TotalEnergies answer to the Elia public consultation on the investment plan for the Flemish Region for the period 2025-2035

TotalEnergies would like to thank Elia for this consultation on the investment plan for the Flemish Region for the period 2025-2035.

TotalEnergies has been informed about this public consultation quite lately in the process and we were still involved in the last stakeholder workshops, whereas several remarks and points have been addressed that are also part of this comment note.

In general, as TotalEnergies, we are positive about the initiative as such. It is important to align the infrastructure for electricity and hydrogen and long term scenarios being established.

We would appreciate to be kept in the loop regarding further deployment of the scenarios described in this paper. We are also willing to comment and explain our different points and remarks.

Remarks on the scenarios and assumptions

- **PV installed capacity :**

  As you addressed during the workshop, the potential of approximately 100 GW is based on the BREGILAB project which assessed the potential of PV on rooftops for Belgium. The Central scenario proposed assumes a growth rate of around 1 GW, while the 'Local' scenario would consider a doubling of this rate. A remark was given during the workshop that today we have an average of 4.5 kW system on each house. In 2050, we have 4 million houses in Flanders which would give for residential 18 GW. The values you are proposing are in our opinion nevertheless high. Even if there there are potential applications elsewhere (also small companies' roofs, industries, parkings…), we also think that in many cases PV's won't be possible :

  - Shadow of buildings on neighbouring roofs excluding an effective PV installation;
  - Older roofs that can't support the charges due to the PV panels and that might be damaged during installation due to the age of the rooftop.
  - Depending on ATEX zoning in chemical and other industries, installation of PV's on rooftops could be not feasible;
  - Distances between rooftops and electrical substations (transfo, cable distances,….);
  - Covering of parking lots with PV's is expensive and economically not viable seen the infrastructure costs to support the PV's that has to be build.

  A closer look at the hypotheses taken for the non residential applications is needed.

- **Batteries :**
    - The average size for home batteries will increase. The average size of the installations in the future will be higher than 4,5 kW. Probably 9-10 kW for all batteries. There's a link with dynamic pricing: the stipulations will be much higher than a linear assumption increase. You are underestimating by keeping that installation size by 2050.
    - Part of the EV to perform V2G should be included. First tests are being realised.
- **Large scale storage :**

  There is engineering ongoing to create new capacity of pumped storage in Belgium. The pump storage capacity will not stay flat. It will at least have a 50% increase.

- **Decentralised CHPs, biomass and waste CHPs :**

  Why decrease the capacity of CHP if you still consider it in the demand scenarios? And e-boilers running in parallel with CHPs is a good combination so not so much decrease in the CHP capacity in the near future.

- **Nuclear :**
    - A recent report indicates that the Tihange 1 nuclear reactor does not meet Belgian safety standards, making its extension nearly impossible. Engie has no willingness or intention to prepare a plan to make the extension of the Tihange 1 nuclear reactor possible. ON the contrary, they introduced a demande to the FNAC to stop and dismantle Tihange 1. While there's an agreement to prolong Tihange 3 and Doel 4 for ten years, there are no current plans for any further extensions beyond that.
    - It is up to the authorities to indicate what scenario to use for developing the grid.
    - Considering developments in other countries, It is highly probable that Belgium will construct potentially new nuclear plants.
- **Combined Cycle Gas Turbines, Open Cycle Gas Turbines and Turbojets :**

  The old capacity should also be hydrogen-fired in a net-zero context.

- **Electricity reservations :**

  The electricity reservation system urgently needs to be revised in order to avoid reservations that will last forever without being realized. It is of utmost importance to get a clear view on the permanent reservations that will be needed in order to avoid that forecasts are made based on virtual needs and not on the real needs.

- **<u>RED III Transport:</u>**

  The 0,6-1-1,4 TWh of hydrogen as publised in the data table for refineries is too low. The implementation of the REDIII transport target will be mostly realised through the use of hydrogen in refineries.
  The current ambitions of the sector – to be confirmed in the specific targets for refineries- are to consume 70-100 kton of H2 in refineries by 2030, which is 3-4 TWh and this can increase to 200 kton later on (6-8 TWh).

  Also related to the use of hydrogen in refineries, we don't understand the red cross in the column of process industry p. 127. Use of decarbonised molecules in refineries is an important pathway.

  RED III considerations for 2030 targets: Are the transport and shipping ambitions outlined in RED III, including sub-targets and associated fuel volumes for 2030, integrated into the scenario development?

- **CCS/CCU :**

  The electricity consumption related to CCS is not included in the electricity demand shown figures but it potentially represents a considerable part in the future developments that will be needed, in particular in the Antwerp region that is already congested. In both Flanders and Wallonia, CCS is indispensable to decarbonize hard-to-abate sectors such as cement, steel, lime, and petrochemicals. Beyond reducing emissions, CCS delivers broad economic benefits: it anchors industrial employment, drives investment in future-proof infrastructure, and positions Belgium to help shape the continent's CO_2 transport and storage systems. Over time, this infrastructure and value chain could also serve as a foundation for developing Carbon Capture and Usage (CCU) applications and enabling a circular CO_2 economy, further boosting industrial innovation and value creation. As a conclusion, it should clearly be included.

- **Haber-Bosh potential additional capacity & energy production :**

  Even in the long term, shipping ammonia from other countries will be much more economically interesting than using Haber-Bosch from low carbon H2.

- **Overview of draft proposed molecules supply scenarios for Belgium in 2030 :**
  Figures are low on the demand side for hydrogen in 2030. You give a view here where it seems we are oversupplied by hydrogen but that's not the case. Based on REDIII, numbers for H2 should be higher. 32% of all hydrogen is used not as energy but as feedstock must be low carbon/green."