



SUBMISSION TO THE CONSULTATION ON THE ENTSOs TYNDP 2020 SCENARIOS

17 January 2020

Climate Action Network (CAN) Europe is Europe's largest coalition working on climate and energy issues. With over 150 member organisations in more than 35 European countries - representing over 40 million citizens - CAN Europe works to prevent dangerous climate change and promote sustainable climate and energy policy in Europe.

Question no. 1 to 3: Name, e-mail address, name of the organisation

Stakeholder engagement is an important part of the joint ENTSOE and ENTSOG scenario development process. The scenario building process aims to engage at multiple times within the process and in various ways, such as, physical workshops, online webinars and written consultation.

Question no. 4. Are you satisfied with the format and level of explanation?

- X Satisfied
- Unsatisfied

5. Are you satisfied with the level of stakeholder engagement during the joint ENTSO scenario building process?

CAN Europe is generally satisfied with the format and with the explanations provided during the ENTSOs' stakeholder engagement process around the TYNDP 2020. For climate NGOs, it is however often difficult to provide technical expertise on all details of energy infrastructure planning. In order to allow for timely preparation as well as for engagement of our member organisations, we suggest to publish clear timelines of the TYNDP process. In addition, a simple manual of TYNDP scenario building and modelling for non-experts could help to increase civil society's buy-in. An introductory webinar for TYNDP beginners would be welcomed.

6. Among the different engagement options, rank them in the order of your preference (rank from 1 to 4)

- 2 Physical Workshops
- 3 Webinars
- 4 Consultations
- 1 Bilateral Discussions

7. Are you satisfied with the format and the level of explanation provided in the Scenario Main Report?

- Unsatisfied
- No opinion
- Satisfied

While the document is very accessible and well-structured, comparison with other scenarios is sometimes difficult as installed capacities and electricity generation from different energy sources is not disclosed in detail. It would be good to explain what is the specific gas demand and what are the different sources of fossil and non-fossil gas supply in electricity, industry, residential, tertiary and transport sectors. Given the confusion about terms such as “decarbonised gas”, “green gas” etc., we suggest to add clear terminology and definitions. The electrification benchmark is illustrative. It however is not fully evident which direct and/or indirect uses of electricity contribute to the benchmark that indicates the level of electrification.

8. Are you satisfied with the format and the level of explanation provided in the Methodology Report?

- Unsatisfied
- No opinion
- Satisfied

CAN Europe would welcome more transparency with regards to the cost assumptions of biogas, biomethane, so-called decarbonised gases and power-to-gas technologies. We miss an overview of the different solid, gaseous and liquid bioenergy carriers as well as a broader explanation of the import rationale for different gases. Given that CCS plays a very important role in view of the scenarios’ alignment to the carbon budget, feasibility and market introduction of this technology should be assessed more in detail. Knowing that the TYNDP modelling includes detailed assumptions on demand profiles, it would be good to publish data on energy efficiency gains in the different sectors.

9. Are you satisfied with the format and the level of information provided in the Visualisation Platform/Data set?

- Unsatisfied
- No opinion
- Satisfied

CAN Europe welcomes this new platform as a helpful tool. Ideally, technology-specific figures and the national level would be added. CAN Europe generally advocates for covering all data related to EU energy infrastructure planning with an open data license to make data available for free re-use for all stakeholders.

10. The ENTSOs scenarios are built to be compliant with EU-28 2030 and 2050 targets as a minimum standard. Do you agree that ENTSO scenario should be built with a minimum standard?

- Yes
- Neutral
- No

If no, please comment why.

Minimum standard comment

In order to avoid any contradictions with EU and Member States' policies, energy infrastructure planning obviously needs not only to integrate the current minimum targets but also to anticipate the necessary increase in ambition levels towards the 1.5°C target of the Paris Agreement.

11. The ENTSOs introduced National Trends as the central policy scenario. National Trends is aligned with the draft member state National Energy Climate Plans (NECPs). Do you agree that member state NECPs should be used to develop National Trends?

X Yes
 Neutral
 No

12. Do you agree that the scenarios are consistent with their respective storyline central matrix?

 Yes
 No opinion
X No

If no, please comment why

In our view fossil gas should be phased out well before 2040. We notice that even though the matrix indicates that in the Distributed Energy storyline fossil gas is "not available" in 2040, it seems that this energy carrier still plays an important role in the scenarios.

13. Scenario diversity is essential when it comes to the assessment of the future gas and electricity infrastructure needs. In your opinion do the 3 scenarios cover a broad enough range of plausible pathways aiming to achieve 2050 EU-28 targets?

 Yes
 No opinion
X No

If no, please comment why

The little variations in the three scenarios do not offer policy makers a sufficient range of possible solutions. All three scenarios rely on high shares of fossil gas, show little difference in the rather modest renewable energy growth rates and keep an almost identical share of nuclear power in the electricity mix. All three scenarios expect important carbon removals with the help of CCS, an increase in bioenergy use as well as (fossil and/or non-fossil and/or so-called decarbonised) gas imports. In addition, there is almost no difference in emissions neither in reduction pathways presented in the three scenarios.

In order to anticipate necessary emission reductions in view of the 1.5°C target, one storyline should deviate from the consensus and assess a potentially 100% renewable energy supply, focussing on proven technologies that are already introduced in European markets. Variation on the demand side should be integrated by considering different gains in energy efficiency in all sectors. Scenarios should not exclusively rely on questionable options such as CCS. TYNDP storylines would gain in information value through at least one storyline that depicts Europe's energy landscape without being dependent on a potential breakthrough of the

abovementioned set of technologies. The recent IPCC Special Report on Global Warming of 1.5°C provides illustrative pathways which indicate very different pathways for policy makers to achieve the same objective. This could serve as an example for the variation of storylines in the TYNDP.

14. The COP21 Paris Agreement and IPCC Special Report 1.5°C provides evidence on the need for a carbon budget in the global effort to tackle the climate change. This is the first time ENTSOs have developed a carbon budget approach for the Distributed Energy and Global Ambition scenarios. Do you agree that using a carbon budget approach to scenarios is appropriate?

- X Yes
- No opinion
- No

Comment

CAN Europe generally welcomes that the ENTSOs integrated a carbon budget into the TYNDP modelling, following a highly appreciated exchange on methodological aspects of such an approach. We however expect that respecting the 1.5°C target is not guaranteed in the TYNDP 2020 scenarios.

1. As all the three TYNDP 2020 scenarios still entail a relatively high share of fossil fuels until 2040/2050, cumulative emissions reach 62.6 to 63.5 Gt CO₂ in 2050. This leaves an important gap compared to the 48.5 Gt CO₂ carbon budget. Huge parts of the needed emission reductions potentially would come too late between 2050 and 2100. Because of limited domestic action, Europe would need to secure imports of renewable or decarbonised energy carriers and/or international offsets as the helping hand.
2. Expectations on up to 17.4 Gt CO₂ of removals from LULUCF, CCS, BECCS and DAC after 2050 are built on sand. CCS, BECCS and DAC are not yet available at market scale – if ever. Important concerns about their environmental harm are not solved.
3. We finally have to raise doubts with regards to the generously high carbon budget as such. CAN Europe advocates for an equity approach instead of a per capita calculation of the EU’s carbon budget. The per capita approach ignores the EU’s historic responsibility for global emissions. It suggests EU citizens are on par with citizens of the Global South when it comes to burden sharing in emission reductions.

15. The Distributed Energy and Global Ambition scenarios aim at achieving a carbon-neutral EU-28 economy by 2050. Do you think the scenarios are helpful in identifying / assessing those challenges?

- Yes
- No opinion
- X No

If no, please comment why

While we acknowledge the robustness and transparency of the ENTSOs’ top-down storylines, they imply the prolonged use of fossil fuels, important carbon removals beyond 2050 and the further uptake of so-called decarbonised gases. Transport, aviation, high temperature demand and “hybrid heating” are key drivers of demand for gaseous energy carriers. For reasons of comparability, a higher direct use of renewable electricity in combination with progress in energy efficiency also should be assessed. Such a pathway might bring about comparable emission reductions with less technological and economic uncertainties.

Besides questions on the economic viability and technological feasibility of certain pathways, the continued use of fossil gas infrastructure would be linked with continued methane leakage along its life cycle.

What do you believe is the 1st biggest challenge? (50 Characters)

Achieving sufficient emissions reductions before 2050 through higher ambition in energy efficiency and domestic renewables.

What do you believe is the 2nd biggest challenge? (50 Characters)

Decarbonising energy-intensive industries and transport with available and most cost-efficient technologies.

What do you believe is the 3rd biggest challenge? (50 Characters)

Mobilising the broad range of flexibility options, e.g. demand response and prosumers, to interact in a beneficial way with energy infrastructure.

16. The ENTSOs scenarios have for the first time used a total energy balance tool to build the scenarios. The energy balance method allows a holistic overview of the future EU-28 energy pathways in a comprehensive and consistent manner. The total energy model provides an opportunity to capture the impact of sector coupling between the gas and electricity sectors. Do you agree that the ENTSOs' approach to sector coupling is sufficiently captured?

Yes

No opinion

X No

If no, please make suggestions on improvements that could be addressed in the next process.

CAN Europe supports the total energy balance tool in scenario building. We however fear that the benefits of sector integration are not fully explored yet. We ask to explore alternatives to the current approach of gas-fired power plants being presented as the (only?) automatic answer to balance variable generation of solar PV and wind turbines.

For the next TYNDP process we suggest to improve the cross-sectoral optimisation of infrastructure. This should provide an integrated assessment not only of existing infrastructure (electricity, gas, heat networks) but also of services such as demand response schemes and different storage technologies for electricity, gases and heat. The TYNDP modelling also should explore more in depth how transmission grids could be eased by better matching renewable supply and demand on the distribution grid level. In addition, we would welcome an analysis of higher electrification shares in the heating and cooling sector, in particular through modelling higher shares of electric heat pumps.

We see an important inconsistency with the sector coupling approach in the way how electrolysers are integrated in the TYNDP scenarios. The assumption that additional renewable capacities will not be grid connected prevents additional grid strain caused by load of new electrolysers. During times of excess electricity, these electrolysers then would not be able to ease grids by absorbing the oversupply. The benefits of this sector coupling technology for grid stability would be lost. Furthermore, economics might undermine it. If any renewable energy installation operates exclusively for supplying an electrolyser, the latter one might not achieve the necessary full load hours for producing economically viable hydrogen. The price of hydrogen would have to reach a level that fully refinances the renewable energy installation which would not have any other income. Finally, the geographical distance between the hydrogen production and the hydrogen demand raises questions with regard to additional infrastructure costs.

17. The ENTSOs scenarios use external data on LULUCF (Land Use, Land Use Change and Forestry) to provide input to the scenarios on carbon sinks. The scenarios also consider the development of “game-changer” net negative emission technologies, such as, Bioenergy Carbon Capture and Storage (BECCS). Do you agree that including external LULUCF and net-negative emission technologies within the scenario is appropriate?

X Yes

No opinion

No

If unsatisfied, please comment

As CAN Europe we believe that increasing the carbon removal capacity of nature through ecosystem restoration, while preserving biodiversity, can play an important role in achieving net zero emissions. Regarding our position on CCS, please see the comment on question no. 18.

18. To reach carbon neutrality by 2050, ENTSOs scenarios consider the deployment of Carbon Capture and Sequestration (CCS) for pre- and post-combustive processes. Do you consider CCS is an appropriate technology within the scenarios?

Yes

No opinion

X No

If no, please comment why

The technological and economic viability of CCS technologies remains highly questionable. CCS as such does not ensure net negative emissions but tries to remove carbon for a certain period in time. Betting on CCS to respect a carbon budget is postponing necessary action for implementing net emission cuts in time. Responsibility for urgent emission reductions should not be shifted to future generations. Against this backdrop, CAN Europe asks to develop at least one scenario that allows to reach the 1.5°C target without relying on CCS. If CCS will be introduced, this is more likely in pre-combustive processes. Post-combustive CCS for gas-fired power plants currently does not appear to be very realistic.

19. The Distributed Energy and Global Ambition scenarios consider different technology pathways to decarbonisation. The Distributed Energy is a scenario where renewable technology is deployed in a decentralised way. The Global Ambition scenario assumes a more globalised and centralised approach to development of renewables. One impact is the potential for more energy imports from outside of the EU. Do you agreed with how renewable energy deployment is applied and?

[The question in the online survey obviously is not complete.]

Yes

No opinion

X No

If no, please comment why

The TYNDP 2020 Distributed Energy scenario assumes up to 35% share of biomass, equalling ca. 4,000 TWh of primary energy. Such an increase in bioenergy use does not appear to be realistic, given high costs, partially

competing demand, sustainability restrictions and logistic difficulties to mobilise certain fractions of bioenergy potentials.

The share of solar PV is surprisingly low given that the Distributed Energy scenario storyline postulates a focus on the key role of prosumers. Solar PV as the technology being potentially the cheapest and most easily to upscale would only increase modestly from 2030 to 2040.

We welcome that the Distributed Energy scenario takes a less conservative approach with regard to installed capacities of wind power, compared to the TYNDP 2018 scenarios. In view of offshore wind potentials, more optimistic assumptions could be taken.

20. As a stakeholder, do you intend to use our scenarios, or do you see opportunities for further use of these outside the TYNDPs?

Yes

No opinion

X No

If yes, how would you consider them?

CAN Europe would continue to use the TYNDP scenarios as a reference if at least one storyline aims at the 1.5°C target without relying on technologies whose contribution to emission reductions is questionable, in particular CCS.

We generally would welcome an open source access for all underlying data.

21. If you have any further comments on the scenarios, please state them here.

At least one scenario could have operated with a higher CO₂ price level in 2040. While the Global Climate Action scenario in the TYNDP 2018 was based on 126€/t CO₂ in 2040, its successor scenario works with 80€/t CO₂ only. The fact that an important share of emission reductions is shifted beyond 2050 in the TYNDP 2020 scenarios reduces the pressure on carbon markets. If all post-2050 removals would be integrated in a pre-2050 carbon budget, the price of CO₂ would probably be higher and enable another choice of technologies for emission reductions. In that regard, potential drawbacks of the postponing element under the carbon budget should be analysed.

The infrastructure dimension of the energy efficiency first principle is missing in the TYNDP 2020 scenarios.

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