RTE's forecast assessment of electricity supply- demand adequacy

Uniper's Contribution

1. General remarks

- **General remarks on the scenarios:**

RTE proposes to analyze 4 demand scenarios and 4 supply scenarios over the horizon 2035 based on mixed studies. This method is relevant to explore all the possible trajectories, with high and low scenarios, that best reflect the possible evolution of the power mix, the uncertainty factors on economic and technological challenges, and that integrates the microeconomic feedback loop.

In the RTE's adequacy assessment, each supply scenario will be associated to a demand scenario. However, if we match all the scenarios above, we would get a total of 16 scenarios. But the RTE's adequacy report will actually stimulate a total of 4 supply-demand scenarios (instead of 16 scenarios).

We agree with the fact that retaining 16 scenarios could be inconsistent from an operational viewpoint but also regarding the matching between some assumptions. However, it is not relevant to consider that only one demand scenario could match with one supply scenario. So, elaborating the adequacy analysis on only 4 supply-demand scenarios is not relevant.

Moreover, RTE should explain and justify how they intend to match the demand scenarios with the supply scenarios.

- **General remarks on the reference costs:**

PÖYRY, ABB may be able to provide external references for fuel and CO2 costs.

2. Supply scenarios by type of energy

2.1. Onshore wind

- Uniper considers that the assumption of an onshore wind capacity of 52 GW by 2035 is too high. To achieve this level of capacity, it is necessary to double the rate of deployment compared to historical data and the forecast for the next 3 years, which seems to be unrealistic.

- Concerning the cost, Uniper considers the current reference costs proposed are too high and that costs reduction are expected to be more important by 2035.

2.2. Solar

Uniper considers that the rate of cost reduction is too aggressive for ground-mounted PV and industrial rooftop.

2.3. Self-production:

RTE's assumptions are based on economic and sociological criteria but don't take into account the target volumes set by the public authorities. The development of self-production in France is just at a beginning phase and supported by public policies. A first call for tenders has already been launched in 2016 and following up the law n°2017-227 of 24 February 2017 ratifying the order for self-production of July 2016, a new call for tenders for a total of 450 MWc is launched for the next three years. In the absence of return on experience, RTE should include in minimum the public volume targets (through call for tenders) in its self-production scenarios and complete them with economic and sociological criteria.

2.4. Hydro

Uniper considers that the capacity assumptions for hydro seem realistic.

2.5. Bioenergy

Uniper considers that the capacity assumptions for bioenergy seem realistic.

Uniper considers that the cost assumptions for bioenergy may be too high.

2.6. Nuclear

RTE assumptions take into account the 50% target within the power mix defined in the energy policy but does not consider that this target is defined for 2025. So introducing a 50% target for 2035 is not aligned with the energy policy (energy transition law and PPE).

As this adequacy assessment should include at least a scenario completely aligned with the energy policy, RTE should analyse a scenario with an evolution of the power mix from 2025 to 2035 of the nuclear share (nuclear share of less than 50% in 2035).

Moreover, RTE should explicitly define the evolution of the nuclear fleet taken into account in each scenario.

Lastly, a scenario of 50% nuclear power in the generation mix would require high levels of transparency about the replacement generation capacity assumptions to ensure the transition is viable and does not cause security of supply issues in practice.

2.7. CCG

- RTE scenarios consider a minimum CCG capacity of 1.2 GW, which corresponds to Landivisiau and DK6 plants. Additional volume is taken into account only in case maintaining or installing other capacities is profitable. However, this assumptions considers that security of supply could be achieve with only 1,2 GW of CCG. In a context where storage is not a mature technology, this assumptions is not realistic. In fact, a scenario with a very low level of CCG capacities is only realistic if the cost of storage needed to manage the intermittency of RES is lower than the cost of flexible power gas capacities. The economic study made to define the volume of CCG installed should take that aspect into account.

- Uniper considers that the capex considers in the reference cost are too high.

2.8. Coal

RTE considers that a maximum coal capacity of 1,8GW could remain in the power system in 2035. This assumption is not consistent with the objective of PPE and the energy policy that sets the end-use of coal generation by 2023. However, this adequacy assessment should include at least a scenario completely aligned with the energy policy.

2.9. Gas-fired cogeneration

- The deployment assumptions on Gas-fired cogeneration should be only based on economic criteria as for the CCG.
- Moreover, Uniper considers that the assumption of 12 GW of gas-fired cogeneration is too high.

2.10. Storage and DSM

- Consistency of assumed scenarios on storage and flexibility should be ensured and scenarios should be aligned with development in neighbouring countries.
- The study from the European Commission on downstream flexibility, price flexibility, demand response and smart metering could be an interesting additional source of information.
- Values for potential DSM capacities and activation costs mainly seem to be in the range of other studies. However, annual fixed costs seem to be rather high.

2.11. Power to gas

Efficiency of 75% for electrolysis is rather high but not unrealistic for 2030. Efficiency including methanization should be below, and parts of variable OPEX (excluding power) highly dependent on regulatory framework.

3. Demand scenarios

3.1. Socio-economic framework

Uniper agrees with population development; however, number of households implies aggressive shrinking of average household size in the median scenario.

3.2. Residential sector

- Uniper has a high doubt on the relevancy of the assumptions on the development of heat pump.
- Uniper agrees with the expectations on energy performance of the buildings.
- Uniper considers RTE should consider more competition from other sources, especially solar for heating water.
- Concerning the Information and communication technologies, it will be possibly difficult to make a clear cut distinction between TV and tablet pc by 2035; a decline equipment rate of TVs (or large screens) seems to be questionable, especially as the number of gaming consoles seem to grow (we would expect a p.a. increase of TVs of 1-2%). RTE should explain the path from current rates to expected 2035 targets. Moreover, RTE should take into account not-yet-developed ICT equipment that would appear by 2035. In fact, power demand in the residential sector historically has been driven by small appliances and new developed appliances.

3.3. Tertiary sector

- Uniper agrees with the assumption of a deployment of 100% DEL lights in 2035. However, we could expect that most efficiency gains will be materialized before 2020. Improvement of technics is leading to 20/25% DEL energy consumption but most efficiency improvements will be already materialized before 2020 (total additional potential ~10-15%).
- Concerning the impact of ICT, we agree with the assumptions taken into account as we could expect strong impact (as it has happened over the past years as well).
- Uniper expects local data centers to grow together with financial services (could increase due to BREXIT effects), but a factor 3 seems a bit high as large scale data centers tend to agglomerate in northern Europe.

3.4. Demand scenarios

- Uniper considers that investment into energy efficiency will be more related to interest rates than economic growth.
- RTE should analyze the expected impact on climate change of each scenario.
- RTE should explicitly define in each scenario the volume of self-consumed energy. This volume will be different depending on the socio-economic framework, the energy policy and the capacity of investment in decentralized capacities. It should be transparent and justified and the impact on the power flows into the grid should be explained.

- Lastly, the 3D printing may have an impact on the development of decentralized generation and self-consumption. RTE should take that aspect into account.