Climate Action Network response to the ENTSO-E public consultation on Visions 2030

September 2013

Introduction

Climate Action Network Europe, representing over 120 environmental and development NGOs, welcomes ENTSO-E efforts to develop a long-term vision in line with the European initiatives on an energy and climate policy framework. Bridging the Ten-Year Network Development Plan (TYNDP) and the future planning of the European power grid with the European Commission's long-term energy vision for a decarbonized power system is of high relevance. We also welcome the efforts to increase stakeholder involvement in the process, making it more transparent, accessible and robust. Finally, we welcome the ambition of ENTSO-E to move away from a bottom-up methodology, based on national views in order to adopt a truly European and optimized approach.

We recognise that progress has been achieved in all these areas but we are concerned that current efforts still fall short of meeting EU policy renewable energy and climate objectives and expected stakeholder involvement. This response builds on concerns previously communicated in December 2012, explained in a joint-paper from industry and NGO representatives[1], comments made during three dedicated workshops organized in 2012 and 2013, as well as concerns expressed in the Long Term Network Development stakeholders group, where CAN Europe is involved.

This response also builds on the recently published data behind their 4 visions/scenarios, which can be found on the ENTSO-E website[2].

Based on these sources of input, there are a number of concerns and recommendation that CAN Europe would like to express during this consultation process, including the following:

Concern 1: The raw data provided to participants for the consultation doesn't provide sufficient information for a robust assessment.

At the workshops, results were presented with total electricity generated per technology (in GWh). However, the excel table in the consultation data only provides installed capacity per technology. Electricity demand is only presented in aggregated form. That information is key to understanding the capacity factor assumptions for RES and running hours for conventional generation.

Other data sets could also help consultation participants make better judgments on whether the assumptions for each of the visions are well reflected in the final figures. For instance, Vision 3 and 4 are supposed to provide a system with high efficiency. However, electricity demand is far too high (see next

[1] EWEA-EPIA-Climate Action Network-Birdlife-Greenpeace-E3G and Friends of the Supergrid joint position paper on ENTSO-E's 2030 visions, December 2012: http://www.climnet.org/resources/publications/position-papers/doc_download/2163-joint-response-to-entso-e-on-visions-2030-14-12-2012

[2] https://www.entsoe.eu/fileadmin/user_upload/_library/consultations/TYNDP_2014/130718_ENTSO-E_Consultation_on_2030_Visions.zip

point). If this is to be explained by a larger electrification of the heating and transport sector, data for those sectors should be provided.

CAN-E has requested ENTSO-E staff provide additional data for demand in other sectors, but it has not being shared, arguing that the scenarios are still being produced. This obviously doesn't facilitate the work and involvement of stakeholders in the consultation process.

Concern 2: Electricity demand is much higher in ENTSO-E scenarios than in any other long-term energy scenario.

The EC, in its Energy Roadmap 2050, foresees EU electricity demand between 3003TWh and 3252TWh for all its decarbonisation scenarios, with the lowest demand expected in the *high efficiency* scenario.

The IEA foresees electricity demand in the European Union of 3613TWh for their 450ppm scenario by 2030. Greenpeace expects electricity demand between 3485TWh and 3076TWh in 2030 for their reference and advanced scenarios respectively.

ENTSO-E, however, proposes electricity demand that goes from 3500TWh in Vision 1 up to 4200TWh in Vision 4 (see figure 1). This seems to be disproportionately high and not in line with any other long-term projections and research. This distortion could lead to wrong conclusions about the level of investment needed, as well as on the need for specific future power lines.

While power demand seems to be much higher in ENTSO-E than in any other forecast, it could be partially justified by high electrification of the transport and heating sectors. However, the ENTSO-E visions only provide data on the power sector and therefore it is not possible to evaluate whether electrification measures in other sectors such as transport and heating have been taken into account.

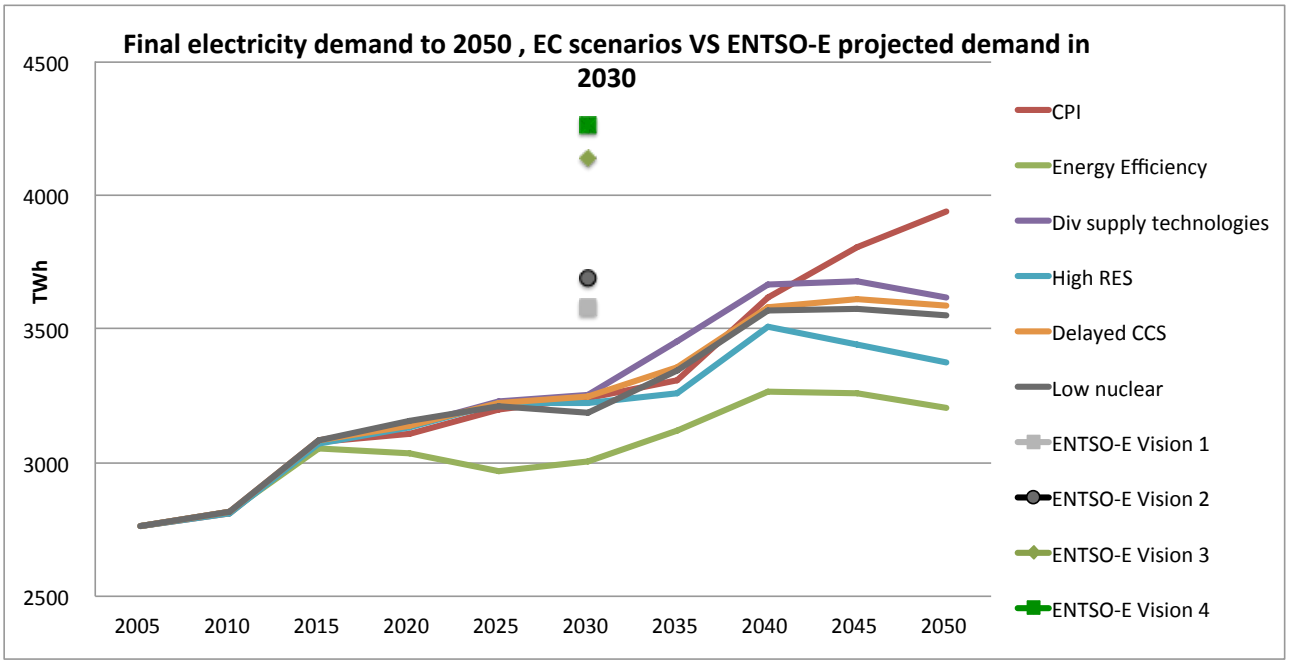

Figure 1. Electricity demand forecast in EC decarbonisation scenarios VS. ENTSO-E visions

Concern 3: Thermal power capacity remains quite similar across all scenarios and the larger penetration of RES is only justified through a significant increase in electricity demand (Visions 3 and 4)

The maximum difference in thermal power capacity among scenarios is in the order of magnitude of 25GW. The increase of RES penetration in Visions 3 and 4 is actually justified through a significant increase in electricity demand (see figure 2) and not through a displacement of existing generation capacity.

From the ENTSO-E presentation at the latest workshop (July 2nd), we can extract the following:

- Vision 2: total reduction of thermal capacity is 14 GW (out of the 485 GW installed thermal capacity in Vision 1). It is mainly gas (mostly in GB, DE, ES and IT)
- Vision 4: total reduction of thermal capacity is 14.5 GW (out of 522 GW installed thermal capacity in Vision 3). There are reductions in both gas and hard coal (mostly in DE, IT, NL and GR)

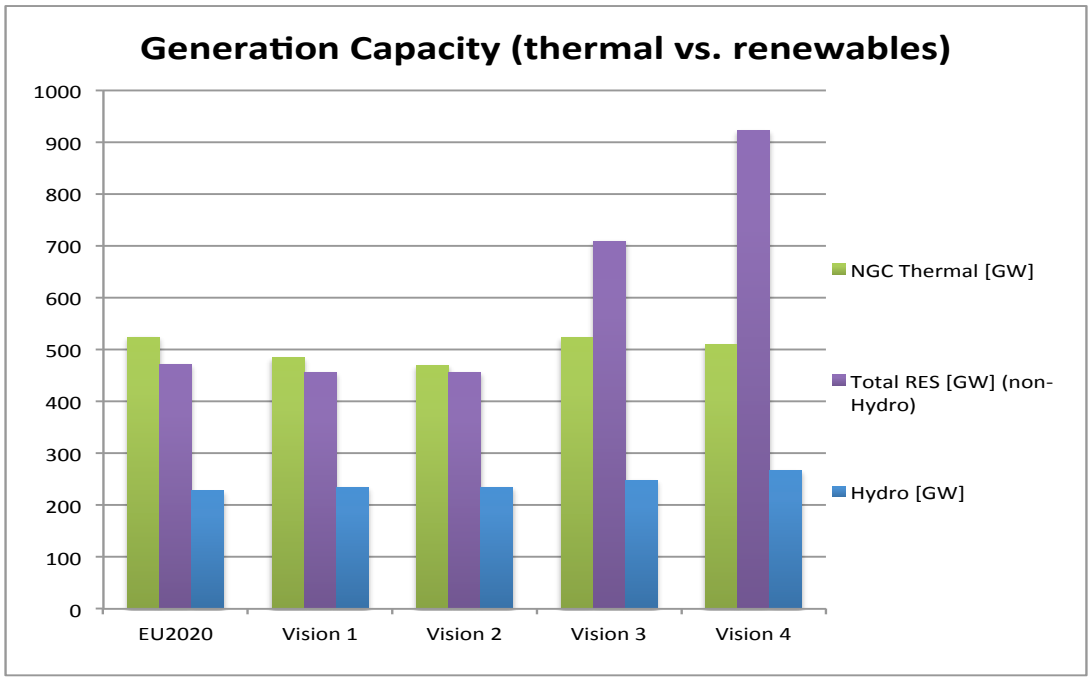

Figure 2. Thermal Capacity vs. RES capacity in 2030 in ETNSO-E visions

It is worrying that ENTSO-E has been unable to produce a single scenario where thermal capacity is significantly replaced by other renewable energy sources and where electricity demand remains constant or even decreases thanks to energy efficiency and savings measures.

Concern 4: Nuclear power capacity remains a constant across all scenarios, even those with a much higher penetration of variable RES.

The difference between scenarios is only of 5 GW (from 112GW in Vision1 to 107GW in Vision 3 and Vision 4).

EU nuclear generation capacity in 2010 was 127GW. In its Energy Roadmap, in 2030 the EC foresees 89GW of nuclear capacity in the high RES scenario, 62GW in the low nuclear scenario and 127GW in the reference scenario.

The integration of RES, their balancing related cost and the optimization of its contribution depend on the amount of inflexible generation in the system. A system with high nuclear and high RES will result in a more costly system, thus not reflecting the real economic potential of significant RES deployment in a flexible system.

ENTSO-E has been unable to produce scenarios that really provide a significant difference on the level of nuclear power, and thus they have failed to reproduce very different energy futures and visions.

Concern 5: The maximum contribution of renewable energy sources in all 4 scenarios is 50% by 2030. This value is not in line with any of the EC's decarbonisation scenarios, which foresee a RES share between 52 and 58%

The overall installed capacity of renewable energy technologies in all 4 ENTSO–E scenarios tends to converge with the levels presented in the EC Energy Roadmap 2050 (the installed RES in the EC's High RES scenario is 790GW, excluding hydro, while it is 709GW for Vision 4 of ENTSO-E). However, the maximum contribution of renewable electricity sources in all four ENTSO-E visions does not exceed 50% by 2030. This value is not in line with any of the Commission's decarbonisation scenarios, which foresee a RES electricity share between 52 and 58% by that year.

ENTSO-E should revise the overall RES share in the electricity mix to provide coherence with the carbon emission reduction objectives and trajectories identified in the 2050 Energy Roadmap.

Concern 6. There is a huge discrepancy between current and estimated future carbon prices, and the carbon prices assumed in the ENTSO-E modelling exercise

In order to establish a credible and transparent CO2 price assumption, ENTSO-E refers to the IEA 450 scenario in their WEO 2011, where a projected CO2 price of US$95/tonne by 2030 is presented. However, leading carbon price analysts see the CO2 price development not getting remotely close to the assumed IEA CO2 price level by 2030. A recent report from CE Delft points out at more realistic projection, based on a number of well known sources[3] and experts.

In view of recent development of CO2 prices and price development projections, it is therefore unlikely that CO2 prices will have any significant impact on investments in the EU power sector before 2030. This

[3] CE Delft, in their latest report on Carbon leakage suggest using average carbon price of 12€/tonne for 2020. The analysis include a Point Carbon poll with 12 expert analysts, it covers expectations from Oeko Institute and Bloomberg New Energy finance. The report suggests that the price will not increase significantly by 2030.

obvious discrepancy of the IEA 450 scenario CO2 price assumptions and current carbon market analyses should be urgently reviewed in the ENTSO-E visions and replaced by up-to-date CO2 price projections in line with those assumed by carbon market analysts.

Concern 7: A truly European-wide approach for visions 2 and 4 is still missing

Whilst Vision 1 and Vision 3 are constructed using a bottom-up approach (based on inputs from 'national correspondents' – experts), Vision 2 and Vision 4 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.

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[4].

Conclusions and general comments

We cannot understand how all four visions, which were originally planned to show four extreme and different future system architectures, are so similar to each other, especially in terms of thermal generation capacity. The level of fossil fuel and nuclear power generation capacity remain quite similar in all four scenarios. At the same time, we cannot find any reasonable argument to explain such high levels of electricity demand in any existing available materials (see explanations above).

This is specially worrying when trying to define a credible and acceptable "green vision", which should, at least, be in line with EU climate and energy policies and long-term objectives to reduce greenhouse gas emissions.

Failing to recognise the potential of energy efficiency together with a continuously high share of fossil and inflexible nuclear capacity will as a result undervalue the cost saving potential of large-scale RES deployment. Under these assumptions the "green revolution" vision will misleadingly render system operation and grid investment related costs overly expensive. Rather than model a system with a high share of nuclear alongside high shares of RES, ENTSO-E should capture the green scenarios the real economic potential of large-scale RES deployment. Consequently, a disproportionate dependence on the amount of inflexible generation should be discarded and assumptions of large shares of RES should be combined with high levels of energy efficiency and more flexible power system assets in general.

[4] For example, in their recently published report, the North Sea Countries' Offshore Grid Initiative (*NSCOGI*) found that co-ordination of offshore grids becomes ever more economically justified as levels of RES penetration increase.

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Climate Action Network Europe is Europe's largest coalition working on climate and energy issues. With over 120 member organisations in more than 25 European countries, CAN Europe works to prevent dangerous climate change and promote sustainable climate and energy policy in Europe.