Energy Storage Overview of the 2023 Draft Updated National Energy and Climate Plans

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EASE – European Association for Storage of Energy

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1. Introduction

The National Energy and Climate Plans (NECPs) were introduced as part of the Clean Energy Package adopted in 2019. The NECPs outline the approach of EU countries to multiple dimensions of the energy union and constitute roadmaps for policymakers and investors on the period running through 2021-2030. The plans are currently in the process of being updated and are intended to be finalised by June 2024.

EASE has produced an analysis of all draft National Energy and Climate Plans (NECPs) released in 2023, to help readers assess how, or even if, energy storage is accounted for in Member States' NECPs. This work investigates to what extent the NECPs meet the European Commission's Recommendations for Energy Storage – and more generally, whether they are introducing reforms conducive to energy storage uptake. The European Commission's recommendations call for member states to use the draft NECPs to "strengthen the objectives and related policies and measures that aim to cost-effectively promote the deployment of energy storage".

In most of the NECPs submitted, there is an overall recognition of energy storage's nodal role in the energy transition. All draft plans except for one (Latvia) mention energy storage, and its role in energy security is also systematically highlighted.

Nevertheless, energy storage is defined differently in the various NECPs, reflecting differences in the national regulatory frameworks. Further, energy storage's roles are not consistently accounted for throughout the dimensions (decarbonisation, energy efficiency, energy security, internal energy market, research, innovation and competitiveness) of the energy union which form the basis of the plans. Several member states envision flexibility services as mainly delivered by fossil-based power plants and do not mention the potential of storage.

Finally, EASE notes that several NECPs, while discussing storage, do not however list concrete measures to be introduced at the national. This lack of clarity regarding what reforms are to be expected may lead to uncertainty among stakeholders, slow down the implementation of EU legislation, and delay investments.

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2. EU-wide Overview

Legend:

✖: not discussed / no implementation

✓: full implementation

o: partial or incomplete implementation

Recommendations on Energy Storage in Member States Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Number of draft NECPs addressing the recommendations**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation b. Network charges and tariff schemes c. Permitting procedures d. Congestion management mechanism	a. ✓ 3 o 6 ✖ 15 b. ✓ 2 o 9 ✖ 13 c. ✓ 3 o 11 ✖ 10 d. ✓ 0 o 10 ✖ 14
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. b. Assess the manufacturing capacity of energy storage	a. ✓ 3 o 15 ✖ 4 b. ✓ 2 o 4 ✖ 18
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks b. Non-binding seasonal energy shifting targets and strategy c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment d. Fossil peaker replacement strategy	a. ✓ 10 o 6 ✖ 8 b. ✓ 0 o 3 ✖ 21 c. ✓ 1 o 3 ✖ 20 d. ✓ 0 o 1 ✖ 23
4. Identify potential financing for all types of storage	✓ 7 o 8 ✖ 9
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option	a. ✓ 0 o 3 ✖ 21 b. ✓ 5 o 8 ✖ 11 c. ✓ 1 o 8 ✖ 15

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b. Operators are able to stack revenue from several services provided to the grid c. Congestion management platforms to procure flexibility in a competitive manner	
6. Redesign Capacity Mechanisms by: a. Ensuring appropriate derating factors b. Reducing minimum eligible capacity and minimum bids c. Facilitating aggregation d. Lowering CO2 emissions e. Prioritising non-fossil technologies f. Creating seasonal capacity auctions for longer duration energy storage (LDES) g. Considering storage-only auctions	a. ✓ 1 o 3 ✖ 5 b. ✓ 0 o 0 ✖ 9 c. ✓ 0 o 0 ✖ 9 d. ✓ 0 o 1 ✖ 8 e. ✓ 0 o 0 ✖ 9 f. ✓ 0 o 0 ✖ 9 g. ✓ 0 o 1 ✖ 8
8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes b. Revising network connection criteria to promote renewables with storage	a. ✓ 2 o 4 ✖ 13 a. ✓ 2 o 2 ✖ 15
Energy storage strategy with targets	✓ 3 o 3 ✖ 18

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3. Per-Country Analysis

At the time of this analysis, Latvia's published draft NECP update is incomplete and therefore absent from this document. Austria and Poland have yet to publish their draft NECP update.

3.1 Belgium

Legend:

✘: not discussed / no implementation

✓: full implementation

o: partial or incomplete implementation

General comment:

Belgium plans a major transformation of the electricity mix between 2023 and 2035. In this context, the NECP acknowledges that the need for flexibility on the energy grid will only increase and the role of short & long-term energy storage to cope with it. While measures are taken at federal & regional level to gather more relevant data and further clarify flexibility needs, the NECP only provides a broad assessment of the country's gap. Accordingly, there is no comprehensive storage strategy at this stage at federal level. While efforts are being made to tackle double charging in some regions (Flanders), the NECP does not mention any specific measure at national level.

Recommendations on Energy Storage in Belgium's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ✘ b. Network charges and tariff schemes ✘ c. Permitting procedures ✘ d. Congestion management mechanism ✘	✘ a: Not addressed in the NECP. Some forms of double taxation remained as of 2023 in Belgium (Study on Energy Storage, ENTEC, 2023). ✘ b: Not addressed in the NECP. According to the Flexibility plan 2025 of the Flemish region, storage is exempt from double charging in Flanders. It was not immediately clear if this was the case in the Walloon region. ✘ c: Not addressed in the NECP.

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	✗ d: Not addressed in the NECP.
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ○ b. Assess the manufacturing capacity of energy storage. ✗	○ a: The NECP cites the Flexibility Report carried out as part of the Pentalateral Energy Forum, which describes the needs and sources of flexibility in 2030/40/50 ✗ b: Not addressed in the NECP.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✓ b. Non-binding seasonal energy shifting targets and strategy ✗ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✗ d. Fossil peaker replacement strategy ✗	✓ a: The NECP cites an analysis of the Belgian electricity system flexibility for the next ten years carried out by the TSO Elia Transmission Belgium. Such analyses are required by Belgian law through the Electricity Act. Elia's Adequacy and Flexibility Study for Belgium 2020-2030 is quoted as foreseeing a 40% increase in flexibility over the period. ✗ b: Not addressed in the NECP. ✗ c: Not addressed in the NECP.
4. Identify potential financing for all types of storage ✗	✗ Not adequately addressed in the NECP. It refers to the 2018 National Investment Pact with the private sector to foster public-private partnerships, including in the "development of storage facilities for heat and electricity".
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✗ b. Operators are able to stack revenue from several services provided to the grid ✗	✗ a: Not addressed in the NECP. ✗ b: Not addressed in the NECP. ✗ c: Not adequately addressed in the NECP.

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c. Congestion management platforms to procure flexibility in a competitive manner ✘	
6. Redesign Capacity Mechanisms by: ✓ a. Ensuring appropriate derating factors ○ b. Reducing minimum eligible capacity and minimum bids ✘ c. Facilitating aggregation ✘ d. Lowering CO2 emissions ✘ e. Prioritising non-fossil technologies ✘ f. Creating seasonal capacity auctions for longer duration energy storage (LDES) ✘ g. Considering storage-only auctions ✘	✓ The NECP highlights an ongoing study on the security of supply in parallel with improving the design of the Capacity Remuneration Mechanism (CRM). ○ a: The NECP does not address the derating factor for storage in the capacity remuneration mechanism. However, Belgium's CRM employs a derating factor varying from 69% derating for storage with energy/power ratio of 1h to 21% for those of 4h. ✘ b: Not addressed in the NECP. ✘ c: Not addressed in the NECP. ✘ d: Not addressed in the NECP. ✘ e: Not addressed in the NECP. ✘ f: Not addressed in the NECP. ✘ g: Not addressed in the NECP.
8. Member States favour storage and flexibility in (energy) islands/remote regions by: ✘ a. Introducing support schemes b. Revise network connection criteria to promote renewables with storage	✘ Not addressed in the NECP.
Energy storage strategy with targets ✘	✘ No.

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3.2 Bulgaria

Legend:

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General comment:

The draft NECP of Bulgaria lists the acceleration of "storage of renewable energy" as one of its priorities and signals the promotion of new RES and energy storage capacities through 2035. The plan recognises the role of energy storage in supporting intermittent renewable energy sources and addressing the problems of grid congestion, balancing and "market distortion". Increasing the flexibility of the national energy system is also an objective of the plan, and the role of energy storage for this is acknowledged to justify several measures. However, the main stated objectives related to increasing the flexibility of the national energy system lack any technology-neutral reference to energy storage and instead list continued reliance on fossil-based flexibility.

Recommendations on Energy Storage in Bulgaria's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in the regulatory framework for: a. Double taxation ○ b. Network charges and tariff schemes ○ c. Permitting procedures ✓ d. Congestion management mechanism ○	✓ The draft NECP states that "Bulgaria aims to progressively remove regulatory and commercial barriers for consumers to use, store and market the electricity they produce and to participate in the market by providing flexibility to the system through energy storage and demand response." ○ a: Double taxation is not specifically addressed in the NECP. However, it may be understood to fall under the reforms as stated above. As of 2023, no specific rule was identified on exemption of storage from double taxation, meaning that storage

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	charging is subject to the electricity consumption tax (ENTEC, 2023). ○ b: Network charges and tariff schemes for storage are not specifically addressed in the NECP. However, they may be understood to fall under the reforms as stated above. Further, the plan states that the Energy and Water Regulatory Commission (KEVR) shall seek to encourage TSOs and DSOs to provide grid access to energy storage facilities. In 2020, there was no double charging for transmission-connected storage (ENTEX, 2023). ✓ c: The draft NECP states that measures will be proposed to improve permitting procedures for a set of "strategic net zero technologies" to attract investment, amongst which "batteries and storage technologies". ○ d: The draft NECP refers in general terms to the deployment of storage to solve congestion issues.
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ○ b. Assess the manufacturing capacity of energy storage. ✘	○ The draft NECP mentions plans for the development of "FLEXITRANSTORE", an integrated platform for increased flexibility in smart data grids with renewable energy storage sites, which will increase the flexibility of the internal energy market system. ✘ b: Not addressed in the draft NECP. However, the plan notes that the construction of "energy storage facilities" is amongst Bulgaria's objectives in the field of research, innovation and competitiveness.

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3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✘ b. Non-binding seasonal energy shifting targets and strategy ✘ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✘ d. Fossil peaker replacement strategy ✘	✘ a: Not addressed in the draft NECP; the plan is lacking in addressing the need for flexibility assessments. ✘ b: Not addressed in the draft NECP. ✘ c: Not addressed in the draft NECP. ✘ d: No. Bulgaria's draft NECP foresees continued reliance on gas-based flexibility in its objectives in regards to increasing flexibility of the energy system. The main stated objectives related to increasing flexibility do not contain any technology-neutral reference to energy storage.
4. Identify potential financing for all types of storage ✓	✓ The draft NECP mentions several financing options. Investment C4.I6 "Support for new renewable electricity generation and electricity storage capacity" includes financial support for an additional 350MW of local electricity storage facilities. This is meant to support a wide range of energy storage systems, including behind-the-meter facilities. Investment C4.I2 "Renewable energy support to households" is expected to support at least 10000 households with inefficient heating with solar equipment including electricity storage systems. The plan cites the "Intelligent Industry" programme announced in 2023 to provide funds for the construction of new RES for self-consumption in combination with local energy storage facilities. It states that the implementation is expected to result in a minimum of

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	54MW additional capacity of installed storage facilities. The plan also notes it is "essential to strengthen the potential of public-private partnerships focusing on the development of new technologies to implement the green transition and energy storage". Further, it highlights that under the Innovation Strategy for Smart Specialisation (RISS) 2027-2021, one of the priority areas is to develop and deploy technologies related to sustainable mobility (batteries and hydrogen). One of the centres designated as a specific beneficiary is the HITMOBIL Competence centre which focuses on research, experimental development and knowledge transfer in the field of "Clean energy generation, storage and consumption technologies and systems". Resources from the Modernisation Fund in the period of 2021-2030 are also mentioned as possibly financing energy storage deployment. The financial allocations in Bulgaria's Recovery and Resilience Plan are indicated to include energy storage. The draft NECP mentions a hydro-pumped storage project in Bulgaria - Yadenitsa, which will add about 800MW of new installed capacity in generator and pump storage mode.
5. Explore whether energy storage services (especially in distribution networks / non-	✗ a: Not addressed in the draft NECP. ✓ b: The draft NECP mentions future measures including "creating options

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frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✘ b. Operators are able to stack revenue from several services provided to the grid ✓ c. Congestion management platforms to procure flexibility in a competitive manner ○	such as dynamic electricity price contracts and aggregation, developing platforms to increase the transparency of information, especially for the benefit of households and micro-enterprise". It posits the development of a regulatory framework to ensure the right to self-consumption of electricity from renewable sources, including through the storing of renewable electricity and "without being subject to any disproportionate procedures or charges". ○ c: As above.
6. Redesign Capacity Mechanisms by: a. Ensuring appropriate derating factors ✘ b. Reducing minimum eligible capacity and minimum bids ✘ c. Facilitating aggregation ✘ d. Lowering CO2 emissions ✘ e. Prioritising non-fossil technologies ✘ f. Creating seasonal capacity auctions for longer duration energy storage (LDES) ✘ g. Considering storage-only auctions ✘	✘ Bulgaria operates a Capacity Mechanism, however the NECP does not address it.
8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes ✘ b. Revise network connection criteria to promote renewables with storage ✘	✘ Not addressed in the draft NECP.
Energy storage strategy with targets ✘	✘ The draft NECP does not set targets for storage deployment or outlines a strategy to support energy storage. However, several projects in development or planning are listed:

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	– increasing the operational potential of pumped hydro through the Yadenitsa dam construction, – construction of the Bataka and Dospat hydro-pumped storage power plants to add 800MW in new installed capacity in generator and pumping storage mode, – approximately EUR 200 million of investments in frequency control batteries with a total capacity of around 180 MW, – around EUR 200 million of investments to promote the combination of new RES with local electricity storage facilities across around 200MW worth of projects.

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3.3 Croatia

Legend:

✖: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

In its draft NECP, Croatia underlines the importance of energy storage for improving energy security, While Croatia makes general statements about increasing the deployment of energy storage as a means of improving energy security, its NECP lacks an assessment of their flexibility needs, a clear strategy, and appears to have abandoned quantified targets from their previous NECP.

Please note that due to the automated nature of the English translation available on the Commission's NECP webpage, information may have been omitted, as per the disclaimer on the given draft NECP.

Recommendations on Energy Storage in Croatia's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ✖ b. Network charges and tariff schemes ✖ c. Permitting procedures ○ d. Congestion management mechanism ○	*Energy storage is not yet defined in Croatia's national legislation (ENTEC, 2023).* ✖ a: Croatia has not abolished double taxation and does not mention an intention to do so. ✖ b: It also has not addressed unfair network charges and tariff schemes for energy storage. ○ c: While their NECP mentions permitting accelerations from REDIII, it fails to mention Croatia's implementation plan. Furthermore, it only appears to apply to PV + energy storage installations and not to a wider range of technologies and applications.

	○ d: Under Croatia's 10-Year Transmission Grid Development Plan, it mentions the use of electricity transmission fees to finance the "…the redispatching of production facilities to eliminate periodic restrictions in the transmission network". This infers the possibility of this acting as a congestion management mechanism, but the description is too vague to understand how exactly this would function.
2. Identify the flexibility needs of their energy systems: a. In the short, medium, and long term. ✘ b. Assess the manufacturing capacity of energy storage. ✘	✘ a: Croatia mentions the general need for flexibility, including heat flexibility, but has no assessment of short-, medium- or long-term flexibility needs. ✘ b: There is no mention of Croatia's manufacturing capacity of energy storage.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ○ b. Non-binding seasonal energy shifting targets and strategy ✘ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✘ d. Fossil peaker replacement strategy ✘	○ a: Croatia will encourage cooperation between DSOs and TSOs to integrate energy storage as sources of flexibility. Specifically, they seek to fully integrate district heating/cooling systems and thermal energy storage into the energy sector for the provision of flexibility services. However, there is no indication of a quantifiable assessment of flexibility needs by system operators. ✘ b: Overall, while Croatia vaguely mentions the need for seasonal flexibility, there is no mention of a strategy or targets, and specific policies discount seasonal flexibility

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	needs. An example being that Croatian policy seeks to boost the efficiency and share of renewable energy in all district heating/cooling systems, but indicates that daily and seasonal thermal energy storage systems are not recognised as solutions to achieve this. ✗ c: Croatia's NECP makes no mention of curtailment. ✗ d: Croatia does not have a fossil peaker replacement strategy.
4. Identify potential financing for all types of storage ✓	✓ As part of its energy security objectives, Croatia identified it needs €19.8M euros for front-of-the-meter energy storage rollout and €13.3M for behind-the-meter energy storage rollout. 70% of this funding derives from the EU Modernisation Fund. The implementation of this funding will be monitored via the TYNDPs of Croatian TSOs and DSOs.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✗ b. Operators are able to stack revenue from several services provided to the grid ✗ c. Congestion management platforms to procure flexibility in a competitive manner ○	✗ a: Croatia does not indicate a pursuit of the least carbon-intensive option in the procurement of ancillary services. In fact, Croatia does not use consumer-level participation, such as demand response and energy storage, in the provision on ancillary services. ✗ b: The current situation is not clear per the NECP. ○ c: As previously mentioned, Croatia's 10-Year Transmission Grid Development Plan, it mentions the use of electricity transmission fees to finance a mechanism that could procure flexibility to manage

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	congestion. But the description of the measure is too vague to understand how exactly this would function and if it would be competitive.
6. Redesign Capacity Mechanisms by: a. Ensuring appropriate derating factors b. Reducing minimum eligible capacity and minimum bids c. Facilitating aggregation d. Lowering CO2 emissions e. Prioritising non-fossil technologies f. Creating seasonal capacity auctions for longer duration energy storage (LDES) g. Considering of storage-only auctions	*Croatia does currently, nor has ever, possessed a capacity mechanism as means to acquire resource adequacy. Thus, none of these reforms are mentioned.*
8. Member States favour storage and flexibility in (energy) islands/remote regions by: ○ a. Introducing support schemes ✘ b. Revising network connection criteria to promote renewables with storage ✘	○ Croatia is party to the Memorandum of Understanding for the Implementation of the Clean Energy for EU Islands, but does not describe how Croatia is implementing it. However, Croatia's Smart Island Declaration does not include any specific strategy for energy storage and flexibility for islands and remote areas. ✘ a,b: Croatia has not introduced support schemes nor revised network connection criteria to promote renewable with storage.
Energy storage strategy with targets ✘	✘ Croatia's former NECP did set an energy storage target of 150 MW by 2030. However, this does not appear in the updated NECP and no targets are referred to. It is important for the new NECP to provide an update on

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	the progress towards these targets or to clarify if they were abandoned.

3.4 Cyprus

Legend:

✘: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

While Cyprus includes encouraging projections for energy storage deployment it does not have a clear strategy or quantifiable targets to guide the deployment of energy storage to allow to optimal renewable energy integration.

Please note that due to the automated nature of the English translation available on the Commission's NECP webpage, information may have been omitted, as per the disclaimer on the given draft NECP.

Recommendations on Energy Storage in Cyprus's draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ✘ b. Network charges and tariff schemes ✘ c. Permitting procedures ○ d. Congestion management mechanism ○	✘ a: Not addressed in the NECP, and assumed to remain in place. ✘ b: Notably, Cyprus does not apply additional transmission tariffs to storage, but distribution tariffs do apply to prosumers. ○ c: The regulating entity CERA is in the process of amending rules for energy storage facilities. ○ d: CERA shall define the regulatory framework allowing for congestion management, in accordance to the Electricity Market Regulation Laws of 2021 and 2022.

2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ○ b. Assess the manufacturing capacity of energy storage. ✗	○ a: The NECP states that specific support plans will incorporate an assessment of flexibility needs, but the degree of granularity is unclear. ✗ b: The manufacturing capacity for energy storage is not tackled, but this is likely irrelevant due to Cyprus' size.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✓ b. Non-binding seasonal energy shifting targets and strategy ✗ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ○ d. Fossil peaker replacement strategy ✗	✓ a: Cyprus requires TSOs and DSOs to assess flexibility needs in accordance to Art 50 of Electricity Market Regulation Laws of 2021 and 2022. ✗ b: Seasonal energy shifting is not discussed. ○ c: The NECP mentions briefly approaches to avoid curtailment, focusing mainly on interconnections. ✗ d: A Fossil peaker replacement is not discussed.
4. Identify potential financing for all types of storage ○	○ Investments for energy storage are foreseen in data presented by the NECP. Furthermore, the NECP states that specific support plans may be carried out to increase system flexibility.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✗ b. Operators are able to stack revenue from several services provided to the grid ✓ c. Congestion management platforms to procure flexibility in a competitive manner ✗	✗ a: Use of the least carbon-intensive option is not mentioned ✓ b: Revenue stacking from multiple grid services is possible. ✗ c: A congestion management platform is not discussed.

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6. Redesign Capacity Mechanisms by: a. Ensuring appropriate derating factors b. Reducing minimum eligible capacity and minimum bids c. Facilitating aggregation d. Lower CO2 emissions e. Prioritising non-fossil technologies f. Creating seasonal capacity auctions for longer duration energy storage (LDES) g. Considering storage-only auctions	*Cyprus does not possess a capacity mechanism so none of these recommendations are discussed.*
8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes b. Revising network connection criteria to promote renewables with storage	*N/A given Cyprus's geographical context.*
Energy storage strategy with targets ✘	✘ The NECP mentions the promotion of energy storage projections (sections 2.1.2 ad 2.4.3.). Lithium-Ion battery storage systems are expected to reach 50MW installed capacity in 2030, allowing for at least 4h of central storage and 2h of decentralised storage. However, these numbers are not part of a national strategy or targets for energy storage. Additional projections are mentioned, such as the use of EVs as flexibility assets for DSOs and TSOs with a total capacity of at least 10MW-20MWh by the end of 2030.

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3.5 Czechia

Legend:

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✓: full implementation

○: partial or incomplete implementation

General comment:

Czechia's NECP contains several acknowledgements of energy storage's role in the energy system, albeit falling short of addressing it with concrete measures. Further, its climate and energy approaches are partly informed by scenario models which do not include all energy storage technologies (e.g. pumped storage).

Recommendations on Energy Storage in Czechia's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ✖ b. Network charges and tariff schemes ✖ c. Permitting procedures ✖ d. Congestion management mechanism ✖	*It may be noted that there is no common definition for energy storage in the Czech regulatory framework (ENTEC, 2023)* ✖ a: Not addressed in the NECP. There was no information on the existence of double taxation and it may be assumed to remain (ENTEC, 2023). ✖ b: Not addressed in the NECP. In 2020, there was no double charging for transmission-connected storage (ENTEC, 2023). ✖ c: Not addressed in the NECP. Czech legislation does not allow direct connection of batteries to the grid for storage purposes, but only together with a generation site (ENTC, 2023). ✖ d: Not addressed in the NECP.
2. Identify the flexibility needs of their energy systems:	○ a: The NECP mentions the flexibility needs assessment proposed in the

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a. In the short, medium and long term. ○ b. Assess the manufacturing capacity of energy storage. ✘	reform of the EU electricity market, and signals that Czechia's indicative national target for demand response and storage will be set following the outcome of the legislative process at the EU level. ✘ b: Not addressed in the NECP. It notes that there is currently no legal existence of a battery repository in Czechia.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✘ b. Non-binding seasonal energy shifting targets and strategy ✘ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✘ d. Fossil peaker replacement strategy ✘	✘ a: Not addressed in the NECP. ✘ b: Not addressed in the NECP. ✘ c: Not addressed in the NECP. ✘ d: Not addressed in the NECP.
4. Identify potential financing for all types of storage ✘	✘ Not really: Czechia's NECP has a brief reference to the contribution of the "New Green Savings 2030 programme" in supporting smaller common energy storage facilities for multiple houses or the creation of energy communities.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✘ b. Operators are able to stack revenue from several services provided to the grid ✘	✘ a: Not addressed in the NECP. ✘ b: Not addressed in the NECP. In 2023, several energy storage services were not allowed to participate in some of the existing markets (ENTEC, 2023). ✘ c: Not addressed in the NECP.

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c. Congestion management platforms to procure flexibility in a competitive manner ✘	
6. Redesign Capacity Mechanisms by: a. Ensure appropriate derating factors b. Reduce minimum eligible capacity and minimum bids c. Facilitate aggregation d. Lower CO2 emissions e. Prioritise non-fossil technologies f. Creating seasonal capacity auctions for longer duration energy storage (LDES) g. Considering storage-only auctions	*N/A: Czechia does not use a Capacity Mechanism.*
8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes ✘ b. Revise network connection criteria to promote renewables with storage ✘	✘ Czechia's NECP comprises measures for vulnerable groups, however, those isolated from energy services in remote regions are not addressed.
Energy storage strategy with targets ✘	✘ Not addressed in the NECP.

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3.6 Denmark

Legend:

✖: not discussed / no implementation

✓: full implementation

o: partial or incomplete implementation

General comment:

The NECP for Denmark, while giving essential acknowledgements of the role of flexibility in decarbonising their energy system, it also severely lacking in terms of improving non-fossil flexibility.

Please note that due to the automated nature of the English translation available on the Commission's NECP webpage, information may have been omitted, as per the disclaimer on the given draft NECP.

Recommendations on Energy Storage in Denmark's Draft NECP Update	
EC & EASE Recommendation on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ✖ b. Network charges and tariff schemes o c. Permitting procedures o d. Congestion management mechanism ✖	*Beyond the NECP, Denmark does not have a definition of storage in its national legislation.* ✖ a: The NECP does not highlight this issue or measures to improve on it. ○ b,c: This is indirectly raised in the draft NECP: "To encourage participation in aggregated demand response, Denmark is continuously working to improve market regulations with the aim of reducing barriers for, among others, smaller (decentralised) market participants such as small industry and households" (p108). ○ c: Denmark is currently developing an aggregation model that allows decentralised resources to participate

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	in energy and ancillary services markets alongside large market participants × d: There is no mention of congestion management in the NECP.
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. o b. Assess the manufacturing capacity of energy storage. ×	○ a: Denmark's network development plans shall clarify the need for flexibility services in the medium and long term (p137). A model development will be initiated for better monitoring and forecasting of grid capacity in Denmark, in view of flexibility promotion (p133). Analyses will also be conducted on how to ensure proactive expansion of the transmission grid, incentives for rapid grid connection in the distribution grid, promotion of the flexibility market, development of new flexible grid connection terms and products, as well as faster implementation of tariff models and development of tariffs to promote flexibility. Short-term flexibility needs remain to be identified. × b: There is no assessment of the manufacturing capacity of energy storage in the NECP.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✓ b. Non-binding seasonal energy shifting targets and strategy × c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ×	✓ a: The Danish Energy Agency has already published recommendations on how to ensure a market model where flexibility can help address challenges in the electricity system. × b: There is no mention of seasonal energy shifting. × c: There is no mention of RES curtailment.

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d. Fossil peaker replacement strategy ✗	✗ d: There is no mention of a strategy for replacing fossil peakers.
4. Identify potential financing for all types of storage o	○ Denmark's network development plan shall determine the investments planned for the next five to ten years, however, it is not clear if this will explicitly cover all energy storage types (p137). In June 2022 the Danish Parliament agreed to ensure investment framework conditions to enable a fourfold increase of solar energy investments in combination with renovations, storage and heat pumps. (p148).
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✗ b. Operators are able to stack revenue from several services provided to the grid ✓ c. Congestion management platforms to procure flexibility in a competitive manner ✗	✗ a: Procurement of the least carbon-intensive ancillary services is not discussed. ✓ b: Denmark has a developed flexibility market, with a legal framework for aggregators and active consumers. Legislation allows the stacking of different balancing services, still with some limitations. Denmark is currently developing an aggregation model that allows decentralised resources to participate in energy and ancillary services markets alongside large market participants. ✗ c: Congestion is not discussed.
6. Redesign Capacity Mechanisms by: a. Ensuring appropriate derating factors b. Reducing minimum eligible capacity and minimum bids c. Facilitating aggregation d. Lowering CO2 emissions e. Prioritising non-fossil technologies	*Denmark does not currently use a capacity mechanism for resource adequacy.*

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f. Creating seasonal capacity auctions for longer duration energy storage (LDES) g. Considering storage-only auctions	
8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes ✘ b. Revising network connection criteria to promote renewables with storage ✘	✘ a,b: Denmark's NECP accounts for the country's multiple islands, however, it falls short of providing support schemes for energy storage nor revising network connection criteria.
Energy storage strategy with targets ✘	✘ The NECP states that Denmark has no strategy nor targets for energy storage capacity yet and not even for flexibility.

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3.7 Estonia

Legend:

✘: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

Estonia describes a clear commitment to remove market barriers for energy storage but provides little evidence of implementation and lacks cohesive national objectives for flexibility and energy storage.

Recommendations on Energy Storage in Estonia's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ✘ b. Network charges and tariff schemes ✘ c. Permitting procedures ○ d. Congestion management mechanism ✘	✘ a: No information in their NECP on the absence of double taxation for energy storage, therefore the assumption is that it remains in place. ✘ b: Not addressed in the NECP. As of 2023 it was known that there remains partial double charging in Estonia (ENTEC, 2023). ○ c: This is partly tackled in the NECP: "According to Estonia's Electricity Market Act, since 2007, household customers may also start producing electricity for self-consumption and selling surpluses to the grid." (Estonia NECP p55). According to the NECP, Estonia has prepared a legislative package shortening permitting procedures and increasing transparency, but energy storage is not mentioned.

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	✗ d: The NECP makes no mention of congestion.
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ○ b. Assess the manufacturing capacity of energy storage. ✗	○ a: Estonia's TAIE Development Plan on Smart and Sustainable Energy Solutions plans for studies on the flexibility of energy storage and load management in the business and public sectors (Estonia NECP, p123). According to the NECP, all Estonian electricity consumers have had smart meters since 2017. Further, the TSO (Elering AS) has set up the Estfeed data exchange platform to develop the flexibility services market. Estfeed consists of a legal, software and hardware solution that manages the exchange of metering data between market participants, providing valuable information in flexibility management. ✗ b: Manufacturing capacity for energy storage is not discussed.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✓ b. Non-binding seasonal energy shifting targets and strategy ✗ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✗ d. Fossil peaker replacement strategy ✗	✓ a: Estonia's DSO and TSO shall draw up a ten-year development plan every two years, and both are engaged in development projects to facilitate the uptake of flexibility services (p118). However, the NECP does not explicitly state that flexibility needs must be assessed as part of the ten-year plans. ✗ b: Seasonal energy shifting is not mentioned. ✗ c: Curtailment is not discussed. ✗ d: The NECP explicitly states that natural gas's role in electricity generation to cover peak hours and reserves will remain (p.45).

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4. Identify potential financing for all types of storage ✓	✓ "Estonia intends, in particular through market-based measures, to promote the market entry of storage, including by removing market barriers arising from the legislation" (p.86). ✓ The NECP also mentions the "Green technology investment programme", a support scheme for green technology startups, as well as a support scheme under the Recovery and Resilience Facility (RRF). ✓ The NECP also notes that an analysis is being conducted on a potential support scheme for offshore wind farms and energy storage.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✗ b. Operators are able to stack revenue from several services provided to the grid ○ c. Congestion management platforms to procure flexibility in a competitive manner ✗	✗ a: This is not mentioned in the NECP. ○ b: The NECP states that Estonia's "NEW 2030" plan has among its objectives the deployment of R&D to "develop a flexibility market (including demand management, energy storage)" (Estonia NECP, p9). However, the concrete measures to support this are unclear. ✗ c: Congestion management is not mentioned in the NECP.
6. Redesign Capacity Mechanisms by: a. Ensuring appropriate derating factors b. Reducing minimum eligible capacity and minimum bids c. Facilitating aggregation d. Lowering CO2 emissions e. Prioritising non-fossil technologies f. Creating seasonal capacity auctions for longer duration energy storage (LDES)	*Estonia does not have currently have a capacity mechanism in place.* *However, the Estonian TSO has highlighted the need for Estonia to implement one. The NECP mentions that in 2024 the Baltic system operators will start designing a "common electricity system reserve market" to ensure resource adequacy following the*

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g. Considering storage-only auctions	*synchronisation of the Baltic electricity systems with the European electricity market. The design of this capacity mechanism should follow these recommendations to align the capacity mechanism with Estonian climate and energy targets.*
8. Member States favour storage and flexibility in (energy) islands/remote regions by: ✘ a. Introducing support schemes ✘ b. Revising network connection criteria to promote renewables with storage ✘	✘ Estonia's draft updated NECP does not mention storage and flexibility for islands and remote regions.
Energy storage strategy with targets ✘	✘ Estonia does not have a strategy for energy storage nor quantifiable targets.

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3.8 Finland

Legend:

✖: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

Finland's NECP relies on market-based principles to encourage the deployment of energy storage, but lacks a comprehensive strategy to reduce market barriers to energy storage and any sort of targets to direct investment towards energy storage.

Recommendations on Energy Storage in Finland's Draft NECP Update	
EC & EASE Recommendation on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ○ b. Network charges and tariff schemes ✖ c. Permitting procedures ○ d. Congestion management mechanism ✖	○ a: In 2019, Finland abolished double taxation of energy storage, however, it lingers for some storage users. The NECP does not mention this. ✖ b: Not addressed in the NECP. Double charging of storage remains in Finland (EMMES, LCP Delta 2023). ○ c: Finland has given "priority treatment" in permitting to certain green projects at Regional State Administrative Agencies from 2023-2026 and in the Finnish administrative courts from 2023-2028 with a target to limit the permit-grating process to 12 months. In terms of energy storage, this priority treatment applies to the production of hydrogen, pumped hydro energy storage facilities and to facilities in the production, recycling and re-use of batteries, but it does not apply to all energy storage technologies. Furthermore, this does not apply permitting accelerations necessary to

	deploy and integrate energy storage into the energy system. ✗ d: Finland's NECP makes no mention of congestion management.
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ○ b. Assess the manufacturing capacity of energy storage. ✓	○ a: Finland's National Climate and Energy Strategy generally emphasised the role of flexibility, which resulted in the creation of a Smart Grid Working Group by the Ministry of Economic Affairs and Employment. In October 2018, they gave several recommendations to make electricity storage into a competitive business activity (such as abolishing double taxation). However, there is no identification of specific flexibility needs over short, medium and longer terms. ✓ b: Finland's NECP briefly maps out Finland's largest energy storage projects, which are all battery projects. Additionally, several pumped-hydro energy storage facilities are being planned.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✓ b. Non-binding seasonal energy shifting targets and strategy ✗ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✗ d. Fossil peaker replacement strategy ✗	✓ a: The Finnish Electricity Act requires DSOs to consider electricity storage, demand response, and other alternatives to grid expansion in their development plans. ✗ b: Not addressed in the NECP. ✗ c: Not addressed in the NECP. ✗ d: Not addressed in the NECP.
4. Identify potential financing for all types of storage ○	○ The Finnish NECP briefly mentions that there is limited public financing into energy storage, mainly in the form of partial investment subsidies. In general,

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	the Finnish energy storage sector is primarily financed by private investment. It states that €2.5 billion is planned to be invested into energy storage, but this is limited to pumped hydro energy storage.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✘ b. Operators are able to stack revenue from several services provided to the grid ○ c. Congestion management platforms to procure flexibility in a competitive manner ✘	✘ a: Finland's NECP makes no mention of prioritising the least carbon-intensive solution in the procurement of ancillary services. ○ b: Some Finnish DSOs have procured services from energy storage facilities, but there are no specifications on the types of services acquired nor the ability of storage operators to be able to stack revenues. ✘ c: Congestion is not discussed in Finland's NECP
6. Redesign Capacity Mechanisms by: a. Ensuring appropriate derating factors ✘ b. Reducing minimum eligible capacity and minimum bids ✘ c. Facilitating aggregation ✘ d. Lowering CO2 emissions ✘ e. Prioritising non-fossil technologies ✘ f. Creating seasonal capacity auctions for longer duration energy storage (LDES) ✘ g. Considering storage-only auctions ✘	*Finland's strategic reserve uses a competitive tendering process for facilities applying to participate in the strategic reserve. It allows the participation of energy storage and demand-side response. However, the Finnish NECP emphasises the role of storage in market-based solutions and not in the reserve.* ✘ a-g: Finland has not appeared to reform their capacity mechanism in line with any of the following recommendations (a-g) nor has not indicated the intention to do so in the future.
8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes ✘	✘ a: Not addressed in the NECP. ✘ b: Not addressed in the NECP.

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b. Revising network connection criteria to promote renewables with storage ✘	
Energy storage strategy with targets ✘	✘ Finland has no specific strategy nor targets for energy storage as a whole in its draft NECP. Finland's National Battery Strategy 2025 lays out Finland's ambitions to be a world player in the battery industry. However, this strategy focuses mainly on batteries for transport and not the energy system.

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3.9 France

Legend:

✘: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

The French NECP highlights the development of flexibility as a whole and electricity storage batteries as a priority to ensure security of supply. However, the NECP falls short of listing a coherent set of measures that would constitute a comprehensive energy storage strategy. Regarding the country's flexibility assessment, the plan mentions the report "Bilan prévisionnel 2023" which forecasts flexibility needs but does not provide a dedicated volume for storage. Finally, while not mentioned in the NECP, double charging remains established for pumped hydro storage.

Recommendations on Energy Storage in France's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ○ b. Network charges and tariff schemes ✘ c. Permitting procedures ✘ d. Congestion management mechanism ○	○ a: Not addressed in the NECP. However, in France, the energy stored and reinjected is not submitted to the tax on final consumption. Double charging remains for pumped hydro storage. ✘ b: Not addressed in NECP. In France, network charges are applied to withdrawal and injection but with a very limited (or null) amount on injection. ○ c: Not addressed in the NECP. France has only one procedure (covering both injection and withdrawal) for connection demand. ○ d: Not addressed in the NECP. In practice, this is partial, as storage

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	can apply to local flexibility markets in France but it is not widespread.
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ○ b. Assess the manufacturing capacity of energy storage. ✘	○ a: The NECP refers to the French report "Bilan prévisionnel 2023", which forecasts flexibility needs but without a dedicated volume for storage. ✘ b: No
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✓ b. Non-binding seasonal energy shifting targets and strategy ✘ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✘ d. Fossil peaker replacement strategy ✘	✓ a: Yes. ✘ b: No. ✘ c: No. ✘ d: No.
4. Identify potential financing for all types of storage ✘	✘ Not really: The NECP mentions potential support mechanisms for storage but no distinction among them, in particular for pumped hydro storage.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✘ b. Operators are able to stack revenue from several services provided to the grid ○ c. Congestion management platforms to procure flexibility in a competitive manner ✘	✘ a: No. ○ b: Yes, but aFRR revenue still missing. ✘ c: Not addressed in the draft NECP and local flexibility markets are very limited in practice.

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6. Redesign Capacity Mechanisms by: ○ a. Ensure appropriate derating factors b. Reduce minimum eligible capacity and minimum bids ✘ c. Facilitate aggregation ✘ d. Lower CO2 emissions ✘ e. Prioritise non-fossil technologies ✘ f. Creating seasonal capacity auctions for longer duration energy storage (LDES) ✘ g. Considering storage-only auctions ✘	○ The NECP does not establish this. However, the capacity remuneration mechanism in France is currently under review: ✘ a: Not addressed in the draft NECP ✘ b: Not addressed in the draft NECP ✘ c: Not addressed in the draft NECP ✘ d: Not in NECP but under review: lower CO2 cap for new capacities ✘ f: Not in NECP but under review: long duration contract for new capacities. ✘ g: Not addressed in the draft NECP
8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes ○ b. Revise network connection criteria to promote renewables with storage ✘	○ a: This is not specified in the NECP. However, specific support schemes do exist for French islands, and there are dedicated tenders for new storage capacities in such contexts. ✘ Not addressed in the draft NECP
Energy storage strategy with targets ✘	✘ No. The NECP however includes hydropower sub-targets for pumped-hydro storage deployment of 1700 MW by 2035. The draft also mentions flexibility targets of which the binding nature was not immediately clear (p77).

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3.10 Germany

Legend:

✖: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

Germany's draft NECP acknowledges that flexibility will be needed to compensate for the fluctuating supply of renewables. However, the plan does not provide any precise data on the estimated volume of flexibility and laconically states that "storage should also play a role where they make sense" without mentioning any comprehensive strategy for energy storage.

Recommendations on Energy Storage in Germany's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ✖ b. Network charges and tariff schemes ✖ c. Permitting procedures ✖ d. Congestion management mechanism ✖	✖ a: Not addressed in the draft NECP. Some forms of double taxation remained in 2023 (ENTEC, 2023). ✖ b: Not addressed in the NECP. In Germany, as of 2020, there was no double charging for transmission-connected storage, but partial withdrawal charges to storage operators connected to the distribution grid. ✖ c: Not addressed in the draft NECP. ✖ d: Not addressed in the draft NECP.
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ✓ b. Assess the manufacturing capacity of energy storage. ✖	✓ a: A Flexibility Report is said to have been developed in the context of the Pentalateral Energy Forum. ✖ b: Not addressed in the draft NECP. While no assessment of manufacturing capacity is mentioned in the NECP, the plan highlights two IPCEIs (Important Projects of Common European Interest) for

	"Industrial manufacturing for mobile and stationary energy storage" by 2030.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✘ b. Non-binding seasonal energy shifting targets and strategy ✘ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✘ d. Fossil peaker replacement strategy ✘	✘ a: Not adequately addressed in the draft NECP. The NECP mentions the "Platform for Climate-Neutral Electricity System" as a source of stakeholder inputs on the barriers and potentials to develop and integrate flexibility options. ✘ b: Not addressed in the draft NECP. ✘ c: Not addressed in the draft NECP. ✘ d: No, Germany's NECP highlights the role of CHP plants in its energy system's flexibility and does not signal an intention to replace them with less carbon-intensive technologies.
4. Identify potential financing for all types of storage ✘	✘ Not really. The draft NECP indicates that current legislation has set the Federal Government's intention to provide research and funding for storage technologies, notably through a new "Fraunhofer Institute for Storage Technologies". This is however not detailed further. The NECP mentions that two IPCEIs (Important Projects of Common European Interest) will involve EUR 1.5 billion by 2030 for "Industrial manufacturing for mobile and stationary energy storage".
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated:	✘ a: Not addressed in the draft NECP. ✘ b: Not addressed in the draft NECP. ✘ c: Not addressed in the draft NECP.

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a. Procurement of ancillary services pursues the least carbon-intensive option ✘ b. Operators are able to stack revenue from several services provided to the grid ✘ c. Congestion management platforms to procure flexibility in a competitive manner ✘	
6. Redesign Capacity Mechanisms by: ✘ a. Ensuring appropriate derating factors ✘ b. Reducing minimum eligible capacity and minimum bids ✘ c. Facilitating aggregation ✘ d. Lowering CO2 emissions ✘ e. Prioritising non-fossil technologies ✘ f. Creating seasonal capacity auctions for longer duration energy storage (LDES) ✘ g. Considering storage-only auctions ✘	✘ There is no reference to capacity mechanisms/markets in the NECP. As of 2023, Germany's capacity mechanism only allows for coal and gas.
8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes ✘ b. Revise network connection criteria to promote renewables with storage ✘	✘ a: Not addressed in the draft NECP. ✘ b: Not addressed in the draft NECP.
Energy storage strategy with targets ✘	✘ Germany's draft NECP does not mention an energy storage strategy nor targets. Germany's Power Storage Strategy was released in December 2023 independently of the draft NECP, and does not include targets. To ensure clarity, this strategy must be integrated in the update of the draft.

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3.11 Greece

Legend:

✗: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

Greece's NECP lists energy storage deployment as one of its policy priorities in electricity generation, and makes several mentions of its nodal role in the energy transition. A full participation of energy storage in energy markets is expected to begin from Q1 2024 and the plan signals important support schemes towards storage deployment. The draft also presents targets on energy storage capacity but states that their binding nature and values are subject to change until the finalised version of the revised NECP.

Recommendations on Energy Storage in Greece's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in (draft) NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ✗ b. Network charges and tariff schemes ✗ c. Permitting procedures ○ d. Congestion management mechanism ✗	✗ a: Not addressed in the NECP. No information was identified and it is assumed to remain (ENTEC, 2023). ✗ b: Not addressed in the NECP. As of 2020 there was no double charging for transmission-connected storage, however, some forms of double charging remain (ENTEC, 2023). ○ c: The NECP signals the promotion of self-consumption of "green energy", and indicates that particular emphasis will be put on removing barriers to installation of RES and storage systems in buildings. ✗ d: Not addressed in the NECP.
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ✗	✗ a: No, albeit several mentions of flexibility promotion, assessments are not adequately covered in the NECP.

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b. Assess the manufacturing capacity of energy storage. ✗	✗ b: Not addressed in the NECP.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✗ b. Non-binding seasonal energy shifting targets and strategy ✗ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ○ d. Fossil peaker replacement strategy ✗	✗ a: Not addressed in the NECP. ✗ b: Not addressed in the NECP. ○ c: The NECP notes that interconnections will help prevent the curtailment of RES electricity. There are no further concrete strategies or objectives on this issue. ✗ d: No, the NECP signals investments in new gas power plants until there is "sufficient deployment of "green" energy storage systems.". This approach may be counter-productive to the stated objective of utilisation of energy storage.
4. Identify potential financing for all types of storage	✓ The NECP mentions strategic investments in energy storage enabled by "UDF1". It also points to the Just Transition Fund, through which objectives of 1.080 MWh in energy storage solutions, and of increasing energy storage in the region to 150 end users/year MW are set. The revised Recovery and Resilience Plan is also cited as a source of financial support for "RES energy storage systems, as well as the Innovation Fund, and the Modernisation Fund. The NECP acknowledges the contribution of several aid and support schemes, including aimed at RES plants, towards storage deployment. It signals the extension of further schemes, possibly aimed at co-located installations.

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5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✗ b. Operators are able to stack revenue from several services provided to the grid ○ c. Congestion management platforms to procure flexibility in a competitive manner ✗	✗ a: Not addressed in the NECP. ○ b: Greece's NECP notes that a "full integration of energy storage systems into the electricity market" is scheduled for Q1 2024. As per current planning, storage systems are envisaged to "participate as allocated Balancing Service Entities, with the right to participate in all energy markets and all successful energy and power products". ✗ c: Not addressed in the NECP.
6. Redesign Capacity Mechanisms by: a. Ensure appropriate derating factors b. Reduce minimum eligible capacity and minimum bids c. Facilitate aggregation d. Lower CO2 emissions e. Prioritise non-fossil technologies f. Creating seasonal capacity auctions for longer duration energy storage (LDES) g. Considering storage-only auctions	Greece's Capacity Mechanism is not currently active, but the regulatory framework allowing energy storage's participation in any future proposed capacity remuneration mechanism is highlighted is set to be completed in early 2024, as per the NECP.
8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes ○ b. Revise network connection criteria to promote renewables with storage ✗	○ a: The GR-eco Islands programme aims to transform some islands into green economy models with increased energy self-sufficiency. Hybrid systems, including pumped storage systems and batteries are planned for installation on some islands. ✗ b: Not addressed in the NECP.
Energy storage strategy with targets ✓	✓ The NECP presents several targets over multiple years related to installed storage capacity. For example, 5.3GW of electricity storage capacity is set for 2030, and 11GW for 2040. However, the table

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	presenting the values has discrepancies and it is currently noted that stated numbers are not binding and expected to be finalised before the final submission of the revised NECP. Further, only batteries, pumped-storage and hydrogen appear to be considered in the Greek plan.

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3.12 Hungary

Legend:

✖: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

Hungary's NECP puts forth ambitious targets and investments for increasing energy storage by 2026 and 2030 to integrate renewables. However, Hungary's draft plan risks maintaining a fossil lock-in path by building new gas power plants in a contradictory strategy to integrate renewables. Thus, fossil-free flexibility should be prioritised in Hungary's draft NECP so as to not perpetuate dependency on imported fossil energy.

Recommendations on Energy Storage in Hungary's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ✖ b. Network charges and tariff schemes ○ c. Permitting procedures ○ d. Congestion management mechanism ○	✖ a: The NECP generally mentions improving the regulatory framework for energy storage and flexibility services, but not on double taxation specifically. There is no specific taxation regulation for energy storage in Hungary and it remains subject to the electricity consumption tax (ENTEC, 2023). ○ b: The NECP mentions an investigation into the extent to which energy storage technologies are hampered by current network charges, and the steps to create a favourable regulatory structure for energy storage. As of 2020, there was no double charging for transmission-connected storage, with withdrawal charges for other storage facilities and prosumers

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	connected to the distribution grid (ENTEC, 2023). ○ c: The NECP generally mentions improving the regulatory framework for energy storage and flexibility services, but not on permitting specifically. ○ d: The NECP briefly mentions recommending congestion management with no concrete measures to support it.
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ○ b. Assess the manufacturing capacity of energy storage. ✘	○ a: The NECP bears important mentions of flexibility needs, highlighting the intent to explore new types of flexibility services. However, no concrete studies are mentioned to support such assessments. ✘ b: No mention of energy storage manufacturing capacity
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✓ b. Non-binding seasonal energy shifting targets and strategy ✘ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✘ d. Fossil peaker replacement strategy ✘	✓ a: The plan lays out both EU and Hungarian public financing of HUF 1046 billion aimed at the "development of flexible modern electricity distribution and transmission networks". ✘ b: Whilst mentioning innovative seasonal electricity and heat storage solutions, the NECP does not bear any concrete targets or strategy to promote these. ✘ c: Curtailment is not discussed. ○ d: On the contrary, the NECP puts a target for increased Combined Cycle Gas Turbine capacity in Hungary.
4. Identify potential financing for all types of storage ✓	✓ The NECP highlights the public financing sources from which energy storage will benefit (e.g. the Recovery

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	and Resilience Plan, the Environment and Energy Efficiency Operational Programme Plus, the Modernisation Fund). It also states that investments in energy storage should be encouraged. ✓ While not mentioned in the NECP, under the Temporary Crisis and Transition Framework, Hungary will spend €1.1 billion by the end of 2025 to develop at least 800MW of storage capacity.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✘ b. Operators are able to stack revenue from several services provided to the grid ○ c. Congestion management platforms to procure flexibility in a competitive manner ✓	✘ a: procurement of the least carbon-intensive ancillary services is not discussed. ○ b: The NECP mentions a basic legislative framework laid out for aggregators and energy communities in 2021, with amendments planned by 2024. Demand response is also highlighted as a service on which government intends to focus more on, albeit with no stated concrete measures. ✓ c: The NECP makes a general mention in favour of distributors developing "congestion management flexibility markets" (p111).
6. Redesign Capacity Mechanisms by: a. Ensure appropriate derating factors b. Reduce minimum eligible capacity and minimum bids c. Facilitate aggregation d. Lower CO2 emissions e. Prioritise non-fossil technologies f. Creating seasonal capacity auctions for longer duration energy storage (LDES) g. Consideration of storage-only auctions	*Hungary does not use a capacity mechanism to meet its resource adequacy needs.*

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8. Member States favour storage and flexibility in (energy) islands/remote regions by: ✖ a. Introducing support schemes b. Revising network connection criteria to promote renewables with storage	✖ No mention of remote regions.
Energy storage strategy with targets ✓	✓ The NECP indicates a target to build 500-600 MW of energy storage by 2026 and to potentially increase it to 1GW by 2030. A National Battery Strategy is also referred to. The NECP lays out in general terms some regulatory and financial incentives to boost the energy storage market. It remains to be seen whether these targets can be met, with only currently about 20-25 MW installed battery capacity in place according to the plan.

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3.13 Ireland

Legend:

✖: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

Ireland's draft NECP does not seem to detail the country's flexibility needs for energy storage. While Ireland plans on developing an Electricity Storage Policy Framework, it is not expressly mentioned in the NECP and a comprehensive strategy on energy storage is missing so far.

Recommendations on Energy Storage in Ireland's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ✖ b. Network charges and tariff schemes ✖ c. Permitting procedures ✖ d. Congestion management mechanism ✖	*In Ireland, storage is treated as a form of generation and applies for a generation license (with a subcategory for storage). The Regulator has made a decision to remove export charges (generation use of system charges) for storage but units still must pay import charges (demand UoS charges). The Regulator, the CRU, has committed to a review of the licensing and charging regime for storage but this is not complete yet.* ✖ a: Not addressed in the draft NECP. ✖ b: Not addressed in the draft NECP. As of 2023, there remained forms of double charging (EMMES 7, LCP Delta 2023) ✖ c: Not addressed in the draft NECP. ✖ d: Not addressed in the draft NECP. There is no congestion product or locational pricing in Ireland at present.

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2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ○ b. Assess the manufacturing capacity of energy storage. ✘	○ a: Not addressed in the draft NECP document. In Ireland, the TSO have carried out a long-term flexibility assessment for 2030 via their Shaping our Electricity Future roadmap. This identified the need for significant LDES, interconnection and demand flexibility by 2030. The DSO has carried out a flexibility assessment for the distribution system for 2025 and 2030. ✘ b: No. The NECP cites the Energy Security in Ireland Report, which recommends additional capacity for "indigenous" energy storage.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✘ b. Non-binding seasonal energy shifting targets and strategy ✘ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✘ d. Fossil peaker replacement strategy ✘	○ a: Not addressed in the draft NECP document. In Ireland, national flexibility targets have not been set yet but the TSOs/DSOs do consider flexibility needs in long term scenario planning. As noted above, the TSO's 2030 Shaping our Electricity Future network plan does consider flexibility requirements by 2030 ✘ b: No. ✘ c: Not addressed in the draft NECP. In Ireland, measures to mitigate renewable dispatch down are considered in the TSO's 2030 plans such as grid buildout, operational policies, ancillary services and flexibility needs. There is no cap placed on curtailment. ✘ d: No, Ireland's NECP highlights upcoming new gas-fired plants. Further, there is no explicit strategy for this although the TSO's proposed

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	procurement of LDES is intended to reduce fossil fuel capacity use.
4. Identify potential financing for all types of storage ✗	✗ No. The draft NECP mentions future investments in battery storage under the Capacity Remuneration Mechanism in the SEM but no further details are provided.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✗ b. Operators are able to stack revenue from several services provided to the grid ○ c. Congestion management platforms to procure flexibility in a competitive manner ✗	✗ a: Not addressed in the draft NECP. In Ireland, Storage is able to participate in ancillary services market at TSO level. There is no mechanism yet to distinguish low carbon providers and all technologies can participate. There is no ancillary services procurement yet at distribution level. ○ b: Not addressed in the draft NECP. In Ireland, operates are able to provide several services and stack revenues ✗ c: Not addressed in the draft NECP. Congestion management platforms are in development by the DSO and TSO but not implemented yet.
6. Redesign Capacity Mechanisms by: a. Ensuring appropriate derating factors ○ b. Reducing minimum eligible capacity and minimum bids ✗ c. Facilitating aggregation ✗ d. Lowering CO2 emissions ✗ e. Prioritising non-fossil technologies ✗ f. Creating seasonal capacity auctions for longer duration energy storage (LDES) ✗ g. Considering storage-only auctions ○	The current capacity mechanism is under existing state aid and the next opportunity for re-design is when the current state aid expires towards end of the decade. The CRM does not incentivise storage as the de-rating factors in the capacity mechanism in Ireland have recently been revised and disadvantage storage. There is also no recognition of storage with durations greater than 8 hours. As noted below the TSO has identified that the CRM is not the appropriate mechanism to procure

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	storage/flexibility and is targeting separate support schemes. ✗ a: Not addressed in the draft NECP. ✗ b: Not addressed in the draft NECP. ✗ c: Not addressed in the draft NECP. ✗ d: Not addressed in the draft NECP. ✗ e: Not addressed in the draft NECP. ✗ f: Not addressed in the draft NECP. ✗ g: Not really. The NECP mentions the RESS, an auction-based support scheme which include several technologies, including co-located storage.
9. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes ✓ b. Revise network connection criteria to promote renewables with storage ○	✓ The NECP cites the Clean Energy for EU islands initiative, of which Ireland is a part of. ✓ a: Under the Clean Islands Energy Transition, Ireland's Department of the Environment, Climate and Communications (DECC) has responsibilities with regard to exploring funding aid and regulatory sandboxes to harness RE potential of said islands, including storage. ✗ b: Albeit possibly under the responsibilities of the DECC, this remains unclear. In Ireland, there are barriers to hybrid/co-located projects sharing the same grid connection (e.g. renewables connecting with storage). There is currently a limit on the amount of capacity developers can install on their sites.
Energy storage strategy with targets ✗	✗ Not addressed in the draft NECP. However, it is known that the Irish government consulted on a national electricity policy framework in

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	January 2023 and is due to publish the decision in April 2024

3.14 Italy

Legend:

✘: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

Italy's encouraging inclusion of energy storage targets in their NECP is notable, however, there is a need for a more developed strategy and measures in order to substantiate its objectives.

Please note that due to the automated nature of the English translation available on the Commission's NECP webpage, information may have been omitted, as per the disclaimer on the given draft NECP.

Recommendations on Energy Storage in Italy's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ✘ b. Network charges and tariff schemes ○ c. Permitting procedures ✘ d. Congestion management mechanism ✘	✘ a: Not addressed in the NECP. As of 2023, energy storage was still subject to some double taxation (EMMES, 2023) ○ b: Whilst not mentioned in the NECP, Italy had no double charging in 2020 for transmission-connected storage (ENTEC). However, double charging in the distribution system is not addressed. The NECP indicates that "instruments" aimed at "promoting self-consumption" and energy communities will be deployed but does not provide details on their precise nature.

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	✗ c: Permitting for energy storage is not discussed. ✗ d: Congestion management is not discussed
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ○ b. Assess the manufacturing capacity of energy storage. ○	○ a: Italy's NECP mentions an assessment by TSO Terna regarding new storage capacity needs for the integration of renewables by 2030, as introduced by Legislative Decree 210/2021, but there is unclear analysis of the timeframes. ○ b: Italy's NECP acknowledges the need to build a sustainable and secure battery manufacturing capacity and highlights research initiatives towards this (p146). No assessment of the current capacity is provided.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ○ b. Non-binding seasonal energy shifting targets and strategy ○ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✓ d. Fossil peaker replacement strategy ✗	○ a: Flexibility assessments are mentioned briefly, in the context of a study by TSO Terna. ○ b: While seasonal storage is mentioned, no targets, strategy or measures are laid out. ✓ c: The NECP states that developing new storage capacity, both centralised and distributed, is necessary to prevent curtailment. A centralised procurement mechanism is said to be prepared for according to Decree 210/2021 and ARERA Decision 247/2023 for energy storage capacity against curtailment. ✗ d: The NECP indicates that the gas-based systems will have to continue to provide flexibility, daily peaking and seasonal coverage.

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4. Identify potential financing for all types of storage ○	○ The NECP mentions the creation of a Green Transition Fund in 2022, covering multiple decarbonisation sectors, including energy storage. A centralised procurement mechanism is said to be prepared for according to Decree 210/2021 and ARERA Decision 247/2023 for energy storage capacity against curtailment.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✗ b. Operators are able to stack revenue from several services provided to the grid ✗ c. Congestion management platforms to procure flexibility in a competitive manner ✗	✗ a: Not discussed. ✗ b: The NECP expresses the intent to support the enabling of different services, however no concrete measures allowing for revenue stacking are detailed. ✗ c: While congestion management is mentioned in the context of European electricity market integration, there is no discussion of establishing a congestion management platform. Most discussions of congestion management centre around building/replacing transmission lines and interconnectors.
6. Redesign Capacity Mechanisms by: a. Ensuring appropriate derating factors ✓ b. Reducing minimum eligible capacity and minimum bids ✗ c. Facilitating aggregation ✗ d. Lowering CO2 emissions ✗ e. Prioritising non-fossil technologies ✗ f. Creating seasonal capacity auctions for longer duration energy storage (LDES) ○ g. Considering storage-only auctions ✗	*Italy has a Capacity Mechanism in use, which has the highest percentage of energy storage in Europe, where at its most recent auction it awarded 30% of new capacity contracts to energy storage.* ✓ a: Whilst not mentioned by the NECP, the derating factor is assessed on a case-by-case basis in Italy by the regulator. ✗ b: Not discussed. ✗ c: The Legislative Decree 210/2021 called for the Regulator to strengthen

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	and promote the development of aggregation. But, it is unclear if this applies to the capacity mechanism requirements. ✗ d: No proposal to lower CO2 emission in capacity mechanism. ✗ e: Renewable generation capacity as part of CM is highlighted, but the level of prioritisation is left unclear. ○ f: While seasonal capacity auctions are not discussed in the NECP, TERNA has begun a consultation process for long-duration energy storage. However, the technologies able to participate and the timeline for implementation is unclear. ✗ g: The NECP does not mention considering storage-only auctions for CMs.
8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes ✗ b. Revising network connection criteria to promote renewables with storage ✗	✗ a: The NECP generally mentions the need to introduce "specific measures" in the case of "small, non-interconnected islands". ✗ b: Not discussed.
Energy storage strategy with targets ○	○ The previous NECP set out electricity storage targets by 2030. 6GW of pumped hydro capacity and utility-scale electrochemical storage, alongside 4 GW of distributed electrochemical storage (IEA). Italy's targets do not apply to all energy storage technologies. The updated NECP states that developing new storage capacity, both centralised and distributed is necessary.

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3.15 Lithuania

Legend:

✘: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

Lithuania's NECP has a lack of discussion on flexibility, let alone energy storage. The draft plan fails to set the foundations needed to move towards a strategy, targets and measures to increase the deployment of energy storage in support of fossil-free flexibility. A capacity mechanism accounting for energy storage is however said to be under development.

Please note that due to the automated nature of the English translation available on the Commission's NECP webpage, information may have been omitted, as per the disclaimer on the given draft NECP.

Recommendations on Energy Storage in Lithuania's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ✘ b. Network charges and tariff schemes ○ c. Permitting procedures ✘ d. Congestion management mechanism ✘	✘ a: Not addressed in the draft NECP. ○ b: In July 2022 the legislative "Employment Package" was adopted, including provisions said to improve prosumer pricing. In national legislation, all storage providers are exempt from transmission tariffs, however, it is not so for distribution tariffs. In 2020, there was no double charging for transmission-connected storage (ENTEC, 2023). ✘ c: The "Employment Package" of July 2022 includes some administrative simplifications for prosumers. The development and operation of co-located energy storage facilities at solar power plants have been identified as requiring permits. Nevertheless, specific measures to simplify

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	permitting for energy storage have yet to be adopted. ✗ d: Not addressed in the NECP.
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ✗ b. Assess the manufacturing capacity of energy storage. ○	✗ a: Identifying Lithuania's flexibility needs are not discussed. ○ b: Lithuania's NECP does not assess the manufacturing capacity for energy storage. However, it highlights the need for increasing it, mentioning an investment plan to build capacity for domestic production of batteries.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✗ b. Non-binding seasonal energy shifting targets and strategy ✗ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✗ d. Fossil peaker replacement strategy ✗	✗ a: Lithuania's NECP does not mention assessing flexibility needs. ✗ b: Not addressed in the draft NECP. ✗ c: Not addressed in the draft NECP. ✗ d: Not addressed in the draft NECP.
4. Identify potential financing for all types of storage ○	○ The NECP mentions financial measures to support the uptake of energy storage systems, notably in households.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✗ b. Operators are able to stack revenue from several services provided to the grid ✗ c. Congestion management platforms to procure flexibility in a competitive manner ✗	✗ a: Not addressed in the draft NECP. ✗ b: Not addressed in the draft NECP. ✗ c: Not addressed in the draft NECP.

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6. Redesign Capacity Mechanisms by: ○ a. Ensuring appropriate derating factors b. Reducing minimum eligible capacity and minimum bids c. Facilitating aggregation d. Lowering CO2 emissions e. Prioritising non-fossil technologies f. Creating seasonal capacity auctions for longer duration energy storage (LDES) g. Considering of storage-only auctions	*Lithuania does not currently use a capacity mechanism to address resource adequacy.* ○ Lithuania's NECP notes that a capacity mechanism is under development and set to cover demand response and storage facilities.
9. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes ✘ b. Revising network connection criteria to promote renewables with storage ✘	✘ a: The draft NECP briefly mentions the infrastructure challenges faced by islands or remote regions, but does not address them. ✘ b: Not addressed in the draft NECP.
Energy storage strategy with targets ✘	✘ No strategy nor quantifiable targets for energy storage are mentioned in Lithuania's NECP.

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3.16 Luxembourg

Legend:

✖: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

Luxembourg's NECP outlines many schemes to boost renewable self-consumption, including the support of installing Behind-the-Meter energy storage in homes, businesses and industry. However, other than the deployment of green hydrogen, Luxembourg lacks specific plans to boost Front-of-the-Meter and longer-duration energy storage.

Please note that due to the automated nature of the English translation available on the Commission's NECP webpage, information may have been omitted, as per the disclaimer on the given draft NECP.

Recommendations on Energy Storage in Luxembourg's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ○ b. Network charges and tariff schemes ○ c. Permitting procedures ○ d. Congestion management mechanism ○	○ a: Luxembourg has not abolished double taxation for all energy storage. However, PV installations less than 10kW are exempt from tax declarations, and in effect eliminates double taxation if these installations use Behind-the-Meter energy storage. ○ b: Luxembourg's ILR will review the tariff structure for network tariffs to promote fairer pricing to contribute to the "development of clean energy technologies". However, it is unspecified if energy storage's dual role is being considered. ○ c: Luxembourg is currently considering revising legislation to speed up permitting for

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	'decarbonisation projects' and renewable energy deployment, but it is unclear if all energy storage facilities will qualify for accelerations. Notably, Luxembourg stated it will use the permitting deadlines set in the Council's temporary Regulation as a minimum basis for its complementary national legislation, which includes permitting accelerations for co-located storage facilities. ○ d: Luxembourg has stated that facilitating congestion management on its day-ahead market with Germany is a top priority. However, details about energy storage's ability to participate are not provided.
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ✓ b. Assess the manufacturing capacity of energy storage. ✖	✓ a: Penta's Flexibility report provides information on the current and future state of flexibility in region, including overviews of the needs and sources of flexibility in 2030, 2040 and 2050. This includes different system flexibility scenarios for Luxembourg alone. ✖ b: There is no mention of Luxembourg's manufacturing capacity for energy storage.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✓ b. Non-binding seasonal energy shifting targets and strategy ○ c. Consideration of renewable energy curtailment, strategies to minimise it	✓ a: Luxembourg's network development plans include facilitating the establishment of energy storage facilities. ○ b: Luxembourg only emphasises hydrogen as a seasonal storage possibility at a European level, but does not discuss targets nor a strategy for seasonal flexibility.

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and/or capping renewable energy curtailment ✗ d. Fossil peaker replacement strategy ✗	✗ c: Luxembourg's NECP makes no mention of renewable energy curtailment. ✗ d: Luxembourg's NECP makes no mention of a strategy to replace fossil peakers.
4. Identify potential financing for all types of storage ✓	✓ From 2022-2025, Luxembourg's 'Klimabonus Wunnen' scheme increases financing for the sustainable construction / renovation of housing and promotes renewable self-consumption by providing higher subsidies. Furthermore, the measure includes Behind-the-Meter (BtM) battery and latent heat storage installations in the eligible costs. ✓ Since 2022, Luxembourg has launched investment aid tenders to promote PV self-consumption in commercial and industrial applications. BtM energy storage is an eligible investment cost for aid under the tenders.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✗ b. Operators are able to stack revenue from several services provided to the grid ✗ c. Congestion management platforms to procure flexibility in a competitive manner ○	✗ a: Luxembourg's NECP makes no mention of ancillary services. ✗ b: Luxembourg's NECP makes no mention of revenue stacking. ○ c: The Pentalateral Energy Forum seeks to make for more efficient congestion management via further market integration of the region. Furthermore, developing congestion management is a 'top priority' for Luxembourg in its common day-ahead market with Germany. Further details on its rollout, competitiveness, and success in

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	managing congestion are not mentioned.
6. Redesign Capacity Mechanisms by: a. Ensuring appropriate derating factors b. Reducing minimum eligible capacity and minimum bids c. Facilitating aggregation d. Lowering CO2 emissions e. Prioritising non-fossil technologies f. Creating seasonal capacity auctions for longer duration energy storage (LDES) g. Considering storage-only auctions	*Luxembourg does not currently, nor has ever, possessed a capacity mechanism as means to acquire resource adequacy. Thus, none of these reforms are mentioned.*
8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes b. Revising network connection criteria to promote renewables with storage	*N/A given Luxembourg's geographical context.* a,b: Luxembourg mentions broadly cooperating with Member States in supporting energy island projects. No specifics are given in terms of support schemes and the role of energy storage.
Energy storage strategy with targets ✘	✘ Energy storage is tangentially addressed in certain Luxembourgish strategies, such as the Building Renovation Strategy or Hydrogen Strategy. However, Luxembourg lacks a specific strategy for energy storage with quantifiable targets.

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3.17 Malta

Legend:

✘: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

Malta's NECP lists the roll-out of cost-effective energy storage as an essential priority to ensure its energy security. While Malta's step towards renewables and energy storage is evident, a clear quantification of the announced measures would be necessary for implementation. It might be linked to the fact that the NECP does not provide a clear flexibility assessment, though it mentions that a new Electricity Supply study should further cover flexibility needs.

Recommendations on Energy Storage in Malta's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ✘ b. Network charges and tariff schemes ✘ c. Permitting procedures ✘ d. Congestion management mechanism ✘	✘ a: Not in the NECP. Further, Malta's tax legislation makes no specific mention of electricity storage and treats charging as consumption. ✘ b: Not in the draft NECP ✘ c: Not in the draft NECP ✘ d: Not in the draft NECP
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ✘ b. Assess the manufacturing capacity of energy storage. ✘	✘ a: Not in the draft NECP. The plan mentions a scheduled update to an Electricity Supply Study which would tackle system cost optimisation while increasing flexibility. ✘ b: No, but this may not be relevant given the size of Malta's economy and geography.
3. Ensure system operators assess the flexibility needs:	✘ a: Not in the draft NECP. ✘ b: Not in the draft NECP.

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a. When planning transmission and distribution networks ✘ b. Non-binding seasonal energy shifting targets and strategy ✘ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment d. Fossil peaker replacement strategy ✘	○ c: Partially in the draft NECP. Subsidiary Legislation 543.13 is mentioned as obligating the DSO to ensure that appropriate distribution systems and market-related operational measures are taken to minimise the curtailment of electricity produced from RES. ✘ d: Not in the NECP. Electricity storage is mentioned as reducing the need to dispatch or invest in peaking plants.
4. Identify potential financing for all types of storage ○	The NECP highlights that "the government will invest in utility-scale battery storage". It presents two utility-scale Battery Energy Storage Systems under development. Further, the plan indicates that the government is expected to continue providing financial support towards the deployment of behind-the-meter. Further, the NECP notes that households have been eligible to benefit from a scheme to install battery storage system co-located with PV since 2021 to store excess generation behind-the-meter. Through new Government schemes, beneficiaries it is said that beneficiaries may be able to recover up to 80% of battery costs.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✘	✘ a: No. ✘ b: Behind-the-meter storage is referenced several times in the NECP. However, it is unclear whether value stacking would be allowed for several services. Further, there is currently no regulatory framework for electricity storage in Malta, which

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b. Operators are able to stack revenue from several services provided to the grid ✘ c. Congestion management platforms to procure flexibility in a competitive manner ✘	represents a significant barrier (ENTEC, 2023). ✘ c: Not in the NECP
6. Redesign Capacity Mechanisms by: a. Ensure appropriate derating factors b. Reduce minimum eligible capacity and minimum bids c. Facilitate aggregation d. Lower CO2 emissions e. Prioritise non-fossil technologies f. Creating seasonal capacity auctions for longer duration energy storage (LDES) g. Consideration of storage-only auctions	*N/A: Malta does not have a capacity mechanism.*
8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes b. Revising network connection criteria to promote renewables with storage	*N/A given Malta's geography as an island itself.*
Energy storage strategy with targets ✘	✘ Not in the NECP.

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3.18 The Netherlands

Legend:

✖: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

The Netherlands' draft NECP contains commitments for renewable energy, and makes a technology-neutral acknowledgement of the role of energy storage in its deployment. However, it lacks a strategy with set measures to further variable energy supply with on-flexibility solutions, including energy storage.

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Recommendations on Energy Storage in the Netherlands' Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ○ b. Network charges and tariff schemes ✖ c. Permitting procedures ○ d. Congestion management mechanism ○	○ a: Double taxation for energy storage facilities with a large-scale consumption connection was abolished in 2022 (source), however, there is ongoing taxation on batteries operating for smaller consumption connections (home batteries for example) with no solution in sight. ✖ b: The NECP does not lay out specific network charges and tariff schemes for energy storage. The debate on this issue is ongoing, with a consensus for allowing a specific transmission taxation discount for energy storage, but a lack of agreement on the value (50% vs >85%).

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	○ c: The NECP states that in the coming legislative agenda, barriers to storage will be removed "where necessary". There is no clear indication of how this would be done. ○ d: The Dutch regulatory framework already allows for "flexibility" in the electricity system through congestion management, aggregation and demand response services, for example. However, in practice communications from the authorities and regional grid operators remain poor on this topic, leading to little business response. Barriers to entering the market for such services, therefore, remain high.
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. o b. Assess the manufacturing capacity of energy storage. ✖	○ a: An analysis is quoted in the NECP as demonstrating that enough options are available to meet short-term flexibility demand (p54). The NECP establishes that H2 production is seen as a long-term CO2-free asset for (partially) generating the required flexibility for the electricity system. 500MW electrolyser capacity in 2025 and 3-4GW in 2030 (p39, 40). However, the NECP notes that the Netherlands does not have targets for increasing flexibility in the system. Flexibility in the form of demand-side management, storage or controllable power is integrated into the electricity market and traded without any explicit definition of it as "flexibility" (p48). ✖ b: The Dutch government has no assessment of the manufacturing capacity regarding energy storage.

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3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks o b. Non-binding seasonal energy shifting targets and strategy ✘ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✘ d. Fossil peaker replacement strategy ✘	○ a: The upcoming legislative agenda is set to open flexibility (including for small-scale consumers) further. There is no clear indication of how this would be carried out. ✘ b: Not discussed in the draft NECP. ✘ c: Not discussed, but mentions that to generate some revenue, that parties will put electrolysers next to their renewable generators to convert very cheap electricity to H2 (assuming that there is a backbone). ✘ d: Not discussed in the draft NECP.
4. Identify potential financing for all types of storage ✘	○ The Netherlands has indicated to invest in battery innovations, but the NECP does not identify evidence of this.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✘ b. Operators are able to stack revenue from several services provided to the grid o c. Congestion management platforms to procure flexibility in a competitive manner o	✘ a: The NECP makes mention of a principle of "non-discriminator participation of energy from renewable sources, demand response and storage in all energy markets. This implies that carbon intensity is not a basis for priority (p101). ○ b: Large operators are said to already be able to bid into the different markets with their assets and respond to real-time prices. It is unclear whether it is the case for small consumers, or where the distinction is made. ○ c: The use of flexibility, energy storage and supply-demand balancing in congestion management will be explored in the second edition of the Netherlands' Energy Infrastructure Outlook 2030-2050 study.

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6. Redesign Capacity Mechanisms by: a. Ensuring appropriate derating factors b. Reducing minimum eligible capacity and minimum bids c. Facilitating aggregation d. Lowering CO2 emissions e. Prioritising non-fossil technologies f. Creating seasonal capacity auctions for longer duration energy storage (LDES) g. Considering storage-only auctions	*The Netherlands does not use a capacity mechanism to procure resource adequacy. Thus, none of the reforms are considered in the Dutch NECP.*
8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes ✘ b. Revising network connection criteria to promote renewables with storage ✘	✘ a: Not discussed in the draft NECP. ✘ b: Not discussed in the draft NECP.
Energy storage strategy with targets ✘	✘ The Netherlands does not have quantitative energy storage targets. The draft NECP underlines the Energy Storage Roadmap which identifies actions to promote energy storage through 2035 and beyond that are importantly technology-neutral. The binding nature of this document and whether it is linked to the adoption of measures was however not immediately clear.

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3.19 Portugal

Legend:

✖: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

Portugal has an encouraging foundation of measures to support the deployment of energy storage in its NECP, but its lack of technology-neutrality in its energy storage objectives risks hampering the deployment of innovative solutions that could address storage gaps.

Please note that due to the automated nature of the English translation available on the Commission's NECP webpage, information may have been omitted, as per the disclaimer on the given draft NECP.

Recommendations on Energy Storage in Portugal's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role(generator – consumer) in regulatory framework for: a. Double taxation ✓ b. Network charges and tariff schemes ✓ c. Permitting procedures ✓ d. Congestion management mechanism ○	✓ a: Portugal's regulatory framework is defined to avoid double taxation in terms of storage systems. ✓ b: Every year, the Portuguese regulatory entity of energy services establishes the network charges and tariff schemes, being later promulgated in parliament. In 2022, these charges and tariffs schemes were extended to includeenergy storage. ✓ c: Permitting procedures related to energy storage systems in Portugal should follow the same guidelines for any power plant to be installed. These guidelines are clearly described in Decree-Law 15/2022. ○ d: By the end of 2023, the Portuguese DSO will conduct a flexibility pilot

	project in identified key geographic areas of the grid that are prone to congestion and blackouts. The results from this study will be the foundation of a possible mechanism for the future.
2. Identify the flexibility needs of their energysystems: a. In the short, medium and long term. ✓ b. Assess the manufacturing capacity of energy storage. ○	✓ a: Due to the energy crisis broughtup by the invasion of Ukraine, the Portuguese NECP describes the importance of energy storage in the form of renewable gases (such as green H2) as a vector to transition away from fossil-based flexibility in the Portuguese energy system for the short, medium and long term. ○ b: This NECP makes reference to the importance of a new hydroelectric power plant expect to start production in 2026 (Gouvães, Daivões e Alto Tâmega) associated with energy storage and reverse pumping for the national grid flexibility.
3. Ensure system operators assess the flexibility needs: a. When planning transmission anddistribution networks ○ b. Non-binding seasonal energy shiftingtargets and strategy ✗ c. Consideration of renewable energy curtailment, strategies to minimise itand/or capping renewable energy curtailment ○ d. Fossil peaker replacement strategy ○	○ a: Portugal's NECP asserts in its Security of Supply guidelines the importance of maintaining coherence between the TSO and DSO development plans, regarding the inclusion of storage capacity with grid flexibility in mind. ✗ b: Portugal's NECP does not define a strategy for seasonal energy shifting. ○ c: Portugal's NECP considers the development of energy storage in the form of green H2 as a solution to reduce curtailment and increase flexibility. ○ d: Portugal's NECP accentuates the necessity of adjusting the role of

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	natural gas in the energy mix. Portugal will evaluate the potential phase-out of fossil combined cyclewith the horizon of 2040.
4. Identify potential financing for all types of storage. ×	× Regarding potential financing for all types of energy storage matter, the Portuguese NECP hasn't made any progress so far.
5. Explore whether energy storage services (especially in distribution networks / non- frequency ancillary services) are sufficientlyremunerated: a. Procurement of ancillary services pursues the least carbon-intensiveoption ○ b. Operators are able to stack revenue from several services provided to the grid × c. Congestion management platforms toprocure flexibility in a competitive manner ○	○ a,c: Following the guidelines in thisnewly revised NECP, later this year will be held the first flexibility services auction, were various figures (consumers, producers, aggregators, etc.) can be paid for reducing consumption in necessity scenarios. It's relevant to mention that these auctions will be held within a pilot project. × b: Revenue stacking is not discussed.
6. Redesign Capacity Mechanisms by: a. Ensuring appropriate derating factors × b. Reducing minimum eligible capacityand minimum bids × c. Facilitating aggregation × d. Lowering CO2 emissions × e. Prioritising non-fossil technologies × f. Creating seasonal capacity auctions for longer duration energy storage (LDES) × g. Consideration of storage-only Auctions ×	*Portugal uses direct capacity payments to acquire resource adequacy.* × a-d, f, g: Regarding its capacity mechanism, the Portuguese NECP hasn't made any progress so far. The NECP bears no mention of considering any of the following reforms. × e: While Portugal opened its capacity auctions to renewables, a lack of detailed rules results in non-fossil technologies being unable to participate.

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8. Member States favour storage and flexibilityin (energy) islands/remote regions by: a. Introducing support schemes ○ b. Revising network connection criteria to promote renewables with storage ○	○ a: The developments and support schemes in insular public infrastructure is defined in the regional development plans. ○ b: This newly revised plan refers tothe development of an interconnected grid between island in both Portuguese autonomous regions to increase flexibility.
Energy storage strategy with targets ○	○ Portugal's NECP sets a 1GW of installed battery storage capacity, 3.9 GW of pumped hydro storage. However, it lacks an overarching target for all energy storage and a comprehensive strategy for achieving these targets.

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3.20 Romania

Legend:

✖: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

Romania's NECP target aims for 240 MW/ 480MWh of battery storage by 2025 and Romania encourages demand response consumption to address the energy demand fluctuations. However, it is far from constituting a comprehensive strategy for energy storage and there is no precise flexibility assessment.

Recommendations on Energy Storage in Romania's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ✖ b. Network charges and tariff schemes ✖ c. Permitting procedures ✖ d. Congestion management mechanism ✖	✖ a: Not addressed in the NECP. As there is no specific mention of electricity storage in legislation, the assumption is that double taxation applies (ENTEC, 2023). ✖ b: Not addressed in the NECP. Double charging existed for pumped hydro storage in 2020 (ENTEC, 2023). ✖ c: Not addressed in the NECP. ✖ d: Not addressed in the NECP.
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ✖ b. Assess the manufacturing capacity of energy storage. ✖	✖ a: Not addressed in the NECP. ✖ b: Not addressed in the NECP.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✖ b. Non-binding seasonal energy shifting targets and strategy ✖	✖ a: Not addressed in the NECP. ✖ b: Not addressed in the NECP. ✖ c: Not addressed in the NECP. ✖ d: Not addressed in the NECP. To the contrary, the plan mentions measures to increase the

c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✘ d. Fossil peaker replacement strategy ✘	development of new Combined-Cycle Gas Turbine capacities.
4. Identify potential financing for all types of storage ✘	✘ Not really: the only potential financing mentioned is the 103.48 million euros planned from the National Recovery and Resilience Plan as well as from the budget towards the target of 240 MW in battery capacity by 2025. This appears to not be technology-neutral.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✘ b. Operators are able to stack revenue from several services provided to the grid ✘ c. Congestion management platforms to procure flexibility in a competitive manner ✘	✘ a: Not addressed in the NECP. ✘ b: Not addressed in the NECP. As of 2023, no information was identified on storage not being eligible to participate in the balancing market (ENTEC, 2023). However, storage was not allowed in 2020 to provide transmission-level voltage control services. ✘ c: Not addressed in the NECP
6. Redesign Capacity Mechanisms by: a. Ensure appropriate derating factors b. Reduce minimum eligible capacity and minimum bids c. Facilitate aggregation d. Lower CO2 emissions e. Prioritise non-fossil technologies f. Creating seasonal capacity auctions for longer duration energy storage (LDES) g. Considering storage-only auctions	*N/A: Romania does not use a Capacity Mechanism.*

8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes ✗ b. Revise network connection criteria to promote renewables with storage ✗	✗ Romania's NECP mentions social protection measures for vulnerable energy consumers, including those isolated from energy sources. However, energy storage is not explored as a means to tackle this isolation.
Energy storage strategy with targets ○	○ Partially. The NECP highlights Romania target of at least 240 MW of 480MWh potential by 2025 for "electricity storage capacity" as set in the "Recovery and resilience plan for Romania". It appears this target is not technology-neutral as other mentions of the target refer to "power battery storage" only.

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3.21 Slovakia

Legend:

✖: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

While it is encouraging that Slovakia now mentions promoting energy storage as priority of its national energy policy as a means to achieve greater flexibility and to integrate more renewable energy, their NECP lacks tangible data, measures and targets to guide energy storage's development.

Recommendations on Energy Storage in Slovakia's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ✖ b. Network charges and tariff schemes ○ c. Permitting procedures ○ d. Congestion management mechanism ○	✖ a: Slovakia has not abolished the double taxation of energy storage and does not mention an intention to do so. ○ b: While Slovakia has worked to ensure that energy storage has equal access in the provision of grid services, there is not a mention of making network charges and tariff schemes better account for energy storage. ○ c: Slovakia describes improving the efficiency of the permit-granting process for energy storage as a priority. Furthermore, Slovakia is considering legislation to significantly simplifying the permitting of hydrogen projects. ○ d: Under Regulation (EU) 2019/943 on the internal market for electricity, Slovakia will coordinate with other Member States in setting guidelines

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	for 'capacity allocation and congestion management'. The role of energy storage as a 'purchased support service' by TSOs and the timeline for implementation remain unclear.
2. Identify the flexibility needs of their energy systems: a. In the short, medium, and long term. ✘ b. Assess the manufacturing capacity of energy storage. ✘	✘ a: Slovakia has no national analysis of their flexibility requirement in any timeframe. While their NECP mentions that Slovakia will need more flexibility, it does not mention an intention to carry out a study to identify Slovakia's flexibility needs. ✘ b: There is no mention of Slovakia's manufacturing capacity of energy storage.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✓ b. Non-binding seasonal energy shifting targets and strategy ✘ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✘ d. Fossil peaker replacement strategy ✘	✓ a: In general, Slovakia says promoting storage in its network planning as an energy policy priority. Since 2023, Slovakia's TSO has harmonised the types and requirements of ancillary services, in order to allow for the participation of energy storage and demand response as flexibility assets. Additionally, Slovakia foresees supporting the development of local distribution grids for energy communities using energy storage. ✘ b: Slovakia does not have a seasonal energy shifting strategy or targets as it lacks any national assessment of flexibility needs in any duration. ✘ c: Slovakia does consider curtailment in its NECP, but does not have a strategy to minimise or cap the curtailment of renewable energy. In fact, Slovakia lists curtailment as a

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	tool to achieve greater system flexibility. ✗ d: Slovakia does not possess a fossil peaker replacement strategy.
4. Identify potential financing for all types of storage ✓	✓ Slovakia's NECP describes several EU funds, such as the Modernisation Fund, and national state aid schemes that are potential financing routes for energy storage. This includes a national scheme to support thermal energy storage in the context of making Slovakia's heating systems smarter. Under their Recovery and Resilience Plan, they plan to invest in an additional 52 MW of grid flexibility in the form of batteries, hydrogen production and upgrading existing pumped-hydro plants.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✗ b. Operators are able to stack revenue from several services provided to the grid ✓ c. Congestion management platforms to procure flexibility in a competitive manner ○	✗ a: While Slovakia's TSO has made strides to allow equal access for energy storage and demand response to participate in ancillary services and balancing markets, they have not indicated an aim to pursue the least carbon-intensive option. ✓ b: Since 2023, Slovakia allows energy storage to aggregate and to stack revenue from a variety of grid services. ○ c: Slovakia is set to work with other Member States in creating guidelines for 'capacity allocation and congestion management' based upon the mandates from Regulation (EU) 2019/943 on the internal market for electricity.
6. Redesign Capacity Mechanisms by: a. Ensuring appropriate derating factors	*Slovakia does currently use a capacity mechanism as means to acquire resource*

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b. Reducing minimum eligible capacity and minimum bids c. Facilitating aggregation d. Lowering CO2 emissions e. Prioritising non-fossil technologies f. Creating seasonal capacity auctions for longer duration energy storage (LDES) g. Considering storage-only auctions	*adequacy. Thus, none of these potential reforms (a-g) are mentioned.*
8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes ○ b. Revising network connection criteria to promote renewables with storage ✓	○ a: While Slovakia does have support schemes for energy storage, including behind-the-meter thermal energy storage and energy communities, it does not explicitly provide specific preference to deployment of energy storage solutions in (energy) islands and remote areas. ✓ b: Slovakia will support the establishment of local distribution grids for renewable energy communities, including energy storage.
Energy storage strategy with targets ✘	✘ While Slovakia lists energy storage as a priority for developing flexibility, it does not have an energy storage strategy nor quantifiable targets to reach this objective.

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3.22 Slovenia

Legend:

✖: not discussed / no implementation

✓: full implementation

o: partial or incomplete implementation

General comment:

The Slovenian NECP is optimistic about the development of a flexibility market to boost grid flexibility and in general terms deploy energy storage, but falls short of setting concrete objectives or measures for deploying energy storage.

Please note that due to the automated nature of the English translation available on the Commission's NECP webpage, information may have been omitted, as per the disclaimer on the given draft NECP.

Recommendations on Energy Storage in Slovenia's draft NECP update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in the regulatory framework for: a. Double taxation ✓ b. Network charges and tariff schemes o c. Permitting procedures ✖ d. Congestion management mechanism ✖	✓ A: While the NECP does not mention double taxation, and national legislation does not define electricity energy storage, energy storage is exempt from taxes on charging (ENTEC, 2023). o b: "Consideration should be given to capping/eliminating the grid charge for storage in both charging and generator mode of operation to incentivise the economics of SHEE investments" (p69). ✖ c: No ✖ d: No
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. o b. Assess the manufacturing capacity of energy storage. ✖	o a: By 2026 at the latest, Slovenia seeks to establish continuous monitoring of voltage quality at electricity consumers' metering points, in conjunction with the

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	upgrading the Advanced Metering System to ensure the technical conditions for the development of the flexibility market (p36). This includes the final roll-out of advanced meters by 2025, along with a "data acquisition and storage system and advanced connectivity of the downstream elements with the upstream elements" are being developed (p81). Slovenia hopes to pay attention to make it technically easy and affordable to provide metering data in (near) real time to all energy markets actors, for an upcoming including the upcoming flexibility market (p175). ✘ b: Slovenia does not assess its energy storage manufacturing capacity.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ✓ b. Non-binding seasonal energy shifting targets and strategy ✘ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✘ d. Fossil peaker replacement strategy ✘	✓ a: Slovenia's NECP describes that they will ensure better conditions for the accelerated development of the electricity distribution network for its increased exploitation of resource and load flexibility. It describes the flexible distribution network as "the cornerstone of the future transition to a climate-neutral society" (p42). Boosting their overall transmission network capacity is also a priority, but they note it is a lengthy process that will go hand-in-hand with the introduction of the flexibility market, since they are mutually supportive (p71). ○ b-d: Seasonal energy shifting, curtailment and replacing fossil peakers are not considered.

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4. Identify potential financing for all types of storage o	○ While Slovenia's NECP mentions that it will be necessary to encourage private investment in storage of all types, it does not provide insights into public financing for storage in Slovenia.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option o b. Operators are able to stack revenue from several services provided to the grid ✓ c. Congestion management platforms to procure flexibility in a competitive manner o	○ a: One of Slovenia's NECP key objectives is the introduction and rapid increase of ancillary energy activities to enable the installation of solar or wind energy in areas whose primary purpose is otherwise different (agricultural, road, water, etc.)" (p53). Slovenia's NECP hopes to supporting the development of an efficient and competitive market to fully exploit flexibility and new technologies, so that by 2030 the supply of flexibility in the services market will allow 100% of the FRR requirements to decarbonised (p36). ✓ b: Under Slovenia's developing flexibility market the ability to stack revenue from multiple services will be addressed. They note that Automatic Frequency Recovery Reserve (aFRR) is expected to be taken over from conventional generators by energy storage, mainly batteries in the coming years (p156). ○ c: While Slovenia's flexibility market does not explicitly state its intention to address congestion issues, they do mention it will assist in boosting the transmission system's capacity (p.71).

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6. Redesign Capacity Mechanisms by: a. Ensuring appropriate derating factors b. Reducing minimum eligible capacity and minimum bids c. Facilitating aggregation d. Lowering CO2 emissions e. Prioritising non-fossil technologies f. Creating seasonal capacity auctions for longer duration energy storage (LDES) g. Considering storage-only auctions	*Slovenia does not have a capacity mechanism and does indicate any intention to launch one in their NECP. Thus, the following reforms (a-g) are not discussed.*
8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes ✘ b. Revising network connection criteria to promote renewables with storage ✘	✘ a,b: Slovenia's NECP makes no mention of support for (energy) islands/remote regions.
Energy storage strategy with targets ✘	✘ While Slovenia's NECP indicates optimistic elimination of market barriers for energy storage, it does not enlist a comprehensive strategy nor quantifiable targets to measure the success of its developing flexibility market.

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3.23 Spain

Legend:

✖: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

Spain's NECP reinforces its commitment to promote flexibility through energy storage with ambitious energy storage targets, which are some of the highest in Europe, and a dedicated energy storage strategy. It remains to be seen whether concrete measures and their implementation can be provided for in time to deliver on the targets. The redesign of Spain's capacity mechanism will be of particular importance to meet these targets.

Please note that due to the automated nature of the English translation available on the Commission's NECP webpage, information may have been omitted, as per the disclaimer on the given draft NECP.

Recommendations on Energy Storage in Spain's Draft NECP Update	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
7. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ○ b. Network charges and tariff schemes ✓ c. Permitting procedures ✓ d. Congestion management mechanism ✖	*Spain's NECP highlights the general recognition of energy storage in national legislation.* ○ a: In the Energy Storage Strategy referred to by the NECP, the tackling of double taxation is highlighted as an ongoing need. ✓ b: In the Energy Storage Strategy referred to by the NECP, and the NECP mentions the need to improve tariffs on storage. ✓ c: In the Energy Storage Strategy referred to by the NECP, legislation towards this is highlighted as well as further needs. ✖ d: The Energy Storage Strategy referred to by the NECP mentions

	such a possibility, but implementation is unclear.
8. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ○ b. Assess the manufacturing capacity of energy storage ○	○ a: The NECP refers to Spain's Energy Storage Strategy, which provides for defining the needs energy storage needs on the basis of multiple scenarios with regard to daily, weekly and seasonal flexibility. ○ b: Measures associated with strengthening the domestic manufacturing and value chain of clean technologies are presented in the NECP, however it is unclear if the manufacturing capacity for energy storage is being assessed specifically.
9. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ○ b. Non-binding seasonal energy shifting targets and strategy ○ c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✗ d. Fossil peaker replacement strategy ✗	○ a: The adaptation of grids towards the deployment of flexibility tools such as storage is planned for in the "Recovery, Transformation and Resilience" Plan. ○ b: The Energy Storage Strategy referred to by the NECP mentions the results of an analysis of seasonal energy storage needs. ✗ c: As per the NECP, this is not clear. ✗ d: Spain does not have a fossil peaker replacement strategy.
10. Identify potential financing for all types of storage ✓	✓ The NECP notably highlights a EUR 684 million investment package for the deployment of energy storage. ✓ The Energy Storage Strategy referred by the NECP identifies financial support measures, where technological neutrality is upheld by the Strategy.

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11. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ○ b. Operators are able to stack revenue from several services provided to the grid ✗ c. Congestion management platforms to procure flexibility in a competitive manner ✗	○ a: The NECP refers to the Energy Storage Strategy and its provisions for a future analysis of the remuneration framework for energy storage. ✗ b: The concrete details of this are unclear in the NECP and it is not clear if this will be explored in their intended analysis of the renumeration framework for energy storage. ✗ c: This is not mentioned in the NECP
12. Redesign Capacity Mechanisms by: a. Ensuring appropriate derating factors ✗ b. Reducing minimum eligible capacity and minimum bids ✗ c. Facilitating aggregation ✗ d. Lowering CO2 emissions ✗ e. Prioritising non-fossil technologies ✗ f. Creating seasonal capacity auctions for longer duration energy storage (LDES) ✗ g. Considering storage-only auctions ✗	*Spain uses a direct capacity payment system to acquire resource adequacy. A proposal for the capacity market to include energy storage is being worked on, supported by an analysis of the remuneration framework for energy storage.* ✗ a,b: Unclear as per the draft NECP ✗ c: Aggregation is facilitated as per measures of the Energy Storage Strategy; however, it is not clear if this will be applied to Spain's Capacity Mechanism ✗ d-f: Unclear as per the draft NECP ✗ g: Unclear in the context of Spain's Capacity Mechanism.
9. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes ✓ b. Revising network connection criteria to promote renewables with storage ✓	✓ a,b: The NECP mentions the provision of specific schemes for storage projects in the Balearic Islands and the Canary Islands. The Energy Storage Strategy also has a section dedicated to remote regions and islands, with a definition of specific needs and schemes for these.

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Energy storage strategy with targets ✓	✓ The NECP sets highly ambitious targets increasing +12 GW (from 6,4 GW in 2020 to 18,5GW in 2030) the 2030 target for energy storage (+6 GW above the increase foreseen in the current NECP). This is supported by an Energy Storage Strategy, however, implementation to meet the targets remains to be seen.

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3.24 Sweden

Legend:

✖: not discussed / no implementation

✓: full implementation

○: partial or incomplete implementation

General comment:

Sweden's NECP bears mention of plans to promote flexibility to integrate increasing variable renewable energy, but lacks concrete strategies, measures or targets to prioritise non-fossil flexibility solutions to meet its climate and energy targets.

Please note that due to the automated nature of the English translation available on the Commission's NECP webpage, information may have been omitted, as per the disclaimer on the given draft NECP.

SWEDEN	
EC & EASE Recommendations on Energy Storage	**Implementation in NECP**
1. Take into account energy storage's dual role (generator – consumer) in regulatory framework for: a. Double taxation ✓ b. Network charges and tariff schemes ○ c. Permitting procedures ○ d. Congestion management mechanism ○	✓ a: Since 2019, Sweden licences energy storage facilities for the full repayment of energy taxes levied on electricity being discharged into the grid after being stored. The intention is to avoid double taxation as long as a firm applies for it (p58). ✖ b: The 1997 Electricity Act of Sweden posits that operators setting their charges must make it easier for customers to provide services offering demand response through new technological solutions (p37). ○ c: The Swedish Energy Agency has set up a one-stop-shop for permitting related to renewable energy but it does not appear this applies to streamlining the permitting of energy storage (p60).

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	○ d: Sweden has made Swedish power grids investigate the possibility of procuring demand-side flexibility and 'plannable electricity generation' in Southern Sweden. Sweden's TSO was approved to use congestion revenues for demand reduction. The extent to which energy storage will be exploited for this flexibility procurement is unclear (p83).
2. Identify the flexibility needs of their energy systems: a. In the short, medium and long term. ○ b. Assess the manufacturing capacity of energy storage. ✓	○ a: Sweden includes energy storage in it modelling of power grid scenarios of blackout potential. Furthermore, the Swedish government has mandated the promotion of a more flexible energy system. This includes a pending analysis of Sweden's flexibility needs and an action plan which is due 15 December 2023. It is not clear if this analysis accounts for flexibility needs across timeframes. ✓ b: Sweden highlights the importance of large-scale battery manufacturing and has granted aid of up to €12.5M to Northvolt Labs to establish a pilot plant for EV li-ion batteries in Sweden with 100 jobs. This pilot project is expected to evolve into the later establishment of a full-scale battery plant in Sweden with 2000-2500 jobs.
3. Ensure system operators assess the flexibility needs: a. When planning transmission and distribution networks ○ b. Non-binding seasonal energy shifting targets and strategy ✘	○ a: Since 2022, the Energy Market Inspectorate, together with the Swedish National Grid, the Energy Agency and the Swedish Board for Accreditation and Conformity Assessment have been mandated to promote flexibility and develop

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c. Consideration of renewable energy curtailment, strategies to minimise it and/or capping renewable energy curtailment ✗ d. Fossil peaker replacement strategy ✗	action plans where measures are necessary to achieve this. (p90) ✗ b: Not discussed. ✗ c: While Sweden's NECP highlights the challenges of integrating renewable energy and the importance of flexibility, it does not consider curtailment at any point in their NECP. ✗ d: Not discussed.
4. Identify potential financing for all types of storage ○	○ Behind-the-meter energy storage installations for the purpose of storing self-generated renewable electricity can benefit from a 50% tax credit with a cap of €4,300. Additionally, in 2018, Sweden gave a grant of up to €15M to Northvolt Labs to establish a battery manufacturing pilot plant.
5. Explore whether energy storage services (especially in distribution networks / non-frequency ancillary services) are sufficiently remunerated: a. Procurement of ancillary services pursues the least carbon-intensive option ✗ b. Operators are able to stack revenue from several services provided to the grid ○ c. Congestion management platforms to procure flexibility in a competitive manner ○	✗ a: There is no indication that the procurement of ancillary services in Sweden pursues the least carbon-intensive option. ○ b: The 1997 Electricity Act provisions posit that electricity network operators should make it easier for customers to provide services offering more demand response opportunities through new technological solutions (p38). Further, legislative work is ongoing for operators to develop explicit demand response, allowing for customers to sell their flexibility on established marketplaces via aggregators. Sweden's Energy Markets Inspectorate is in dialogue with aggregators, network

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	companies, and various local authorities to identify regulatory needs for a functioning market where aggregators can offer their flexibility and support services (p93). ○ c: Sweden will investigate the possibility of procuring demand-side flexibility and 'plannable electricity generation' in Southern Sweden. Sweden's TSO was approved to use congestion revenues for demand reduction. The extent to which energy storage will be able to compete in this flexibility procurement is unclear (p83).
6. Redesign Capacity Mechanisms by: a. Ensuring appropriate derating factors ○ b. Reducing minimum eligible capacity and minimum bids ✘ c. Facilitating aggregation ✘ d. Lowering CO2 emissions ○ e. Prioritising non-fossil technologies ✘ f. Creating seasonal capacity auctions for longer duration energy storage (LDES) ✘ g. Considering storage-only auctions ✘	*Sweden's NECP states its intention to replace its power reserve with a newly designed market-wide capacity mechanism that will be open to energy storage to ensure resource adequacy by 16 March 2025. Swedish TSO, Svenska kraftnät, has produced this report on its potential design.* ○ a: Sweden's TSO has said that constructing appropriate derating factors is a concern and acknowledges that they tend to unfairly disadvantage energy storage. ✘ b: Minimum eligibility and bidding requirements are not discussed in the NECP nor in the TSO report. ✘ c: Aggregation in capacity mechanisms is not discussed in the NECP nor the TSO report. ○ d: While not mentioned in the NECP, the TSO report says the design process for the new Capacity Mechanism will consider lowering the EU-mandated 550 g of CO2/kWh

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	emission limit to exclude fossil participation since Sweden is largely free from fossil-based generation. ✘ e: The TSO Report highlights Sweden's lack of fossil-based production and an intention to avoid their Capacity Mechanism investing in fossil-based energy. ✘ f: Seasonal capacity auctions are not discussed in the NECP nor the TSO report. ✘ g: Storage-only auctions are not discussed in the NECP nor the TSO report.
8. Member States favour storage and flexibility in (energy) islands/remote regions by: a. Introducing support schemes ✘ b. Revising network connection criteria to promote renewables with storage ✘	✘ a,b: Sweden's NECP makes no mention of islands nor remote regions.
Energy storage strategy with targets ✘	✘ Sweden does not have specific objectives for energy storage. An action plan to achieve a 2030 vision has been developed that highlights some development areas around flexibility. However, it is striking that an oil reserve of 90 days is the only measure mentioned under the NECP's section 2.3.4 on "national objectives with regard to increasing the flexibility of the national energy system, in particular by means of deploying domestic energy sources, demand response and energy storage" (p.32).

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About EASE

The European Association for Storage of Energy (EASE) is the leading member-supported association representing organisations active across the entire energy storage value chain. EASE supports the deployment of energy storage to support the cost-effective transition to a resilient, climate-neutral, and secure energy system. EASE was established in 2011 and represents around 60 members including utilities, technology suppliers, research institutes, distribution system operators, and transmission system operators.

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