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EU Taxonomy: Gas power generation as Transitional Activity

EUTurbines proposal for the complementary climate delegated act

EUTurbines recommends including 2 transitional activities for power generation and cogeneration with gas:

- *for the fast replacement of the remaining coal and lignite power plants in Europe*
- *for the transition from fossil to renewable and low-carbon gases for use in gas power plants that provide grid stability via flexible generation*

Additionally, the recognition of blended renewable gases in the climate delegated act is proposed.

The recommended solutions support the transition to climate-neutrality in line with the EU's climate ambitions. The criteria and thresholds follow a "science-based" approach, aligned with the criteria for transitional activities outlined in the EU Taxonomy Regulation and the thresholds mentioned in the climate Delegated Act for sustainable activities.

1. Recognising the replacement of existing solid fossil fuel plants by efficient gas power or cogeneration plants as transitional activity

Reasoning:
To realize the ambitious 2030 climate targets, an accelerated replacement of the remaining coal plants is mandatory. Where feasible, zero-carbon renewables should be deployed as much as possible. However, the available alternative technologies for countries with a considerable share of coal and/or lignite power generation are limited and relying on a renewables-only strategy not feasible.

Replacing coal power plants with flexible and efficient gas power plants immediately reduces the related GHG emissions more than 50%, an important step to reach the 55% reduction target for 2030.

A sunset clause that requires the new gas plants to start their operation the latest in 2030 would ensure that the replacement decisions and by this the transition will not be unduly postponed.

Over time, renewable and low-carbon gases will become available in larger quantities. As a consequence, emission limits for the years to follow can be further reduced stepwise.

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www.euturbines.eu
info@euturbines.eu

European Association of Gas and Steam Turbine Manufacturers
President
Prof. Dr. Thomas Thiemann
Secretary General
Ralf Wezel

Boulevard A. Reyers 80
1030 Brussels
Belgium
Phone +32 2 706-82 12
magdalena.kurz@euturbines.eu

Lyoner Str. 18
60528 Frankfurt/Main
Germany
Phone +49 69 66 03-19 36
patricia.seizer@euturbines.eu

Meeting the requirements for transitional activities defined in the EU Taxonomy Regulation:

- **Supporting the transition to a climate-neutral economy**
  - The immediate replacement of the remaining coal and lignite plants drastically reduces GHG emissions. The transitional activity is limited to the replacement of an existing power plant (power only or cogeneration) using solid fossil fuels and a minimum one-time reduction of GHG emissions per kWh through the replacement of the plant required.
  - The faster the replacement takes place, the bigger the impact. Introducing a sunset clause ensures that the investment decisions are taken within the next years.

- **No lock-in of carbon-intensive assets**
  - By requiring the plant to be technically suitable for the operation with renewable gases and/or low-carbon hydrogen ("H2-ready") and thus capable to switch as soon as these are available in the quantities needed
  - By incentivising the switch in operation to renewable and low-carbon gases through a progressive reduction of the allowed emission aligned with the growing availability of these gases

- **Not hampering the deployment of other low-carbon technologies**
  - No other generation technology can fully replace the coal plants in the short-term. By limiting this transitional activity in scope and time, the impact on other technologies is negligible.

- **Best-in-class performance**
  - By requiring the installed technology to fulfil the energy efficiency requirements for new units as defined in the BAT conclusions for Large Combustion Plants ((EU) 2017/1442)

- **Credible path towards climate-neutrality**
  - By defining decreasing GHG emission budgets over time, leading to a climate-neutral operation and meeting the EU Taxonomy threshold for sustainable activities. This will be achieved through the decarbonisation of the gas supply.
  - By requiring all plants to meet the "do no significant harm" threshold of 270g CO2e/kWh mentioned in the first climate Delegated Act, by a date when adequate quantities of hydrogen and other climate-neutral gases can be expected, a suitable blending of renewable and natural gas is allowed.
  - By requiring that by 2045, the 100g CO2e/kWh threshold defined for sustainable activities (or alternatively the equivalent annual GHG budget) is met.

2. Recognising the transition from fossil to renewable and low-carbon gases for gas power & cogeneration plants that provide grid stability via flexible generation

Reasoning:
A renewable energy system dominated by variable renewables needs dispatchable back-up generation capacity to ensure the system's resilience, especially during longer periods of non-availability. Gas power plants are a suitable option that are on the path to being fully carbon-neutral through the growing use of renewable and low-carbon gases.

The main role of gas power and cogeneration plants in Europe's future energy system will be the complementary generation that only feeds in when there is not sufficient electricity generated from variable renewable sources. This means that these plants will not operate steadily over the year.

The evolution of gas power and cogeneration plants leads to a reduction in GHG emissions due to two factors:

- The growing replacement of natural gas in the gas grid by hydrogen and other renewable and low-carbon gases. This is driven by the upcoming gas market reform and the efforts to boost the hydrogen supply.
- A growing availability of other flexibility sources like demand-side management or large-scale batteries that will reduce the use of gas power plants to longer supply gaps and thus reduce their annual operating hours.

Today's new efficient power-only plants have direct emissions between 350 and 500gCO2e/kWh when using natural gas – depending on the size of the plant. The life-cycle approach of the EU Taxonomy includes GHG emissions along the natural gas supply chain. The target is to operate the plants with renewable and low-carbon gases by 2045 at the latest, while still providing the needed resilience to the system – thus making the activity sustainable as described in 4.7 and 4.19 of the first climate Delegated Act. The principal limiting factor in the pace of this transition is the availability of the renewable and low-carbon gases and other flexibility options.

The GHG emissions threshold of 100g CO2e/kWh for power generation (used in the climate Delegated Act) assumes an almost constant operation of the plant over the year as well as over the full lifetime of the plant. These assumptions are inconsistent with the expected non-steady operation in a renewables-dependent system and should be replaced by a solution that better reflects realistic operational schemes.

An annual GHG emission budget would mirror this better than a threshold per kWh. Taking the threshold of 100g CO2e/kWh defined by the first climate Delegated Act as criteria for a sustainable generation, an annual emission budget of 876kg CO2e per installed kW (100gCO2e/kWh x 8760hrs per year) would be sustainable and in line with the climate policy of the EU. The complementary climate Delegated Act should include this annual GHG budget amount as the reference for evaluating gas power plants operating as flexible capacities.

Meeting the requirements for transitional activities defined in the taxonomy regulation:

- **Supporting the transition to a climate-neutral economy**
  - By defining annual GHG emission budgets instead of hourly thresholds that allow the plants to operate whenever they are needed to ensure grid stability but, at the same time, limit the number of operating hours via the emission budget. This supports the integration of more variable renewables, while ensuring a resilient energy system and operating only in times when the variable renewables cannot match the electricity demand.

- **No lock-in of carbon-intensive assets**
  - By requiring plants to be technically suitable for the operation with renewable and low-carbon hydrogen (H2-ready) and thus capable to switch as soon as available in the quantities needed.
  - By incentivising the switch in operation to renewable and low-carbon gases through a progressive reduction of the GHG emissions, in alignment with the growing availability of these gases.

- **Not hampering the deployment of other low-carbon technologies**
  - The accelerated deployment of further variable renewable generation is supported by ensuring a dispatchable, affordable and climate-friendly back-up. For longer supply gaps, other flexibility options for the energy system are not meeting the needs at scale

- **Best-in-class performance**
  - By requiring the installed technology to fulfil the energy efficiency requirements for new units as defined in the BAT conclusions for Large Combustion Plants ((EU) 2017/1442).

- **Credible path towards climate-neutrality**
  - By decreasing the GHG emission budgets over time, leading to a climate-neutral operation and meeting the EU Taxonomy threshold for sustainable activities.
  - The annual amount equivalent to a daily emission of 100g CO2e/kWh to be the limit when adequate quantities of hydrogen and other renewable and low-carbon gases can be expected to allow a suitable blending of renewable and natural gas.
  - By requiring all plants to meet the "do no significant harm" threshold of 270g CO2e/kWh mentioned in the first climate Delegated Act, by a date when adequate quantities of hydrogen and other climate-neutral gases can be expected, a suitable blending of renewable and natural gas is allowed.

3. Including blends of renewable gases with small shares of other gases in activities 4.7 and 4.19 of the EU Taxonomy Climate Delegated Act that stay below 100g CO2e/kWh

Reasoning:
The climate differentiator is the threshold, regardless of the source of the fuel. The threshold of 100g CO2e/kWh is formulated as a general threshold for the power sector with regard to climate considerations. Any gas composition like a blend of renewable or bio-based fuels with a small share of non-renewable fuels that stays below the threshold must be treated equally. The specific limit value of 100g CO2e/kWh avoids that fossil gas can meet the threshold.

Proposal:
Delete the words "renewable" and "non-fossil" in the titles of 4.7 and 4.19 of the EU Taxonomy Climate Delegated Act as well as in the description and technical screening criteria.

About EUTurbines:
EUTurbines is the only association of European gas and steam turbine manufacturers. Its members are Ansaldo Energia, Baker Hughes, Doosan Skoda Power, GE Power, MAN Energy Solutions, Mitsubishi Power Europe, Siemens Energy and Solar Turbines. EUTurbines advocates an economic and legislative environment for European turbine manufacturers to develop and grow R&I and manufacturing in Europe and promotes the role of turbine-based power generation in a sustainable, decarbonised European and global energy mix. For more information please see www.euturbines.eu