



SUBMISSION TO CONSULTATION ON THE TEN YEAR NETWORK DEVELOPMENT PLAN (TYNDP) 2022 STORYLINES

Climate Action Network (CAN) Europe is Europe's leading NGO coalition fighting dangerous climate change. With over 170 member organisations from 38 European countries, representing over 1.500 NGOs and more than 47 million citizens, CAN Europe promotes sustainable climate, energy and development policies throughout Europe.

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With this submission, CAN Europe responds to the consultation on the storylines for the Ten Year Network Development Plan (TYNDP) 2022. This masterplan of European energy infrastructure planning is prepared every two years by the European transmission system operators for electricity and for gas, ENTSO-E and ENTSOG.

ENTSO-E/ENTSOG consultation questions:

4. ENTSOE and ENTSOG organised a webinar on July 3 2020 to introduce the TYNDP 2022 Scenarios. Did you attend this webinar?

X Yes

No

Do you feel this webinar provided sufficient information about the aims of the Scenario Building Team and the scenario-building process?

CAN Europe welcomes the transparent presentation during the webinar on 3 July 2020. We suggest to offer these kinds of easy accessible updates more often to allow civil society organisations to better understand the progress, the priorities and the results of your scenario building.

5. ENTSOE and ENTSOG has published a list of all bilateral meetings and all stakeholder questions (including answers) on the TYNDP Scenarios website. How satisfied are you with the level of transparency provided by the Scenario Building Team?

X Yes

No

Add any comments here

Compared to the previous TYNDP processes, the documentation has become more transparent, accessible and reader-friendly. CAN Europe welcomes that a list of stakeholder meetings has been published. We thank ENTSO-E and ENTSOG for the opportunities to exchange about scenario building and the TYNDP process bilaterally during the previous

months. (We however cannot identify any bilateral CAN Europe/EEB meeting with ENTSO-E and ENTSOG indicated in the list for 23 September 2020.)

6. How satisfied are you with the format and the level of explanation in the Storyline Report? (5 highest, 1 lowest)

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7. The main aim of the TYNDP Scenario Report is to create scenarios that can test the future development of energy infrastructure. To what extent do you feel these storylines provide a good overview of the challenges facing infrastructure development in the next thirty years? (5 highest, 1 lowest)

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8. To what extent do you feel the Storyline report provide a clear overview of the two storylines (i.e. presents the most important information, outlines similarities and differences in the storylines etc.)? (5 highest, 1 lowest)

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9. The TYNDP Storylines has defined ranges for key parameters (greenhouse gas emissions, technology development) based on information from external, publicly-accessible studies. How satisfied are you with this approach? (5 highest, 1 lowest)

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10. The EC LTS Scenarios 1.5LIFE and 1.5TECH consider between 2000 and 2900 TWh of bioenergy production in 2050. Do you feel that this is a realistic benchmark for sustainable bioenergy production? Please provide references for figures in your response. (5 highest, 1 lowest)

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Future TYNDP scenarios should increase transparency with regards to the carbon footprint of the different bioenergy carriers included. In order to bring about net climate benefits and reduce the strain on ecosystems, bioenergy use must respect certain sustainability criteria. Any increase of forest harvests needs to be excluded, more areas need to be left out of harvesting and only a maximum of 70% of residues should be available for energy use. For biogas production, dedicated energy crops except sequential crops should be phased out. Besides following the cascading principle, only waste and residues with climate benefits and no alternative use should be mobilised.

A quantification of the sustainable bioenergy potential building on these criteria is provided in CAN Europe/EEB: Building a Paris Agreement Compatible (PAC) energy scenario, June 2020. Bioenergy supply data stems from EEB: Burnable carbon. What is still burnable in a circular, cascading, low carbon economy? June 2017. Its maximum low risk biomass quantity suitable for energy use in 2030 is 798 TWh of solid biomass and 956 TWh of fermentable biomass respectively gaseous biomass (primary energy potential). By 2050, the PAC scenario assumes that only 533 TWh of biomass (primary energy supply) will be used.

11. Considering that currently published scenarios might not accurately capture the development of fuel cell electric vehicles, should at least one of the TYNDP scenarios include higher market shares?

Yes

X No

12. How appropriate is the technology selection chosen for the storyline Global Ambition? (5 highest, 1 lowest) Please explain in the comment section if there are certain technologies missing/wrongly included.

2

The most relevant energy supply technologies all seem to be integrated into the storyline Global Ambition, except ocean energy. Information about energy efficiency technologies and services is missing.

It is however not the technology selection but the magnitude of certain technologies that raises questions, in particular the important role for carbon capture and storage (CCS) technologies. The scenario storyline report itself mentions that the materialisation of its fast and broad roll-out depends on public acceptance. The technical and economic viability of CCS as well as of new nuclear capacities, bio LNG and hybrid heat pumps is far from being guaranteed. Against this backdrop, the Global Ambition storyline appears to be not well balanced in view of fast decarbonisation.

13. How appropriate is the technology selection chosen for the storyline Distributed Energy? (5 highest, 1 lowest) Please explain in the comment section if there are certain technologies missing/wrongly included.

4

The most relevant energy supply technologies all seem to be integrated into the storyline Distributed Energy, except ocean energy. Information about energy efficiency technologies and services is missing. CAN Europe welcomes the focus on local optimisation through mobilising domestic renewable energy sources and other available, mature technological solutions. The Distributed Energy storyline appears to be more realistic in view of achieving fast decarbonisation but should become a 100% renewable energy scenario.

14. In the TYNDP 2020 Storyline Report, general parameters were provided for consultation on a +/- basis. In the 2022 Storyline Report we have attempted to provide greater quantitative options. How satisfied are you with this improvement? (5 highest, 1 Lowest)

4

15. Are you satisfied with the range for the market share of electric heat pumps provided in the Storyline Report? If not, please provide clear references for figures in your response.

Yes

X No

A quick and strong increase of electric heat pumps is key for decarbonising the heat sector. From the data disclosed in the storylines report, it is difficult to deduce the total amount of heat supplied by heat pumps in the residential and tertiary sectors and in other

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sectors. CAN Europe recommends the Heat Roadmap Europe 4 as a reference for the potential of renewable heat sources and district heat networks. In the PAC scenario, we assume that the heat delivered by heat pumps in the residential sector reaches 417 TWh in 2030 and 544 TWh in 2050. This amount includes the ambient and geothermal heat captured by heat pumps and the electricity input for heat pump operation. In the tertiary sector, 157 TWh are supplied in 2030 and 319 TWh in 2050.

In relation to the final energy demand for space heating and hot water in the residential and tertiary sectors, the share of heat delivered by heat pumps lies in the upper part of the range indicated for 2030 in the storylines report. In 2050, heat supply from heat pumps in the PAC scenario could cover up to circa 90% of the final demand for space heating and hot water in the residential and tertiary sectors. In addition, the PAC scenario assumes that a minor share of low temperature heat demand in industry and agriculture also will be covered by heat pumps.

16. Are you satisfied with the range for the market share of hybrid heat pumps provided in the Storyline Report? If not, please provide clear references for figures in your response.

Yes

No

Given that there is a huge variety of technologically and economically viable alternatives to gas boilers as flexibility option for heating, CAN Europe questions the relatively high market share suggested in the storyline report. A continued dependency on fossil gas and its infrastructure might tend to make a fast decarbonisation more difficult and costly. It is not clear to what extent thermal storage and other flexibility options for the heating sectors are included in the storylines.

17. Are you satisfied with the range for the market share of district heating provided in the Storyline Report? If not, please provide clear references for figures in your response.

Yes

No

It is difficult to estimate in which sectors how much heat will be delivered through district heating networks because the storyline report only mentions a certain market share as percentage figure without indicating the reference.

The expansion of district heat networks is indispensable for ramping up the share of renewable heat while phasing out inefficient individual heating systems such as fossil gas boilers. In the PAC scenario, district heating network and renewable heat potentials are developed on the base of the Heat Roadmap Europe 4. Ca. 700 TWh of heat are delivered through district heat networks in 2030, ca. 1029 TWh in 2040 and ca. 935 TWh in 2050. District heating in the PAC scenario covers 24% of the space heating and hot water demand of the residential sector in 2030 and 76% in 2050. In the tertiary sector, 22% of the demand for space heating and hot water is covered through district heating networks in 2030 and 70% in 2050. In industry and agriculture, the shares of district heating are lower. The ranges of market shares proposed in the storyline report nevertheless appear to be very low in every respect. CAN Europe asks to foresee storylines with a more important role for district heating networks.

18. Are you satisfied with the range for the market share of electric vehicles provided in the Storyline Report? If not, please provide clear references for figures in your response.

Yes

No

In the PAC scenario, we assume that a very quick upscaling of the share of electric vehicles is key for the decarbonisation of the transport sector. Starting from Transport and Environment's Roadmap to decarbonising European cars, an accelerated market introduction will lead to a fully electrified fleet by 2040. In this regard, the ranges suggested in the storylines report appear to be too reluctant.

19. Are you satisfied with the range for wind energy provided in the Storyline Report? If not, please provide clear references for figures in your response.

Yes

No

Regarding the ranges for wind energy, we miss indicators on the role of offshore wind compared to onshore wind. Offshore wind is portrayed in a number of studies as the ideal electricity supplier for renewable hydrogen. While the Global Ambition storyline adopts a stronger role for offshore wind, it is at the same time focussing strongly on imports of gaseous energy carriers. It might appear to be more consistent to assume a minor role for offshore wind in the Global Ambition scenario if domestically produced hydrogen from offshore wind electricity also plays a minor role compared to the important imports. Storylines should reflect the European Commission's recently published Offshore Renewable Energy Strategy.

20. Are you satisfied with the range for the share of solar/PV energy provided in the Storyline Report? If not, please provide clear references for figures in your response.

Yes

No

The PAC scenario describes a faster upscaling of solar PV capacities. In the EU27, installed capacity will reach 1031 GW in 2030 and 1783 GW in 2050. Such a strong growth rate is not only possible but also needed in view of achieving net-zero emissions in the EU. The potentially disruptive element of ever cheaper self-consumption and battery storage technologies should be reflected in at least one storyline.

21. Are you satisfied with the range for the share of nuclear energy provided in the Storyline Report? If not, please provide clear references for figures in your response.

Yes

No

Except from a few ongoing nuclear power plants that are currently under construction, it is not realistic to expect any additional capacities. With higher shares of variable renewable electricity generation, economic attractiveness of existing capacities will decline while operation costs will rise. Investment in modernisation and maintenance costs are higher than the expected future income from wholesale markets. The likeliness that nuclear power will benefit from sufficient national support schemes is appears to be small and limited to a minority of Member States. Against this backdrop, an earlier and stronger decrease of

capacities is realistic. This should be reflected in the storylines. The PAC scenario assumes that a maximum of 41 GW of nuclear power capacities will be operational in 2030 in the EU27, followed by 13 GW in 2040 and a phase-out latest by 2045.

22. Are you satisfied with the range for the share of energy imports provided in the Storyline Report? If not, please provide clear references for figures in your response.

Yes

No

Information provided in the draft storyline report are not clearly quantified which makes it challenging to answer this question. An important share of methane imports in the draft storylines might entail fossil gas imports. Emissions from fossil gas imports and their associated infrastructure would make it difficult to achieve the net zero emission target in due time. As the Distributed Energy storyline prioritises the use of indigenous European energy sources, the assumed hydrogen imports do not appear to be in line with the overall narrative. CAN Europe reiterates its question about the economic viability of fossil gas imports for gas power plants with post-combustion CCS – in case this supply stream is maintained from the previous TYNDP (“decarbonised methane”).

23. Are you satisfied with the electrolysis capacity considered in the Storyline Report? If not, please provide clear references for figures in your response.

Yes

No

This question is difficult to answer because the draft storyline report does not indicate any quantified range of electrolysis capacities for the TYNDP 2022 storylines. All storylines should assume that hydrogen as a relatively expensive energy carrier will be channelled firstly towards those sectors that are the most difficult to be supplied directly with renewable electricity, namely energy-intensive industries such as steel and chemicals, aviation and shipping. CAN Europe suggests to clarify the assumed learning curves and cost reductions of electrolysers. In contrast to the previous TYNDP 2020 modelling, electrolysers should be fully integrated into electricity markets. It is important to improve transparency with regards to the location, the operation mode and the full load hours of electrolysers as these parameters influence the assessment of their potential benefits as a flexibility option.

24. Are you satisfied with the approach for modeling flexibility options provided in the Storyline Report? If not, please provide clear references for figures in your response.

Yes

No

CAN Europe welcomes that the TYNDP 2022 storylines pay more attention to the different flexibility options. Ideally, the TYNDP 2022 would illustrate the contribution of the different flexibility options to greenhouse gas emission reductions. It is important to fully mobilise the potential of ancillary services from renewable energy installations and different demand response schemes. Keeping fossil gas fired power plants as the default backup option in the electricity system would neither reflect technological progress in the area of ancillary services nor be compatible with the climate target.

The analysis should not exclusively rely on studies from TSOs and DSOs but also try to integrate aggregators’ expertise. It is not clear to what extent heat sector

flexibility options and thermal storage will be included in this exercise. Given that so-called hybrid heat pumps play a very important role in the TYNDP 2022 storylines, interaction of electric heat pumps with distribution grids in different European regions under different weather constraints should be modelled with sufficient granularity.

25. Do you have any additional comments?

CAN Europe would have welcomed the integration of one new storyline that describes a fully renewable energy system that is compatible with the Paris Agreement's 1.5°C target without relying heavily on CCS technologies and on nuclear power.

Although we value the attempt to strengthen the variation of the storylines compared to the previous TYNDPs, there are still inconsistencies. The differences in industry's high level driver "energy intensity", assuming a variation in its growth and raw material demand do suggest that the Distributed Energy storyline with its stronger direct use of renewable electricity leads to a lower raw material demand and to less growth. Independently from the energy mix, industry anyway will continue to improve its competitiveness, optimise the efficiency of its processes and mobilise its energy savings potentials. Against this backdrop, it appears to be more coherent to assume these high level drivers are similar. In contrast, it is surprising that the Distributed Energy storyline and the Global Ambition storyline with its higher importance given to gaseous energy carriers work with similar levels for small scale gas boilers in households.

We miss more substantial information regarding the energy demand in the draft storylines. Given the importance of reducing energy consumption, assumptions should be made clear. In order to be consistent with EU policies and targets, the storylines need to reflect how the energy efficiency first principle impacts the EU's energy system.

In view of data transparency, CAN Europe suggests to publish all data under an open data licence. In order to ensure comparability, for instance with National Long-Term Strategies of Member States, we request to publish also country-specific data for all storylines beyond 2040.