Gas TSO efficiency analysis for the Dutch transmission system operator (GTS)

COUNTRY SPECIFIC FACTORS

Frontier Economics ("Frontier") and Consentec are advising ACM on the efficiency benchmarking of GTS. The aim of the benchmark study is to determine the static cost efficiency for GTS based on the data from all gas TSO's participating in the corresponding German efficiency benchmark. The analysis will be based on data for the year 2010. The benchmark research should formulate an opinion on the reasonable level of efficiency for GTS. This note discusses how the country specific factors, which GTS has claimed, should be considered in the analysis.

Introduction

ACM, the Dutch energy regulator, wishes to include a static efficiency measure in its method of regulation for GTS, the Dutch gas TSO. Article 13 of the European gas Regulation 715/2009 amongst others stipulates that tariffs of a TSO shall reflect the actual costs incurred, insofar as those costs correspond to those of an efficient and structurally comparable network operator. As GTS is the only gas TSO in the Netherlands, ACM has no national direct comparator to determine whether the costs of GTS are efficient. For this reason, ACM has decided to use experiences and data from the German gas TSO benchmark commissioned by BNetzA in order to determine the static efficiency of GTS. In this note we discuss adjustments for costs and outputs necessary to make cost and output/service data for GTS comparable to the German gas TSOs.

GTS has raised some differences between GTS and the German gas TSOs, which it believes should be taken into account in the benchmarking analysis. These claims were raised in the GTS kick-off meeting presentation of February 11th, 2014, the GTS Memo of September, 5th, 2014, the GTS Memo of December, 24th, 2014 and the GTS Memo of January, 30th, 2015. These country specific factors can be classified into:

- costs;
- outputs;
- norms and standards.

Country specific factors – costs

Claim 1: HGB vs. IFRS

GTS claim

GTS claims that the differences in accounting rules (HGB in Germany and IFRS for GTS) result in different pension costs, which would need to be corrected for. This claim corresponds to Claim A4 in the GTS Memo.

Discussion

The cost base of the German gas TSOs is based on HGB (German civil trade law) accounting standards. This has been confirmed by Bundesnetzagentur.

By contrast, the annual report of GTS is based on IFRS standards. GTS claims that there are differences in acknowledging pension costs between HGB and IFRS. We understand that the respective costs for 2010 are included in the cost item for the "Transport taak" in "Tabel 6 – OPEX" of GTS cost template:

- Pensioenen en overige personeelskosten – GTS reports a value of € 16,174.02 million; and
- SORIE (maakt geen deel uit van bovenstaande kosten) – GTS reports a value of € 60,843.10 million.

We propose to acknowledge this claim and exclude the cost item from the GTS cost base.

On the other hand pension costs will also be removed from the cost base of the German TSOs.

Claim 1 – proposal

We propose to acknowledge this claim and exclude the cost item from the GTS cost base.

Claim 2: Treatment of expansion investments

GTS claim

GTS claims that cost for expansion investments in Germany are treated as „non-controllable costs" and hence excluded from the cost base used for German TSOs in the benchmarking analysis. This claim corresponds to Claim A3 in the GTS Memo.

Discussion

We understand that GTS is concerned that the treatment of expansion investments may mean that the cost base of the German firms may in some way not be reflective of the full cost base. In the following we clarify

- how respective measures and costs are treated under the German regulation; and
- how we will consider this for the benchmarking analysis to ensure comparability of cost.

Treatment of expansion investment under German regulation - We note that (new) investments for expansion are treated under a separate regulatory allowance (investment measure) in Germany. Investment measures allow companies to add costs for expansion investment accruing during the price control period and to be added as revenue allowance within the on-going regulation period. This is achieved by treating CAPEX approved in investment measures as non-controllable costs to be passed through with a t-0 lag. However, the costs of investment measures will be included as "controllable" costs after expiry of investment measures (at the end of the price control period in which the investment was undertaken) and exposed to total cost efficiency benchmarking. The treatment of new expansion investment as investment measures is normally limited to one regulatory period.

Comparability of cost - The cost base 2010 for German Gas TSOs was used as the relevant photo year for the regulatory period 2013-18 and all costs from investment measures arising until 2010 are included in this cost base of the companies and treated as "controllable costs". At the same time we consider corresponding service and output measures for the year 2010. Therefore, the data for GTS and German TSOs are consistent in this regard.

Claim 2 – proposal

No adjustment of GTS costs necessary as costs from investment measures are already included in photo year costs of 2010 for German gas TSOs (and output parameters are also measured consistent with this).

Claim 3: Treatment of non-controllable costs

GTS claim

GTS claims that certain costs in Germany are treated as „non-controllable costs" and are hence excluded from the cost base used for German TSOs in the benchmarking analysis. This claim corresponds to Claim A3 in the GTS Memo.

Discussion

The German "Anreizregulierungsverordnung" includes in § 11 (2) ARegV an exhaustive list of "non-controllable costs". Non-controllable costs are treated as pass-through items in regulation and no efficiency targets are applied to this part of the cost base. Therefore, the respective cost has been excluded from the German national benchmarking investigation.

The relevant items for this benchmarking analysis are

- costs for works committee and staff work activities according to legislation ("Kosten/Erlöse der im gesetzlichen Rahmen ausgeübten Betriebs- und Personalratstätigkeit");
- costs for occupational training and further education of staff ("Kosten/Erlöse der Berufsausbildung und Weiterbildung im Unternehmen");
- costs for add-on salaries based on companies' agreements signed before 31 December 2005 ("Kosten/Erlöse der betrieblichen und tarifvertraglichen Vereinbarungen zu Lohnzusatz- und Versorgungsleistungen, soweit diese in der Zeit vor dem 31. Dezember 2008 abgeschlossen worden sind"); as well as
- costs for play school for employees' children ("Kosten/Erlöse der Betriebskindertagesstätten für Kinder der im Netzbereich beschäftigten Betriebsangehörigen").

We acknowledge this claim. As the data for the above listed non-controllable costs are separately available for the German gas TSOs, we propose add these costs to the German gas TSOs' cost base in order to make the GTS and German Gas TSOs' costs comparable.

Claim 3 – proposal

We propose to acknowledge this claim and add the non-controllable costs to the cost base of the German Gas TSOs.

Claim 4: Differences in depreciation periods

GTS claim

GTS claims that depreciation periods are different for the German TSOs and GTS. This difference may cause distortions in the benchmarking analysis. This claim corresponds to Claim A8 in the GTS Memo.

Discussion

We acknowledge this claim and tackle it by standardisation of capital costs. We will not use the capital cost in the format used by Bundesnetzagentur in their national benchmarking analysis, but are calculating capital costs for the German Gas TSOs based on the

- gross historic investment costs (investments before any depreciation) from German Gas TSOs provided by Bundesnetzagentur in "Anlage III – Vergleichbarkeitsrechnung gem. § 14 Abs. 1 Nr. 3 und Abs. 2 ARegV"; and
- the Dutch approach for calculation of capital costs.

Using gross historic investment costs (before any depreciation) from German Gas TSOs and standardised depreciation periods (according to the Dutch approach) cancels out distortions caused by differences in the calculation of capital costs for GTS and the German Gas TSOs. In case that Dutch depreciation periods being longer than German depreciation periods we will take this into account in the standardisation process. In the case that

- *German depreciation periods* ≥ *Dutch depreciation periods* – we use Dutch depreciation periods;
- *German depreciation periods* < *Dutch depreciation periods* – the default is that we adjust the relevant GTS assets to German depreciation periods (we do this as we have no record of German assets that are already fully depreciated under the German accounting rules). In certain cases, e.g. if only a small part of investments are affected, we also use the Dutch depreciation periods. We will make the cost impact explicit in our final report.

Table 1. Overview on proposal for depreciation periods

Netherlands		Depreciation period (Years)		Germany	Depreciation period (Years)
Pipelines and service accommodations	01 Regional pipelines	55	A	IV. 1.1 Pipe lines and service lines steel PE coated	55
	07 Service accommodations	55		IV. 1.2 Pipe lines and service lines steel cathodically protected	55
	21 Transmission pipeline	55		IV. 1.3 Pipe lines and service lines steel bituminated	55
	22 Regional transmission pipeline	55		IV. 6 Valve/valve stations	55
	23 Brigittaleiding	55		IV. 7 Pig traps	55
				IV. 8 Safety devices (Pipe lines/service lines)	55
Stations, installations, air separation units, office and utility buildings	02 Gas exit point to regional network	excluded	B	I.2 Land plants, buildings for transportation services	25
	06 Utility buildings	25		I.4 Administration buildings	30
	15 Compressor stations	25		III. 1 Natural gas compression	25
	16 LNG installations	30		III. 2 Gas cleaning systems	25
	17 Mixing station	excluded		III. 3 Piping and fitting	25
	18 Calibrator installations	25		III. 4 Gas measuring systems	25
	19 Landfill gas installations	excluded		III. 5 Safety devices (Gas compressor plants)	25
	20 Office buildings	30		III. 6 Control and energy technology (Gas compressor plants)	25
	32 Measuring and regulating stations	25		III. 7 Ancillary facilities (Gas compressor plants)	25
	33 Interconnection point	25		I.3 Premises	30
	34 Pressure control station	25		III. 8 Traffic infrastructure	25
	35 Entry points	25		V. 3 Measuring systems	30
	36 Air separation units	excluded		V. 4 Controlling systems	30
				V. 8 Ancillary facilities (Measuring, controlling and metering system	15
				V. 9 Buildings (Measuring, controlling and metering systems)	30
				II Gas container	30
Furniture, buildings, inventory, equipment, tools, rolling material, roads, facilities	05 Roads and facilities	10	C	I.6 Office equipment (no computer facilities or tools/equipment); switching equipment	8
	08 Furniture buildings	8		I.7 Tools/equipment	10
	09 Inventory	8		I.10.1 Light vehicles	5
	10 Equipment	10		I.10.2 Heavy vehicles	5
	11 Tools	10		I.8 Storage facility	10
	12 Motor vehicles	5			
	13 Trailers	10			
	14 Other rolling material	10			
Computers, remote measuring systems	03 Remote measuring systems	5	D	I.9.1 Hardware	3
	37 Computers	3		I.9.2 Software	3
				V. 6 Control and energy technology (Measuring, controlling and me	5
				VI. Remote control systems	5
Land properties	04 Land properties		E	3.1.2.4. Land properties 3.2.4. Land properties	

Source: Frontier / Consentec

Hence, this means that GTS is not disadvantaged by fully depreciated assets when calculating the capital costs in this benchmarking study. We note that there will be no adjustment of operating expenses with regard to different depreciation periods.

Claim 4 – proposal

We propose to acknowledge this claim and standardise capital costs of the German TSOs according to the Dutch approach for calculation of capital costs. For German TSOs, data on gross historic investment costs (investments before any depreciation) will be used for standardisation. In case that Dutch depreciation periods being longer than German depreciation periods we will take this into account in the standardisation process.

Claim 5: Cost base of German TSOs not based on audited costs

GTS claim

GTS claims that the cost base of German TSOs is not based on audited costs.

Discussion

We note that the costs Bundesnetzagentur uses for setting allowed revenues and benchmarking are derived from the audited annual accounts (P&L statements,

balance sheets) from the German Gas TSOs for the segment "Gas Transmission". Bundesnetzagentur additionally audits the correct allocation of costs to the segment "Gas Transmission" and makes adjustments if necessary (e.g. in cases where there are common costs that may be shared with unregulated services). Therefore any "adjustments" to the cost base undertaken by Bundesnetzagentur would have served to enhance the comparability of data between firms.

Claim 5 – proposal

We propose to reject this claim as we consider that the quality of the German cost data is of appropriate quality.

Country specific factors – outputs

Claim 6: Difference in Security of Supply

GTS claim

GTS claims that there is a difference in the supply task with regard to Security of Supply compared to the German TSOs. This claim corresponds to Claim A1 in the GTS Memo.

Discussion

GTS notes that the Dutch law prescribes that GTS should be able to fulfil its supply task at -17 degree. We note that the respective legal act came into force in 2004.[1] Hence, in theory the impact from this law should only have an impact on the network configuration from 2004.

In its claim GTS implicitly raises two questions:

- Whether GTS truly faces a task that is significantly different from that of the German gas TSOs; and
- Whether through the choice of parameters (and the use of DEA) it is possible to reflect any differences in supply tasks (if they existed).

On possible differences in the supply task - In a meeting with ACM, Bundesnetzagentur explained certain possible differences in the supply task: there is no temperature laid down in German legislation at which the TSO should be able to supply.

Rather, it is city-gate capacity bookings by DSOs that determine overall TSO network capacity. The DSO demand is derived on a theoretical basis from

1 See: Besluit van 13 april 2004, houdende regels inzake voorzieningen in verband met de leveringszekerheid (Besluit leveringszekerheid Gaswet), Artikel 2, http://wetten.overheid.nl/BWBR0016605/geldigheidsdatum_27-06-2014#Artikel2

temperature regression analysis, which reflects estimation of actual need and not one specific (prescribed) temperature. Relevant variables in this regression are inter alia standard load profiles and the mixture of customers. Significantly, the networks are laid out to supply gas to all customers, including the demand of temperature driven users, the latter being determined according to the norm DIN EN 12831 at temperatures between around -10 and -18 degrees Celsius for 2 consecutive days, according to an iso-thermic map of Germany (corrected for wind chill and other factors).[2] In addition to this, there is room for higher capacity bookings by the DSOs based on historic experiences and existing capacity rights; this effectively results in capacity bookings that correspond to even lower temperatures.

The EnWG (Energy Act) furthermore provides general rules for connection and access obligations (see above, paragraph 20). Private law applies as a contract is being drawn up for the amount of capacity a DSO orders from a TSO. Although the German law does not prescribe a supply task at -17 degrees, it is very likely that the German grids are able to supply at that temperature and even lower temperatures.

We acknowledge the general effect that a higher requirement for capacity reliability (in the Netherlands) could potentially lead to higher costs, e.g. for larger pipeline or compressor dimensions or redundancies. However, as explained by Bundesnetzagentur, the security of supply standards for the German gas TSOs are high and networks laid out to supply customers at temperatures between around -10 and -18 degrees Celsius for 2 consecutive days. In addition, Bundesnetzagentur notes that it is very plausible that the German network configuration allows supplying at -17 degree Celsius. Therefore, it is not clear that the supply task in the Netherlands is materially different from that in Germany in this regard.

On consideration of the supply task in benchmarking - In addition, even if the supply tasks were different, this could be reflected either by parameterising the supply task or its effect on the cost base for the benchmarking analysis.

For example, if pipeline volume were used as a parameter to characterise gas TSOs (which was done in the German benchmarking analysis), the effect of a difference in supply tasks on the network configuration would already be covered within the benchmarking analysis. We note that pipeline volume will be an output parameter candidate for this benchmarking analysis, also in the Dutch investigation.

---

2 Furthermore, it is not clear that very cold temperatures are the key cost driver. Often not the very cold temperature load situations lead to flows straining physical assets, but intermediate temperatures: if it is moderately cold, then shippers have a choice from which entry they balance their portfolio, which may lead to situations where e.g. all gas enters in Northern Germany and has to be transported to Southern Germany, while at cold temperatures gas is used closer to the entry points.

GTS claims a cost impact from higher security of supply only for compressor stations (and not pipelines). GTS notes that a choice is made for additional compression or expansion of the piping capacity for each investment project separately. It has been assumed that, with respect to providing a higher peak capacity, installing additional compression capacity at one or more of the existing compressor stations yields a lower TCO compared to increasing the piping capacity along multiple piping routes. Jacobs subscribed this approach. The GTS Memo includes detailed information on the cost impact reviewed by an expert report.

We note that the argumentation from Jacobs seems plausible from a technical point of view. The Jacob's approach, the illustration of the calculations from GTS, the used methodology and models, in particular the tool MCA, are comprehensible. There are no logical breaks in the argumentation. We were not in the position of a detailed assessment of GTS calculations and the data used by GTS.We acknowledge the cost impact from the difference in Security of Supply and propose the following cost adjustments:

- **Adjustment of capital costs** – We propose to adjust the investment stream for the respective compressor stations according to the part due to higher Security of Supply.

- **Adjustment of operating costs** – We propose to use the GTS figure, which was assessed by Jacobs as reasonable, of € 1.432 million for adjusting operating costs. This adjustment applies to "Total OPEX excl. BESeF (NOK)". We understand from GTS that no adjustment is necessary for the cost item "Totaal BESeF".

Claim 6 – Security of Supply

We acknowledge the cost impact from the difference in Security of Supply and propose the following cost adjustments:

- *Adjustment of capital costs* – we propose to adjust the investment stream for the respective compressor stations according to the part due to higher Security of Supply. We understand that GTS already provided ACM with respective cost figures for the compressor stations, which can be used for cost adjustments.
- *Adjustment of operating costs* – We propose to use the GTS figure, which was assessed by Jacobs as reasonable, of € 1.432 million for adjusting operating costs. This adjustment applies to "Total OPEX excl. BESeF (NOK)". We understand from GTS that no adjustment is necessary for the cost item "Totaal BESeF".

Claim 7: Balancing costs

GTS claim

GTS claims that in Germany the balancing task is not undertaken by the gas TSOs but the market operator (GasPool en NetConnectGermany). This claim corresponds to Claim A7 in the GTS Memo.

Discussion

In Germany balancing is undertaken by the market operators NetConnectGermany and GasPool. This has the following implications for OPEX and CAPEX of German gas TSOs:

- OPEX – Associated to balancing is not part of the cost base of the German Gas TSOs. Hence, GTS opex for "Taak balanceren" shall not be included in the benchmarking analysis.
- CAPEX – Physical assets used for balancing are part of the RAB of the German Gas TSOs. However, there is no clear separation of these assets for transportation and balancing purposes. In the Netherlands, ACM allocates a certain percentage, 3.3%, of GTS capital costs to balancing. We understand from ACM that this allocation was not based on a detailed cost analysis of the share of GTS network used for balancing task, but on a rough estimate. In addition, we understand that the allocation of capital costs to the balancing task is currently under review with plans to abolish it.

  Bundesnetzagentur does not allocate a specific part of the capital costs to the balancing task. Hence, a similar % figure (as has been used by ACM) has not yet been established for the German Gas TSOs. As in the Netherlands,

capital costs for balancing are not documented separately in Germany. Additional costs for balancing (in addition to those for transport) could occur in several asset categories, e.g. due to larger pipeline diameters, higher wall thickness (that allow higher pressure ranges), higher power rating of compressors (that also allow for higher pressure ranges, instead of higher operation times) etc. Due to the fact that there is no direct relationship between specific asset categories and the purpose of balancing, an exact share of capital cost allocated to balancing is always difficult to estimate and would, at least for the German data, bear the risk of being arbitrary.

Hence, taking into account the on-going assessment in the Netherlands on the future treatment of capital costs for the balancing task, we propose no cost correction for GTS may be undertaken for capital costs. This means that the correction factor for balancing costs is 0% for GTS and the German TSOs.

Claim 7 – Balancing

We propose:

- Opex – only use GTS opex for "Transport taak".
- Capex – no cost correction for the balancing task for GTS and the German TSOs.

Claim 8: Quality conversion

GTS claim

GTS claims that quality conversion is not undertaken by German gas TSOs. This claim corresponds to Claim A2 in the GTS Memo.

Discussion

Quality conversion is a task undertaken by certain German Gas TSOs, e.g. Open Grid Europe and Thyssengas. Hence, whether quality conversion should be included as a task in the benchmarking analysis depends on the comparability of the quality conversion task between GTS and the German gas TSOs and/or if a possible output parameter can be identified for this task (and incorporated in the benchmarking analysis). In this context it must be clarified that the operation of separate and/or overlapping H- and G-/L-gas networks exists in Germany as well and is adequately treated in the definition and quantification of benchmarking parameters.

However, this does not imply a high importance of quality conversion in Germany. Furthermore, for other German TSOs, e.g. Bayernets or Terranets BW, quality conversion is not a task relevant to the operator as they operate only one relatively homogeneous gas quality; and for those German TSOs that

undertake quality conversion, this task is of smaller importance and mainly consists in blending H- and/or L-gas, e.g. injection of limited amounts of H-gas into L-gas sub-systems and not exceeding the technical Wobbe Index ranges for L-gas. This has the following implication for OPEX and CAPEX of GTS in the benchmarking analysis:

- OPEX – GTS opex for "Kwaliteitsconversie" shall not be included in the benchmarking analysis.

- CAPEX – Physical assets used for "Kwaliteitsconversie" should be excluded from the RAB of GTS. We note that certain German gas TSOs include physical assets for quality conversion in the RAB, as well. However, these assets are not explicitly specified. Hence, as a conservative approach (in favour of the efficiency result of GTS) we propose not to correct for these physical assets for the respective German gas TSOs. However, as only few assets are affected it is likely that the upward capital cost impact for German TSOs is rather small.

- The overlapping infrastructure for H- and L-gas in the whole network area (last sentence of the claim) is not related to quality conversion, both networks will be considered as separate asset configurations and the fact that they are widely overlapping in the case of GTS then turns into an advantage rather than a disadvantage for GTS. Therefore no further correction is necessary for this aspect.

In addition GTS claims that

  - certain compressor stations currently allocated to the "Transport taak" are primarily used for quality conversion; and

  - the nitrogen transport pipeline IJmuiden (Supplier Linde) - Oudelandertocht (GTS Mixing station) is only used for quality conversion.

The GTS Memo includes detailed information on the cost impact reviewed by an expert report.

We note that the argumentation from Jacobs seems plausible from a technical point of view. The Jacob's approach, the illustration of the calculations from GTS, the used methodology and models, in particular the tool MCA, are comprehensible. There are no logical breaks in the argumentation. We were not in the position of a detailed assessment of GTS calculations and the data used by GTS.

We acknowledge that these compressor stations should be partly allocated to the quality conversion task and propose the following cost adjustments:

- **Adjustment of capital costs** – We propose to adjust the investment stream for the respective compressor stations according to the part due to quality conversion.

- **Adjustment of operating costs** – We propose to use the GTS figure, which was assessed by Jacobs as reasonable, of 787 k € for adjusting operating costs. This adjustment applies to "Total OPEX excl. BESeF (NOK)". For the adjustment of the cost item "Totaal BESeF" we propose to use the GTS figures of € 533k.

We acknowledge that the nitrogen transport pipeline IJmuiden (Supplier Linde) - Oudelandertocht (GTS Mixing station) is used only for quality conversion and propose the following cost adjustments:

- **Adjustment of capital costs** – We propose to adjust the investment stream for the nitrogen transport pipeline IJmuiden (Supplier Linde) - Oudelandertocht (GTS Mixing station). GTS already provided the year of come into operation and the investment costs for these assets in one of their memos. We will use this costs figures for the cost adjustment.

- **Adjustment of operating costs** – We propose to use the GTS figure, which was assessed by Jacobs as reasonable, of 237 k € for adjusting operating costs. This adjustment applies to "Total OPEX excl. BESeF (NOK)".

Claim 8 – Quality conversion

We propose to exclude the costs for "Kwaliteitsconversie" from GTS cost base:

- Opex – exclude GTS opex for "Kwaliteitsconversie"; and
- Capex – exclude GTS physical assets used for "Kwaliteitsconversie".

There would not be any correction for overlapping H- and G-gas infrastructure.

In addition we propose to adjust capital costs and operating expenditures for

- Part of compressor stations used for quality conversion – We understand that GTS already provided ACM with respective cost figures for the compressor stations, which can be used for cost adjustments;
- Nitrogen transport pipeline IJmuiden (Supplier Linde) - Oudelandertocht (GTS Mixing station).

Claim 9: Joint ventures of German TSOs

GTS claim

GTS claims that a large part of the German gas TSOs operate in joint ventures which may have an implication for the benchmarking analysis. This claim corresponds to Claim B11 in the GTS Memo.

Discussion

Some output parameters (of German gas TSOs) effectively are influenced to a limited extent by the existence of Joint Ventures (JVs). This is due to the fact that – instead of building parallel infrastructure – German companies built pipelines jointly in the past and these are now part of the asset base of the JV's partners according to their rights of use. This means that the costs are shared between the partners and this can constitute a cost advantage compared to the hypothetical stand-alone alternative for each partner with parallel individual pipelines with smaller diameters and higher specific costs to span the same network area. We note that the total share of pipelines operated in joint ventures in Germany amounts to 15%.

Most output parameters (e.g. peak load, energy transported, pipeline volume, transport momentum) used in the development of the German TSO benchmarking allow for a corresponding attribution of shares to the JV's partners, i.e. one partner holds e.g. 50% of the rights of use, is allocated 50% of the energy transported and also 50% of the pipeline volume etc. This was also undertaken in the German TSO benchmarking analysis.

For other output parameters counting of all values for all the JV's partner may be necessary in order to describe the TSO's tasks correctly, e.g. for the connection

points and for the surface area (exactly as if the task was covered with individual and parallel infrastructures). During the German TSO benchmarking analysis the regulator Bundesnetzagentur took the decision not to undertake an adjustment for JVs with regard to connection points and surface area as this was deemed necessary. The resulting values for surface area and connection points were calculated, assessed and confirmed by the German TSOs during the benchmarking analysis.

For further discussion on this claim and our proposal on this claim we refer to Frontier/Consentec (2015)[3].

Claim 10: Gas receiving stations

GTS claim

GTS claims that gas receiving stations are owned by the distribution networks in Germany, while in the Netherlands these stations are owned by GTS. This claim corresponds to Claim A5 in the GTS Memo.

Discussion

GTS is concerned that GTS' cost base includes the cost for receiving stations while in the case of German TSOs this is not the case (and also no distinction is made in defining the supply task between Germany and the Netherlands).

In a meeting with ACM, Bundesnetzagentur explained that in Germany gas receiving stations are typically owned by DSOs. There may be a few exceptions.

We propose to exclude the costs for "Gasontvangstations" from GTS' cost base:

- **Adjustments of capital costs** – We exclude the asset "02 Gasontvangstations" from the asset base of GTS.
- **Adjustment of operating costs** – GTS claims an adjustment for opex of 16.09 million €, which is 5% of the corresponding investment costs. This adjustment applies to "Total OPEX excl. BESeF (NOK)". For the adjustment of the cost item "Totaal BESeF" we propose to use the GTS figures of € 3.477 million. We propose to use these figures to adjust operating costs.

3 Frontier Economics/Consentec, *Gas TSO efficiency analysis for the Dutch transmission system operator (GTS) – Interim report for ACM*, July 2015.

Claim 10 – Gas receiving stations

We propose to exclude the costs for "Gasontvangststations" from GTS' cost base:

- **Adjustments of capital costs** – we exclude the asset "02 Gasontvangstations" from the asset base of GTS.
- **Adjustment of operating costs** – GTS claims an adjustment for opex of € 16.09 million, which is 5% of the corresponding investment costs. This adjustment applies to "Total OPEX excl. BESeF (NOK)". For the adjustment of the cost item "Totaal BESeF" we propose to use the GTS figures of € 3.477 million.

Claim 11: Firmness, Capacity Products

GTS claim

GTS claims that capacity which German TSOs sell as firm capacity would not qualify as firm capacity in the Netherlands, and that there are further restrictions for the allocation and/or usage of capacities.

Discussion

GTS claims that capacity which German TSOs sell as firm capacity would not qualify as firm capacity in the Netherlands, and that there exist further restrictions for the allocation and/or usage of capacities. Therefore German Gas TSOs need less physical capacity to provide the same amount of contractual capacity.

Bundesnetzagentur in a meeting with ACM explained that German contract capacity is not firm in case of force majeure and for 14 days of maintenance. Also in Germany, there is a clause in the terms and conditions relating to certain flow scenarios in which case firmness and/or free allocation is no longer guaranteed. However, for this clause to take effect, flows will have to change very significantly (this has not occurred in the past, and is not likely to occur in the near future).

Whether these aspects would impact efficiency results depends on the specification of the output parameters used in the benchmarking analysis. If pipeline volume is used as an output parameter in the benchmark, which was the case in the German benchmarking analysis, the effect on the network configuration of different requirements on capacity firmness and free allocation is already covered as part of the analysis. Pipeline volume will be an output parameter candidate for this benchmarking analysis, as well.

For further discussion on this claim and our proposal on this claim we refer to Frontier/Consentec (2015) [4].

Claim 12: Gas quality

GTS claim

GTS claims that German TSOs have lower cost than GTS because they do less to convert gas into (just) two gas qualities. In addition, GTS claims in the memo from January, 30th, 2015, that due to the large number of small gas fields GTS has to install more gas chronographs compared to the German TSOs to audit the gas quality.

Discussion

In a meeting with ACM, Bundesnetzagentur explained that the German regulation also describes specifications of gas quality. "Table 3 – 2. Gasfamilie", DVGW, Arbeitsblatt G 260, records "brenntechnische Kenndaten". This confirms that German TSOs transport gas of differing qualities.

Firstly, we note that it is not clear that the situation in Germany is fundamentally different from that in the Netherlands.

We also note that – even if there were differences in the cost of case quality conversion - it is unlikely that after we have already decided on the exclusion of the task of quality conversion from the benchmark there could be any remaining substantial effects of the comparability of cost between the Netherlands and Germany.

We note that there are also smaller gas fields in Germany and the German TSOs have gas chronographs in their assets, as well. Hence, the question reduces to the incremental number of chronographs of GTS necessary due to country specifics. We note that the process of adjusting for country specifics is meant to adjust for significant differences putting GTS at a disadvantage against German TSOs. GTS reports investment costs for chronographs of € 13.2 million. This corresponds to appr. 0.3% of GTS asset base. As only incremental investment costs occurred by GTS are relevant this figure needs to be reduced further. This is no evidence for a significant impact.

4 Frontier Economics/Consentec, *Gas TSO efficiency analysis for the Dutch transmission system operator (GTS) – Interim report for ACM*, July 2015.

Claim 12 – Gas quality

We propose to reject this claim.

Claim 13: Flexibility

GTS claim

GTS claims differences in providing flexibility compared to the German gas TSOs. This claim corresponds to Claim C15 in the GTS Memo.

Discussion

GTS suggests that the Dutch network is built to provide flexibility to exploit the Groningen field while the provision of flexibility in Germany is decentralised. This results in different network configurations in the Netherlands and Germany.

- Firstly, it is worth noting that the situations in the Netherlands and Germany do not appear as fundamentally different as might be suggested by GTS' statement. The Groningen field directly provides flexibility to the Dutch L-gas grid and at best indirectly to Dutch H-Gas. Gas flexibility in the Dutch H-gas market (also) comes from storages. This situation is not dissimilar to that in Germany. A significant part of L-gas flexibility in Germany is also provided from the Groningen field. H-gas flexibility comes from storages.

- Unlike suggested in GTS' comments the location of storage sites is not freely disposable – neither in Germany, nor in the Netherlands. In fact the location of gas storages is dependent on geological formations, typically either salt caverns or depleted oil or gas fields. Also in Germany it is not feasible to optimise storage sites to place them next to major loads.

Therefore, we expect that the location of storages in practice has only a very limited effect on different network configurations in the Netherlands and Germany – if any.

Moreover, in case where network capacity is used as an output parameter in the benchmarking analysis (as has been done in the German benchmarking analysis) then different network configurations (for reasons of location of storages or otherwise if they did exist) would be taken account as part of the analysis.

For further discussion on this claim and our proposal on this claim we refer to Frontier/Consentec (2015) [5].

---

5 Frontier Economics/Consentec, *Gas TSO efficiency analysis for the Dutch transmission system operator (GTS) – Interim report for ACM*, July 2015.

Claim 14: Connection Task

GTS claim

GTS claims difference in costs due to differences in the obligation to connect customers. This claim corresponds to Claim C14 in the GTS Memo.

Discussion

GTS claims that German TSOs have lower cost than GTS, because they have fewer obligations to connect customers.

In a meeting with ACM, Bundesnetzagentur explained that the German regulation also describes specifications for connection of customers. Network operators have an obligation to connect households. In paragraph 20 en 21 of Energiewirtschaftsgesetz - EnWG the obligations are briefly worded:

The network operators grant access to everyone at criteria that are technically justified. To arrange access to the gas supply system, operators of gas supply systems must offer feed-in and output capacity that enable system access without establishment of a transaction-dependent transport path and that are utilizable and transferable independently of one another. Operators of energy supply systems can reject access to the extent they demonstrate that providing system access is not possible or not reasonable based on operational or other reasons taking in to account the objectives of § 1. The refusal shall be substantiated in writing and promptly notified to the Regulatory Authority (par. 20).

First, we note that it is not clear that the situation in Germany is fundamentally different from that in the Netherlands.

We also note that – even if there were differences in the obligation – it is unlikely that there could be any remaining substantial effect not covered by benchmarking parameters. We note that one benchmarking parameter candidate is the number of connections that – in the unlikely case of different obligations – would also have to be expected to be higher if there were stricter obligations in the Netherlands.

Claim 14 – Connection Task

We propose to reject this claim.

Claim 15: Market Areas

GTS claim

GTS claims that German TSOs would have higher costs when operating one unified countrywide market area like in the Netherlands. This claim corresponds to Claim B10, B12 and B13 in the GTS Memo.

Discussion

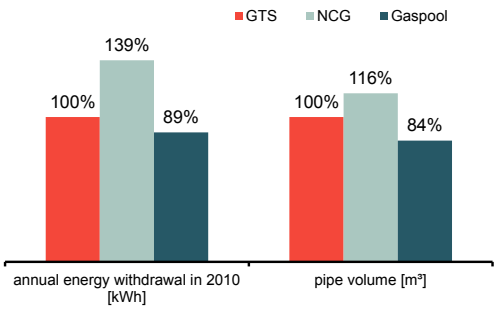
We note that benchmarking analysis refers to TSOs and not to countries. Consequently, additional costs that might result from the full merger of German market areas are not relevant. In addition, we note that already the existing German market areas are comparable in size and structure to the market area in the Netherlands.

This can be illustrated by a comparison of key indicators for describing the size of the market areas. For this comparison we use:

- annual energy withdrawal in 2010 (kWh); and
- pipe volumes (m^3).

Which both provide a good indication for the size of market areas. We are using data from the German gas benchmarking analysis and data provided from GTS. The German gas TSOs are allocated to their respective market areas, Gas Connect and NetConnect Germany, accordingly. The data are normalised to GTS (i.e. GTS = 100%).

Figure 1. Comparison of GTS, Gas Connect and NetConnect Germany



Source: Bundesnetzagentur, GTS

Figure 1 illustrates that NetConnect Germany is even larger than GTS with regard to annual energy withdrawal and pipe volume. Taking GTS argumentation this would imply that the investment costs for the German gas TSOs in the NetConnect Germany market area should be reduced, thus forming a stricter benchmark in comparison to GTS.

However, we propose that such hypothetical cost increases due to market area mergers should not be taken into account.

With regard to the GTS claims on transport restrictions within and between the German market areas we refer to the discussion on **Claim 11 (p. 16).**

Claim 15 – Market Areas

We propose to reject this claim.

Country specific factors – norms and standards

Claim 16: ICT system

GTS claim

GTS claims that its ICT system needs to meet higher requirements than those of German gas TSOs, placing GTS at a cost disadvantage. In addition, GTS claims that GTS is responsible for the data collection and plausibility check at the exit points to the regional grids. This has an impact on the costs for manpower, the software and hardware. GTS claims that in Germany this is done by the regional networks and not by the TSOs.

Discussion

In the first part of the claim GTS is concerned that its ICT system needs to meet higher requirements than those of German gas TSOs, placing GTS at a cost disadvantage.

GTS provides in the memo from January, 30th, 2015 information on the claimed cost impact:

- operating expenditures: € 1.12 million; and
- investment costs: € 10.49 million.

Most requirements which can affect ICT stem from EU law and regulations and these are therefore the same for Germany and the Netherlands, for instance transparency requirements on flow data. However, on one aspect GTS differs from German TSOs: GTS reports on individual shipper balancing status near real time as this has a particular function in the Dutch balancing regime, whereas the German TSO's do not report on individual shipper status as regularly. However, in Germany the challenge for TSO's is that many market parties have to provide information to the TSOs, which the TSOs then have to process and which also has an impact on the ICT costs. Therefore, it is not clear that the ICT cost in the Netherlands and Germany are truly different. This means that only incremental cost differences should be relevant.

We note that the process of adjusting for country specifics is meant to adjust for significant differences putting GTS at a disadvantage against German TSOs. The reported investment cost corresponds to appr. 0.2% of GTS asset base and the reported opex to app. 0.4% of total opex. As only the incremental costs are relevant this figure needs to be reduced further. This gives no evidence for a significant impact.

In the second part of the claim GTS is concerned that higher costs due to metering at exit points to regional networks puts them at a disadvantage. GTS provides in the memo from January, 30th, 2015 information on the claimed cost impact:

- operating expenditures: € 0.6 million; and
- investment costs: € 2.96 million.

We note that also German TSOs are operating metering devices at the exit points to the regional networks. Metering occurs on both sides. This means that there are also costs involved for this activity from the German TSOs. Hence, only incremental costs – if at all – for GTS can be relevant. We note that the process of adjusting for country specifics is meant to adjust for significant differences putting GTS at a disadvantage against German TSOs. The reported investment cost corresponds to appr. 0.1% of GTS asset base and the reported opex to app. 0.2% of total opex. As only the incremental costs are relevant this figure needs to be reduced further. This gives no evidence for a significant impact.

Claim 16 – ICT costs

We propose to reject this claim.

Claim 17: Odorisation

GTS claim

GTS claims that odorisation is undertaken by gas distribution companies in Germany while it is undertaken by GTS in the Netherlands. This claim corresponds to Claim A6 in the GTS Memo.

Discussion

GTS is concerned that it faces the cost of odorisation, while German TSOs do not. In Germany, odorisation is performed solely by DSOs.

GTS is reporting the cost for odorisation in the opex cost item "Overig (emissie en odorant)". In 2010 GTS reported "Overig (emissie en odorant)" of € 2.9 million. In the GTS Memo the exact figure for cost of odorisation is reported by € 2.855 million.

Claim 17 – Odorisation

We propose to accept this claim. We suggest deducting € 2.855 million from the cost item "Overig (emissie en odorant)" when calculating the opex for GTS in the benchmarking analysis.

Claim 18: Safety and environmental standards

GTS claim

GTS claims that safety and environmental standards are higher in the Netherlands than in Germany placing resulting in a cost disadvantage.

Discussion

GTS is concerned that safety and environmental standards are higher in the Netherlands than in Germany, placing a cost disadvantage on GTS.

In a meeting with ACM, Bundesnetzagentur explained that German TSOs face a stringent collective self-regulation. German TSOs have to comply with technical rules set by the DVGW (Deutscher Verband des Gas und Wasserfaches) (§49 (2) Nr. 2 EnWG). If these rules are violated the company faces prosecution). Treatment of environmental rules is much the same in Germany as it is in Netherlands.

Hence, we conclude that the German gas TSOs place high standards on safety and environmental issues, as well.

Claim 18 – Safety and environmental standards

We propose to reject this claim.

Claim 19: Provision of cleaning costs

GTS claim

GTS claims that it had an extraordinary cost for cleaning costs of € 30 million in 2010. According to the approach from BNetzA these extraordinary costs should be normalised over a period of 5 years.

Discussion

We understand that BNetzA in principle undertakes normalisations of extraordinary costs when defining the cost base for the photo year. This should smooth out the impact from one extraordinary event on the photo year costs for the regulatory period. As the regulatory period in Germany is 5 years, BNetzA tends to use this time period for normalisation.

GTS reports that the correction in their operation costs for extraordinary cleaning costs should be € 24 million GTS provided ACM with further details how to derive this figure.

The costs for cleaning are included in the position "overige incidentele kosten en baten (inclusief dotatie)" of € 42.1 million GTS stated that the € 42.1 million should be split as follows:

- cleaning costs ("Voorziening opruimkosten"): € 30 million and
- others: € 12.1 million.

Eliminating 4/5 from € 30 million results in the correction of € 24 million for operating costs.

Claim 19 – Provision of cleaning costs

We propose to accept this claim and correct the operating costs from GTS by € 24 million.

Country specific factors – proposals

Table 2. Overview on proposals

	Claim	Proposal	Further information from GTS
1	Pension costs HGB vs. IFRS	We propose to acknowledge this claim and exclude the cost item from the GTS cost base.	
2	Treatment of expansion investments	No adjustment of GTS costs necessary as costs from investment measures included in photo year costs 2010 of German gas TSOs.	
3	Treatment of non-controllable costs	We propose to acknowledge this claim and add the non-controllable costs to the cost base of the German Gas TSOs	
4	Differences in depreciation periods	We propose to acknowledge this claim and standardise capital costs of the German TSOs according to the Dutch approach for calculation of capital costs. For German TSOs gross historic investment costs (investments before any depreciation) will be used for standardisation In case that Dutch depreciation periods being longer than German depreciation periods we will take this into account in the standardisation process.	
5	Cost base of German TSOs not based on audited costs	We propose to reject this claim	
6	Difference in Security of Supply	We acknowledge the cost impact from the difference in Security of Supply and propose the following cost adjustments: • Adjustment of capital costs – we propose to adjust the investment stream for the respective compressor stations according to the part due to higher Security of Supply. • Adjustment of operating costs we propose to use the GTS figure, which was assessed by Jacobs as reasonable, of 1.432 million € for adjusting operating costs. This adjustment applies to “Total OPEX excl. BESeF (NOK)”. We understand from GTS that no adjustment is necessary for the cost item “Totaal BESeF”.	GTS already provided information on cost figures for the compressor stations

7	Balancing costs	We propose: • Opex – only use GTS opex for "Transport taak". • Capex – no cost correction for the balancing task for GTS and the German TSOs	
8	Quality conversion	We propose to exclude the costs for "Kwaliteitsconversie" from GTS cost base: • Opex – exclude GTS opex for "Kwaliteitsconversie". • Capex – exclude GTS physical assets used for "Kwaliteitsconversie". There would not be any correction for overlapping H- and G-gas infrastructure. In addition we propose to adjust capital costs and operating expenditures for • Part of compressor stations used for quality conversion; • Nitrogen transport pipeline IJmuiden (Supplier Linde) - Oudelandertocht (GTS Mixing station).	GTS already provided details on costs figures for the compressor stations.
9	Joint ventures of German TSOs	We propose to retain the approach used by Bundesnetzagentur. See Frontier/Consentec (2015)	
10	Gas receiving stations	We propose to exclude the costs for "Gasontvangstations" from GTS cost base: • Adjustments of capital costs – we exclude the asset "02 Gasontvangstations" from the asset base of GTS. • Adjustment of operating costs – GTS claims an adjustment for opex of € 16.09 million, which is 5% of the corresponding investment costs. This figure is not substantiated by Jacobs. We propose to accept these costs and to adjust GTS opex accordingly. This adjustment applies to "Total OPEX excl. BESeF (NOK)". For the adjustment of the cost item "Totaal BESeF" we propose to use the GTS figures of € 3.477 million.	
11	Firmness	see Frontier/Consentec (2015).	
12	Gas quality	We propose to reject this claim.	
13	Flexibility	We propose to reject this claim (see	

		Frontier/Consentec, 2015).
14	Connection task	We propose to reject this claim.
15	Market areas	We propose to reject this claim.
16	ICT system	We propose to reject this claim.
17	Odorisation	We propose to accept this claim.
18	Safety and environ-mental standards	We propose to reject this claim.
19	Provision of cleaning costs	We propose to accept this claim and correct the operating costs from GTS by € 24 million.

Source: Frontier / Consentec