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OPINION OF THE AGENCY FOR THE COOPERATION OF ENERGY REGULATORS No 01/2015

of 29 January 2015

ON THE ENTSO-E DRAFT TEN-YEAR NETWORK DEVELOPMENT PLAN 2014

THE AGENCY FOR THE COOPERATION OF ENERGY REGULATORS,

HAVING REGARD to Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators[1], and, in particular, Articles 6(3)(b) and 17(3) thereof,

HAVING REGARD to Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003[2], and, in particular, Articles 8(3)(b) and 9(2) thereof,

HAVING REGARD to the favourable opinion of the Board of Regulators of 28 January 2015, issued pursuant to Article 15(1) of Regulation (EC) No 713/2009,

WHEREAS:

(1) On 31 October 2014 the European Network of Transmission System Operators for Electricity ("ENTSO-E"), with reference to Article 9(2) of Regulation (EC) No 714/2009, submitted to the Agency for its opinion the draft Ten-Year Network Development Plan 2014 ("draft TYNDP 2014")[3], accompanied by six Regional Investment Plans and the draft ENTSO-E Scenario Outlook and Adequacy Forecast 2014-2030.

(2) The Agency assessed the draft TYNDP 2014 on the basis of the following main criteria: (i) the TYNDP's essentials specified in Article 8(10) of Regulation (EC) No 714/2009, as amended by Regulation (EU) No 347/2013[4], and (ii) the objectives set out in Article 6(3)(b) of Regulation (EC) No 713/2009 and Article 9(2) of Regulation (EC) No 714/2009.

(3) When reviewing the draft TYNDP 2014, the Agency took into account its monitoring of the regional cooperation of transmission system operators referred to in Article 12 of Regulation (EC) No 714/2009. Furthermore, the Agency took into account its previous activities, including

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[1] OJ L 211, 14.8.2009, p.1.
[2] OJ L 211, 14.8.2009, p.15.
[3] The set of ENTSO-E documents is available at: https://www.entsoe.eu/major-projects/ten-year-network-development-plan/tyndp-2014/Pages/default.aspx
[4] OJ L 115, 25.4.2013, p.39.

the following documents and acts related to i) TYNDP 2012[5], ii) scenarios for use in the draft TYNDP 2014, iii) cost benefit analysis methodology for use in the draft TYNDP 2014 and iv) recommendations for use of Ten-Year Network Development Plans (TYNDPs) for the purpose of selection of projects of common interest:

- Agency's Opinion No 06/2012 on the European Ten Year Network Development Plan 2012[6];
- Agency's Opinion No 08/2014 on the national Ten-Year Electricity Network Development Plans pursuant to Article 8(11) of Regulation (EC) No 714/2009[7];
- Agency's Opinion No 16/2014 on the implementation of investments in electricity transmission networks[8];
- Agency's letter to ENTSO-E on the Agency's position on ENTSO-E Scenario Outlook and Adequacy Forecast 2013-2030, on generation adequacy assessments and on scenarios for the ENTSO-E Ten-Year Network Development Plan[9];
- Agency's Opinion No 21/2014 on the draft ENTSO-E Scenario Outlook and Adequacy Forecast 2014-2030[10];
- Agency's position on the ENTSO-E "Guideline to Cost Benefit Analysis of Grid Development Projects"[11];
- Agency's Opinion No 01/2014 on the ENTSO-E guideline for cost benefit analysis of grid development projects[12] ("CBA methodology 2013");
- Agency's Opinion No 16/2013 on the draft regional lists of proposed electricity projects of common interest 2013[13].

(4) In this Opinion, the Agency did not consider the storage projects part in view of the expected ENTSO-E's CBA guideline to identify specific benefits of storage projects[14],

HAS ADOPTED THIS OPINION:

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[5] ENTSO-E, "10-Year Network Development Plan 2012", 5 July 2012. https://www.entsoe.eu/fileadmin/user_upload/_library/SDC/TYNDP/2012/TYNDP_2012_report.pdf

[6] http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Opinions/Opinions/ACER%20Opinion%2006-2012.pdf

[7] http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Opinions/Opinions/ACER%20Opinion%2008-2014.pdf

[8] http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Opinions/Opinions/ACER%20Opinion%2016-2014.pdf

[9] http://www.acer.europa.eu/official_documents/lists/other%20documents/attachments/1/letter%20konstantin%20stasch us_entsoe_soaf_130718.pdf

[10] http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Opinions/Opinions/ACER%20Opinion%2021-2014.pdf

[11] http://www.acer.europa.eu/Official_documents/Position_Papers/Position%20papers/ACER%20Position%20ENTSO-E%20CBA.pdf

[12] http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Opinions/Opinions/ACER%20Opinion%2001-2014.pdf

[13] http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Opinions/Opinions/ACER%20Opinion%2016-2013.pdf

[14] Agency's Opinion No 01/2014, section 3.1.

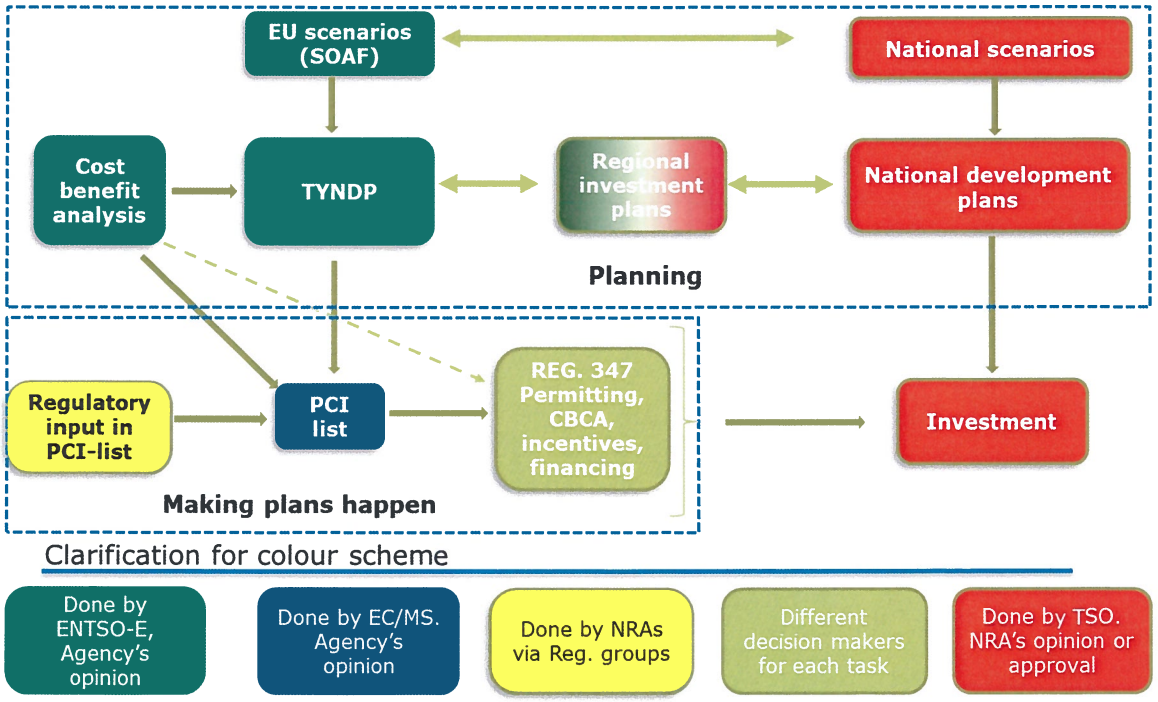
1. TYNDPs in the context of Regulation (EU) No 347/2013

TYNDPs play a central role in the development of electricity transmission infrastructure in Europe, in line with the provisions in Regulation (EC) No 713/2009. These provisions have been significantly upgraded by Regulation (EU) No 347/2013. This relates in particular to the requirements that:

- TYNDPs shall be subject to a cost-benefit analysis (CBA);
- the project-specific CBA for the selection[15] of project of common interest ("PCI") shall be in accordance with the CBA for the TYNDPs;
- the project-specific CBA which accompanies investment requests including cross-border cost allocation (CBCA) request shall be consistent with the CBA methodology used for the TYNDPs;
- proposed electricity transmission and storage PCIs[16] falling under the categories set out in Annex II.1(a), (b) and (d) of Regulation (EU) No 347/2013 shall be part of the latest available TYNDP.

This significant upgrade makes the TYNDPs an even more critical tool for the development of infrastructure investments in Europe (see Figure 1). As already indicated in January 2013, the TYNDP assumptions and modelling shall be further improved, with the involvement of stakeholders, in order to ensure the quality and consistency of data inputs[17].

Figure 1: The process of infrastructure development in Europe (left side: European dimension, right side: national dimension)



[15] For projects having reached a sufficient degree of maturity.
[16] For PCIs in the Union lists adopted after the first Union list.
[17] First key improvement in Agency's Position on ENTSO-E CBA, page 4.

Given the central role of TYNDPs in the development of electricity transmission infrastructure in Europe, the Agency reaffirms its expectation that ENTSO-E implement in a timely manner, the recommendations formulated in its previous Opinions[18] (in particular regarding the TYNDP 2012, the SOAF 2014 and the CBA methodology 2013).

2. General remarks

The Agency notes that the draft TYNDP 2014 includes the modelling of the integrated network and an assessment of the resilience of the system. Scenario development and a European generation adequacy outlook are part of the complementary draft Scenario Outlook and Adequacy Forecast 2014-2030 ("draft SOAF 2014"). Furthermore, the draft TYNDP 2014 is to some extent based on a CBA[19], as further discussed in the rest of this Opinion.

The Agency deems that the draft TYNDP 2014 contributes to the objectives of non-discrimination, effective competition and efficient and secure functioning of the internal market in electricity, according to Article 6(3)(b) of Regulation (EC) No 713/2009. More specifically, the non-discrimination objective is covered adequately by the information and consultation process that was open to all stakeholders and conducted during the drafting of TYNDP 2014. The objective of effective competition and long-term efficient functioning of the market is covered through sufficient provision of information concerning the future development of the European interconnected power system, thus allowing potential investors in power generation or transmission to compete in an informed manner. The draft TYNDP 2014 also ensures a coordination of investment decisions of TSOs and thus a better valuation and identification of projects in Europe. The objective of secure functioning of the internal market is to some extent covered by the fact that the draft TYNDP 2014 includes a variety of projects, which will also contribute to security of supply. However, with respect to the latter objective, the Agency confirms its view that the security of supply criterion should be further assessed and monetised by ENTSO-E[20] before the TYNDP 2016.

Furthermore, in comparison to the TYNDP 2012, the Agency positively acknowledges:

- the set-up of the ENTSO-E Long-term Network Development Stakeholder Group ("LTNDSG") to facilitate stakeholders' involvement;
- ENTSO-E's progress concerning involvement of stakeholders by organising public workshops and in general regarding provision of information;
- the updates made by ENTSO-E in the draft TYNDP 2014 compared to its first draft edition for public consultation, taking into account the comments received by stakeholders;
- a clear improvement regarding the inclusion of third party projects and their equal treatment with respect to TSOs' projects;

[18] See recital (3) of this Opinion and footnotes thereof. The recommendations are summarised in the rest of this Opinion, where appropriate (in particular, for SOAF, in Section 6).
[19] The ENTSO-E methodology pursuant to Article 11 of Regulation (EU) No 347/2013 was not yet approved on 31 October 2014. The CBA methodology 2013 (available in Appendix 3 of the draft TYNDP 2014) did not take yet into account the opinion of the Agency and the opinion of the European Commission.
[20] Agency's Opinion No 01/2014, p.2.

- the improvement in the description of the TYNDP methodology and the use of pan-European market studies to increase consistency across regions;
- a wider spectrum in the studied scenarios;
- the reduction of the average number of investments per cluster;
- the improvement in the presentation of clusters of investments, with detailed technical description and assessment (Appendix 1 of the draft TYNDP 2014).

3. Remarks on the involvement of stakeholders

3.1 Long-term Network Development Stakeholder Group

ENTSO-E established the LTNDSG in autumn 2012 to further enhance stakeholder collaboration, the exchange of ideas and streamlining of diverging opinions. ENTSO-E published terms of reference[21] and organised seven meetings of the LTNDSG. ENTSO-E published the LTNDSG's recommendations on scenario building and stakeholder involvement[22] as element of its public consultation on the draft TYNDP 2014. For most of the LTNDSG meetings, material and minutes, as ex-post information, are published[23]. Minutes are missing for the 6th and 7th LTNDSG meetings.

The Agency acknowledges that the set-up of the ENTSO-E LTNDSG facilitates stakeholders' involvement both directly (by means of the LTNDSG meetings) and indirectly (by making the related information publicly available). The Agency expects ENTSO-E to periodically review the terms of reference, the membership and the activities of LTNDSG taking into account the interest expressed by participants and by other stakeholders.

The Agency notes that some stakeholders called for the establishment of a similar group in the Baltic Sea region and suggests ENTSO-E to consider one pilot regional stakeholders group.

The Agency reaffirms its support[24] to the following suggestions stemming from the LTNDSG report to the degree they are related to the TYNDP process:

ENTSO-E could issue an explanatory document at the beginning of the TYNDP building process containing:

a) *A timeline of the different TYNDP building steps and of the different consultation periods and workshops on specific building steps.*

b) *An explanation of the intermediary procedures between one step and the following one, so that stakeholders understand what ENTSO-E does with their input and how ENTSO-E works internally on the TYNDP.*

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[21] https://www.entsoe.eu/fileadmin/user_upload/_library/events/Workshops/TYNDP_2014__3rd_party___others_/ENTSO-E_Stakeholder_group_TOR_FINAL.pdf

[22] Recommendations on scenario building and stakeholders involvement: Increasing acceptability of the Ten Years Network Development Plan - A document prepared by the Long-Term Network Development Stakeholders Group https://www.entsoe.eu/Documents/TYNDP%20documents/Long-Term%20Development%20Group/140424_Recommendations%20on%20scenario%20development_FINAL.pdf

[23] https://www.entsoe.eu/major-projects/ten-year-network-development-plan/tyndp-2014/long-term-network-development-stakeholder-group/Pages/default.aspx

[24] Opinion No. 21/2014, page 4.

c) *An explanation of the decision-making process for each building step; clarifying to what extent and when stakeholders will be able to influence (weight of stakeholders' vs. ENTSO-E members' input) what elements and how their input will be used.*

The Agency considers that the aforementioned report produced by the LTNDSG should be better identified by ENTSO-E as proposal by a group of stakeholders[25] and commented accordingly. Furthermore, ENTSO-E should set out a plan for practical implementation of any suggestion presented in this report which are deemed useful by ENTSO-E.

3.2 *Public workshops*

ENTSO-E organised the following public workshops at EU and regional levels:

- three workshops on 2030 visions - the first one on 17 April 2012, presenting the visions story lines including an *ad-hoc* questionnaire on demand and generation development issues for bottom-up visions 1 and 3, the second one on 22 November 2012, focusing on top-down visions 2 and 4, and the third one on 2 July 2013, on input data and market studies results;
- two workshops on CBA - the first one on 19 November 2012, presenting a draft CBA methodology, and the second one on 24 June 2013, following the entry into force of Regulation (EU) No 347/2013;
- a workshop on third party procedure on 20 November 2012, focusing on legal and technical criteria of third party projects;
- seven regional workshops, including a Baltic Sea workshop on 10 April 2013, focusing on scenarios and methodology, and six workshops on Regional Investment Plans ("RgIP") between 18 March 2014 and 31 March 2014; and
- two workshops on the TYNDP 2014 on 26 November 2013 and on 4 September 2014.

The Agency recognises ENTSO-E's progress concerning involvement of stakeholders by organising public workshops. For all public workshops, an agenda and presentations are available[26]. ENTSO-E provided minutes for most of the workshops. Minutes are missing for the TYNDP 2014 workshop of 26 November 2013, the North Sea regional workshop of 31 March 2014 and the TYNDP workshop of 4 September 2014.

The Agency expects ENTSO-E to check possibilities for publishing the omitted workshop and LTNDSG meeting minutes together with the final edition of the TYNDP 2014.

The Agency expects ENTSO-E to put in place processes for future TYNDPs to ensure that information and minutes from all workshops and meetings are published in a timely manner.

The Agency positively acknowledges the process of stakeholders' involvement put in place by the ENTSO-E Regional Group Baltic Sea (one workshop in April 2013 on scenarios and methodologies, another workshop in March 2014 on preliminary RgIP results).

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[25] According to Article 10 of Regulation (EC) No 714/2009.
[26] https://www.entsoe.eu/major-projects/ten-year-network-development-plan/tyndp-2014/stakeholder-interaction/Pages/default.aspx

Therefore, the Agency recommends ENTSO-E to consider the Baltic Sea's approach for the future TYNDP processes:

- in each year before the TYNDP, involve stakeholders with focus on scenarios and on the CBA methodology;
- in each year of the TYNDP, involve stakeholders with focus on TYNDP results.

3.3 *Consultations and ENTSO-E assessments of stakeholders' feedback*

ENTSO-E published documentation on two *ad-hoc* stakeholder feedback requests (the 2030 visions workshop survey results and a report on comments received on third party procedure together with ENTSO-E's statements)[27].

On 3 December 2012 ENTSO-E issued a one-month open call for inputs on the scenarios based on a template questionnaire. 13 responses were received. ENTSO-E provided a summary and an assessment of stakeholders' comments[28].

From 3 July to 15 September 2013 ENTSO-E held a public consultation on the ENTSO-E Guideline for CBA, which has been attended by 11 organisations. On 14 November 2013, ENTSO-E responded publicly on the consultation feedback received[29].

From 19 July to 20 September 2013 ENTSO-E held a public consultation on 2030 visions data, which has been attended by 19 organisations. In December 2013, ENTSO-E published its response to TYNDP 2014-2030 Visions consultation answers[30].

From 10 July to 20 September 2014 ENTSO-E held a public consultation on the draft TYNDP 2014. The Agency positively acknowledges the fact that ENTSO-E published[31] a summary report as well as the detailed comments received during the public consultation.

The Agency also sees positively some updates in the draft TYNDP 2014 compared to its first draft edition released for public consultation, for instance:

- the addition of key data values and data sources (page 38);
- the explanation of the modelling of demand side response in market studies (page 39);
- the addition of informative statements regarding the network planning process for each vision (page 55);
- the clarification on the reasons for discarding some third party projects and their increased visibility (footnote 28 and Appendix 1);
- the addition of PCI label numbers and the revision of cost figures for projects in Appendix 1 of the draft TYNDP 2014.

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[27] https://www.entsoe.eu/fileadmin/user_upload/_library/events/Workshops/TYNDP_2014__3rd_party___others_/121219__Report_on_received_comments.pdf
[28] https://www.entsoe.eu/fileadmin/user_upload/_library/events/Workshops/2030_Visions/130411_Outcome-_request_for_input.pdf
[29] https://www.entsoe.eu/fileadmin/user_upload/_library/events/Workshops/CBA/131114_CBA_Methodology_-_Consultation_Comments.pdf
[30] https://www.entsoe.eu/Documents/TYNDP%20documents/TYNDP%202014/131219_ENTSO-E_response_to_TYNDP_2014-2030_Visions_consultation_comments.pdf
[31] https://www.entsoe.eu/major-projects/ten-year-network-development-plan/tyndp-2014/Pages/default.aspx

The Agency recognises the significant progress in terms of information disclosure and earlier stakeholder involvement in the TYNDP 2014 process compared to the TYNDP 2012. The Agency concludes that - pursuant to Article 10(1) of Regulation (EC) No 714/2009 - ENTSO-E conducted an extensive consultation process, at an early stage and in an open and transparent manner, involving all relevant market participants, and the organisations representing all stakeholders while preparing the draft TYNDP 2014.

The Agency expects ENTSO-E in the future TYNDP processes to publish its assessment of the way stakeholders' feedback is taken into account during the TYNDP preparation.

4. Treatment of third party projects

ENTSO-E - in cooperation with the Agency and the European Commission - developed in November 2012 and subsequently revised in September 2013 the "Procedure for inclusion of third party projects – transmission and storage – in the 2014 release of the TYNDP" ("Third-Party Procedure")[32]. ENTSO-E opened two application windows to enable project promoters to candidate projects for inclusion in the TYNDP, in January 2013 and in September 2013.

According to ENTSO-E[33], it received 33 applications and in total the draft TYNDP 2014 assesses 24 projects proposed by non-ENTSO-E Members (13 transmissions projects and 11 storage projects).

While no information was available on the reasons for discarding some projects in the first draft edition released for public consultation, the Agency acknowledges a footnote in the subsequent draft TYNDP 2014 setting out the reasons[34].

The Agency notes that third party transmission projects are not immediately identifiable in the draft TYNDP 2014, despite the addition of the attribute "project application" compared to the first draft edition for public consultation. Such attribute is given to 9 clusters, including 16 investments[35]. However, it remains unclear whether other investments (for instance the Greenwire investment 1020 and all investments in the cluster 189 Irish-Scottish Isles) are actually third-party projects.

The Agency acknowledges that cost information which was omitted for three third-party projects in the first draft edition of the TYNDP released for public consultation has been included in the draft TYNDP 2014[36].

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[32] https://www.entsoe.eu/fileadmin/user_upload/_library/events/Workshops/TYNDP_2014__3rd_party__others_/130923_New_3rd_parties_procedure_FINAL.pdf
[33] Draft TYNDP 2014, Section 5.1.2, page 65.
[34] Draft TYNDP 2014, page 65: "regarding the nine other applications, one application was rejected as it regards two countries outside the ENTSO-E perimeter; the eight others failed to provide the required documentation".
[35] 172 - 1005: ElecLink, 174 - 1014: Greenconnector, 182 - 1111: BRITIB, 185 - 1021: Greenwire IE-GB, 190 - 1033: Norway-Great Britain, 210 - 1071: Würmlach (AT) - Somplago (IT), 219 - 949/971/1054: EUROASIA interconnector, 220 - 936/944/973/979/1001/1042: Southern Aegean Interconnector, 228 - 1113: Marex.
[36] In one case, in the corrigendum version published by ENTSO-E in December 2014.

The Agency positively acknowledges that the cost of third-party projects is transparently provided, in line with the Third-Party Procedure, so as to ensure equal treatment with the TSOs' projects.

In addition, a similar level of detail (for example regarding the "description of the project") should be provided for all projects, regardless of whether they are third-party projects or TSOs' projects. ENTSO-E's Third-Party Procedure could be further improved in this respect.

ENTSO-E's Third-Party Procedure states that "*when a project does not fulfil minimum criteria established in section 3, the project shall only be mentioned in the table with the non-eligible projects submitted to ENTSO-E which constitutes an Annex to the TYNDP*"[37].

The Agency confirms its recommendation[38] that ENTSO-E should add in an appendix of future TYNDPs all the third-party projects which have applied and explain how they are treated in the TYNDP.

For example, ENTSO-E should indicate whether third-party projects are assessed with the usual (or adapted in case of competing projects) Take Out One at the Time ("TOOT") methodology. In case third-party projects are excluded, the reason for exclusion should be clearly indicated.

The Agency acknowledges that the inclusion of third-party projects represents an improvement compared to the TYNDP 2012.

5. Methodology and modelling approach

5.1 Methodology for studies

ENTSO-E presents the articulation of the [main] studies performed to assess projects as follows[39]:

- Pan-European market studies for each Vision, which are set up (for the first time in the TYNDP 2014 process) to define parameters and datasets and to provide the boundary conditions for the regional market studies;
- Regional market studies (i.e. market studies undertaken by every regional group), which deliver bulk power flows, pinpoint specific cases for network studies and deliver the economic part of the CBA assessment;
- Regional network studies, which analyse exactly the grid power flows and deliver the technical part of the CBA assessment.

The CBA assessment of the TYNDP projects is performed using regional market and network studies[40]. Table 2-2 of the draft TYNDP 2014[41] explains that:

[37] Third Party Procedure, p.11.
[38] Agency's Opinion No 06/2012, Section 3.3
[39] Draft TYNDP 2014, Section 2.1.3, pages 22-23 and page 92.
[40] Draft TYNDP 2014, page 30.
[41] Draft TYNDP 2014, Table 2-2, page 33.

- CBA indicators stemming from market studies are security of supply, social and economic welfare, RES integration and variation in CO2 emissions;
- CBA indicators stemming from network studies are grid transfer capacity, security of supply, RES integration, variation in losses, technical resilience/system safety and flexibility.

The Agency acknowledges the improvement in the description of the TYNDP methodology compared to the TYNDP 2012 and the inclusion of pan-European market studies, which aim at improving the consistency across ENTSO-E's regional groups.

In relation to the recursive process between market and network studies (including the circularity of interconnection and transmission development and assumptions on generation), the Agency notes ENTSO-E's statement in the CBA methodology 2013 that "*transmission expansions have an influence on generation investment. Instead of estimating the consequences of projects for new generation investment in each individual TYNDP, this effect is dealt with by the dynamic nature of the TYNDP process in which successive publications include developments in generation capacity as the basis for their adapted scenarios*"[42]. Greater visibility of this statement would facilitate the TYNDP readers in understanding these complex effects.

Pursuant to ENTSO-E's rules of procedures (namely to Article 27 of the Internal Regulations of ENTSO-E), the Regional Groups set up under the System Development Committee ("SDC") are:

- North Sea ("NS")
- Baltic Sea ("BS")
- Continental South West ("CSW")
- Continental South East ("CSE")
- Continental Central South ("CCS")
- Continental Central East ("CCE")

Given the importance of the work of SDC Regional Groups for the preparation of the TYNDP, the Agency recommends ENTSO-E to display the geographical coverage of the regional groups in the main text of the final edition of the TYNDP 2014[43] as already done in the TYNDP 2012[44].

5.2 Methodology for identification of candidates and for inclusion of projects

While the articulation of studies is well described, the Agency observes that it is less clear (especially in Section 2 "Methodology" of the draft TYNDP 2014) how the candidate projects are identified and which criteria are applied to confirm inclusion of projects in the TYNDP.

Section 5.1.2 of the draft TYNDP 2014 indicates that "*most of the transmission projects are proposed by licensed TSOs, who are members of ENTSO-E*" and that "*it is possible that some transmission projects are proposed by 'third party' promoters*". Section 2.1.2 of the draft TYNDP 2014 adds that "*The objectives of the exploratory studies are to establish the main flow patterns*

[42] Draft TYNDP 2014, page 433, footnote 79.
[43] The composition of each regional group is available in the draft TYNDP 2014, Appendix 2.2, page 394.
[44] TYNDP 2012, page 25.

and indicate the subsequent investment needs. When applicable, the exploratory phase resulted in the proposal of new projects".

The Agency observes that no criteria are clearly available in the draft TYNDP 2014 about the cross-border relevance of candidate projects proposed by TSOs[45], neither about their presence in the relevant national plans[46]. While taking into account the complexity for achieving consistency of TYNDP and national development plans (in particular the different timing and frequency of national plans, see Section 2 of the Agency's Opinion No 08/2014[47]), the Agency calls on ENTSO-E to pursue such consistency already in the first steps of preparation of the future TYNDPs.

The Agency recommends (as already made for future national plans) that future TYNDPs include a mapping presenting cross-reference between the investment codes in the different plans.

The criteria to be matched by a transmission project of pan-European significance are partly presented in Section 5.1.1 of the draft TYNDP 2014. In addition, Appendix 1.1.1 of the draft TYNDP 2014 specifies that "*projects meeting the criteria of Regulation 347/2013 (Article IV.1.c) which do not fulfil the criteria of pan-European significance are also included*".

The Agency expects ENTSO-E to provide a clearer description of the methodology for identification of candidate projects and of the criteria for their inclusion in the TYNDP.

The Agency expects that ENTSO-E will document the process it has undertaken to ensure that all investments necessary to deliver pan-European grid development in the coming future are included in the TYNDP. This should include a review of national development plans to ensure that all investments of European significance are included in the TYNDP.

5.3 Modelling approach for market studies

The outcomes of market studies are market balances in every country and in particular generation and exchange patterns ("bulk power flows")[48].

The Agency acknowledges that the main modelling information, such as time horizon and granularity, geographical scope, modelling elements, target function and optimisation tools applied, is provided in the TYNDP and in the RgIPs[49]. Through the application of different tools, ENTSO-E is in a position to compare their results. ENTSO-E notes in Section 8.1 of the draft TYNDP 2014 that various market modelling tools are used across regions. Additional information is available in the RgIPs about these nine market modelling tools: ANTARES (used in CCS, CSW and NS regional groups), BID (BS and NS), MAPS (BS), POWRSYM4 (CCE, CCS and NS), PROMED

[45] An estimate of the grid transfer capability increase across a network boundary has to be provided in the application (draft TYNDP 2014, page 64).
[46] According to Article 8(10) of Regulation (EC) No 714/2009, as amended by Regulation (EU) No 347/2013, the TYNDP shall, in particular, build on national investment plans.
[47] In the Opinion, the Agency concluded that consistency was applicable for about 93% of investments in the TYNDP 2012. Currently there is no similar information in the draft TYNDP 2014, as the TYNDP does not show cross-references to projects in the national plans.
[48] Draft TYNDP 2014, page 30.
[49] Sections 2.3 on "Market studies methodologies".

(CCS), PROMOD (NS), PROSIM (CSE), SAMLAST (BS) and UPLAN (CSW)[50]. Such information could be consolidated in a TYNDP annex in order to facilitate harmonised description and comparability of the main features of the market modelling tools, also in view of identifying good practices and facilitating future harmonisation, as appropriate. The Agency notes that description of the tools in Section 8.1 may be improved as regards the actual use of the tools[51].

If any significant differences exist between market modelling tools, the TYNDP should emphasize the impacts of using different market tools on the estimated benefits. As the CBA methodology 2013 does not explicitly define the generation costs which are considered in the calculation of benefit B2 Socio-Economic Welfare, the TYNDP should identify which costs have been considered in each market modelling tool (e.g. variable fuel costs, internalised cost of CO_2 emissions, variable operation and maintenance costs, start-up and shut-down costs). The contribution of avoided start-up costs should be highlighted, when it significantly contributes to the benefit B2.

According to ENTSO-E[52], the modelling of RES in market studies is harmonised with the use of the Pan-European Climate Database (PECD). The Baltic Sea RgIP specifies that wind and solar time series (8760 h) are derived from ENTSO-E's PECD. The assumptions for the conversion of the climate data (wind speed) into actual generation are not described. The Agency notes that the development of wind turbine technology has led and will lead to a substantial increase of full load hours and a structural change of power curves.

The Agency expects ENTSO-E to further enhance the approach for modelling future generation profiles from volatile RES (wind power curves) and invites ENTSO-E to closely cooperate with other institutions (e.g. through the LTNDSG) on this issue.

The Agency notes that minimising curtailment of volatile RES production is an indicator for the criterion "RES integration" in the CBA methodology 2013[53] and, according to it, avoided (or increased) curtailment is accounted for in monetary terms in the indicator B2[54]. On the other hand, curtailment of wind or photovoltaic generation is an economically feasible measure to reduce network strain and it is regarded as not sensible to absorb 100% of volatile RES-E generation in tight network situations[55]. Therefore, curtailment should continue to be considered to the economically feasible extent.

ENTSO-E included in the draft TYNDP 2014 an explanation about the modelling of demand-side response (DSR) in market studies. Market studies model DSR potential as fictitious generation

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[50] PROSIM, SAMLAST and UPLAN allow also a detailed network modelling, which however may require the use of DC load flow calculation approach.
[51] Section 8.1 of the draft TYNDP 2014 refers to a 'combined market and grid modelling tool' for the CSE Region, while the RgIP CSE states that different tools for market and network studies are used (probabilistic / deterministic simulation for market studies and DC Load Flow for network studies).
[52] Draft TYNDP 2014, page 30.
[53] Draft TYNDP 2014, page 28.
[54] Draft TYNDP 2014, page 436.
[55] Refer to "Sensitivitätsbericht 2014 zum NEP 2013 der Übertragungsnetzbetreiber in Deutschland", June 2014; "Optimale Netzanschlussleistung bei kombinierter PV- und Windeinspeisung", Schufft et al, EW 3/2014

peak units, which would start when prices rise, basically before actual peak units in the system start[56].

The Agency welcomes the addition of this explanation, compared to the first draft edition of the TYNDP released for public consultation.

5.4 Modelling approach for network studies

The outcomes of network studies are physical power flows induced by the commercial ones, grid constraints remaining after implementation of projects and technical indicators of each project.

The Agency acknowledges that main modelling information, such as geographical scope, input parameter, modelling elements and applied simulation tools, is provided transparently in the Regional Investment Plans, section 2.4, "Network Studies Methodology".

5.5 Selection of planning cases for network studies

Planning cases as input to network simulation are either very frequent situations, or more "extreme" situations that are chosen by the TSOs for their ability to encompass representative grid constraints.

The Agency notes that the methodology for the selection of planning cases is stated in general, but lacks transparency and traceability. Probabilities of occurrence and representativeness of those cases should be stated by ENTSO-E, as already done for instance in the RgIP North Sea[57].

6. Scenarios and study results

In its Opinion No 21/2014, the Agency noted positively the fact that ENTSO-E, acknowledging the uncertainties involved in the longer planning horizon of the TYNDP, adopted a scenario approach, including diverging assumptions on various relevant parameters. However, the Agency deemed that the whole methodology of constructing the scenarios for TYNDP development should be described in a comprehensive way and should be consulted with stakeholders. The Agency also observed that an expert review of the methodology might contribute towards increasing the confidence on its results.

Furthermore, the Agency recommended:

- ENTSO-E to provide stakeholders with a comprehensive description of assumptions, documentation of data sources, data acquisition and processing methods;
- ENTSO-E to provide assumptions on hourly load, hourly generating available capacity, available interconnection capacities, fuel prices and CO_2 prices in a transparent way in the future Scenario Development reports;

[56] Draft TYNDP 2014, page 39.
[57] RgIP North Sea, page 29.

- ENTSO-E to provide more information and clarity on the methodology used for the development of Visions 2 and 4, and on the reasons why these two Visions are characterised as 'top-down';
- ENTSO-E to more clearly identify the 'distance' between parameters used in the different Visions other than installed renewable energy sources (RES) capacity or load;
- ENTSO-E to assess the TYNDP scenarios against their 'feasibility' related to factors such as system adequacy, economic viability of generation investments, flexibility embedded in the assumed system to cope with intermittent RES and dependence on gas-fired generation;
- ENTSO-E to explain the method used to deal with the recursive process of making assumptions on the level of generation capacities and of calculating the future interconnection capacities;
- ENTSO-E to consider a case of high energy prices and high RES development.

Finally, the Agency suggested that a stakeholder comment on using also a "best estimate" scenario deserves a broader discussion and that ENTSO-E adopts a two-year period for issuing separately the reports relevant to scenario development and to adequacy assessment.

6.1 Market and network studies for each vision

The Agency notes the additions by ENTSO-E in the draft TYNDP 2014 compared to its first draft edition released for public consultation[58]: "*Because of the high ambitions regarding RES development, Vision 4 required more investigation efforts compared to Vision 1 and 3 (and practical measures to answer some investment needs specific to Vision 4 are yet to be devised in the framework of the preparation of TYNDP 2016). One will also remark that the main outputs for Vision 1 and Vision 2 appear similar at the pan-European level, although the breakdown per country shows differences. Vision 2 assessments have hence been performed last in the process, with often fewer resources allotted from the Regional Groups*".

The Agency also notes the statement regarding network studies in the North Sea RgIP: "*Visions 2 and 3 have not been assessed in a quantitative way as preliminary results have shown that Vision 2 is very similar to Vision 1 and that Vision 3 is relatively close to Vision 4. In some case, the Visions 2 and 3 flows are mostly calculated via a qualitative interpolation between the Visions 1 and 4 flow values*".

The Agency commends the effort put by ENTSO-E and its Regional Groups in the investigation of significantly different (and totally new) patterns for the year 2030, which proved to be very burdensome. The Agency however expects a proper investigation of all studies and scenarios in the future TYNDPs.

Taking into account the ENTSO-E's statement that "*investment needs investigation in Vision 4 requires additional input and feedback from stakeholders (more precise locations of generation especially) so that a more comprehensive picture of the grid infrastructure can be supplied*"[59], the Agency concludes that the results for Vision 4 are not consistent with the CBA methodology 2013

[58] Draft TYNDP 2014, page 55.
[59] Draft TYNDP 2014, page 13 and page 70.

(as they are not based on TOOT methodology, since the reference network does not include the needed investments) and should be used with due caution for the purpose of selection of PCIs.

7. Investment needs and project assessment

Section 4 of the draft TYNDP 2014 describe investment needs, i.e. "every concern on the regional grid which is of European significance" and is "likely to trigger extra-high voltage grid investment". Solutions to accommodate the investment needs are presented in Section 5 of the draft TYNDP 2014.

7.1 Network planning horizon and study horizon

The 10-year network planning horizon of the TYNDP 2014 should encompass the period from year 2015 until year 2024.

The Agency recommends using a 10-year period for network planning to be compliant with Article 8(3)(b) of Regulation (EC) No 714/2009.

ENTSO-E stated in its draft CBA methodology 2013 its view that a long-term study horizon (typically 10 to 20 years) and a mid-term study horizon (typically 5 to 10 years) should be assessed in terms of project results and benefits.

However, the analysis carried out in the draft TYNDP 2014 is limited to a single study horizon to 2030. The Agency considers that the single study horizon approach adopted by ENTSO-E does not provide proper evaluations of benefits. In particular, the market integration benefits of projects to be developed in the short term are highly likely to be underestimated, given that in the short term (e.g. at year 2020), the cost (and price) differentials across countries are expected to be higher than in 2030, when more market integration will be achieved. Therefore significant market integration benefits may have been left out of ENTSO-E's analysis.

The Agency recommends that ENTSO-E soon prepares a best estimate scenario and a TOOT reference network for a mid-term study year, in line with the mid-term approach suggested in the Agency's Opinion No 01/2014[60].

The Agency notes that the CBA analysis is required to be based on input data for n+5, n+10, n+15 and n+20[61]. Furthermore, ENTSO-E acknowledges that the 2030 time horizon does not capture the security of supply value of some projects where generation is adequate in 2030, but may not be in the years before 2030.

[60] Agency's Opinion No 01/2014, section 4.1.
[61] Regulation (EU) No 347/2013, Annex V(1).

Given that the TYNDP shall be subject to the CBA methodology of Regulation (EU) No 347/2013 and that one purpose of the TYNDP is to feed into the PCI selection process, the Agency considers that the future TYNDPs should include data sets and study horizons that meet the requirement of Regulation (EU) No 347/2013.

7.2 *Transfer capacities*

No aggregate information about the estimated cross-border capacities is provided in the draft TYNDP 2014, while for instance the Baltic Sea RgIP displays a map showing the transmission capacity situation of 2030 with all capacities in the reference case[62]. The BS reference case includes all the TYNDP 2012 projects (including reassessed projects) except for the cancelled ones. Additionally, new project candidates were included and assessed with the TOOT approach. Capacity increases of immature and alternative projects are not included into the reference case, but analysed separately with the Put IN one at a Time approach.

Given its importance for the assumptions regarding generation capacity, the Agency expects ENTSO-E to display the cross-border capacities calculated in each scenario at each study year in the future TYNDPs.

In general, more clarity is required on the assumptions for modelling the transmission capacity between countries and network areas modelled in market studies. It should be immediately clear to the reader which capacities are considered for the purpose of calculating the bulk power flows in Section 4 and which capacities are expected with all projects in Section 5.

7.3 *Projects and studies*

The draft TYNDP 2014 presents in its Appendix 1 the list of transmission projects of pan-European significance. This list is composed by 127 clusters and 370 investments[63]. It includes 98 investments "under consideration".

The Agency believes – also on the basis of its Opinion No 16/2014 on implementation of investments – that for a proper analysis it is necessary to disaggregate the list into a first group of projects, those already planned, and another group of projects that are under consideration[64] or are to be commissioned beyond the 10-year network planning horizon or both. Furthermore, the first group of projects could be further disaggregated in mid-term (commissioning date by 2019) and in long-term (commissioning date between 2020 and 2024) projects.

Indeed, based on the information available in Appendix 1 of the draft TYNDP 2014, 108 investments would belong to the second group, which features less mature investments.

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[62] Baltic Sea RgIP, Figure 25, page 39.
[63] The cluster 230 North Seas offshore grid infrastructure scheme is not counted as it is built by "19 projects of the TYNDP 2014 (including 3 proposed by non-ENTSO-E members) developing into a global scheme for offshore grid infrastructure in the North Seas". The number of investments does not count investment item 136 which is present both in cluster 90 and in cluster 198. Further, the two commissioned investments 392 and 393 in cluster 64 N-S Finland (P1) stage 1 are not counted.
[64] I.e. not yet planned neither in the design or permitting phase.

A precise identification of the potential investment challenge associated with the group is not possible as the cost information is "clustered" in the draft TYNDP 2014. However, based on the available cost figures, it may be estimated that:

- The total cost of mid-term "mature projects" would be in the range of 35 to 42 billion Euros;
- The total cost of long-term "mature projects" would be in the range of 25 to 36 billion Euros;
- The total cost of "less mature projects" would be in the range of 44 to 66 billion Euros.

Furthermore, it is worth observing that the cost uncertainty (calculated as maximum cost minus minimum cost divided by the latter) is about 20% for the group of mid-term mature projects and about 50% for the group of "less mature projects".

The Agency recommends that projects belonging to the group of "less mature projects" should be clearly marked as such within the TYNDP. As already stated in its Opinion No 16/2013 on draft regional lists of PCIs, the Agency reaffirms that for this kind of projects, the priority would be to complete the feasibility studies, in order to eventually reach a level of sufficient maturity. The Agency deems that the "highest possible priority" conferred to this kind of projects in regional and in national plans[65] should be intended as a high priority for undertaking further studies.

ENTSO-E displays in the draft TYNDP 2014 all projects of pan-European significance divided into two periods: the mid-term (2014-2018) and the long-term (2019 and beyond)[66].

The Agency recommends ENTSO-E to include three main sets of investments in the future TYNDPs: a) investments already planned with an expected commissioning date in the subsequent five years, b) investments already planned with an expected commissioning date in the period 6-10 year ahead, and c) a group of less mature investments, which will include investments under consideration or investments expected to be commissioned beyond ten years or both.

7.4 Identification of commissioning dates

Network planning based on market and network studies for 2030 only implies that the identification of the expected commissioning dates for proposed investments is not derived from the studies themselves (as this would require multiple study years). In general, commissioning dates should relate to the importance and urgency of each investment. Therefore, the Agency considers that the setting of commissioning dates is supported by other considerations carried out by ENTSO-E and its TSO members.

The Agency expects ENTSO-E to clarify how the commissioning dates of the proposed investments are set.

[65] Pursuant to Article 3(6) of Regulation (EU) No 347/2013.
[66] Draft TYNDP 2014, page 66.

7.5 *Investments to be commissioned beyond the network planning horizon*

The draft TYNDP 2014 includes 28 clusters and their 63 investment items which have expected dates of commissioning in 2025 or beyond. Furthermore, 7 investments in other (mixed) clusters are expected to be commissioned in this period.

Overall, out of the 70 investments expected to be commissioned in 2025 or beyond, 60 have a status "under consideration". The other 10 investments are:

- 315 Kocin (CZ) - Prestice (CZ) - Design and Permitting - year 2028;
- 316 Mirovka (CZ) - Cebin (CZ) - Design and Permitting - year 2028;
- 1004 Sindi (EE) - Paide (EE) - Planning - year 2030;
- 140 Eisenhüttenstadt (DE) - Plewiska (PL) - Planning - year 2030;
- 726 Gubin (PL) - Planning - year 2030;
- 194 OWF Cluster Baltic Sea East (DE) - Lüdershagen/Lubmin (DE) - Design and Permitting - year 2031[67];
- 195 wind farm cluster Baltic Sea West (DE) - Bentwisch/Lüdershagen (DE) - Design and Permitting - year 2032[68];
- 769 Wylfa (GB) - Pembroke (GB) - Planning - year 2025;
- 779 F. Alentejo (by Ourique) - Tavira (PT) - Planning - year 2025;
- 780 Ourique (PT) - Planning - year 2025.

The Agency acknowledges the importance of analysing early prospects for possible investment needs in the long run. Indeed, the early identification of potential investments for the very long term in TYNDP facilitates carrying out future planning studies.

On the other hand, the Agency observes that the TYNDP has – by nature – a 10-year network planning horizon. As noted in the Agency's Opinion No 08/2014 on national development plans, most of the national plans have the same 10-year network planning horizon.

ENTSO-E is therefore invited to clarify why some investment items have a "planned" or even "permitting" status even if their commissioning is not foreseen in the next ten years (2015-2024), and how consistency of the TYNDP with the relevant national plans is guaranteed.

7.6 *Investments with non-ENTSO-E countries*

ENTSO-E presents various investments connecting ENTSO-E's Member Countries to third countries: interconnection Iceland – Great Britain, interconnections with Albania Tirana – Pristina and Bitola - Elbasan, interconnection Greece – Cyprus – Israel and interconnection Italy – Northern Africa. However, hardly any information is provided by ENTSO-E in the draft TYNDP 2014 on the assumptions related to non-ENTSO-E's countries. Based on regional investment plans, it is observed that[69]:

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[67] See also comments in Annex 1 to this Opinion about this investment.
[68] See also comments in Annex 1 to this Opinion about this investment.
[69] RgIP BS, page 29-30. RgIP NS, Page 26. RgIP CCE, page 25. RgIP CCS, page 27. RgIP CSW, Page 26. RgIP CSE, Page 28

- since there were no common assumptions for modelling of the Russian, Belorussian developments at Pan-EU level, RgIP BS used specific assumptions;
- a market model for Iceland was added in order to be able to assess a cable project from Great Britain to Iceland;
- Albania has been modelled to a high degree of detail;
- in the framework of third-party projects assessment, the modelling perimeter has been extended in order also to include Cyprus and Israel;
- for all other neighbouring countries, exchanges are considered as hourly time series provided directly by the respective TSOs.

The Agency therefore reaffirms its recommendation for greater transparency and enhanced cooperation with TSOs of third countries, in order to provide a comprehensive picture of grid development.

7.7 *Clustering of investments*

ENTSO-E adopted the new clustering rules of the CBA methodology 2013 as a main feature of the draft TYNDP 2014 to define projects of pan-European significance, focusing on the core investment items. The rules foresee that investment items may be clustered as long as the difference between their respective commissioning does not exceed five years ("max-5-year") and each of them contributes to significantly developing the grid transfer capability along a given boundary, i.e. it supports the main investment items in the cluster by increasing the grid transfer capability developed by the latter by at least 20%.

The Agency already considered in its Opinion No 01/2014 that the clustering rules in the CBA methodology 2013 will have to be carefully assessed by ENTSO-E with regard to their usefulness and impact for reducing excessive clustering in the TYNDP 2014[70].

Table 1 below summarises the clusters in the draft TYNDP 2014.

Table 1 Clustering of investments in the draft TYNDP 2014

Number of investment in a cluster	Clusters	Investments
Clusters with 1 investment	48	48
Clusters with 2 investments	18	36
Clusters with 3 investments	18	54
Clusters with 4 investments	19	76
Clusters with 5 investments	7	35
Clusters with 6 investments	8	48
Clusters with 7 investments	3	21
Clusters with 8 investments	3	24
Clusters with 9 investments	2	18
Cluster with 11 investments	1	11
Total[71]	**127**	**371**

[70] Agency's Opinion No 01/2014, p.11.

The Agency observes that the average number of investments per cluster is slightly below 3, marking a clear improvement when compared to the TYNDP 2012 (112 clusters, 503 investments, about 4.5 investments per cluster). However, the number of investments in each cluster varies significantly, up to the 11 investment items of LitPol Link Stage 1 (cluster 59).

Further, the North South Eastern German Corridor consists of six clusters 130, 164, 204, 205, 206 and 209 (corresponding to 20 investments). ENTSO-E states that, as the existing tools are not designed to assess single internal clusters within a price zone, the above-mentioned clusters are assessed together as one corridor. Similarly, the North South Western German Corridor includes 5 clusters and 17 investments, the Czech North South Corridor 2 clusters and 10 investments, the Transbalkan Corridor 2 clusters and 5 investments, the Dutch ring 2 clusters and 5 investments.

The Agency notes that such an aggregated presentation of results does not help readers and stakeholders in understanding the importance of each investment item inside each cluster.

The Agency reaffirms the need to further develop the clustering methodology for providing a more consistent clustering approach throughout Europe.

7.8 Presentation of investments and individual comments

The Agency positively notes that the presentation of investments and clusters is in general improved in Appendix 1 of the draft TYNDP 2014 compared to the TYNDP 2012 with a more detailed description of each cluster. The Agency also acknowledges the addition of PCI label number in Appendix 1 of the draft TYNDP 2014 compared to the first draft edition released for public consultation.

Still, a few investments are still insufficiently described concerning e.g. their benefits, location, involved TSOs or third party promoters. A practical recommendation (also to favour consistency checks with national plans) is to split up the length of interconnection lines into national parts.

Also because of the long term horizon of many investments, some of them (particularly beyond 10 years) are so far not known well enough by NRAs in order for them to formulate a final opinion. More detailed comments provided by NRAs on single investment items are presented in Section 10 of this Opinion.

8. Implementation of cost benefit analysis

ENTSO-E states[72] that it has used "*the TYNDP 2014 as an opportunity to conduct a real-life test of the CBA methodology in order to be able to tune it if necessary. The implementation of the CBA in this trial phase hence focuses on checking the feasibility of its implementation while also answering actual stakeholder concerns*".

[71] The total number of investments is 371 in this table, as investment 136 Border area (DE-AT) - Rüthi (CH) is counted as element of cluster 90 and also as part of cluster 198.
[72] Draft TYNDP 2014, page 29.

The calculation of indicators in the draft TYNDP 2014 is based on the CBA methodology 2013, which was published in November 2013 and which was commented on by the Agency[73], Member States and the Commission according to Article 11 of Regulation (EU) No 347/2013. Therefore, it should be specified in a transparent way to which extent the draft TYNDP 2014 is based on (parts of) the CBA methodology 2013 or an updated methodology which takes into account the comments provided on it. For example, ENTSO-E states that "the clustering rules have been fully implemented", while the CBA provisions for two study horizons have not been implemented (see Section 7 of this Opinion).

8.1 Presentation of costs of investments

According to the draft TYNDP 2014[74], the project costs are defined as follows: C1. Total project expenditures are based on prices used within each TSO and rough estimates of project consistency (e.g. km of lines). ENTSO-E concludes that the total investments costs for the portfolio of projects of pan-European significance amount up to €150 billion and provides the breakdown of the total investment cost per country in Table 5-1 of the draft TYNDP 2014[75].

Albeit the approach of using investment costs can be applicable to individual clusters, it remains unclear which cost information is provided in the indicator C1 Estimated cost, e.g. whether life cycle cost are included or not and which of them. Furthermore, it is not clear how the €150 billion single figure has been calculated considering that the estimated costs of individual clusters are given within a range. According to updated cost information in the Appendix 1 of the draft TYNDP 2014, which significantly improves the first draft edition released for public consultation, the total cost of projects can be calculated in the range between €104 billion and €144 billion.

Furthermore, the significance of that single figure needs to be qualified, as some projects in the draft TYNDP 2014 will not be realised in its entirety (competing projects at some borders and projects under consideration which will not turn into a planned investment). On the other hand, it would be useful that ENTSO-E complements the cost estimates of the TYNDP projects with:

- cost estimates of projects in the regional investment plans which are not in the TYNDP, and
- cost estimates of projects in the national development plans which are not in the regional investment plans.

In its Opinion No 06/2012 on TYNDP 2012, the Agency stated its expectation that ENTSO-E provides further details on the importance of an investment item and its possible impacts on the whole cluster. The Agency recommended costs to be presented for each individual investment item inside each project cluster.

In order to check consistency of projects in the TYNDP with projects in national development plans, the Agency reaffirms its expectation that ENTSO-E specifies costs at investment level.

[73] Agency's Opinion No 01/2014.
[74] Draft TYNDP 2014, page 28.
[75] However, it is hardly understandable how single national cost figures match the cost information provided in the form of ranges for each cluster and the total of 110-150 billion Euros.

8.2 *The "financial challenge"*

ENTSO-E notes in section 5.4 of the draft TYNDP 2014 that "*TYNDP 2014 projects impose a significant financial challenge on TSOs and investors. This is due to the large volume of the TYNDP 2014 investment portfolio and the fact that TYNDP 2014 projects represent only a subset of all transmission investments needed in Europe*". Moreover, according to ENTSO-E, there is a lack of incentives within the current regulatory framework of most European countries, which, ENTSO-E notes, tend to focus on lowering tariffs and setting relatively low returns for transmission investments. Similarly, ENTSO-E asserts, most of current regulatory regimes fail to take into account financing issues sufficiently. ENTSO-E calls for regulatory frameworks to provide "*stable and investor-friendly conditions and instruments*". ENTSO-E asserts that transmission investments should generate a stable and predictable regulatory return throughout their lifetime, thus keeping the costs of capital as low as possible.

The Agency notes that no investments in the draft TYNDP 2014 are marked as delayed due to the presence of regulatory risks. Only in four cases (three investments in Bulgaria and the Maritsa East - Nea Santa interconnection Bulgaria-Greece) delays are reported due to lack of funding.

Based on the draft TYNDP 2014, the Agency stresses that ENTSO-E has provided no evidence that regulatory frameworks in the large majority of countries are not already providing the appropriate incentives and ensuring stable conditions and predictable regulatory returns.

8.3 *Presentation of benefit results*

ENTSO-E presents five benefit results in quantitative format for each cluster. ENTSO-E should clarify in the final edition of the TYNDP 2014 whether the indicator B4 Losses displays a yearly value (MWh/year) like other indicators.

Besides the monetary and quantitative values associated with each project, the TYNDP should more clearly explain the determinants of these values in reference to the substitutions of different fuels in each scenario caused by the project, the causes of these substitutions and their evolution in connection with changes in the generation mix. The utilisation rate of each investment in each scenario would also facilitate the understanding of the need for the investment.

ENTSO-E presents results for some clusters only for some visions. In particular, results for the following clusters are displayed only for Vision 3 and Vision 4.

- Cluster 173: FR-BE phase 2
- Cluster 121: 2nd Interco Belgium - UK (1GW)
- Cluster 189: Irish-Scottish Isles Project
- Cluster 120: 2nd Offshore-Onshore Corridor
- Cluster 192: OWP Northsea TenneT Part 3
- Cluster 129: OWP Northsea TenneT Part 4
- Cluster 133: Longterm German RES
- Cluster 216: Massif Central North

Furthermore, the results of Cluster 225 (ALEGRO 2) are displayed only for Vision 4, while the results for Cluster 24 Belgian North Border, Cluster 64 N-S Finland (P1) stage 1 and Cluster 197 N-S Finland P1 stage 2 are presented for a scenario 2020.

The Agency expects ENTSO-E to clarify the number of different TOOT reference networks which were defined in the TYNDP preparation process.

8.4 Security of supply benefit

ENTSO-E states that "the TYNDP methodology fails to capture the benefits of projects regarding Security of supply". Because of its pan-European level/focus, and because it assumes that generation is sufficient to balance load in all countries, the TYNDP methodology fails to capture all of the benefits of projects regarding security of supply, especially where those security of supply benefits relate within a single Member State.[76]

The Agency observes that ten clusters have non-zero results for the security of supply indicator in the draft TYNDP 2014:

- Cluster 5: Eastern interconnection ES-FR
- Cluster 213: Santa Llogaia - Bescano
- Cluster 184: PST Arkale
- Cluster 40: Luxembourg-Belgium Interco
- Cluster 151: Asturian Ring
- Cluster 76: London Cluster
- Cluster 30: Sicily-mainland Italy
- Cluster 24: Belgian North Border
- Cluster 64: N-S Finland (P1) stage 1
- Cluster 197: N-S Finland P1 stage 2

Although many projects are developed on a national basis to increase security of supply, the rest of the projects do not show results regarding security of supply in the CBA. However, as indicated in Appendix 1.1 of the draft TYNDP 2014, TYNDP projects locally improve security of supply in Gerona (Spain), in the French Basque Country, in Liège and Limburg (Belgium), in Luxembourg, in the west south of Estonia and in the Riga area, in the central area of Asturias (Spain), in London (for visions 3 and 4), in Sicily (Italy) and for the Antwerp Harbour (Belgium).

ENTSO-E states that "*the security of supply (SoS) indicator is to be understood in the way it is defined within the Cost Benefit Analysis methodology which focuses merely on the connection of partly isolated grid areas*" (page 221). ENTSO-E is invited to clarify such a statement, which does not correspond to the definition of indicator B1 security of supply in the CBA methodology 2013.

ENTSO-E also notes that "*market simulations are not able to take internal bottlenecks inside one bidding area into account in a comprehensive way. Therefore, to evaluate the SOS indicator for internal projects a more detailed and specialized survey is indispensable*".

The Agency observes that the security of supply calculations in the draft TYNDP 2014 does not fully implement the CBA methodology 2013. The Benefit Category B1 "Improved security of supply" is defined[77] as the ability of a power system to provide an adequate and secure supply of

[76] Draft TYNDP 2014, page 75.
[77] Draft TYNDP 2014, page 27 and CBA methodology 2013.

electricity under ordinary conditions. Adequacy measures the ability of a power system to supply demand in full, at the current state of network availability; the power system can be said to be in an N-0 state. Security measures the ability of a power system to meet demand in full and to continue to do so under all credible contingencies of single transmission faults; such a system is said to be N-1 secure.

The CBA methodology 2013 indicates that "*depending on the issue at stake, market or network models are used for the assessment calculations. When dealing with generation adequacy issues the market models are used to determine the contribution of a project to deliver power that was generated somewhere in the system to this specific area. Network models, on the other hand, are preferred for network adequacy issues, i.e. to determine the contribution of a project to network robustness (risk of network failures leading to lost load). (...) However, the method that is used must be reported*". However, for the investments for which a positive B1 value is reported, there is no reference to whether the B1 value refers to a generation or a network adequacy issue, and no clarification is given as to which method was used for the B1 indicator calculation. Such clarifications should be included in the final edition of the TYNDP 2014.

The Agency recommends ENTSO-E to calculate security of supply impacts with network modelling including probabilistic features, whenever appropriate. Furthermore, ENTSO-E should add a quantified analysis of system resilience to the CBA methodology in order to complement the security of supply indicator.

The indicator of system resilience to extreme circumstances should be considered for possible future monetisation, in order to complement the analysis of security of supply currently limited on the Expected Energy Not Supplied indicator.

Taking into account the limited assessment of projects' contribution to the security of supply indicator, and the limited security of supply assessment by the current TYNDP methodology, the Agency expects ENTSO-E to provide a description of the methodology used to determine the boundaries that are related to security of supply shown in the maps of bulk power flows[78].

Finally, the Agency observes that the lack of ENTSO-E's studies at year 2020 may have determined a significant underestimation of security of supply concerns in the mid-term. Therefore, the Agency reaffirms the need that ENTSO-E carries out TYNDP studies for the n+5 and n+10 years (see also the Agency's Opinion No 01/2014 and Section 7.1 of this Opinion).

9. Transmission adequacy, target capacities and analysis of resilience

The Agency notes that the examination of transmission adequacy was improved compared to the TYNDP 2012. In line with an Agency's recommendation in its Opinion No 06/2012 on TYNDP 2012, ENTSO-E has introduced the definition and calculation of target capacities (Section 6.1 of the draft TYNDP 2014). It is displayed whether the project portfolio is sufficient to secure

[78] Draft TYNDP 2014, page 63.

transmission adequacy. Results show that (for all 4 visions) this is the case for about half of all European boundaries in 2030.

ENTSO-E states that "*For every boundary, the target capacities correspond in essence to the capacity above which additional capacity development would not be profitable, i.e. the economic value derived from an additional capacity quantum cannot outweigh the corresponding costs*", but also that "*additionally, ENTSO-E checked whether the interconnection capacity of every country meets the criterion set by the European Council for interconnection development, asking for a minimum import capacity level from every Member State equivalent to 10% of its installed production capacity. Meeting this criterion led to an increase in the target capacity between Spain on the one hand and France and the UK on the other hand*".

The Agency expects that ENTSO-E calculates and publishes quantitative results for the (first) concept of economic-efficient target capacity, separately from any considerations related to European or national targets.

The Agency considers that the complex methodology of estimating the target capacity could be further explained by ENTSO-E. In addition, the economic value derived from an additional capacity quantum (€/MW) around the target capacity should be presented at each boundary to facilitate the understanding of the methodology.

The Agency also positively acknowledges that Figure 6.1 of the draft TYNDP 2014 has been expanded compared to the first draft edition in order to display results for each vision. Nevertheless, the interpretation of the results is left to the reader. The use of the term "adequate in some visions" in Figure 6.2 should be better developed by ENTSO-E (potentially indicating which boundaries are adequate in which visions). As there is no proposition of a probability associated to each vision, it is also not possible to draw any conclusions out of the transmission adequacy results.

ENTSO-E describes the amount of assessments it undertook to argue i) the resilience of projects in the TYNDP with respect to their ability to support the system in extreme circumstances (resilience of the system to extreme conditions) and ii) the opportunity to build each project in each of the visions (resilience of proposed projects to future demand/supply patterns). ENTSO-E indicates that "*the resilience of the project portfolio opens a large choice of options to fulfil European energy policy goals*". ENTSO-E uses indicator B7 "robustness/flexibility" for each project as a Key Performance Indicator with three levels, while stating that it is infeasible to accurately calculate or monetise the performance of each project with respect to flexibility.

The Agency acknowledges the wider spectrum in studied scenarios compared to the TYNDP 2012. However, it calls on ENTSO-E further to improve the analysis of flexibility with some indication of probability for each scenario.

10. Comments on specific clusters and investments

10.1 Compliance with CBA rules regarding definition of investments

ENTSO-E Guideline for Cost Benefit Analysis of Grid Development Projects lists various types of transmission reinforcement measures including, for instance, construction of new circuits, DC or AC (section 3.1). It also notes that "*an example of investments completely dependent on each other*

(one is a precondition of the other) would for instance be a reactive shunt device needed to avoid voltage upper limit violations due to the addition of the new investment or a converter station association with a HVDC cable" (section 3.2).

The Agency recommends that the TYNDP presents, in line with the CBA methodology 2013:

- One HVDC link (including the converter stations) as one investment item;
- One AC line as one investment item;
- A reactive compensation device (e.g. reactor) in the relevant substation investment item.

The following investments are excessively disaggregated in the draft TYNDP 2014:

- Cluster 5 Eastern interconnection ES-FR (France, Spain): Investments 36, 505 and 506 are one HVDC link;
- Cluster 28 Italy-Montenegro (Italy, Montenegro): Investments 70, 621 and 622 are one HVDC link;
- Cluster 48 HU-SK phase 1 (Hungary, Slovakia): Investments 696 (shunt reactors in station Sajóivánka (HU)) and 698 (shunt reactor in station Győr (HU)) are to be included in the respective substations;
- Cluster 59 LitPol Link Stage 1 (Lithuania, Poland): Investments 368 and 376 are one AC line.

The description of the investments 198.136 Border area (DE-AT) - via Meiningen (AT) - Rüthi (CH) and 198.1043 Neuravensburg (DE) - border area (AT) is not fully clear. If they correspond to one AC line, they should be presented as such.

The following investments are excessively aggregated in the draft TYNDP 2014:

- investment 173.1008 tbd (FR) - tbd (BE) (multiple lines, subject to further studies, Belgium, France);
- investment 92.1045 Lixhe Herderen (line and substations, Belgium);
- investment 92.1048 Lixhe Herderen (line and transformer, Belgium);
- investment 74.449 Richborough (GB) Canterbury (GB) (line and substation, United Kingdom);
- investment 121.934 Kemsley (UK) for example TBD - Doel/Zandvliet (BE) for example TBD (line and substation, subject to further studies, Belgium, United Kingdom);
- investment 82.463 Srananagh (IE) - New substation in South Donegal (IE) (line and substation, Ireland);
- investment 82.896 South Donegal (IE) - Omagh South (NI) (line and substation, Ireland, United Kingdom NI);
- investment 82.897 Omagh South - Turleenan (line and substation, United Kingdom NI);
- investment 37.406 (Southern part of Norway) (NO) - (Southern part of Norway) (NO) (multiple lines, Norway);
- investment 47.216 St. Peter (AT) - Tauern (AT) (lines and substations, Austria);
- investment 47.219 Westtirol (AT) - Zell-Ziller (AT) (line and transformer, Austria);
- investment 141.225 Divaca (SI) - Cirkovce (SI) (multiple lines, Slovenia);
- investment 46.194 OWF Cluster Baltic Sea East (DE) - Lüdershagen/Lubmin (DE) (multiple elements, different stages, Germany);
- investment 46.195 wind farm cluster Baltic Sea West (DE) - Bentwisch/Lüdershagen (DE) (multiple elements, different stages, Germany);
- investment 78.458 Hinkley Point (GB) - Seabank (GB) (lines and substations, United Kingdom).

For the sake of clarity, separate investments should be presented as such by ENTSO-E[79].

Furthermore, cluster 170 Baltics synchro with CE includes investment 1034 Substation in Lithuania - State border. The project description of cluster 170 explains that two different landing points and two differently routed interconnections are required [investment 1034 being the second one].

While acknowledging the present "under consideration" status, the Agency expects investment 1034 to be presented as one interconnection line between two countries, as soon as it reaches a more mature stage.

10.2 Compliance with CBA rules regarding definition of clusters

Cluster 58 GerPol Power Bridge (Germany, Poland)

After rescheduling of the third interconnection, new commissioning dates for the investments in the cluster (between 2018 and 2030) are planned in the draft TYNDP 2014.

The Agency observes that this implies a violation of the "max-5-year" clustering rule, as already noted by ENTSO-E (p. 210 of the draft TYNDP 2014): "*When the project was assessed with the CBA during the TYNDP 2014 assessment phase, the CBA clustering rules were respected. This was reflected in the draft TYNDP 2014 for consultation published in July 2014. Given the changes above-mentioned the project now does not fulfil anymore the CBA clustering rules.*"

The Agency propose that ENTSO-E de-clusters (and thus re-calculates results for) cluster 58 into smaller clusters, as appropriate.

Cluster 46: Offshore Wind Baltic Sea (Germany)

According to the project description, investment 194 is "split into different stages with different commissioning dates (starting in 2017)" and its commissioning date is 2031. The other investment (195) in the cluster has an expected commissioning date in 2032.

The Agency observes that this implies a violation of the "max-5-year" clustering rule. The Agency recommends ENTSO-E to appropriately disaggregate investment items and to provide clarity on the expected commissioning dates.

Corridor 230: North Seas offshore grid infrastructure scheme

ENTSO-E introduced a new cluster in the draft TYNDP 2014 compared to its first draft edition released for public consultation. Cluster 230 encompasses 19 clusters of the draft TYNDP 2014 (including 3 proposed by non-ENTSO-E members) developing into a global scheme for offshore grid infrastructure in the North Seas[80].

[79] For the sake of clarity, this comment does not affect the clustering of the mentioned investments.
[80] Cluster 230 also includes investment 996 which is not present in the draft TYNDP 2014.

The Agency notes some positive features in this presentation, which however should be qualified in due terms, for instance as "corridor" (as done for other aggregations of clusters in the draft TYNDP 2014) or "focus area" (as done in the Baltic Sea RgIP). The Agency notes the ENTSO-E statement that "*by exception, CBA clustering rules are not complied with for this project, but they are for all its contributing parts*". In general, it is not clear why corridor 230 is presented by exception, with a different treatment (and duplication) of its projects compared to projects in other regions. Unless clarity is provided by ENTSO-E, the Agency expects corridor 230 to be deleted from the final edition of the TYNDP 2014.

On the other hand, building on the positive features, ENTSO-E could in the future provide an overview of infrastructure developments in each of the four priority corridors defined in Annex I of Regulation (EU) No 347/2013:

- Northern Seas offshore grid;
- North-South electricity interconnections in Western Europe;
- North-South electricity interconnections in Central Eastern and South Eastern Europe;
- Baltic Energy Market Interconnection Plan in electricity.

For each of the four priority corridors, ENTSO-E could present an overview of costs, benefits and future expected cross-border capacities. Such an approach may also favour locating some investments (especially at corridor boundaries) in the most appropriate priority corridor, taking into account interdependencies across investments.

10.3 Comments on Appendix 1.2 of the draft TYNDP 2014

According to ENTSO-E[81], Appendix 1.2 of the draft TYNDP 2014 wraps up the assessment of transmission Projects of Common Interest.

The Agency notes that it is not clear why Appendix 1.2 is presented, with duplicated information and with a different treatment of PCIs versus non-PCI projects. Unless clarity is provided by ENTSO-E, the Agency expects Appendix 1.2 to be deleted from the final edition of the TYNDP 2014.

10.4 Other observations from National Regulatory Authorities, including consistency with national development plans

While a complete check of consistency between national development plans and the draft TYNDP 2014 and a check of the projects included in the second PCI list are left to the respective forthcoming opinions of the Agency, some NRAs provided initial observations on specific clusters and investments.

Austria

E-Control can not confirm investment 26.1049, since this investment is unclear to E-Control. It should at least be possible to name the substations to increase clarity. Furthermore, investment

[81] Draft TYNDP 2014, page 370.

26.1049 did not apply for approval in the national TYNDP and E-Control is not going to support this project.

Croatia

Cluster 136: CSE1 (Bosnia Herzegovina and Croatia)
HERA observes that the most appropriate way for realisation of TYNDP cluster 136 (and of its strongly interdependent investments 227, 617, 618, 619, 620 and 633) will be decided based on the outcome of the upcoming feasibility study including environmental and social impact assessment.

Furthermore, HERA notes the following inconsistencies with the national plan regarding commissioning dates:

- the commissioning date for investment 136.619 (Lika) in the latest approved TSO's plan is set to 2019, while in the draft TYNDP it is set to 2018.
- the commissioning date for investment 136.620 (Brinje) in the latest approved TSO's plan is set to 2021, while in the draft TYNDP it is set to 2020.

Germany

BNetzA observes that:

- the end substation of investments 191.952 Cluster DolWin 5 (NOR-1-1) - Halbemond and 191.954 Cluster BorWin 5 (NOR-7-1) - Halbemond should be changed to Cloppenburg/Ost and also the commissioning date for NOR-1-1 to 2022, for NOR-7-1 to 2023;
- the commissioning date for investment 42.163 Cluster HelWin1(NOR-4-1) (DE) - Büttel (DE) should be set to 2015;
- the commissioning date for investment 42.165 Cluster DolWin1(NOR-2-2) (DE) - Dörpen/West (DE) should be set to 2015;
- the end substation of investment 191.211 Cluster DolWin 4 (NOR 3-2) - Unterweser should be changed to Cloppenburg/Ost and also the commissioning date to 2025; investment is not confirmed yet;
- the commissioning date for investment 191.656 Cluster BorWin3 (NOR-8-1) - Emden/Ost (DE) should be set to 2019;
- the commissioning date for investment 191.658 Cluster BorWin4 (NOR-6-3) - Emden/Ost (DE) should be set to 2019;
- the end substation of investment 192.955 Cluster BorWin6 (NOR-7-2) - Unterweser should be changed to Wilhelmshaven and also the commissioning date 2026; investment is not confirmed yet;
- the end substation of investment 192.946 NOR-11-1 - Elsfleth/West should be changed to Wilhelmshaven and also the commissioning date to 2028; investment is not confirmed yet;
- the commissioning date for investment 192.948 NOR-12-1 - Wilhelmshaven should be set to 2029; investment is not confirmed yet;
- the commissioning date for investment 192.950 NOR-13-1 - Kreis Segeberg should be set to 2027; investment is not confirmed yet;
- the end substation of investments 129.943 NOR-9-1 - Cloppenburg and 129.945 Cluster NOR-10-1 - Halbemond should be changed to Unterweser and also the commissioning date for NOR-9-1 to 2030; for NOR-10-1 to 2031; both not confirmed yet;
- the end substation of investments 129.947 NOR-11-2 - Wilhelmshaven should be changed to Unterweser and also the commissioning date to 2033; investment is not confirmed yet;

- the commissioning date for investment 129.951 NOR-13-2 - Kreis Segeberg should be set to 2032; investment is not confirmed yet;
- the commissioning date for investment 135.662 Wehrendorf (DE) - Urberach (DE) should be set to 2024;
- investment 152.988 is part of NEP (Netzentwicklungsplan, Network Development Plan), but not confirmed yet;
- investment 152.989 is part of NEP, but not confirmed yet;
- investment 225.1107 is not part of NEP;
- investment 179.1016 is not part of NEP;
- investment 176.995 is not part of NEP;
- investment 46.195 is part of NEP, but not confirmed yet;
- investment 209.937 is part of NEP, but not confirmed yet;
- investment 135.662 is part of NEP, but not confirmed yet;
- investment 206.688 is part of NEP, but not confirmed yet;
- investment 204.686 is part of NEP, but not confirmed yet;
- investment 207.675 is part of NEP, but not confirmed yet;
- investment 207.676 is part of NEP, but not confirmed yet.

Ireland

Clusters 185 and 228: Greenwire and Marex (Great Britain and Ireland)
Investments 1113 (Marex), 1020 and 1021 (Greenwire) are not included in the Irish transmission development plan (TDP) 2013. They are expected be included in the 2014 Irish TDP.
CER observes that these investments can be present in the ENTSO-E TYNDP 2014 since, based on the information submitted for PCI evaluation, these investments have the potential to provide cross border benefits.

Non-TYNDP projects by Mainstream Renewable Power (PCIs in cluster 1.9)

The following projects are part of the "Energy Bridge" project proposed by Mainstream Renewable Power as part of a major RES-E proposal at Government level for delivering renewable electricity from Ireland to the UK in order to allow UK to meet its 2020 targets. In 2014 the RES-E project failed to achieve final joint Government agreement.

- Ireland - United Kingdom interconnection between the Irish Midlands and Pembroke (UK);
- Ireland - United Kingdom interconnection between the Irish Midlands and Alverdiscott, Devon (UK);
- Ireland - United Kingdom interconnection between the Irish coast and Pembroke (UK).

Non-TYNDP project "Cluster of Pumped Storage projects in North West Ireland"

It is CER's understanding that the project has recently had some personnel changes and a name change but that the promoters are still keen on progressing the project. CER is unaware of the current progress of the project.

Italy

Non-TYNDP project "battery storage systems in Central South Italy" (PCI 3.25)

This large scale storage project is included in the first PCI list, but it has not been assessed for the TYNDP 2014, since the promoter (Terna) did not send any data to ENTSO-E[82]. In addition, an assessment of the project is not included in the CCS and CSE RgIPs (which feature only a quick reference[83]). This project is not included in the draft TYNDP 2014 and AEEGSI believes that therefore it cannot be proposed for the second list of PCIs according to Annex III of Regulation (EU) No 347/2013.

AEEGSI notes that a decrease of yearly curtailed wind energy due to local network congestion has been recorded in the last available Italian Development Plan (published on January 2014). Hence, AEEGSI considers that, if the currently ongoing pilots for storage will still demonstrate that there is real need for further deployment of battery storage to limit curtailments, a totally new project (or, even, totally new projects from different third party promoters) could be included in the TYNDP 2016, after the conclusion of the experimental phase and appropriate cost-benefit assessments.

Cluster 28 Italy – North Africa

Although this project is only "under consideration" (with expected date of commissioning: 2030), this HVDC cable project has been included in the list of proposed projects for the second PCI list (currently under public consultation). It appears that there is only one EU MS involved in this project, so it is not eligible as PCI.

Moreover, the first results of CBA of this project raise some doubts. In the absence of an appropriate model of the North African system, imposed power flows have been used to estimate exchanges (see CCS RgIP, figure 3-5 and page 27); it seems quite unrealistic that the assessed B2 benefit provides the same results in all the four scenarios, for it means that the African energy input substitutes always the same generation units in Italy (or in Europe) in all the four scenarios independently of the specific merit order. AEEGSI observes that greater cooperation with the Tunisian TSO and studies with improved modelling of the Northern African system are needed before this project is included in future TYNDPs.

Slovenia

AGEN-RS took into account the recently issued draft national TYNDP 2015-2024.

Investments 68 and 615 in cluster 148 should have an expected commissioning date after 2025.

For investment 150.616 HVDC link Divača/Beričevo (Slovenia) - Salgareda (Italy), the planned commissioning date is actually after 2022.

For investment 141.223 Interconnection Žerjavenec (HR)/Heviz (HU) and Cirkovce (SI), the planned commissioning date is actually 2018.

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[82] Draft TYNDP 2014, appendix 1.3, p.389.
[83] In both CCS and CSE RgIP, paragraph 5.2: "Moreover in Italy the development of electrochemical storage is planned by Terna to integrate RES in local HV systems (due to its high level of innovation, the development of the project is subject to a first experimental phase involving the realization of 35 MW of batteries in southern Italy)".

For some elements of investment 141.225, namely the internal line Beričevo/Podlog (SI) and the internal line Podlog/Cirkovce (SI), the planned commissioning is actually 2025.

Spain

CNMC observes that no new interconnection projects between France and Spain are present in the draft TYNDP 2014, compared to the TYNDP 2012. As transparently stated in Section 6.1 of the draft TYNDP 2014, even after completing the projects already planned, the interconnection capacity of Spain will be below 10% of the installed production capacity (target agreed by the European Council in 2002 and recalled in the conclusions of the European Council of 23 and 24 October 2014). As a consequence, the Iberian market remains insufficiently connected to the rest of Europe.

CNMC observes that:

- Clusters 5 and 213 can well be merged, as they are interdependent.
- Investments 503 and 504 have been excluded from cluster 4 due to a refined clustering. Indeed, from a geographical point of view these projects (in the province of Caceres) are rather distant from the rest of the projects included in cluster 4 (located in the North of Portugal). However, these projects (503 and 504) are not dropped; they are included in the national and regional plan CSW.

As the Spanish national development plan is not updated, as of January 2015, CNMC is not in a position to comment on its consistency with the TYNDP. In general, if a project affecting Spain is not in the Spanish national development plan it cannot be approved, therefore, commissioning dates are conditional to an eventual inclusion in the national development plan.

United Kingdom

The commissioning date of investment 167.998 Idomlund (DKW) - Stella West (GB), set as 2030 in the draft TYNDP 2014, should be carefully reviewed.

The following projects are not in the draft TYNDP 2014 and should not be eligible for PCI status:

- Ireland - United Kingdom interconnection between the Irish Midlands and Pembroke (UK);
- Ireland - United Kingdom interconnection between the Irish Midlands and Alverdiscott, Devon (UK);
- Ireland - United Kingdom interconnection between the Irish coast and Pembroke (UK).

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