



European Network of  
Transmission System Operators  
for Electricity

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**TYNDP  
PUBLIC CONSULTATION  
REPORT ON RECEIVED COMMENTS**

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30.10.2014

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# 1 BACKGROUND

As stipulated by the 3<sup>rd</sup> Energy Package, ENTSO-E is mandated to publish the biennial Ten-Year Network Development Plan (TYNDP) - *“ENTSO-E shall adopt a non-binding Community-wide 10 year network development plan, including a European generation adequacy outlook, every two years”*<sup>1</sup>.

For the 2014 plan, ENTSO-E has created a package of reports (eight in total) which cover not only the pan-European view but also the regional perspectives:

- the Community-wide TYNDP report 2014;
- the six Regional Investment Plans 2014; and
- the Scenario Outlook and Adequacy Forecast 2014.

ENTSO-E strongly encourages and factors stakeholder involvement into the TYNDP process. During the two-year development period, ENTSO-E both provided information to, and sought input from stakeholders during several phases of the process via 17 European and regional public workshops<sup>2</sup>, six public web consultations, numerous requests for contributions and bilateral meetings.

In addition, ENTSO-E formed a stakeholder group to regularly and proactively discuss and provide input on topics regarding long-term network development. This group meets 3-4 times a year, in addition to related dedicated task forces meetings, and is attended by European organisations<sup>3</sup> who have an interest in system development.

**Finally, the TYNDP 2014 package was open for public consultation from 10 July to 20 September 2014. During the 10-week consultation, ENTSO-E received more than 400 comments from 30 stakeholders.**

The present report proposes a synthetic typology of all feedback received during this last consultation. Detailed responses for each consultation comment can be found in the TYNDP consultation comments excel-table which is appended to this report, and published with the final TYNDP 2014 package.

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<sup>1</sup> Legal requirements set for the TYNDP by Regulation 714/2009 are explained in Appendix § A2.1 of the TYNDP report.

<sup>2</sup> All material presented in the workshops can be accessed on the ENTSO-E website: <https://www.entsoe.eu/major-projects/ten-year-network-development-plan/tyndp-2014/stakeholder-interaction/>

<sup>3</sup> More details and list of members can be found in the Terms of Reference – Long-term network development stakeholders' group, on the ENTSO-E website: <https://www.entsoe.eu/major-projects/ten-year-network-development-plan/tyndp-2014/long-term-network-development-stakeholder-group/>

## 2 STATISTICAL OVERVIEW

The public consultation period on the draft TYNDP package 2014 during summer 2014 resulted in a total of 411 comments.

About 250 comments made during the recent consultation relate directly to the TYNDP 2014 report, with some overlap for the TYNDP and regional investment plans.

Report	Number of comments	Number of contributors
TYNDP	250	22
SOAF	16	3
North Sea	37	7
Baltic Sea	35	5
Continental Central East	10	2
Continental South East	4	1
Continental Central South	23	4
Continental South West	37	2

Eurelectric was the most prolific contributor, making about about 60 comments. Several contributors coordinated their feedback with that of Eurelectric and provided similar comments, stressing specific important points. Otherwise, one consumer organisation, one environmental NGO, two consultants/R&D organisations, three transmission equipment suppliers as well as five PCI promoters contributed. Five respondents preferred not to state their organisational affiliation.

All but one contributor explicitly expressed satisfaction regarding the improvements made in the report's content... while suggesting further improvements.

Comments were quite evenly divided between clarification issues for the present edition and suggestions for the next release in 2016 (specifically on scenario building and/or methodology). A few comments were also made regarding specific project assessments.

Many concerns about stakeholder involvement have been addressed since the last 2012 edition, with only a few remarks on this subject, mostly expressing satisfaction. Conversely, transparency emerged as a concern with a wish to get spreadsheets to play with the figures (see infra).

***ENTSO-E would like to thank all the involved stakeholders for their valuable input, and looks forward to increased collaboration for future ENTSO-E Ten-Year Network Development Plans.***

### 3 MAIN CONCERNS

Stakeholders commented mainly the following topics:

- Scenario building and assumptions, and in particular about
  - o Demand side response;
  - o CBA methodology implementation and potential improvements, and especially
    - Storage assessments,
    - Involvement of the stakeholders,
    - Transparency.

#### 3.1 SCENARIOS AND ASSUMPTIONS

##### Main stakeholder concerns:

The effort made to address a longer-run timeframe was appreciated, but an intermediate midpoint for the assessment around 2020-2025 is expected for the 2016 plan. The amount of RES is perceived as either too low or too high. Thermal capacity appears too large, and not economically viable. Basic assumptions about fuel and CO2 prices are not displayed in the reports. Data spreadsheets are missing. Various concerns were voiced on the macro-economics or the future regulatory framework (with a focus on risks and required protection for European industry).

##### ENTSO-E feedback:

The scenario building process took place from spring 2012 to autumn 2013. Scenarios were built involving the Long-Term Network Development Stakeholders Group, stakeholder surveys, two specific consultations and three dedicated public workshops.

Date	Workshop
02/07/13	3rd Workshop on the 2030 Visions - final visions outcome
22/11/12	2nd 2030 Visions Workshop
17/04/12	1st 2030 Visions Workshop

However, this information has obviously not been visible enough. Most queries can be addressed through the material already published on the ENTSO-E web site<sup>4</sup> : SOAF data spreadsheets, merit order price curves, DSR modelling etc. The draft reports only refer to it.

<sup>4</sup> For more insight on the assumptions, please see the presentations from the [3rd 2030 visions workshop](#).

The final 2014 TYNDP now embeds the answers to the most frequent questions, about DSR and fuel and CO2 prices. A spreadsheet with the underlying data for the Chapter 3 charts, with load factors is available along with the final version of reports.

Scenario building is quite a difficult process, especially when it comes to finding consensus amongst very diverse opinions. In this respect, ENTSO-E strongly encourages all stakeholders wanting to share their expertise to join the scenario building process for the TYNDP 2016.

In particular, the TYNDP 2014 macroeconomic parameters were discussed and surveyed in 2012, and unfortunately some stakeholders missed the opportunity to contribute to this process. Concerning these parameters, the load forecasts were sketched globally, with no specific focus on potential European industry leakage in the context of high CO2 prices<sup>5</sup>.

The four Visions were deliberately targeted as different corners of possible future paths, thus in some of them, the Renewable Energy Source (RES) development is more modest and some are in the path to achieve 2050 goals. Employing these corner scenarios, ENTSO-E expects to find the most robust and appropriate grid development.

The methodology to build these scenarios has been widely discussed and consulted upon; bottom-up Visions rely on standard protocols to collect national data; top-down Visions rely on standard protocol to ensure pan-European consistency.

However, the outcome is criticised with some generation means with too little outlet so that they can be viable: this outcome is probably the best way to show all stakeholders the practical moves to enforce in the scenario building methodology; while it does not actually alter the conclusions about the economic value of transmission assets.

The analysis of an intermediate timeframe is foreseen in the CBA methodology. Unfortunately, due to resource issues it could not be included in the TYNDP 2014 release, but ENTSO-E will include assessment figures for this timeframe in the TYNDP 2016.

Regarding the TYNDP 2016, the scenario building process begins in autumn 2014 until summer 2015, with the possibility to provide input in the scenario consultation. Stakeholders interested in more active involvement and contribution, can apply to participate in the work of the Long-term network stakeholders group.

## 3.2 DEMAND SIDE RESPONSE

### **Main stakeholder concerns:**

Demand Side Response (DSR) as an alternative to grid development. DSR was not adequately considered and it is not clear how it was modelled in the analysis.

### **ENTSO-E feedback:**

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<sup>5</sup> ENTSO-E however believes that a context of high CO2 prices (or rather : high fossil fuel-based generation costs) can prevail with no leakage of the European industry, if it prevails all over the world, in particular if shipping is more expensive than at present. But this is to be discussed for the TYNDP 2016.

Demand Side Response was addressed while building the scenarios, and modelled in the market and network studies. ENTSO-E believes that DSR can bring great benefits to system operation. However, the major concern for grid investment is conveying large amounts of RES production to load centres, especially when the generating output of RES facilities is close to capacity.

DSR in itself is one of the 13 key parameters for the Visions (and four others are closely related: development of smart metering and smart grid devices; of electric vehicles; of decentralised storage; of PV). In a survey performed by ENTSO-E at the beginning of 2012, 40% of the responding stakeholders said DSR could represent 5-10% of the total load by 2030 (and less than 10% said DSR could address more than 20% of the load by 2030).

During the scenario building process, specific attention was given to the evolution of load curves, particularly in order to reflect the development of electric vehicles and heat pumps. The charging of electrical vehicles is assumed as being smarter in Vision 4 than in Vision 1 (e.g. it takes rather place off-peak during winter, or at noon in summer to take advantage of the photovoltaic generation). These adapted (but not adapting) load curves were inputs to the market studies.

Market studies model DSR potential as fictitious generation peak units, which would start when prices rise, basically before actual peak units in the system start. Calculating DSR across the year, the volumes in GWh are negligible compared to the entire consumption. No extra load, to catch up with the not-consumed power is modelled, as volumes (and hence prices) are negligible, and this type of modelling is quite complex to implement.

Network studies model DSR potential as a remedial measure to congestions, with up to 10% of the total load potentially activated. However, DSR only marginally challenges grid development at pan-European level: the major concern is conveying large amount of RES to load centres, especially when the generating output of RES facilities is close to their capacity; and the amounts at stake are much higher than DSR potential. (This fact is indirectly illustrated with the Security of Supply indicator being null for the vast majority of the projects of pan-European significance.)

ENTSO-E has included a report regarding DSR in Chapter 3 in the completed TYNDP 2014.

### 3.3 CBA METHODOLOGY

#### Main stakeholder concerns:

Clarification on the origin and implementation of the methodology. Clustering rules. Monetisation and ranking of projects. Assessment of the projects at an intermediate timeframe. Specific comments on Security of Supply, RES, CO2, losses variation, protected areas and urbanised areas indicators. (Concerns about storage projects will be covered in a specific section further on.

#### ENTSO-E feedback:

The CBA methodology results from a 2-year definition process with stakeholders. The Long-term network development stakeholder group was devoted to the subject and two dedicated public workshops were held.

Date	Workshop
24/06/13	2nd Cost Benefit Analysis Methodology Workshop
19/11/12	1st Cost Benefit Analysis Workshop

The CBA methodology is scheduled for approval by ACER and the EC authorities in autumn 2014. Project assessments in the TYNDP 2014 are performed according to the CBA clustering and valuation rules in order to deliver a real-life test of the methodology.

In this respect, the analysis of an intermediate timeframe is foreseen in the CBA methodology. The investigation of a wider panel of scenarios was preferred, due to resource issues, in order to give robustness to the valuation of projects; and test the CBA methodology more thoroughly. However, ENTSO-E will include assessment figures for such an intermediate timeframe in the TYNDP 2016.

The testing of very different scenarios, from Vision 1 to Vision 4 proved useful. However, the definition of the Security of Supply indicator for proved too demanding and the practical appraisal of other indicators for storage also demonstrated the need for improvement.

The disaggregation of the project GTC per investment is provided in the description of each project. At pan-European level, projects do cluster several investments in order to more easily get a view of the overall picture. The GTC contribution of every investment enables a swift and effective way to appraise the contribution of the investment, (including for other indicators, pro-rata).

Clustering rules were tightened in the CBA methodology compared to the TYNDP 2012, based on stakeholder feedback and EC and ACER guidance in particular. Clustering rules require all investments clustered in one project to support the grid transfer capability increase across the same boundary; each investment should provide a grid transfer capability increase of at least 20% of the capacity increase of the main investment; and the investments should be not further apart than 5 years. Typically, a cross-border interconnector is clustered with the necessary internal reinforcements needed to achieve the wanted interconnection capacity.

The CBA methodology is meant to be multi criteria, because stakeholder opinions about how to weight every criteria is very diverse. Monetisation of non-monetised criteria involves valuation choices that prove quite complex; many times with no single valuation parameters and as there is currently no consensus on these issues in Europe, with often wide-apart pricing options.

ENTSOE believes more exhaustive and relevant information is provided to stakeholders by giving "rough" figures (e.g. MWh, kttons of CO<sub>2</sub>).

The environmental NGO Birdlife pointed out that the data base used for the computation of the protected areas indicator was not complete. In fact, several databases must be referred to, as none is comprehensive, so ENTSO-E has now re-computed the indicator for all projects for the final release of the report. Nonetheless, the orders of magnitude of the total figures across Europe do remain valid.

Following a request from ACER, investment costs figures have been tuned in the final release of the TYNDP 2014. Cost figures derive from a specific estimate for each project, forwarded to ENTSO-E by the project promoters and hence, there are no standard assumptions behind them.

The CBA will continue to evolve and ENTSO-E welcomes stakeholder input on the further development of the methodology.

## 3.1 STORAGE ASSESSMENT

### **Main stakeholder concerns:**

Clarification on the CBA definition and implementation for storage. Storage assessment is missing the benefits of storage, and must be improved. Environmental impact of storage is not appropriately addressed. Interaction between storage projects and scenario definitions.

### **ENTSO-E response:**

ENTSO-E recognises the need to further develop the CBA methodology, especially in regard to storage projects.

In particular; ENTSO-E acknowledges that the economic benefits of SEW projects focus on the “energy only” part of the total economic benefits. The SEW must be completed with an appraisal of the “capacity” (i.e. the availability of net power generating capacity) and the “flexibility” parts of the benefits (i.e. the capability of adapt quickly the power output to the system needs).

“Flexibility” issues relate to real time phenomena that the 60-minute quantum used in the TYNDP market studies and steady state load flows in networks studies cannot capture. The SEW presented in the TYNDP 2014 is thus a conservative assessment of the economic benefits. This remark is valid both for transmission and storage projects, but is all the more important for storage projects where the investment costs are larger. Profitability of storage projects can never be concluded upon with the present assessments.

The S1 and S2 indicators, measuring the length of the route respectively crossing protected and urbanised areas, are thus not appropriate for storage projects. These indicators must be redefined specifically for storage projects in the next version of the CBA. In the TYNDP 2014, these two indicators are “NA”, i.e. “not assessed”.

KPIs for the computation of resilience and flexibility indicators (B6, B7) should also be complemented in order to better match the specific features of the storage projects.

Increases in storage capabilities have been accounted for in the definition of the scenarios, even if the specific storage projects to assess were not candidates at the time the scenarios were initiated. The assessed projects do however fit in the overall picture so that the late candidature required no adaptation of the scenarios.

## 3.2 STAKEHOLDER INVOLVEMENT

### **Main stakeholder concerns:**

Acknowledgment of ENTSO-E's effort, especially the Long Term Network Development Stakeholders Group and the workshops that have been held. ENTSO-E is still encouraged, especially in the scenario building process or for a regional stakeholder group in Baltic Sea area.

### **ENTSO-E feedback:**

Stakeholder involvement can further be improved. The next move is to ensure active participation in the framework of the Long-term network development stakeholders group. Participation can be arranged without any physical presence.

Most important is actual contribution from stakeholders with respect to scenario inputs or modelling activities and acknowledgement for our joint works.

Non-industry experts such as universities can already now be invited to present issues on their expertise to the stakeholder group meetings.

Beyond this stakeholder group, regional workshops and consultation will continue to be organised regularly during the TYNDP process, where stakeholders can contribute and participate.

### 3.3 TRANSPARENCY

#### **Main stakeholder concerns:**

Data spreadsheets with projects assessment figures. Too wide margins for costs figures. Data spreadsheets with installed generation capacities. Make row study outputs available.

#### **ENTSO-E feedback:**

As was the case for the TYNDP 2010 and 2012, and as confirmed during the stakeholder workshop on 01 July 2014, data spreadsheets with projects assessment figures will be published with the final release of the reports.

Costs figures can and will be fine-tuned for projects in the final release of the reports, based on their specific maturity, instead of an awkward standard cost range definition.

Data spreadsheets with installed generation capacities are available as part of the SOAF. Figures behind the generated amounts (displayed in charts of chapter 3), and load factors can and will be displayed.

Dumping all the study outputs is simply not manageable: trillions of values are produced by the regional group experts during the TYNDP process. ENTSO-E does not foresee storage of these outputs and the essence is displayed in the reports.

## 4 APPENDIX

For a detailed list of comments and responses, see the dedicated report on comments table (Excel table).