entsog
european network
of transmission system operators
for gas

TEN YEAR NETWORK
DEVELOPMENT PLAN **2015**

TYNDP 2015

ANNEX C5

EVOLUTION OF DEMAND AND SUPPLY SCENARIOS

ENTSOG – A FAIR PARTNER TO ALL!

Evolution of demand and supply scenarios

In this Annex, the scenarios of TYNDP 2013–2022 and TYNDP 2015–2035 are compared in order to help the understanding of the change in the visions of the future.

1 Gas demand scenarios

1.1 ANNUAL GAS DEMAND

1.1.1 Final annual gas demand

Compared to the 2013 TYNDP edition, final gas demand projections tend to be more conservative with lower figures throughout the whole period. This maybe a result of TSOs taking into account the ongoing economic crisis, which has been longer and deeper than generally expected. The difference ranges between -2 % and -3 % for Scenario A and between -3 % and 5 % for Scenario B. In the TYNDP 2013 the trend was almost flat over the whole period, whereas TYNDP 2015 projections decrease representing a change of -8 % in Scenario A and -4 % in Scenario B.

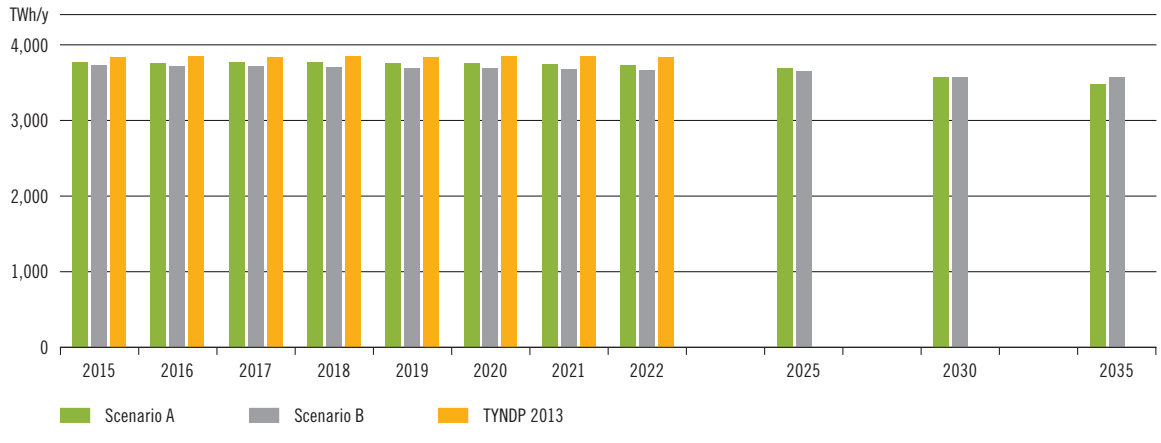

Figure 1.1: Comparison of annual final gas demand between TYNDP 2015 and TYNDP 2013

1.1.2 Annual gas demand for power generation

Based on the feedback received after the publication of the TYNDP 2013, ENTSOG has developed an enhanced approach for the assessment of power generation. Instead of analyzing a single projection, a range of scenarios based on ENTSO-E data is now assessed taking into account uncertainties within this sector. Power generation projection from TYNDP 2013 is in the upper part of the TYNDP 2015 range.

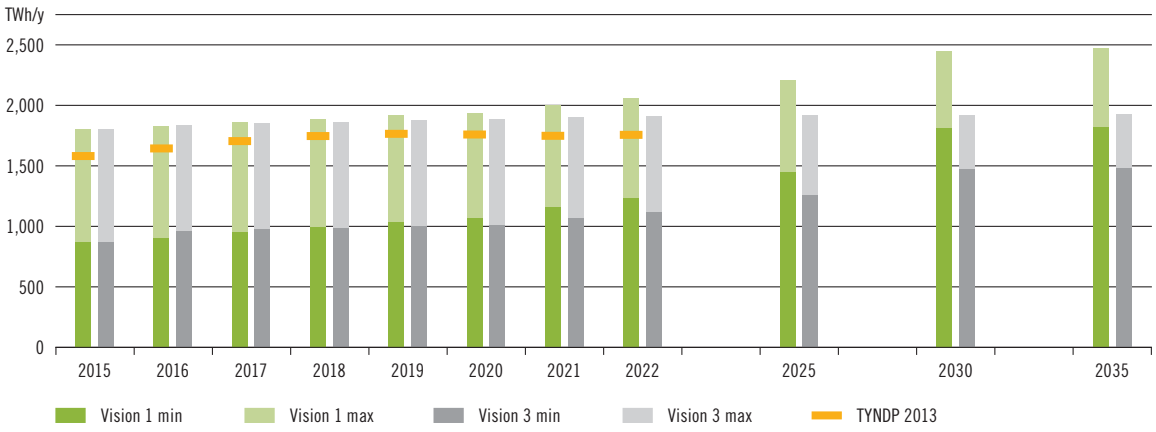

Figure 1.2: Comparison of annual gas demand for power generation between TYNDP 2015 and TYNDP 2013

1.1.3 Total annual gas demand

The following figure shows the range of annual total gas demand for TYNDP 2015. TYNDP 2013 total demand level is close to the upper level of TYNDP 2015. The difference varies between -1 % and -3 %. A range has also been created using TSOs submissions for final gas demand including projections for power generation. These latest projections are based on information provided by the TSOs or the average of data from Vision 1 and Vision 3 where TSOs data was not available.

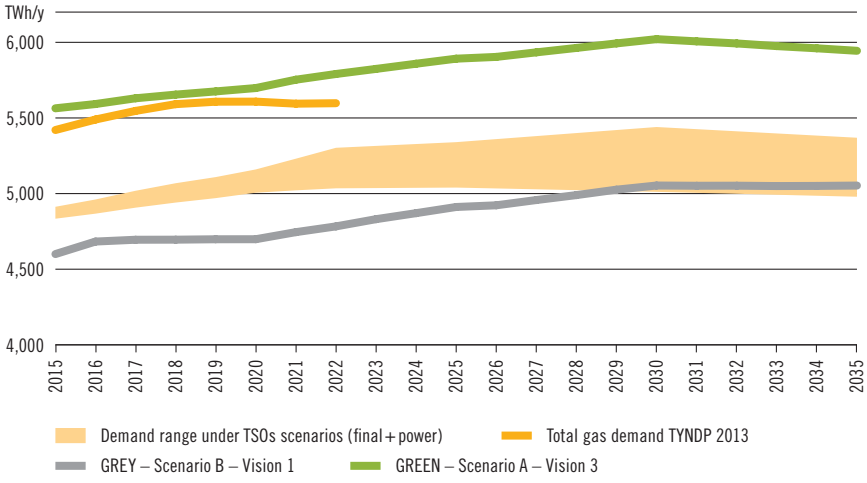

Figure 1.3: Comparison of total annual gas demand between TYNDP 2015 and TYNDP 2013

1.2 PEAK GAS DEMAND

1.2.1 Final peak day gas demand (residential, commercial and industrial)

Final peak day gas demand is slightly higher than in TYNDP 2013, but follows a downward trend. Whereas TYNDP 2013 projections decreased by 1.4 %, TYNDP 2015 figures decline by 6 % in Scenario B and by 13 % in Scenario A. TYNDP 2013 peak projections were lower whereas annual projections were higher. This could be explained by the lack of disaggregation in some of the data for peak day projections in TYDNP 2013 and by the increase in peak day projections from several TSOs in TYNDP 2015.

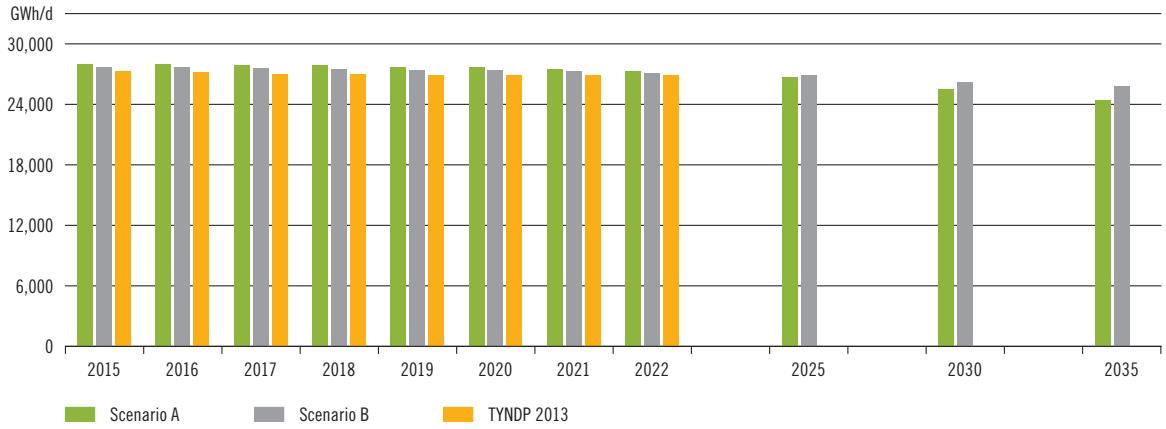

Figure 1.4: Comparison of peak day gas demand between TYNDP 2015 and TYNDP 2013

1.2.2 Peak day gas demand for power generation

TYNDP 2015 peak day gas demand for power generation is lower compared to TYNDP 2013. On average, figures for Vision 3 are 15 % lower and figures for Vision 1 are 20 % lower. TYNDP 2013 figures showed an increasing trend in the short term, stabilizing in the medium term, and leading to a 17 % increase at the end of the period. TYNDP 2015 projections show a continuous upward trend ending with a 46 % higher peak day gas demand for power generation in Vision 3. Vision 1 shows a similar trend to TYNDP 2013 projections with an increase of 17 %. Although starting from different initial levels, it should be noted that all three projections represent an upward trend.

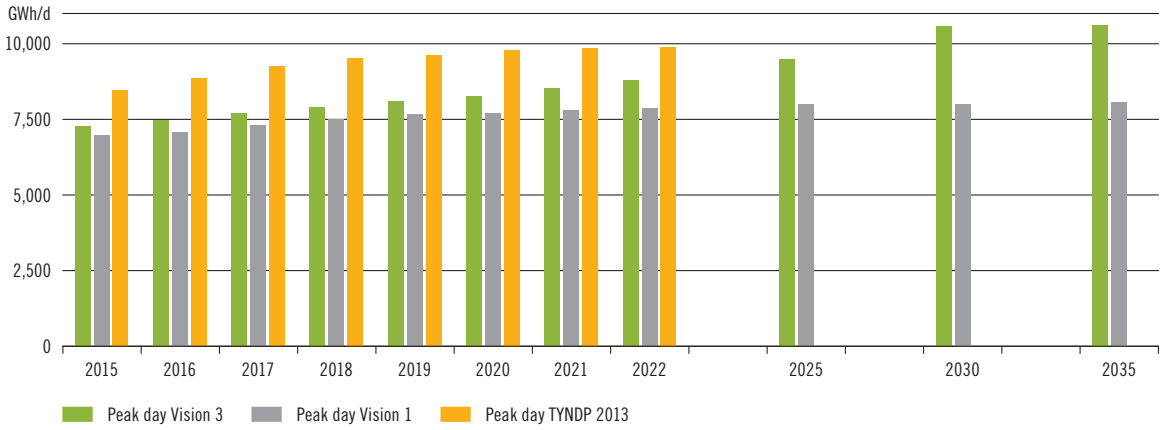

Figure 1.5: Comparison of peak day gas demand for power generation between TYNDP 2015 and TYNDP 2013

1.2.3 Total peak day gas demand

The TYNDP 2015 projections show slightly lower levels for the total peak day gas demand. The higher levels of final peak gas demand do not fully compensate the lower levels of peak day gas demand for power generation.

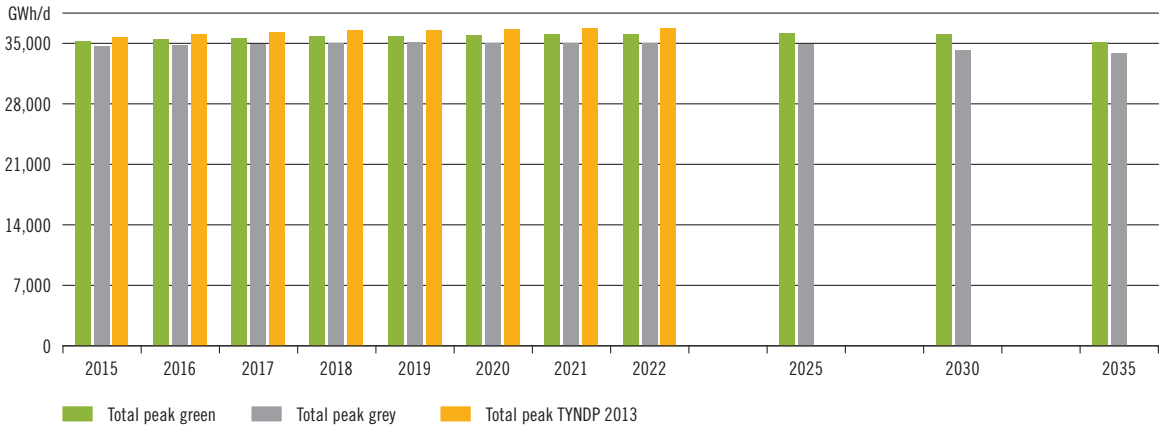

Figure 1.6: Comparison of total peak day gas demand between TYNDP 2015 and TYNDP 2013

2 Evolution of difference in the supply scenarios

ENTSOG stays basically with the already elaborated fundamentals for the supply scenarios and refreshed them with reasonable information. At the same time, the increase of the time horizon has led to more uncertainty in the later period of each scenario.

2.1 NATIONAL PRODUCTION

2.1.1 Conventional gas

The supply from conventional production based on TSO projections, shows a similar downward trend as identified in TYNDP 2013. Non-FID projects for new conventional production could lead to a rise in 2019 but would not stop the overall decline in European conventional production over the following decades.

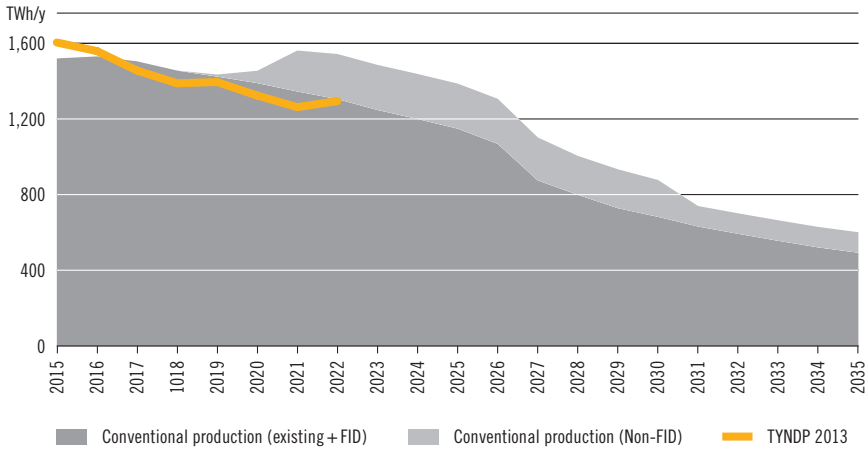

Figure 2.1: Comparison of conventional production between TYNDP 2015 and TYNDP 2013

2.1.2 Biomethane

Whereas only two TSOs reported biomethane figures in the previous edition, this time nine TSOs gave information on projections and ENTSOG has identified other data sources. This has allowed ENTSOG to generate the three supply scenarios whereas only a single supply scenario was generated for the previous TYNDP. The increased information has led to a much higher estimation of biomethane in the grids. The intermediate scenario is based on TSO projections whereas the maximum and minimum scenarios are based on other literature sources.

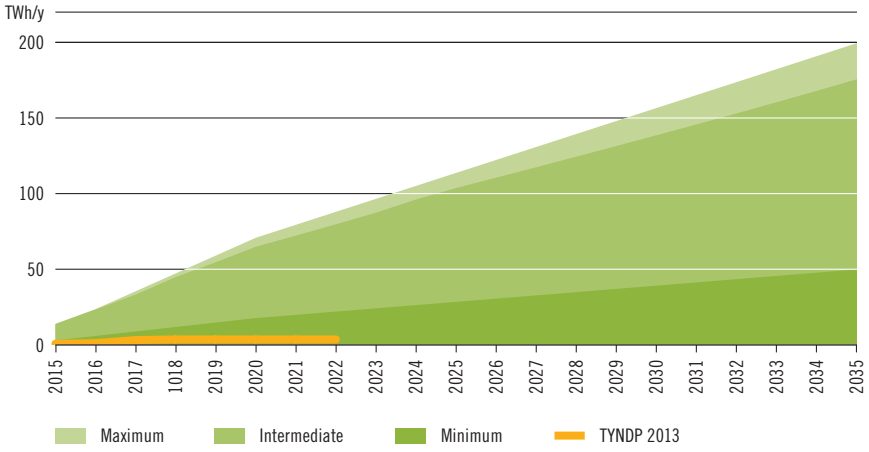

Figure 2.2: Comparison of biomethane production between TYNDP 2015 and TYNDP 2013

2.1.3 Shale gas

More available information, in comparison to the previous TYNDP, has allowed ENTSOG to generate the three general supply scenarios. This has resulted in a better vision of potential shale gas supplies compared to the limited projection in the previous edition. The intermediate supply scenario is based on TSOs data whereas the maximum supply scenario is based on literature. The minimum supply forecast is zero to reflect the current uncertainty as described in the Supply Chapter.

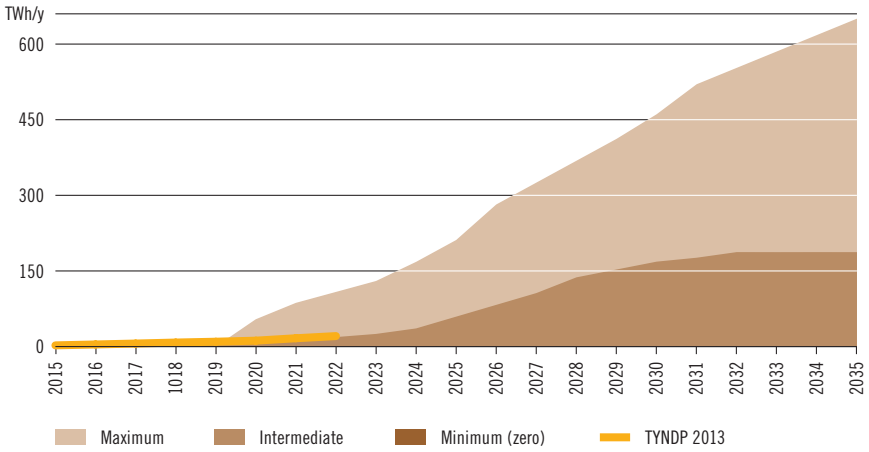

Figure 2.3: Comparison of shale gas production between TYNDP 2015 and TYNDP 2013

2.2 RUSSIA

For Russia the Institute of Energy Strategy (Gromov 2011) has been used as the main source in replacement of the Russian Energy Strategy Report. This new source provides a wider range of scenarios making the assessment more robust. The range between scenarios in 2022 is now of 778 TWh/y instead of 157 TWh/y in previous edition. The main change is in the minimum scenario which is now based on contracted quantities in order to reflect uncertainty in future upstream investments.

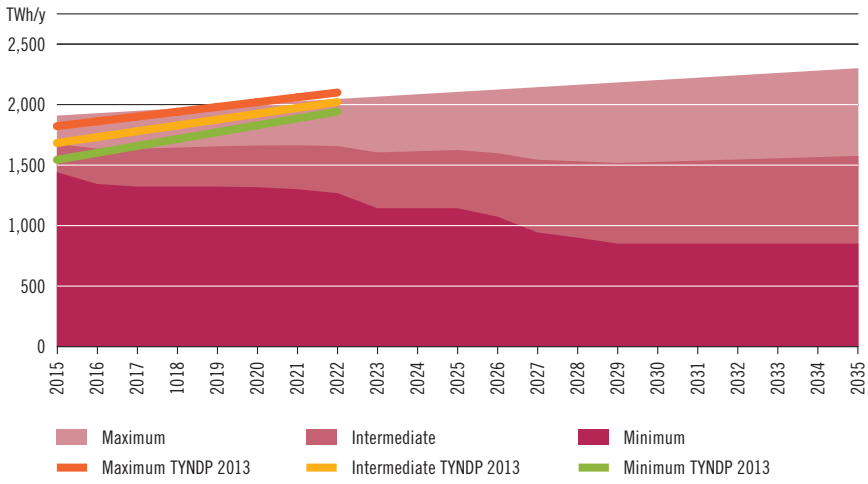

Figure 2.4: Comparison of Russian supplies between TYNDP 2015 and TYNDP 2013

2.3 NORWAY

Norway's supply projections are based on data provision from GASSCO and hence are similar to the previous TYNDP's scenarios. The new projections follow the same general trend as the old projections until 2015/2016 and a rise afterwards to plateau from 2017/2018 for the maximum scenario. From 2022 onwards, supplies from Norway follow a continuously decreasing trend until 2028. From 2028 evolution of the supply scenarios is based on ENTSOG assumptions.

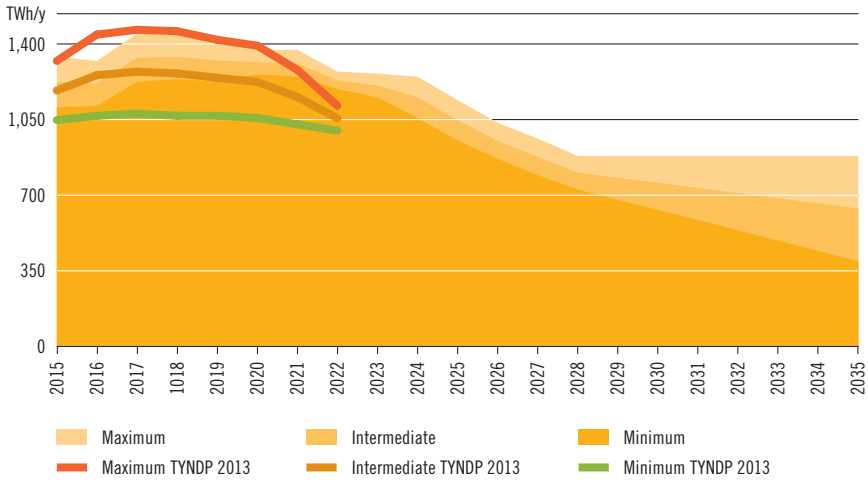

Figure 2.5: Comparison of Norwegian supplies between TYNDP 2015 and TYNDP 2013

2.4 ALGERIA

Algeria supply projections are based on a more detailed analysis but have a similar trend compared to the one of previous TYNDP. The biggest change has occurred in the minimum scenario which in now less pessimistic in the medium term, compared to TYNDP 2013 but still follows a downward trend with a soft decrease in the longer term.

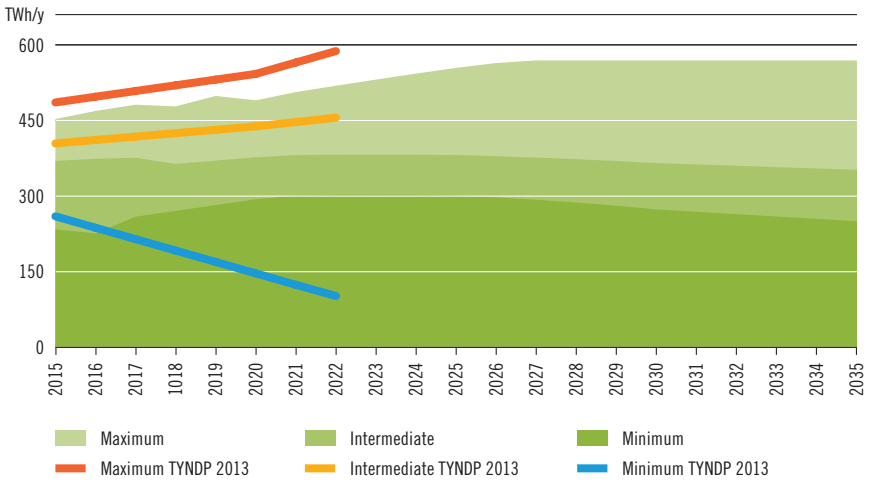

Figure 2.6: Comparison of Algerian supplies between TYNDP 2015 and TYNDP 2013

2.5 LIBYA

The Libyan supply scenario fundamentals are largely unchanged from the previous TYNDP. The major differences between the two editions can be seen in the minimum scenario with the previous downward trend now changed to an upward trend. As the country tries to return to its former production levels, it is assumed that production will increase in the future and this would lead to higher exports; however, in the intermediate and minimum scenarios ENTSOG has taken less optimistic views of levels of supplies in the medium term.

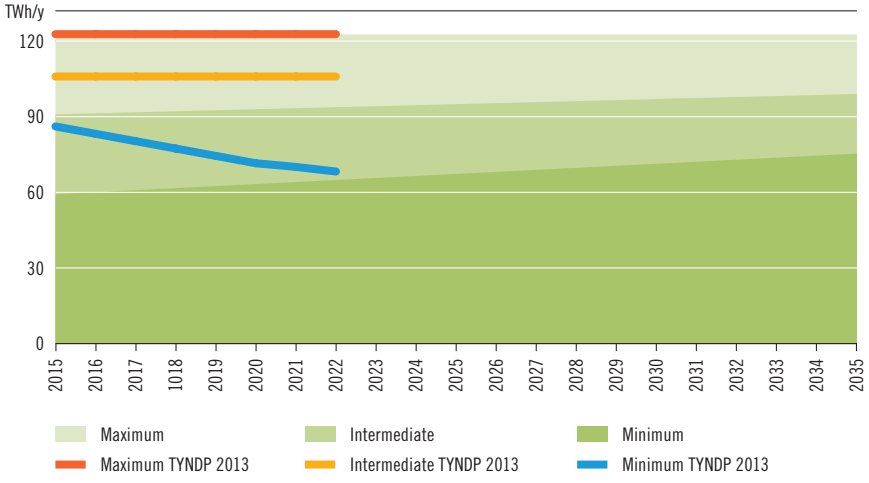

Figure 2.7: Comparison of Libyan supplies between TYNDP 2015 and TYNDP 2013

2.6 AZERBAIJAN

The major change has been introduced in the minimum scenario as the projects evolved more in the meantime. Instead of the previous zero flows, a minimum flow of 80 % based on the intermediate scenario has been introduced now. Hence, the projected minimum supply from Azerbaijan is now constantly 87 TWh/y. Additional changes have been made in the assumption of first gas supplies (change from 2018 to 2019) based on more recent data.

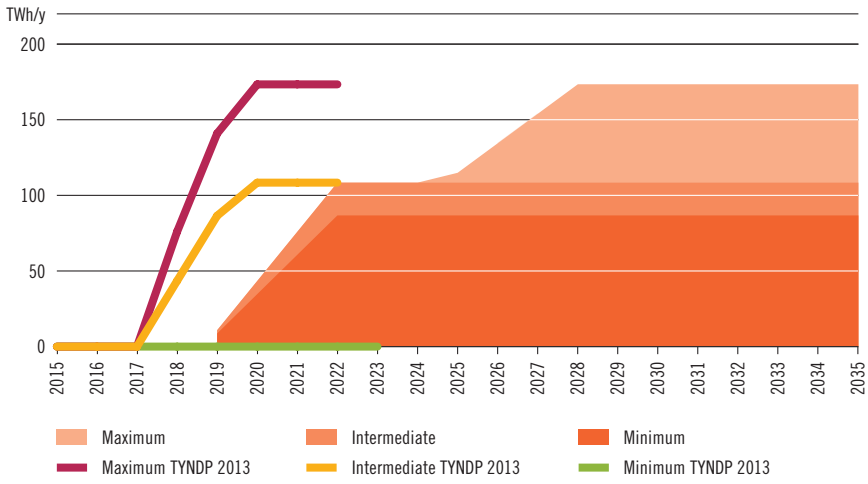

Figure 2.8: Comparison of supplies from Azerbaijan between TYNDP 2015 and TYNDP 2013

2.7 LIQUEFIED NATURAL GAS

LNG projections in TYNDP 2013 and this report are very similar. In TYNDP 2013 the assumptions underlying the projections were based on aggregated load factors for European send-out capacities of LNG terminals. In this report, projections are based on the supply potentials of the different production areas with assumptions on the proportion delivered to Europe.

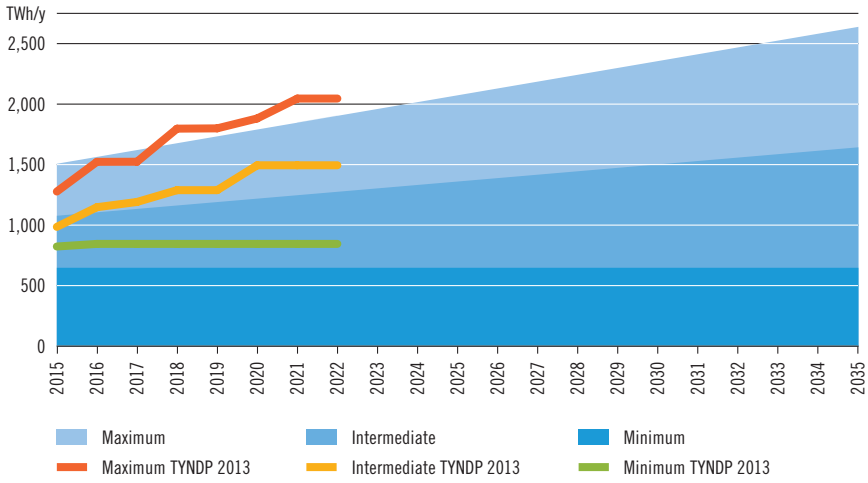

Figure 2.9: Comparison of LNG supplies between TYNDP 2015 and TYNDP 2013

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