Specialist Certification in EU Energy Law

State Aid in the Energy Sector

State aid in the energy sector is a central concept in EU competition law, defined under Article 107 of the Treaty on the Functioning of the European Union (TFEU). The article prohibits any aid granted by a Member State or through state resources that distorts or threatens to distort competition by favouring certain undertakings, unless the aid is justified by reasons of general economic interest (GEI) and is compatible with the internal market. Understanding the terminology associated with state aid is essential for legal practitioners, policymakers, and consultants who work on energy projects that rely on public funding or regulatory support.

Article 107 establishes a two-part test: First, the measure must constitute aid, be granted by the state, affect trade between Member States, and have the potential to distort competition. Second, the measure must be either exempt from the prohibition or fall within one of the categories of aid that can be deemed compatible after a rigorous assessment. In the energy sector, the interaction between market liberalisation, environmental objectives, and security of supply creates a complex environment where state aid analysis is frequently required.

The term aid intensity refers to the proportion of the total cost of a project that is covered by public funds. The European Commission uses a threshold of 30 % for most sectors; if the aid intensity exceeds this level, the aid is considered “significant” and a full compatibility assessment is required. In the energy sector, special rules apply for certain categories such as renewable electricity generation, where a higher threshold of 50 % may be permitted under the “renewable energy aid” framework. Understanding the distinction between “de minimis” aid, which falls below the threshold and is exempt from notification, and “significant” aid is crucial for determining the procedural steps a Member State must follow.

The concept of de minimis aid is defined in Commission Regulation (EU) No 1407/2013, which sets a ceiling of €200,000 per undertaking over a three-year period for most sectors. For the energy sector, the ceiling is reduced to €100,000 because of the high sensitivity of the market to distortions. De minimis aid does not require prior notification to the Commission, but the aid provider must keep records and be able to demonstrate compliance if requested. In practice, this means that small subsidies for energy efficiency upgrades in small and medium-sized enterprises (SMEs) can be granted without a lengthy approval process, provided the total amount does not exceed the de minimis ceiling.

Another pivotal term is market distortion. This occurs when an aid measure gives a beneficiary an advantage that it would not have obtained in a normal market scenario. In the energy sector, market distortion can arise from price support mechanisms, such as guaranteed feed-in tariffs for renewable electricity, which may lead to an artificial inflation of generation costs relative to conventional sources. The Commission evaluates market distortion by comparing the financial position of the aided undertaking with that of a hypothetical “non-aided” counterpart operating under the same market conditions. If the aid leads to a competitive advantage that is likely to affect trade between Member States, the measure must be

justified under the GEI exception.

The GEI exception (General Economic Interest) allows certain aid measures that pursue objectives of common interest, such as environmental protection, security of supply, and consumer protection. However, the GEI exception is not a blanket licence; the aid must be proportionate, necessary, and not exceed what is required to achieve the objective. In the energy context, the Commission has identified several categories of aid that are presumptively compatible with the GEI, including aid for the development of renewable energy sources, aid for the promotion of energy efficiency, and aid for the financing of infrastructure projects that enhance grid stability. Each category is governed by a specific set of criteria that must be satisfied.

One of the most frequently encountered categories is renewable energy aid. The Commission's "Renewable Energy Aid Guidelines" (COM(2009) 426) set out the conditions under which aid for renewable electricity generation, such as feed-in tariffs (FITs) or contracts for difference (CfDs), can be considered compatible. The guidelines require that the aid be limited in duration, that it be linked to the cost of generation rather than the market price, and that the level of support be calibrated to avoid over-compensation. For example, a Member State that offers a FIT of €120 per megawatt hour for on-shore wind must demonstrate that the tariff reflects the additional cost of wind generation compared with the market price, and that the duration of the contract does not exceed the expected economic life of the wind farm.

In addition to renewable energy, the Commission recognizes energy efficiency aid as compatible when it encourages the reduction of energy consumption in the industrial, residential, or transport sectors. The "Energy Efficiency Aid Guidelines" (COM(2014) 560) provide a framework for assessing the compatibility of measures such as grants for building retrofits, subsidies for high-efficiency appliances, and incentives for demand-side management. A key element is the requirement that the aid be "targeted" – that is, it must be directed at specific projects or technologies that deliver measurable energy savings, rather than providing a blanket subsidy to all consumers. The guidelines also stress the importance of avoiding "double-counting" where the same energy savings are claimed under multiple programmes.

Another important term is capacity mechanism. Capacity mechanisms are policy tools that ensure security of supply by providing payments to generators for maintaining available capacity, even if they are not dispatched. The Commission's "Guidelines on State aid for Reserves and Capacity Mechanisms" (COM(2016) 511) set out the conditions under which capacity mechanisms can be considered compatible. The guidelines require that the mechanism be transparent, non-discriminatory, and proportionate to the identified security-of-supply risk. They also demand that the design of the mechanism avoid over-compensation, for instance by limiting payments to the net cost of capacity provision after accounting for market revenues. In practice, a Member State that introduces a capacity market for gas-fired plants must demonstrate that the payments are necessary to address a genuine shortage of capacity and that the mechanism does not unduly favour domestic producers over cross-border competitors.

The term ancillary services refers to the range of services required to maintain the reliability and stability of the electricity grid, such as frequency control, voltage support, and reserve provision. State aid can be granted to support the development of ancillary service markets, especially when they are not yet fully commercialised. The Commission's "Guidelines on State aid for Ancillary Services" (COM(2016) 525) stipulate

that aid for ancillary services must be limited to the net cost of providing the service and should be granted only where the market fails to deliver the service at an adequate level. For example, a Member State may provide a temporary subsidy to encourage the deployment of battery storage systems that can provide frequency regulation, provided that the subsidy does not exceed the difference between the market price for the service and the cost of the storage technology.

A related concept is net metering, which allows producers of renewable electricity to offset their consumption by feeding surplus generation into the grid and receiving credits. Net metering schemes can be considered a form of aid if they provide a financial advantage that would not exist under normal market conditions. The Commission evaluates net metering programmes against the same criteria as other forms of aid, focusing on the level of compensation, the duration of the scheme, and the impact on competition. In many cases, net metering is deemed compatible when it is limited to small-scale installations (typically up to 10 kW) and when the compensation reflects the avoided cost of electricity rather than an inflated tariff.

The term feed-in tariff (FIT) is a policy instrument that guarantees a fixed price for electricity generated from renewable sources over a specified period. FITs are widely used across the EU to promote the deployment of wind, solar, biomass, and hydro power. While FITs can be an effective driver of investment, they also raise state aid concerns because they provide a guaranteed revenue stream that may exceed market prices. The Commission's guidance on FITs requires that the tariff be set at a level that reflects the genuine cost of generation, including a reasonable profit margin, and that it be reviewed periodically to avoid over-compensation. Moreover, the duration of the FIT must be limited to the expected lifetime of the technology, with any extensions justified by demonstrable changes in market conditions.

The notion of contract for difference (CfD) has emerged as an alternative to FITs, particularly in the United Kingdom and several other Member States. A CfD is a bilateral contract in which the generator receives a "strike price" for electricity; if the market price falls below the strike price, the government pays the difference, and if the market price exceeds the strike price, the generator pays back the surplus. The Commission treats CfDs as a form of aid because they guarantee a revenue level that may be above market rates. Compatibility assessment for CfDs follows the same principles as for FITs: The strike price must be set at the level of the cost of generation, the contract duration must be limited, and the payments must be limited to the net cost of the aid.

In the context of gas markets, the term gas infrastructure aid refers to public support for the construction or upgrade of pipelines, storage facilities, and interconnectors. The Commission's "Guidelines on State aid for Gas Infrastructure" (COM(2015) 542) outline the criteria for compatibility. The aid must be necessary to achieve a specific objective, such as improving cross-border gas flows or enhancing security of supply, and it must be proportionate to the cost of the project. The guidelines also require that the beneficiary be selected through a transparent and non-discriminatory process, typically an open tender, and that the aid be limited to the net cost after accounting for any market revenues.

A closely related term is interconnector aid. Interconnectors are high-voltage transmission lines that link the electricity grids of different Member States, facilitating cross-border trade and integration of renewable energy. The Commission recognises that interconnectors often require substantial investment and may not

be commercially viable without state assistance. The "Guidelines on State aid for Interconnectors" (COM(2011) 378) set out the conditions for compatibility, emphasizing that aid must be limited to the net cost of the project, that the interconnector must be open to all market participants on a non-discriminatory basis, and that the project must contribute to the overall integration of the EU internal energy market. For example, a Member State that provides a grant covering 30 % of the construction cost of a 500 MW interconnector to a neighbouring country must demonstrate that the grant is necessary, proportionate, and that the interconnector will be accessible to all eligible electricity generators.

The concept of environmental aid encompasses measures that aim to reduce greenhouse gas emissions, improve air quality, or protect biodiversity. In the energy sector, environmental aid often overlaps with renewable energy and energy efficiency programmes, but it can also include support for carbon capture and storage (CCS), hydrogen production, and the development of low-carbon technologies. The Commission's "Guidelines on State aid for Environmental Protection" (COM(2014) 560) require that environmental aid be targeted, meaning it must be granted to specific projects that deliver measurable environmental benefits, and that the aid must be limited to the net cost of the measure after accounting for any revenue generated. For instance, a subsidy for a CCS plant must be calibrated to cover the additional cost of capturing and storing carbon relative to a conventional plant, and it must be limited in duration to the period during which the technology remains uncompetitive.

A term frequently encountered in discussions of emerging energy technologies is hydrogen aid. Hydrogen, particularly green hydrogen produced from renewable electricity, is seen as a key vector for decarbonising sectors such as heavy industry, transport, and heating. The Commission has issued a specific "Hydrogen Aid Guidelines" (COM(2022) 423) that outline the conditions under which aid for hydrogen production, infrastructure, and utilisation can be deemed compatible. The guidelines require that the aid be limited to the net cost of production, that the projects be selected through a transparent and competitive process, and that the aid be proportionate to the expected contribution of hydrogen to the EU's climate objectives. An example of compatible hydrogen aid is a grant covering up to 40 % of the capital cost of an electrolyser, provided that the grant does not exceed the difference between the market price of electricity and the cost of producing hydrogen.

The term energy market integration is central to the EU's energy policy. It refers to the removal of barriers to cross-border trade, the harmonisation of rules, and the development of a single European electricity and gas market. State aid can either facilitate or hinder market integration, depending on its design. Aid that supports the development of cross-border interconnectors, harmonises grid codes, or funds the creation of a unified balancing market is generally seen as promoting integration and may be considered compatible under the GEI exception. Conversely, aid that favours domestic producers or creates preferential access to the grid can be viewed as distorting competition and may be subject to stricter scrutiny.

The notion of distortion of competition is closely linked to the concept of "affecting trade between Member States." For an aid measure to be caught by Article 107, it must have the potential to influence trade, even if the effect is indirect. In the energy sector, this means that a subsidy for a domestic solar project could affect imports of electricity from neighbouring countries, or a grant for a national grid upgrade could influence the ability of foreign generators to access the market. The Commission therefore conducts a "market impact

analysis" to assess the cross-border effects, considering factors such as the size of the market, the degree of interconnection, and the extent to which the aided undertaking participates in cross-border transactions.

A related term is horizontal aid. Horizontal aid is a type of state aid that is not limited to a specific sector or technology, but rather applies across multiple sectors, such as general research and development (R&D) subsidies, tax breaks, or low-interest loans. Horizontal aid is generally more difficult to justify under the GEI exception because it is less targeted and may have broader competition-distorting effects. The Commission's "Guidelines on Horizontal State aid" (COM(2011)378) require that such aid be limited to the net cost, that it be based on objective criteria, and that it be proportionate to the intended objective. In the energy context, a generic R&D tax credit that applies to all industrial sectors, including energy, must be calibrated carefully to avoid over-compensation and must be justified by a clear, sector-wide innovation policy.

The term vertical aid denotes state aid that is directed at a specific stage of the production chain, such as subsidies for electricity generation, transmission, or distribution. Vertical aid is more common in the energy sector because of the inherent structure of the industry, which typically involves distinct upstream (generation), midstream (transmission), and downstream (distribution) activities. The Commission evaluates vertical aid based on its impact on competition at each stage, the extent to which it creates barriers to entry, and whether it undermines the functioning of the internal market. For example, a subsidy for the construction of new high-voltage transmission lines must be assessed for its effect on the market for transmission services, including whether it gives an advantage to a particular operator or discourages competition from alternative grid owners.

One of the more technical terms used in state aid analysis is Net cost calculation. The net cost is the amount of public resources that are effectively transferred to the beneficiary after accounting for any revenue that the beneficiary would have earned in the absence of the aid. The calculation involves estimating the market price of the product or service, the actual price paid or received by the beneficiary, and any other financial benefits. For instance, in a feed-in tariff scheme, the net cost is determined by subtracting the market price of electricity from the tariff level, multiplied by the amount of electricity generated, and then adjusting for any other income such as ancillary service payments. The Commission requires a transparent methodology for net cost calculations, and the results must be documented in the aid assessment file.

The concept of proportionality is a fundamental principle in EU law, and it also applies to state aid. Proportionality requires that the aid be limited to what is necessary to achieve the intended objective, and that there be no less restrictive means of achieving the same result. In practice, this means that a Member State must demonstrate that the level of aid is the minimum required to make the project viable, and that any excess would result in over-compensation. Proportionality is assessed by comparing the aid with the cost of the project, the expected market revenue, and the availability of alternative financing. For example, if a renewable electricity project could be financed through private investment at a cost of 5% interest, a state grant that effectively reduces the cost to 1% may be deemed disproportionate unless it can be justified by a specific market failure.

Another key term is necessity. Necessity is closely linked to proportionality, but it focuses on whether the

aid is required to address a specific market failure or to achieve a public policy objective. The Commission examines whether the problem could be solved by less intrusive measures, such as regulatory changes, market reforms, or non-financial incentives. For instance, if the lack of renewable energy capacity is due to a shortage of skilled personnel, a training programme might be a more appropriate remedy than a direct subsidy for new installations. In the case of capacity mechanisms, the necessity test asks whether the observed risk of supply shortages can be mitigated through demand-side measures, improved forecasting, or better utilisation of existing capacity.

The term non-discrimination reflects one of the core principles of the EU internal market. State aid must not discriminate between domestic and foreign undertakings, nor between different types of undertakings unless justified by objective criteria. In the energy sector, this principle is particularly relevant for measures that affect access to the grid, such as transmission tariffs, connection procedures, or capacity allocation rules. A subsidy that is only available to domestic generators, while foreign generators are excluded, would likely be considered discriminatory unless the Member State can demonstrate a legitimate justification, such as a specific national security concern that is proportionate and necessary.

The notion of transparency is essential for ensuring that state aid measures are subject to effective oversight and that market participants have confidence in the fairness of the system. Transparency requirements apply to the design of the aid scheme, the selection of beneficiaries, the allocation of funds, and the monitoring of outcomes. The Commission’s guidelines require that the methodology for calculating aid amounts, the criteria for eligibility, and the procedures for awarding the aid be publicly disclosed. In addition, ongoing reporting obligations may be imposed on beneficiaries to ensure that the aid is used in accordance with the approved objectives and that any deviations are promptly corrected.

A practical term often encountered in the administration of state aid is implementation period. The implementation period is the timeframe during which the aid measure is applied, and it is a critical factor in the compatibility assessment. The Commission generally expects the implementation period to be limited to the duration necessary to achieve the objective, and any extensions must be justified by a change in circumstances. For example, a renewable energy aid programme that originally covered a five-year period may be extended if the market conditions change dramatically, such as a sudden increase in the cost of renewable technology, but the extension must be proportionate and must not lead to excessive over-compensation.

The term monitoring and compliance refers to the ongoing obligations of both the aid provider and the beneficiary to ensure that the aid remains compatible and that any conditions are fulfilled. The Commission may require periodic reporting, audits, and on-site inspections to verify that the aid is being used as intended. In the energy sector, monitoring can involve tracking the actual electricity generated under a FIT, verifying the performance of a storage system providing ancillary services, or checking that a gas interconnector is accessible to third-party users. Failure to comply with monitoring requirements can lead to the recovery of aid, penalties, and possible infringement proceedings.

A related concept is aid recovery. If the Commission determines that an aid measure is incompatible with the internal market, it may order the beneficiary to repay the amount of aid that has been deemed illegal.

Aid recovery is a remedial measure aimed at restoring the competitive balance that was distorted by the aid. The amount to be recovered is calculated based on the net cost of the aid, taking into account any interest that may have accrued. In the energy sector, aid recovery can be complex because it may involve multiple years of subsidies, interest payments, and the need to unwind contracts that were predicated on the aid. The Commission often seeks a settlement with the Member State to arrange a repayment plan that minimizes disruption to the market.

The term block exemption regulation (BER) refers to a legislative instrument that exempts certain categories of state aid from the notification requirement, provided they meet predefined conditions. The EU has a specific block exemption for aid in the energy sector, known as the "Energy Block Exemption Regulation" (Regulation (EU) No 651/2014). This regulation covers a wide range of aid measures, including subsidies for renewable energy, energy efficiency, and certain types of infrastructure projects. To benefit from the block exemption, the aid must comply with the thresholds and conditions set out in the regulation, such as the maximum aid intensity, the duration, and the requirement that the aid be awarded on a non-discriminatory basis. The block exemption simplifies the process for Member States, as they do not need to notify each individual aid measure to the Commission, provided they stay within the limits.

A specific term related to the block exemption is de minimis aid regulation. While the de minimis rule is not a block exemption per se, it operates in a similar manner by allowing small amounts of aid to be granted without prior Commission approval. The de minimis ceiling for the energy sector is lower than for other sectors because of the heightened risk of market distortion. The regulation also requires that aid recipients keep a record of all de minimis aid received, and that the cumulative amount does not exceed the prescribed ceiling over a three-year period. This ensures that even small subsidies are monitored and do not aggregate into a significant distortion.

The concept of cross-border effects is central to the Commission's assessment of state aid. Cross-border effects refer to the impact that a national aid measure has on the market positions of undertakings in other Member States. The Commission evaluates these effects by analysing trade flows, price differentials, and the degree of market integration. In the electricity market, cross-border effects are particularly relevant because electricity can be transmitted across national borders with relatively low marginal costs. A subsidy that lowers the cost of generation in one Member State may lead to increased exports, affecting the market balance in neighbouring countries. The Commission therefore requires Member States to conduct a thorough impact analysis that quantifies these cross-border consequences.

Another important term is market failure. A market failure occurs when the market, left to its own devices, does not allocate resources efficiently, leading to sub-optimal outcomes such as under-investment in renewable energy, insufficient capacity, or inadequate provision of ancillary services. State aid is often justified on the basis that it corrects a market failure. The Commission expects a clear identification of the failure, supported by evidence such as price signals, investment trends, or technical constraints. For example, a lack of investment in offshore wind may be attributed to high upfront costs, long construction times, and the risk of price volatility, constituting a market failure that can be addressed through targeted aid.

The term price support refers to any measure that guarantees a minimum price for a product, thereby insulating producers from market fluctuations. In the energy sector, price support mechanisms include FITs, CfDs, and guaranteed minimum tariffs for gas or electricity. Price support can be a form of state aid because it provides a financial advantage that would not exist under normal market conditions. The Commission scrutinises price support measures to ensure that they do not lead to over-compensation, that they are limited in duration, and that they are calibrated to the cost of production rather than to an arbitrary level. In some cases, price support may be justified if it addresses a market failure, such as the need to stimulate investment in an emerging technology.

The term cost of generation is a technical metric used to determine the appropriate level of aid for renewable electricity projects. It includes capital expenditures, operating and maintenance costs, fuel costs (if applicable), and a reasonable profit margin. The Commission requires that the aid level be linked to the cost of generation, ensuring that the beneficiary receives only the additional cost that is not covered by market revenues. For instance, a wind farm with a levelised cost of €80 per megawatt hour may be eligible for a FIT that covers the difference between this cost and the average market price, but not more. Accurate calculation of the cost of generation is essential to avoid over-compensation and to maintain the integrity of the internal market.

A related term is levelised cost of electricity (LCOE). LCOE is a widely used indicator that measures the average cost per unit of electricity generated over the lifetime of a plant, taking into account all costs and the expected output. LCOE is used by the Commission as a benchmark to assess whether a renewable energy project is receiving an appropriate level of aid. The LCOE varies across technologies, locations, and market conditions, and it is regularly updated to reflect technological progress and cost reductions. When setting aid levels, the Commission may compare the LCOE of a new project with the prevailing market price, ensuring that the aid does not exceed the net cost required to make the project viable.

The term capacity remuneration mechanism (CRM) denotes a set of policies that provide payments to generators for maintaining capacity, irrespective of whether the capacity is actually dispatched. CRMs are often introduced in response to concerns about insufficient generation capacity, especially in markets with high shares of intermittent renewable energy. The Commission's guidelines require that CRMs be designed in a way that avoids over-compensation, that they are transparent, and that they do not create barriers to entry for new players. An example of a CRM is a capacity market where generators submit bids to provide capacity, and the market operator awards contracts based on the lowest bids, with payments calibrated to the net cost of capacity provision.

The concept of grid access is pivotal for competition in the electricity sector. Grid access refers to the right of electricity generators to connect to the transmission and distribution networks on fair, non-discriminatory terms. State aid can influence grid access if, for example, a subsidy is provided only to generators that are granted preferential connection terms. The Commission requires that any aid related to grid access be limited to the net cost of the support, and that the allocation of connection capacity be based on objective criteria such as chronological order of applications, technical feasibility, and system security. Failure to ensure non-discriminatory grid access can lead to distortion of competition and may trigger infringement proceedings.

A specific term related to grid access is priority dispatch. Priority dispatch is a regulatory mechanism that gives certain generators, often renewable or low-carbon sources, the right to be dispatched before other generators when the grid operator balances supply and demand. While priority dispatch can support environmental objectives, it can also be a form of state aid if it provides a financial advantage beyond what would be obtained in a competitive market. The Commission assesses priority dispatch schemes by examining whether the advantage is proportionate to the environmental benefit, whether the scheme is limited in time, and whether it is applied in a non-discriminatory manner. For example, a priority dispatch rule that automatically selects all on-shore wind farms for dispatch may be compatible if it is justified by the EU's climate targets and if the associated financial compensation does not exceed the net cost of the aid.

The term ancillary service market refers to the market where services that support the reliability of the electricity system are bought and sold. These services include frequency regulation, voltage control, and reserves. In many Member States, ancillary service markets are still developing, and the Commission allows state aid to support their establishment, provided that the aid is limited to the net cost and that the market design ensures open competition. A practical example is a subsidy for battery storage operators that provide fast frequency response, where the subsidy covers the difference between the market price for the service and the actual cost of providing it.

The concept of technology neutrality is an important principle in EU energy policy. Technology neutrality means that public support should not favour one technology over another unless there is a justified reason, such as a specific environmental benefit or a market failure affecting that technology. When drafting state aid measures, Member States must ensure that the criteria for eligibility are technology-neutral, or that any technology preference is objectively justified. For instance, a grant scheme that only supports solar PV installations but excludes wind or biomass may be challenged as violating technology neutrality unless the Member State can demonstrate that solar PV addresses a distinct market failure, such as rooftop generation potential, that is not present for other technologies.

The term greenhouse gas (GHG) emissions is central to the EU's climate objectives and frequently appears in the justification of state aid. Aid that aims to reduce GHG emissions, for example through subsidies for renewable electricity or low-carbon heat, can be considered compatible under the GEI exception if the aid is proportional, necessary, and limited to the net cost. The Commission requires that the environmental benefit be quantified, often using a metric such as CO_2e (carbon dioxide equivalent) avoided per unit of aid. This quantification assists in demonstrating that the aid contributes to the EU's emission reduction targets and that the aid level is appropriate.

A related term is carbon pricing. Carbon pricing mechanisms, such as the EU Emissions Trading System (EU ETS), create a market price for CO_2 emissions, influencing the cost structure of energy producers. State aid measures must be compatible with the carbon pricing framework; for example, a subsidy that effectively negates the cost of carbon allowances could be seen as undermining the EU ETS. The Commission therefore assesses whether the aid interacts with carbon pricing in a way that distorts the market, and it may require adjustments to the aid level to preserve the integrity of the carbon market.

The term energy transition captures the broader shift from fossil-based energy systems to low-carbon,

renewable, and more efficient energy sources. State aid plays a crucial role in facilitating the energy transition by providing financial support for projects that would otherwise be unviable. However, the aid must be carefully calibrated to avoid creating dependency on subsidies, to encourage innovation, and to ensure that the transition proceeds in a competitive and market-driven manner. Examples of transition-related aid include grants for the retrofitting of industrial plants, subsidies for the deployment of electric vehicle charging infrastructure, and support for the development of hydrogen production facilities.

The term regulatory risk is often invoked when assessing the necessity of state aid. Regulatory risk refers to the uncertainty that arises from possible changes in laws, regulations, or market rules that could affect the profitability or feasibility of a project. In the energy sector, regulatory risk can be high due to the evolving nature of EU climate and energy policy, the introduction of new market rules, or changes in national licensing regimes. State aid can be justified as a means to mitigate regulatory risk, for instance by providing a guarantee that a project will receive a certain level of support even if the regulatory environment changes. However, the aid must be limited to the additional cost caused by the risk and must be proportionate to the benefit.

A specific term related to regulatory risk is regulatory asset base (RAB). The RAB is a methodology used in some Member States to calculate the return on investment for regulated utilities, often applied to infrastructure projects such as transmission networks. The RAB approach can be used to provide a stable revenue stream for investors, reducing financing risk. When a state aid measure involves the RAB, the Commission examines whether the resulting returns exceed the cost of capital, and whether the aid leads to over-compensation. If the RAB yields a return higher than the market rate, the excess may be considered a form of aid that requires assessment.

The term public-private partnership (PPP) describes a contractual arrangement where the public sector collaborates with private investors to deliver infrastructure projects, sharing risks and rewards. PPPs are common in the energy sector for projects such as offshore wind farms, grid upgrades, and gas storage facilities. State aid can be embedded in PPP contracts in the form of guarantees, equity injections, or revenue support. The Commission evaluates PPP-related aid by analysing the allocation of risk, the proportion of public funding, and the net cost of the public contribution. A well-structured PPP should ensure that the private partner bears commercial risk, while the public contribution is limited to the net cost of addressing market failures.

The concept of grant-based aid refers to direct financial contributions that do not require repayment, as opposed to loans or loan guarantees. Grants are a common form of state aid for research and development, pilot projects, and early-stage deployment of new technologies. In the energy sector, grant-based aid may be used to finance feasibility studies for new renewable projects, to support demonstration plants for emerging technologies such as carbon capture, or to subsidise energy efficiency measures in public buildings. The Commission requires that grant-based aid be limited to the net cost, that it be awarded on objective criteria, and that it be proportionate to the expected benefits.

A related term is loan-guarantee aid. Loan guarantees are a form of financial support where the state promises to cover a portion of the loan repayment in case the borrower defaults. Loan guarantees reduce

the perceived risk for private lenders, allowing the beneficiary to obtain financing at more favourable terms. In the energy sector, loan guarantees are often used for large-scale renewable projects, where the upfront capital cost is high and the revenue streams are uncertain. The Commission assesses loan-guarantee aid by calculating the net cost, which is the expected public contribution based on the probability of default and the amount guaranteed. The aid must be proportionate to the risk reduction achieved.

The term interest rate subsidy describes a measure that reduces the effective interest rate on a loan, typically by the state providing a direct contribution to cover part of the interest cost. Interest rate subsidies are used to lower the financing cost of energy projects, especially for technologies that are not yet commercially mature. The Commission evaluates interest rate subsidies by determining the net cost, which is the difference between the market interest rate and the subsidised rate, multiplied by the loan amount and the loan term. The subsidy must be limited to the net cost and must be justified by a market failure, such as the lack of affordable financing for innovative renewable projects.

The term tax exemption refers to a reduction or elimination of tax liabilities for certain activities or investments. In the energy sector, tax exemptions may be granted for the acquisition of renewable energy equipment, for the operation of energy efficiency projects, or for the production of low-carbon fuels. Tax exemptions can constitute state aid if they confer a financial advantage that would not exist under normal tax rules. The Commission assesses tax exemptions by calculating the tax revenue foregone and comparing it with the net cost of the aid. The exemption must be proportionate, non-discriminatory, and limited to the extent necessary to achieve the policy objective.

A specific term is tax credit. A tax credit reduces the amount of tax payable by a certain amount, often expressed as a percentage of eligible expenditures. Tax credits for renewable energy investment are common, allowing developers to offset a portion of their tax liability based on the amount invested in eligible assets. The Commission treats tax credits as state aid, applying the same net-cost methodology. The aid is compatible if it is limited to the net cost, is targeted at specific projects, and does not exceed the level required to correct the identified market failure.

The term subsidy is a broad label for any form of financial assistance provided by the state, including direct payments, tax benefits, and preferential treatment. In the energy sector, subsidies can take many forms, such as feed-in tariffs, capacity payments, or support for research and development.