²²;

²⁰ Commission Regulation (EU) 2017/1151 of 1 June 2017 supplementing Regulation (EC) No 715/2007 of the European Parliament and of the Council on type-approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information (OJ L 175, 7.7.2017, p. 1).

²¹ Directive 2009/33/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of clean road transport vehicles in support of low-emission mobility (OJ L 120, 15.5.2009, p. 5).

²² Regulation (EU) 2019/1242 of the European Parliament and of the Council of 20 June 2019 setting CO₂ emission performance standards for new heavy-duty vehicles and amending Regulations (EC) No

- (iii) until 31 December 2025, a clean vehicle as defined in Article 4, point (4)(b), of Directive 2009/33/EC and not falling within the scope of Regulation (EU) 2019/1242;
- (d) concerning inland waterway vessels:
 - (i) an inland vessel for passenger or freight transport that has zero direct (tailpipe/exhaust) CO₂ emissions;
 - (ii) an inland vessel for passenger transport that has a hybrid or dual fuel engine deriving at least 50 % of its energy from zero direct (tailpipe) CO₂ emission fuels or plug-in power for its normal operation;
 - (iii) an inland vessel for freight transport that has direct (tailpipe) emissions of CO₂ per tonne kilometre (gCO₂/tkm), calculated (or estimated in case of new vessels) using the International Maritime Organization Energy Efficiency Operational Indicator (EEOI), that are 50 % lower than the average reference value for emissions of CO₂ determined for heavy-duty vehicles (vehicle subgroup 5-LH) in accordance with Article 11 of Regulation (EU) 2019/1242;

When assessing whether a vessel qualifies as a clean vehicle, the Commission will take into account evolutions in the sector concerned, including by referring to the technical screening criteria under which an activity qualifies as contributing substantially to climate change mitigation, as set out in the relevant delegated act under Regulation (EU) 2020/852;

- (e) concerning maritime vessels:
 - (i) a sea and coastal vessel for passenger or freight transport, for port operations or for auxiliary activities that has zero direct (tailpipe) CO₂ emissions; or
 - (ii) a sea and coastal vessel for passenger, freight transport, for port operations or for auxiliary activities that has a hybrid or dual fuel engine deriving at least 25 % of its energy from zero direct (tailpipe) CO₂ emission fuels or plug-in power for its normal operation at sea and in ports or that has an attained International Maritime Organization Energy Efficiency Design Index (EEDI) value 10 % below the EEDI requirements applicable on 1 April 2022 and that is able to run on zero direct (tailpipe) CO₂ emission fuels or on fuels from renewable sources; or
 - (iii) a sea and coastal vessel for freight transport that is used exclusively for operating coastal and short sea services designed to enable modal shift of freight currently transported by land to sea and that has direct (tailpipe) CO₂ emissions, calculated using the EEDI, that are 50 %

595/2009 and (EU) 2018/956 of the European Parliament and of the Council and Council Directive 96/53/EC (OJ L 198, 25.7.2019, p. 202).

lower than the average reference CO₂ emissions value defined for heavy-duty vehicles (vehicle sub group 5-LH) in accordance with Article 11 of Regulation 2019/1242;

When assessing whether a vessel qualifies as a clean vehicle, the Commission will take into account evolutions in the sector concerned, including by referring to the technical screening criteria under which an activity qualifies as contributing substantially to climate change mitigation, as set out in the relevant delegated act under Regulation (EU) 2020/852;

- (f) concerning rail rolling stock:
 - (i) rolling stock that has zero direct (tailpipe) CO₂ emissions;
 - (ii) rolling stock that has zero direct tailpipe CO₂ emissions when operated on a track with necessary infrastructure and that uses a conventional engine where such infrastructure is not available (bimode);
- (g) concerning aircraft:
 - (i) an aircraft that has zero direct (tailpipe) CO₂ emissions;
 - (ii) an aircraft with substantially improved environmental performance as compared to an aircraft of the same take-off mass corresponding to an alternative widely available on the market;
- (21) ‘cogeneration’ or combined heat and power means cogeneration as defined in Article 2, point (30), of Directive (EU) 2012/27 of the European Parliament and of the Council²³;
- (22) ‘contaminated site’ means a site where there is a confirmed presence, caused by human activity, of materials or substances of such a level that they pose a significant risk to human health or the environment, taking into account current and approved future use of the land, sea bed or rivers;
- (23) ‘demonstration project’ means demonstration project as defined in Article 2, point (24) of Regulation (EU) 2019/943;
- (24) ‘digitalisation’ means the adoption of technologies carried out by electronic devices and/or systems which make it possible to increase product functionality, develop online services, modernise processes, or migrate to business models based on the disintermediation of goods production and service delivery, eventually producing a transformative impact;

²³ 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).

- (25) ‘disposal’ means disposal as defined in Article 3, point 19, of Directive 2008/98/EC of the European Parliament and of the Council²⁴;
- (26) ‘distribution system operator’ (DSO) means distribution system operator as defined in Article 2, point (29), of Directive (EU) 2019/944 of the European Parliament and of the Council²⁵;
- (27) ‘district heating’ or ‘district cooling’ means district heating or district cooling as defined in Article 2, point (19), of Directive (EU) 2010/31 of the European Parliament and of the Council²⁶;
- (28) ‘district heating and/or cooling systems’ means heating and or cooling generation facilities, thermal storage and distribution network, comprising both primary-transmission- and secondary network of pipelines, to supply heating or cooling to consumers. Reference to district heating is to be interpreted as district heating and/or cooling systems, depending on whether the networks supply heating or cooling jointly or separately;
- (29) ‘eco-innovation’ means all forms of innovative activities, including new production processes, new products or services, and new management and business methods, resulting in or aimed at significantly improving environmental protection and significantly reducing the environmental impacts of pollution. For the purposes of this definition, the following are not considered innovations:
- (a) activities leading only to minor changes or improvements on environmental protection;
 - (b) an increase in production or service capabilities through the addition of manufacturing or logistical systems which are very similar to those already in use;
 - (c) changes in business practices, workplace organisation or external relations that are based on organisational methods already in use in the undertaking;
 - (d) changes in management strategy;
 - (e) mergers and acquisitions;
 - (f) ceasing to use a process;
 - (g) simple capital replacement or extension;
 - (h) changes resulting purely from changes in factor prices, customisation, regular seasonal and other cyclical changes;

²⁴ 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).

²⁵ Directive 2019/944/EU 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).

²⁶ Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings (OJ L 153, 18.6.2010, p. 13).

- (i) trading of new or significantly improved products;
- (30) ‘ecosystem’ means ecosystem as defined in Article 2, point (13), of Regulation (EU) 2020/852;
- (31) ‘energy efficiency’ means energy efficiency as defined in Article 2, point 4, of Directive 2012/27/EU;
- (32) ‘energy storage’ means, energy storage in the electricity system, as defined in Article 2, point 59, of Directive (EU) 2019/944;
- (33) ‘energy storage facility’ means, energy storage facility in the electricity system, as defined in Article 2, point 60, of Directive (EU) 2019/944;
- (34) ‘efficient district heating and cooling’ means efficient district heating and cooling as defined in Article 2, point (41), of Directive 2012/27/EU of the European Parliament and of the Council;
- (35) ‘energy from renewable sources’ means energy produced by plants using only renewable energy sources as defined in Article 2, point (1), of Directive (EU) 2018/2001, as well as the share in terms of calorific value of energy produced from renewable energy sources in hybrid plants which also use conventional energy sources and includes renewable electricity used for filling storage systems connected behind-the-meter (jointly installed or as an add-on to the renewable installation), but excludes electricity produced as a result of storage systems;
- (36) ‘energy infrastructure’²⁷ means any physical equipment or facility which is located within the Union or linking the Union to one or more third countries and falling under the following categories:
 - (a) concerning electricity:
 - (i) transmission and distribution systems, where ‘transmission’ means the transport of electricity onshore as well as offshore on the extra high-voltage and high-voltage interconnected system with a view to its delivery to final customers or to distributors, but does not include supply and ‘distribution’ means the transport of electricity onshore as well as offshore on high-voltage, medium-voltage and low-voltage distribution systems with a view to its delivery to customers, but does not include supply;
 - (ii) any equipment or installation essential for the systems referred to in point (i) to operate safely, securely and efficiently, including protection, monitoring and control systems at all voltage levels and substations;

²⁷ Projects which are built for one or a small group of *ex ante* identified users and tailored to their needs (‘dedicated infrastructure’) do not qualify as energy infrastructure.

- (iii) fully integrated network components as defined in Article 2, point (51), of Directive (EU) 2019/944;
 - (iv) smart electricity grids, which means systems and components integrating information and communication technologies, through operational digital platforms, control systems and sensor technologies both at transmission and distribution level, aiming at a more secure, efficient and intelligent electricity transmission and distribution network, increased capacity to integrate new forms of generation, storage and consumption and facilitating new business models and market structures;
 - (v) off-shore electricity grids, which means any equipment or installation of electricity transmission or distribution infrastructure, as defined in point (i), which has dual functionality: interconnection and transmission or distribution of offshore renewable electricity from the offshore generation sites to two or more countries. This also includes smart grids as well as any offshore adjacent equipment or installation essential to operate safely, securely and efficiently, including protection, monitoring and control systems, and necessary substations if they also ensure technology interoperability and among other interface compatibility between different technologies;
- (b) concerning gas (natural gas, biogas – including biomethane – and/or renewable gas of non-biological origin):
- (i) transmission and distribution pipelines for the transport of gas that form part of a network, excluding high-pressure pipelines used for upstream distribution of natural gas;
 - (ii) underground storage facilities connected to the high-pressure gas pipelines mentioned in point (i);
 - (iii) reception, storage and regasification or decompression facilities for liquefied or compressed gas;
 - (iv) any equipment or installation essential for the system to operate safely, securely and efficiently or to enable bi-directional capacity, including compressor stations;
 - (v) smart gas grids, which means any of the following equipment or installation aiming at enabling and facilitating the integration of renewable and low-carbon gases (including hydrogen or gases of non-biological origin) into the network: digital systems and components integrating information and communication technologies, control systems and sensor technologies to enable the interactive and intelligent monitoring, metering, quality control and management of gas production, transmission, distribution and consumption within a gas network. Furthermore, smart grids may also include equipment to

enable reverse flows from the distribution to the transmission level and related necessary upgrades to the existing network;

- (c) concerning hydrogen²⁸:
- (i) transmission pipelines, for the high-pressure transport of hydrogen, as well as distribution pipelines for the local distribution of hydrogen, giving access to multiple network users on a transparent and non-discriminatory basis;
 - (ii) storage facilities, which means facilities used for the stocking of hydrogen of a high grade of purity, including the part of a hydrogen terminal used for storage but excluding the portion used for production operations, and including facilities reserved exclusively for hydrogen network operators in carrying out their functions. Hydrogen storage facilities include underground storage facilities connected to the high-pressure hydrogen transmission or distribution pipelines referred to in point (i);
 - (iii) dispatch, reception, regasification or decompression facilities for hydrogen or hydrogen embedded in other chemical substances with the objective of injecting the hydrogen into the grid either for gas or dedicated to hydrogen;
 - (iv) terminals, which means installations used for the transformation of liquid hydrogen into gaseous hydrogen for injection into the hydrogen network. Terminals include ancillary equipment and temporary storage necessary for the transformation process and subsequent injection into the hydrogen network, but does not include any part of the hydrogen terminal used for storage;
 - (v) interconnectors, which means a hydrogen network (or part thereof) which crosses or spans a border between Member States, or between a Member State and a third country up to the territory of the Member States or the territorial sea of that Member State;
 - (vi) any equipment or installation essential for the hydrogen system to operate safely, securely and efficiently or to enable bi-directional capacity, including compressor stations;
- (d) concerning carbon dioxide²⁹:

²⁸ Any of the assets listed in points (i) to (vi) concerning hydrogen may be newly constructed assets or assets converted from natural gas to hydrogen ('repurposed'), or a combination of the two. Assets listed under points (i) to (vi) concerning hydrogen which are subject to third party access qualify as energy infrastructure.

²⁹ Assets listed under points (i) to (iv) concerning carbon dioxide which are subject to third party access qualify as energy infrastructure.

- (i) pipelines, other than upstream pipeline networks, used to transport carbon dioxide from more than one source, that is to say, industrial installations (including power plants) that produce carbon dioxide gas from combustion or other chemical reactions involving fossil or non-fossil carbon-containing compounds, for the purpose of permanent geological storage of carbon dioxide pursuant to Article 3 of Directive 2009/31/EC of the European Parliament and of the Council³⁰ or for the purpose of using carbon dioxide as feedstock or to enhance the yields of biological processes;
 - (ii) facilities for liquefaction and storage of carbon dioxide in view of its transport or storage;
 - (iii) infrastructure within a geological formation used for the permanent geological storage of carbon dioxide pursuant to Article 3 of Directive 2009/31/EC and associated surface and injection facilities;
 - (iv) any equipment or installation essential for the system in question to operate properly, securely and efficiently, including protection, monitoring and control systems. This may include dedicated mobile assets for the transport and storage of carbon dioxide, provided that such mobile assets fulfil the definition of a clean vehicle;
- (e) infrastructure used for transmission or distribution of thermal energy in the form of steam, hot water or chilled liquids from multiple producers/users, based on use of renewable energy or waste heat from industrial applications;
 - (f) projects of common interest as defined in Article 2, point (4) of Regulation (EU) No 347/2013 of the European Parliament and of the Council³¹ and projects of mutual interest referred to in Article 171 of the Treaty;
 - (g) other infrastructure categories, concerning infrastructure that enables physical or wireless connection of renewable or carbon-free energy between producers and users from multiple access and exit points and which are open to access by third parties not belonging to the infrastructure owner/manager undertakings;
- (37) ‘energy performance’ means energy performance of a building as defined in Article 2, point (4), of Directive 2010/31/EU;
- (38) ‘energy savings’ means energy savings as defined in Article 2, point (5), of Directive 2012/27/EU;

³⁰ 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).

³¹ Regulation (EU) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009 (OJ L 115, 25.4.2013, p. 39).

- (39) ‘environmental protection’ means any action or activity designed to reduce or prevent pollution, negative environmental impacts or other damage to physical surroundings (including to air, water and soil), ecosystems or natural resources by human activities, including to mitigate climate change, to reduce the risk of such damage, to protect and restore biodiversity or to lead to more efficient use of natural resources, including energy-saving measures and the use of renewable sources of energy and other techniques to reduce greenhouse gas emissions and other pollutants, as well as to shift to circular economy models to reduce the use of primary materials and increase efficiencies. It also covers actions that reinforce adaptive capacity and minimise vulnerability to climate impacts;
- (40) ‘environmental tax or parafiscal levy’ means a tax or levy applied on a specific tax base, products or services that have a clear negative effect on the environment or which seeks to charge certain activities, goods or services so that the environmental costs may be included in their price or so that producers and consumers are oriented towards activities which better respect the environment;
- (41) ‘evaluation plan’ means a document covering one or more aid schemes and containing at least the following minimum aspects:
- (a) the objectives to be evaluated,
 - (b) the evaluation questions,
 - (c) the result indicators,
 - (d) the envisaged method to conduct the evaluation,
 - (e) the data collection requirements,
 - (f) the proposed timing of the evaluation including the date of submission of the interim and the final evaluation reports,
 - (g) the description of the independent body that will carry out the evaluation or the criteria that will be used for its selection and the modalities for making the evaluation publicly available;
- (42) ‘extended producer responsibility scheme’ means extended producer responsibility scheme as defined in Article 2, point (21), of Directive 2008/98/EC;
- (43) ‘generator’ means an undertaking which produces electrical power for commercial purposes;
- (44) ‘greenhouse gas’ means any gas that contributes to the greenhouse effect by absorbing infrared radiation, including carbon dioxide, methane, nitrous oxide and fluorinated gases such as hydrofluorocarbons;
- (45) ‘high-efficiency cogeneration’ means high-efficiency cogeneration as defined in Article 2, point (34), of Directive 2012/27/EU;

- (46) ‘hydrogen network operator’ means a natural or legal person who carries out the function of hydrogen network transport and is responsible for operating, ensuring the maintenance of, and, if necessary, developing the hydrogen network in a given area and, where applicable, its interconnections with other hydrogen networks, and for ensuring the long-term ability of the system to meet reasonable demands for the transport of hydrogen;
- (47) ‘imbalance’ means means imbalance as defined in Article 2, point (8) of Commission Regulation (EU) 2017/2195;
- (48) ‘imbalance settlement’ means imbalance settlement as defined in Article 2, point (9) of Commission Regulation (EU) 2017/2195;
- (49) ‘imbalance settlement period’ means imbalance settlement period as defined in Article 2, point (15), of Regulation (EU) 2019/943;
- (50) ‘individual aid’ means ad hoc aid and notifiable awards of aid on the basis of an aid scheme;
- (51) ‘interruptibility scheme’ means a measure for security of electricity supply designed to ensure a stable frequency in the electricity system or address short term security of supply problems, including by interrupting load;
- (52) ‘microenterprise’, means an undertaking that fulfils the conditions for microenterprises laid down in the Commission Recommendation concerning the definition of micro, small and medium-sized enterprises³²;
- (53) ‘nature-based solution’ means a solution that is inspired and supported by nature, which is cost-effective, simultaneously provides environmental, social and economic benefits and helps build resilience, and that brings more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions;
- (54) ‘network congestion measure’ means a measure for security of electricity supply designed to compensate for insufficiency in the electricity transmission or distribution network;
- (55) ‘pollutant’ means pollutant as defined in Article 2, point (10), of Regulation (EU) 2020/852;
- (56) ‘polluter’ means polluter as defined in the Annex, point 3 of the Council Recommendation 75/436/Euratom, ECSC, EEC³³;
- (57) ‘pollution’ means pollution as defined in Article 3, point 2 of Directive 2010/75/EU of the European Parliament and of the Council³⁴;

³² Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises (OJ L 124, 20.5.2003, p. 36).

³³ Council Recommendation of 3 March 1975 regarding cost allocation and action by public authorities on environmental matters (OJ L 194, 25.7.1975, p. 1).

- (58) ‘polluter pays principle’ means that the costs of measures to deal with pollution should be borne by the polluter who causes the pollution;
- (59) ‘preparing for re-use’ means preparing for re-use as defined in Article 3, point 16, of Directive 2008/98/EC;
- (60) ‘recharging infrastructure’ means a fixed or mobile infrastructure supplying clean vehicles or clean mobile service equipment with electricity;
- (61) ‘recovery’ means recovery as defined in Article 3, point 15, of Directive 2008/98/EC;
- (62) ‘recycling’ means recycling as defined in Article 3, point 17, of Directive 2008/98/EC;
- (63) ‘reference project’ means an example project that is representative of the average project in a category of eligible beneficiaries for an aid scheme;
- (64) ‘refuelling infrastructure’ means fixed or mobile infrastructure for the provision of hydrogen, natural gas, in gaseous form (compressed natural gas (CNG)) and liquefied form (liquefied natural gas (LNG)), biogas and biofuels including advanced biofuels, or synthetic fuels produced from renewable or low-carbon energy;
- (65) ‘rehabilitation’ means environmental management actions that aim to reinstate a level of ecosystem functioning on degraded sites, where the goal is renewed and ongoing provision of ecosystem services rather than the biodiversity and integrity of a designated natural or semi-natural reference ecosystem;
- (66) ‘remediation’ means environmental management actions, such as the removal or detoxification of contaminants or excess nutrients from soil and water, that aims to remove sources of degradation;
- (67) ‘renewable electricity’ means electricity generated from renewable sources, as defined in Article 2, point (1), of Directive (EU) 2018/2001;
- (68) ‘renewable energy community’ means renewable energy community as defined in Article 2, point (16), of Directive (EU) 2018/2001;
- (69) ‘renewable energy’ means energy from renewable sources or renewable energy as defined in Article 2, point (1), of Directive (EU) 2018/2001;
- (70) ‘renewable hydrogen’ means hydrogen produced from renewable energy in accordance with the methodologies set out for renewable liquid and gaseous transport fuels of non-biological origin in Directive (EU) 2018/2001;

³⁴ 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).

- (71) ‘renewable liquid and gaseous transport fuels of non-biological origin’ means renewable liquid gaseous transport fuels of non-biological origin as defined in Article 2, point (36), of Directive (EU) 2018/2001;
- (72) ‘resource adequacy’ means a level of generated capacity which is deemed to be adequate to meet demand levels in a bidding zone in any given period, based on the use of a conventional statistical indicator used by organisations which the Union institutions recognise as performing an essential role in the creation of a single market in electricity, for example the European Network of Transmission System Operators for Electricity (ENTSO-E);
- (73) ‘resource efficiency’ means reducing the quantity of inputs needed to produce a unit of output or substituting primary inputs with secondary inputs;
- (74) ‘restoration’ means the process of assisting the recovery of an ecosystem as a means of conserving biodiversity and increasing ecosystem resilience, notably to climate change. The restoration of ecosystems includes measures taken for the improvement of the condition of an ecosystem and the re-creation or re-establishment of an ecosystem where that condition was lost and the improvement of ecosystem resilience and adaptation to climate change;
- (75) ‘re-use’ means re-use as defined in Article 3, point (13), of Directive 2008/98/EC and includes any operation by which products or components that are not waste are used again for purposes other than those for which they were conceived;
- (76) ‘small enterprise’, means an undertaking that fulfils the conditions laid down for small enterprises in the Commission Recommendation concerning the definition of micro, small and medium-sized enterprises;
- (77) ‘small and medium-sized enterprise’ (SME), means an undertaking that fulfils the conditions laid down in the Commission Recommendation concerning the definition of micro, small and medium-sized enterprises;
- (78) ‘small mid-cap’ means an undertaking that is not an SME and whose number of employees does not exceed 499, calculated in accordance with Articles 3 to 6 of Annex I to Commission Regulation (EU) No 651/2014³⁵, and the annual turnover of which does not exceed EUR 100 million or the annual balance sheet of which does not exceed EUR 86 million. Several entities will be considered as one undertaking if any of the conditions listed in Article 3, point (3) of Annex I to Regulation (EU) No 651/2014 are fulfilled;
- (79) ‘smart recharging’ means a recharging operation in which the intensity of electricity delivered to the battery is adjusted in real-time, based on information received through electronic communication;

³⁵ Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (OJ L 187 26.6.2014, p. 1).

- (80) ‘smart readiness’ means the capability of buildings or building units to adapt their operation to the needs of the occupant, including optimising energy efficiency and overall performance, and to adapt their operation in response to signals from the grid;
- (81) ‘standard balancing responsibilities’ means non-discriminatory balancing responsibilities across technologies which do not exempt from balance responsibility any generator as set out in Article 5 of Regulation (EU) 2019/943;
- (82) ‘start of works’ means 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;
- (83) ‘strategic reserve’ means a capacity mechanism in which electricity capacity, such as generation, storage or demand response, is held outside the electricity market and only dispatched in specific circumstances;
- (84) ‘total cost of ownership’ means the total cost of acquiring and owning a vehicle for its lifetime, including the costs of acquiring or leasing the vehicle, fuel costs, maintenance and repair costs, insurance costs, finance costs, and taxes;
- (85) ‘transmission system operator’ (TSO) means transmission system operator as defined in Article 2, point (35), of Directive (EU) 2019/944;
- (86) ‘vehicle’ means any of the following:
- (a) a road vehicle of category M1, M2, N1, M3, N2, N3 or L;
 - (b) an inland or a sea and coastal vessel for passenger or freight transport;
 - (c) rolling stock;
 - (d) an aircraft;
- (87) ‘treatment’ means treatment as defined in Article 3, point 14, of Directive 2008/98/EC;
- (88) ‘Union minimum tax level’ means the minimum level of taxation provided for in Union law; with respect to energy products and electricity, it means the minimum level of taxation laid down in Annex I to Council Directive 2003/96/EC³⁶;
- (89) ‘Union standard’ means:

³⁶ 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).

- (a) a mandatory Union standard setting the levels to be attained in environmental terms by individual undertakings, excluding standards or targets set at Union level which are binding for Member States but not for individual undertakings;
 - (b) the obligation to use the best available techniques (BAT), as defined in Directive 2010/75/EU, and to ensure that emission levels do not exceed those that would be achieved when applying BAT; where emission levels associated with the BAT³⁷ have been defined in implementing acts adopted under Directive 2010/75/EU or under other applicable directives, those levels will be applicable for the purpose of these guidelines; where those levels are expressed as a range, the limit for which the BAT is first achieved for the undertaking concerned will be applicable;
- (90) ‘waste’ means waste as defined in Article 3, point (1), of Directive 2008/98/EC;
- (91) ‘waste heat’ means waste heat as defined in Article 2, point (9), of Directive (EU) 2018/2001.

3. COMPATIBILITY ASSESSMENT UNDER ARTICLE 107(3), POINT (C), OF THE TREATY

20. These guidelines lay down the criteria for compatibility, under Article 107(3), point (c), of the Treaty, of aid measures for environmental protection, including climate protection, and energy objectives which are subject to the notification requirement in Article 108(3) of the Treaty.
21. On the basis of Article 107(3), point (c), of the Treaty, the Commission may consider compatible with the internal market State aid to facilitate the development of certain economic activities within the Union (positive condition), where such aid does not adversely affect trading conditions to an extent contrary to the common interest (negative condition).
22. When assessing whether environmental protection and energy aid can be considered compatible with the internal market under Article 107(3), point (c) of the Treaty, the Commission will analyse the following aspects:
- (a) as regards the first (positive) condition, that the aid facilitates the development of an economic activity:
 - (i) identification of the economic activity which is being facilitated by the measure, its positive effects for the society at large and, where applicable, its relevance for specific policies of the Union (see Section 3.1.1);
 - (ii) incentive effect of the aid (see Section 3.1.2);
 - (iii) absence of breach of any relevant provision of Union law (see Section 3.1.3).

³⁷ This may include associated emission levels (BAT-AEL), associated energy efficiency levels (BAT-AEEL) or associated environmental performance levels (BAT-AEPL).

(b) as regards the second (negative) condition that the aid does not unduly affect trading conditions to an extent contrary to the common interest:

- (i) the need for State intervention (see Section 3.2.1.1);
- (ii) the appropriateness of the aid (see Section 3.2.1.2);
- (iii) the proportionality of the aid (aid limited to the minimum necessary to attain its objective) including cumulation (see Section 3.2.1.3);
- (iv) the transparency of the aid (see Section 3.2.1.4);
- (v) avoidance of undue negative effects of the aid on competition and trade (see Section 3.2.2);
- (vi) weighing up the positive and negative effects of the aid (see Section 3.3).

3.1 Positive condition: the aid must facilitate the development of an economic activity

3.1.1 Identification of the economic activity which is being facilitated by the measure, its positive effects for society at large and, where applicable, its relevance for specific policies of the Union

- 23. When notifying aid, Member States must identify the economic activities that will be facilitated as a result of the aid and how the development of those activities is supported.
- 24. Aid to prevent or reduce the negative effects of economic activities on climate or the environment can facilitate the development of economic activities by increasing the sustainability of the economic activity concerned. The aid can also ensure that the activity can continue in the future without creating disproportionate environmental damage and by supporting the creation of new economic activities and services (supporting the development of the so-called ‘green economy’).
- 25. Member States must also describe if and how the aid will contribute to the achievement of objectives of Union climate policy, environmental policy and energy policy and more specifically, the expected benefits of the aid in terms of its material contribution to environmental protection, including climate change mitigation, or the efficient functioning of the internal energy market.

3.1.2 Incentive effect

- 26. Aid can be considered as facilitating an economic activity only if it has an incentive effect. An incentive effect occurs when the aid induces the beneficiary to change its behaviour, to engage in additional economic activity or in more environmentally-friendly economic activity, which it would not carry out without the aid or would carry out in a restricted or different manner.

27. The aid must not support the costs of an activity that the aid beneficiary would anyhow carry out and must not compensate for the normal business risk of an economic activity³⁸.
28. Proving an incentive effect entails the identification of the factual scenario and the likely counterfactual scenario in the absence of aid³⁹. The Commission will examine this based on the quantification referred to in Section 3.2.1.3.
29. The Commission considers that aid does not have an incentive effect for the beneficiary in cases where the start of works on the project or activity took place prior to a written aid application by the beneficiary to the national authorities. In cases where the beneficiary starts implementing a project before applying for aid, any aid granted in respect of that project will, in principle, not be considered compatible with the internal market.
30. The aid application may take various forms, including for example a bid in a competitive bidding process. Any application must at least include the applicant's name, a description of the project or activity, including its location, and the amount of aid needed to carry it out.
31. In certain exceptional cases, aid can have an incentive effect even for projects which started before the aid application. In particular, aid is considered to have an incentive effect in the following situations:
 - (a) the aid is granted automatically in accordance with objective and non-discriminatory criteria and without further exercise of discretion by the Member State, and the measure has been adopted and is in force before work on the aided project or activity has started, except in the case of fiscal successor schemes, where the activity was already covered by the previous schemes in the form of tax advantages;
 - (b) the national authorities have published, before the start of works, a notice of their intention to establish the proposed aid measure, conditional upon the Commission's approval of the measure as required by Article 108(3) of the Treaty. That notice must be made available on a public website or other publicly accessible media with comparably broad and easy access and clearly state the type of projects that the Member State proposes to be eligible and the point in time from which the Member State intends to consider such projects eligible. The proposed eligibility must not be unduly limited. The beneficiary must have informed the granting authority prior to the start of works that the proposed aid

³⁸ See judgment of the Court of Justice of 13 June 2013, *HGA and others v Commission*, C-630/11 P to C-633/11 P, ECLI:EU:C:2013:387, paragraph 104.

³⁹ That scenario must be credible, genuine and related to decision-making factors prevalent at the time of the decision by the aid beneficiary regarding the project. Member States are invited to draw on official board documents, risk assessments, financial report, internal business plans, expert opinions and other studies related to the project under assessment. Documents containing information on demand forecasts, costs forecasts, financial forecasts, documents submitted to an investment committee and that elaborate on investment/operation scenarios, or documents provided to the financial institutions could help Member States to demonstrate the incentive effect. Those documents need to be contemporary to the decision making process concerning the investment/operation decision.

measure was considered as a condition for the investment decisions taken. Where it relies upon such a notice to demonstrate an incentive effect, the Member State must provide, as part of its State aid notification, a copy of the notice and a link to the website on which it was published or respective proof of its availability to the public;

- (c) operating aid granted to existing installations for environmentally-friendly production where there is no 'start of works' because there is no significant new investment. In these cases, the incentive effect can be demonstrated by a change to operate the installation in an environmentally-friendly way rather than an alternative cheaper mode of operation that is less environmentally friendly.

32. The Commission considers that aid granted merely to cover the cost of adapting to Union standards has, in principle, no incentive effect. As a general rule, only aid to go beyond Union standards can have an incentive effect. However, in cases where the relevant Union standard has already been adopted but is not yet in force, aid can have an incentive effect if it incentivises the investment to be implemented and finalised at least 18 months before the standard enters into force, unless otherwise indicated in the Sections 4.1 to 4.13. In order not to discourage Member States from setting mandatory national standards that are more stringent or ambitious than the corresponding Union standards, aid measures may have an incentive effect irrespective of the presence of such national standards. The same is true of aid granted in the presence of mandatory national standards adopted in the absence of Union standards.

3.1.3 No breach of any relevant provision of Union law

33. If the supported activity, or the aid measure or the conditions attached to it, including its financing method when it forms an integral part of the measure, entail a violation of relevant Union law, the aid cannot be declared compatible with the internal market. This may be the case, for instance, where the aid is subject to clauses conditioning it directly or indirectly on the origin of products or equipment, such as requirements for the beneficiary to purchase domestically-produced products.

3.2 Negative condition: the aid measure must not unduly affect trading conditions to an extent contrary to the common interest

3.2.1 Minimisation of distortions of competition and trade

3.2.1.1 Necessity of the aid

34. The proposed State aid measure must be targeted towards a situation where it can bring about a material development that the market alone cannot deliver, for example by remedying market failures in relation to the projects or activities for which the aid is awarded. Whilst it is generally accepted that competitive markets tend to bring about efficient results in terms of development of economic activities, prices, output and use of resources, in the presence of market failures, public intervention in the form of State aid may improve the efficient functioning of markets and thereby contribute to the development of an economic activity to the extent that the market on its own fails to deliver an efficient outcome. The Member State should identify the market failures preventing the achievement of a sufficient level of environmental protection or an efficient internal energy market. The main market failures related to environmental

protection and energy which can prevent the optimal outcome and can lead to an inefficient outcome are:

- (a) Negative externalities: they are most common for environmental aid measures and arise when pollution is not adequately priced, that is to say, the undertaking concerned does not face the full cost of pollution. In this case, undertakings acting in their own interest may have insufficient incentives to take the negative externalities arising from their economic activity into account either when they choose a particular technology or when they decide on the output level. In other words, the costs that are borne by the undertaking do not fully reflect the costs borne by consumers and society at large. Therefore undertakings typically have insufficient incentive to reduce their level of pollution or to take individual measures to protect the environment.
 - (b) Positive externalities: the fact that part of the benefit from an investment will accrue to market participants other than the investor, may lead undertakings to underinvest. Positive externalities may occur for instance in the case of investments in eco-innovation, system stability, new and innovative renewable technologies and innovative demand-response measures or in the case of energy infrastructures or security of electricity supply measures that benefit many Member States or a wider number of consumers.
 - (c) Asymmetric information: this typically arises in markets where there is a discrepancy between the information available to one side of the market and the information available to the other side of the market. This could, for instance, occur where external financial investors have a lack of information about the likely returns and risks of a project. It may also come up in cross-border infrastructure collaboration where one party has an information disadvantage compared to the other party. Although risk or uncertainty do not in themselves lead to the presence of a market failure, the problem of asymmetric information is linked to the degree of such risk and uncertainty. Both tend to be higher for environmental investments with a typically longer amortisation period, reinforcing a focus on a short-term horizon that could be aggravated by financing conditions for such investments in particular for SMEs.
 - (d) Coordination failures: this may prevent the development of a project or its effective design due to diverging interests and incentives among investors, so called 'split incentives', the costs of contracting or liability insurance arrangements, uncertainty about the collaborative outcome and network effects, for example uninterrupted supply of electricity. These coordination failures can arise, for example, in the relationship between a building owner and a tenant in respect of energy efficient solutions. Coordination failures may be further exacerbated by information problems, in particular those related to asymmetric information. Coordination failures may also stem from the need to reach a certain critical mass before it is commercially attractive to start a project, which may be a particularly relevant aspect in (cross-border) infrastructure projects.
35. The mere existence of market failures in a certain context is, however, not sufficient to prove the necessity of State aid. Other policies and measures may already be in place to address some of the identified market failures. Examples include sectorial regulation,

mandatory Union pollution standards, supply obligations, pricing mechanisms such as the Union's Emissions Trading System (ETS) and carbon taxes. Additional measures, including State aid, may only be directed at residual market failures, that is to say those that remain unaddressed by such other policies and measures. It is important also to show how State aid reinforces other policies and measures in place that aim at remedying the same market failures. Therefore, demonstrating that State aid is necessary is more difficult if it counteracts other policies targeted at the same market failures. The Member State should therefore also identify any existing policies and measures that already target the identified regulatory or market failures.

36. The Commission will consider that aid is necessary if the Member State demonstrates that it effectively targets residual market failures, also taking into account any other policies and measures already in place to address some of the market failures identified.
37. Where State aid is awarded for projects or activities which, with respect to their technological content, level of risk and size, are similar to those already delivered within the Union at market conditions, the Commission will, in principle, presume that no market failure is present and will require further evidence to demonstrate the need for State aid.
38. To demonstrate the necessity of aid, the Member State 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.

3.2.1.2 Appropriateness

39. The proposed aid measure must be an appropriate policy instrument to achieve the intended objective of the aid, that is to say there must not be a less distortive policy and aid instrument capable of achieving the same results.

1.1.1.1 Appropriateness among alternative policy instruments

40. State aid is not the only policy instrument available to Member States to promote increased levels of environmental protection or to ensure an efficient internal energy market. There may be other, more appropriate instruments available, such as market-based instruments or demand-side measures involving regulation, compliance with the energy efficiency first principle⁴⁰, public procurement or standardisation, as well as an

⁴⁰ According to that principle, Member States are to take utmost account in energy planning, and in policy and investment decisions, of alternative cost-efficient energy efficiency measures to make energy demand and energy supply more efficient, in particular by means of cost-effective end-use energy savings, demand response initiatives and more efficient conversion, transmission and distribution of energy, whilst still achieving the objectives of those decisions. See 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).

increase in funding of public infrastructure and general fiscal measures. Soft instruments, such as voluntary eco-labels and the dissemination of environmentally-friendly technologies may also play an important role in achieving a higher level of environmental protection⁴¹.

41. Different measures to remedy the same market failure may counteract each other. This is the case where an efficient, market-based mechanism has been put in place to specifically counter the problem of externalities, as for instance the Union's ETS. An additional support measure to address the same market failure risks undermining the efficiency of the market-based mechanism. Therefore, when an aid scheme aims at addressing residual market failures, the aid scheme must be designed in such a way as to not undermine the efficiency of the market-based mechanism.
42. Compliance with the 'polluter pays' principle through environmental legislation aims at ensuring that a market failure linked to negative externalities will be rectified. Therefore, State aid is not an appropriate instrument and cannot be granted insofar as the beneficiary of the aid could be held liable for the pollution under existing Union or national law.

1.1.1.2 Appropriateness among different aid instruments

43. State aid for environmental protection and energy can be awarded in various forms. The Member State should, however, ensure that the aid is awarded in the form that is likely to generate the least distortion of trade and competition.
44. In that respect, the Member State is required to demonstrate why other potentially less distortive forms of aid are less appropriate, such as: repayable advances as compared to direct grants; tax credits as compared to tax reductions; or forms of aid that are based on financial instruments, such as debt as compared to equity instruments, including, for example, low-interest loans or interest rebates, State guarantees, or an alternative provision of financing on favourable terms.
45. The choice of the aid instrument should be appropriate to the market failure that the aid measure aims to address. Where the actual revenues are uncertain, for instance in the case of energy saving measures, a repayable advance may constitute the most appropriate instrument.
46. The Member State must demonstrate that the aid and its design are appropriate to achieve the objective of the measure at which the aid is targeted.

⁴¹ The use of environmental labels and claims on products can be another means to allow consumers/users to make informed purchasing decisions, and to increase demand for environmental friendly products. When well designed, recognised, understood, trusted and perceived by relevant consumers, robust environmental labels and truthful environmental claims can be a powerful tool to guide and shape (consumer) behaviour towards more environmentally-friendly choices. Using a reputable labelling/certification scheme with clear criteria and subject to external (third-party) verification will be one of the most effective ways for businesses to demonstrate to consumers and stakeholders that they are meeting high environmental standards. In this light, the Commission does not include specific rules concerning aid for the design and manufacture of environmentally-friendly products in the scope of these guidelines.

3.2.1.3 Proportionality

47. Aid is considered to be proportionate if the aid amount per beneficiary is limited to the minimum needed for carrying out the aided project or activity.
48. As a general principle, aid will be considered as limited to the minimum needed for carrying out the aided project or activity if the aid corresponds to the net extra cost ('funding gap') necessary to meet the objective of the aid measure, compared to the counterfactual scenario in the absence of aid. The net extra cost is determined by the difference between the economic revenues and costs (including the investment and operation) of the aided project and those of the alternative project which the aid beneficiary would credibly carry out in the absence of aid.
49. A detailed assessment of the net extra cost will not be required if the aid amounts are determined through a competitive bidding process, because it provides a reliable estimate of the minimum aid required by potential beneficiaries⁴². Therefore, the Commission considers that the proportionality of the aid is ensured if the following criteria are fulfilled:
 - (a) the bidding process is competitive, namely: it is open, clear, transparent and non-discriminatory, based on objective criteria, defined *ex ante* in accordance with the objective of the measure and minimising the risk of strategic bidding;
 - (b) the criteria are published sufficiently far in advance of the deadline for submitting applications to enable effective competition⁴³;
 - (c) the budget or volume related to the bidding process is a binding constraint in that it can be expected that not all bidders will receive aid, the expected number of bidders is sufficient to ensure effective competition, and the design of undersubscribed bidding processes during the implementation of a scheme is corrected to restore effective competition in the subsequent bidding processes or, failing that, as soon as appropriate;
 - (d) *ex post* adjustments to the bidding process outcome (such as subsequent negotiations on bid results or rationing) are avoided as they may undermine the efficiency of the process's outcome.
50. 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 may be expressed, for example, in terms of aid per unit of

⁴² However, in case there is a possibility of 'zero subsidy bids' Member States should explain how proportionality will be ensured. Zero subsidy bids can arise for example because market revenues are projected to rise over time and/or because successful bidders receive concessions or other benefits as well as price-support. Price floors or caps that constrain the competitive process undermining proportionality, even if at zero, should be avoided.

⁴³ Six weeks will usually be sufficient. For particularly complex or novel processes this may need to be longer. In justified cases, for example with simple or regular/repeated processes, a shorter duration may be appropriate.

environmental protection or aid per unit of energy⁴⁴. It may also be appropriate to include other selection criteria that are not directly or indirectly related to the main objectives of the measure. In such cases, these other criteria must account for not more than 30 % of the weighting of all the selection criteria. The Member State must provide reasons for the proposed approach and ensure it is appropriate to the objectives pursued.

51. Where the aid is not granted under a competitive bidding process, the net extra cost must be determined by comparing the profitability of the factual and counterfactual scenarios. To determine the funding gap in such cases, the Member State must submit a quantification, for the factual scenario and a credible counterfactual scenario, of all main costs and revenues, the estimated weighted average cost of capital (WACC) of the beneficiaries to discount future cash flows, as well as the net present value (NPV) for the factual and counterfactual scenarios, over the lifetime of the project. The Commission will verify whether this counterfactual is realistic⁴⁵. The Member State must provide reasons for the assumptions used for each aspect of the quantification, and explain and justify any methodologies applied. The typical net extra cost can be estimated as the difference between the NPV for the factual scenario and for the counterfactual scenario over the lifetime of the reference project.
52. A counterfactual scenario may consist in the beneficiary not carrying out an activity or investment, or continuing its business without changes. Where evidence supports that this is the most likely counterfactual, the net extra cost may be approximated by the negative NPV of the project in the factual scenario without aid over the lifetime of the project (hence, implicitly assuming that the NPV of the counterfactual is zero)⁴⁶. In particular, this can be the case for infrastructure projects.
53. For cases of individual aid and schemes benefitting a particularly limited number of beneficiaries, the calculations and projections in point 51 need to be presented at the level of the detailed project business plan, and for aid schemes on the basis of one or more reference projects. Similarly, if point 52 applies, the supporting evidence needs to be presented at the level of the detailed project business plan, and for aid schemes on the basis of one or more reference projects.

⁴⁴ When assessing units of environmental protection, Member States may for instance develop a methodology that accounts for emissions or other pollution at different stages of the supported economic activity, project realisation time or system integration costs. When putting the contribution to the main objectives in relation with the aid amount requested, Member States may for instance weigh the various objective criteria and select on the basis of aid amount per unit of the weighted average of the objective criteria, or select among a limited range of bids with the lowest aid amount per unit of the objective criteria the ones with highest scores on the objective criteria. The parameters of any such approach must be calibrated to ensure that the bidding process remains non-discriminatory, effectively competitive and reflects economic value.

⁴⁵ A counterfactual that proposes as alternative investment/operation scenario a continuation in the long term of current non-environmentally sustainable activities will not be considered realistic.

⁴⁶ In the absence of an alternative project, the Commission will verify that the aid amount does not exceed the minimum necessary for the aided project to be sufficiently profitable, for example by making possible to achieve an IRR corresponding to the sector or firm specific benchmark or hurdle rate. Normal rates of return required by the beneficiary in other investment projects of a similar kind, its cost of capital as a whole or returns commonly observed in the industry concerned may also be used for this purpose. All relevant expected costs and benefits must be considered over the lifetime of the project.

54. In certain circumstances, it may be difficult to fully identify the benefits and costs to the beneficiary and hence to quantify the NPV in the factual and counterfactual scenarios. Alternative approaches for those cases may be applied, as detailed in Chapter 4 for specific types of aid. In those cases, aid may be deemed proportionate where the aid amount does not exceed the maximum aid intensity.
55. Where a competitive bidding process is not used and future developments in costs and revenues are surrounded by a high degree of uncertainty and there is a strong asymmetry of information, the Member State may be required to introduce compensation models that are not entirely *ex ante*. Instead, these models will be a mix of *ex ante* and *ex post* or introduce *ex post* claw-back or cost monitoring mechanisms, while keeping incentives for the beneficiaries to minimise their costs and develop their business in a more efficient manner over time.

1.1.1.1.3 Cumulation

56. Aid may be awarded concurrently under several aid schemes or cumulated with ad hoc or *de minimis* aid in relation to the same eligible costs, provided 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 these guidelines. If the Member State allows aid under one measure to be cumulated with aid under other measures, then it must specify, for each measure, the method used for ensuring compliance with the conditions set out in this point.
57. Centrally managed Union funding that is not directly or indirectly under the control of the Member State, does not constitute State aid. Where such 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.

3.2.1.4 Transparency

58. To reduce negative effects by ensuring competitors have access to relevant information about supported activities, the Member State concerned must ensure the publication, in the Commission's transparency award module⁴⁷ or on a comprehensive State aid website, at national or regional level, of:
- (a) the full text of the approved aid scheme or the individual aid granting decision and its implementing provisions, or a link to it;
 - (b) information on each individual aid award granted ad hoc or under an aid scheme approved on the basis of these guidelines and exceeding EUR 100 000⁴⁸.
59. Member States must organise their comprehensive State aid websites, on which the information required by this Section is to be published, in such a way as to allow easy access to the information. Information must be published in a non-proprietary

⁴⁷ State Aid Transparency Public Search, available at: <https://webgate.ec.europa.eu/competition/transparency/public?lang=en>.

⁴⁸ Upon a Member State's duly substantiated request, this requirement may be waived in case full detailed publication would undermine competition in subsequent allocation processes, for instance by allowing for strategic bidding.

spreadsheet data format, which allows data to be effectively searched, extracted, downloaded and easily shared on the internet, for instance in CSV or XML format. The general public must have access to the website without restrictions. No prior user registration must be required to access the website.

60. For schemes in the form of tax or parafiscal levy advantages, the conditions set out in point 58(b) will be considered to be fulfilled if Member States publish the required information on individual aid amounts in the following ranges (in EUR million):

0.1 -0.5;

0.5-1;

1-2;

2-5;

5-10;

10-30;

30-60;

60-100;

100-250;

250 and more.

61. The information referred to in point 58(b) must be published within six months from the date the aid was granted, or for aid in the form of tax advantages, within one year from the date the tax declaration is due⁴⁹. In the case of unlawful but compatible aid, Member States will be required to ensure the publication of this information *ex post* within six months from the date of the Commission's decision declaring the aid compatible. In order to allow the enforcement of State aid rules under the Treaty, the information must be available for at least 10 years from the date on which the aid was granted.
62. The Commission will publish on its website the links to the State aid websites referred to in point 59.

3.2.2 *Avoidance of undue negative effects on competition and trade*

63. Article 107(3), point (c), of the Treaty allows the Commission to declare aid to facilitate the development of certain economic activities or of certain economic areas compatible, but only 'where such aid does not adversely affect trading conditions to an extent contrary to the common interest'.
64. The application of this negative condition requires, first, an assessment of the distortive effect of the aid in question on trading conditions. By its very nature, any aid measure will generate or threaten to generate distortions of competition and have an effect on trade between Member States as it reinforces the competitive position of the

⁴⁹ Where there is no formal requirement for an annual declaration, 31 December of the year for which the aid was granted will be considered as the granting date for encoding purposes.

beneficiaries, even if the aid measure is necessary, appropriate, proportionate and transparent.

65. Aid for environmental purposes will, by its very nature, tend to favour environmentally-friendly products and technologies at the expense of other, more polluting ones and that effect of the aid will, in principle, not be viewed as an undue distortion of competition, since it addresses market failures that make the aid necessary. In addition, support for climate friendly products and technologies are conducive to the achievement of the European Climate Law objectives for 2030 and 2050. For measures for environmental protection, the Commission will therefore consider the distortive effects on competitors that likewise operate on an environmentally-friendly basis, even without aid.
66. The Commission considers that schemes open to a broader range of potential beneficiaries have or are likely to have a more limited distortive effect on competition than support targeted at a limited number of specific beneficiaries only, in particular where the scope of the aid measure includes all competitors willing to deliver the same service, product or benefit.
67. State aid for environmental and energy objectives may have the unintended effect of undermining market rewards to the most efficient, innovative producers as well as incentives for the least efficient ones to improve, restructure or exit the market. This may also result in inefficient barriers to the entry of more efficient or innovative potential competitors. In the long term, such distortions may stifle innovation, efficiency and the adoption of cleaner technologies. These distortive effects can be particularly important when the aid is granted to projects that provide a limited transitory benefit but lock out cleaner technologies for a longer term, including those necessary to achieve the medium-term and long-term climate targets enshrined under the European Climate Law. This can, for example, be the case for support to certain activities using fossil fuels that provide an immediate reduction of greenhouse gas emissions, but lead to slower emissions reductions in the long term. All other things being equal, the closer the aided investment is in time to the relevant target date, the greater the likelihood that its transitory benefits may be outweighed by the possible disincentives for cleaner technologies. The Commission will therefore take into account these possible short and long-term negative effects on competition and trade in its assessment.
68. Aid may also distort competition by strengthening or maintaining substantial market power of the beneficiary. Even where aid does not strengthen substantial market power directly, it may do so indirectly, by discouraging the expansion of existing competitors or inducing their exit or discouraging the entry of new competitors. This needs to be taken into account, in particular where the support measure is targeted at a limited number of specific beneficiaries or where incumbents gained market power prior to market liberalisation, as is for instance sometimes the case in energy markets. This is also relevant in competitive bidding processes in nascent markets, when there is a risk that a player with a strong market position succeeds in most bids and prevents significant new entry.
69. Apart from distortions on the product markets, aid may also give rise to effects on trade and location choice. Those distortions can arise across Member States, either when undertakings compete across borders or when they consider different locations for

investment. Aid aimed at preserving economic activity in one region or attracting it away from other regions within the internal market may displace activities or investments from one region into another without any net environmental impact. The Commission will verify that the aid does not result in any manifestly negative effects on competition and trade. For example, aid for environmental and energy objectives that merely leads to a change in location of the economic activity without improving the existing level of environmental protection in the Member States will not be considered compatible with the internal market.

70. The Commission will approve measures under these guidelines for a maximum period of 10 years, though this may be further limited in some cases (see point 76). If a Member State wishes to extend the duration of the measure beyond that maximum period, it can re-notify the measure. That means aid could be granted under approved measures within a maximum period of 10 years from the date of the notification of the Commission's decision declaring the aid compatible.

3.3 Weighing the positive effects of the aid against the negative effects on competition and trade

71. As a final step, the Commission will balance the identified negative effects on competition and trading conditions of the aid measure with the positive effects of the planned aid on the supported economic activities, including its contribution to environmental protection and objectives of energy policy and, more particularly, to transition towards environmentally-sustainable activities and to the achievement of the legally binding targets under the European Climate Law and the Union's 2030 targets for energy and climate.

72. In that balancing exercise, the Commission will pay particular attention to Article 3 of Regulation (EU) 2020/852, including the 'do no significant harm' principle⁵⁰, or other comparable methodologies. Furthermore, as part of the assessment of the negative effects on competition and trade, the Commission will take into account, where relevant, negative externalities of the aided activity where such externalities adversely affect competition and trade between Member States to an extent contrary to the common interest by creating or aggravating market inefficiencies including in particular those externalities that may hinder the achievement of climate objectives set under Union law⁵¹.

73. The Commission will consider an aid measure compatible with the internal market only where the positive effects outweigh the negative effects. In cases where the proposed aid measure does not address a well-identified market failure in an appropriate and proportionate way, for example due to the transitory nature of the benefit and the long term distortions it entails as set out in point 67, the negative distortive effects on

⁵⁰ For measures which are identical to measures within Recovery and Resilience Plans as approved by the Council, their compliance with the 'Do no significant harm' principle is considered fulfilled as this has already been verified.

⁵¹ This could also be the case where the aid distorts the operation of economic instruments put in place to internalise such negative externalities (for example, by affecting price signals given by the Union ETS or a similar instrument).

competition will tend to outweigh the positive effects of the measure. The Commission will therefore be likely to conclude that the proposed aid measure is incompatible.

74. Measures that directly or indirectly involve support to fossil fuels, in particular the most polluting fossil fuels, are unlikely to create positive environmental effects and often have important negative effects because they can increase the negative environmental externalities in the market. The same applies for measures involving new investments in natural gas, unless it is demonstrated that there is no lock-in effect⁵². This will in principle render a positive balancing for such measures unlikely, as further explained in Chapter 4.
75. The Commission will generally look favourably at measures' features proposed by Member States to facilitate the participation of SMEs and, where relevant, renewable energy communities in competitive bidding processes, provided that the positive effects of ensuring participation and acceptance outweigh the possible distortive effects.
76. Further factors to be taken into account to determine the overall balance of certain categories of aid schemes in certain cases are:
 - (a) a requirement of *ex post* evaluation as described in Chapter 5; in such cases, the Commission may limit the duration of the schemes (normally to four years or less) with a possibility to re-notify their extension afterwards;
 - (b) a requirement - in the absence of a competitive bidding process - to individually notify support projects of a certain size or presenting certain characteristics;
 - (c) a requirement that aid measures be subject to a time limitation.

4. CATEGORIES OF AID

4.1 Aid for the reduction and removal of greenhouse gas emissions including through support for renewable energy and energy efficiency

4.1.1 Rationale

77. In the European Climate Law, the Union has set binding and ambitious greenhouse gas emissions reduction targets for 2030 and 2050. In Regulation (EU) 2018/1999, the Union has set out the Union's 2030 targets for energy and climate. In the Energy Efficiency Directive, the Union has set binding energy efficiency targets for 2030. State aid may be necessary to contribute to the achievement of those Union targets and related national contributions.

⁵² For example, this may be based on a national decarbonisation plan with binding targets and/or may include binding commitments by the beneficiary to implement decarbonisation technologies such as CCS/CCU or replace natural gas with renewable or low-carbon gas or to close the plant on a timeline consistent with the Union's climate targets. To meet the Union's 2030 and 2050 climate targets, there needs to be a clear downward trajectory for all fossil fuels including natural gas. The Commission's impact assessment produced for the 2030 climate target plan explains that, by 2050, 'the unabated use of natural gas will become incompatible with the climate-neutrality objective and its use [must] be reduced by 66 - 71% compared to 2015' (SWD(2020) 176 final).

4.1.2 *Scope and supported activities*

78. Section 4.1 lays down the compatibility rules for measures for energy from renewable sources, including aid for the production of renewable energy or synthetic fuels produced using renewable energy. It also lays down the compatibility rules for aid measures involving a wide range of other technologies primarily aimed at reducing greenhouse gas emissions⁵³.

4.1.2.1 Aid for renewable energy

79. This Section lays down the compatibility rules for measures to support all types of renewable energy.

80. Support for biofuels, bioliquids, biogas (including biomethane) and biomass fuels can only be approved to the extent that the aided fuels are compliant with the sustainability and greenhouse gases emissions saving criteria in Directive (EU) 2018/2001 and its implementing or delegated acts.

81. Aid for energy generation from waste may be found compatible under this section to the extent it is limited to waste that falls under the definition of renewable energy sources.

82. Aid for the production of renewable hydrogen⁵⁴ may be assessed under this Section.

4.1.2.2 Other aid for the reduction and removal of greenhouse gas emissions and energy efficiency

83. All technologies that contribute to the reduction of greenhouse gas emissions are in principle eligible, including aid for the production of low-carbon energy or synthetic fuels produced using low-carbon energy, aid for energy efficiency including high-efficiency cogeneration, aid for CCS/CCU, aid to demand response and energy storage where this reduces emissions, and aid for the reduction or avoidance of emissions resulting from industrial processes, including the processing of raw materials. It also covers support for the removal of greenhouse gases from the environment. This Section does not apply to measures whose primary objective is not the reduction or removal of greenhouse gas emissions. Where a measure contributes to both the reduction of greenhouse gas emissions and the prevention or reduction of pollution other than from greenhouse gas emissions, the compatibility of the measure will be assessed on the basis of this Section or Section 4.5, depending on which of the two objectives is predominant.

84. This Section also covers dedicated infrastructure projects (including for hydrogen, other low-carbon gases and carbon dioxide for storage/use) that do not fall under the definition of energy infrastructure, as well as projects encompassing a dedicated infrastructure or energy infrastructure, or both, combined with either production or consumption/use.

85. To the extent that aid facilitates investments to improve the energy performance of industrial activities, this Section also applies to aid to SMEs and small mid-caps that are

⁵³ This covers both brownfield and greenfield investments.

⁵⁴ This includes on-grid electrolysers that have concluded renewables power purchase agreements with economic operators producing renewable electricity that fulfil the conditions set out in the Commission Delegated Regulation adopted pursuant to Article 27(3) Directive (EU) 2018/2001.

providers of energy performance improvement measures, for the facilitation of energy performance contracting within the meaning of Article 2, point (27), of Directive 2012/27/EU.

86. Aid for energy generation from waste may be found compatible under this Section to the extent it is limited to waste used to fuel installations that fall under the definition of high-efficiency cogeneration.
87. Aid for the production of low-carbon hydrogen may be assessed under this Section.
88. Aid to support electrification using renewable electricity and/or low-carbon electricity may also be assessed under this Section, including support for heating and industrial processes.

4.1.3 Minimisation of distortions of competition and trade

4.1.3.1 Necessity of the aid

89. Points 34 to 37 do not apply to measures for the reduction of greenhouse gas emissions. The Member State must 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.
90. The Member State should demonstrate that aid is needed for the proposed activities as required under point 38, taking into account the counterfactual situation⁵⁵ as well as relevant costs and revenues including those linked to the ETS and related policies and measures identified in point 89. Where there is significant uncertainty concerning future market developments related to a large part of the business case (as for example may be the case for renewable energy investments where electricity revenues are not coupled to input costs), support in the form of a certain guaranteed remuneration to limit exposure to negative scenarios may be considered necessary to ensure that the private investment takes place. In such cases, limits to profitability and/or clawbacks linked to possible positive scenarios may be required to ensure proportionality.
91. Where the Member State demonstrates that there is a need for aid under point 90, the Commission presumes that a residual market failure remains, which can be addressed through aid for decarbonisation, unless it has evidence to the contrary.
92. For schemes that run for more than three years the Member State must confirm that it will update its analysis of relevant costs and revenues at least every three years or, for schemes involving less frequent granting, before aid is granted, to ensure that aid remains necessary for each eligible category of beneficiary. Where aid is no longer

⁵⁵ The counterfactual is the activity that would have been carried out by the beneficiary in the absence of aid. In some decarbonisation cases this may involve an investment in a less environmentally-friendly alternative. In other cases no or delayed investment may be involved, but it may for example involve operating decisions that would deliver lesser environmental benefit, such as the continuing operation of existing onsite facilities and/or the purchase of energy.

required for a category of beneficiary, that category should be removed before further aid is granted⁵⁶.

4.1.3.2 Appropriateness

93. Section 3.2.1.2 does not apply to measures for the reduction of greenhouse gas emissions. The Commission presumes that State aid can, in principle, be an appropriate measure in achieving decarbonisation goals, given that other policy instruments are typically not sufficient to achieve those goals, provided all other compatibility conditions are met. Given the scale and urgency of the decarbonisation challenge, a variety of instruments, including direct grants, may be used.
94. Aid for the facilitation of energy performance contracting, as referred to in point 85, may only take one of the following forms:
- (a) a loan or guarantee to the provider of the energy performance improvement measures under an energy performance contract;
 - (b) a financial product aimed to refinance the respective provider (for example, factoring or forfaiting).

4.1.3.3 Eligibility

95. Decarbonisation measures targeting specific activities which compete with other unsubsidised activities can be expected to lead to greater distortions of competition, compared to measures open to all competing activities. Therefore, the Member State should give reasons for measures which do not include all technologies and projects that are in competition – for example all projects operating in the electricity market, or all undertakings producing substitutable products and which are technically capable of contributing efficiently to greenhouse gas emissions reductions⁵⁷. These reasons should be based on objective considerations linked, for example, to efficiency or costs or other relevant circumstances. Such reasons may draw on evidence gathered in the public consultation referred to in Section 4.1.3.4 where applicable.
96. The Commission will assess the reasons given and will, for instance, consider that a more limited eligibility does not unduly distort competition where:
- (a) a measure targets a specific sectoral or technology based target established in Union law⁵⁸, such as a renewable energy or energy efficiency scheme⁵⁹;

⁵⁶ This would not affect the entitlement to receive aid already granted (e.g. under a 10 year contract).

⁵⁷ The Commission will not generally require measures to be opened across borders, although this can help alleviate competition concerns.

⁵⁸ Such as, if applicable, for renewable hydrogen.

⁵⁹ Eligibility in such a case should only be limited in line with relevant definitions where available in the sectoral legislation. For example, a scheme designed to meet the Union's headline renewable energy target should be open to all technologies that meet the definition of 'renewable energy sources' in 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. 8), while a scheme designed to meet a Union sub-target should be open to all technologies that can contribute to meeting that sub-target. Member States may however also further limit the scope of their support measures, including

- (b) a measure aims specifically to support demonstration projects;
- (c) a measure aims to address not only decarbonisation but also air quality or other pollution;
- (d) 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;
- (e) a measure is required to achieve diversification necessary to avoid exacerbating issues related to network stability⁶⁰;
- (f) a more selective approach can be expected to lead to lower costs of achieving environmental protection (for example through reduced system integration costs as a result of diversification, including between renewables, which could also include demand response and/or storage), and/or result in less distortion of competition;
- (g) a project has been selected following an open call to form part of a large integrated cross-border project, jointly designed by several Member States and which aims to have an important contribution to environmental protection in the Union's common interest, and either it applies an innovative technology, which follows on from a research and development and innovation (R&D&I) activity conducted by the beneficiary or by another entity as long as the former acquires the rights to use the results of the previous R&D&I, or it is amongst the early adopters of an innovative technology in its sector.

97. Member States must regularly review eligibility rules and any rules related thereto to ensure that reasons provided to justify a more limited eligibility continue to apply for the lifetime of each scheme, that is to say, to ensure that any limitations on eligibility can still be justified when new technologies or approaches are developed or more data becomes available.

4.1.3.4 Public consultation

98. Section 4.1.3.4 applies from 1 July 2023.
99. Prior to the notification of aid, other than in duly justified exceptional circumstances, Member States must consult publicly on the competition impacts and proportionality of measures to be notified under this Section. The obligation to consult does not apply in

to specific types of renewable energy sources, on the basis of other objective criteria such as those listed in points 96(b) to (g).

⁶⁰ In a case involving regional support, the Member State should demonstrate that ancillary services and redispatching rules enable efficient participation of renewables, storage and demand response as appropriate and reward locational and technology choices that support grid stability, in line with Regulation (EU) 2019/943 and Directive (EU) 2019/944. Where the Member State identifies a local security of supply problem that cannot be solved in the medium term (e.g. within 5-10 years) with improvements to market design or sufficient network reinforcement, a measure to address this concern should be designed and assessed under Section 4.8.

respect of amendments to already approved measures that do not alter their scope or eligibility or extend their duration beyond 10 years of the notification of the original decision of the Commission finding the aid compatible, nor in respect of cases referred to in point 100. To determine whether a measure is justified, bearing in mind the criteria in these guidelines, the following public consultation is required⁶¹:

- (a) for measures where the estimated average annual aid to be granted is at least EUR 150 million per year, a public consultation of at least six weeks' duration, covering:
 - (i) eligibility;
 - (ii) method and estimate of subsidy per tonne of CO₂ equivalent⁶² emissions avoided (per project or reference project);
 - (iii) proposed use and scope of competitive bidding processes and any proposed exceptions;
 - (iv) main parameters for the aid allocation process⁶³ including for enabling competition between different types of beneficiary⁶⁴;
 - (v) main assumptions informing the quantification used to demonstrate the incentive effect, necessity and proportionality;
 - (vi) where new investments in natural gas based generation or industrial production may be supported, proposed safeguards to ensure compatibility with the Union's climate targets (see point 129);
- (b) for measures where the estimated average annual aid to be granted is below EUR 150 million per year, a public consultation of at least four weeks' duration, covering:
 - (i) eligibility;
 - (ii) proposed use and scope of competitive bidding processes and any proposed exceptions;
 - (iii) where new investments in natural gas based generation or industrial production may be supported, proposed safeguards to ensure compatibility with the Union's climate targets (see point 129);

⁶¹ Member States may rely on existing national consultation processes in respect of these requirements. As long as the consultation covers the points listed in these guidelines and runs for the required period of time, a separate consultation is not required. A separate consultation may also not be required for cases referred to in point 96(g).

⁶² CO₂ equivalent (CO₂ e) is a metric measure used to compare the emissions from various greenhouse gases on the basis of their global-warming potential, by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential.

⁶³ For example, the lead-time between the competitive process and the delivery period, bid/offer rules, pricing rules.

⁶⁴ For example, if there are different contract durations, different methodologies for calculating the amount of eligible capacity / output from different technologies, different methodologies for calculating or paying subsidies.

100. No public consultation is required for measures falling under point 99(b) where competitive bidding processes are used and the measure does not support investments in fossil-fuel based energy generation, production or other activities.
101. Consultation questionnaires must be published on a public website. Member States must publish a response to the consultation summarising and addressing the input received. This should include explaining how possible negative impacts on competition have been minimised through the scope or eligibility of the proposed measure. Member States must provide a link to their response to the consultation as part of the notification of aid measures under this Section.
102. In exceptional and duly justified cases, the Commission might consider alternative methods of consultation provided that the views of interested parties are taken into account in the (continued) implementation of the aid. In such cases, the alternative methods might have to be combined with corrective actions to minimise possible distortive effects of the measure.

4.1.3.5 Proportionality

103. Aid for reducing greenhouse gas emissions should in general be granted through a competitive bidding process as described in points 49 and 50, so that the objectives of the measure⁶⁵ can be attained in a proportionate manner which minimises distortions of competition and trade. The budget or volume related to the bidding process is a binding constraint in that it can be expected that not all bidders will receive aid, the expected number of bidders is sufficient to ensure effective competition, and the design of undersubscribed bidding processes during the implementation of a scheme is corrected to restore effective competition in the subsequent bidding processes or, failing that, as soon as appropriate⁶⁶.
104. The bidding process should, in principle, be open to all eligible beneficiaries to enable a cost effective allocation of aid and reduce competition distortions. However, the bidding process can be limited to one or more specific categories of beneficiary where evidence, including any relevant evidence gathered in the public consultation, is provided, showing for example that:
 - (a) a single process open to all eligible beneficiaries would lead to a suboptimal result or not allow the achievement of the objectives of the measure; that justification may refer to the criteria in point 96;
 - (b) there is a significant deviation between the bid levels that different categories of beneficiaries are expected to offer (this would generally be the case where the expected competitive bid levels – identified on the basis of the analysis required

⁶⁵ For instance, the achievement of the Member State's decarbonisation targets.

⁶⁶ Such a binding constraint can be achieved in a variety of complementary ways, including actions to alleviate possible constraints on the supply side, adjusting volume to reflect the likely available supply at a given point in time and/or modifying other features of the design of the bidding process (for instance, eligibility criteria for participation); with the aim of attaining the objective of the measure (for instance, the MS decarbonisation targets) in a proportionate manner which minimises distortions of competition and trade. While safeguarding proportionality and competitiveness, Member States may also consider legitimate expectations of investors.

under point 90 – differ by more than 10 %); in that case, separate competitive bidding processes may be used so that categories of beneficiary with similar costs compete against each other.

105. Where a Member State relies on the exceptions in point 104 (b) for a scheme that will run for more than three years, the analysis required in point 92 should also consider whether those exceptions can still be relied upon. In particular, Member States must confirm that such schemes will be adapted over time to ensure technologies expected to bid within 10 % of each other are tendered through the same competitive bidding process. Likewise, the Member State may choose to arrange separate tenders where updated analysis under point 92 shows that costs have diverged to the point where bids differ by more than 10 %.
106. Where the analysis required under point 90 shows there may be a significant deviation between the bid levels that different categories of beneficiaries are expected to offer, Member States should consider the risk of overcompensation of cheaper technologies. This will also be taken into account by the Commission in its assessment. Where appropriate, bid caps may be required to limit the maximum bid from individual bidders in particular categories. Any bid caps should be justified with reference to the quantification for reference projects referred to in points 51, 52 and 53.
107. Exceptions from the requirement to allocate aid and determine the aid level through a competitive bidding process can be justified where evidence, including that gathered in the public consultation, is provided that one of the following applies:
 - (a) there is insufficient potential supply or number of potential bidders to ensure competition; in that case, the Member State must demonstrate that it is not possible to increase competition by reducing the budget or facilitating participation in the bidding process (for example by identifying additional land for development or adapting pre-qualification requirements) as appropriate;
 - (b) beneficiaries are small projects, defined as follows:
 - (i) for electricity generation or storage projects – projects below or equal to 1 MW of installed capacity;
 - (ii) for electricity consumption – projects with a maximum demand below or equal to 1 MW;
 - (iii) for heat generation and gas production technologies – projects below or equal to 1 MW of installed capacity or equivalent;
 - (iv) for 100 % SME-owned or renewable energy community projects equal to or below 6 MW installed capacity or maximum demand;
 - (v) for projects 100 % owned by small and microenterprises or by renewable energy communities for wind generation only, equal to or below 18 MW of installed capacity;
 - (vi) for energy efficiency measures not involving energy generation benefitting SMEs, where beneficiaries receive less than EUR 300 000 per project.

- (c) individual projects comply with both of the following conditions:
 - (i) the project has been selected following an open call to form part of a large integrated cross-border project, jointly designed by several Member States and which aims to have an important contribution to environmental protection in the Union's common interest;
 - (ii) either the project applies an innovative technology which follows on from an R&D&I activity conducted by the beneficiary or by another entity as long as the former acquires the rights to use the results of the previous R&D&I activity, or it is amongst the early adopters of an innovative technology in its sector.
108. Member States may also use competitive certificates or supplier obligation schemes to establish the aid amount and allocate aid, provided that:
- (a) demand in the scheme is set below potential supply;
 - (b) the buyout or penalty price that applies to a consumer or supplier that has not bought the number of certificates required (that is to say, the price which constitutes the maximum that would be paid for support) is set at a sufficiently high level to incentivise compliance with the obligation. However, the penalty price should be based on the quantification referred to in points 51, 52 and 53 to avoid that an excessively high level leads to overcompensation;
 - (c) where schemes involve support for biofuels, bioliquids and biomass fuels, Member States must take into account the information on support already received from the mass balance system documentation under Article 30 of Directive (EU) 2018/2001, to avoid overcompensation.
109. Member States may also design support schemes targeting decarbonisation or energy efficiency in the form of reductions in taxes or parafiscal levies such as levies financing environmental policy objectives. The application of a competitive bidding process is not obligatory for such schemes. However, such aid must be granted, in principle, in the same way for all eligible undertakings operating in the same sector of economic activity that are in the same or similar factual situation in respect of the aims or objectives of the aid measure. The notifying Member State must put in place an annual monitoring mechanism to verify that the aid is still necessary. This Section does not cover reductions of taxes or levies, which reflect the essential costs of providing energy or related services. For example, reductions of network charges or charges financing capacity mechanisms are excluded from the scope of this Section.
110. Where a tax or a parafiscal levy reduction reduces recurrent operating costs, the aid amount must not exceed the difference between the costs of the environmentally-friendly project or activity and of the less environmentally-friendly counterfactual scenario. Where the more environmentally friendly project or activity may result in potential cost savings or additional revenues, these must be taken into account when determining the proportionality of aid.
111. When designing aid schemes, Member State must take into account the information on support already received from the mass balance system documentation under Article 30 of Directive (EU) 2018/2001.

112. Where concessions or other benefits are granted as part of aid measures – such as the right to use land, sea bed or rivers or a right to an infrastructure connection – Member States must ensure that such concessions are awarded on the basis of objective and transparent criteria linked to the objectives of the measure (see point 50).
113. Where aid takes the form of a senior loan to the provider of the energy performance improvement measures under an energy performance contract, loan instruments should ensure a substantial co-investment rate by commercial providers of debt funding. This is presumed to be the case if such a rate is not lower than 30 % of the value of the underlying energy performance contracts’ portfolio of the provider. The repayment by the provider of the energy performance improvement measures must be at least equal to the nominal value of the loan. Where the aid is granted in form of a guarantee, the public guarantee must not exceed 80 % of the underlying loan’s principal and losses must be sustained proportionally and under same conditions by the credit institution and the State. The guaranteed amount must decrease proportionally, in such a way that the guarantee never covers more than 80 % of the outstanding loan. The public loan or guarantee to the provider of the energy performance improvement measures must be limited to maximum 10 years.

4.1.4 *Avoidance of undue negative effects on competition and trade and balancing*

114. With the exception of point 70, Sections 3.2.2 and 3.3 do not apply to measures for the reduction of greenhouse gas emissions.
115. This point applies from 1 July 2023. The subsidy per tonne of CO₂ equivalent emissions avoided must be estimated for each project, or in the case of schemes, each reference project, and the assumptions and methodology for that calculation provided. To the extent possible, that estimation should identify the net emissions reduction from the activity, taking into account life-cycle emissions created or reduced. Moreover, short and long-term interactions with any other relevant policies or measures, including the Union’s ETS, should be considered. To enable a comparison between the costs of different environmental protection measures, the methodology should in principle be similar for all measures promoted by a Member State⁶⁷.
116. 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.
117. 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. Aid for improvements of the energy efficiency of industrial activities must improve energy efficiency of the beneficiaries’ activities.

⁶⁷ The principles for the calculation of greenhouse gas emissions reductions as used for the EU Innovation Fund provide a useful point of reference, available at: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/innovfund/wp-call/2021/call-annex_c_innovfund-lsc-2021_en.pdf. However, where electricity is used as an input the methodology used must take into account the emissions from producing this electricity. Member States may choose to use the level of subsidy per tonne of CO₂ equivalent emissions avoided as a selection criterion in their aid measures but are not required to do so.

118. By way of exception from the requirement set out in the last sentence of point 117, improvements in the energy efficiency of industrial activities can be supported with aid granted for the facilitation of energy performance contracting.
119. Where aid for the facilitation of energy performance contracting is not granted as a result of a competitive bidding process, State aid must be granted, in principle, in the same way for all eligible undertakings operating in the same sector of economic activity that are in the same or similar factual situation in respect of the aims or objectives of the aid measure.
120. To avoid a budget being allocated to projects that are not realised, potentially blocking new market entry, Member States must demonstrate that reasonable measures will be taken to ensure that projects granted aid will actually be developed, for example setting clear deadlines for project delivery, checking project feasibility as part of pre-qualification for receiving aid, requiring collateral to be paid by participants, or monitoring project development and construction. However, Member States may grant more flexibility regarding pre-qualification requirements for projects developed and 100 % owned by SMEs or by renewable energy communities as a means to reduce barriers to their participation⁶⁸.
121. Aid for decarbonisation can take a variety of forms including upfront grants and contracts for ongoing aid payments such as contracts for difference⁶⁹. 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.
122. Where aid is primarily required to cover short-term costs that may be variable such as biomass fuel costs or electricity input costs, and paid over periods exceeding one year, Member States should confirm that the production costs on which the aid amount is based will be monitored and the aid amount updated at least once per year.
123. 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. For instance, beneficiaries should remain exposed to price variation and market risk, unless this undermines the attainment of the objective of the aid. In particular, beneficiaries should not be incentivised to offer their output below their marginal costs and must not

⁶⁸ In addition, as stated in point 75, the Commission will generally look favourably at other features proposed by Member States to facilitate the participation of SMEs and renewable energy communities in competitive bidding processes, provided that the positive effects of ensuring participation and acceptance outweigh the possible distortive effects.

⁶⁹ A contract for difference entitles the beneficiary to a payment equal to the difference between a fixed 'strike' price and a reference price – such as a market price, per unit of output. They have been used for electricity generation measures in recent years but could also involve a reference price linked to the ETS – i.e. 'carbon' contracts for difference. Such carbon contracts for difference may be a useful tool for bringing to market breakthrough technologies that may be necessary to achieve industrial decarbonisation. Contracts for difference may also involve paybacks from beneficiaries to taxpayers or consumers for periods in which the reference price exceeds the strike price.

receive aid for production in any periods in which the market value of that production is negative⁷⁰.

124. The Commission will carry out a case-by-case assessment for measures that include dedicated infrastructure projects. In its assessment, the Commission will consider, among other, the size of the infrastructure in relation to the relevant market, the impact on the likelihood of additional market-based investments, the extent to which the infrastructure is initially intended for an individual user or group of users and whether a credible plan or firm commitment for connecting to a wider network exists, the duration of any derogations or exemptions from internal market legislation, the structure of the relevant market and the position of the beneficiaries in that market.
125. For instance, where the infrastructure initially connects only a limited number of users, the distortive effect can be mitigated where it is part of a plan to develop a wider Union network on the basis of the following criteria:
- (a) the accounting for the infrastructure should be separated from any other activity and costs of access and usage made transparent;
 - (b) unless this undermines the attainment of the objective of the aid, aid should be subject to commitments to open up the infrastructure⁷¹ to third parties at fair, reasonable and non-discriminatory terms (including public calls for connection requests at equivalent conditions);
 - (c) the advantage that the beneficiaries derive until such wider development occurs may need to be offset, for instance by way of contributing to the further extension of the network;
 - (d) the advantage derived by the dedicated users may need to be limited and/or shared with other players.
126. To avoid undermining the objective of the measure or other Union environmental protection objectives, incentives must not be provided for the generation of energy that would displace less polluting forms of energy. For example, where cogeneration based on non-renewable sources is supported, or where energy production from biomass is supported, as far as possible they must not receive incentives to generate electricity or heat at times when this would mean zero air pollution renewable energy sources would be curtailed.
127. Aid for decarbonisation may unduly distort competition where it displaces investments into cleaner alternatives that are already available on the market, or where it locks in certain technologies, hampering the wider development of a market for and the use of cleaner solutions. The Commission will therefore also verify that the aid measure does not stimulate or prolong the consumption of fossil-based fuels and energy⁷², thereby

⁷⁰ Small-scale renewable electricity installations may benefit from direct price support that covers the full costs of operation and does not require them to sell their electricity on the market, in line with the exemption in Article 4(3) of Directive (EU) 2018/2001. Installations will be considered as small-scale if their capacity is below the applicable threshold in Article 5 of Regulation (EU) 2019/943.

⁷¹ This refers to the assets list in point 19(36).

⁷² Including low-carbon fuels from non-renewable sources and energy carriers that do not emit at the tailpipe but are produced in a carbon-intensive process.

hampering the development of cleaner alternatives and significantly reducing the overall environmental benefit of the investment. 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.

128. The Commission considers that certain aid measures have negative effects on competition and trade that are unlikely to be offset. In particular, certain aid measures may aggravate market failures, creating inefficiencies to the detriment of consumers and social welfare. For instance, measures that incentivise new investments in energy or industrial production based on the most polluting fossil fuels, such as coal, diesel, lignite, oil, peat and oil shale, increase the negative environmental externalities in the market. They will not be considered to have any positive environmental effects, given the incompatibility of these fuels with the Union's climate targets.
129. Similarly, measures that incentivise new investments in energy or industrial production based on natural gas may reduce greenhouse gas emissions and other pollutants in the short term but aggravate negative environmental externalities in the longer term, compared to alternative investments. For investments in natural gas to be seen as having positive environmental effects, Member States must explain how they will ensure that the investment contributes to achieving the Union's 2030 climate target and 2050 climate neutrality target. In particular, the Member States must explain how a lock in of this gas-fired energy generation or gas-fired production equipment will be avoided. For example, this may be based on a national decarbonisation plan with binding targets and/or may include binding commitments by the beneficiary to implement decarbonisation technologies such as CCS/CCU or replace natural gas with renewable or low-carbon gas or to close the plant on a timeline consistent with the Union's climate targets. The commitments should include one or more credible milestones in emissions reduction towards climate neutrality by 2050.
130. Production of biofuels from food and feed crops may create additional land demand and lead to the extension of agricultural land into areas with high-carbon stock, such as forests, wetlands and peatland, causing additional greenhouse gas emissions. This is why Directive (EU) 2018/2001 limits the amount of food and feed crops-based biofuels, bioliquids and biomass fuels that count towards the renewable energy targets. The Commission considers that certain aid measures can aggravate indirect negative externalities. The Commission will therefore, in principle, consider that State aid for biofuels, bioliquids, biogas and biomass fuels exceeding the caps determining their eligibility for the calculation of the gross final consumption of energy from renewable sources in the Member State concerned in accordance with Article 26 of Directive (EU) 2018/2001, is unlikely to produce positive effects which could outweigh the negative effects of the measure.
131. Where risks of additional competition distortions are identified or measures are particularly novel or complex, the Commission may impose conditions as set out in point 76.
132. For individual aid measures or schemes benefitting a particularly limited number of beneficiaries or an incumbent beneficiary, Member States should, in addition demonstrate that the proposed aid measure will not lead to distortions of competition, for example, through increased market power. Even when the aid does not directly

increase market power, it may do so indirectly by discouraging expansion of existing competitors or inducing their exit or discouraging the entry of new competitors. In assessing the negative effects of those aid measures, the Commission will focus its analysis on the foreseeable impact the aid may have on competition between undertakings in the product market concerned, as well as in up- or downstream markets where relevant, and on the risk of overcapacity. The Commission will also assess the potential negative effects on trade, including the risk of a subsidy race between Member States that may arise in particular with respect to the choice of a location.

133. Where the aid is granted without a competitive bidding process and the measure benefits a particularly limited number of beneficiaries or an incumbent beneficiary, the Commission may require the Member State to ensure that the beneficiary disseminates the know-how obtained as a result of the aided project with the aim of accelerating the roll-out of the successfully demonstrated technologies.
134. Provided that all other compatibility conditions are met, the Commission will typically find that the balance for decarbonisation measures is positive (that is to say, distortions to the internal market are outweighed by positive effects) in the light of their contribution to climate change mitigation, which is defined as an environmental objective in Regulation (EU) 2020/852 and/or in light of their contribution to meeting Union energy and climate objectives, as long as there are no obvious indications of non-compliance with the ‘do no significant harm’ principle⁷³. In case the assumption above does not apply, the Commission will assess whether on balance the positive effects (including compliance with the points in Section 4.1.4 and any commitments related to point 129) outweigh the negative impacts on the internal market.

4.2 Aid for the improvement of the energy and environmental performance of buildings

4.2.1 Rationale for the aid

135. Measures aimed at improving the energy and environmental performance of buildings target negative externalities by creating individual incentives to attain targets for energy savings and for the reduction of greenhouse gas and air pollutant emissions. In addition to the general market failures identified in Chapter 3, specific market failures may arise in the field of the energy and environmental performance of buildings. For instance, when renovation works in buildings are considered, the benefits of energy and environmental performance measures do not typically accrue only to the owner of the building, who generally bears the renovation costs, but also to the tenant. The Commission therefore considers that State aid may be needed to promote investments aimed at improving the energy and environmental performance of buildings.

4.2.2 Scope and supported activities

136. Aid may be granted for the improvement of the energy efficiency of buildings.
137. That aid may be combined with aid for any or all of the following measures:

⁷³ For measures which are identical to measures within Recovery and Resilience Plans as approved by the Council, their compliance with the ‘Do no significant harm’ principle is considered fulfilled as this has already been verified.

- (a) the installation of integrated on-site renewable energy installations generating electricity, heat or cooling;
- (b) the installation of equipment for the storage of the energy generated by on-site renewable energy installations;
- (c) the construction and installation of recharging infrastructure for use by the building users, and related infrastructure, such as ducting, where the parking facilities are located either inside the building or are physically adjacent to the building;
- (d) the installation of equipment for the digitalisation of the building's environmental and energy management and control, in particular to increase its smart-readiness, including passive in-house wiring or structured cabling for data networks and the ancillary part of the passive network on the property to which the building belongs, but excluding wiring or cabling for data networks outside the property;
- (e) other investments that improve the energy or environmental performance of the building, including investments in green roofs and equipment for the recovery of rain water.

138. Aid may also be granted for the improvement of the energy performance of the heating or cooling equipment inside the building. Aid for heating or cooling equipment directly connected to district heating and cooling systems will be assessed under the conditions applicable to aid for district heating and cooling set out in Section 4.10. Aid for the improvement of the energy efficiency of production processes and for energy-generating equipment used to power machinery will be assessed under the conditions applicable to aid for the reduction and removal of greenhouse gas emissions set out in Section 4.1.

139. The aid must induce:

- (a) in the case of renovation of existing buildings, energy performance improvements leading to a reduction in primary energy demand of at least 20 % compared to the situation prior to the investment or, where the improvements are part of a staged renovation, a reduction in primary energy demand of at least 30 % compared to the situation prior to the investment, over a period of five years,
- (b) in case of renovation measures concerning the installation or replacement of just one type of building elements⁷⁴ within the meaning of Article 2, point 9, of Directive 2010/31/EU, a reduction in primary energy demand of at least 10 % compared to the situation prior to the investment, provided the Member State demonstrates the measure has at the scheme level an overall significant effect in terms of reduction of primary energy demand,
- (c) in the case of new buildings, energy performance improvements leading to a reduction in primary energy demand of at least 10 % compared to the threshold set for the nearly zero-energy building requirements in national measures implementing Directive 2010/31/EU.

⁷⁴ Such investments could for example aim at replacing windows or boilers in the building or focus on the wall insulation.

140. Aid for the improvement of the energy performance of buildings may also be granted to SMEs and small mid-caps that are providers of energy performance improvement measures for the facilitation of energy performance contracting within the meaning of Article 2, point (27), of Directive 2012/27/EU.

4.2.3 *Incentive effect*

141. The requirements set out in points 142 and 143 apply in addition to those set out in Section 3.1.2.
142. The Commission considers that, in principle, aid to projects with a payback period⁷⁵ of less than five years does not have an incentive effect. However, the Member State may provide evidence to demonstrate that aid is needed to trigger a change in behaviour, even in the case of projects with a shorter payback period.
143. Where Union law imposes on undertakings minimum energy performance standards qualifying as Union standards, aid for all the necessary investments enabling undertakings to comply with those standards will be considered to have an incentive effect, provided that the aid is granted before the requirements become mandatory for the undertaking concerned⁷⁶. The Member State must ensure that beneficiaries provide a precise renovation plan and timetable demonstrating that the aided renovation is at least sufficient to bring the building to comply with those minimum energy performance standards.

4.2.4 *Minimisation of distortions of competition and trade*

4.2.4.1 *Appropriateness*

144. The requirement set out in point 145 applies in addition to the requirements set out in Section 3.2.1.2.
145. Aid for the facilitation of energy performance contracting may take the form of a loan or guarantee to the provider of the energy performance improvement measures under an energy performance contract or consist in a financial product aimed at financing the provider (for example, factoring or forfaiting).

4.2.4.2 *Proportionality*

146. The eligible costs are the investment costs directly linked to the achievement of a higher level of energy or environmental performance.
147. The aid intensity must not exceed 30 % of the eligible costs for measures specified in points 139(a) and (c). For measures specified in point 139(b), the aid intensity must not exceed 25 %. Where aid for investments enabling undertakings to comply with minimum energy performance standards qualifying as Union standards is granted less than 18 months before the Union standards enter into force, the aid intensities must not

⁷⁵ The payback period is the amount of time needed to recover the cost of an investment (without aid).

⁷⁶ This applies wherever aid is granted to enable undertakings to comply with minimum energy performance standards qualifying as Union standards before they become mandatory for the undertaking concerned, irrespective of the existence of earlier Union standards already in force.

exceed 20 % of the eligible costs for measures specified in points 139(a) and (c), or 15 % of the eligible costs for measures specified in point 139(b).

148. As regards aid granted for improving the energy performance of existing buildings, the aid intensity may be increased by 15 percentage points where the energy performance improvements lead to a reduction in primary energy demand of at least 40 %. This increase in aid intensity, however, does not apply where the project, although delivering a reduction in primary energy demand of 40 % or more, does not improve the energy performance of the building beyond the level imposed by minimum energy performance standards qualifying as Union standards entering into force within less than 18 months.
149. The aid intensity may be increased by 20 percentage points for aid granted to small undertakings or by 10 percentage points for aid granted to medium-sized undertakings.
150. The aid intensity may be increased by 15 percentage points for investments located in assisted areas fulfilling the conditions of Article 107(3), point (a), of the Treaty or by 5 percentage points for investments located in assisted areas fulfilling the conditions of Article 107(3), point (c), of the Treaty.
151. Depending on the specific characteristics of the measure, the Member State may also demonstrate, based on a funding gap analysis, as set out in points 48, 51 and 52, that a higher aid amount is required. The aid amount must not exceed the funding gap, as set out in points 51 and 52. Where aid for investments enabling undertakings to comply with minimum energy performance standards qualifying as Union standards is granted less than 18 months before the Union standards enter into force, the maximum aid amount must not exceed 70 % of the funding gap.
152. Where the aid is granted following a competitive bidding process conducted in accordance with the criteria set out in points 49 and 50, the aid amount is considered proportionate. Where aid for investments enabling undertakings to comply with minimum energy performance standards qualifying as Union standards is granted less than 18 months before the Union standards enter into force, the Member State must ensure that the risk of overcompensation is appropriately addressed, for instance by setting bid caps.
153. Aid granted in the form of financial instruments is not subject to the maximum aid intensities set out in points 147 to 151. Where the aid is granted in the form of a guarantee, the guarantee should not exceed 80 % of the underlying loan. Where the aid is granted in the form of a loan, the repayment by the owner(s) of the building to the energy efficiency fund or renewable energy fund or other financial intermediary must at least equal the nominal value of the loan.

4.2.4.3 Avoidance of undue negative effects on competition and trade and balancing

154. The requirements set out in points 155 to 157 apply in addition to those set out in Section 3.2.2.
155. Aid for investments in equipment using natural gas aimed at improving the energy efficiency of buildings may lead to a reduction in energy demand in the short term but aggravate negative environmental externalities in the longer term, compared to alternative investments. Aid for the installation of equipment using natural gas may

unduly distort competition where it displaces investments into cleaner alternatives that are already available on the market or where it locks in certain technologies, thereby impeding the development of a market for cleaner technologies and their use. The positive effects of measures that create such displacement or lock-in effects are unlikely to outweigh their negative effects on competition. As part of its assessment, the Commission will consider whether the equipment using natural gas replaces energy equipment using most polluting fossil fuels such as oil and coal.

156. Alternatives to energy equipment using polluting fossil fuels such as oil and coal are already available on the market. In this context, aid for the installation of energy-efficient energy equipment using such fuels is not considered to yield the same positive effects as aid for the installation of cleaner energy equipment. First, the marginal improvement in terms of reduction in energy demand is counterbalanced by the greater carbon emissions linked to the use of fossil fuels. Second, the granting of aid for installing energy equipment using solid or liquid fossil fuels entails a significant risk of locking in fossil fuel technologies and of displacing investments into cleaner and more innovative alternatives available on the market by shifting demand away from energy equipment that does not use solid or liquid fossil fuels. This would also discourage the further development of the market for non-fossil fuel technologies. The Commission therefore considers that the negative effects on competition of aid for energy equipment using solid or liquid fossil fuels are unlikely to be offset.
157. Where the aid is granted in the form of an endowment, equity, a guarantee or a loan to an energy efficiency fund or renewable energy fund or other financial intermediary, the Commission will verify that conditions are in place to ensure that the energy efficiency fund or renewable energy fund or other financial intermediaries do not receive any undue advantage and apply a commercially sound investment strategy for the purpose of implementing the energy performance aid measure. In particular, the following conditions must be fulfilled:
 - (a) financial intermediaries or fund managers must be selected through an open, transparent and non-discriminatory process which is made in accordance with applicable Union and national laws;
 - (b) conditions are in place to ensure that financial intermediaries, including energy efficiency funds or renewable energy funds, are managed on a commercial basis and will ensure profit-driven financing decisions;
 - (c) the managers of the energy efficiency fund or renewable energy fund or other financial intermediaries pass the advantage on to the largest extent possible to the final beneficiaries (the owner(s) or tenant(s) of the building), in the form of higher volumes of financing, lower collateral requirements, lower guarantee premiums or lower interest rates.

4.3 Aid for clean mobility

158. Sections 4.3.1 and 4.3.2 set out the conditions under which State aid for certain investments to reduce or avoid emissions of CO₂ and other pollutants from air, road, rail, waterborne and maritime transport sectors can facilitate the development of an economic activity in an environmentally-friendly manner, without adversely affecting trading conditions to an extent contrary to the common interest of the Union.

159. Aid for investments in light duty and heavy-duty road vehicles using gas (notably, LNG, CNG and biogas), and in the relevant gas refuelling infrastructure for road, except for LNG infrastructure exclusively for the refuelling of heavy-duty road vehicles, falls outside the scope of these guidelines. Based on the current stage of market development, these technologies are expected to have a significantly lower potential to contribute to climate change mitigation and air pollution reduction, compared to cleaner and more innovative alternatives and therefore are expected to unduly distort competition by displacing investments into those cleaner alternatives and locking in mobility solutions which are not in line with the 2030 and 2050 targets.

4.3.1 *Aid for the acquisition and leasing of clean vehicles and clean mobile service equipment and for the retrofitting of vehicles and mobile service equipment*

4.3.1.1 Rationale for the aid

160. To achieve the Union's legally binding climate neutrality objective by 2050, the European Green Deal Communication established the goal to reduce transport emissions by at least 90 % compared to 1990 levels by 2050. The Communication on a Sustainable and Smart Mobility Strategy⁷⁷ sets out a path towards achieving that objective through the decarbonisation of both the individual modes of transport and the whole transport chain⁷⁸.

161. While existing policies may provide incentives for the uptake of clean vehicles, by setting binding CO₂ emission targets for the new road vehicle fleet of manufacturers⁷⁹, by internalising the climate and environmental externalities⁸⁰, or by boosting vehicle demand through public procurement⁸¹, they may not be sufficient to address in full the market failures affecting the sector concerned. Despite existing policies, certain market barriers and market failures may remain unaddressed, including the affordability of clean vehicles compared to conventional vehicles, the limited availability of recharging or refuelling infrastructure and the existence of environmental externalities. Member States may therefore provide aid to address those residual market failures and support the development of the clean mobility sector.

4.3.1.2 Scope and supported activities

162. Aid may be granted for the acquisition and leasing of new or used clean vehicles and for the acquisition and leasing of clean mobile service equipment.

⁷⁷ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'Sustainable and Smart Mobility Strategy: putting European transport on track for the future', COM(2020) 789 final.

⁷⁸ The Communication includes among others the ambition to have at least 30 million zero-emission cars and 80 000 zero-emission lorries in operation by 2030 and that by 2050 nearly all cars, vans, buses and new heavy-duty vehicles will be zero-emission.

⁷⁹ Regulation (EU) 2019/1242 and Regulation (EU) 2019/631 of the European Parliament and of the Council of 17 April 2019 setting CO₂ emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011 (OJ L 111, 25.4.2019, p. 13).

⁸⁰ For instance, through Directive 1999/62/EC of the European Parliament and of the Council of 17 June 1999 on the charging of heavy goods vehicles for the use of certain infrastructures (OJ L 187, 20.7.1999, p. 42) and the Union's ETS.

⁸¹ For instance, through Directive 2009/33/EC.

163. Aid may also be granted for the retrofitting, refitting and adaptation of vehicles or mobile service equipment in the following cases:
- (a) where it allows them to qualify as clean vehicles or clean mobile service equipment; or
 - (b) where it is necessary to allow vessels and aircraft to use, or increase the share of, biofuels and synthetic fuels, including renewable liquid and gaseous transport fuels of non-biological origin, in addition to, or as an alternative to, fossil-based fuels; or
 - (c) where it is necessary to allow vessels to use wind propulsion.

4.3.1.3 Incentive effect

164. The conditions set out in points 165 to 169 apply in addition to the conditions set out in Section 3.1.2.
165. The Member State must provide a credible counterfactual scenario in the absence of the aid. A counterfactual scenario corresponds to an investment with the same capacity, lifetime and, where appropriate, other relevant technical characteristics as the environmentally-friendly investment. Where the investment concerns the acquisition or leasing of clean vehicles or clean mobile service equipment, the counterfactual scenario generally is the acquisition or the leasing of vehicles or mobile service equipment of the same category and the same capacity, at least complying with Union standards, where applicable, that would be acquired or leased without the aid.
166. The counterfactual scenario might correspond to maintaining the existing vehicle or mobile service equipment in operation for a period corresponding to the lifetime of the environmentally-friendly investment. In that case, the discounted maintenance, repair and modernisation costs over that period should be taken into account.
167. In other cases, the counterfactual scenario may consist in a later replacement of the vehicle or mobile service equipment, in which case the discounted value of the vehicle or mobile service equipment should be taken into account and the difference in the respective economic lifetime of equipment should be equalised. This approach may be particularly relevant for vehicles that have a longer economic life, such as vessels, rail rolling stock or aircraft.
168. In the case of vehicles or mobile service equipment subject to leasing arrangements, the discounted value of the leasing of the clean vehicles or clean mobile service equipment should be compared with the discounted value of the leasing of the less environmentally-friendly vehicle or mobile service equipment that would be used in the absence of the aid.
169. Where the investment consists of adding equipment to an existing vehicle or mobile service equipment to improve its environmental performance (for example, retrofitting of pollution control systems), the eligible costs may consist of the total investment costs.

4.3.1.4 Minimising distortions of competition and trade

1.1.1.1.4 Appropriateness

170. The requirements set out in point 171 apply in addition to those set out in Section 3.2.1.2.
171. The verification of appropriateness among alternative policy instruments should take into consideration the potential for other types of interventions than State aid to stimulate the development of the clean mobility market and their expected impact compared to that of the proposed measure. Such other types of interventions may include the introduction of general measures aimed at promoting the acquisition of clean vehicles such as ecological bonus schemes or scrappage schemes or the creation of low-emission zones in the Member State concerned.

1.1.1.1.5 Proportionality

172. The aid must not exceed the cost necessary to facilitate the development of the economic activity at issue in a manner that increases the level of environmental protection (that is to say, through the shift from conventional to clean vehicles and clean mobile service equipment), compared to the counterfactual scenario in the absence of aid. State aid may be considered proportionate where the conditions set out in points 173 to 181 are fulfilled.
173. As a general rule, the aid must be granted following a competitive bidding process conducted in accordance with the criteria set out in points 49 and 50.
174. If criteria other than the aid amount requested by the applicant are included in the context of the competitive bidding process, point 50 applies. The selection criteria may, for instance, relate to the expected environmental benefits of the investment in terms of CO₂ equivalent or other pollutant reductions throughout its lifetime. In such cases, to facilitate the identification of the environmental benefits, the Member State may require the applicants to indicate in their bids the expected level of emission reductions resulting from the investment, compared to the level of emissions of a comparable vehicle complying with Union standards, where applicable. Environmental criteria used in the competitive bidding process may also include life-cycle considerations such as the environmental impact of the end-of-life management of the product.
175. The design of the competitive bidding process must ensure that sufficient incentives remain for applicants to bid for projects concerning the acquisition of zero-emission vehicles, which are generally more expensive than less environmentally friendly alternatives, insofar as these are available for that transport mode. That includes ensuring that the application of the selection criteria does not put those projects at a disadvantage compared to other clean vehicles, which do not qualify as zero-emission vehicles. For example, environmental criteria may be designed as premiums allowing a higher score to be assigned to projects bringing environmental benefits beyond those deriving from the eligibility requirements or the primary objective of the measure. Where appropriate, bid caps may be required to limit the maximum bid from individual bidders in particular categories. Any bid caps should be justified with reference to the quantification for reference projects referred to in points 51, 52 and 53.

176. By way of derogation from points 173 to 175, aid may be granted without a competitive bidding process in the following cases:
- (a) where the expected number of participants is not sufficient to ensure effective competition or avoid strategic bidding;
 - (b) where the Member State provides adequate justification that a competitive bidding process, as described in points 49 and 50, is not appropriate to ensure the proportionality of the aid and that using the alternative methods in points 177 to 180 would not increase the risk of undue distortions of competition⁸², depending on the characteristics of the measure or of the sectors or transport modes concerned; or
 - (c) where it is granted for the acquisition or leasing of vehicles intended for use by undertakings active in the sector of public passenger transport by land, rail or water.
177. In the cases referred to in point 176, the aid may be considered proportionate if it does not exceed 40 % of the eligible costs. The aid intensity may be increased by 10 percentage points for zero-emission vehicles and by 10 percentage points for medium-sized enterprises or by 20 percentage points for small enterprises.
178. The eligible costs are the net extra costs of the investment. These are calculated as the difference, on the one hand, between the total cost of ownership of the clean vehicle foreseen to be acquired or leased, and on the other hand the aid and the total cost of ownership in the counterfactual scenario. Costs that are not directly linked to the achievement of a higher level of environmental protection are not eligible.
179. As regards the retrofitting of vehicles or mobile service equipment, in accordance with point 169, the eligible costs may be the total costs of the retrofitting, provided that in the counterfactual scenario the vehicles or mobile service equipment retain the same economic life in the absence of the retrofitting.
180. Depending on the specific characteristics of the measure, the Member State may also demonstrate, based on a funding gap analysis, as set out in points 48, 51 and 52, that a higher aid amount is required. In such a case, the Member State must conduct an *ex post* monitoring to verify the assumptions made about the level of aid required and put in place a claw-back mechanism, as set out in point 55. The aid amount must not exceed the funding gap, as set out in points 51 and 52.
181. In the case of individual aid, the aid amount has to be determined on the basis of a funding gap analysis as set out in points 48, 51 and 52. In those cases, the Member State must conduct an *ex post* monitoring to verify the assumptions made about the level of aid required and put in place a claw-back mechanism as set out in point 55.

⁸² This can be demonstrated by ensuring that the aid is granted in a transparent and non-discriminatory manner, and that potential interested parties are sufficiently informed of the scope of the measure and potential conditions of aid.

4.3.1.5 Avoidance of undue negative effects on competition and trade and balancing

182. The requirements set out in points 183 to 189 apply in addition to those set out in Section 3.2.2.
183. The Commission considers that aid for investments in vehicles and mobile service equipment using natural gas may lead to a reduction in greenhouse gas emissions and other pollutants in the short term but aggravate negative environmental externalities in the longer term, compared to alternative investments. Aid for the acquisition of vehicles and mobile service equipment using natural gas may unduly distort competition where it displaces investments into cleaner alternatives that are already available on the market or where it locks in certain technologies, thereby impeding the development of a market for cleaner technologies and their use. Therefore, in those cases, the Commission considers that the negative effects of aid for vehicles and mobile service equipment using natural gas are unlikely to be offset.
184. Aid for the acquisition or leasing of CNG and LNG vehicles for waterborne transport and mobile service equipment may however be regarded as not having long-term lock-in effects or not displacing investments into cleaner technologies if the Member State demonstrates that cleaner alternatives are not readily available on the market and are not expected to be available in the short term⁸³.
185. Alternatives to vehicles using the most polluting fossil fuels such as diesel, petrol or liquid petroleum gas (LPG) are already available on the market for use in the road, waterborne and rail transport sectors. The granting of aid for those vehicles entails a significant risk of locking in conventional technologies and of displacing investments into cleaner alternatives available on the market by shifting demand away from more environmentally-friendly vehicles. This would also discourage the further development of the market for non-fossil fuel technologies. In this context, aid for the acquisition or leasing of those vehicles, including new generation vehicles going beyond Union standards where applicable, is not considered to yield the same positive effects as aid for the acquisition or leasing of clean vehicles with lower direct (tailpipe/exhaust) CO₂ emissions. The Commission therefore considers that the negative effects on competition of aid for vehicles using the most polluting fossil fuels such as diesel, petrol or LPG are unlikely to be offset.
186. Zero-emission aircraft, whether electric or powered by hydrogen, are not expected to become available on the market in the short term. On that basis, the Commission considers that the negative effects of State aid for clean aircraft other than zero-emission aircraft may be offset by its positive effects where it contributes to the market introduction or accelerated uptake of new, more efficient and substantially more environmentally-friendly aircraft, in line with a pathway towards climate neutrality, without locking in certain technologies and displacing investments into cleaner alternatives.

⁸³ For such an assessment, depending on the sectors and transport modes concerned, the Commission will generally consider a period of between two to five years following the notification or the implementation of the aid measure. It will base its assessment on independent market studies submitted by the Member State or on any other appropriate evidence.

187. As regards air transport, where appropriate to mitigate particularly distortive effects of the aid, including having regard to the market position of the beneficiary, or to increase the positive effects of the measures, the Commission may require that the beneficiary decommissions an equivalent number of less environmentally-friendly aircraft of a similar take-off mass as the aircraft acquired or leased with State aid.
188. When assessing the distortion of competition of aid for the acquisition or leasing of vehicles or mobile service equipment, the Commission will consider whether bringing into service new vehicles would result in or aggravate existing market failures, such as overcapacity in the sector concerned.
189. To address the expected higher distortive effects of measures granting targeted support to an individual beneficiary or a limited number of specific beneficiaries⁸⁴ in the absence of competitive bidding, the Member State must adequately justify the measure's design, and demonstrate that the higher risks of competition distortion are duly addressed⁸⁵.

4.3.2 *Aid for the deployment of recharging or refuelling infrastructure*

4.3.2.1 Rationale for the aid

190. A comprehensive network of recharging and refuelling infrastructure is necessary to enable a widespread uptake of clean vehicles, and to enable the shift towards zero emission mobility. In fact, a particularly critical barrier to the market uptake of clean vehicles is the limited availability of the infrastructure to recharge or refuel them. Furthermore, the recharging and refuelling infrastructure is not spread evenly across Member States. As long as the share of clean vehicles in operation remains limited, the market alone may fail to deliver the recharging and refuelling infrastructure needed.
191. Directive 2014/94/EU of the European Parliament and of the Council⁸⁶ creates a common framework of measures for the deployment of alternative fuels infrastructure for transport in the Union and sets out a framework of common measures for the deployment of such infrastructure. Moreover, other policies promoting the uptake of clean vehicles may already provide for investment signals for the deployment of recharging and refuelling infrastructure. However, those policies alone may not be sufficient to address in full the identified market failures. Member States may therefore grant aid to address those residual market failures and support the deployment of recharging and refuelling infrastructure.

4.3.2.2 Scope and supported activities

192. Aid may be granted for the construction, installation, upgrade or extension of recharging or refuelling infrastructure.

⁸⁴ See point 66.

⁸⁵ This may include ensuring that overcompensation is excluded by verifying that the aid does not exceed the net extra costs, as demonstrated by comparing the funding gap in the factual and counterfactual scenario, and that the Member State introduces an *ex post* monitoring mechanism to verify the assumptions made about the level of aid required, together with a claw-back mechanism.

⁸⁶ Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure (OJ L 307, 28.10.2014, p. 1).

193. Projects may also include installations for smart charging operations and for the on-site production of renewable electricity or renewable or low-carbon hydrogen, connected to the recharging or refuelling infrastructure by means of a direct link, as well as on-site storage units for storing electricity or renewable or low-carbon hydrogen to be supplied as transport fuels. The nominal production capacity of the on-site electricity or hydrogen production installation should be proportionate to the rated output or refuelling capacity of the recharging or refuelling infrastructure to which it is connected.

4.3.2.3 Minimisation of distortions of competition and trade

1.1.1.1.6 Necessity of the aid

194. The Member State must verify the necessity of aid to incentivise the deployment of recharging or refuelling infrastructure of the same category as the infrastructure that would be deployed with State aid⁸⁷ by means of an *ex ante* open public consultation, an independent market study or based on any other appropriate evidence as set out in Section 3.2.1.1. In particular, the Member State must demonstrate that similar infrastructure is not likely to be developed on commercial terms in the short term⁸⁸ and consider the impact of an ETS, where applicable.

195. When assessing the necessity of aid for the deployment of recharging and refuelling infrastructure that is open for access by users other than the aid beneficiary or beneficiaries, including publicly accessible recharging or refuelling infrastructure, the level of market penetration of the clean vehicles that such infrastructure would serve and the traffic volumes in the region or regions concerned may be considered.

1.1.1.1.7 Appropriateness

196. The requirement set out in point 197 applies in addition to those set out in Section 3.2.1.2.

197. The verification of appropriateness among alternative policy instruments should take into consideration the potential for new regulatory interventions to stimulate the shift towards clean mobility and their expected impact compared to that of the proposed measure.

1.1.1.1.8 Proportionality

198. The aid must not exceed the cost necessary to facilitate the development of the economic activity at issue, in a manner that increases the level of environmental protection. The aid may be considered proportionate where the conditions set out in points 199 to 204 are fulfilled.

⁸⁷ For example, for recharging infrastructure, normal or high power.

⁸⁸ For such an assessment, the Commission will generally consider whether the recharging or refuelling infrastructure is expected to be deployed on commercial terms within a period that is relevant taking into consideration the duration of the measure. It will base its assessment on the results of the *ex ante* public consultation, independent market studies submitted by the Member State or on any other appropriate evidence.

199. The aid must be granted following a competitive bidding process conducted in accordance with the criteria set out in points 49 and 50. The design of the competitive bidding process must ensure that sufficient incentives remain for applicants to bid for projects concerning recharging or refuelling infrastructure supplying only renewable electricity or renewable hydrogen. The application of the award criteria must not result in projects concerning recharging or refuelling infrastructure supplying only renewable electricity or renewable hydrogen being put at a disadvantage compared to projects concerning recharging or refuelling infrastructures that also supply electricity or hydrogen that is more CO₂-intensive compared to renewable electricity or renewable hydrogen or that is not renewable. Where appropriate, bid caps may be required to limit the maximum bid from individual bidders in particular categories. Any bid caps should be justified with reference to the quantification for reference projects referred to in points 51, 52 and 53.
200. By way of derogation from point 199, the aid may be granted on the basis of methods other than a competitive bidding process in the following cases:
- (a) where the expected number of participants is not sufficient to ensure effective competition or avoid strategic bidding;
 - (b) where a competitive bidding process, as set out in points 49 and 50, cannot be organised;
 - (c) where the aid is granted for recharging or refuelling infrastructure intended exclusively or primarily for use by undertakings active in the sector of public passenger transport by land, rail or water⁸⁹;
 - (d) where the aid is granted for recharging or refuelling infrastructure intended exclusively or primarily for use by the aid beneficiary and which is not accessible to the public⁹⁰, if adequately justified by the Member State concerned; or
 - (e) where the aid is granted for recharging or refuelling infrastructure intended for use by certain types of vehicle for which the relevant market penetration rate (per relevant type of vehicle) in the Member State concerned or the traffic volumes in the region or regions concerned are very limited⁹¹.
201. In the cases listed in point 200, the aid amount may be determined on the basis of a funding gap analysis as set out in points 48, 51 and 52. The Member State must conduct an *ex post* monitoring to verify the assumptions made about the level of aid required and put in place a claw-back mechanism as set out in point 55.

⁸⁹ Recharging or refuelling infrastructure intended primarily for use by undertakings active in the sector of public passenger transport by land, rail or water may be open on an ancillary basis for use by employees, external contractors or suppliers of those undertakings.

⁹⁰ Recharging or refuelling infrastructure intended primarily for use by the aid beneficiary may be open on an ancillary basis for use by employees, external contractors or suppliers of the aid beneficiary.

⁹¹ For instance, a measure targeting aid for investments in hydrogen refuelling stations for heavy-duty vehicles at freight terminals and logistics parks in a Member State in which the market share of hydrogen heavy-duty vehicles is less than 2 %.

202. Alternatively to point 201, the aid may be considered proportionate if it does not exceed 30 % of the eligible costs or, where the recharging or refuelling infrastructure supplies only renewable electricity or renewable hydrogen, 40 % of the eligible costs. The aid intensity may be increased by 10 percentage points for medium-sized enterprises or by 20 percentage points for small enterprises. The aid intensity may be increased by 15 percentage points for investments located in assisted areas fulfilling the conditions in Article 107(3), point (a), of the Treaty or by 5 percentage points for investments located in assisted areas fulfilling the conditions in Article 107(3), point (c), of the Treaty.
203. In such cases, the eligible costs are all the investment costs for the construction, installation, upgrade or extension of recharging or refuelling infrastructure. For instance, these may include the costs of:
- (a) the recharging or refuelling infrastructure and related technical equipment;
 - (b) the installation of or upgrades to electrical or other components, including electrical cables and power transformers, required for connecting the recharging or refuelling infrastructure to the grid or to a local electricity or hydrogen production or storage unit and for ensuring the smart readiness of recharging infrastructure;
 - (c) civil engineering works, land or road adaptations, installation costs and costs for obtaining related permits.
204. Where a project includes the on-site production of renewable electricity or renewable or low-carbon hydrogen or the on-site storage of electricity or renewable or low-carbon hydrogen, the eligible costs may include the investment costs of the production units or of the storage facilities.

4.3.2.4 Avoidance of undue negative effects on competition and trade and balancing

205. The requirements set out in points 206 to 216 apply in addition to those set out in Section 3.2.2.
206. New recharging infrastructure that allow for a transfer of electricity with a power output of up to 22 kW must be capable of supporting smart recharging functionalities. This would ensure that recharging operations are optimised and managed in a way that does not cause congestion and takes full advantage of the availability of renewable electricity and low electricity prices in the system.
207. To avoid the duplication of infrastructure and make use of assets that have not yet reached the end of their economic lifetime, in the case of refuelling infrastructure for waterborne and air transport supplying synthetic fuels, including renewable liquid and gaseous transport fuels of non-biological origin, or biofuels⁹², the Member State must justify the need for new infrastructure, taking into account the technical characteristics of the fuel or fuels to be supplied using that infrastructure. In the case of drop-in⁹³

⁹² This includes sustainable aviation fuels.

⁹³ Drop-in fuels refer to fuels that are functionally equivalent to the fossil fuels currently in use and fully compatible with the distribution infrastructure and the on-board machinery and engines.

synthetic fuels or biofuels, the Member State must consider the extent to which existing infrastructure can be used for the supply of drop-in synthetic fuels or biofuels.

208. Aid for the construction, installation, upgrade or extension of refuelling infrastructure may unduly distort competition where it displaces investments into cleaner alternatives that are already available on the market, or where it locks in certain technologies, thereby hampering the development of a market for cleaner technologies and their use. Therefore, in those cases, the Commission considers that the negative effects on competition of aid for refuelling infrastructure supplying natural gas-based fuels are unlikely to be offset.
209. Given the current stage of development of the market for clean mobility technologies in the waterborne sectors, aid for the construction, installation, upgrade or extension of CNG and LNG refuelling infrastructure for waterborne transport may be considered as not having long-term lock-in effects and not displacing investments into cleaner technologies if the Member State demonstrates that cleaner alternatives are not readily available on the market and are not expected to be available in the short term⁹⁴, and provided that the infrastructure would be used to trigger the transition towards low-carbon fuels. When assessing such aid, the Commission will take into account whether the investment forms part of a credible decarbonisation pathway and the aid contributes to achieving targets set out in Union legislation on the deployment of alternative fuel infrastructure.
210. In the area of road transport, zero-emission vehicles are already a realistic option, especially for light duty vehicles. As regards heavy-duty vehicles, these are expected to become more widely available on the market in the near future. Therefore, aid for LNG refuelling infrastructure for heavy-duty vehicles granted after 2025 is likely to have negative effects on competition that are unlikely to be offset by any positive effects. When assessing aid for refuelling infrastructure for heavy-duty vehicles, the Commission will take into account whether it contributes to achieving targets set out in Union legislation on the deployment of alternative fuel infrastructure.
211. Alternatives to fossil-based fuels are already available on the market for use in the road transport sector, certain segments of the waterborne transport sector and the rail transport sector. In this context, aid for the deployment of refuelling infrastructure supplying fuels produced using fossil-based sources or energy, including fossil-based hydrogen⁹⁵, is not considered to yield the same positive effects as aid for deployment of refuelling infrastructure supplying non-fossil-based or low-carbon fuels. Firstly, the CO₂ emission reductions achieved in the transport sector are likely to be counterbalanced by the continuation of CO₂ emissions linked to the production and use of fossil-based fuels, especially where these are not effectively captured and stored. Secondly, the granting of aid for refuelling infrastructure that supplies fossil-based fuels that are not low-carbon, may entail a risk of locking in certain production technologies,

⁹⁴ For such an assessment, the Commission will generally consider a period of between two to five years following the notification or the implementation of the aid measure. It will base its assessment on independent market studies submitted by the Member State or on any other appropriate evidence.

⁹⁵ See Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'A hydrogen strategy for a climate-neutral Europe', COM(2020) 301 final, p. 3.

thereby displacing investments into cleaner alternatives by shifting demand away from production processes that do not involve the use of fossil-based sources or energy, or that are low-carbon. This would also discourage the development of the market for clean, non-fossil-based technologies for zero-emission mobility, and for the production of non-fossil fuels and energy. The Commission therefore considers that the negative effects on competition of aid for refuelling infrastructure supplying fossil-based fuels, including fossil-based hydrogen, where greenhouse gases emitted as part of the hydrogen production are not effectively captured, are unlikely to be offset, in the absence of a credible pathway towards the supply and use of renewable or low-carbon fuels in the medium term.

212. Aid for hydrogen refuelling infrastructure that does not exclusively supply renewable hydrogen or low-carbon hydrogen may therefore be regarded as not having long-term lock-in effects or not displacing investments into cleaner technologies if the Member State demonstrates a credible pathway towards the phasing out of hydrogen that is not renewable or low-carbon to supply the refuelling infrastructure by 2035.
213. In the absence of appropriate safeguards, the aid may result in the creation or the strengthening of market power positions, which may prevent or impair effective competition in nascent or developing markets. The Member State must therefore ensure that the design of the aid measure contains appropriate safeguards to address that risk. Those safeguards can include, for instance, the establishment of a maximum percentage of the budget for the measure that can be allocated to one single undertaking.
214. Where appropriate, the Commission will assess whether sufficient safeguards are in place to ensure that operators of recharging or refuelling infrastructure that offer or allow contract-based payments on their infrastructure do not unduly discriminate between mobility service providers, for example by applying unjustified preferential access conditions, or through unjustified price differentiation. Where such safeguards are not in place, the Commission considers that the measure may likely lead to undue negative effects on competition in the market for mobility services.
215. Any concession or other entrustment to a third party to operate the recharging or refuelling infrastructure must be awarded on a competitive, transparent and non-discriminatory basis, having due regard to the Union public procurement rules, where applicable.
216. Where aid is granted for the construction, installation, upgrade or extension of recharging or refuelling infrastructure that is open for access by users other than the aid beneficiary or beneficiaries, including publicly accessible recharging or refuelling infrastructure, the infrastructure must be accessible to the public and provide non-discriminatory access to users, including, as appropriate, in relation to tariffs, authentication and payment methods and other terms and conditions of use. In addition, the Member State must ensure that the fees charged to users other than the aid beneficiary or beneficiaries for using the recharging or refuelling infrastructure correspond to market prices.

4.4 Aid for resource efficiency and for supporting the transition towards a circular economy

4.4.1 Rationale for the aid

217. The Circular Economy Action Plan ('CEAP')⁹⁶ provides a future-oriented agenda which aims at accelerating the Union's transition to a circular economy as part of the transformational change promoted by the European Green Deal Communication. The CEAP promotes circular economy processes, encourages sustainable consumption and production, and aims to ensure that waste is prevented and that resources used are kept in the Union economy for as long as possible. Those goals are also a prerequisite to achieving the Union's 2050 climate neutrality target and a cleaner and more sustainable economy.
218. The CEAP specifically mentions the need to reflect objectives linked to the circular economy in the context of the revision of the State aid guidelines in the field of the environment and energy. In this respect, financial support in the form of State aid, combined with broad, clear, and consistent rules, can play a key role in supporting circularity in production processes as part of a wider transformation of the Union industry towards climate-neutrality and long-term competitiveness. It can also play a key role in helping to create a well-functioning Union market for secondary raw materials that will reduce pressure on natural resources and will create sustainable growth and jobs and will strengthen resilience.
219. The CEAP further recognises the increasing importance of biological resources as key input to the economy of the EU. In line with the EU Bioeconomy Strategy⁹⁷, the bioeconomy is supportive of the European Green Deal objectives, as it contributes to a carbon neutral economy, enhances environmental, economic, and social sustainability, and promotes green growth. Financial support in the form of State aid can play a key role in supporting the deployment of sustainable bioeconomy practices, such as the support for sustainably produced bio-based materials and products, which can help to achieve climate neutrality and would not be taken up by the market alone.

4.4.2 Scope and supported activities

220. Aid under this Section may be granted for the following types of investments:
- (a) investments aimed at improving resource efficiency through any of the following:
 - (i) a net reduction in the resources consumed in the production of the same quantity of output⁹⁸;

⁹⁶ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'A new Circular Economy Action Plan For a cleaner and more competitive Europe', COM(2020) 98 final.

⁹⁷ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'A sustainable Bioeconomy for Europe: Strengthening the connection between economy, society and the environment', COM(2018)673 final and SWD(2018)431.

⁹⁸ The resources consumed may include all material resources consumed, with the exception of energy. The reduction may be determined by measuring or estimating consumption before and after the

- (ii) the replacement of primary raw materials or feedstock with secondary (re-used or recycled) or recovered raw materials or feedstock; or
 - (iii) the replacement of fossil-based raw materials or feedstock with bio-based raw materials or feedstock;
- (b) investments for the reduction, prevention, preparing for re-use, material recovery, decontamination and recycling of waste⁹⁹ generated by the beneficiary;
 - (c) investments for the preparing for re-use, material recovery, decontamination and recycling of waste generated by third parties and which would otherwise be disposed of, or be treated based on a treatment operation that is situated lower in the priority order of the waste hierarchy¹⁰⁰ or in a less resource-efficient manner, or would lead to a lower quality of recycling;
 - (d) investments for the reduction, prevention, preparing for re-use, material recovery, decontamination, re-use and recycling of other products, materials or substances¹⁰¹ generated by the beneficiary or by third parties, which do not necessarily qualify as waste, and which would otherwise be unused, disposed of or recovered in a less resource-efficient manner, would constitute waste unless re-used or would lead to a lower quality of recycling;
 - (e) investments for the separate collection¹⁰² and sorting of waste or other products, materials or substances with a view to the preparing for re-use or recycling.
221. Under certain conditions, aid to cover operating costs may be granted for the separate collection and sorting of waste in relation to specific waste streams or types of waste (see point 247).
222. Aid relating to the recovery of residual heat from production processes or aid relating to CCU will be assessed under the conditions applicable to aid for the reduction of greenhouse gas emissions set out in Section 4.1.
223. Aid relating to the production of biofuels, bioliquids, biogas and biomass fuels from waste will be assessed under the conditions applicable to aid for the reduction of greenhouse gas emissions set out in Section 4.1.

implementation of the aid measure, including any adjustment for external conditions that may affect resource consumption.

⁹⁹ See the definitions of re-use, recovery, preparing for re-use, recycling, and waste in points 19(59), (61), (62), (75) and (90).

¹⁰⁰ The waste hierarchy consists of (a) prevention, (b) preparing for re-use, (c) recycling, (d) other recovery, for instance energy recovery, and (e) disposal. See Article 4, point (1), of Directive 2008/98/EC.

¹⁰¹ Other products, materials or substances may include by-products (as referred to in Article 5 of Directive 2008/98/EC), agricultural, aquaculture, fisheries and forestry residues, waste water, rain water and runoff water, minerals, mining waste, nutrients, residual gases from production processes, redundant products, parts and materials, etc. Redundant products, parts and materials are products, parts or materials that are no longer needed by or useful for its holder but are suitable for re-use.

¹⁰² See the definition of 'separate collection' in Article 3, point (11), of Directive 2008/98/EC.

224. Aid for energy generation from waste will be assessed under the conditions applicable to aid for the reduction of greenhouse gas emissions set out in Section 4.1. Where it is related to investments in district heating and cooling systems or for their operation, aid for the production of energy or heat from waste will be assessed under the conditions applicable to aid for district heating or cooling set out in Section 4.10.

4.4.3 *Incentive effect*

225. The requirements set out in points 226 to 233 apply in addition to those set out in Section 3.1.2.

226. As regards the requirement set out in point 28 for the Member State to identify a credible counterfactual scenario, the counterfactual scenario will generally correspond to an investment with the same capacity, lifetime and, where appropriate, other relevant technical characteristics, as the environmentally-friendly investment.

227. The counterfactual scenario may also consist in maintaining the existing installations or equipment in operation for a period corresponding to the lifetime of the environmentally-friendly investment. In that case, the discounted maintenance, repair and modernisation costs over that period should be taken into account.

228. In certain cases, the counterfactual scenario may consist in a later replacement of the installations or equipment, in which case the discounted value of the installations and equipment should be taken into account and the difference in the respective economic lifetime of the installations or equipment should be equalised.

229. In the case of equipment subject to leasing arrangements, the discounted value of the leasing of the environmentally-friendly equipment should be compared with the discounted value of the leasing of the less environmentally-friendly equipment that would be used in the absence of the aid.

230. Where the investment consists in adding installations or equipment to existing facilities, installations or equipment, the eligible costs will consist of the total investment costs.

231. The Commission considers that, in principle, aid to projects with a payback period of less than five years does not have an incentive effect. However, the Member State may provide evidence to demonstrate that aid is needed to trigger a change in behaviour, even in the case of projects with a shorter payback period.

232. Aid for investments enabling undertakings to merely comply with mandatory Union standards already in force will not be considered to have an incentive effect (see point 32). As explained in point 32, aid may be regarded as having an incentive effect where it enables an undertaking to increase its level of environmental protection in compliance with mandatory national standards that are more stringent than Union standards or that are adopted in the absence of Union standards.

233. Aid for the adaptation to Union standards adopted but not yet in force will be considered to have an incentive effect if the investment is implemented and finalised at least 18 months before the Union standards enter into force.

4.4.4 *Minimisation of distortions on competition and trade*

4.4.4.1 Necessity of the aid

234. The requirements set out in points 235 and 236 apply in addition to those set out in Section 3.2.1.1.
235. The investment must go beyond established commercial practices that are generally applied throughout the Union and across technologies¹⁰³.
236. In the case of aid for the separate collection and sorting of waste or other products, materials or substances, the Member State must demonstrate that such separate collection and sorting is underdeveloped in that Member State¹⁰⁴. Where aid to cover operating costs is granted, the Member State must demonstrate that such aid is required during a transitional period to facilitate the development of activities relating to the separate collection and sorting of waste. The Member State must take into account any obligations of undertakings under extended producer responsibility schemes, which it may have implemented pursuant to Article 8 of Directive 2008/98/EC.

4.4.4.2 Appropriateness

237. The requirements set out in point 238 apply in addition to those set out in Section 3.2.1.2.
238. In accordance with the ‘polluter pays’ principle¹⁰⁵, undertakings generating waste should not be relieved from the costs of waste treatment. The aid should therefore not relieve undertakings that generate waste from any costs or obligations relating to the treatment of waste for which they are liable under Union or national law, including under extended producer responsibility schemes. In addition, the aid should not relieve undertakings from costs that should be considered as normal costs for an undertaking.

4.4.4.3 Proportionality

239. The eligible costs are the extra investment costs determined by comparing the total investment costs of the project with those of a less environmentally-friendly project or activity, which may be one of the following:
- (a) a comparable investment as described under point 226 that would credibly be realised without aid and which does not achieve the same level of resource efficiency;
 - (b) treating the waste based on a treatment operation that is situated lower in the priority order of the waste hierarchy or in a less resource-efficient way;

¹⁰³ From a technological perspective, the investment should lead to a higher degree of recyclability or to a higher quality of the recycled material as compared to normal practice.

¹⁰⁴ Where adequately demonstrated by the Member State, the specific situation at the level of the region or regions concerned may also be considered.

¹⁰⁵ See the definition in point 19(58).

- (c) the conventional production process relating to the primary raw material or product, if the re-used or recycled (secondary) product is technically and economically substitutable with the primary raw material or product;
 - (d) any other counterfactual scenario based on duly justified assumptions.
240. Where the product, substance or material would constitute waste unless re-used and there is no legal requirement for that product, substance or material to be disposed of or otherwise be treated, the eligible costs may correspond to the investment necessary to recover the product, substance or material concerned.
241. The aid intensity must not exceed 40 % of the eligible costs.
242. The aid intensity may be increased by 10 percentage points for medium-sized enterprises or by 20 percentage points for small enterprises.
243. The aid intensity may be increased by 15 percentage points for investments located in assisted areas fulfilling the conditions in Article 107(3), point (a), of the Treaty or by 5 percentage points for investments located in assisted areas fulfilling the conditions in Article 107(3), point (c), of the Treaty.
244. The aid intensity may be increased by 10 percentage points for eco-innovation activities, provided that the following cumulative conditions are fulfilled:
- (a) the eco-innovation activity must be new or substantially improved compared to the state of the art in its industry in the Union¹⁰⁶;
 - (b) the expected environmental benefit must be significantly higher than the improvement resulting from the general evolution of the state of the art in comparable activities¹⁰⁷;
 - (c) the innovative character of the activity involves a clear degree of risk, in technological, market or financial terms, which is higher than the risk generally associated with comparable non-innovative activities¹⁰⁸.

¹⁰⁶ The novelty could, for example, be demonstrated by the Member States on the basis of a precise description of the innovation and of market conditions for its introduction or diffusion, comparing it with state-of-the-art processes or organisational techniques generally used by other undertakings in the same industry.

¹⁰⁷ If quantitative parameters can be used to compare eco-innovative activities with standard, non-innovative activities, 'significantly higher' means that the marginal improvement expected from eco-innovative activities in terms of reduced environmental risk or pollution or improved efficiency in energy or resources should be at least twice as high as the marginal improvement expected from the general evolution of comparable non-innovative activities. Where the proposed approach is not appropriate for a given case, or if no quantitative comparison is possible, the application file for State aid should contain a detailed description of the method used to assess this criterion, ensuring a standard comparable to that of the proposed method.

¹⁰⁸ This risk could be demonstrated by the Member State for instance in terms of: costs in relation to the undertaking's turnover, time required for the development, expected gains from the eco-innovation activity in comparison with the costs, and probability of failure.

245. By way of derogation from points 241 to 244, the Member State may also demonstrate, based on a funding gap analysis, as set out in points 48, 51 and 52, that a higher aid intensity is required. In such a case, the Member State must conduct an *ex post* monitoring to verify the assumptions made about the level of aid required and put in place a claw-back mechanism, as set out in point 55. The aid amount must not exceed the funding gap, as set out in points 51 and 52.
246. Where the aid is granted following a competitive bidding process conducted in accordance with the criteria set out in points 49 and 50, the aid amount is considered proportionate.
247. The aid may cover operating costs where it relates to the separate collection and sorting of waste or other products, materials or substances in relation to specific waste streams or types of waste with a view to the preparing for re-use or recycling, in which case the following conditions must be fulfilled:
- (a) the aid must be granted following a competitive bidding process conducted in accordance with the criteria set out in points 49 and 50 which must be open, on a non-discriminatory basis, to all operators providing separate collection and sorting services;
 - (b) where there is a high level of uncertainty about the future evolution of the operating costs for the duration of the measure, the competitive bidding process may include rules that limit aid in certain well-identified circumstances, provided those rules and circumstances are established *ex ante*;
 - (c) any investment aid granted to an installation used for the separate collection and sorting of waste in relation to specific waste streams or types of waste must be deducted from the operating aid granted to that same installation when both forms of aid cover the same eligible costs;
 - (d) the aid may be granted for a maximum period of five years.

4.4.5 *Avoidance of undue negative effects on competition and trade*

248. The requirements set out in points 249 to 252 apply in addition to those set out in Section 3.2.2.
249. The aid must not incentivise the generation of waste or the increased use of resources.
250. The aid must not merely increase demand for the waste or other materials and resources intended to be re-used, recycled or recovered without increasing the collection of those materials.
251. When assessing the impact of the aid on the market, the Commission will take into account the potential effects of the aid on the functioning of the markets for primary and secondary materials relating to the products concerned.
252. In particular, when assessing the impact on the market of aid for operating costs relating to the separate collection and sorting of waste or other products, materials or substances in relation to specific waste streams or types of waste in view of preparing

for re-use or recycling, the Commission will take into account the potential interactions with extended producer responsibility schemes in the Member State concerned.

4.5 Aid for the prevention or the reduction of pollution other than from greenhouse gases

4.5.1 Rationale for the aid

253. The European Green Deal Communication's zero pollution ambition for a toxic-free environment should ensure that, by 2050, pollution is reduced to levels no longer harmful for humans and natural ecosystems and respect the boundaries our planet can cope with, thus creating a toxic-free environment, in line with the UN 2030 Agenda for Sustainable Development¹⁰⁹ and the long-term objectives of the 8th Environment Action Programme¹¹⁰. The Union has set out specific targets for reducing the level of pollution, such as for cleaner air¹¹¹ and for zero pollution of water bodies¹¹², less noise, minimised used and release of substances of concern, plastic litter and microplastics pollution and waste¹¹³, as well as targets for excess nutrients and fertilisers, hazardous pesticides and substances causing antimicrobial resistance¹¹⁴.
254. Financial support in the form of State aid can contribute substantially to the environmental objective of reducing forms of pollution other than from greenhouse gas emissions.

4.5.2 Scope and supported activities

255. Aid for the prevention or the reduction of pollution other than from greenhouse gases may be granted for investments enabling undertakings to go beyond Union standards for environmental protection, to increase the level of environmental protection in the

¹⁰⁹ The UN 2030 Agenda for Sustainable Development is available at:

<https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf>.

¹¹⁰ Proposal for a Decision of the European Parliament and of the Council on a General Union Environment Action Programme to 2030, COM(2020) 652 final.

¹¹¹ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'A Clean Air Programme for Europe', COM(2013) 918 final. See also Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air (OJ L 23, 26.1.2005, p. 3) and Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe (OJ L 152, 11.6.2008, p. 1) for ground-level ozone, particulate matter, nitrogen oxides, dangerous heavy metals and a number of other pollutants. See also Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC (OJ L 344, 17.12.2016, p. 1) for the most important transboundary air pollutants: sulphur dioxides, nitrogen oxides, ammonia, non-methane volatile organic compounds and particulate matter.

¹¹² Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ L 327, 22.12.2000, p. 1) requires, unless exemptions apply, good ecological status, for all surface and groundwater bodies.

¹¹³ 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.

¹¹⁴ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system', COM(2020) 381 final.

absence of Union standards or to comply with Union standards that are adopted but not yet in force.

256. Where the aid is granted in the form of tradable permits¹¹⁵, the aid measure must be designed in such a way as to prevent or reduce pollution beyond the levels imposed by Union standards that are mandatory for the undertakings concerned.
257. The aid must target the prevention or reduction of pollution directly linked to the beneficiary's own activities.
258. The aid must not merely displace pollution from one sector to another or from one environmental medium to another (for example, from air to water). Where the aid targets the reduction of pollution, it must achieve an overall reduction of pollution.
259. Section 4.5 does not apply to aid measures that fall within the scope of Section 4.1. Where a measure contributes to both the prevention or reduction of greenhouse gas emissions and the prevention or reduction of pollution other than from greenhouse gas emissions, the compatibility of the measure will be assessed either on the basis of Section 4.1 or on the basis of this Section, depending on which of the two objectives is predominant¹¹⁶.

4.5.3 *Incentive effect*

260. The requirements set out in points 261 and 262 apply in addition to those set out in Section 3.1.2.
261. Aid is considered to have an incentive effect when it enables an undertaking to prevent or reduce pollution in the absence of Union standards or beyond the levels required by Union standards that are already in force. As explained in point 32, aid may also be regarded as having an incentive effect where it enables an undertaking to prevent or reduce pollution in compliance with mandatory national standards that are more stringent than the Union standards or that are adopted in the absence of Union standards.
262. Aid for the adaptation to Union standards adopted but not yet in force will be considered to have an incentive effect if the investment is implemented and finalised at least 18 months before the Union standards enter into force.

4.5.4 *Minimisation of distortions on competition and trade*

4.5.4.1 *Necessity of the aid*

263. The requirements set out in point 264 apply in addition to those set out in Section 3.2.1.1.

¹¹⁵ Tradable permits can involve State aid, in particular when Member States grant permits and allowances below their market value.

¹¹⁶ To determine which of the two objectives is predominant the Commission may require the Member State to provide a comparison of the expected results of the measure in terms of the prevention or reduction of emissions of greenhouse gases and of other pollutants on the basis of credible, detailed quantifications.

264. For aid in the form of tradable permits¹¹⁷, the Member State must demonstrate that the following cumulative conditions are fulfilled:
- (a) full auctioning leads to a substantial increase in production costs for each sector or category of individual beneficiaries;
 - (b) the substantial increase in production costs cannot be passed on to customers without leading to significant sales reductions¹¹⁸;
 - (c) individual undertakings in the sector do not have the possibility to reduce emission levels in order to reduce the cost of the certificates to a level that is bearable for those undertakings. The fact that consumption cannot be reduced may be demonstrated by comparing the emission levels with those derived from the best performing technique in the European Economic Area. Any undertaking achieving the best performing technique can benefit at most from an allowance under the tradable permit scheme corresponding to the increase in production cost, and which cannot be passed on to customers. Any undertaking having a worse environmental performance benefits from a lower allowance, proportionate to its environmental performance.

4.5.4.2 Proportionality

265. The eligible costs are the extra investment costs directly linked to the achievement of a higher level of environmental protection.
266. The extra investment costs consist of the difference between the aided investment costs and those of the investment under the counterfactual scenario as described in points 226 to 230. Where the project consists in the early adaptation to Union standards that are not yet in force, the counterfactual scenario should in principle be that described in point 228.
267. The aid intensity must not exceed 40 % of the eligible costs.
268. The aid intensity may be increased by 10 percentage points for medium-sized enterprises or by 20 percentage points for small enterprises.
269. The aid intensity may be increased by 15 percentage points for investments located in assisted areas fulfilling the conditions in Article 107(3), point (a), of the Treaty or by 5 percentage points for investments located in assisted areas fulfilling the conditions in Article 107(3), point (c), of the Treaty.
270. The aid intensity may be increased by 10 percentage points for eco-innovation activities, provided that the conditions set out in point 244(a) to (c) are fulfilled.

¹¹⁷ Tradable permits can involve State aid, in particular when Member States grant permits and allowances below their market value.

¹¹⁸ The analysis may be conducted on the basis of estimates of the product price elasticity of the sector concerned, among other factors, as well as on estimates of lost sales as well as their impact on the profitability of the beneficiary.

271. By way of derogation from points 267 to 270, the Member State may also demonstrate, based on a funding gap analysis, as set out in points 48, 51 and 52, that a higher aid amount is required. In such a case, the Member State must conduct an *ex post* monitoring to verify the assumptions made about the level of aid required and put in place a claw-back mechanism, as set out in point 55. The aid amount must not exceed the funding gap, as set out points 51 and 52.
272. Where the aid is granted following a competitive bidding process conducted in accordance with the criteria set out in points 49 and 50, the aid amount is considered proportionate.
273. For aid in the form of tradable permits, the Commission will also verify that:
- (a) the allocation is carried out in a transparent way, based on objective criteria and on data sources of the highest quality available; and
 - (b) the total amount of tradable permits or allowances granted to each undertaking for a price below their market value is not higher than its expected needs as estimated for a situation without the trading scheme.

4.5.5 *Avoidance of undue negative effects on competition and trade*

274. The requirements set out in point 275 apply in addition to those set out in Section 3.2.2.
275. For aid in the form of tradable permits, the Commission will also verify that:
- (a) the choice of beneficiaries is based on objective and transparent criteria and the aid is granted in principle in the same way for all competitors in the same sector if they are in a similar factual situation;
 - (b) the allocation methodology does not favour certain undertakings¹¹⁹ or certain sectors, unless it is justified by the environmental logic of the scheme itself or where such rules are necessary for consistency with other environmental policies;
 - (c) new entrants do not receive permits or allowances on more favourable conditions than existing undertakings operating on the same markets;
 - (d) where higher allocations are granted to existing installations compared to new entrants, this does not result in creating undue barriers to entry.

4.6 Aid for the remediation of environmental damage, the rehabilitation of natural habitats and ecosystems, the protection or restoration of biodiversity and the implementation of nature-based solutions for climate change adaptation and mitigation

4.6.1 Rationale for the aid

276. The Biodiversity Strategy for 2030¹²⁰ aims at protecting nature, reversing the degradation of ecosystems and putting the Union's biodiversity on a path to recovery

¹¹⁹ For example new entrants or on the contrary existing undertakings or installations.

by 2030. As a core part of the European Green Deal Communication, it sets ambitious targets and commitments for 2030 to achieve healthy and resilient ecosystems.

277. Financial support in the form of State aid can contribute substantially to the environmental objective of protecting and restoring biodiversity and ecosystems, in several ways, including by providing incentives to repair the damage to contaminated sites, rehabilitate degraded natural habitats and ecosystems or undertake investments for the protection of ecosystems.
278. The EU strategy for adaptation to climate change¹²¹ aims at leveraging investments in nature-based solutions for adaptation¹²², given that their implementation on a large scale would increase climate resilience and contribute to multiple objectives of the European Green Deal.

4.6.2 *Scope and supported activities*

279. This Section lays down compatibility rules for aid measures for the remediation of environmental damage, the rehabilitation of natural habitats and ecosystems, the protection or restoration of biodiversity and the implementation of nature-based solutions for climate change adaptation and mitigation.
280. This Section does not apply to:
- (a) aid for remediation or rehabilitation following the closure of power plants and mining or extraction operations to the extent that the aid in question is covered by Section 4.12¹²³;
 - (b) aid to make good the damage caused by natural disasters, such as earthquakes, avalanches, landslides, floods, tornadoes, hurricanes, volcanic eruptions and wild fires of natural origin.
281. Aid under this Section may be granted for the following activities:
- (a) the remediation of environmental damage, including damage to the quality of the soil, surface water or groundwater or to the marine environment;
 - (b) the rehabilitation of natural habitats and ecosystems from a degraded state;
 - (c) the protection or restoration of biodiversity or of ecosystems to contribute to achieving the good condition of ecosystems or to protect ecosystems that are already in good condition;

¹²⁰ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions ‘EU biodiversity Strategy for 2030 bringing nature back into our lives’, COM(2020) 380 final.

¹²¹ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions ‘Forging a climate-resilient Europe – the new EU Strategy on Adaptation to Climate Change’, COM(2021) 82 final.

¹²² <https://www.eea.europa.eu/publications/nature-based-solutions-in-europe/>.

¹²³ For instance, aid for the rewetting of peatlands that is not linked to aid for the early closure of peat extraction operations or to aid for exceptional costs linked to such activities may be covered under Section 4.6.

(d) the implementation of nature-based solutions for climate change adaptation and mitigation.

282. This Section does not apply to aid measures that fall within the scope of Section 4.1. Where a measure contributes to both the reduction of greenhouse gas emissions and the remediation of environmental damage, the rehabilitation of natural habitats and ecosystems, the protection or restoration of biodiversity and the implementation of nature-based solutions for climate change adaptation and mitigation, the compatibility of the measure will be assessed either on the basis of Section 4.1 or of this Section, depending on which of the two objectives is predominant¹²⁴.

4.6.3 *Incentive effect*

283. The requirements set out in points 284 to 287 apply in addition to those set out in Section 3.1.2.

284. Without prejudice to Directive 2004/35/EC of the European Parliament and of the Council or other relevant Union rules¹²⁵, aid for the remediation of environmental damage, the rehabilitation of natural habitats and ecosystems, the protection or restoration of biodiversity and the implementation of nature-based solutions for climate change adaptation and mitigation may be regarded as having an incentive effect only when the entity or undertaking at the origin of the environmental damage cannot be identified or be held legally liable for financing the works necessary to prevent and correct environmental damage in accordance with the ‘polluter pays’ principle.

285. The Member State must demonstrate that all necessary measures, including legal action, have been taken to identify the liable entity or undertaking at the origin of the environmental damage and make it bear the relevant costs. Where the entity or undertaking liable under the applicable law cannot be identified or made to bear the costs, aid may be granted to support the entire remediation or rehabilitation works and may be regarded as having an incentive effect. The Commission may consider that an undertaking cannot be made to bear the costs of remediating the environmental damage it has caused where it has ceased to legally exist and no other undertaking can be regarded as its legal or economic successor¹²⁶ or where there is insufficient financial security to meet the costs of remediation.

¹²⁴ To determine which of the two objectives is predominant the Commission may require the Member State to provide a comparison of the expected results of the measure in terms of the prevention or reduction of emissions of greenhouse gases and of the remediation of environmental damage, the rehabilitation of natural habitats and ecosystems, the protection or restoration of biodiversity and the implementation of nature-based solutions for climate change adaptation and mitigation, where appropriate on the basis of credible, detailed quantifications.

¹²⁵ Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage (OJ L 143 30.4.2004, p. 56). See also Commission Notice Guidelines providing a common understanding of the term ‘environmental damage’ as defined in Article 2 of Directive 2004/35/EC of the European Parliament and of the Council on environmental liability with regard to the prevention and remedying of environmental damage (OJ C 118, 7.4.2021, p. 1).

¹²⁶ See Commission Decision C(2012) 558 final of 17 October 2012 in case SA.33496 (2011/N) – Austria – Einzelfall, Altlast, DECON Umwelttechnik GmbH, recitals 65-69 (OJ C 14, 17.1.2013, p. 1).

286. Aid granted for the implementation of compensatory measures referred to in Article 6, point (4), of Council Directive 92/43/EEC¹²⁷ does not have an incentive effect. Aid to cover the extra costs necessary to increase the scope or ambition of those measures beyond the legal obligations under Article 6, point (4), of that Directive may be found to have an incentive effect.
287. Aid for the remediation of environmental damage and for the rehabilitation of natural habitats and ecosystems will be considered to have an incentive effect when the remediation or rehabilitation costs exceed the increase in land value (see point 288).

4.6.4 Proportionality

288. For investments in the remediation of environmental damage or the rehabilitation of natural habitats and ecosystems, the eligible costs are the costs incurred for the remediation or rehabilitation works, less the increase in the value of the land or property. Evaluations of the increase in value of the land or property resulting from the remediation or rehabilitation must be carried out by an independent qualified expert.
289. For investments in the protection or restoration of biodiversity and in the implementation of nature-based solutions for climate change adaptation and mitigation, the eligible costs are the total costs of the works resulting in the contribution to protecting or restoring biodiversity or in the implementation of nature-based solutions for climate change adaptation and mitigation.
290. Where aid is granted for the implementation of nature-based solutions in buildings, for which an energy performance certificate exists, Member States would need to demonstrate that these investments do not prevent the implementation of energy efficiency measures recommended in the energy performance certificate.
291. The aid intensity may reach up 100 % of the eligible costs.

4.7 Aid in the form of reductions in taxes or parafiscal levies

292. Section 4.7 covers aid in the area of environmental protection in the form of reduction in taxes or parafiscal levies. It is structured in two sub-sections, each of them having a distinct logic. Section 4.7.1 tackles taxes or levies which sanction environmentally harmful behaviour and therefore aim to direct undertakings and consumers towards more environmentally-friendly choices. Under Section 4.7.2, Member States may choose to encourage, by means of targeted reductions in taxes or levies, undertakings to change or adapt their behaviour by engaging in more environmentally-friendly projects or activities.

4.7.1 Aid in the form of reductions in environmental taxes and parafiscal levies

4.7.1.1 Rationale for the aid

293. Environmental taxes or parafiscal levies are imposed in order to internalise the external costs of environmentally harmful behaviour, thereby discouraging such behaviour by putting price on it and increasing the level of environmental protection. In principle,

¹²⁷ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.7.1992, p. 7).

environmental taxes and parafiscal levies should reflect the overall costs to society (external costs), and correspondingly, the amount of tax or parafiscal levy paid per unit of emissions, other pollutants or resources consumed should be the same for all the undertakings that are responsible for the environmentally harmful behaviour. While reductions in environmental taxes or parafiscal levies may adversely impact the environmental protection objective, they may nonetheless be needed where the beneficiaries would otherwise be placed at such a competitive disadvantage that it would not be feasible to introduce the environmental tax or parafiscal levy in the first place.

294. Where environmental taxes or parafiscal levies could not be enforced without putting the economic activities of certain undertakings at risk, granting a more favourable treatment to some undertakings may allow to achieve a higher general level of contribution to the environmental taxes or parafiscal levies. Accordingly, in some circumstances, reductions in environmental taxes or levies can indirectly contribute to a higher level of environmental protection. However, they should not undermine the overall objective of the environmental tax or parafiscal levy to discourage environmentally harmful behaviour and/or increase the cost of such behaviour where satisfactory alternatives are not available.

4.7.1.2 Scope and supported activities

295. The Commission will consider that aid in the form of tax or levy reductions may be granted if the Member State demonstrates that both of the following conditions are fulfilled:
- (a) the reductions are targeted at the undertakings most affected by the environmental tax or levy that would not be able to pursue their economic activities in a sustainable manner without the reduction;
 - (b) the level of environmental protection actually achieved by implementing the reductions is higher than the one that would be achieved without the implementation of these reductions.
296. To demonstrate that the two conditions in point 295 are fulfilled, the Member State must provide the following information to the Commission:
- (a) a description of the sectors or categories of beneficiaries eligible for the reductions,
 - (b) a list of the largest beneficiaries in each sector concerned, their turnover, market shares, the size of the tax base and the proportion that the environmental tax or levy would represent in their pre-tax profit with and without the reduction,
 - (c) a description of the situation of those beneficiaries explaining why they would not be able to pay the standard rate of environmental tax or levy,
 - (d) an explanation of how the reduced tax or levy would contribute to an actual increase of the level of environmental protection compared to the level of environmental protection to be achieved in the absence of reductions (for example by comparing the standard rate that would be implemented with the reductions to

the standard rate that would be implemented without the reductions, the number of undertakings that would be subject to the tax or levy in total or other indicators reflecting actual change in environmentally harmful behaviour).

4.7.1.3 Minimisation of distortions of competition and trade

297. When environmental taxes are harmonised, the Commission may apply a simplified approach to assess the necessity and proportionality of the aid. In the context of Directive 2003/96/EC, the Commission may apply a simplified approach for tax reductions respecting the Union minimum tax level set out in points 298 and 299.
298. The Commission will consider aid in the form of reductions on harmonised taxes necessary and proportional provided that the following cumulative conditions are fulfilled:
- (a) the beneficiaries pay at least the Union minimum tax level set by the applicable Directive;
 - (b) the choice of beneficiaries is based on objective and transparent criteria;
 - (c) the aid is granted in principle in the same way for all undertakings in the same sector, if they are in a similar factual situation,
 - (d) the Member State verifies the necessity of aid to indirectly contribute to a higher level of environmental protection by means of an ex ante open public consultation where the sectors eligible for the reductions are properly described and a list of the largest beneficiaries for each sector is provided.
299. Member States can grant the aid in the form of a reduction of the tax rate or as a fixed annual compensation amount (tax refund), or as a combination of the two. The advantage of the tax refund approach is that undertakings remain exposed to the price signal given by the environmental tax. The amount of the tax refund should be calculated on the basis of historical data, i.e. the level of production, and the consumption or pollution observed for the undertaking in a given base year. The level of the tax refund must not go beyond the Union minimum tax amount that would otherwise be due for the base year.
300. When environmental taxes are non-harmonised or the beneficiaries pay less than the Union minimum level of the harmonised tax where allowed by the applicable Directive, an in-depth assessment of the necessity and proportionality of the aid is needed, as set out in Sections 4.7.1.3.1 to 4.7.1.3.3.

1.1.1.1.9 Necessity

301. The requirements set out in points 302 and 303 apply in addition to the requirements set out in Section 3.2.1.1.
302. The Commission will consider the aid to be necessary if the following cumulative conditions are fulfilled:

- (a) the selection of beneficiaries is based on objective and transparent criteria, and the aid is granted in the same way for all eligible undertakings operating in the same sector of economic activity that are in the same or similar factual situation in respect of the aims or objectives of the aid measure;
- (b) the environmental tax or parafiscal levy without the reduction would lead to a substantial increase in production costs, calculated as a proportion of the gross value added for each sector or category of beneficiaries;
- (c) the substantial increase in production costs could not be passed on to customers without leading to significant reductions of sales volumes.

303. For tax reductions for biofuels, bioliquids and biomass fuels, the Member State must put in place a mechanism to verify that the measure is still necessary, applying the necessity conditions of Section 4.1.3.1., and take appropriate measures, such as termination of the exemption or a reduction of the support level.

1.1.1.1.10 Appropriateness

304. The requirements set out in points 305 and 306 apply in addition to the requirements set out in Section 3.2.1.2.

305. The Commission will authorise aid schemes for maximum periods of 10 years, after which a Member State can re-notify the measure if it re-evaluates the appropriateness of the aid measures concerned.

306. Where the aid is granted as a tax refund, the amount of the tax refund should be calculated on the basis of historical data, that is to say the level of production, and the consumption or pollution observed for the undertaking in a given base year.

1.1.1.1.11 Proportionality

307. Section 3.2.1.3 does not apply to aid in the form of reductions in environmental taxes and parafiscal levies.

308. The Commission will consider the aid to be proportionate if at least one of the following conditions is fulfilled:

- (a) each aid beneficiary pays at least 20 % of the nominal amount of the environmental tax or parafiscal levy that would otherwise be applicable to that beneficiary in the absence of the reduction;
- (b) the tax or levy reduction does not exceed 100 % of the national environmental tax or parafiscal levy, and is conditional on the conclusion of agreements between the Member State and the beneficiaries or associations of beneficiaries whereby the beneficiaries or associations of beneficiaries commit themselves to achieve environmental protection objectives which have the same effect as if beneficiaries or associations of beneficiaries paid at least 20 % of the national tax or levy. Such agreements or commitments may relate, among other things, to a reduction in energy consumption, a reduction in emissions and other pollutants, or any other environmental protection measure.

309. Such agreements must fulfil the following cumulative conditions:
- (a) the substance of the agreements is negotiated by the Member State, specifies the targets and fixes a time schedule for reaching the targets;
 - (b) the Member State ensures independent and regular monitoring of the commitments in the agreements;
 - (c) the agreements are revised periodically in the light of technological and other developments and provide for effective penalties in the event that the commitments are not met.

4.7.2 Aid for environmental protection in the form of reductions in taxes or parafiscal levies

4.7.2.1 Rationale for the aid

310. Member States may consider incentivising undertakings to engage in projects or activities that increase the level of environmental protection by means of reductions in taxes or parafiscal levies. Where such reductions aim at incentivising the beneficiaries to undertake projects or activities resulting in less pollution or consumption of resources, the Commission will assess the measures in the light of the requirements set out in Section 4.7.2.

4.7.2.2 Scope and supported activities

311. This Section covers aid for environmentally-friendly projects and activities that fall within the scope of Sections 4.2 to 4.6 and that take the form of reductions in taxes or parafiscal levies.

312. Where the tax or levy reduction primarily pursues a decarbonisation objective, Section 4.1 applies.

313. This Section does not cover reductions of taxes or levies that reflect the essential costs of providing energy or related services. For example, reductions of network charges or charges financing capacity mechanisms are excluded from the scope of Section 4.7.2. This Section does not cover reductions from levies on electricity consumption that finance an energy policy objective.

4.7.2.3 Incentive effect

314. The requirements set out in points 315 and 316 apply in addition to those set out in Section 3.1.2.

315. For each eligible project or reference project for a category of beneficiaries, the Member State must submit a quantification, as set out in point 51, or equivalent data, for assessment by the Commission, comparing the profitability of the reference project or activity with and without the tax or parafiscal levy reduction and showing that the reduction incentivises the realisation of the environmentally-friendly project or activity.

316. Aid for projects starting before the aid application is submitted is considered to have an incentive effect where the following cumulative conditions are fulfilled:

- (a) the measure establishes a right to aid in accordance with objective and non-discriminatory criteria and without further exercise of discretion by the Member State;
- (b) the measure has been adopted and is in force before work on the aided project or activity has started, except in the case of fiscal successor schemes, where the activity was already covered by the previous schemes in the form of tax or parafiscal advantages.

4.7.2.4 Proportionality

- 317. Section 3.2.1.3 does not apply to aid for environmental protection in the form of reductions in taxes or parafiscal levies.
- 318. The aid must not exceed the normal rate or the amount of the tax or levy that would otherwise be applicable.
- 319. Where the tax or parafiscal levy reduction is linked to investment costs, the aid will be considered proportionate, provided it does not exceed the aid intensities and maximum aid amounts in Sections 4.2 to 4.6. Where those Sections require a competitive bidding process, that requirement does not apply to aid granted in the form of tax or parafiscal levy reductions.
- 320. Where the tax or parafiscal levy reduction reduces recurrent operating costs, the aid amount must not exceed the difference between the operating costs of the environmentally-friendly project or activity and of the less environmentally-friendly counterfactual scenario. Where the more environmentally friendly project or activity may result in potential cost savings or additional revenues, these must be taken into account when determining the proportionality of the aid.

4.7.2.5 Avoidance of undue negative effects on competition and trade

- 321. The requirements set out in points 322 to 324 apply in addition to those set out in Section 3.2.2.
- 322. State aid must be granted in the same way for all eligible undertakings operating in the same sector of economic activity that are in the same or similar factual situation in respect of the aims or objectives of the aid measure.
- 323. The Member State must ensure that aid remains necessary for the duration of schemes that run for more than three years and evaluate the schemes at least every three years.
- 324. If the tax or parafiscal levy reduction concerns projects falling within the scope of :
 - (a) Section 4.2, points 154 to 156 apply;
 - (b) Section 4.3.1, points 183 to 188 apply;
 - (c) Section 4.3.2, points 206 to 216 apply.

4.8 Aid for the security of electricity supply

4.8.1 Rationale for the aid

325. Market and regulatory failures may mean price signals fail to provide efficient investment incentives, leading for instance to inadequate electricity resource mix, capacity, flexibility or location. Moreover, the significant transformation in the electricity sector due to technological change and climate challenges raises new challenges for ensuring the security of electricity supply. While an increasingly integrated electricity market will normally allow exchange of electricity EU wide, thereby mitigating national security of supply problems, situations may occur where even in coupled markets security of supply may not be guaranteed at all times in some Member States or regions. As a result, Member States may consider the introduction of measures to ensure certain levels of security of electricity supply.

4.8.2 Scope and supported activities

326. This Section covers compatibility rules for aid measures aimed at increasing the security of electricity supply. This includes capacity mechanisms and any other measures for dealing with long and short-term security of supply issues resulting from market failures preventing sufficient investment in electricity generation capacity, storage or demand response, interconnection, as well as network congestion measures which aim to treat the insufficiency of electricity transmission and distribution networks¹²⁸.

327. Such measures may also be designed to support environmental protection objectives, for example through the exclusion of more polluting capacity or measures to give more environmentally beneficial capacity an advantage in the selection process.

328. As part of their notification, Member States should identify the economic activities that will be developed as a result of the aid. Aid for increasing the security of electricity supply directly facilitates the development of economic activities linked to electricity generation, storage and demand response, including new investments and the efficient refurbishment and maintenance of existing assets. It may also indirectly support a wide range of economic activity that relies on electricity as an input including the electrification of heat and transport.

4.8.3 Incentive effect

329. The rules on incentive effect in points 29, 30, 31 and 32 apply.

4.8.4 Minimisation of distortions of competition and trade

4.8.4.1 Necessity

330. Section 3.2.1.1 does not apply to measures for the security of electricity supply.

¹²⁸ This section does not cover ancillary services, including measures of System Defence Plans pursuant to Commission Regulation (EU) 2017/2196, with the aim of ensuring operational security that are procured by TSOs or DSOs through a non-discriminatory competitive bidding process open to all resources that can contribute to the identified operational security requirement, without involvement of the State in the procurement and financing of the service.

331. The nature and causes of the security of electricity supply problem, and therefore of the need for State aid to ensure security of electricity supply, must be properly analysed and quantified, including when and where the problem is expected to arise with reference where applicable to the reliability standard as defined in Article 25 of Regulation (EU) 2019/943. For network congestion measures, the Member State should provide analysis (after consultation of and taking into account the view of the responsible NRA) identifying and justifying with a cost benefit analysis the level of security of supply pursued with the proposed measure. For all security of supply measures, the unit of measure for quantification should be described and its method of calculation should be provided, with reference to any relevant requirements in sectoral legislation.
332. Where applicable, the identification of a security of electricity supply problem should be consistent with the latest available analysis carried out by ENTSO-E for electricity in accordance with the internal energy market legislation, notably:
- (a) for measures targeting resource adequacy, the European resource adequacy assessments referred to in Article 23 of Regulation (EU) 2019/943;
 - (b) for network congestion measures, the reports on structural congestions and other major physical congestions between and within bidding zones, mentioned in Article 14, point (2), of Regulation (EU) 2019/943.
333. Member States may also rely on national resource adequacy assessments to demonstrate the necessity of capacity mechanisms, to the extent permitted under Article 24 of Regulation (EU) 2019/943. For other security of supply measures including network congestion measures, Member States may also rely on a national assessment of the necessity of the proposed intervention. The national assessments referred to in this point should be either approved by or reviewed by the responsible NRA.
334. Measures related to the risk of electricity crises should be identified in the national risk-preparedness plan provided for in Article 11 of Regulation (EU) 2019/941¹²⁹.
335. Member States proposing to introduce several measures targeting security of electricity supply must clearly explain how they interact with one another in ensuring the overall cost effectiveness of the combined measures for ensuring security of supply, for example as regards capacity mechanisms by explaining how they reach (but do not go beyond) the reliability standard referred to in point 331.
336. The regulatory or market failure(s), along with any other issues preventing a sufficient level of security of electricity supply (and of environmental protection if relevant) being achieved in the absence of intervention, must be identified.
337. Existing measures that already target the market or regulatory failure(s) or other issues identified in point 336 must also be identified.
338. Member States must demonstrate the reasons why the market cannot be expected to deliver security of electricity supply in the absence of State aid, taking account of

¹²⁹ Regulation (EU) 2019/941 of the European Parliament and of the Council of 5 June 2019 on risk-preparedness in the electricity sector (risk-preparedness regulation) (OJ L 158, 14.6.2019, p. 1).

market reforms and improvements planned by the Member State and technology developments.

339. In its assessment, the Commission will take account of the following elements to be provided by the Member State:
- (a) an assessment of the impact of variable generation, including that originating from neighbouring systems;
 - (b) an assessment of the impact of demand-side and storage participation, including a description of measures to encourage demand side management;
 - (c) an assessment of the actual or potential existence of interconnectors and major internal transmission grid infrastructure, including a description of projects under construction and planned;
 - (d) an assessment of any other element which might cause or exacerbate the security of electricity supply problem, such as caps on wholesale prices or other regulatory or market failures. Where required under Regulation (EU) 2019/943, the implementation plan referred to in Article 20(3) of that Regulation must be subject to a Commission opinion before aid can be granted. The implementation plan and opinion will be taken into account in the necessity assessment; and
 - (e) any relevant content in an action plan under Article 15 of the Regulation (EU) 2019/943.

4.8.4.2 Appropriateness

340. Section 3.2.1.2 does not apply to measures for the security of electricity supply.
341. Member States should primarily consider alternative ways of achieving security of electricity supply, in particular more efficient electricity market design that can alleviate the market failures that undermine security of electricity supply. For instance, improving the functioning of electricity imbalance settlement, better integrating variable generation, incentivising and integrating demand response and storage, enabling efficient price signals, removing barriers to cross-border trade, and improving infrastructure, including interconnection. Aid may be found appropriate for security of supply measures where, despite appropriate and proportionate improvements to market design¹³⁰ and investments in network assets, whether already implemented or planned, a security of supply concern remains.
342. For network congestion measures Member States should in addition explain how the efficiency of redispatch measures is being improved in line with Article 13 of Regulation (EU) 2019/943.

4.8.4.3 Eligibility

343. The aid measure should be open to all beneficiaries or projects technically capable of contributing efficiently to the achievement of the security of supply objective. This

¹³⁰ Taking account of Regulation (EU) 2019/943 and Directive (EU) 2019/944.

includes generation, storage and demand response, as well as the aggregation of small units of these forms of capacity into larger blocks.

344. Limitations on participation in security of supply measures that aim to ensure those measures do not undermine environmental protection are deemed appropriate (see points 368 and 369).
345. Member States are encouraged to introduce additional criteria or features in their security of supply measures to promote the participation of greener technologies (or reduce the participation of polluting technologies) necessary to support the delivery of the Union's environmental protection objectives. Such additional criteria or features must be objective, transparent and non-discriminatory in relation to clearly identified environmental protection objectives, and must not result in the overcompensation of beneficiaries.
346. Where technically feasible, measures for security of electricity supply must be open to direct cross-border participation of capacity providers located in another Member State¹³¹. Member States must ensure that foreign capacity capable of providing equivalent technical performance to domestic capacities has the opportunity to participate in the same competitive process as domestic capacity. Member States may require foreign capacity to be located in a Member State that has a direct network connection with the Member State applying the measure. Where applicable, the relevant rules set out in Article 26 of Regulation (EU) 2019/943 must also be complied with.

4.8.4.4 Public consultation

347. Section 4.8.4.4 applies from 1 July 2023.
348. Prior to the notification of aid, other than in duly justified exceptional circumstances, Member States must consult publicly on the proportionality and competition impacts of measures to be notified under this Section. The obligation to consult does not apply in respect of amendments to already approved measures that do not alter their scope or eligibility or extend their duration beyond 10 years of the original decision date, nor in respect of cases referred to in point 349. To determine whether a measure is justified, bearing in mind the criteria in these guidelines, the following public consultation is required¹³²:
 - (a) for measures where the estimated average annual aid to be granted is at least EUR 100 million per year, a public consultation of at least six weeks' duration, covering:
 - (i) eligibility;
 - (ii) proposed use and scope of competitive bidding processes and any proposed exceptions;

¹³¹ Technical feasibility is presumed for capacity mechanisms, for which cross border participation is required under Regulation (EU) 2019/943.

¹³² Member States may rely on existing national consultation processes in respect of these requirements. As long as the consultation covers the points listed here, a separate consultation is not required.

- (iii) main parameters for the aid allocation process¹³³ including for enabling competition between different types of beneficiary¹³⁴;
 - (iv) the methodology for allocating the costs of the measure to consumers;
 - (v) if a competitive bidding process is not used, the assumptions and data informing the quantification used to demonstrate the proportionality of the aid, including costs, revenues, operating assumptions and lifetime, and WACC; and
 - (vi) where new investments in natural gas based generation may be supported, proposed safeguards to ensure consistency with the Union's climate targets.
- (b) for measures where the estimated average annual aid granted is below EUR 100 million per year, a public consultation of at least four weeks' duration, covering:
- (i) eligibility;
 - (ii) proposed use and scope of competitive bidding processes and any proposed exceptions;
 - (iii) the methodology for allocating the costs of the measure to consumers; and
 - (iv) where new investments in natural gas based generation may be supported, proposed safeguards to ensure consistency with the Union's climate targets.
349. No public consultation is required for measures falling under point 348(b) where competitive bidding processes are used and the measure does not support investments in fossil-fuel based energy generation.
350. Consultation questionnaires must be published on a public website. Member States must publish a response to the consultation summarising and addressing the responses received. This should include explaining how possible impacts on competition have been minimised through the scope/eligibility of the proposed measure. Member States must provide a link to their consultation response as part of the notification of aid measures under this section.
351. In exceptional and duly justified cases, the Commission might consider alternative methods of consultation provided that the views of interested parties are taken into account in the (continued) implementation of the aid. In such cases, the consultation might have to be combined with corrective actions to minimise possible distortive effects of the measure.

¹³³ For example the lead-time between the competitive process and the delivery period, bid/offer rules, pricing rules.

¹³⁴ For example if there are different contract durations, different methodologies for calculating the amount of eligible capacity / output from different technologies, different methodologies for calculating or paying subsidies.

4.8.4.5 Proportionality

352. The rules set out in points 353, 354, 355, 356 and 357 apply in addition to the rules set out in points 49, 50, 51, 52, 53 and 55.
353. Demand in security of supply measures should be set based on the reliability standard or cost benefit analysis referred to in point 331, and based on the analysis under points 332, 333 and 334 of the resources needed to ensure an adequate level of security of supply. The analysis used to set the level of demand must be at most twelve months old at the point in time when the demand level is set.
354. The lead-time between the granting of the aid and the deadline by when projects must be delivered should allow effective competition between the various eligible projects.
355. Exceptions from the requirement to allocate aid and determine the aid level through a competitive bidding process can only be justified:
- (a) where evidence is provided, including any evidence gathered in the public consultation where applicable, demonstrating that there is likely to be insufficient potential participation in such a bidding process to ensure competition; or
 - (b) for network congestion measures only, where the Member State provides analysis (after consultation of and taking into account the view of the responsible NRA) based on evidence, including that gathered in the public consultation where applicable, that a tender would be less cost-effective for example because of strategic bidding or market distortion.
356. The beneficiaries of security of supply measures should have efficient incentives to contribute to security of supply during the delivery period. These incentives should in general be related to the value of lost load (VOLL)¹³⁵. For example, where a beneficiary is not available, they should face a penalty related to VOLL. Other than for network congestion measures, this penalty should in general come from electricity imbalance settlement prices to avoid distortions to market functioning.
357. Member States may also use competitive certificates/supplier obligation schemes, provided that:
- (a) demand in the scheme is set below potential supply; and
 - (b) the buyout/penalty price that applies to a consumer/supplier that has not bought the number of certificates required (i.e. the price which constitutes the maximum that will be paid to beneficiaries) is set at a level that ensures beneficiaries cannot be overcompensated.

4.8.5 *Avoidance of undue negative effects on competition and trade and balancing*

358. Other than point 70, Section 3.2.2 does not apply to measures for the security of electricity supply.

¹³⁵ As determined according to Article 11 of Regulation (EU) 2019/943.

359. The aid must be designed to maintain the efficient functioning of markets and preserve efficient operating incentives and price signals.
360. Incentives must not be provided for generation of energy that would displace less polluting forms of energy.
361. The requirements in points 359 and 360 will generally be met when a measure pays for capacity (EUR per megawatt (MW)) rather than for electricity output (EUR/MWh). Where there is a payment per MWh, additional attention is needed to ensure adverse market effects are avoided, and less polluting generation sources are not displaced.
362. Security of supply measures must meet any applicable design conditions in Article 22 of Regulation (EU) 2019/943¹³⁶.
363. For strategic reserves and any other measures for resource adequacy, including interruptibility schemes, where capacity is held outside the market, to ensure market price formation is not distorted the following additional cumulative requirements apply:
- (a) the resources of the measure are to be dispatched only if the transmission system operators are likely to exhaust their balancing resources to establish an equilibrium between demand and supply¹³⁷;
 - (b) during imbalance settlement periods where resources in the measure are dispatched, imbalances in the market are to be settled at least at VOLL or at a higher value than the intraday technical price limit¹³⁸, whichever is higher;
 - (c) the output of the measure following dispatch is to be attributed to balance responsible parties through the imbalance settlement mechanism;
 - (d) the resources do not receive remuneration from the wholesale electricity market or balancing markets;
 - (e) the resources in the measure are to be held outside the energy markets for at least the duration of the contractual period.
364. For network congestion measures, where resources are held outside the market those resources cannot receive remuneration from the wholesale electricity market or balancing markets and must be held outside the energy markets for at least the duration of the contractual period.
365. For capacity mechanisms other than strategic reserves, Member States must ensure that the measure:

¹³⁶ For measures included in the risk preparedness plan referred to in Regulation (EU) 2019/941, see also Article 12(1) of that Regulation.

¹³⁷ That requirement is without prejudice to the activation of resources before actual dispatch in order to respect the ramping constraints and operating requirements of the resources. The output of the strategic reserve during activation must not be attributed to balance groups through wholesale markets and must not change their imbalances.

¹³⁸ As referred to in Article 10(1) of Regulation (EU) 2019/943.

- (a) is constructed so as to ensure that the price paid for availability automatically tends to zero when the level of capacity supplied is expected to be adequate to meet the level of capacity demanded;
 - (b) remunerates the participating resources only for their availability and ensure that the remuneration does not affect decisions of the capacity provider on whether or not to generate; and
 - (c) enables capacity obligations to be transferable between eligible capacity providers.
366. Security of electricity supply measures should not:
- (a) create undue market distortions nor limit cross-zonal trade;
 - (b) reduce incentives to invest in interconnection capacity – for example by reducing congestion revenue for existing or new interconnectors;
 - (c) undermine market coupling, including intra-day and balancing markets;
 - (d) undermine investment decisions on capacity which preceded the measure.
367. To avoid undermining incentives for demand response and exacerbating the market failures that lead to the need for security of supply measures, and to ensure the security of supply intervention is as limited in size as possible, the costs of a security of supply measure should be borne by the market participants who contribute to the need for the measure. For example, this may be achieved by allocating the costs of a security of supply measure to electricity consumers in periods of peak electricity demand or by allocating the costs of a network congestion measure to consumers in the region experiencing scarcity at times when the capacity in the measure is dispatched. However, such a cost allocation may not be required where the Member State provides analysis based on evidence, including that gathered in the public consultation, that allocating costs in this way would undermine the cost effectiveness of the measure or result in severe competition distortions that would clearly undermine the potential benefits of such a cost allocation.
368. The Commission considers that certain aid measures have negative effects on competition and trade that are unlikely to be offset. In particular, certain aid measures may aggravate market failures, creating inefficiencies to the detriment of consumer and social welfare. For instance, measures – including network congestion measures and interruptibility schemes – that do not respect the emissions threshold applicable to capacity mechanisms set out in Article 22 of Regulation (EU) 2019/943 and that may incentivise new investments in energy based on the most polluting fossil fuels, such as coal, diesel, lignite, oil, peat and oil shale increase the negative environmental externalities in the market.
369. Measures that incentivise new investments in energy generation based on natural gas may support security of electricity supply but aggravate negative environmental externalities in the longer term, compared to alternative investments in non-emitting technologies. To enable the Commission to verify that the negative effects of such measures can be offset by positive effects in the balancing test, Member States should

explain how they will ensure that such investment contributes to achieving the Union's 2030 climate target and 2050 climate neutrality target. In particular, the Member States must explain how a lock-in of this gas-fired energy generation will be avoided. For example, this may include binding commitments by the beneficiary to implement decarbonisation technologies such as CCS/CCU or replace natural gas with renewable or low-carbon gas or to close the plant on a timeline consistent with the Union's climate targets.

370. For individual aid measures or schemes benefitting only a particularly limited number of beneficiaries or an incumbent beneficiary, Member States should, in addition, demonstrate that the proposed aid measure will not lead to increased market power.

4.9 Aid for energy infrastructure

4.9.1 Rationale for the aid

371. In order to meet the Union's climate targets, significant investment and upgrading of energy infrastructure will be required. A modern energy infrastructure is crucial for an integrated energy market that meets climate targets while ensuring security of supply of in the Union. Adequate energy infrastructure is a necessary element of an efficient energy market. Improving energy infrastructure enhances system stability, resource adequacy, integration of different energy sources and energy supply in under-developed networks.

372. Where market operators cannot deliver the infrastructure needed, State aid may be necessary in order to overcome market failures and to ensure that the Union's considerable infrastructure needs are met. One market failure that may arise in the field of energy infrastructure is related to problems of coordination. Diverging interests among investors, uncertainty about the collaborative outcome and network effects may prevent the development of a project or its effective design. At the same time, energy infrastructure may generate substantial positive externalities, whereby the costs and benefits of the infrastructure may occur asymmetrically among the different market participants and Member States. The Commission therefore considers that aid to energy infrastructure can be beneficial to the internal market by contributing to addressing these market failures. This applies in particular to infrastructure projects having a cross-border impact such as projects of common interest, as defined in Article 2, point (4), of Regulation (EC) No 347/2013.

373. In line with the Notion of Aid Notice¹³⁹, support to energy infrastructure within the framework of a legal monopoly is not subject to State aid rules. In the energy sector, this is particularly relevant for those Member States where the construction and operation of certain infrastructures is exclusively reserved by law for the TSO or DSO.

¹³⁹ See the Commission Notice on the Notion of State aid as referred to in Article 107(1) of the Treaty on the Functioning of the European Union (OJ C 262, 19.7.2016, p. 1). Given that the notion of State aid is an objective and legal concept defined directly by the Treaty (judgment of the Court of Justice of 22 December 2008, *British Aggregates v Commission*, C-487/06 P, ECLI:EU:C:2008:757, paragraph 111) the views set out in points 373 to 375 are without prejudice to the interpretation of the notion of State aid by the Union Courts (judgment of the Court of Justice of 21 July 2011, *Alcoa Trasformazioni v Commission*, C-194/09 P, ECLI:EU:C:2011:497, paragraph 125); the primary reference for interpreting the Treaty is always the case-law of the Union Courts.

374. The Commission considers that a legal monopoly which excludes distortions of competition exists where the following cumulative conditions are met:

- (a) the construction and operation of the infrastructure is subject to a legal monopoly established in compliance with Union law; this is the case where the TSO/DSO is legally the only entity entitled to make a certain type of investment or activity and no other entity can operate an alternative network¹⁴⁰;
- (b) the legal monopoly not only excludes competition on the market, but also for the market, in that it excludes any possible competition to become the exclusive operator of the infrastructure in question;
- (c) the service is not in competition with other services;
- (d) if the operator of the energy infrastructure is active in another (geographical or product) market that is open to competition, cross-subsidisation is excluded; this requires that separate accounts are used, costs and revenues are allocated in an appropriate way and public funding provided for the service subject to the legal monopoly cannot benefit other activities. As regards electricity and gas infrastructure, as Article 56 of Directive (EU) 2019/944 and Article 31 of Directive 2009/73/EC of the European Parliament and of the Council require vertically integrated entities to keep separate accounts for each of their activities, this requirement will in all likelihood be satisfied.

375. Similarly, the Commission considers that there is no State aid involved in investments where the energy infrastructure is run under a ‘natural monopoly’, which is deemed to exist where the following cumulative conditions are met:

- (a) an infrastructure faces no direct competition, which is the case where the energy infrastructure cannot be economically replicated and hence where no operators other than the TSO/DSO are involved;
- (b) alternative financing in the network infrastructure, in addition to the network financing, is insignificant in the sector and Member State concerned;
- (c) the infrastructure is not designed to selectively favour a specific undertaking or sector but provides benefits for society at large.
- (d) Member States also have to ensure that the funding provided for the construction and/or operation of the energy network infrastructure cannot be used to cross-subsidise or indirectly subsidise other economic activities. For electricity and gas infrastructure, see point 374.

¹⁴⁰ A legal monopoly exists where a given service is reserved by law or regulatory measures to an exclusive provider in a determined geographic area (also within one Member State), with a clear prohibition for any other operator to provide such service (not even to satisfy a possible residual demand from certain customer groups). However, the mere fact that the provision of a public service is entrusted to a specific undertaking does not mean that such undertaking enjoys a legal monopoly.

4.9.2 *Scope and supported activities*

376. This Section 4.9 applies to aid for the construction or upgrade investments of energy infrastructure, as defined in point 19(36)¹⁴¹. Eligible investments may include digitalisation, smartening of energy infrastructure, e.g. in order to enable integration of renewable or low-carbon energy, as well as upgrades on grounds of climate resilience. Operating costs should in general be borne by network users, and aid for these costs should therefore not generally be required. In exceptional circumstances where a Member State demonstrates that operating costs cannot be recovered from network users, and where the operating aid is unrelated to sunk costs but leads to a change in behaviour that enables the delivery of security of supply or environmental protection objectives, operating aid for infrastructure may be found compatible. Unless the project is excluded from State aid control (see point 374 and 375), the Commission will assess it as set out in this Section.
377. This Section 4.9 will also apply to energy storage facilities until 31 December 2023, connected to transmission or distribution lines (stand-alone electricity storage¹⁴²) irrespective of the voltage levels¹⁴³.

4.9.3 *Minimisation of distortions of competition and trade*

4.9.3.1 Necessity and appropriateness

378. Sections 3.2.1.1. and 3.2.1.2 are not applicable to aid for energy infrastructure.
379. Energy infrastructure is typically financed through user tariffs. For many infrastructure categories those tariffs are subject to regulation, in order to ensure the necessary level of investments while preserving user rights, ensure cost-reflectiveness and are set with no interference from the State.
380. The granting of State aid is a way to overcome market failures which cannot be fully addressed by means of compulsory user tariffs. Therefore, to demonstrate the need for State aid, the following principles apply:
- (a) the Commission considers that for projects of common interest as defined in Article 2, point (4), of Regulation (EU) No 347/2013 which are fully subjected to internal energy market legislation, the market failures in terms of coordination problems are such that financing by means of tariffs may not be sufficient and State aid may be granted;
 - (b) for projects of common interest which are partially or fully exempted from internal energy market legislation, and for other infrastructure categories, the Commission will carry out a case-by-case assessment of the need for State aid. In

¹⁴¹ This section does not apply to projects involving dedicated infrastructure and/or other energy infrastructure combined with production and/or consumption activities.

¹⁴² As different from ‘behind-the-meter’ storage facilities.

¹⁴³ Support to energy storage may also be assessed under Sections 4.1, 4.2, 4.3, and 4.8 where relevant. Storage assets selected as PCIs – in line with applicable TEN-E legislation – qualify as energy infrastructure under this section and support would be assessed under section 4.9. Support to storage assets which are “owned or controlled” by the TSOs or DSOs, in compliance with Articles 54 and/or 36 of Directive 944/2019, is also covered by the section 4.9.

its assessment, the Commission will consider the following factors: (i) the extent to which a market failure leads to a sub-optimal provision of the necessary infrastructure; (ii) the extent to which the infrastructure is open to third party access and subject to tariff regulation; and (iii) the extent to which the project contributes to the security of energy supply in the Union or to the climate neutrality objectives of the Union. For infrastructure between the Union and a third country, if the project is not contained in the list of projects of mutual interest, other factors may also be taken into account to assess the compatibility with Internal Market rules¹⁴⁴.

- (c) For electricity storage facilities, the Commission may require the demonstration by the Member State of a specific market failure in the development of facilities to provide similar services.

4.9.3.2 Proportionality of the aid

381. Proportionality will be assessed on the basis of the funding gap principle as set out in points 48, 51, and 52. For aid to infrastructure, as explained in point 52, the counterfactual scenario is presumed to be the situation in which the project would not take place. The introduction of monitoring and claw-back mechanisms may be necessary where there is a risk of windfall profits, e.g. when the aid is close to the maximum allowed, while keeping incentives for the beneficiaries to minimise their costs and develop their business in a more efficient manner over time.

4.9.4 *Avoidance of undue negative effects on competition and trade and balancing*

382. Section 3.2.2. is not applicable to energy infrastructure. In analysing the impact of State aid to energy infrastructure on competition, the Commission's approach will be as follows:

- (a) In view of the existing requirements under the internal energy market legislation, which are aimed at strengthening competition, the Commission will generally consider that aid for energy infrastructure subject to full internal market regulation does not have undue distortive effects¹⁴⁵.
- (b) For infrastructure projects which are exempted, in whole or in part, from internal energy market legislation, the Commission will carry out a case-by-case assessment of the potential distortions of competition taking into account, in particular, the degree of third party access to the aided infrastructure, access to

¹⁴⁴ In particular, the Commission will consider whether the third country or countries involved have a high level of regulatory alignment and support the overall policy objectives of the Union, in particular as they relate to a well-functioning internal energy market; security of energy supply based on cooperation and solidarity; an energy system on a trajectory towards decarbonisation in line with the Paris Agreement and the Union's climate objectives; and avoiding carbon leakage.

¹⁴⁵ For infrastructure between one Member State and one or more third countries; - For the part located on Union territory, the projects will need to be in line with Directives 2009/73/EC and (EU) 2019/944; - For the third country or countries involved, the projects will need to have a high level of regulatory alignment and support the overall policy objectives of the Union, in particular to ensure a well-functioning internal energy market, security of energy supplies based on cooperation and solidarity, and an energy system on a trajectory towards decarbonisation in line with the Paris Agreement and the Union's climate objectives; and, in particular, avoiding carbon leakage.

alternative infrastructure, crowding-out of private investment and the competitive position of the beneficiary or beneficiaries. For infrastructure exempted in whole from internal energy market legislation, the negative distortive effects on competition are considered particularly serious.

- (c) In addition to the approach outlined in points (a) and (b), the Commission considers that for natural gas infrastructure investments, the Member states need to demonstrate the following positive effects capable of off-setting the negative effects on competition: (i) whether the infrastructure is ready for the use of hydrogen and leads to an increase of the use of renewable gases, or alternatively the reason why it is not possible to design the project so that it is ready for the use of hydrogen and how the project does not create a lock-in effect for the use of natural gas; and (ii) how the investment contributes to achieving the Union's 2030 climate target and 2050 climate neutrality target.
- (d) For support to electricity storage facilities- as well as of other PCIs and PMIs infrastructure not subject to internal market legislation-, the Commission will in particular assess the risks of distortion of competition which may arise in related services markets as well as on other energy markets.

4.10 Aid for district heating and cooling

4.10.1 Rationale for the aid

- 383. The construction or the upgrade of district heating and cooling systems can make a positive contribution to environmental protection by increasing the energy efficiency and sustainability of the supported system. Sectorial legislation on the promotion of renewable energy (Directive 2018/2001/EU) specifically requires Member States to take the necessary steps with a view to developing efficient district heating and cooling infrastructure to promote heating and cooling from renewable energy sources¹⁴⁶.
- 384. However, the environmental externalities associated with the operation of district heating and cooling can lead to inefficient underinvestment in the construction and upgrade of district heating and cooling systems. State aid can contribute to addressing this market failure by triggering additional efficient investment or by supporting exceptional operating costs due to the need to promote the environmental purpose of district heating systems.

4.10.2 Scope and supported activities

- 385. Support that is limited to district heating distribution networks can, under certain circumstances be considered to fall outside of State aid control as an infrastructure measure which does not affect competition and trade. This would in particular be the case when district heating networks are run in the same way as other energy infrastructure through separation from the heating generation, third-party access and regulated tariffs.

¹⁴⁶ Article 20 of Directive (EU) 2018/2001 states that 'Member States shall, where relevant, take the necessary steps with a view to developing a district heating and cooling infrastructure to accommodate the development of heating and cooling from large biomass, solar energy, ambient energy and geothermal energy facilities and from waste heat and cold'.

386. In such circumstances, whenever the district heating distribution networks are run in a situation of natural or legal monopoly or both, the same conditions points 374 and 375 apply¹⁴⁷.
387. Unless the project is excluded from State aid control (see point 385¹⁴⁸), the Commission will assess it as set out in this Section.
388. This Section applies to aid for the construction, the upgrade or the operation of a heating or cooling generation and storage plants or the distribution network or both.
389. Such aid measures typically cover the construction, upgrade and operation of the generation unit to use renewable energy¹⁴⁹, waste heat or highly-efficient cogeneration including thermal storage solutions, or the upgrade of the distribution network to reduce losses and increase efficiency, including through smart and digital solutions¹⁵⁰. Aid for energy generation based on waste may be found compatible under this section to the extent that it is limited to either waste that meets the definition of renewable energy sources or waste used to fuel installations that meet the definition of high-efficiency cogeneration.
390. Where aid is granted for the upgrade of a district heating and cooling system without meeting at that stage the standard of efficient district heating and cooling¹⁵¹, the Member State must commit to ensure that the aid beneficiary starts the works to reach that standard within three years following the upgrade works .

4.10.3 *Necessity and appropriateness*

391. Sections 3.2.1.1. and 3.2.1.2. do not apply to aid to district heating or cooling. The Commission considers that State aid can contribute to addressing market failures by triggering the investment costs needed for the creation, extension or upgrade of efficient district heating and cooling systems.

¹⁴⁷ In order to make sure that the distribution network is run genuinely as a facility open to users, in line with the SEIP Communication (see section 4.3.3. of Communication of the Commission on a Sustainable Europe Investment Plan – annex to the European Green Deal Communication – of 14.1.2020 COM(2020) 21 final), normally – in analogy with internal market rules for the energy sector, notably gas or electricity – specific rules would need to be in place (mandating third party access, unbundling and regulated tariffs), beyond mere ‘separate accounting’.

¹⁴⁸ While in the cases of natural or legal monopoly or both, support to district heating distribution infrastructure falls outside of State aid rules (subject to specific conditions), any support to district heating generation activity would remain subject to State aid rules.

¹⁴⁹ The amount of energy captured by heat pumps to be considered renewable shall be calculated as per Annex VII of Directive 2018/2001/EU. In addition, where electricity is used, it may be considered as fully renewable in analogy with the methods used to consider electricity as fully renewable under Directive 2018/2001/EU – as well as delegated legislation – or other equivalent methods ensuring that all electricity actually used would derive from renewable sources, provided that double counting of renewable energy and overcompensation are avoided. Support to new investments or upgrade – as well as operation – must not relate in any case to co-firing installations which use fuels other than RES energy or waste heat.

¹⁵⁰ Heating and cooling equipment, including thermal storage, within customers premises as referred to under point 138, when linked to district heating or cooling systems- can also be covered.

¹⁵¹ See Article 2, point (41), of Directive 2012/27/EU.

392. Operating costs should in general be paid for by heat consumers, and aid for these costs should therefore not generally be required. Where a Member State demonstrates that operating costs cannot be passed on to heat consumers without undermining environmental protection, operating aid for heat generation may be found compatible insofar as the net extra operating costs (as compared to a counterfactual scenario) contribute to the realisation of environmental benefits (such as reduction of CO₂ and other pollution as compared to alternative heating solutions¹⁵²). This would for example be the case where there is evidence that residential heat consumers (or other entities not exercising economic activities) would switch to more polluting heat sources in the absence of operating aid¹⁵³ or that, in the absence of support, the long-term viability of the district heating system would be threatened to the advantage of more polluting heating solutions. For operating aid to district heating generation facilities, points 122 and 126 apply.

393. In addition, State aid for efficient district heating and cooling systems –using waste as input fuel can make a positive contribution to environmental protection, provided that it does not circumvent the waste hierarchy principle¹⁵⁴.

4.10.4 *Proportionality of the aid measure*

394. Proportionality will be assessed on the basis of the funding gap principle as set out in points 48, 51, and 52.

395. For the construction, upgrade and operation of distribution networks, as set out in point 52, the counterfactual scenario would be the situation in which the project would not take place.

4.10.5 *Avoidance of undue negative effects on competition and trade and balancing*

396. Section 3.2.2. does not apply to aid for district heating or cooling. The Commission considers that the support to upgrade, construction or operation of district heating and cooling systems which rely on the most polluting fossil fuels such as coal, lignite, oil and diesel, have negative consequences on competition and trade which are unlikely to be offset unless the following cumulative conditions are fulfilled:

- (a) the aid is limited to investments on the distribution network;
- (b) the distribution network already enables the transport of heat or cooling generated from renewable energy sources, waste heat or carbon neutral sources;
- (c) the aid does not result in increased generation of energy from the most polluting fossil fuels (for example, by connecting additional customers)¹⁵⁵;

¹⁵² In this context, Member States shall in particular demonstrate that the supported district heating systems have put in place the necessary measures to increase efficiency, reduce CO₂ and other pollution sources as well as network losses.

¹⁵³ Heat consumers which are undertakings exercising economic activities, must pay in any case their full share of heating costs, at least equivalent to their cheapest alternative heating source, to avoid competition distortions in other markets.

¹⁵⁴ The waste hierarchy consists of (a) prevention, (b) preparing for re-use, (c) recycling, (d) other recovery, for instance energy recovery, and (e) disposal. See Article 4, point (1), of Directive 2008/98/EC.

- (d) there is a clear timeline involving firm commitments for transitioning away from the most polluting fossil fuels, in view of the Union’s 2030 climate target and the 2050 climate neutrality target¹⁵⁶.

397. As regards the construction, upgrade or operation of district heating generation installations, measures that incentivise new investments in, or operation of energy generation assets based on natural gas may reduce greenhouse gas emissions in the short term but aggravate negative environmental externalities in the longer term, compared to alternative investments or counterfactual scenarios. For those investments in or operation based on natural gas to be seen as having positive environmental effects, Member States must explain how they will ensure that the aid contributes to achieving the Union’s 2030 climate target and 2050 climate neutrality target and, in particular, how a lock-in of the gas-fired energy generation will be avoided and how it does not displace investments into cleaner alternatives that are already available on the market, thereby impeding the development of cleaner technologies and their use. For example, this may include binding commitments by the beneficiary to implement CCS/CCU or replace natural gas with renewable or low-carbon gas or to close the plant on a timeline consistent with the Union’s climate targets.
398. In analysing the impact of State aid for district heating and cooling systems on competition, the Commission will carry out an assessment balancing the benefits of the project in terms of energy efficiency and sustainability¹⁵⁷ against the negative effects on competition and in particular the possible negative impact on alternative technologies or providers of heating and cooling services and networks. In this context, the Commission will take into account whether the district heating system is or may be open to third party access¹⁵⁸ and whether sustainable alternative heating solutions are possible¹⁵⁹.

4.11 Aid in the form of reductions from electricity levies for energy-intensive users

4.11.1 Rationale for the aid

399. The transformation of the Union’s economy in line with the European Green Deal Communication is partially financed through levies on electricity consumption. The realisation of the Green Deal requires that Member States put in place ambitious decarbonisation policies to significantly reduce Union greenhouse gas emissions by 2030 and reach climate neutrality by 2050. In this context, it is likely that Member States will continue to finance such policies through levies and it is therefore possible that those levies may increase. The funding of decarbonisation support through levies

¹⁵⁵ Member States must demonstrate that measures have been taken to add sustainable heating sources to the system to cater for additional customers.

¹⁵⁶ Member States should for example provide evidence that the district heating systems at stake are either part of a national or local decarbonisation plans, or part of the integrated national energy and climate plans in accordance with Annex I to Regulation (EU) 2018/1999 on the necessity to build new infrastructure for district heating and cooling from renewable sources in order to achieve the Union target set in Article 3(1) of the Directive (EU) 2018/2001 and commit to transitioning away from fossil fuels by pursuing intermediate and final targets towards climate neutrality by 2050.

¹⁵⁷ In light of their contribution to climate mitigation which is defined as an environmental objective in Regulation (EU) 2020/852 as long as there are no obvious indications of non-compliance with the do no significant harm principle.

¹⁵⁸ See also Article 24 of Directive 2018/2001/EU.

¹⁵⁹ See also Articles 18(5) and 24 of Directive 2018/2001/EU.

does as such not target a negative externality. Those levies are therefore not environmental levies for the purpose of these guidelines and Section 4.7.1 does not apply to these levies.

400. For certain economic sectors which are particularly exposed to international trade and rely heavily on electricity for their value creation, the obligation to pay the full amount of levies on electricity consumption which finance energy and environmental policy objectives can heighten the risk of activities in these sectors moving outside the Union to locations where environmental disciplines are absent or less ambitious. In addition, such levies increase the cost of electricity compared to the cost of direct emissions resulting from recourse to other energy sources and can therefore discourage the electrification of production processes, which is central to the successful decarbonisation of the Union economy. To mitigate those risks and adverse impacts on the environment, Member States can grant reductions from such levies for companies active in the economic sectors concerned.
401. This Section sets out the criteria which the Commission will apply when assessing the development of an economic activity, incentive effect, necessity, appropriateness, proportionality and competition impacts of reductions in electricity levies for certain energy-intensive users. The compatibility criteria in Chapter 3 apply only to the extent there are no specific rules in Section 4.11.
402. The Commission has used appropriate measures to identify those sectors which are particularly exposed to the risks mentioned in point 400 and it has introduced proportionality requirements taking into consideration that, if the levy reductions are too high or awarded to too many electricity consumers, the overall funding of support to energy from renewable sources might be threatened and distortions of competition and trade may be particularly high.

4.11.2 Scope: Levies from which reductions can be granted

403. Member States may grant reductions from levies on electricity consumption which finance energy and environmental policy objectives. This includes levies financing support to renewable sources or to combined heat and power and levies financing social tariffs or energy prices in isolated regions. Section 4.11 does not cover levies which reflect part of the cost of providing electricity to the beneficiaries in question. For example, exemptions from network charges or from charges financing capacity mechanisms are not covered by this Section. Levies on the consumption of other forms of energy, in particular natural gas, are also not covered by this Section.
404. The location decisions of undertakings and the associated adverse environmental impact are dependent on the overall combined financial effect of levies from which reductions can be granted. Member States wishing to introduce a measure to be assessed under this Section therefore have to include all such reductions in a single scheme and, as part of the notification, have to inform the Commission of the cumulative effect of all eligible levies and all reductions proposed. Should a Member State decide at a later stage to introduce additional reductions on levies covered by this Section, it will have to notify an amendment to the existing scheme.

4.11.3 *Minimisation of distortions on competition and trade*

4.11.3.1 Eligibility

405. For levies covered under Section 4.11.2, the risk at sectoral level of activities moving outside the European Union to locations where environmental disciplines are absent or less ambitious largely depends on the electro-intensity of the sector in question and its openness to international trade. Accordingly, aid can only be granted to undertakings from:
- (a) sectors at significant risk, for which the multiplication of their trade intensity and electro-intensity at Union level reaches at least 2 % and whose trade intensity and electro-intensity at Union level is at least 5 % for each indicator;
 - (b) sectors at risk, for which the multiplication of their trade intensity and electro-intensity at Union level reaches at least 0.6 % and whose trade intensity and electro-intensity at Union level is at least 4 % and 5 % respectively.

The sectors meeting these eligibility criteria are listed in Annex I.

406. A sector or subsector¹⁶⁰ that is not included in Annex I will also be considered eligible provided that it meets the eligibility criteria of point 405 and that Member States demonstrate this with data that is representative of the sector or subsector at Union level¹⁶¹, verified by an independent expert and based on a time period of at least three consecutive years starting no earlier than 2013.
407. Should a Member State grant support only to a subset of eligible beneficiaries or grant different levels of reductions to eligible beneficiaries falling within the same category of either point 405(a) or (b), it must demonstrate that that decision is made on the basis of objective, non-discriminatory and transparent criteria and that the aid is granted, in principle, the same way for all eligible beneficiaries in the same sector if they are in a similar factual situation.

4.11.3.2 Proportionality of the aid measure

408. The Commission will consider the aid to be proportionate if the beneficiaries from sectors in point 405(a) and (b) pay respectively at least 15 % and 25 % of the costs generated by the electricity levies which a Member State includes in its scheme. The Commission also considers that, in order for the aid to be proportionate, such reductions must not result in a levy below 0.5 EUR/MWh.
409. However, own contributions based on point 408 might go beyond what undertakings which are particularly exposed can bear. Therefore, the Member State may instead limit the additional costs resulting from the electricity levies to 0.5 % of the gross value added ('GVA') of the undertakings in sectors from point 405(a) and to 1 % of the GVA of the undertakings in sectors from point 405(b). The Commission also considers that,

¹⁶⁰ In the definition of the Statistical Classification of Economic Activities in the European Community ('NACE rev. 2' classification), to a level of disaggregation not higher than eight digits ('PRODCOM' level).

¹⁶¹ For example, data covering a significant percentage of the gross value added at EU level of the concerned sector or subsector.

in order for the aid to be proportionate, such reductions must not result in a levy below 0.5 EUR/MWh.

410. The Commission will consider the aid to be proportionate if the application of the higher aid intensities under points 408 and 409 are extended to the undertakings from sectors from point 405(b), provided that the concerned undertakings reduce the carbon footprint of their electricity consumption. For this purpose, beneficiaries will cover at least 50 % of their electricity consumption from carbon-free sources, out of which either at least 10 % will be covered by a forward instrument such as a power purchase agreement or at least 5 % will be covered by on-site or near-site generation.
411. For the purpose of point 409 the GVA of an undertaking will be the gross value added at factor costs, which is the GVA at market prices less any indirect taxes plus any subsidies. Gross value added at factor cost can be calculated from turnover, plus capitalised production, plus other operating income, plus or minus changes in stocks, minus purchases of goods and services¹⁶², minus other taxes on products that are linked to turnover but not deductible, minus duties and taxes linked to production. Alternatively, GVA at factor cost can be calculated from gross operating surplus by adding personnel costs. Income and expenditure classified as financial or extraordinary in company accounts are excluded from the value added. The value added at factor costs is calculated at gross level, as value adjustments (such as depreciation) are not subtracted¹⁶³.
412. For the purposes of point 411, the arithmetic mean over the most recent 3 years for which GVA data is available will be used.

4.11.3.3 Form of State aid

413. Member States can grant the aid in the form of a reduction in levies, as a fixed annual compensation amount (refund), or as a combination of the two¹⁶⁴. Where the aid is granted in the form of a reduction in levies, an *ex post* monitoring mechanism needs to be put in place to ensure that any over-payment of aid will be repaid before 1 July of the following year. Where the aid is granted in the form of a refund, it must be calculated on the basis of the observed levels of electricity consumption and, if applicable, the gross value added over the period of time during which the eligible levies were applied.

4.11.3.4 Energy Audits and Management Systems

414. For aid granted under Section 4.11, the Member State must commit to verifying that the beneficiary complies with its obligation to conduct an energy audit within the meaning of Article 8 of Directive 2012/27/EU. It can be conducted either as a stand-alone energy audit or within the framework of a certified Energy Management System or

¹⁶² 'Goods and services' do not include personnel costs.

¹⁶³ Code 12 15 0 within the legal framework established by Council Regulation (EC, Euratom) No 58/97 of 20 December 1996 concerning structural business statistics (OJ L 014, 17.1.1997, p. 1).

¹⁶⁴ The use of fixed annual compensations (refunds) has the advantage that undertakings benefitting from the aid face the same increase in the marginal cost of electricity (i.e. the same increase in the cost of electricity for every extra MWh consumed), thereby limiting potential distortions of competition within the sector.

Environmental Management System, as specified in the Article 8 Energy Efficiency Directive.

415. The Member State must also commit to monitoring that beneficiaries required to conduct an energy audit under Article 8(4) of Directive 2012/27/EU do one or more of the following:
- (a) implement recommendations of the audit report, to the extent that the pay-back time for the relevant investments does not exceed 3 years and that the costs of their investments is proportionate;
 - (b) reduce the carbon footprint of their electricity consumption, so as to cover at least 30 % of their electricity consumption from carbon-free sources;
 - (c) invest a significant share of at least 50 % of the aid amount in projects that lead to substantial reductions of the installation's greenhouse gas emissions; where applicable, the investment should lead to reductions to a level well below the relevant benchmark used for free allocation in the Union ETS.

4.11.3.5 Transitional rules

416. To avoid disruptive changes in the levy burden for individual undertakings that do not meet the eligibility conditions set out in Section 4.11, Member States can establish a transitional plan for those undertakings. The transitional plan will be limited to undertakings that comply with the two following cumulative criteria:
- (a) in at least one of the last two years prior to the adaptation under point 468(a), they received aid in the form of reduced levies under a national aid scheme declared compatible on the basis of Section 3.7.2 of the Guidelines on State aid for environmental protection and energy 2014-2020¹⁶⁵;
 - (b) at the time when the aid under point 416(a) was granted, they met the eligibility criteria of Section 3.7.2 of the Guidelines on State aid for environmental protection and energy 2014-2020.
417. Such transitional plan will entail a progressive and complete adjustment to the conditions resulting from the application of the eligibility and proportionality criteria set out in section 4.11, to be completed by the year 2028 in line with the following schedule:
- (a) for the levies applicable to the years until 2026, concerned undertakings pay at least 35 % of the costs generated by the electricity levies which a Member State includes in its scheme or the equivalent to 1.5 % of their GVA;
 - (b) for the levies applicable to the year 2027, concerned undertakings pay at least 55 % of the costs generated by the electricity levies which a Member State includes in its scheme or the equivalent to 2.5 % of their GVA;

¹⁶⁵ Communication from the Commission — Guidelines on State aid for environmental protection and energy 2014-2020 (OJ C 200, 28.6.2014).

- (c) for the levies applicable to the year 2028, concerned undertakings pay at least 80 % of the costs generated by the electricity levies which a Member State includes in its scheme or the equivalent to 3.5 % of their GVA;
418. The transitional plan may allow that the aid intensities under point 417(a) are applied for the entire transitional period, provided that the undertakings concerned reduce the carbon footprint of their electricity consumption. For this purpose, beneficiaries will cover at least 50 % of their electricity consumption from carbon-free sources, out of which either at least 10 % will be covered by a forward instrument such as a power purchase agreement or at least 5 % will be covered by on-site or near-site generation.
419. The Commission considers that non-notified aid granted in the form of reduced electricity levies for energy-intensive users in the period prior to the publication of these guidelines can be declared compatible with the internal market under the following cumulative conditions:
- (a) that the aid was necessary for the development of the economic activities carried out by the beneficiaries;
 - (b) that excessive competition distortions have been avoided.

4.12 Aid for the closure of power plants using coal, peat or oil shale and of mining operations relating to coal, peat or oil shale extraction

420. The shift away from power generation based on coal, peat and oil shale is one of the most important drivers of decarbonisation in the power sector in the Union. Sections 4.12.1 and 4.12.2 lay down the compatibility rules applicable to two types of measures that Member States may take to support the closure of power plants that burn coal (including both hard coal and lignite), peat or oil shale and of mining operations for these fuels (together referred to as ‘coal, peat and oil shale activities’).
421. Sections 4.12.1 and 4.12.2 set out the criteria which the Commission will apply when assessing the incentive effect, necessity, appropriateness, proportionality and effects on competition and trade. The compatibility criteria in Chapter 3 apply only for those criteria for which there are no specific rules in Sections 4.12.1 and 4.12.2.
422. Accelerating the energy transition in Member States with very low income per capita is particularly challenging. In order to support the green transition in the most affected regions through phasing out the most polluting energy sources, Member States may need to combine the phase out of the coal, peat or oil shale activities with a simultaneous investment in more environmentally-friendly generation, such as natural gas. The Commission may exceptionally, until 31 December 2023, base its assessment of such investments in Member States with Real GDP per capita at market prices in EUR at or below 35% of the Union average in 2019 on criteria diverging from these guidelines. The projects covered by this point must:
- (a) involve a simultaneous closure of power plants using coal, peat or oil shale of at least the same capacity as the new generation covered by the investment, by no later than 2026;

- (b) concern Member States which do not have a capacity mechanism in place and that commit to undertake the necessary market reforms so that security of electricity supply can be ensured in future without recourse to individual support measures; and
- (c) be part of a credible and ambitious decarbonisation strategy, including the prevention of stranded assets in view of the 2030 and 2050 targets (see point 129).

4.12.1 Aid for the early closure of profitable coal, peat and oil shale activities

4.12.1.1 Rationale for the aid

423. The shift away from coal, peat and oil shale activities is largely driven by regulation, market forces such as the effects of carbon prices and competition from renewable sources with low marginal costs.
424. However, Member States may decide to accelerate this market driven transition by prohibiting the generation of power based on these fuels as of a certain date. This prohibition can create situations in which profitable coal, peat and oil shale activities have to close before the end of their economic lifetime and can hence result in forgone profit. Member States may wish to grant compensation outside court procedures in order to ensure legal certainty and predictability, facilitating the green transition.

4.12.1.2 Scope and supported activities

425. This Section sets out compatibility rules for measures taken to accelerate the closure of profitable coal, peat and oil shale activities and to compensate the affected undertakings. Such compensation would typically be calculated on the basis of the forgone profits incurred by the undertakings due to the early closure. It may also cover additional costs incurred by the undertakings, for instance relating to additional social and environmental costs, if these costs are directly caused by the early closure of the profitable activities. Additional costs cannot include costs where they would have also occurred in the counterfactual scenario.
426. Measures covered by this Section can facilitate the development of certain economic activities or areas. For instance, such measures can create space for the development of other power generation activities in line with the Green Deal in order to offset the reduction in the power generation capacity caused by the early closure. In the absence of the measure, this development may not take place to the same extent. In addition, the predictability and legal certainty introduced by such measures can help to facilitate the ordered closure of coal, peat and oil shale activities.

4.12.1.3 Incentive effect

427. The measure needs to trigger a change in the economic behaviour of the operators, which close down their coal, peat and oil shale activities earlier than the end of their economic lifetime. To determine whether this is the case, the Commission will compare the factual scenario (i.e. the effects of the measure) with a counterfactual scenario (i.e. in the absence of the measure). The measure should not lead to a circumvention of the rules applicable to measures for security of supply.

4.12.1.4 Necessity and appropriateness

428. The Commission considers that there is a need for a measure if the Member State can demonstrate that the measure is targeted towards a situation where it can bring about a material improvement that the market alone cannot deliver. For instance, by enabling the phase-out of power generation capacity based on coal, peat and oil shale and thereby contributing to the development of the economic activity of power generation from alternative sources, which would not occur to the same extent without the measure. In this context, the Commission may also consider whether the market itself would have achieved a similar CO₂ emissions reduction without the measure or whether the measure contributes significantly to ensure legal certainty and predictability that would not have been there in the absence of the measure, thereby facilitating the green transition.
429. Furthermore, the Member State should demonstrate that the measure is an appropriate policy instrument to achieve the intended objective, that is to say there must not be a less distortive policy and aid instrument capable of achieving the same results. For instance, if the measure is well targeted to contribute to the development of electricity generation from alternative sources, whilst mitigating the impact on the electricity market functioning and employment, and to ensure predictability of the closure, while contributing to the CO₂ emission reduction targets.

4.12.1.5 Proportionality

430. The aid must in principle be granted through a competitive bidding process on the basis of clear, transparent and non-discriminatory criteria, in line with Section 3.2.1.3¹⁶⁶. This requirement does not apply where the Member State demonstrates that a bidding process is unlikely to be competitive for objective reasons. This can, for example, be the case where the number of potential participants is limited, provided this is not due to discriminatory eligibility criteria.
431. If the aid is granted through a competitive bidding process, the Commission will presume that the aid is proportionate and limited to the minimum necessary.
432. In the absence of a competitive bidding process, the Commission will assess proportionality on a case-by-case basis to verify that the compensation is limited to the minimum necessary. In this context, the Commission will analyse in detail the assumptions used by the Member State to determine the forgone profits and additional costs on the basis of which the compensation for the early closure was calculated, by comparing the expected profitability in the factual and counterfactual scenarios. The counterfactual scenario should be based on duly justified assumptions, realistic market developments and reflect the projected revenues and costs of each entity in question, whilst taking into account possible direct functional links between entities.
433. Where the closure of the coal, peat and oil shale activities occurs more than three years after the compensation has been awarded, the Member State must introduce a mechanism to update the calculation of the compensation based on the most recent

¹⁶⁶ The 30 % requirement set out in point 50 does not apply to bidding processes under Section 4.12. Member States may consider the use of additional criteria, such as other environmental benefits to be achieved.

assumptions, unless it can demonstrate why the use of such a mechanism is not justified due to exceptional circumstances in the case at hand.

4.12.1.6 Avoidance of undue negative effects on competition and trade

434. The Member State must identify and quantify the expected environmental benefits of the measure, where possible in terms of aid per tonne of CO₂ equivalent emissions avoided. Furthermore, the Commission will consider it positively if measures include a voluntary cancellation of CO₂ emission allowances at national level.
435. It is important to ensure that the measure is structured in a way that limits to the minimum any distortion of competition in the market. If the aid is granted through a competitive bidding process open to all operators of coal, peat or oil shale activities on a non-discriminatory basis, the Commission will presume that the aid has limited distortive effects on competition and trade. In the absence of a competitive bidding process, the Commission will assess the aid's effects on competition and trade based on the design of the measure and its effect on the relevant market.

4.12.2 *Aid for exceptional costs in relation to the closure of uncompetitive coal, peat and oil shale activities*

4.12.2.1 Rationale for the aid

436. The closure of uncompetitive coal, peat and oil shale activities can generate significant social and environmental costs at the level of the power plants and the mining operations. Member States may decide to cover such exceptional costs to mitigate the social and regional consequences of the closure.

4.12.2.2 Scope and supported activities

437. This Section sets out compatibility rules for measures taken to cover exceptional costs resulting from the closure of uncompetitive coal, peat and oil shale activities.
438. Measures covered by this Section can facilitate the social, environmental and safety transition of the area concerned.
439. This Section applies to the extent that the measure is not covered by the Council Decision of 10 December 2010 on State aid to facilitate the closure of uncompetitive coal mines¹⁶⁷.

4.12.2.3 Necessity and appropriateness

440. The Commission will consider aid to cover exceptional costs necessary and appropriate to the extent that it can help mitigate the social and environmental impact of the closure of uncompetitive coal, peat and oil shale activities in the region and the Member State concerned.

¹⁶⁷ Council Decision of 10 December 2010 on State aid to facilitate the closure of uncompetitive coal mines (OJ L 336, 21.12.2010, p. 24).

4.12.2.4 Incentive effect and proportionality

441. State aid for exceptional costs may only be used to cover the costs resulting from the closure of uncompetitive coal, peat and oil shale activities.
442. The categories of eligible costs covered are defined in Annex II. Costs resulting from non-compliance with environmental regulations and costs related to current production are not eligible.
443. Without prejudice to Directive 2004/35/EC of the European Parliament and of the Council¹⁶⁸ or other relevant Union rules¹⁶⁹, aid to cover exceptional environmental costs, may be regarded as having an incentive effect only when the entity or undertaking at the origin of the environmental damage cannot be identified or be held legally liable for financing the works necessary to prevent and correct environmental damage in accordance with the ‘polluter pays’ principle.
444. The Member State must demonstrate that all necessary measures, including legal action, have been taken to identify the liable entity or undertaking at the origin of the environmental damage and make it bear the relevant costs. Where the entity or undertaking liable under the applicable law cannot be identified or made to bear the costs, aid may be granted to support the entire remediation or rehabilitation works and may be regarded as having an incentive effect. The Commission may consider that an undertaking cannot be made to bear the costs of remediating the environmental damage it has caused where it has ceased to legally exist and no other undertaking can be regarded as its legal or economic successor¹⁷⁰ or where there is insufficient financial security to meet the costs of remediation.
445. The aid amount must be limited to the coverage of exceptional costs of the beneficiary and must not exceed the costs actually incurred. The Commission will require the Member State to clearly and separately identify the aid amount for each category of eligible costs, as detailed in Annex II. Where the Member State covers such costs on the basis of estimations, before they are actually incurred by the beneficiary, it must carry out an *ex post* verification of the costs incurred on the basis of detailed statements provided by the beneficiary to the granting authority, including invoices or certificates showing the exceptional costs incurred, and adjust the amounts granted accordingly.

4.12.2.5 Avoidance of undue negative effects on competition and trade

446. Provided that the aid is limited to the coverage of exceptional costs incurred by the beneficiary, the Commission considers that it has limited distortive effects on competition and trade.

¹⁶⁸ Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage (OJ L 143 30.4.2004, p. 56).

¹⁶⁹ See also Commission Notice Guidelines providing a common understanding of the term ‘environmental damage’ as defined in Article 2 of Directive 2004/35/EC of the European Parliament and of the Council on environmental liability with regard to the prevention and remedying of environmental damage 2021/C 118/01 (OJ C 118, 7.4.2021, p. 1).

¹⁷⁰ See Commission Decision C(2012) 558 final of 17 October 2012 in case SA.33496 (2011/N) – Austria – Einzelfall, Altlast, DECON Umwelttechnik GmbH, recitals 65-69 (OJ C 14, 17.1.2013, p. 1).

447. Aid received for exceptional costs should be shown in the profit-and-loss accounts of the beneficiary as a separate item of revenue distinct from turnover. Where the beneficiary continues trading or operating after closing down the relevant coal, peat and oil shale activities, it must keep precise and separate accounts for those activities. The aid granted must be managed in such a way that there is no possibility of it being transferred to other economic activities of the same undertaking.

4.13 Aid for studies or consultancy services on matters relating to climate, environmental protection and energy

4.13.1 Scope and supported activities

448. This Section applies to aid for studies or consultancy services directly linked to projects or activities covered by these guidelines on matters relating to climate, environmental protection and energy. Aid may be granted irrespective of whether the study or the consultancy service is followed by an investment covered by these guidelines.

449. The study or consultancy service must not be a continuous or periodic activity nor relate to the undertaking's usual operating costs.

4.13.2 Incentive effect

450. The requirement set out in point 451 applies in addition to those set out in Section 3.1.2.

451. Aid for energy audits required by Directive 2012/27/EU may be considered to have an incentive effect only to the extent that the energy audit is carried out in addition to the mandatory energy audit under that Directive.

4.13.3 Proportionality

452. The eligible costs are the costs of the study or consultancy services relating to projects or activities covered by these guidelines. Where only part of the study or consultancy service concerns investments covered by these guidelines, the eligible costs are the costs of the parts of the study or consultancy service relating to those investments.

453. The aid intensity must not exceed 60 % of the eligible costs.

454. The aid intensity may be increased by 20 percentage points for studies or consultancy services undertaken on behalf of small enterprises and by 10 percentage points for studies or consultancy services undertaken on behalf of medium-sized enterprises.

5. EVALUATION

455. To further ensure that distortions of competition and trade are limited, the Commission may require notifiable aid schemes to be subject to an *ex post* evaluation. Evaluations should be carried out for schemes where the potential distortions of competition and trade are particularly high, that is to say schemes that may risk significantly restricting or distorting competition if their implementation is not reviewed in due time.

456. *Ex post* evaluation will be required for schemes with large aid budgets, or containing novel characteristics, or when significant market, technology or regulatory changes are foreseen. In any event, *ex post* evaluation will be required for schemes when the State aid budget or accounted expenditures exceed EUR 150 million in any given year or

EUR 750 million over the total duration of the schemes. The total duration of the schemes includes the combined duration of the scheme and any predecessor scheme covering a similar objective and geographical area, starting from 1 January 2022. Given the objectives of the evaluation, and in order not to impose a disproportionate burden on Member States and on smaller aid projects, the *ex post* evaluation requirement only applies for aid schemes with a total duration that exceeds three years, starting from 1 January 2022.

457. The *ex post* evaluation requirement may be waived with respect to aid schemes that are the immediate successors of schemes covering a similar objective and geographical area that have been subject to an evaluation, delivered a final evaluation report in compliance with the evaluation plan approved by the Commission and have not generated any negative findings. Any scheme where the final evaluation report is not in compliance with the approved evaluation plan must be suspended with immediate effect.
458. The *ex post* evaluation should aim at verifying whether the assumptions and conditions underlying the compatibility of the scheme have been achieved, in particular the necessity and the effectiveness of the aid measure in the light of its general and specific objectives and should provide indications on the impact of the scheme on competition and trade.
459. The Member State must notify a draft evaluation plan, which will be an integral part of the Commission's assessment of the scheme, as follows:
- (a) together with the aid scheme, if its State aid budget exceeds EUR 150 million in any given year or EUR 750 million over its total duration; or
 - (b) within 30 working days following a significant modification increasing the budget of the scheme to over EUR 150 million in any given year or EUR 750 million over the total duration of the scheme; or
 - (c) for schemes not falling under (a) or (b), within 30 working days after recording in official accounts expenditures in excess of EUR 150 million in the previous year.
460. The draft evaluation plan must be in accordance with the common methodological principles provided by the Commission¹⁷¹. The evaluation plan approved by the Commission must be made public.
461. The *ex post* evaluation must be carried out by an expert independent from the aid granting authority on the basis of the evaluation plan. Each evaluation must include at least one interim and one final evaluation report. Both reports must be made public.
462. In case of aid schemes excluded from the scope of a block exemption regulation exclusively on the grounds of their large budget, the Commission will assess their compatibility solely on the basis of the evaluation plan.

¹⁷¹ Commission Staff Working Document, Common methodology for State aid evaluation, 28.5.2014, SWD(2014) 179 final.

463. The final evaluation report must be submitted to the Commission in due time to allow for the assessment of the possible prolongation of the aid scheme and at the latest nine months before its expiry. That deadline could be reduced for schemes triggering the evaluation requirement in their last two years of implementation. The precise scope and arrangements for each evaluation will be set out in the decision approving the aid scheme. Any subsequent aid measure with a similar objective must describe how the results of the evaluation have been taken into account.

6. REPORTING AND MONITORING

464. Under Council Regulation (EU) 2015/1589¹⁷² and Commission Regulation (EC) No 794/2004¹⁷³, Member States must submit annual reports to the Commission.

465. Member States must maintain detailed records regarding all aid measures. Such records must contain all information necessary to establish that the conditions regarding eligible costs and maximum aid intensities have been fulfilled. Those records must be maintained for 10 years from the date of award of the aid and must be provided to the Commission upon request.

7. APPLICABILITY

466. The Commission will apply these guidelines to assess the compatibility of all notifiable aid for climate, environmental protection and energy awarded or intended to be awarded from 27 January 2022. Unlawful aid will be assessed in accordance with the rules applicable at the date on which the aid was awarded.

467. These guidelines replace the Guidelines on State aid for environmental protection and energy 2014-2020¹⁷⁴.

468. The Commission proposes the following appropriate measures to Member States under Article 108(1) of the Treaty:

- (a) Member States amend, where necessary, existing environmental protection and energy aid schemes in order to bring them into line with these guidelines no later than 31 December 2023;
- (b) Member States give their explicit unconditional agreement to the appropriate measures proposed in point 468(a) within two months from the date of publication of these guidelines in the *Official Journal of the European Union*. In the absence of any reply, the Commission will assume that the Member State in question does not agree with the proposed measures.

¹⁷² Council Regulation (EU) 2015/1589 of 13 July 2015 laying down detailed rules for the application of Article 108 of the Treaty on the Functioning of the European Union (OJ L 248, 24.9.2015, p. 9).

¹⁷³ Commission Regulation (EC) No 794/2004 of 21 April 2004 implementing Council Regulation (EC) No 659/1999 laying down detailed rules for the application of Article 93 of the EC Treaty (OJ L 140, 30.4.2004, p. 1).

¹⁷⁴ Communication from the Commission — Guidelines on State aid for environmental protection and energy 2014-2020 (OJ C 200, 28.6.2014, p. 1).

8. REVISION

469. The Commission intends to carry out an evaluation of these guidelines as from 31 December 2027, to examine their effectiveness, efficiency, relevance, coherence and added value.
470. The Commission may decide to review or amend these guidelines at any time if this should be necessary for reasons associated with competition policy or to take account of other Union policies and international commitments or for any other justified reason.