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Subject: **State Aid SA.64736 – RRF - Greece - Financial support in favour of electricity storage facilities**

Excellency,

1. PROCEDURE

(1) Following pre-notification contacts, pursuant to Article 108(3) of the TFEU, Greece notified to the Commission on 10 June 2022 its intention to establish a scheme to provide support for the establishment of electricity storage facilities in Greece (the "measure" or the "scheme").

(2) The Commission requested additional information on 1 and on 20 July 2022, which was provided by the Greek authorities on 5, 6 July and on 17 August 2022 respectively. Following's Commission's request of 24 August 2022, Greece provided further clarifications on 25 August 2022.

(3) By letter dated 31 May 2022, Greece agreed to waive its rights deriving from Article 342 TFEU in conjunction with Article 3 of Regulation 1/1958[1] and to have this Decision adopted and notified in English.

[1] Regulation No 1 determining the languages to be used by the European Economic Community, OJ 17, 6.10.1958, p. 385.

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2. DETAILED DESCRIPTION OF THE MEASURE

2.1. Background and objectives

(4) Greece intends to introduce a scheme to support investments in storage facilities for a total capacity of up to 900 MW. While the scheme is open to all storage technologies meeting the minimum technical requirements, the Greek authorities notably expect investment in grid-scale Battery Electricity Storage ("BES") facilities[2]. By increasing available storage capacity in the system, the Greek authorities aim for the smooth integration of a higher share of Renewable Energy Sources ("RES") in the Greek electricity system with a reduced level of curtailments.

(5) Storage facilities participate in the electricity markets notably performing a price arbitrage function, i.e. absorbing and storing electricity when electricity market prices are low, and injecting it back into the grid when electricity market prices are high. As such, storage facilities effectively substitute expensive electricity generated by high-cost units for low-cost, clean electricity available during high RES generation conditions, thus generally facilitating RES integration and reducing RES electricity curtailments during over-generation periods.

(6) According to Greece, apart from enabling a higher level of RES penetration, the storage facilities have other benefits. They also participate in the balancing market, providing flexibility and ancillary services to the electricity system, which are key to the successful integration of a large capacity of varying and intermittent RES in power systems. In addition, storage facilities enhance market liquidity, particularly in the balancing market, supporting competitiveness and transparent price formation, and lead to a reduction in the prices of balancing services.

(7) Moreover, storage facilities installed in congested network areas could provide network congestion relief services, by absorbing locally produced RES electricity, which would otherwise be curtailed due to the network's transmission constraints. That function would effectively increase the hosting capacity in areas with favourable RES potential, where network expansion is either not feasible or not the optimal solution, with storage facilities acting, at least temporarily, as a substitute for network investments. Deployment of such services in Greece is subject to the development of the appropriate regulatory framework to support that functionality (see section 2.4.8).

(8) In December 2019, Greece published its National Energy and Climate Plan ("NECP")[3], which sets out the plan for the medium-term development of the Greek electricity sector in the 2020-2030 period. The NECP provides for the complete withdrawal of lignite-fired capacity by 2028, through its gradual replacement with

[2] There are different ways of storing energy. BES is a technology that allows for the storage of electricity for later use through an electrochemical process. A battery collects electricity from the grid or a power plant and then discharges that electricity at a later time to provide electric energy and other ancillary services when needed. Li-ion batteries are the most popular battery storage option today for grid scale applications. Compared to other technologies, they combine a high energy density, a small installation footprint and a low environmental impact.

[3] Available here: https://energy.ec.europa.eu/system/files/2020-03/el_final_necp_main_en_0.pdf.

new dispatchable, gas-fired and electricity storage capacity, alongside the establishment of approximately 9 GW of new intermittent RES generation during the 2020-2030 period[4]. The NECP highlights the benefits of electricity storage facilities for the higher penetration of RES in the electricity generation mix and the reduction of electricity production cost and retail electricity prices.

(9) Greece submitted that the measure is intended to promote the development of storage facilities as a means of supporting the de-carbonisation of Greece's electricity system in the medium term and the introduction of a large volume of new RES generating capacity. Greece explains that the introduction of electricity storage capacity constitutes an essential element allowing for the cost-efficient and effective integration of the envisaged new RES capacity into the Greek electricity system to meet the targets of Greece's NECP.

(10) Greece explained that currently there are no stand-alone storage facilities of any technology connected to the Greek interconnected system. The only storage facilities in operation in the Greek system are two hydro pumped storage facilities owned by Public Power Corporation ("PPC"). Those facilities are used almost exclusively as hydro-electric generation units, as their storage functionality is limited.

(11) In addition, the Ten-Year Network Development Plan (2021-2030) of the Greek Independent Power Transmission Operator S.A. ("IPTO") recognised the need for introduction of electricity storage facilities, in order for Greece to meet its RES penetration targets[5].

(12) A study commissioned by Greece's Regulatory Authority for Energy ("RAE") quantifies the need for new electricity storages to optimally support the gradual integration of the new 9 GW of RES capacity target set by the NECP for 2030[6]. The RAE study concluded that the optimal solution should target the development of new system-level storage capacity of approximately 1,250 - 1,750 MW, consisting of a mix of large and small capacity facilities, largely corresponding to pumped hydro storage ("PHS") and BES technologies, with the latter representing 500 – 750 MW of the total new storage capacity required in the medium term.

(13) Finally, Greece submitted that the measure will bring societal benefits. First, job creation on national and local level due to the construction, installation and operation of the new storage facilities[7]. Second, benefits to the national economy and security by replacing imported fuel and electricity with an indigenous source (RES electricity).

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4 Greece's NECP is currently being revised to provide for higher RES capacity targets, in line with the increased Union targets for a 55% reduction of greenhouse gas emissions by 2030.

5 Available here: https://www.admie.gr/sites/default/files/users/dssas/DPA%202021-2030/dpa2021-2030.pdf.

6 Determination of medium-term energy storage requirements of the Greek power system, ICCS/NTUA study for the Regulatory Authority for Energy, December 2019.

7 See for instance page 83 of the Greek NECP. The scheme will contribute to the increase of the domestic added value of the energy sector, which shall also ensure an increase in the number of jobs due to activities in the energy sector.

2.2. National legal basis

(14) The Greek authorities have provided Law 4920/2022[8] and in particular its Article 225[9], which introduces an amendment of Law 4001/2011 on "the operation of Electricity and Gas Energy Markets, Research, Production and Hydrocarbon transmission networks and other provisions" and sets the national legal basis for the grant of State aid for the establishment of electricity storage facilities pursuant to the Commission's prior approval of such aid and for the adoption of any further implementing measures:

(a) the adoption of a ministerial decision dealing with the main elements of the State aid scheme, namely the up-front grant covering the capital expenditure and the associated monitoring and certification mechanism, the principles applied to the determination of the annual support and the allocation of its funding to a storage support account;

(b) a RAE decision laying down the detailed methodology for the determination of the amount of the approved annual support for the supported projects and the application of the regulatory incentives and disincentives for the effective participation of the facilities in the electricity markets and for the operation of the facilities such that maximises system benefits;

(c) a methodology for the allocation of the annual storage support account cost to load representatives (i.e. suppliers of electricity, which act as the aggregators to represent consumer demand in the electricity market);

(d) modifications to the Electricity Market Regulations and System Codes to implement all necessary details for the application of the scheme.

(15) The Greek authorities have also initiated the process of revising the regulatory framework to facilitate the integration of storage facilities to the networks and electricity markets. To that purpose, the Greek Government established a Storage Task Force in December 2020 and entrusted it with the task of proposing the required legal and regulatory interventions. The report of the Storage Task Force dated June 2021 establishes the directions for the amendment of the legal and regulatory framework on electricity storage[10].

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8 Government Gazette 74/15.04.2022.

9 Article 225 of Law 4920/2022 contains, apart from the provision for the scheme, also a provision for individual aid for storage. Greece explained that the individual aid provision concerns only the support for the Amfilochia project (approved with Commission decision of 20 December 2021 in State Aid SA.57473 (2021/N) – Greece - RRF - Pumped Hydro plant – Amfilochia).

10 Available here: https://ypen.gov.gr/wp-content/uploads/2021/07/Eisigisi_ODE_Apothikeysis-xwris-FEK-kai-praktika.pdf.

2.3. Form and duration of support

(16) The scheme provides for two forms of support to be granted cumulatively to the selected storage facilities:

a) An investment grant

(17) An investment grant to finance capital expenditure (the "investment grant"). It will be paid during the construction period of each project, i.e. until the end of 2025. An equal amount of investment grant (in EUR/MW) will be paid to all supported projects in order to cover part of their funding gap. The investment grant will not exceed 40-50% of a project's CAPEX (investments costs)[11].

b) A two-way Contract for Difference

(18) A two-way Contract for Difference ("CfD") of a 10-year duration to cover the balance of any residual funding gap, after payment of the investment grant (the "annual support"). The annual support, on a EUR/MW basis, will be paid over a 10-year period as of the commencement of operation of the project, i.e. by 2035 at the latest. It will be subject to regular monitoring, review and adjustment by RAE to prevent overcompensation. The amount of the annual support will be calculated on an annual basis, as the difference between the amount of revenues tendered by each project as necessary for its financial viability ("Bid Revenues"), and the revenues that each project will earn from its participation in the various electricity markets ("Market Revenues"). The amount of annual support will be adjusted through incentives for effective market participation (see recitals (73) to (79)).

(19) Greece explained that if Market Revenues are lower than the Bid Revenues, they will be complemented with the necessary amount of annual support in order for each project to receive its Bid Revenues on an annual basis. On the other hand, if Market Revenues exceed the Bid Revenues, a claw-back mechanism will be established both at the level of the scheme and the project for the project to return any amount of excess revenues, preventing thus the possibility of windfall profits and overcompensation.

(20) Greece submitted that the combination of the investment grant with the annual support is an appropriate instrument to achieve simultaneously several objectives, all crucial to allow the immediate implementation of investments in storage:

(a) cover the funding gap that remains after granting the investment grant to the projects;

(b) hedge against the volatility of market revenues, which cannot be reliably predicted over the lifetime of the projects, enhancing critically the bankability of the projects;

[11] The investment grant amount set by Greece corresponds to 40% of the CAPEX of the reference project used by Greece (see section 2.6.1). This percentage might vary in each project but Greece submitted that the intensity will be maintained at a level not exceeding 40-50% of a project's CAPEX.

(c) avoid over-compensation and windfall profits in case of unexpectedly high market revenues, via a claw-back mechanism as regards any excess market revenues; and

(d) combine with mechanisms incentivising effective market participation.

(21) As an alternative to the CfD, the Greek authorities also examined the possibility of covering the funding gap solely by means of an up-front investment grant. That option would however result in a high market exposure of the projects, effectively negating their bankability, given that long-term prediction of market revenue for storage faces major uncertainties. Furthermore, a large amount of up-front investment grant to mitigate the impact of market revenues uncertainty would entail a risk of excessive investment returns.

(22) The scheme is included in the Greek National Recovery and Resiliency Plan ("RRP"). It is part of the investment for "Support of the installation of storage systems to enhance RES penetration"[12]. This investment will support the installation of 1,380 MW capacity of storage in the electricity system. Of this capacity, i) 680 MW will be contributed by the Amfilochia PHS Project[13], in the form of long duration storage and ii) the remaining capacity of up to 900 MW will be installed through the scheme, which intends to support investments in storage facilities, notably BES facilities, i.e. in shorter duration storage assets[14].

(23) The investments supported by the scheme are under the so-called "Power Up" component of the RRP. Those investments shall allow the system integration of new RES capacity, which is required for the achievement of NECP targets. In addition, those investments shall also increase the flexibility of the electricity system and liquidity of balancing market, enhance system adequacy, enable energy efficiency, promote transparency in electricity price formation, and lower energy costs, while they may also alleviate network congestion, if installed in congested areas of the system.

(24) According to the Greek authorities, Greece's NECP considers electricity storage to be an essential element of its strategy for the promotion of RES penetration, electricity cost reduction, efficient usage of transmission network as well as capacity adequacy of the electricity system[15]. However, in the absence of State intervention, investments in storage facilities addressing the urgent needs of the Greek electricity system would not be likely to take place.

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12 See under Pillar 1: Green Transition, Component 1.1 Power Up, Investment fiche "Support of the installation of storage systems to enhance RES penetration", Unique ID: 16926. Full plan available at https://greece20.gov.gr/en/the-complete-plan/.

13 See Commission decision of 20 December 2021 in State Aid SA.57473 (2021/N) – Greece - RRF - Pumped Hydro plant – Amfilochia, where the Commission approved support for the implementation of a PHS unit in Amfilochia with capacity of 680 MW.

14 While the Component 1.1. refers to 1,380 MW (680 MW of long-duration + 700 MW of short-duration storage), Greece explained that the short-duration storage to be installed will be up to 900 MW, in view of the envisaged higher RES capacity targets, while the RRF budget for this investment will remain the same. The total storage capacity would thus be 1,580 MW. Based on the RRP, the minimum short-duration storage capacity to be installed under the scheme is 500 MW.

15 See, for instance, page 187.

(25) Greece submitted that Li-ion batteries are beginning to find large-scale electricity grid applications and that, while the cost of such batteries might be declining, it still remains high enough to warrant investment support by the State. Batteries can be used to provide short-term flexibility to the system, which is required to support the enhanced penetration of volatile RES sources and in particular solar photovoltaic ("PV"). Greece also referred to the Commission's "*Study on energy storage: Contribution to the security of the electricity supply in Europe*", where the Commission notes that solar PV drives the need for short-term flexibility, and that batteries are well-adapted technologies to provide such services[16]. Under the current NECP, the installed solar PV capacity in Greece is expected to increase by 2030 more than two-fold as compared with its current levels (i.e., from approximately 3.5 GW to 7.7 GW) and this target will be increased further in the ongoing revision of Greece's NECP.

2.4. The tender process

(26) The storage projects to be supported by the scheme will be selected through a tender process.

(27) The tender bid will include at least the applicant's name, a description of the project, including its location, the respective production license, the required environmental license if it is prerequisite to participate in the tender, and the bid offer.

(28) No support will be granted in cases where the start of works on the project took place prior to the aid application by the beneficiary to the national authorities, i.e. prior to the submission of the bid.

(29) The tender rules will be defined ahead of each round. Greece confirmed that the eligibility and the tender award criteria will be known to all participants well in advance of each tender and will be published at least six weeks in advance. Furthermore, the scheme, once approved by the Commission, will be published in order to allow all interested parties to prepare their projects.

(30) The responsibility for setting the parameters of the tender process, the eligibility criteria and the award process will be borne by the Ministry for the Environment and Energy (the "Ministry"). RAE will organise the tenders and will evaluate the offers of the bidders.

(31) The main features of the tender process are described in sections 2.4.1 to 2.4.9.

2.4.1. Timing

(32) The tenders will be held and the projects will be selected by the end of 2023, while the installation of the storage facilities will take place by the end of 2025.

[16] Available here: https://op.europa.eu/en/publication-detail/-/publication/a6eba083-932e-11ea-aac4-01aa75ed71a1/language-en?WT.mc_id=Searchresult&WT.ria_c=37085&WT.ria_f=3608&WT.ria_ev=search, page 48.

2.4.2. Tendered capacity

(33) The total capacity (in all rounds) to be tendered under the scheme will be up to 900 MW. Greece submitted that this capacity will likely be tendered in two or three rounds, with the first tender covering up to 40% of the total capacity. The number of rounds and the exact capacity of each round will depend on the availability of mature projects, the restrictions imposed by the timeline under the EU Recovery and Resilience Facility ("RRF"), as well as on whether area-related restrictions or tenders will be developed (see recital (54) for congestion management).

2.4.3. Level of support

(34) All selected projects from the tender process will receive an equal amount of investment grant (in EUR/MW), which will be known to the participants before commencement of the tender process. The participants' bids will be expressed in EUR/MW/year of nominal capacity and will set out the amount of their tendered Bid Revenue for the foreseen 10-year period of annual support.

2.4.4. Eligibility

(35) The beneficiaries must be capable of participating directly in all electricity markets currently in operation and particularly in the balancing power and energy markets as balancing service providers. Any participating plant of the balancing market must be effectively integrated in the system of the transmission system operator ("TSO"); have the capability to respond to commands issued through the automatic generation control system; and operate in an unconstrained manner to deliver market and system services. Greece explains that this is currently feasible for plants connected to the system at high-voltage level or interfaced to the high-voltage system through dedicated medium-voltage facilities.

(36) Greece submitted that the scheme's objective is to ensure that the identified short-duration storage[17] needs of the Greek system are met in an optimal technical and economic way.

(37) According to Greece, the best technology currently available to achieve this is BES, and in particular Li-ion batteries. For that reason, BES is mentioned in the "Power Up" investment of the Greek RRP and has been used as the benchmark to design and quantify the main parameters of the notified scheme. However, the scheme will be open also to other storage technologies, as long as they:

(a) meet all eligibility criteria applicable to each tender, including project maturity requirements;

(b) meet technical qualification criteria established by the TSO; and

(c) constitute an equivalent solution in terms of characteristics and functionality (e.g. duration of discharge, capability to participate in all electricity markets currently in operation, delivery of a commensurate level of services as batteries).

[17] Short-duration refers to a period of several hours (e.g. at least two hours), meaning that charging and discharging takes place on a daily basis.

(38) Greece submitted that the exact eligibility criteria applicable to each tender will be set well in advance ahead of the tender. Such criteria will include the following:

(a) a certain level of project maturity, i.e. a project having already obtained the required environmental licence and possibly a binding connection application to the grid, or possibly at a reduced level of maturity that will open the tenders to more entrants and therefore increase competition;

(b) maximum size restrictions imposed for anti-concentration purposes and to secure effective competition;

(c) direct interfacing to the high-voltage electricity transmission grid;

(d) minimum capacity requirements for providing services with a duration of two hours, to exclude severe functionality limitations due to energy capacity related constraints;

(e) capability for participation in all electricity markets currently in operation, and particularly in the balancing power and energy markets as balancing service providers, with full integration in the automatic generation control system of the TSO;

(f) satisfaction of technical and prequalification requirements applicable to all facilities of similar characteristics;

(g) the provision of financial guarantees to ensure timely implementation of the tendered projects, in line with tender requirements.

(39) As regards the minimum discharge duration of two hours, Greece submitted that facilities designed with storage capacity for a shorter duration are severely constrained in terms of their practical contribution to grid flexibility. Such facilities of shorter duration are effectively intended for the delivery of ancillary services for short-term stabilisation of the grid, such as fast frequency response services, which are not the main priority for the modernisation of the Greek electricity system. Such facilities of short duration are unable to provide "energy-intensive" services, for instance price arbitrage and RES curtailment management, which is what the scheme aims at. However, projects of increased energy capacity, beyond two hours, will be allowed to participate in the tenders, without being entitled to additional support.

(40) In addition, the Greek TSO will impose pre-qualification criteria to test the observability and controllability of the plant, its response capabilities to TSO commands or to changing system operating conditions, and to validate their technical and operational characteristics required for full integration in the balancing market systems. Additional tests will be conducted by the TSO to validate the tender requirement for a minimum storage duration at the output of the facilities, which will have to be maintained during the entire support period of each project and verified periodically by the TSO.

(41) The Greek authorities confirmed that the beneficiaries will not be exempted from the energy market regulations and will notably comply with the requirements set out in Regulation (EU) 2019/943[18] and Directive (EU) 2019/944[19] (e.g. excluding system operators from owning, developing, managing or operating energy storage facilities).

(42) According to the Greek authorities, a total number of 147 BES projects by 44 different legal entities - adding up to 11.48 GW - have already received a production license by RAE. This amounts to a total project capacity exceeding by more than ten times the targeted capacity of 900 MW of the scheme. Those projects are dispersed over the entire Greek territory (mainland and islands interconnected to the mainland system). However, the Greek authorities currently do not have specific data regarding the number of projects that have obtained an environmental license nor data about the maturity of these projects. Greece submitted that the interest already expressed by the 44 legal entities allows Greece to expect that highly competitive tendering processes will be achieved.

2.4.5. Maximum price

(43) The intended maximum amount of annual Bid Revenue that may be tendered and provided under the scheme is currently estimated at EUR 60 000 per MW[20].

(44) Greece submitted an analysis for a reference 100 MW BES project showing that for an up-front investment grant of EUR 220 000 per MW, a Bid Revenue of EUR 60 000 per MW for a 10-year period is estimated to be sufficient to ensure a project internal rate of return ("IRR") of 8%. Hence, Greece considers the value of EUR 60 000 per MW as a reasonable maximum bidding price. Greece expects the IRR figure of 8% to be used as a ceiling rather than as a lower guaranteed revenue, as the prices will be set through a tender process with sufficient competition.

2.4.6. Lowest-price threshold

(45) A lowest-price threshold may be imposed in advance of each tender, to protect against under-bidding strategies from incumbent participants that would virtually exclude other stakeholders from the tender market and result in enhancing their position in the electricity market.

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18 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 p. 54.

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

20 This figure may be subject to adaptation by the Greek authorities, should market conditions, principally as regards the investment cost of Li-ion batteries, change substantially with respect to the main assumptions used in the quantification of the scheme, which were based on Li-ion battery cost projections available in 2021. Substantial change would be considered if the cost of Li-ion batteries exceeds by more than 10% the 2021 assumptions of 554 €/kW for 2 hours storage facilities.

2.4.7. Selection of the beneficiaries

(46) The projects to be supported by the scheme will be selected based on a least cost criterion, i.e. on the basis of the lowest amount of the annual guaranteed revenues (Bid Revenue) requested by each project (in EUR/MW/year). They will be selected in an ascending order, i.e. starting from the minimum bid and then moving upwards to select the next lowest bid, until the tendered capacity is exhausted. The Bid Revenue of each project will correspond to the amount offered by the successful bidders, on a "pay-as-bid" basis.

(47) In case the bids of two or more participants are equal and the selection of all projects leads to exceeding the capacity of the tender, then instead of selecting all projects, the participants will be asked to modify their Bid Revenue, i.e. the requested amount of total annual revenue (EUR/MW/year) to ensure investment viability. The amount of the investment grant will remain equal for all successful participants. This approach will allow participants to bid by asking lower annual support at equal investment grant.

(48) Oversubscription rule: Greece will conduct each tender in one phase, with all bidders applying for participation and submitting their bids at the same time. After screening applicants based on the applicable eligibility criteria, the capacity of eligible projects will be determined. If this does not exceed the tendered capacity by more than 50%, the latter will be adjusted downwards, in order to ensure an oversubscription level of at least 50%.

(49) Anti-concentration rule: Greece will introduce rules to ensure that a sufficient number of independent entities will participate in each tender process. Such rules will include the following maximum capacity limits upon each single legal entity participating in a tender process:

(a) 100 MW per project participating in any tender, to ensure a sufficient number of projects operating in the market and an improved distribution of projects over the Greek transmission system.

(b) 25% of the tendered capacity in a specific round, for all projects tendered by the same legal entity and its subsidiaries and affiliates participating in that round. For entities participating with a single project in a round, the maximum capacity of this project shall be allowed to exceed the 25% restriction, as long as it remains below 100 MW and 50% of the tendered capacity in that round.

(c) A maximum of 25% of the total tendered capacity of the scheme will be enforced as regards the aggregate capacity of successful projects awarded to each legal entity and its subsidiaries and affiliates at all tender rounds organised under the scheme.

(50) According to the Greek authorities, those anti-concentration rules will ensure that support will be granted to at least four independent entities and to at least nine projects (for a 900 MW total tendered capacity).

(51) Greece submitted that the supported projects will be legally obliged not to conclude private power purchase agreements ("PPAs") and will have to participate in the markets on an individual basis, in order to ensure that market revenues and benefits delivered to the system are identifiable and to avoid leakage of support towards entities external to the scheme. This requirement will be included in the ministerial decision mentioned in recital (14), which will set out the details for the measure.

(52) In order to facilitate market participation of projects of a small scale, formation of portfolios consisting only of beneficiary storage facilities may be allowed, provided that the aggregate capacity will not exceed 100 MW per portfolio, i.e. as much as the maximum capacity of individual projects that can enter the tenders.

(53) Last-project rule: The last successful project of each tender will be allowed to lead to a cumulative capacity exceeding the tender capacity up to a certain margin that will be decided (in the range 5-10%), in order to allow for cost optimal projects to be selected.

2.4.8. Congestion management tenders

(54) Greece submitted that although the scheme is not intended to target specific geographical areas, there might be need for area-related restrictions in the tenders or for separate tenders addressing specific area-related congestion issues, in case the general tenders do not lead to the procurement of sufficient storage capacity in congested grid areas. Hence, such targeted tenders for congested grid areas would take place last in the sequence of tenders for the scheme, if such needs remain to be addressed. Further, this would happen after the TSO concludes the required studies to identify and delimit specific grid areas, quantify the respective storage needs and determine grid access requirements for storage in such areas, and RAE approves the studies in time to meet the RRF timeframe.

(55) The aim of such tenders would be to increase the RES hosting capacity of the respective regional network. More specifically, Greece submitted that any area-related restrictions and tenders would:

(a) target and serve the increase of RES hosting capacity in constrained areas and thus effectively contribute to the achievement of Greece's RES penetration targets;

(b) lead to a reduction in the generation cost of the Greek system, since additional RES facilities would be possible to be developed in regions with superior RES resource;

(c) be determined based solely on transmission network characteristics, rather than on geographical criteria;

(d) concern only a fraction (below 30%) of the total targeted capacity of the scheme;

(e) involve tenders subject to the same tendering rules as the general tenders under the scheme.

2.4.9. Joint calls for tenders for foreign projects located outside Greece

(56) Greece commits to open the competitive bidding process to storage facilities established in other EEA States and organise joint calls for tenders for storage facilities in Greece and for foreign projects located outside Greece.

(57) The Greek authorities explained that the supported storage facilities must be able to provide both price arbitrage and balancing services in the Greek electricity markets, in view of the primary objective of the scheme to support the smooth integration in the Greek electricity system of a high capacity of variable RES at a reduced level of curtailments. This requires that the day-ahead, intra-day and balancing markets of Greece and of the Member State, where the foreign project is located, are coupled[21] and that it must be possible to exchange all system services of interest. Currently, the day-ahead and intra-day markets of Bulgaria, Italy and Greece are already coupled, however this is not the case for the balancing markets. As regards balancing markets, Bulgaria will share automatic Frequency Restoration Reserve ("aFRR") services with Greece as of 2024, i.e. before the end of the construction period of the storage facilities, which is expected by the end of 2025. Resources located in Italy are unable to share aFRR services with Greece as the existing interconnector between the two systems does not support this functionality and there are no developments planned in short- or medium-term.

(58) In order to quantify the storage capacity of the scheme that will be open to projects in other Member States that are eligible to participate based on the criteria outline above, Greece applied a methodology similar to the one included in the Greek RES scheme 2021-2025[22], as the purpose of both schemes is similar in supporting Greece's targets for achieving a high RES penetration in the electricity system.

(59) More specifically, the total targeted storage capacity of 1,580 MW (900 MW of storage facilities under the scheme and 680 MW of the Amfilochia PHS Project) is intended to provide support to the entire variable RES (wind and solar PV) share in the Greek energy mix. A fraction of this variable RES share is contributed by variable RES projects operating in other Member States through cross-border energy transactions[23]. Therefore, a similar fraction of the total storage capacity, which is intended to support the entire variable RES share in the Greek energy mix, will be open for storage facilities operating in foreign projects located outside Greece, to the extent that cross-border exchange of balancing services is possible.

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[21] This means that electricity trading across borders and the necessary allocation of transport capacities in interconnectors is combined in order to maximise the efficiency of trading.

[22] See Commission Decision of 24 November 2021 in State aid SA.60064 (2021/N) – Greece - Greek RES and heCHP scheme 2021-2025, section 2.4.3.3.

[23] In order to calculate this fraction, Greece looked at the total energy imported from the other Member State and at what percentage the variable RES constitute in the energy mix of that Member State and on that basis calculated an estimate of the imported variable RES from the Member State.

(60) Based on this methodology, the capacity of the scheme that will be open to storage facilities located outside Greece, in countries fulfilling the criteria set out above, is estimated at 32 MW. This was calculated based on the most recent available data on imported RES electricity from such countries[24] and the respective installed variable RES capacities[25]. This figure may be updated depending on the energy data for 2021, when they become available.

(61) The foreign projects will compete with domestic projects, participating in the same tenders under the same conditions applicable to domestic projects, as regards anti-concentration rules and all other participation requirements, i.e. including those concerning licensing maturity, provision of guarantees for participation and timely implementation thereafter, capability to provide all relevant services. All the bids, from both domestic and foreign projects, will be ranked together and the projects will be selected based on a least cost criterion, as described in recitals (46)-(47). Up to 32 MW can be allocated to foreign projects.

2.5. Budget and financing

(62) The total budget of the measure is estimated at EUR 341 million, including the investment grant (EUR 200 million) and the annual support (EUR 141 million). That figure has been derived assuming a total capacity of 900 MW under the scheme.

(63) The investment grant will be funded mainly by the RRF, potentially complemented by financing from structural funds or the general budget. Specifically, up to EUR 200 million of this RRF investment have been earmarked for the scheme.

(64) The annual support (EUR 141 million) will be funded by the Storage Support Account, which will be established to bear the cost of the annual support provided to all supported storage facilities, including the Amfilochia PHS Project and the storage projects under the scheme. The Storage Support Account is intended to be integrated as a sub-account under the RES and CHP Special Account[26], funded through a charge imposed by government measure upon all suppliers of electricity participating in the Greek wholesale electricity market, which would then mandatorily pass on this cost to final consumers.

[24] See TSO study for 2020 here: https://www.admie.gr/sites/default/files/attached-files/type-file/2021/05/Energy_Report_202012_v2b.pdf.

[25] See Eurostat data for 2020 here: https://ec.europa.eu/eurostat/web/energy/data/shares.

[26] Commission Decision of 24 November 2021 in State aid SA.60064 (2021/N) – Greece - Greek RES and heCHP scheme 2021-2025.

2.6. Financial aspects

2.6.1. Funding gap

(65) The Greek authorities have submitted a business plan for a reference BES project with a capacity of 100 MW and a discharge of two hours, showing the expected revenues and costs over the duration of its participation in the scheme. The business plan assumes that the project will be operational at the beginning of 2025 and during the subsequent ten years. The main project assumptions are summarised in the table below.

CAPEX – investment costs [EUR/kW, @2 h]	554
OPEX – operational costs [percentage of CAPEX]	2.5%
Project IRR	8%
Tax rate	22%
Project lifetime [years]	10[27]
Residual value at year 10 [percentage of CAPEX]	20%

(66) Greece submitted that a medium-term analysis of the Greek electricity market shows that through its participation in the electricity markets, the reference BES project could on average obtain annual revenue of EUR 43 000 per MW of installed power capacity. In the absence of a support scheme, that market revenue does not suffice to ensure the viability of BES projects, leading to a negative net present value ("NPV") and a funding gap of approximately EUR 327 000 per MW of installed power capacity or 59% of their CAPEX estimated at EUR 554 000 per MW of installed power capacity.

(67) In order to calculate the funding gap, the Greek authorities discounted the projected cash flows using a Weighted Average Cost of Capital ("WACC") of 7.95%. The WACC has been defined based on several assumptions[28], including a cost of debt at 4.70% and a cost of equity at 15.92%. The cost of equity comprises an additional risk premium of 2.00%.

(68) Without the support (both the investment grant and annual support), both the IRR and the NPV of the reference project over its lifetime would be negative (-4.6% and -EUR 32 million, respectively) and the project would not materialise. According to Greece, in the absence of the scheme and based on the estimated market revenue

[27] This is based on the estimation of the effective lifetime in which the battery would be able to provide services in a quality specified by the tender requirement. As a benchmark for a comparison of the stated ten-year lifetime, the benchmarked warranty for storage systems of nine years, as composed by BloomberNEF Energy Storage System Costs Survey 2021, was used.

[28] Other WACC assumptions are: debt at 65%, risk-free rate of 1.25%, unlevered beta at 0.70, market risk premium at 7.40%, equity market risk premium at 4.38%, debt risk premium at 3.02%, additional risk premium of 2.00% and a tax rate of 22%.

alone, a private investor would not have the necessary incentive to undertake the project and install the storage facility.

(69) In order to ensure the installation of the storage capacity needed to fulfil the targets set out in the Greek NECP, the Greek authorities submitted that it is necessary to bridge the funding gap of the reference BES project through support, concretely with a combination of the investment grant and the annual support.

(70) Assuming that the reference project receives an investment grant equal to EUR 220 000 per MW of installed power capacity (roughly equal to 40% of the projected CAPEX), the annual revenue required to ensure the financial viability of the reference project amounts to approximately EUR 60 000 per MW of installed power capacity. The annual revenue comprises of the market revenue and the annual support. The assumed maximum IRR of the reference project required by an investor is 8%.

(71) The Greek authorities pointed out that as regards other potential revenue streams for storage projects than the ones mentioned in recital (66), an analysis of the needs of the Greek electricity system carried out by the Storage Task Force did not identify any suitable opportunities that would have the potential to increase the financial viability of storage projects.

(72) Greece notes in its RRP[29] that storage facilities need RRF support because they are not viable and cannot be undertaken in Greece in the absence of any aid covering their funding gap. This is due to the combined effect of the current absence of a capacity remuneration mechanism, high and front-loaded capital costs resulting in considerable investment risk, and immature and illiquid markets, which are insufficient to compensate fully the multitude of services offered by a storage facility to the electricity system. In the absence of such RRF support, market forces alone would not provide sufficient incentives in order for storage facilities to be realised.

2.6.2. Mechanisms to avoid overcompensation

(73) In order to incentivise the projects to participate effectively in the electricity market, adjustments to the amount of annual support are foreseen, based on the evaluation of projects' Market Revenues against other storage facilities of similar characteristics (calculated *ex post*), as well as a reasonable estimate on anticipated revenues through effective market participation, established *ex ante* by RAE. The incentivisation mechanism involving the *ex ante* and *ex post* Market Revenue benchmarks to determine the adjusted annual support of the beneficiary projects will be established by decision of the Ministry, while a RAE decision will lay down the details of the methodology.

(74) Specifically, the *ex ante* Market Revenue benchmarks will be calculated by RAE at the beginning of each regulatory period (typically spanning over a period of 2-3 years) as forecasts of annual amount of revenues that storage facilities can reasonably expect to achieve if they actively participate in the electricity market. Such forecasts will be based upon past performance of storage facilities of similar

[29] See in footnote 7 above reference to the relevant Investment Fiche.

characteristics (e.g. duration of discharge, capacity) and expectations and projections for the upcoming years that may impact market conditions and the revenue of electricity market participants. RAE would conduct this evaluation on a periodic basis, at a minimum per regulatory period with possible updates in intermediate years, if market conditions impose such a need.

(75) The efficient participation of each storage facility in the electricity market will be evaluated against the revenues of a peer group, i.e. other storage facilities operating in the system. Thus, the *ex post* Market Revenue benchmark will be established as the average market revenues of storage facilities having similar characteristics (e.g. duration of discharge, capacity).

(76) In the first step, the amount of annual support granted to a given project is calculated using the *ex ante* Market Revenue benchmark, that will be deducted from the Bid Revenue of the project. The amount of support thus calculated will be provided on a monthly basis to the project over the course of each year of the regulatory period year. At the end of the each regulatory period, two additional steps will follow, in which corrections to the annual support are made, in order to incentivise effective market participation and reflect actual market developments as compared to initial projections.

(77) In the second step, the *ex post* calculated Market Revenue benchmark of storage facilities will be evaluated against the established *ex ante* Market Revenue benchmark to reduce the possibility of collusive behaviour of beneficiaries. If the *ex post* Market Revenue benchmark is lower than the *ex ante* Market Revenue benchmark (meaning that the actual performance of the group of similar projects was worse than what RAE had initially expected), the project will be entitled to be partially compensated for the difference. The Greek authorities consider setting that share at 90%, but this can be reduced, if RAE considers the actual performance of the group of similar projects to be unjustifiably low or if it appears systematically and therefore might indicate concerted collusive practices of the group. In such a case, RAE may deem it appropriate to impose penalties upon all projects as an extra measure to incentivise competitive operation in the electricity markets and prevent market manipulation through oligopolistic participation strategies. If, on the other hand, the *ex post* Market Revenue benchmark is higher than the *ex ante* Market Revenue benchmark, the difference will be deducted from the annual support. In that case the *ex post* benchmark effectively sets the reference against which the Bid Revenue is compared, to prevent overcompensation of the projects. This ensures that the annual support is adjusted to take into account possible long-term efficiency gains of storage facilities.

(78) In the third step, the actual performance of the individual project is compared to the *ex post* Market Revenue benchmark, representing the project's peer group average market performance. Where the Market Revenue of the specific project falls below that *ex post* benchmark, only part of the deficit will be compensated by higher annual support. Conversely, a project achieving a higher Market Revenue than the *ex post* Market Revenue benchmark will be rewarded by being allowed to retain part of the excess, thus reaching a total revenue that is higher than its Bid Revenue. Greece will determine the deficit coverage percentage when publishing the respective tender conditions. Deficit coverage will not be higher than 25% in any case, thus if market revenues of individual projects fall below the *ex post* Market Revenue benchmark, at least 75% of the deficit in project revenue compared to the

benchmark will need to be borne by the investor. Similarly, market revenues achieved in excess of the *ex post* Market Revenue by an individual project will be retained by the project at a rate equal to 75% or higher.

(79) Intermediate adjustments, e.g. on an annual basis, may be introduced within each regulatory period to prevent accumulation of subsidy deficit/surplus over the length of a multi-year regulatory period, which may negatively impact the project cash flows or place an unnecessary burden on the account funding the annual support of storage facilities.

2.7. Cumulation and Transparency

(80) Greece has confirmed that the measure would not be cumulated with other forms of support to cover the same eligible costs. In particular, Greece confirmed that the projects benefitting from support under the scheme would not be eligible for participation in a capacity remuneration mechanism, if one were established in the future. This does not exclude storage capacity from being taken into account when determining the need for and volume of an eventual capacity remuneration mechanism.

(81) However, even if a capacity mechanism scheme is eventually introduced in Greece and applies to the projects supported under the scheme, any revenue that the projects would derive from the capacity mechanism scheme would lead to a reduction of the amount of support that could be granted based on the difference between the Bid Revenues and the Market Revenues.

(82) Greece will ensure compliance with the transparency requirements laid down in points 58 to 62 of the Commission's Guidelines on State aid for climate, environmental protection and energy 2022 ("CEEAG")[30]. The relevant data of the scheme will be published on a national website that will link to the Commission's transparency register[31].

2.8. Companies in difficulty and under recovery order

(83) Greece committed not to award aid under the measure to undertakings in difficulty, as defined by the Commission Guidelines on State aid for rescuing and restructuring non-financial undertakings in difficulty[32].

(84) Greece also committed, 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, to take account of the amount of aid still to be recovered[33].

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30 Communication from the Commission – Guidelines on State aid for climate, environmental protection and energy 2022, C/2022/481, OJ C 80, 18.2.2022, p. 1.

31 Accessible here: https://webgate.ec.europa.eu/competition/transparency/public?lang=en.

32 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.

33 Judgment of 13 September 1995, *TWD* v *Commission*, T-244/93 and T-486/93, 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.

3. ASSESSMENT OF THE MEASURE

3.1. Existence of State aid within the meaning of Article 107(1) TFEU

(85) According to Article 107(1) TFEU, the qualification of a measure as State aid requires the following conditions to be met cumulatively:

(a) the measure is imputable to the State and financed through State resources;

(b) it grants a selective advantage liable to favour certain undertakings or the production of certain goods;

(c) the measure distorts or threatens to distort competition;

(d) it has the potential to affect trade between Member States.

3.1.1. Imputability and State resources

(86) The Commission notes that the support to storage facilities under the scheme is imputable to the State, as it will be established by a national law and other implementing acts (see recital (14)).

(87) As regards the State resources criterion, the Commission notes that the investment grant will be financed by the RRF and the annual support will be financed through the Storage Support Account (see recitals (62)-(64)).

(88) The RRF funds are considered as State resources since Member States have the discretion to decide on the use of those resources. Once awarded, the RRF funds would be directly controlled by the Greek State and the granting authority would be the relevant Ministry.

(89) The annual support is intended to be financed from the Storage Support Account, which is itself financed through special levies imposed upon electricity suppliers.

(90) According to settled case law, only advantages that are granted directly or indirectly through State resources are to be regarded as aid within the meaning of Article 107(1) TFEU.[34] The distinction between aid granted by the State and aid granted through State resources serves to bring within the definition of aid not only aid granted directly by the State, but also aid granted by public or private bodies designated or established by the State.[35] Thus, resources do not need to transit through the State budget to be considered as State resources. It is sufficient that they remain under public control.[36]

(91) Indeed, the Court of Justice has held that funds financed through compulsory charges imposed by the legislation of the Member State, managed and apportioned

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[34] Judgment of 24 January 1978, *Van Tiggele*, 82/77, EU:C:1978:10, paragraphs 25 and 26; Judgment of 12 December 1996, *Air France* v *Commission*, T-358/94, EU:T:1996:194, paragraph 63.

[35] Judgment of 22 March 1977, *Steinike & Weinlig*, 78/76, EU:C:1977:52, paragraph 21.

[36] Judgment of 16 May 2002, *France* v *Commission*, C-482/99, EU:C:2002:294, paragraph 37.

in accordance with the provisions of that legislation, may be regarded as State resources within the meaning of Article 107(1) TFEU even if they are managed by entities separate from the public authorities.[37]

(92) In the present case, the Commission notes that, as described in recital (64), the Storage Support Account will be funded by means of a mandatory charge, which will be imposed upon electricity suppliers through a legislative measure. Moreover, the State will control the Storage Support Account and will disburse the support to the eligible storage projects.

(93) Therefore, the resources are deemed under State control and qualify as State resources.

3.1.2. Economic Advantage

(94) The Commission notes that the measure will provide an economic advantage to the beneficiaries, as they will obtain an investment grant and a 10-year CfD for their storage facilities, which they would not have obtained under normal market conditions, i.e. in the absence of the State intervention.

3.1.3. Selectivity

(95) The measure is selective since it is provided only to certain beneficiaries, which are selected via a tender process, and is not accessible to all undertakings.

3.1.4. Impact on competition and on trade between Member States

(96) In accordance with settled case law[38], for a measure to impact competition and trade it is sufficient that the recipient of the aid competes with other undertakings on markets open to competition.

(97) The electricity market has been liberalised and electricity producers engage in trade between Member States. The electricity stored by the beneficiaries of the measure will generally be sold on the market where it will enter in competition with electricity from different sources (such as electricity from other RES and conventional sources). Moreover, the Greek market is interconnected to other markets, for example the Italian and Bulgarian markets.

(98) Therefore, the advantage granted to the beneficiaries of the measure is likely to distort competition and affect trade between Member States.

3.1.5. Conclusion regarding existence of State aid

(99) Based on the above considerations, the Commission concludes that the measure constitutes State aid within the meaning of Article 107(1) TFEU.

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[37] Judgments of 2 July 1974, *Italy* v *Commission*, 173/73, EU:C:1974:71, paragraph 16, and of 19 December 2013, *Association Vent De Colère! and Others*, C-262/12, EU:C:2013:851, paragraph 25. See also judgment of 21 September 2019, *FVE Holýšov I s. r. o. and Others* v *Commission*, C-850/19 P, EU:C:2021:740, paragraph 46.

[38] Judgment of 30 April 1998, *Het Vlaamse Gewest* v *Commission*, T-214/95, EU:T:1998:77.

3.2. Lawfulness of the aid

(100) By notifying the measure before its implementation, the Greek authorities have respected the notification and standstill obligation laid down in Article 108(3) TFEU.

3.3. Compatibility of the aid

3.3.1. Legal basis for assessment

(101) Article 107(3)(c) TFEU provides that the Commission may declare compatible aid to facilitate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest. Therefore, compatible aid under that provision of the Treaty must contribute to the development of certain economic activity[39]. Furthermore, the aid should not distort competition in a way contrary to the common interest.

(102) The Commission notes that the measure aims at the promotion of the establishment of BES and other storage facilities in Greece, which qualify as energy storage facilities under point 19(33) CEEAG. According to point 377 CEEAG, section 4.9 CEEAG also applies to energy storage facilities, connected to transmission or distribution lines irrespective of the voltage levels, until 31 December 2023.

(103) The Commission has therefore assessed the compatibility of the measure on the basis of the general compatibility provisions of CEEAG (set out in section 3 CEEAG), where applicable, and the specific compatibility criteria for aid for energy infrastructure (section 4.9 CEEAG).

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

3.3.2.1. 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

(104) In line with points 23 to 25 CEEAG, Member States must identify the economic activities that will be facilitated as a result of the aid and describe if and how the aid will contribute to the achievement of Union policies and targets.

(105) The Commission notes that the measure aims at developing the establishment of storage facilities in Greece. It thus contributes to the development of a certain economic activity. The Commission also notes that the scheme will allow the feasibility of the benefitting projects, which would not have taken place in the absence of the aid (see recitals (66)-(68)).

(106) Moreover, the promotion of the development of electricity storage is in line with Greece's NECP. The scheme will help Greece reach its objectives related to the

[39] Judgment of 22 September 2020, *Austria v Commission*, C-594/18 P, EU:C:2020:742, paragraphs 20 and 24.

reduction of greenhouse gas emissions, in line with the Green Deal, as it will enable the smooth integration of a higher level of penetration of RES in the Greek electricity system with a reduced level of curtailments (see recital (5)).

(107) The scheme will support the operation of the existing RES capacity as well as the rapid introduction of new RES capacity, as foreseen in the NECP, in the medium-term to 2030 and in the long run, towards 2050. The scheme will thus contribute towards Greece's decarbonisation process and, at the same time, will contribute to a smooth operation of the electricity system during the latter's transition towards the extensive use of RES energy. In this context, the scheme will also make a contribution towards the attainment of the Union targets of reduction of greenhouse gas emissions by 2030 and towards a climate neutral Union by 2050.

(108) The scheme will also provide a number of additional services and benefits to the electricity system, including flexibility and ancillary services to the electricity system and potentially also network congestion relief services, thereby improving operational security of the Greek network (see recital (6)).

(109) In addition to the direct economic benefits, it will contribute to the pursuit of the NECP's key objectives of diversification of the national energy mix and reduced reliance on imported energy sources and it will enhance environmental protection.

(110) Finally, the Commission refers to the analysis of the Greek RRP accompanying the Commission's proposal for a Council implementing decision on the approval of the Greek RRP[40], where the benefits of storage facilities for renewable integration and their contribution to Greece's green transition have been set out and the scheme is mentioned as one of the planned measures.

(111) Considering the above, the Commission concludes that the measure contributes to the development of economic activities of electricity storage, as required by Article 107(3)(c) TFEU, in a manner that improves the RES penetration in Greece and has also other positive effects on the Greek electricity system.

3.3.2.2. Incentive effect

(112) According to point 26 CEEAG, 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. 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 activity (point 27 CEEAG).

(113) Proving an incentive effect entails the identification of the factual scenario and the likely counterfactual scenario in the absence of aid (point 28 CEEAG). For aid to infrastructure, the counterfactual scenario is presumed to be the situation in which the project would not take place (point 381 CEEAG).

[40] Available here: https://data.consilium.europa.eu/doc/document/ST-9920-2021-ADD-2/en/pdf; see measure ID 16926.

(114) Greece submitted that in the absence of the aid, investors would not have the appropriate incentive to undertake the material investments required for the establishment of the required storage capacity. The analysis provided by Greece shows that without the aid measure, the storage facilities would not be constructed because the expected market revenues do not suffice to ensure viability of the storage projects, leading to a negative NPV (see recitals (66)-(68)). Without the aid, the facilities could not materialise and contribute to ensure stable RES integration, congestion management and grid stabilisation.

(115) Furthermore, the Commission notes that the aid application, required in point 30 CEEAG, will be in the form of a bid in the tender process that Greece will carry out for the selection of the beneficiaries. Greece confirmed that the tender bid shall include at least the applicant's name, a description of the project, including its location, the respective production license, the required environmental license (if that's a condition to participate to the tender) and their bid offer (see recital (27)).

(116) Greece also confirmed that no aid will be granted in cases where the start of works on the project took place prior to the aid application by the beneficiary to the national authorities, i.e. prior to the submission of the bid, in line with point 29 CEEAG (see recital (28)).

(117) Finally, the Commission notes that the OPEX to be covered by the measure represent only a small percentage of the CAPEX (2.5%) (see in recital (65) for the funding gap calculation). In addition, these costs cannot be recovered from network users, and the aid is unrelated to sunk costs but leads to a change in behaviour as it incentivises investors to make the necessary investments for the establishment of the required storage capacity and thus contribute to environmental protection objectives. This is in line with point 376 CEEAG.

(118) Taking into account the above considerations, it can be concluded that the scheme has an incentive effect, as it induces the beneficiaries to engage in an economic activity that they would not carry out without the aid or would carry out in a restricted or different manner.

3.3.2.3. No breach of any relevant provision of Union law

(119) According to point 33 CEEAG, 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.

(120) In the present case, the Commission has assessed in particular whether the measure contravenes any relevant Union legislation in the energy sector. Greece has confirmed that the beneficiaries will not be exempted from the energy market regulations and will notably comply with the requirements set out in Regulation (EU) 2019/943 and Directive (EU) 2019/944 (e.g. excluding system operators from owning, developing, managing or operating energy storage facilities) (see recital (41)).

(121) Furthermore, any levy that has the aim of financing a State aid measure and forms an integral part of that measure needs to comply in particular with Articles 30 and 110 TFEU[41].

(122) According to case law, for a levy to be regarded as forming an integral part of an aid measure, it must be hypothecated to the aid under the relevant national rules, in the sense that the revenue from the charge is necessarily allocated for the financing of the aid and has a direct impact on the amount of the aid and, consequently, on the assessment of the compatibility of that aid with the common market[42]. In particular, the charge at issue must be levied specifically and solely for the purpose of financing the aid at issue[43].

(123) In the present case, the annual support will be financed by a levy, which will be imposed, through a legislative act, upon electricity suppliers. Differently, the investment grant of EUR 200 million will be funded mainly through the RRF and potentially complemented by financing from structural funds or the general budget.

(124) The Commission notes that the Support Storage Account will finance the annual support both for the storage facilities supported under the scheme and for the Amfilochia PHS Project.

(125) As the Commission cannot exclude the existence of a hypothecation link between the levy and the aid awarded, the Commission will assess the compatibility of the levy with Articles 30 and 110 TFEU.

(126) According to the case law[44], a charge that is imposed on domestic and imported products according to the same criteria may nevertheless be prohibited by the Treaty if the revenue from such a charge is used to support activities that specifically benefit the taxed domestic products. Such a charge would include a levy if the advantages which those products enjoy wholly offset the burden imposed on them, the effects of that charge are apparent only with regard to imported products and that charge constitutes a charge having equivalent effect to custom duties, contrary to Article 30 TFEU. If, on the other hand, those advantages only partly offset the burden borne by domestic products, the charge in question constitutes discriminatory taxation for the purposes of Article 110 TFEU and will be contrary to this provision as regards the proportion used to offset the burden borne by the domestic products.

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41 Judgment of 17 July 2008, *Essent Netwerk Noord and Others*, C-206/06, EU:C:2008:413, paragraphs 40 to 59. For the application of Articles 30 and 110 TFEU to tradable certificates schemes, see Commission Decision C(2009)7085 of 17.9.2009, State aid N 437/2009 - Aid scheme for the promotion of cogeneration in Romania, OJ C 31, 9.2.2010, p. 8, recitals 63 to 65.

42 Judgment of 22 December 2008, *Régie Networks v Rhone Alpes Bourgogne*, C-333/07, EU:C:2008:764, paragraph 99 and case law cited.

43 Judgment of 22 December 2008, *Régie Networks v Rhone Alpes Bourgogne*, C-333/07, EU:C:2008:764, paragraphs 100 and 104.

44 Judgments of 11 March 1992, *Compagnie Commerciale de l'Ouest and Others*, C-78/90 to C-83/90, EU:C:1992:118, paragraph 27, and of 27 October 1993, *Scharbatke*, C-72/92, EU:C:1993:858, paragraph 10; see also, to that effect, judgment of 17 July 2008, *Essent Netwerk Noord and Others*, C-206/06, EU:C:2008:413, paragraphs 40 to 57.

(127) As set out in recital (56), Greece commits to open a share of the scheme to foreign projects, which will be able to participate to the tenders under the same conditions as the domestic projects. Greece explained that the capacity to be opened was calculated on the basis of the total targeted combined capacity of 1,580 MW for storage support actions, i.e. 900 MW of short-duration storage facilities and 680 MW of the Amfilochia PHS Project. As the measure aims at integrating production from variable RES into the Greek system, the approach chosen by Greece to calculate the share open to projects in other Member States with reference to the share of variable RES from those Member States in the Greek energy mix (see recitals (59) and (60)) is coherent. Against this background, the Commission concludes that financing of the measure via the storage levy is compatible with Articles 30 and 110 TFEU.

(128) In view of the above considerations, the Commission concludes that the measure does not contravene any relevant provision or general principles of Union law, in the sense of the abovementioned case law, and is in line with point 33 CEEAG.

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

3.3.3.1. Minimisation of distortions of competition and trade

(129) The measure affects mainly the electricity market in Greece, where several suppliers are in competition with each other. The measure might also affect the electricity markets in neighbouring countries, in view of the cross-borders interconnections.

3.3.3.1.1. Necessity of the aid

(130) In order to demonstrate the necessity of the measure, it has to be established that the measure is targeted towards a situation where aid can bring about a material improvement that the market alone cannot deliver.

(131) The Commission recognised in point 372 CEEAG that 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. In the present case, without the measure, the necessary investments in storage facilities would not have been delivered within a reasonable time and to the extent required in order to meet the storage needs of the Greek electricity system, as identified also by the RAE study.

(132) Energy infrastructure is typically financed through user tariffs and the granting of State aid is a way to overcome market failures that cannot be fully addressed by means of compulsory user tariffs (points 379-380 CEEAG). According to point 380(c) CEEAG, in order to demonstrate the need for State aid 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.

(133) The Commission notes that, based on Greece's analysis of the Greek electricity market, in the absence of a support scheme, the market revenues of BES projects would not suffice to ensure viability of the BES projects, leading to a negative NPV (see recitals (66)-(68)). State aid is necessary in order to bridge the funding gap of the BES projects and thus promote the development of the required storage capacity,

which will allow the material increase in RES penetration levels anticipated in the coming years.

(134) In addition, the need for storage was also identified by RAE in its study on the required electricity storage in order to support the fulfilment of the NECP targets for 2030 and to optimise the system's operation from a technical and economic perspective (see recital (10)).

(135) In the absence of the scheme, RES electricity generation in Greece would face curtailment problems, which would likely increase because of the increasing penetration of RES into the electricity system. The introduction of the targeted storage capacity will mitigate the level of RES curtailment, promoting thereby the sustainability and viability of RES investments.

(136) Furthermore, Greece submitted that it envisages introducing area-related restrictions in the tenders or organising separate tenders to address specific area-related congestion issues and to enable the full exploitation of the available RES potential in areas with insufficient network infrastructure. The Commission notes that this will materialise only if such need, and its extent, is identified by the TSO and in case the general tenders do not lead to the procurement of sufficient storage capacity in congested grid areas (see in recital (55) the additional conditions that would apply).

(137) The Commission finally notes that the aid is needed due to the combined effect in Greece of the absence of a capacity remuneration mechanism, high and front-loaded investments costs, and immature and illiquid markets for system services in Greece (see recital (71)). While storage facility deployment has occurred under market conditions in certain Member States, this has been linked mostly to frequency containment reserve services and participation in a capacity mechanism. The scale and speed of the roll-out intended in Greece and the range of services – which focus on price arbitrage, RES curtailment management, congestion management and thus clearly go beyond the volumes of frequency containment reserve – are, based on the information provided by Greek authorities, not likely to be achieved by market-based investments alone.

(138) The Commission therefore concludes that the measure is necessary for the development of storage facilities in Greece.

3.3.3.1.2. Appropriateness

(139) 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.

(140) The Commission recalls that, according to point 380 CEEAG, the granting of State aid is a way to overcome market failures that cannot be fully addressed by means of compulsory user tariffs.

(141) The Commission notes that the scheme will offer short-term flexibility to the Greek system, which is required to support the enhanced penetration of volatile RES sources (see recitals (20)-(25)). The scheme will allow for the speedy implementation of storage projects, also in view of the RRF timeline, according to which the investments in electricity storage have to be implemented by the end of 2025.

(142) Moreover, the combination of the investment grant with an annual support will incentivise the supported projects to participate to the market and the mechanism of the scheme shall avoid overcompensation (see recitals (20)-(21)).

(143) The Commission also notes that, based on the information provided by the Greek authorities, under normal market conditions, no market investor would invest in the BES projects without aid due to the funding gap (see recital (66)). In such a case, the benefits of the scheme (e.g. facilitation of the development of new storage facilities, support to the integration of RES, increase of competition within the Greek market by means of diversification of sources, societal benefits) would not materialise.

(144) Finally, different from classical energy infrastructure, pursuant to Article 54 Directive 2019/944, storage is in principle not part of the asset base for transmission or distribution system operators. As such, it cannot be financed by general transmission or distribution tariffs.

(145) Given the need for a grant in order to finance the funding gap, the Commission considers that the measure constitutes an appropriate instrument to bring the projects forward.

3.3.3.1.3. Proportionality and cumulation

(146) 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 (point 47 CEEAG).

(147) The Commission notes that the investment grant, which will be paid out to every project selected through the tenders, is established beforehand and amounts to the same aid per MW of installed capacity for every project. The investment grant will cover approximately two thirds of the funding gap (EUR 220 000 per MW out of EUR 327 000 per MW) (see recital (70)). On the other hand, the annual support, which will cover roughly a third of the funding gap, is established through a tender process where participants submit their Bid Revenue offers. Thus, in order to assess proportionality, it is necessary to assess both the tender process and the assumptions underpinning the calculation of the funding gap.

a) Tender process

(148) The Commission notes that the tender process foreseen in the scheme is transparent and based on clear rules which will be made available to all participants at least six weeks in advance of each round of tendering, in line with point 49 CEEAG and in particular footnote 43 (see recital (29)). The eligibility criteria are reasonable and non-discriminatory in view of the objectives of the scheme, which is to prepare the Greek electricity system for increasing levels of penetration of RES electricity and make it more flexible and decentralised.

(149) The criteria to evaluate the bids have also been established upfront in an objective and transparent manner. The bidders requesting the lowest amount of annual revenue (and therefore annual support) per MW of installed capacity will have the highest chance of winning the award (see recital (46)).

(150) In addition, the number of participants is expected to be high and sufficient to ensure effective competition. Based on the data provided by Greece, a total number of 147 BES projects by 44 different legal entities - adding up to 11.48 GW - have already received a production license by RAE (see recital (42)). Although the maturity of those projects differs and not all may be eligible to participate in the tenders, the total project capacity exceeds by more than ten times the targeted capacity of 900 MW of the scheme, so it should ensure a competitive bidding process.

(151) Furthermore, the oversubscription rule (see recital (48)), which effectively excludes the possibility of an undersubscribed tender, and anti-concentration rule (see recital (49)), which reduces the potential for an entity with a large bid or many smaller ones to negatively influence the result of the tender, will reinforce the competitiveness of the tender process.

(152) Finally, the maximum Bid Revenue, set at EUR 60 000 per MW annually, will also limit the risk of overcompensation, as it corresponds to the maximum funding gap of a reference project left after the investment grant is taken into account (see analysis below).

(153) In view of the above, the Commission finds that the tender process is conducted in a transparent, competitive and non-discriminatory fashion and therefore ensures that the amount of aid granted is kept to the minimum.

b) Funding gap

(154) Proportionality is assessed on the basis of the funding gap principle, as set out in points 48, 51, and 52 CEEAG.

(155) Where the aid is not granted under a competitive bidding process, the funding gap must be determined by comparing the profitability of the factual and counterfactual scenarios.

(156) Aid is considered as limited to the minimum needed for carrying out the aided project or activity if the aid corresponds to the funding gap necessary to meet the objective of the aid measure, compared to the counterfactual scenario in the absence of aid. The counterfactual scenario in the case of the scheme corresponds to the situation in which a storage project would not be realised, in line with point 381 CEEAG.

(157) As regards the investment grant of EUR 220 000 per MW of installed capacity, this covers two thirds of the funding gap of the reference BES project (see recital (70)). The Commission notes that the calculation of the funding gap provided by Greek authorities is based on detailed business projections, which the Commission has reviewed.

(158) The underlying assumptions of the projected costs seem credible and in line with the expected developments in the Greek electricity market. Specifically, capital and operational expenditures as outlined in section 2.6.1 are consistent with the latest assessment of the battery storage market available to the Commission.[45] As for the project lifetime, it corresponds to the duration of the scheme. This is based on the estimation of the effective lifetime in which the battery would be able to provide services in a quality specified by the tender requirements. The frequency with which a battery is used has a large impact on its annual degradation. Since the battery is expected to be used on a daily basis, it will be under heavy strain operationally which can be expected to cause degradation of various components. This is largely due to irreversible chemical degradation in the battery cells. As a benchmark for the assessment of the stated 10-year lifetime, the Commission notes that the benchmarked warranty for storage systems as composed by BloombergNEF Energy Storage System Costs Survey 2021[46] is nine years. This means that a typical vendor will guarantee some measure of performance and functionality of a battery system for nine years, after which the system performance shrinks to 55-70% of the initial state.

(159) The Commission concludes further that the assumptions made to calculate the WACC are sufficiently justified by the specificities of the market at stake and the investment made in a specific project, and that these specificities are satisfactorily captured by the WACC computed by the Greek authorities.

(160) In addition, the Commission verified that the profitability of the reference BES project, measured by the IRR, corresponds to the remuneration required by the market measured by the WACC and also corresponds to the profitability proposed in similar projects recently reviewed by the Commission.[47] Without the aid (both the investment grant and annual support) and taking into account the proposed IRR, the NPV of the reference project over its lifetime would be negative (-EUR 32 million) and the project would not materialise (see recital (68)).

(161) The Commission concludes that the assumptions made to calculate the NPV of the reference BES project over its lifetime are sufficiently justified by the specificities of the Greek market and satisfactorily substantiate the resulting calculation of the funding gap made by the Greek authorities.

(162) According to point 381 CEEAG, 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

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45 See for instance Energy Storage System Costs Survey 2021 by BloombergNEF (21 December 2021), according to which capital expenditure for a typical battery storage project range from 524 EUR per kW for a system with two-hour discharge duration to 476 EUR per kW for a system with four-hour discharge duration. For operational costs, see Cole, Wesley; Frazier, A. Will; and Augustine, Chad: Costs Projections for Utility-Scale Battery Storage: 2021 Update. National Renewable Energy Laboratory (available at https://www.nrel.gov/docs/fy21osti/79236.pdf), where operational costs are assessed at 2.5% of the capital expenditure on page 10.

46 Energy Storage System Costs Survey 2021 by BloombergNEF (21 December 2021, p. 10-11.

47 See for instance Commission decision of 20 December 2021 in State Aid SA.57473 (2021/N) – Greece - RRF - Pumped Hydro plant – Amfilochia, page 9, or Commission decision of 24 November 2021 in State Aid SA.60064 (2021/N) – Greece - Greek RES and heCHP scheme 2021-2025, page 19.

time. The development of market revenue for electricity storage technologies is difficult to predict. In case of increased market volatility with significantly higher differences between maximum and minimum hourly electricity prices within one day, for instance, market revenues of storage operators may be significantly higher compared to the assumptions of the funding gap analysis. This is addressed by the mechanism to avoid overcompensation described in section 2.6.2.

(163) The Commission notes that the use of *ex ante* and *ex post* Market Revenue benchmarks as a reference against which the actual performance of an individual project is measured will provide a good basis for checking possible overcompensation risks and incentivising projects to make the most of their participation in the electricity market. First, if the *ex post* Market Revenue benchmark calculated by RAE shows a substantial market-wide improvement in the profitability of projects compared to the previous assumptions expressed in the *ex ante* benchmark, the entire difference will be deducted from the annual support. Furthermore, the comparison of actual individual market revenue and the *ex post* benchmark with the possibility for projects to retain a relatively large part of the excess revenue (or bear a relatively large part of the deficit resulting from underperformance) will incentivise them to maximise revenues from market participation. The possibility to retain part of the excess revenue will mean that projects can achieve a total revenue that is higher than their Bid Revenue, but it does not have to necessarily lead to a higher IRR than assumed by the funding gap analysis. This is because the Bid Revenue is likely to be lower than what the funding gap analysis assumes thanks to the competitive bidding process through which the winning bids are determined. A lower Bid Revenue during the tender automatically means a lower initial IRR target than the 8% established by the funding gap analysis as a maximum value. Finally, the key parameters of the mechanism will be reviewed by RAE and can be tightened or adjusted in the case of suspicion of collusive behaviour on the part of projects (e.g., if *ex post* benchmarks expressing the actual performance of a group of projects systematically fall short of estimates made by RAE).

c) *Cumulation*

(164) The Commission notes that Greece confirmed that the measure would not be cumulated with other forms of support to cover the same eligible costs and that in case it were cumulated, the aid amount granted under this scheme would be accordingly reduced (see recitals (80)-(81)).

(165) In view of the above considerations, the Commission concludes that the measure is proportionate.

3.3.3.1.4. Transparency

(166) Greece committed to comply with the transparency requirements laid down in points 58 to 62 CEEAG (see recital (82)). The relevant data of the measure will be published on a national website that will link to the Commission's transparency register.

3.3.3.2. Avoidance of undue negative effects on competition and trade

(167) In line with point 382(a) CEEAG, the Commission will generally consider that aid for energy infrastructure that is subject to full internal market regulation does not have undue distortive effects. In the present case, the storage facilities will indeed be subject to full internal market regulation (see recital (39)).

(168) According to point 382(d) CEEAG, for support to electricity storage facilities, 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.

(169) The Commission notes that battery storage facilities have not yet been installed in Greece. Currently, the only storage facilities in operation in the Greek interconnected power system are PPC's two hydro pumped storage facilities but their storage functionality is limited (see recital (10)). In addition, the scheme will be open also to other storage technologies apart from batteries.

(170) Furthermore, the storage capacity to be supported by the scheme corresponds to the storage needs identified in the RAE study and is in line with the storage capacity envisaged in the Greek RRP, which addresses the mid-term needs of the Greek electricity system up until 2030 (see recital (12)).

(171) The Commission notes that the design of the proposed funding mechanism integrates sufficient incentives to promote the effective participation of beneficiary projects in all electricity markets. The annual support, covering any residual funding gap over a 10-year period post commencement of operation of each project, will allow for the continuous monitoring and adjustment of the annual support provided to the beneficiary storage facilities, based on their performance in the electricity markets. The Market Revenues encompass any revenues from the participation of the projects in the electricity markets. Hence, competitive and effective participation to all individual markets will be a prerequisite for beneficiary projects, ensuring that the scheme will not hamper the development of balancing and other energy markets.

(172) In addition, competition will also be fostered by ensuring that a sufficient number of projects belonging to independent entities will eventually be operating in the market. This will be enabled through the anti-concentration rules in the tenders, which aim to ensure that support will be granted to at least four independent market entities and to at least nine projects (for a 900 MW total tendered capacity).

(173) As revenues lower than the respective benchmark are only compensated to 25% or less, there is a clear incentive to maximise market revenues also compared to other storage installations. Combined with the anti-concentration rule applied in the tender, the scheme is expected to incentivise several market participants to actively compete on the Greek balancing services markets. Given the low number of market participants on Greek balancing markets at the current stage (eight balancing service providers at year-end 2021), the scheme is expected to improve rather than reduce competition on the concerned services markets.

(174) Currently, there are no other remunerated system services for storage projects in the Greek system and the scheme does not seem to negatively impact the development of future and yet uncertain system services markets.

(175) In view of the above, it can be concluded that the risk of undue negative effects on competition and trade from the scheme is limited.

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

(176) A carefully designed aid measure should ensure that the overall balance of the effects of the measure is positive in terms of avoiding adversely affecting trading conditions to an extent contrary to the common interest.

(177) As shown in section 3.3.2.1, the aid will facilitate the development of storage facilities, thereby contributing to the development of economic activities of electricity storage and, moreover, to the smooth and effective transition to clean RES energy of the Greek power system. The aid will also lead to benefits in terms of stability of the electricity grid in Greece and societal benefits.

(178) Furthermore, the Greek authorities have designed the measure in such a way as to minimise the potential distortion of competition arising from the measure.

(179) Therefore, the positive effects of the measure outweigh any potential negative effects on competition and trade. On balance, the measure is in line with the objectives of Article 107(3)(c) TFEU as it facilitates the development of electricity storage in Greece, where such aid does not adversely affect competition to an extent contrary to the common interest.

3.3.5. Companies in difficulty and under recovery order

(180) As explained in above recitals (83)-(84), Greece committed not to grant aid under the scheme to undertakings in difficulty and when an undertaking is subject to an outstanding recovery order, to take account of the amount of aid still to be recovered. Therefore, the Commission concludes that the notified scheme complies with points 14 and 15 CEEAG.

3.3.6. Conclusion on the compatibility of the measure

(181) The Commission concludes that the aid under the measure facilitates the development of an economic activity and does not adversely affect trading conditions to an extent contrary to the common interest. Therefore, the Commission considers the aid compatible with the internal market based on Article 107(3)(c) TFEU and on the relevant provisions of CEEAG.

4. AUTHENTIC LANGUAGE

(182) As mentioned in recital (3) above, the Greek authorities have accepted to have the decision adopted and notified in English. The authentic language will therefore be English.

5. CONCLUSION

The Commission has accordingly decided not to raise objections to the aid on the grounds that it is compatible with the internal market pursuant to Article 107(3)(c) of the Treaty on the Functioning of the European Union.

Yours faithfully,

For the Commission

Margrethe VESTAGER
Executive Vice-President