

Position on anticipatory investments

March 2024

ACER-CEER Position on anticipatory investments

Introduction

The conclusions of the 9th Energy Infrastructure Forum (June 2023)¹ requested ACER and CEER to analyse key barriers and develop recommendations for national incentive schemes to promote anticipatory investment for the system integration of renewables.

In November 2023, the European Commission published the communication “Grids, the missing link – An EU Action Plan for Grids”². This communication states that *“tariff methodologies require the right balance between, on the one hand, anticipating future infrastructure needs, accepting a higher degree of uncertainty that an infrastructure asset might not be fully utilised from its commissioning and allowing for the early recovery of the related costs on the one side, and, on the other, affordability for consumers who bear the costs through network tariffs. The socio-economic welfare losses of delaying the network upgrades necessary to connect renewables and flexible demand will frequently outweigh the additional initial cost of anticipatory investments”*.

In this paper, ACER and CEER present findings based on two reviews of national regulatory frameworks (one in 2023 and another one in 2024) based on national regulatory authorities (“NRAs”) factual inputs and their views on the topic of anticipatory investments.

Findings from 2023 survey

Before the publication of its “Report on Investment Evaluation, Risk Assessment and Regulatory Incentives for Energy Network Projects”³, ACER carried out a survey, mainly in January 2023, across national regulatory authorities including some questions related to anticipatory investment.

For the purpose of that report, which was focused on electricity transmission, the term “anticipatory investments” referred to investments that are risky for society because they may turn out be underused, at least for some years, until developments on the generation side. The findings of the report therefore focused to anticipatory investments in electricity transmission assets serving new generation.

The main findings of the report were:

- in the vast majority of the Member States once the investment is positively assessed by the NRA (including that the risks are deemed acceptable for the society), the costs will be reimbursed despite the actual utilisation of the asset;
- no instances were found where anticipatory investments are differentiated by the regulatory treatment compared to other projects;
- offshore anticipatory investments, which are positively assessed by the NRA, do not generally entail higher risks for the transmission system operators (“TSOs”) compared to other projects in most Member States.

From the findings of the 2023 survey and report, ACER concluded at the Energy Infrastructure Forum in June 2023 that there are no specific elements of the national regulatory frameworks

¹ https://energy.ec.europa.eu/document/download/b74bef91-5434-4928-ae6e-36c9ae0b77c5_en?filename=Conclusions%209th%20EIF_13%20June%20FINAL.pdf

² COM(2023) 757 final <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2023%3A757%3AFIN>

³

https://acer.europa.eu/sites/default/files/documents/Publications/ACER_Report_Risks_Incentives.pdf

creating a potential barrier or a need for particular incentive to anticipatory investments, but the key aspect to facilitate infrastructure development lies in the assessment of NRAs on the need for investments and on the level of assurance about the value/need of the project to positively assess it.⁴ ACER also recommended to improve the identification of the offshore and onshore investment needs both at national and regional/EU level.

Findings from 2024 survey

Considering that the topic of anticipatory investment is wider than the need for transmission investments triggered by accommodation of new generation (e.g. it can relate to requests for additional energy withdrawal, such as for electric vehicle “EV” recharging, and it can impact also on electricity distribution networks), ACER and CEER carried out a new review, based on a questionnaire prepared by the European Commission DG Energy, in February 2024.

This activity and the present paper are meant as a contribution to the European Commission work on guiding principles identifying conditions under which anticipatory investments in grid projects should be granted (action 4 of the Action Plan for Grids).

The main findings of the 2024 survey are described in the following sections.

There is no definition of anticipatory investments:

Definitions of “anticipatory investments” (under this or different “label”) are not used in any of the 22 national regulatory frameworks reviewed: Austria, Belgium, Croatia, Cyprus, Czech Republic, Denmark, Estonia, France, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, Poland⁵, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden.

Anticipatory approaches are used in network planning in several Member States:

Some NRAs reported that their National Network Development Plans (“NDPs”) include several investments that may be qualified as “anticipatory” due to higher uncertainty regarding their need. Inclusion of such projects in the NDPs is facilitated by various national provisions and principles:

- For example, the TSOs and the distribution system operators (“DSOs”) are often expected to follow a forward-looking approach (up to 10 or even 15 years for NDPs and more for prospective studies for transmission) in planning and anticipate future generation and demand, including renewable energy (“RES”) connection requests, EV charging infrastructure or other drivers of network expansion, which can be accomplished via use of a set of different future scenarios (e.g. AT, BE, DE, IT).

In ACER/CEER understanding, considering the previous ACER surveys on national electricity transmission development plans and scenarios used for them⁶, it is highly likely that this forward-looking approach at transmission level takes place in more

⁴ ACER presentation at session 2 of the Energy Infrastructure Forum 2023.
https://circabc.europa.eu/ui/group/88886b79-cdea-4633-a933-8b191efb335b/library/30a8b185-0529-4c1b-a9ba-a7cee1716945?p=1&n=10&sort=modified_DESC

⁵ The Polish NRA did not fill in the relevant survey, but indicated that the national law has no definition concerning anticipatory investments and there is no special treatment for anticipatory investments or any established rules of conduct in this area.

⁶ ACER Opinion No 05/2021 on the electricity national development plans;
<https://acer.europa.eu/sites/default/files/documents/Official documents/Acts of the Agency/Opinions/Opinions/ACER%20Opinion%2005-2021%20on%20the%20electricity%20national%20development%20plans.pdf>

Member States than what was reported as an optional information in the present survey.

- In some Member States, some of the investments are intentionally “overly” designed to efficiently accommodate further needs in the future (e.g. IT and PT: new substations leave room for scalability and future network users; PT: new one circuit lines are built with poles which are also fitting double circuit; DE: for low voltage grids, long-term expected connections of generation capacities and loads have to be considered in the NDPs.)

In other regulatory frameworks the network planning is more restricted from “anticipatory” investment, or the actual national practice slightly differs from the envisaged forward-looking principles. NRAs mentioned the following practices:

- TSO/DSO may include in the NDP only the investments which were triggered by actual/firm connection requests and/or connection requests based on consultation feedback (e.g. HU, HR, RO), which may be lower than the set national targets⁷.
- In order to be approved in the NDP as a planned investment, the project must meet the identified reinforcement needs in all studied scenarios (e.g. BE).
- The project (for which the need is not yet confirmed) can be provisionally included in the NDP (as “under consideration”, “under investigation” or “conditionally approved” investment), but only after a higher level of certainty a final investment greenlight is given by the NRA with the subsequent cost approval within the tariffs (e.g. BE, IT, PT).

Some NRAs also pointed out difficulties to identify investments labelled as “anticipatory” inside the whole set of planned network developments, e.g. the IT NRA observed that this identification would require an in-depth analysis of the current system, while for the NDPs the TSOs carry out simulations only for future system conditions, and duplicating the simulations only for labelling purposes would pose unnecessary burden on the concerned parties.

The regulatory treatment does not differentiate anticipatory investments from other investments:

Based on the NRAs’ responses, the regulatory treatment, including cost-recognition process and regulatory incentives, does not distinguish between “anticipatory” investment and other investments into the grid, neither for transmission nor for distribution, in the reviewed national frameworks.

The regulatory scrutiny of the projects is mainly carried out in the Member States when evaluating the network development plans. Once the projects proposed in the NDP are positively checked by the relevant entities, the projects’ inclusion in the Regulatory Asset Base (“RAB”) follows the same rules for each infrastructure assets. ACER/CEER note that not all Member States carry out a formal approval process for DSO projects included in distribution NDPs⁸, but this does not prevent those projects from being included in the RAB.

The lack of differentiation of anticipatory investments from other investments regarding their regulatory treatment is still capable to disincentivise or incentivise TSOs/DSOs to proceed with anticipatory investments.

In case there is a high risk that the project will become stranded or underutilised, at least for some years after commissioning (until the anticipated generation or load capacity is

⁷ Note: actual/firm connection requests may be also higher than the national targets.

⁸ Article 32 of the Electricity Directive does not require NRA approval on distribution network development plans. Still, based on previous ACER surveys and NRA inputs, this happens in several EU countries due to specific national provisions.

connected) and such a risk is left on the TSO/DSOs, the system operators are more likely to refrain from investing in such projects. This is the case, for example, where the remuneration of TSOs is impacted by the level of utilisation. However, based on previous ACER's findings⁹, for transmission such practice is not frequent across the EU.

In contrast, where the regulatory framework mitigates the system operators' risks of underutilised and/or stranded investments in general (i.e. for any project), it may also encourage investments in "anticipatory" projects (e.g. in Germany, there is a special depreciation that can also be used to depreciate e.g. "stranded assets" and residual risks are compensated by the market risk premium within the imputed rate of return on equity).

Moreover, regulatory measures which are increasing TSO/DSOs liquidity (e.g. in AT and BE the system operators are entitled for return already before project's commissioning) or allowing additional revenues (e.g. mark-up on revenue caps in AT and DE) may also facilitate network investments, including those which are more anticipatory.

Other tools mentioned by NRAs which can facilitate "anticipatory investments" and/or reduce the lead time for network adaptation, include:

- System operator's possibility to choose a more costly "connection method" of a new grid user when it anticipates additional future connections (e.g. in IE the additional costs are socialised via use of the network charge, similar measure is the "grid reinforcement loans" provided in SE, where the State takes the financial risk for the part of the grid reinforcement that is not utilized in the initial stage, as the loan is repaid proportionate to utilisation);
- Advanced build of renewable hubs identified by the system operators based on expected projects, available generation capacity, available upstream grid capacity and/or other factors (e.g. IE);
- Request to producers to declare their expected projects through a specific website and request to network operators to start the works based on these evaluations as soon as possible (e.g. FR);
- Allowing the TSO to oversize grid reinforcement projects to enable pre-set industrial areas with high demand to host future potential users not yet identified, but considered very likely to appear soon due to substitution of fossil fuels (e.g. "decarbonation zones" in FR)¹⁰;
- Allowing the TSO to anticipate the start of the work before the end of wind farms development tendering processes if the geographical area in which the offshore windfarm will be located is known (e.g. FR).

Planning activities help evaluating anticipatory investments:

Former ACER reviews of the transmission NDPs showed that in most Member States, the NRA approves the NDP or has a right to require its amendment¹¹. However, in other instances, NRAs are not responsible for approving projects which are proposed for inclusion in the NDPs.

⁹ Cf. ACER's Report on Investment Evaluation, Risk Assessment and Regulatory Incentives for Energy Network Projects (June 2023).

¹⁰ FR: National law encourages the NRA and the TSO to consider positively anticipatory investments for grid connection in "decarbonation zones".

¹¹ https://acer.europa.eu/sites/default/files/documents/Official_documents/Acts_of_the_Agency/Opinions/Opinions/ACER%20Opinion%2005-2021%20on%20the%20electricity%20national%20development%20plans.pdf

Instead, their role primarily involves approving the associated costs and ensuring their inclusion in network tariffs.

When an assessment of project maturity for its planning approval is performed by NRAs, this is generally done through the evaluation of:

- supporting documentation provided by the concerned TSOs (e.g. technical feasibility studies), through regulatory compliance checks and, in some cases, also with the involvement of technical experts and/or stakeholder consultation;
- the future capacity needs or through an in-depth review of the projects' cost benefit analysis ("CBA") and/or their technical and engineering assessment. In-depth assessment is sometimes however limited to "large" projects characterised by high investments costs.

In some other cases the assessment of project maturity is carried out by other entities than the NRAs, such as Ministries.

Most NRAs which responded to the survey do not assess the risk and/or the likelihood of a project to become a stranded asset. Only in few cases among the respondents, the likelihood of a project becoming a stranded asset is assessed through detailed analyses of future energy needs and cost-benefit analysis, ensuring that infrastructure related investments are made in areas with a high likelihood of utilisation.

Most NRAs which responded to the survey do not have specific requirements to accept an investment as anticipatory. According to some NRAs however:

- the risk acceptable to society connected to anticipatory investment also depends on the approach used for connection costs (deep vs shallow)¹²;
- anticipatory investments (in Member States where they are a relevant issue) need to be well detailed, including identification and quantification of possible risks and benefits. The information related to the project candidate should be extensive, providing a clear and relevant motivation for why the project should be classified as an anticipatory investment¹³, as well as the potential impacts on tariffs, also in case of the project ending up not being fully used;
- a (partial) clawback mechanism could be introduced to mitigate sunk cost effects;
- a CBA "tailored" to anticipatory investments might be useful;

ACER/CEER note that where network planning is based on scenarios of plausible system developments and the probable measures which could be put in place to align to the policy targets and not only based on current connection requests (which may be either too high or too low compared to the policy targets), this tends to reduce the problems linked to overlooking "anticipatory investments". For example, where the connection requests fall short on the estimated needs (assessed based on scenario studies), the scenario-based approach will ensure higher penetration compared to a "connection requests-based" planning. Elsewhere, the amount of connection requests can be an unrealistic proxy of the needs (e.g. as pointed out by the IT NRA, the pipe of connection requests to the transmission system in the country is around three times the size of the whole generation capacity).

¹² In case of deep connection charging approach the grid user is paying part of the network reinforcement costs, while this is not the case with shallow charges.

¹³ Such motivation should also take into account national strategies/commitments.

There are limited coordination roles on anticipatory investments:

In none of the reviewed Member States, the NRA plays a clear coordination role between network operators and new generation/load requiring connection. Even in those cases, where some coordination role was flagged it remains occasional (e.g. LT: the NRA reported some coordination role if the concerned investments were initiated by TSOs or DSOs).

Some NRAs mentioned that other entities (than NRAs and system operators) already play a coordinating role in network planning or may play a role in the future (e.g. Prefect of each region in FR, Swedish Energy Agency in SE, Government/Ministry and Autonomous Regions in ES).

Some options are mentioned by NRAs to accommodate anticipatory investments where relevant:

While the related question was not answered by all NRAs, several of them mentioned that no particular issues with anticipatory investments arise at national level and consequently no further actions (different than proper implementation of already adopted measures) are needed.

In addition, NRAs have been requested to indicate options to accommodate anticipatory investments. The following measures have been mentioned by NRAs in the survey or during the preparation of this note (some of them as proposals, while some of them are already implemented):

- Governments (in cooperation with the interested parties) should determine several zones appropriate for RES intake (sometimes labelled as “renewable acceleration areas”), which would feed into the planning of the grid reinforcements needed to accommodate new connection requests¹⁴.
- 2-step evaluation of major transmission network development projects would allow progressing a project whose need is “uncertain” with pre-construction activities (i.e. design and permitting), and therefore allowing a quicker delivery when the need for a project is confirmed by further NDP analysis or other developments, including the outcomes of RES tendering procedures.
- Longer-term network development planning has been useful in facilitating public acceptance and therefore reducing the time for implementation of projects.
- The quality of information regarding investment projects, could be improved including detailed information on risks (e.g., risks of expected demand or expected generation not becoming a reality) and on benefits. Criteria and methodologies for risk sharing between current and future consumers, promoters of renewables projects and network operators could be defined.

Some NRAs also highlighted some drawbacks:

- To include anticipatory investments further into the revenue cap would risk hampering the efficiency of the network operations.
- If the definition of anticipatory investments is not appropriately delimited, and anticipatory investments are automatically included in the RAB, under deep connection charging a distortion in the network access charging for some new network users can be introduced, since it would allow them to evade their obligation to bear the associated costs of their connection to the grid.

¹⁴ Some related provisions are also foreseen in Art. 15(c) of EU Directive (EU) 2023/2413.

Conclusions and recommendations

ACER/CEER findings:

- Definitions of “anticipatory investments” are not used in any of the 22 national regulatory frameworks reviewed;
- Several NRA respondents mentioned that no particular issues with anticipatory investments arise at national level and consequently no further actions (different than proper implementation of already adopted measures) are needed;
- As regards network planning, TSOs/DSOs often follow a forward-looking approach in planning and anticipate future generation and demand, including RES connection requests, EV charging infrastructure or other drivers of network expansion. In some instances, however, network planning may include only the investments which were triggered by actual/firm connection requests or does not include projects where the need is highly uncertain;
- The regulatory treatment, including cost-recognition process and regulatory incentives, does not distinguish between “anticipatory” investment and other investments into the grid, neither for transmission nor for distribution. Anticipatory investments are subject to the same incentives and penalties of other network investments;
- NRAs mentioned several tools which can facilitate anticipatory investments and/or reduce the lead time for network adaptation;
- Only in few cases among the respondents, the likelihood of a project becoming a stranded asset is assessed through detailed analyses of future energy needs and cost-benefit analysis, ensuring that infrastructure related investments are made in areas with a high likelihood of utilisation;
- While the actual need for further actions varies across Member States, NRAs provided some proposals and some options already implemented to further accommodate anticipatory investments, while also flagging some drawbacks;
- Based on ACER’s infrastructure monitoring reports, the main obstacle for electricity network development is related to permitting, which leads currently to the challenge of timely commissioning of infrastructure;
- Finally, it needs to be born in mind that the question of anticipatory investments cannot be dissociated from their impact on tariffs.

ACER/CEER recommendations:

- Instruments to reduce as far as possible uncertainties about development of new network uses, including distribution network development plans, in the Member States where they were recently introduced following Directive (EU) 2019/944, should be strengthened and therefore allow NRAs to take more informed decisions, e.g. to validate projects as applicable (e.g. renewable acceleration areas, improved analysis of the electric recharging uptake in scenarios for network plans);
- Network users should be encouraged to flag their potential future connection requests, including their capacity requirements and planned locations, as early as possible;
- Coordination, including early exchange of information, amongst future network users, network operators and NRAs, as a basis to speed-up the regulatory validation of grid investments should be deployed. In this regard, consultation of the network planning scenarios (including access to relevant data), the identification of the priorities in

addressing reinforcement needs and its means, including wire and non-wire solutions are useful tools;

- As a concrete example of information exchange, TSOs and DSOs should publish and regularly update country-wide “hosting capacities” maps, which display the capabilities of the network to integrate (i) new generation and (ii) additional loads;
- Where relevant, each NRA, individually or jointly with some neighbouring NRAs, could perform or evaluate economic studies performed by the system operators to understand the risk of potential lack of interest to connect as initially envisaged, therefore leading to “too early” or “stranded” assets, as well as the potential loss of welfare for specific network users and for the entire society due to implementing network projects “late”. Such evaluations and studies would help decision-making, but may also come with a need for additional resources for the NRAs;
- TSOs (with NRA guidance/overview) should improve the identification of electricity transmission needs by studies with higher spatial granularity at European and at national level and increase transparency by publishing detailed results of such studies;
- NRA role in assessing infrastructure needs and projects should be strengthened, e.g. NRAs should approve transmission development plans in all EU Member States;
- NRAs could consider greenlight to a project to progress permit granting and other pre-construction activities as much as possible, without the regulatory approval of the project construction (which would come later, when the need is confirmed); such an approach would speed up the project implementation, while limiting the risks of “sunk costs” for the society to the (small) pre-construction costs, in case the need will never be confirmed;
- NRAs should follow the recommendations provided in ACER’s Report on Investment Evaluation, Risk Assessment and Regulatory Incentives for Energy Network Projects (June 2023) as well as in ACER’s Recommendation No 03/2014 on Incentives for Projects of Common Interest and on a Common Methodology for Risk Evaluation.

ANNEX I

Table 1: Use of anticipatory investments in the national regulatory framework

Question of the 2024 survey: Do you already make use of anticipatory investments (as per the description in this document) in your jurisdiction for electricity transmission and/or distribution projects? Please describe which kind of projects have been supported under an anticipatory investment approach. If not the case, please explain why.

Member State	Extract of NRAs' answers to the survey
Austria	The need for connections is considered in the 10-year NDP, especially when evident due to current demands for safe and reliable system operation. The NDP must encompass all necessary measures to ensure that the network is appropriately optimized, enhanced, and expanded over the next decade to address all requirements and maintain security of supply.
Belgium	<p>We do not make use of 'anticipatory investments' as per our understanding of the definition.</p> <p>According to us, the Belgian federal development plan is a forward-looking exercise and prepared to meet the needs identified on the basis of the foreseen scenarios on electrification, RES development, adequacy needs, security of supply, cross-border integration, etc. Most network projects are proposed to address the anticipated needs of the future through these scenarios. The TSO is thus working proactively, not reactively. If the needs evolve during the planning and construction phases, the TSO can always adapt the investments accordingly.</p> <p>The approved tariff proposal for the period 2024-2027 include budgets for studies for projects approved as 'condition', such as TritonLink. These budgets are seen as crucial for the investment to ever occur but are relatively small compare to the whole budget. The risk to face a stranded expenditure is therefore high but the amount is limited and cannot be avoided.</p>
Croatia	<p>No</p> <p>Big investments in network upgrade which had firm commissioning date have always been based on firm connection requests so far.</p> <p>If we are talking about only reinforcing the lines without pillars (e.g. change of classical conductors with HTLS conductors) this action can be made relatively quickly (and without complex civil-engineering licences) and is currently being installed in Croatian transmission grid financed from National Plan for Restoration and Resilience.</p>
Cyprus	According to the description in this document, the anticipatory investments refer to accepting that it is necessary to accept a higher degree of uncertainty to ensure the networks are ready for the energy transition. CERA does not have a different approach for anticipatory investments as defined in this document. Proposed investments are submitted by TSO and DSO through their development plans to CERA for approval.
Czech Republic	No
Estonia	No
France	Anticipatory investments are made regularly by the operators to address the network needs. Anticipatory investments have been made since the creation of the electricity network.

Member State	Extract of NRAs' answers to the survey
	<p>However, in the recent years, system operators have faced an increased level of uncertainty in terms of the foreseeable changes of energy consumption and production. This higher uncertainty has led to elaborating new network development methodologies under the auspices of public authorities. The aim is to address uncertainty while avoiding sunk costs:</p> <ul style="list-style-type: none"> • France has put in place a specific regulatory framework for the network development planning associated with renewable productions development (so called "Schémas Régionaux de Raccordement au Réseau des Energies Renouvelables" or "S3REnR"). This framework aims to coordinate producer's projects and network planning and mutualize costs. In order to reduce the lead time for network adaptation, producers have been asked to give a better visibility about their expected projects, through a declaration on a specific website. Network operators have been asked to start the works as soon as possible based on these evaluations. • In terms of consumption, France has set up "decarbonation zones" (industrial areas where an important future demand of electricity is expected to substitute fossil fuels, mainly gas). A strong increase of power needs is foreseen in these areas, thus RTE and CRE have elaborated a framework that allows RTE to over size grid reinforcement projects so that the zone will be able to host future potential users not yet identified, but considered very likely to appear in the near future. • In terms of offshore grid connections, the TSO can anticipate the start of the work before the end of wind farms development tendering processes. However, such an anticipation requires knowing the geographical area in which the offshore windfarm will be located.
Germany	<p>German DSOs</p> <p>DSOs are generally obliged to perform anticipatory network expansion according to § 11 of the Energy Industry Act. Moreover, the major distribution grid operators with more than 100.000 customers are required to create a network development plan and a so-called regional scenario. These documents serve as the foundation for determining the proactive network expansion needs. Future generators and loads, especially renewable energies, electric vehicle charging infrastructure, and buildings, must be considered during this process.</p> <p>German TSOs</p> <p>In BNetzAs view, the fact that the proposed investments are weighed against a multitude of scenario settings and target years fulfills the abovementioned definition of "higher degree of uncertainty" (see introduction). An investment project that shows its merit under these circumstances is deemed necessary and therefore legally codified in the following processes</p>
Hungary	<p>Hungary has started to integrate this concept in its electricity transmission and distribution projects, focusing on renewable energy integration, grid modernization for enhanced capacity and flexibility, and the development of smart grid technologies to support the energy transition.</p>
Ireland	<p>System Operator Preferred Connection Method</p> <p>When developing the connection methods for projects connecting to the grid, the System Operator may specify a connection method different from the least cost connection method as being a more appropriate connection method for an individual sub-group. This is referred to as the System Operator's Preferred Connection Method and will take into account wider system development, the costs of associated transmission system reinforcements, the possibility of future connections at a subsequent date, and an overall prudent medium-term approach to system planning. In the first instance any additional cost will be recovered through the UoS charges rather than from the connecting parties, subject to usual regulatory scrutiny with</p>

Member State	Extract of NRAs' answers to the survey
	<p>respect to the appropriateness and efficiency of the investments. Any future connections to the assets built will, however, be charged on the basis of the actual build.</p> <p>Renewable Hubs Pilot</p> <p>On 6th November 2023, the CRU published a Renewable Hubs Pilot Decision Paper. The pilot aims to facilitate increased volumes of generator customers connecting to the network through advanced build of Renewable Hubs alongside a per-MVA charging methodology. The pilot provides approval for 5 initial renewable hub locations in the distribution network. The DSO identified these sites by reviewing the expected pipeline of projects at the locations, available capacity at the locations, the availability of transmission capacity upstream from the node, and the stage of development of pipeline projects. For locations nearing capacity or over-capacity when the expected pipeline is taken into account, the pilot allows for uprating of transformers at substations to accommodate further connections. The selected locations also have sufficient upstream capacity and demand connections at each node.</p>
Italy	<p>No</p> <p>We would have difficulties in qualifying which projects are “anticipatory”. Such an identification would require an in-depth analysis of the current system. The “current system status” is typically described in the electricity NDPs by actual market and system metrics recorded up to December of the year before. Instead, NDP simulations are carried out (only) on future system conditions. Duplicating simulations for the “current system” would imply a likely unnecessary burden, without a clear added value.</p>
Latvia	<p>Investments for system recovery (renovation) are planned in accordance with the methodology developed internally by system operators, which ensures safe system operation in the long term. System renovation costs are related to the replacement of aging lines, the replacement of old substations, etc.</p>
Lithuania	<p>We have investment projects in our country related to network development planning in next 10 years. These investments are coordinated in the network operator's 10-year investment plan and assessed through a technical and economic analysis. These investment projects are related to increasing the capacity of transformer substations, increasing the cross section of overhead line, and are focused on future demand rather than current demand.</p>
Malta	<p>Not applicable</p>
Portugal	<p>There is no explicit legal context for anticipatory investments, classified as so, in Network Development Plans in Portugal. However, it is worth mentioning that in several cases networks are built to meet future needs that are still uncertain. For example, new substations are built leaving available room and scalability to the initial equipment (non-equipped reserves). Also, lines can be built with poles for double circuit lines while initially equipped only with one circuit installed and in operation. Nonetheless, projects are proposed and included in the NDP by the operators to meet existing network needs, with some flexibility to adjust investment cost and project schedules during the regulatory period due to the TOTEX approach.</p> <p>For instance, the national Ten-Year Network Transmission Development Plan (national TYNDP) includes projects with low certainty, usually scheduled in the 5 to 10 years of time horizon (but currently still not classified as “anticipatory investments” as per the description in this document).</p> <p>As so, network operators only request a Final Investment Decision for a subset of all proposed investment projects, usually those for which there is a higher level of certainty.</p>

Member State	Extract of NRAs' answers to the survey
	In the near future, for example when discussing offshore network development, consideration of anticipatory investments may become more relevant.
Romania	No The current development plans of the network operators do not include investment projects aimed at objectives with a high degree of uncertainty.
Slovakia	No
Slovenia	There is no such concept in the national regulatory framework.
Spain	No
Sweden	<p>Under normal circumstances, network operators are allowed and expected to build the grid based on prognoses (Electricity Act Section 3 Para. 1 and Section 5 Para. 7). An anticipatory investment will however not enter the RAB and generate capital costs in the revenue cap until the asset is in use. In the Electricity Act Section 5 Para. 7, it is stated that: An asset that is not required for conducting the operations should be considered part of the regulatory asset base only if it would be unreasonable to disregard the asset in relation to the grid concession holder.</p> <p>In practice, the network operators often increase the capacity in the grid when replacing worn out assets or reapplies for concessions to make room for new connections.</p> <p>To facilitate the connection of renewable production, the Government has introduced the opportunity for grid reinforcement loans. Grid reinforcement loans mean that the State, through the TSO, Svenska kraftnät, takes the financial risk for the part of the grid reinforcement that is not utilized in the initial stages. The purpose of grid reinforcement loans is to overcome the investment threshold that may arise when grid reinforcements are required for the connection of at least two or more renewable electricity production facilities. By basing the repayment of the grid reinforcement loan on the portion of the grid reinforcement that is utilized, the risk is mitigated, ensuring that the first connecting facility does not have to bear the total grid reinforcement cost for all planned facilities. The connecting facility should remunerate the network operator only for the connecting parties' share of the increased capacity (Electricity Act Section 4 Para. 10). For the regulatory period 2020-2023 two DSOs had grid reinforcement loans.</p>

Table 2: Assessment of maturity/certainty of investments before inclusion on the NDP and/or Regulatory asset base

Question of the 2024 survey: How do you assess the maturity/certainty of investments proposed by system operators before agreeing to their inclusion as a planned investment in the network development plans (investment plans) and, ultimately, the RAB?

Member State	Extract of NRAs' answers to the survey
Austria	<p>Every other year the electricity TSO sends a network development plan to E-Control for it to be approved. We then check the NDP regarding its economic and technical plausibility before approving it. We publish the results of this consultations. Due to the fact, that projects usually have a duration of 10 to 15 years, this time horizon can usually be estimated very realistically by the TSOs.</p> <p>The maturity of a project is determined, among other things, by the evaluation of the capacity needs (transportation and RES integration or other factors) in the transmission network. This need is regularly determined by the company and subsequently evaluated by the authority. Based on these assessments project qualifies for being mature in regard of being accepted in the NDP.</p> <p>For us as the NRA it is mainly of interest whether the ten-year network development plan covers all the investment needs identified in the course of the consultations and whether there is consistency with the ENTSO-E's Ten-Year Network Development Plan in accordance with Article 8(3)(b) of Regulation (EC) No 714/2009.</p> <p>Only assets in service, not assets that are still in construction are considered within the RAB.</p>
Belgium	<p>the majority of investments proposed for approval by the TSO have a sufficient level of certainty to be approved as planned investments in the Federal Development Plan (FDP) because they are necessary to meet the identified grid reinforcement needs in all scenarios studied. Though, some investments can be approved as conditional in the FDP, especially when the maturity level of a technology necessary for the realisation of the project has not been reached yet or that the commissioning date is so far in the future that it is possible to wait for the next FDP to make the final investment decision.</p> <p>For investments which have been approved as conditional in the framework of the FDP, the TSO can recover costs incurred for e.g. studies as long as those ones are approved by the regulator. In Belgium, the inclusion of investments in the RAB is a gradual process. It is not necessary to wait for the commissioning of the asset for it to be included in the RAB. It will be done gradually as invoices for works related to the project (i.e. preliminary studies) are received by the TSO. However, depreciation of an asset starts with its commissioning.</p>
Croatia	<p>Investments which should be realized inside first 3-y period are somehow deemed certain (usually they have already obtained some kind of licences for project planning or construction works). Project which should have been realized at the end of 10-y period often are postponed. TSO does not want to accept bigger risks and therefore waits for firm connection requests.</p>
Cyprus	<p>The TSO submits to CERA for approval, within six (6) months from the end of each calendar year, the proposed national TYNDP for the decade beginning in January of the following year. CERA consults all existing and potential users of the transmission system and publishes the outcome of the consultation process and in particular the potential investment needs. Then CERA examines whether the TYNDP covers all the investment needs identified during the consultation process and whether it is in line with the non-binding EU ten-year network development program referred to in point b) of paragraph 1 of article 30 of Regulation (EU) 2019/943. If any doubt arises</p>

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	<p>regarding the agreement to the EU network development program, CERA consults ACER. CERA ensures that the TYNDP is consistent with the goals, objectives, policies and measures defined within the NECP and may ask the TSOC to modify it.</p> <p>According to the Regulatory Decision 01/2021, Statement of Regulatory Practice and Electricity Tariffs Methodology, only those profitable investments that are in the long-term interest of the customer and approved by CERA should be included in the regulated company's RAB. The RAB may not be burdened with investments in projects that have not yet been implemented and therefore have not been put into operation.</p>
Czech Republic	Inclusion of an investment in RAB is being carried out by DSO/TSO itself, based on bookkeeping data.
Denmark	<p>TSO grid: In Denmark the TSO (Energinet) produce a Long-term development plan every other year. The development plan is based on "Analytical conditions" made by the Danish Energy Agency, which approximates the development of the Danish electricity system towards 2050. The agency produces these conditions in order for the TSO too plan the development in their grid. To our knowledge, it is not specified in the plan which of the investments that are 'anticipatory investments'. The Danish Utility Regulator (DUR) does not influence which investments are included in the plan. The Danish Energy Agency does an assessment of relevance for the energy system. The DUR only assess investments when the TSO apply for the investment to be included in the RAB. In order for the investment to be included, the investment have to fulfil a size requirement of 2.000.000 DKK. The DUR also check if the Danish Energy Agency have assessed that the project is relevant. The DUR considers this assessment and the size requirement when approving the investment in the RAB. It is the same process for all infrastructure assets.</p> <p>DSO grid: The Danish DSOs submit the network development plans to the DUR every other year. The plans are published on our website for a public hearing. The DSO then incorporate the hearing answers in their plan, at this point the DUR can request changes in the plans. Following this process, the DSOs submit their final plans, which are then published in their final form on our website. In this case the Danish Energy Agency also makes an assessment of the relevance of the planned investments. The DUR include the assessments when publishing the final plans.</p>
Estonia	System operator (SO) must explain and justify the necessity of the planned investments. If necessary, we involve experts who help assess the justification of the SO's planned investments.
France	CRE does not assess all the investments foreseen by the operators, their number (thousands a year) is incompatible with an exhaustive scrutiny. Overall, CRE requires cost-benefits analyses to be performed for every investment (big projects) or investment programmes (ITs for example). CBA methodologies are assessed by CRE (evaluation of costs, nature of benefits, scenarios, indicators like value of energy not served...). For significant projects (several tens of millions of euros), CRE carries out an in-depth review of TSO's evaluations and approves every project individually before their inclusion into the RAB. CRE pays particular attention to the methodology used by the operators. This methodology must be based on a wide range of scenarios of likely evolutions of the energy system, to ensure that the project is beneficial in different possible futures. CRE also considers that all the technical options must be investigated by the operator, including OPEX-based solutions (i.e. with less capital expenditures), to choose the most efficient one. In this process, CRE assesses the accuracy of cost evaluations of the various options. It can determine incentives to reduce the risk of cost overruns. The general aim is to find a balance between the uncertainty about the future outcome and the risk of sunk costs. CRE is convinced that all efforts should be made to ensure the energy transition remains affordable for all the consumers.

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Germany	<p>DSOs</p> <p>Network development plans (Hereafter “NDP”) are developed by the DSOs and are legally regulated in § 14d of the Energy Industry Act. DSOs are obliged to create so-called “regional scenarios” in currently six “planning regions” which unite multiple DSOs to create a common regional scenario. A regional scenario consists of a development path that considers both the legally specified climate and energy policy goals of the federal government for the long-term target year 2045, as well as probable developments for the next five and ten years. Regional scenarios have to consider expected connections, network feed-ins and withdrawals as well as developments in other sectors, especially transportation and buildings.</p> <p>DSOs are required to submit a network development plan for their respective electricity distribution networks to BNetzA every two years, starting on April 30th 2024, and update the respective regional scenarios 10 months in advance. The network development plan is based on the regional scenario, in order to ensure integrated and forward-looking network planning.</p> <p>BNetzA does not have to agree on planned investments by DSOs for their inclusion in network development plan, but monitors compliance with legal requirements and may request adjustments to the regional scenario as well as the network development plan. DSOs then have to adjust the plan.</p> <p>TSOs</p> <p>BNetzA's decision-making process concerning the inclusion of investments in the NDP is mainly based on technical grid studies; Maturity does not play a significant role.</p> <p>The German NDP is based on the Scenario framework, which defines six scenarios, in the current iteration three with a 2037-time horizon and three with a 2045-time horizon. The scenarios have to incorporate all national and known international targets, e.g. for renewable installation incl. offshore, CO2 targets, EV and heat pump penetration, interconnectors from the TYNDP, etc.</p> <p>A pan-European market model study is conducted for 8760 hours for every scenario and the effects of every single investment project are calculated by doing base-case load flow simulations with and without the project in the grid, as well as automated n-1 outage calculations. If a proposed investment project shows that it is able to significantly alleviate grid congestion in all analysed scenarios it is included in the NDP.</p>
Hungary	<p>The maturity and certainty of investments proposed by system operators are assessed through a comprehensive process involving technical feasibility studies, regulatory compliance checks, and stakeholder consultation to ensure that the investments align with Hungary's energy strategy and regulatory framework. The need to provide a CBA for a planned investment project is compliant with the new TEN-E regulation.</p>
Ireland	<p>As part of the Price Review CapEx assessment, the CRU assesses supporting business cases documenting fully the needs case for specific investments, including costs and risks, potential available investment options, detailed financial analysis including lifetime costing and operation expenditure impacts as appropriate. The CRU evaluates network capital expenditure projections and considers the ability to build and deliver new transmission infrastructure and the likelihood of deliverability and progression of the portfolio of projects. The TSO and TAO applies greater certainty of expenditure for those projects which are to be developed in the near term or are most likely to advance and the majority of the projected capital expenditure will be assigned. For projects with less certainty of advancing, the TSO and TAO applies a factor of the total expenditure will be applied to reflect this uncertainty. The factored</p>

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	approach gives a more practical view of the deliverability and uncertainty of project development within the period.
Italy	<p>Regarding electricity transmission, ARERA's assessment is mainly based on the content of the Italian draft network development plan, including cost benefit analysis and (namely for cross-zonal projects) based on the Italian needs activity (named "target capacities"). Other considerations may be sometimes factored in, such as comparison with ENTSO-E TYNDP or ENTSO-E needs reports as well as consideration of alternative solutions and their costs.</p> <p>The distribution network development plans are relatively new (the first D-NDP round under Directive 2019/944 was completed in late 2023). There are no harmonised practices yet.</p>
Latvia	<p>When examining transmission investment Plan the PUC evaluates plans compliance with the Community-wide Plan, compliance with the performance of the obligations of the transmission system operator specified in the Electricity Market Law, including ensuring the security of the electricity system in accordance with the requirements specified in the Network Code. The PUC evaluates the need to prevent congestion of the cross-border interconnections, taking into account the volumes of the electricity market transactions in the region, the activity of the electricity exchange and the need to ensure appropriate transmission capacity. The PUC evaluates recommendations of existing and potential transmission system users. In addition system operator submits to the PUC the calculation of the impact which the financial investment into the transmission infrastructure will have on the transmission system service tariffs.</p>
Lithuania	<p>Our investment assessment methodology provides for the application of cost-benefit analysis, technical and engineering assessment.</p>
Malta	<p>The RAB of regulated entities in Malta includes only projects already approved and materialised.</p>
Portugal	<p>The Portuguese NRA does not assess the maturity/certainty of investments before their inclusion in the network development and investment plan (NDP). It is up to the operators to decide which investments and projects are to be included in the NDP. Based on the draft NDP, the NRA issues an Opinion that shall be taken into account by network operators when preparing the final version of the NDP, this Opinion shall also be considered by the Government when deciding on NDP approval.</p> <p>When assessing the draft NDP, the NRA must consider the National and European Energy Policy Plans and, based on that, assess NDP assumptions and assess if the NDP covers identified network needs. NRA shall also assess the impacts of the costs of proposed investment on tariffs. In this regard, the NRA may request in its Opinion amendments from the network operators to the initial draft NDP, before submitting it to approval.</p> <p>The Portuguese NRA also decides on which investments are to be included in the RAB.</p> <p>In general, investments approved by the Government under a NDP or those included in a NDP not yet approved but that receive a positive appreciation by the NRA are included in the RAB.</p> <p>In the case of the Portuguese TSO and DSO, it should be emphasised that the regulatory methodologies in place consist of revenue caps applied to TOTEX. With this TOTEX approach, the RAB was previously defined for the following regulatory period, based on information reported by the network operators on the investment projects expected to be commissioned in the same regulatory period (currently with 4</p>

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	years). Those investment projects are also checked in terms of their approval, justification/motivation and expected efficiently incurred costs. Despite no anticipatory investments, as per the description in this document, have been considered the network operators have a certainty in their revenue streams in the medium term, as well as some flexibility to adjust investment costs and project schedules during that period, which is a useful tool to effectively address the priorities in infrastructures needs.
Romania	The evaluation of the maturity/certainty of the investments proposed by the network operators before the acceptance of their inclusion in the network development plans is done on the basis of the supporting documents provided in the specific regulations (the results of feasibility studies, regime studies and analyses, adequacy, etc.).
Slovakia	There is no particular assessment of the maturity and certainty of investments prior to their inclusion in the development plan. Inclusion in the RAB follows after the investments have been made.
Slovenia	The maturity and certainty of investments prior to their inclusion in the development plan is not assessed in any particular way. Inclusion in the RAB follows after the investments have been made.
Spain	<p>The maturity/certainty of investments proposed by TSO and DSOs before agreeing to their inclusion as a planned investment in the network development plans (investment plans) is evaluated by the competent administration (Autonomous Regions for Distribution facilities and Ministry for transmission facilities). CNMC makes an economic assessment of the proposals defined in the NDP ensuring stability in access tariffs and once those assets are commissioned, they are remunerated from the tariffs and included in the RAB. Energy planning involves forecasting future energy needs and determining the necessary actions to ensure their proper provision. The delivery of energy services is contingent upon the suitability of the infrastructure supporting this activity, infrastructure that requires a long maturation period from the identification of the need to its operationalization. Anticipation and continuous adaptation of forecasts to changing realities thus become integral parts and indispensable tools of energy policy.</p> <p>Planning is developed with the following objectives:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Fulfilment of commitments in energy and climate matters outlined at the national level in the PNIEC 2021-2030. <input type="checkbox"/> Maximization of renewable penetration in the electrical system, minimizing the risk of spills, and in a manner compatible with the security of the electrical system. <input type="checkbox"/> Evacuation of renewable energies in areas with high renewable resources where environmentally sustainable exploitation and transport of generated energy are possible. <input type="checkbox"/> Contribution, regarding the electricity transmission network, to ensuring the security of supply for the electrical system. <input type="checkbox"/> Harmonization of the development of the electricity transmission network with environmental constraints. <input type="checkbox"/> Elimination of existing technical constraints in the electricity transmission network. <input type="checkbox"/> Adherence to principles of economic efficiency and the principle of economic and financial sustainability of the electrical system. <input type="checkbox"/> Maximization of the use of the existing network, renewing, expanding capacity, employing new technologies, and reusing the purposes of existing installations. <input type="checkbox"/> Reduction of losses in the transmission of electric energy to consumption centres.

Member State	Extract of NRAs' answers to the survey
	The facilities proposed by TSO and DSOs that allow progress towards any of the objectives mentioned above are eligible to be authorized by the competent authority.
Sweden	<p>Ei do not assess individual investments in the network development plans (NDPs). Ei will examine the content on an overall level, that all requirements are fulfilled, and that investments are in line with the plans for connecting grids. The network development plans will provide transparent information for different stakeholders, e.g. where there is available capacity in the grid, where there is limited capacity and hence opportunities for flexibility services and storage. It will also give information about the expected grid investments.</p> <p>To build a power line a permit (concession) is needed. In the permitting process for line concessions, an assessment of suitability according to the Electricity Act (Section 2 Para. 12). Ei has no formal requirements on how speculative it may be; anticipatory needs should be reasonably justified in the permit application for a given project/power line. Regarding transmission network lines, a socio-economic assessment, in the form of a Cost-Benefit Analysis, should also be submitted.</p> <p>For new assets to enter the RAB, they will have to be in use. Assets under construction are not accepted into the RAB. Hence the network operators will start to receive regulatory remuneration within the revenue cap when the assets are in use. It can build with excess capacity.</p>

Table 3: Process of approval for inclusion in the Regulatory Asset Base

Question of the 2024 survey: Is the process of approval for inclusion in the RAB the same as for any other infrastructure assets, or are there dedicated processes or particularities?

Member State	Extract of NRAs' answers to the survey
Austria	The decision of whether and how to construct infrastructure is typically seen as a business decision made by the TSO. When evaluating infrastructure for inclusion in the regulatory asset base, it is assessed by an auditor to ensure that the investment is suitable both in terms of quality and cost. If this is the case the investment is considered within the RAB.
Belgium	The inclusion of investments in the RAB is done gradually, as invoices are paid by the TSO.
Croatia	No. TSO is obliged to make CBA for big capital projects, but the main problem is certainty of the investments and commissioning year of it.
Cyprus	N/A
Czech Republic	Anticipatory investments, as described above, are not being included in RAB.
Estonia	The process of approval for inclusion in the RAB is the same as for any other infrastructure assets.
France	Same process.
Germany	Yes, it is the same approval process.
Hungary	The approval process is the same/uniform for all infrastructure related investments in the NDP. However, the approval process for anticipatory investments in the RAB once specified and codified could include specific considerations to account for their forward-looking nature, aligning with the standard process but with additional emphasis on long-term benefits and sustainability.
Ireland	No answer
Italy	There is no explicit process for approving inclusion of specific investments in RAB. The scrutiny on transmission projects is mainly carried out when evaluating the network development plan.
Latvia	Yes
Lithuania	Yes, there are general principles for approval of assets for inclusion in the RAB for TSO and DSO. There is no separate regulation for anticipatory investment.
Malta	Not applicable
Portugal	Yes, the process is the same for all investments. Currently, under TOTEX approach applied both for regulation of TSO and DSO, all investments included in an approved NDP or those included in a draft NDP not yet approved but with positive opinion by ERSE shall be considered in the process of definition of total cost base.
Romania	N/A
Slovakia	RAB inclusion methodology is the same for all regulated entities in energy sector (TSOs and DSOs), as well as the conditions of investments approval, given in the URSO decrees.
Slovenia	Inclusion in the RAB follows after the investments have been made.

Member State	Extract of NRAs' answers to the survey
Spain	It will depend on how they are incorporated into the regulatory framework. However, the CNMC considers that the treatment should guarantee the homogeneous treatment of all the investments, in order to prevent that TSO or DSO can focus on these types of investments to the detriment of those they would have to make according to an established NDP or those necessary for new users who must cover the cost of his connection, as has been explained in the introductory overview of the Spanish case.
Sweden	The same regulatory framework applies for anticipatory investments as for other assets, hence new assets will be remunerated when they are in use.