GOOD PRACTICES FOR DEVELOPING SCENARIOS IN VIEW OF THE ACER SCENARIO GUIDELINE

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.

AUGUST 2022

CAN Europe thanks the European Union's Agency for the Coordination of Energy Regulators (ACER) for the opportunity to engage in preparatory discussions about the upcoming Scenario Guideline for the Ten Year Network Development Plans (TYNDPs). Following the series of Scenario Guideline workshops in July and August 2022, we summarise in this submission our proposals for key principles that would improve substantially the quality of the TYNDP scenarios if enshrined in the Scenario Guideline.

During the past decade, the scenario building process for the TYNDPs has been driven primarily by the European Networks of Transmission System Operators for Electricity (ENTSO-E) and for Gas (ENTSOG), following their legal mandate. In view of the introduction of the new Scenario Guideline, CAN Europe sees an important potential for improving the quality and credibility of the scenarios. The TYNDP scenarios can only live up to their role as the masterplan for Europe's energy infrastructure if they **help to prepare the ground for an accelerated energy transition**. The scenario building must not prolong path dependencies on fossil fuels but spearhead the EU's way towards the Paris Agreement's objective of **limiting average global temperature increase to 1.5°C**.

1. Ensure an inclusive stakeholder engagement

An independent peer review for target alignment, against biased inputs

In order to integrate most up to date research, the process should allow for an independent peer review of the scenario building and modelling methodology. Involving a broader range of scientific and societal stakeholders into the definition of storylines from the earliest beginning would enable the TYNDP scenarios to **harvest the knowledge of the European energy and climate modelling expert communities**.

An independent review of the scenario building process could also provide **safeguards against biased assumptions and data inputs**. The current process might be driven by too technocratic voices while the planning of Europe's energy transition is much more complex:

scenario building is not just about society 'accepting the optimal engineering solution' but important values that need to be deliberated with different representatives from society: security of supply, affordability, nature protection, participation (economic and procedural), distributional justice. ACER and/or the newly established European Scientific Advisory Body for Climate Change (ESABCC) could be charged with these tasks, going beyond the remit of the ENTSOs.

For the consistency and timeliness of scenarios, we consider indispensable an independent assessment of key assumptions in view of their **compatibility with EU climate and energy targets** as well as potential **conflicts with other sustainability goals**. This exercise could also include a double-checking of the role of technologies and trends with regards to their readiness for a rapid roll-out as well as their relevance for achieving EU climate and energy targets.

Make the scenario building and modelling data more accessible

Social acceptance of an accelerated energy transition is key for its success. Without guaranteeing the acceptability of its planning process, the European energy transition is at risk. In order to improve the inclusiveness of the process, grid operators should make the scenario building and modelling data more accessible and easy to contribute. As the TYNDP scenarios have the role of the EU's masterplan for energy infrastructure, they are **a matter of public interest and require not only technical but societal scrutiny**. Whoever engages in the TYNDP process should not have to be a professional modeller or network operator staff to be able to join the debate about the EU's energy infrastructure masterplan. The ENTSOs as the entities leading the scenario building could facilitate the integration of stakeholders through targeted webinars, e.g. introductory briefings for newcomers.

Stakeholders should be enabled to co-shape storylines from the beginning. A broad range of scientific and other societal stakeholders need to be involved through **early invitations** and **constant updates** with accessible data and reports, following a **reliable and binding timeline**. CAN Europe considers the publication of all data sets under an **open data licence** as well as the use of **open source modelling software** as a prerequisite for an inclusive stakeholder engagement.

2. Increasing the transparency of scenarios

Free the data, free the models

CAN Europe 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. Only under this condition, the inclusive stakeholder engagement as described above can live up to its objectives. CAN Europe also suggests future TYNDP modelling to be run with open source software. Openness of models would not only increase transparency but also **encourage the sharing of innovative modelling approaches**, strengthen its quality and credibility by harvesting the expertise of the scientific community[1].

[1] see also the Open Energy Modelling Initiative's FAQs on why openness is important: https://forum.openmod.org/t/openmod-faq-for-people-new-to-open-modelling/1016

If the TYNDP scenarios are to keep their role as the most influential plans for future investment decisions, the TYNDP scenario building process needs to ensure that the most relevant **key parameters can be updated at any point in time** to reflect major political or economic changes that occur during the process. Besides its qualitative aspect, open source approaches also bear the potential to accelerate updates and to analyse sensitivities more easily. As highlighted recently in the ACER Opinion No. 06/2022, price assumptions for the TYNDP 2022 scenarios can be considered implausible. TYNDP scenarios need to be enabled to reflect quickly the fundamental changes in the EU's energy supply due to the fossil gas price crisis and the Russian invasion in Ukraine. Open source data and modelling could allow to replicate outdated scenarios with more recent key input parameters such as fossil fuel prices.

Assess benefits of sector integration instead of modelling in silos

Instead of modelling separately parts of gas and electricity infrastructure, all networks (e.g. including heat networks) and all levels (including the distribution grids) should be assessed consistently. The joint scenario building needs to be reflected in an **integrated modelling** that optimises scenarios towards net-zero emissions in the EU by 2040 in a fully renewable energy system.

We understand the current interlinked model of ENTSO-E and ENTSOG is being rooted in the cost-benefit analysis and not in TYNDP scenario building. It has a narrow project-specific perspective looking at quantitative challenges for gas or electricity infrastructure separately, but is not taking into account a more **holistic vision including the interplay of all potential flexibility options** (e.g. a more efficient use of existing infrastructure, demand response, different storage technologies, flexible renewable and non-renewable generation capacities).

We fear that a **broader cross-sectoral system optimisation** is not possible with this tool alone. TYNDP scenario building and modelling should however assess how the use of the broad range of flexibility options can contribute to achieving substantially higher climate ambition.

Provide clarity about data input and modelling choices

More transparency should be provided on cost assumptions of different energy carriers, technologies and services in order to allow for comparing them on par. The EU-wide or national policy constraints, political decisions and targets that inform assumptions need to be mentioned clearly in the scenario documents. The **comparability of key indicators of the TYNDP scenarios should be improved** to allow for an extended benchmarking exercise.

The **carbon footprint of different energy carriers and technologies** should be made transparent to better explain their contribution to net climate benefits. More detailed sources regarding the potential integration of energy efficiency technologies and services in TYNDP scenarios are needed. Detailed assumptions on renewable heating technologies are still missing and it is not clear to what extent thermal **storage and other flexibility options** for the heating sectors are included in the storylines.

Given that newly built nuclear reactors play a relevant role in the TYNDP 2022 Global Ambition scenario, indicators for investment costs and potential upgrading costs should be added in future scenarios with the same level of detail like for other electricity generation technologies.

3. Build scenarios that are truly compatible with Paris

Align scenarios with most up to date policies and targets

For CAN Europe, it is self-evident that all TYNDP scenarios should illustrate divergent pathways that are **all compatible with the 1.5°C objective and net zero emissions by 2040** to assess the variety of available solutions for emissions reductions. The level of ambition of the **RePowerEU package should be the starting point** of scenarios, reflecting the most up to date policies of Member States.

In order to be on the safe side with regards to its compatibility with the Paris Agreement's 1.5°C objective, CAN Europe recommends to not only assess the current range of targets under the 'Fit for 55' package but also the emissions reductions trajectories needed to make the EU **'Fit for 1.5°C'**. In view of the timeliness of data and policy objectives, the storylines should not fall back on completely outdated National Energy and Climate Plans (NECPs) or on divergent and inconsistent data feed-in from national TSOs.

Integrate a meaningful carbon budget

From a methodological perspective, applying the carbon budget approach is the most robust instrument to assess whether a scenario is in line with the 1.5°C objective of the Paris Agreement. ENTSOs have integrated for the first time a carbon budget as a threshold for the cumulative greenhouse gas emissions of the scenarios in their TYNDP 2020 Scenario Report.

However, the carbon budget allocated to the TYNDP scenarios is rather generous compared to most recent research[2]. Moreover, the current TYNDP scenarios allow for relatively high greenhouse gas emissions before 2050. As a matter of fact, the **current TYNDP scenarios overshoot the carbon budget** in the early 2030s. They then would only theoretically respect the Paris Agreement's 1.5°C threshold if disproportionately strong emissions reductions and carbon removals come into play very quickly. All the TYNDP scenarios also bet on the **quick roll-out of carbon removal technologies** such as Direct Air Capture, Carbon Capture and Storage (CCS) and bioenergy with CCS whose readiness and availability remains questionable.

As a cost and feasibility analysis of the required carbon removal technologies is lacking, the consistency and credibility of the carbon budget approach in this case appears to be undermined. Future scenario building should integrate most recent findings on how the EU can respect the 1.5°C objective in order to ensure that the modelling identifies optimal 1.5°C compatible pathways, **excluding a massive overshooting or a disproportionate reliance on carbon removal technologies**.

[2] Climate Analytics: 1.5°C Pathways for Europe: Achieving the highest plausible climate ambition, October 2021, https://climateanalytics.org/publications/2021/15c-pathways-for-europe-achieving-the-highest-plausible-climate-ambition/; Climate Analytics: 1.5°C pathways for the EU27: accelerating climate action to keep 1.5°C alive, September 2022.