



## Joint response to ENTSO-E's '2030 Visions'

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14 December 2012

### Introduction

In the context of ENTSO-E's work in developing '2030 Visions', the cost benefit analysis methodology to build scenarios and the System Operation and Adequacy Forecast (SOAF) reports, we welcome the ambition of ENTSO-E to move away from a bottom-up methodology in order to adopt a truly European approach. We recognise that progress has been achieved in this respect but we are concerned that current efforts still fall short in meeting with EU policy renewable energy and climate objectives and expected stakeholder involvement. This response paper outlines these concerns and suggests further improvements.

### Proposals to improve the 2030 Visions and its methodology

The two axes used to build the four different visions (vertical axis: "progress towards Energy Roadmap 2050" and horizontal axis: "strength of European framework") represent a good starting point. However there are a number of elements that could be improved.

1. **Identification of limitations of the current analysis:** The next TYNDP will be the first pan-European document of its kind, using 'top-down' European scenarios for long-term grid development; it shows a promising evolution towards a European approach to infrastructure planning and development. However, as discussed during the workshop of 22 November 2012 and developed in details in the points below, the modelling and data collection methodology presents its limitations. We believe that the shortcomings of the study must be clearly identified and laid out in the final publications in order for decision-makers acting on the basis of the TYNDP 2014 do so knowingly, and to encourage further improvement of the methodology for the subsequent editions. Several oversights were caused by a lack of recognised data sources or models, but one can imagine this problem to be solvable by the time the work starts on TYNDP 2016.

**Proposal:** The TYNDP 2014 and Visions 2030 documents must clearly list what shortcuts were taken in compiling the scenarios data and modelling the top-down results. This would include the lack of pan-European optimisation for renewable energy, the potential discrepancy between national submissions, the lack of modelling of the peak-shedding effects of smart grids, electric cars, demand response aggregation, and all the points detailed below.

2. **Lack of European-wide approach:** Whilst Vision 1 (V1) and Vision 3 (V3) are constructed using a bottom-up approach (based on inputs from 'national correspondents' – experts), Vision 2 (V2) and Vision 4 (V4) are meant to be carried out using a top-down approach including EU renewable energy policies, and long-term climate goals (as ENTSO-E has presented on several occasions). However in practice, V2 and V4 are derived from the



bottom up scenarios (V1 and V3). Thus **V4, in particular, fails to show the full benefits of an optimised European electricity system with high renewable generation and strong energy efficiency standards.** If this scenario, which would save costs and resources, is not even considered, it cannot be planned for. By being over-cautious and lacking a truly European vision, the scenarios in fact constrain what can be achieved in Europe, against the interests of consumers, future generations and the natural environment.

**Proposal:** So far, the potential of renewable energy sources is based on the estimates of current national experts (which do not consider the benefits of an optimal interconnection system and integrated regional or European energy markets) and/or national political situations. **We believe that the potential of renewables should be assessed at a regional, if not European, level on the basis of optimisation analyses** (which are currently only performed for thermal capacities). Regional groups should estimate the potential for their regions, taking into consideration optimized market conditions, sufficient transmission interconnections and reinforced distribution grids<sup>1</sup>.

3. **Inconsistency between stated goals and the visions:** V3 and V4 imply that the Energy Roadmap 2050's goal of decarbonising Europe's energy system by 2050 would be achieved on time. However, at this stage in the process it is unclear what the energy mix for V4 would be in 2030, making it impossible to verify if carbon emissions reductions would be at least in line with the Energy Roadmap 2050 trajectory.

**Proposal:** ENTSO-E should provide a clearer picture of the energy mix for V4 and it should indicate how this vision is in line with the carbon emission reduction objectives and trajectories identified in the Energy Roadmap 2050.

4. **Unjustified treatment of variable renewable energy sources as non-usable capacity:** The SOAF report indicates that many TSOs consider renewable energy sources (RES), especially wind and solar, to be "non-usable capacity". However, there is clear evidence<sup>2</sup> that enlarged geographical areas and combinations of different renewable energy technologies will result in certain reliable available capacity. Furthermore, variable RES, if combined with dispatchable RES such as biomass, hydro, CSP and ocean energy would present significant higher capacity credit values.

The amount of wind and solar contribution increases as power systems get better integrated, and contributes to the adequacy of the power system<sup>3</sup>. Despite the real

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<sup>1</sup> For example, in their recently published report, the North Seas Countries' Offshore Grid *Initiative (NSCOGI)*, found that co-ordination of offshore grids becomes ever more economically justified as levels of RES penetration increase.

<sup>2</sup> The International Energy Agency in their World Energy Outlook 2011 identify that the capacity credit or variable RES will be at least of 5% in 2035 (pag 190-193).

<sup>3</sup> For example, EPIA report Connecting The Sun finds that, assuming 15% and 30% PV and wind penetration by 2030 respectively and high level of interconnection, in Europe the firm capacity of these technologies together could amount to 60 GW. Moreover, the combination of PV, wind hydro, bioelectricity, geothermal CSP, ocean and storage (100 GW) could provide up to 286 GW of firm capacity in 2030. See also EWEA report "Powering Europe: wind



technical and physical capacity value of wind and solar power, it is not yet regularly used for capacity planning. One of the barriers is the absence of a standardised accepted method for calculating capacity credit.

**Proposal:** The capacity credit of RES should be reflected more accurately and results should be displayed for the regional level to fully account for the geographic smoothing of RES. We therefore call on ENTSO-E to develop and utilise a harmonised method for wind and solar power capacity credit assessment in the European generation adequacy forecast and the TYNDP, in order to properly evaluate the contribution of wind and solar power to system adequacy. The existing methodology developed by the International Energy Agency<sup>4</sup> could be used as starting point.

5. **Lack of ambition on energy efficiency:** The electricity demand figures for V3 are significantly higher than those foreseen by any other decarbonisation study, including the Energy Roadmap 2050. V4 is expected to present even higher figures. The results from the first consultation workshop (April 17<sup>th</sup>) do not support such high amounts as there was little consensus between participants.
6. **Inappropriate correlation nuclear-RES:** Regional and EU-wide market integration (including larger and optimized interconnectors) are an important prerequisite for significant deployment of renewable energy sources in a cost effective way. It is therefore more likely that nuclear will be developed in a scenario where there are both a lack of market integration and a lack of common EU energy strategy (i.e. a scenario in which RES do not have a large penetration). Therefore **nuclear deployment, or at least public acceptance of nuclear, should be part of V3 and not V4 as it currently stands.**
7. **The missing role of decentralized storage and smart grids:** V1 and V3 present the view of national experts, who provide consistent data with strong market modelling. At the stakeholders' workshop of 22 November 2012, ENTSO-E pointed out that lack of data and of EU-wide consistent modelling for smart grids and decentralised storage hampers the integration of the positive effects of these solutions in the visions. This is not acceptable when it comes to V4: the Energy Roadmap shows that, as the decarbonisation effort and the level of variable RES in the system increase, investments in smart grids become a necessity. **As European support is assumed in V4 (e.g. the energy infrastructure package), such vision should include a certain penetration level of smart grids and decentralised storage.**

**Proposal– sensitivity analysis:** Based on points 5, 7 and 7, V4 should present a **top-down scenario where generation and demand are fully optimized to ensure a cost-effective energy system.** The combination of inflexible generation with large amounts of RES will not lead to such situation. In order to understand the cost implications of different system schemes,

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energy and the electricity grid, pages 79-82:

[http://www.ewea.org/fileadmin/files/library/publications/reports/Grids\\_Report\\_2010.pdf](http://www.ewea.org/fileadmin/files/library/publications/reports/Grids_Report_2010.pdf)

<sup>4</sup> [http://www.worldenergyoutlook.org/media/weowebiste/energymodel/Methodology\\_CapacityCredit.pdf](http://www.worldenergyoutlook.org/media/weowebiste/energymodel/Methodology_CapacityCredit.pdf)



including different energy mixes and energy demand expectations, and the technical and economical benefits of certain technological solutions (i.e. storage vs. curtailment, centralized vs. decentralized storage, how peak shedding will be affected by a larger/smaller introduction of electrical vehicles and/or smart grids), a number of sensitivity analyses should be run.

Although it is understood that the human resources of ENTSO-E to work on the TYNDP are limited, the importance of running sensitivity analyses should not be underestimated.

**Sensitivity analyses should be performed for V3 and V4 to understand the implications of the key parameters** on the final architectural requirements of the European electricity grid, as well as the related costs and environmental impacts. The following are parameters we believe should be analyzed:

- a. Regional distribution of generation (both renewable generation and flexible conventional generation)
- b. Energy efficiency
- c. Storage
- d. Smart grids and role of distribution grids
- e. Demand-side management
- f. Management of production (capping the renewable peaks which should not reduce the overall amount of electricity produced from renewables)

If the effect of all parameters mentioned above cannot be studied in detail, we hope that the first 3 parameters would be considered.

If there is a lack of human resources to run the analyses, ENTSO-E could outsource those studies to specialised companies.

8. **No need for “Realistic visions”:** The goal of the TYNDP and the role of ENTSO-E is, among others, to facilitate the completion of the internal energy market, by coordinating and fostering better interconnections, and to ensure reliability of the system and security of supply. **The TYNDP should no longer focus on visions based on the non-achievement of these objectives.** We recognise the importance for ENTSO-E of presenting such a scenario but it cannot be considered a “vision”, nor be called “realistic”; it should rather be defined as “Business as Usual” or “reference”. Conversely, we feel that not all possibilities have been considered: an overachievement of the 2020 renewable energy targets should be part of the picture.



## General comments on the overall process

- The views of stakeholders have been sought for **only limited aspects** of the interconnections optimization methodology, e.g. how to adjust down thermal capacity, what should the model use as trigger to projecting new interconnector capacity, etc.
- Suggestions and comments from the workshop participants are normally focused on the overall approach, technology choices, policy needs, costs, implications for consumers, demand profiles and trends. However, these elements are mostly fixed and cannot be changed unless EU wide accepted methodologies and back-up data are provided by those making the comments. This is a significant barrier for the meaningful engagement of any stakeholder in the process.

## Proposals:

Stakeholders should be able to comment on:

- The **visions architecture** (how many visions, based on which parameters and on which objectives...)
- **ENTSO-E assumptions**
- **National correspondents' assumptions**, potentially through mid-consistency checks (to see whether they are in line with the political agenda, economic reality, technical feasibility)

Stakeholders' input at EU level should be gathered in the following way:

- It should be requested **when the visions are still being designed** and not when the visions architecture is already decided upon
- During the workshops, stakeholders should be asked to **comment upon the visions architecture and not on specific aspects of the visions**
- Stakeholders' consultation should be performed **through workshops and through a web tool**. It is not always possible for stakeholders to attend the ENTSO-E meetings and to provide data on the spot

To conclude, ENTSO-E should **clarify to stakeholders how their input is exactly being taken into account**<sup>5</sup>.

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<sup>5</sup> For example, it appears that despite the high numbers provided at the ENTSO-E workshop of April 2012 for PV additional installed capacities (> 600 GW in 2030 as maximum level), vision 3 seems to consider that only 227 GW of new installations will be added in the timeframe 2010-2030.



**GREENPEACE**



**The following organizations support this paper:**

- Birdlife International
- Climate Action Network Europe
- European Photovoltaic Industry Association
- European Wind Energy Association
- Friends of the Super Grid
- Greenpeace European Unit
- Third Generation Environmentalism- E3G

## **Contact Information**

Daniel Fraile Montoro  
[Daniel@canuerope.org](mailto:Daniel@canuerope.org)  
+32 4 95 12 85 73

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**Climate Action Network (CAN) Europe** is Europe's largest coalition working on climate and energy issues. With over 140 member organisations in 27 European countries, CAN-Europe works to prevent dangerous climate change and promote sustainable energy and environment policy in Europe.