1. INTRODUCTION

Enagas appreciates the opportunity given to express our point of view to this project and to participate in the PE^{2}Gas workshop that took place last December in Brussels. Taking advantage of it, in this document we would like to present you some of our thoughts and concerns that, based in our experience and in the comments expressed by other participants in this workshop, arises to us.

Since its creation, Enagas has been committed in providing an efficient, reliable and quality service to the gas users at a minimum cost and in order to achieve this target, while maintaining the best practices, during all these years, it has been putting in practice active efficiency plans.

Enagas also reckons that in order to measure the results of this endeavour and to keep improving, comparison with other peers should be done and for this purpose benchmarking studies are one of the best options.

In this sense, Enagas has been working with a group of European TSOs in this type of initiatives, having undertaken previous benchmarking studies. The experience and know how learned in these analysis should be applied in this project in order to avoid request from TSOs extra and non-useful information and to be aware of the limits of the outcomes of these type of projects due to the complexity and variability of the regimes and circumstances of TSOs across Europe.

Finally, we would also point out that ACER is preparing a study on unit investment cost indicators to be published by May 2015 for pipelines and compressor stations and that for this purpose we have already received through ENTSOG a mail from ACER. In this mail ACER also indicates that in the forthcoming months that NRAs may circulate to TSOs questionnaires requesting information for this study.

Although this study may not be directly related to the PE^{2}Gas project, the information to be provided will probably be the same and in this sense, coordination between both studies would be welcome to avoid adding an extra burden on TSOs.

2. GENERAL COMMENTS

Although Enagas acknowledges that benchmarking studies are a very valuable tool to measure and compare the performance of national TSOs, it is also aware that in order to obtain any valid conclusion, the analysis has to be done in homogenous and equivalent conditions.

The normalization process of the different variables that take part in the analysis is the key of the whole process and it's the most difficult issue due to the high heterogeneity of the variables and conditions.

Enagas also believes that the role of TSOs in this project hasn't to be merely of the, a data provider, and that it must go beyond, playing an active role in all the stages of the project, with direct and continuous interaction with the consultants.

For this reason, Enagas considers that it is very important that experience of TSOs in previous benchmarking studies is used in this project in order to take advantage of it, especially in the normalization process, data collection and process model.

In this sense, the workshop that took place last December was a very positive experience where TSOs could express to the regulators and consultants their point of view and share with all the assistants, for example, the experiences and the effects that previous benchmarking studies, as e^3Grid in 2012 had in some electricity TSO, in particular in the Dutch TSO, and how sensitive the outcomes of these analysis could be depending on the normalization process, as other German TSOs pointed out.

However, we would like to let you know that an earlier participation of TSOs would be welcome, as this meeting wasn't the start-up of project, and the regulators seemed to have already taken the decision to go on with the project.

The e3Grid study provided an overall efficiency score for each TSO. However the study was contentious for numerous reasons, e.g. transparency and robustness, and was widely criticized by TSOs and academics.

In some countries, the outputs of these studies were used directly in the setting of price controls, such as in The Netherlands, where the e^3Grid results were used for TenneT's price control.

This equivalent study in the gas sector PE^2Gas, appears to be also driven by the Dutch regulator, who might have the intention of using again the results in the next price control determination, in this case for Gasunie Transport Services.

If we focus in the Spanish gas system we could realize that in this case it already provides some kind of benchmarking information, as, the Spanish regulatory system provides public information about CAPEX and OPEX unit costs that could be used as the standard costs.

These costs that are annually published in the official Gazette could be regarded as a cost benchmark for Spanish TSOs. In fact, these unit costs were established from a CNE study based on actual projects and operation and maintenance costs of Spanish transportation, LNG and underground storage gas companies.

The project will impose TSOs a very important effort that may entail extra expenses. This should be taken into account.

The heterogeneity of the TSOs conditions (market, regulatory, etc.) and the complexity of the project have to be considered by the consultants and the NRAs in the analysis of the results.

The results should be just used to monitor the productivity and efficiency of the TSOs in order to improve their performance but must not be used for other purposes as tariff calculations or price control review, as mentioned before, as they are beyond the scope of the analysis.

The TSOs must also benefit of the results of the project and although the TSOs will have access to individualized reports, these shouldn't limit just to data comparison. A more comprehensive individualized report should be available.

Apart from these general comments, here you can find other comments and concerns about more particular issues:

Regarding the data collection:

- Timeframe of data collecting. It could be very difficult or even almost impossible to obtain detailed data from old projects, so a time limit should be considered for this project. No detailed data should be required for projects at least before 2002.
- Data from old projects might reflect costs from older organization capabilities and old technologies in developing transmission assets, that might cause distortion when mixing with data from recent projects that are driven by new state of the art and different costs in developing gas assets.Special projects, such as subsea pipelines, must be excluded, as they aren't comparable to the rest of the pipelines and they could distort the analysis, (3% of total pipeline length in Enagas).
- The consultants should provide TSOs comprehensive and detailed training and information about the data collection process, specific workshops could be necessary.
- It is essential to develop a process to ensure that data reported from different TSO are homogeneous and establish a data validation process that guarantees data quality & uniformity. Developping this process and auditing it might also carry out big costs for TSOs.

- Detail of data to be provided should be analysed beforehand by the consultant, in coordination with TSOs, to exclude extra and non-relevant data, to avoid unnecessary workload and waste of time.
- Output services. Only those variables under the TSO responsibility and linked to availability of the service should be considered as output services. Among others could be considered capacity, peak demand and volume of storage or even functions of asset base. Volume of gas delivered or level of usage of infrastructures should be excluded as they are outside the control of TSOs.

Regarding the homogeneity of TSOs:

- There is large heterogeneity among gas TSOs within a small sample size (even greater than differences between Electricity TSOs), what makes very challenging if not impossible to ensure consistency and auditability of data.
- There is an important risk of data misinterpretation, if all relevant country specific differences are not taken into account.
- The planning and grid development differs from one country to another and should be considered among complicating factors. Enagas network development is subject to central and mandatory planning, while in other countries may be driven by markets mechanisms like open seasons.
- Terms and concepts used must be precisely defined in order to avoid misunderstanding and to allow TSOs provide equivalent and homogeneous information.
- Differences among TSOs structures should be carefully considered. Enagas for example is not only a TSO, but also a LSO and SSO while others are also RTSOs. Criteria in overhead cost allocation among these activities should be taken into account.
- The small sample size of the sample couldn't guarantee the statistical validity of the analysis and limit the conclusion of the outcomes.

Regarding the auditability of information:

- The validation of the cost allocation and the consolidation of the decomposed data will require an additional audit process. Although it is understood that this requirement falls under the scope of the PE^{2}GAS project, further clarification that this doesn't impose an extra cost to TSOs is needed.
- More detail regarding the statistics and econometric methodology to be used in the study should be required.
- It's very important the transparency of the process and the ability to (independently) verify and replicate the results.

Other considerations:

- The benchmarking analysis could be a very valuable tool, but the concerns already outlined make very difficult, if not impossible, to obtain valid conclusions and to use them directly in regulatory revenue setting.

- NRAs should take into account the expenses and staff dedication to this project. Although they can be small compared to the TSOs costs, this cost should be considered as part of the normal responsibilities of TSOs and so included in the benchmark study.

3. ANSWERS TO QUESTIONS

Below we present the answer to the questions proposed.

2.14 The current analysis focuses at TSOs rather than regional transmission operators (RTOs) – do you agree with this limitation?

In a first study we do, as TSOs constitute a more coherent group and so the results are expected to be more reliable (within the limits of reliability outlined previously). However an equivalent analysis could be carried on for RTOs. Later on, a complete study on both types of TSOs could be considered.

2.15 Do what extent are the European more or less similar than operators outside of EU-28?

They may have market and regulatory conditions that differs from those of the EU-28, and so they may be less comparable.

3.07 Are there other asset dimensions that are relevant here?

Subsea pipelines and singular infrastructures should be excluded from the analysis.

3.23 Do you agree with the statements regarding the access to data for pipelines, stations, LNG terminals and storage installations?

Although most of the data should be available, some of it could be difficult to obtain, and may be irrelevant to the study such as: exact location of the pipelines or the type of soil cover.

Moreover, how the pipelines are defined for this study could be a source of complication whenever these definitions don't match those of the internal management systems of the TSO.

3.52 The Chapter argues that the initial scope should be limited to a subset in order to assure comparability. Do you agree with this assessment?

Yes, LNG terminals and underground storages have different conditions.

3.53 The Chapter is negative with respect to the feasibility of comparing system operations among GTSOs. Do you agree

with this assessment? If not, what information should be used to achieve comparability in this regard?

Yes, in a first phase, as the operation conditions are probably very different among TSOs, and it would be more difficult to get the data homogenous.

4.08 Is it feasible for you to provide information corresponding to that presented in the table above for your corresponding assets?

Yes, although the information is too detailed. Quite of it could be irrelevant for this study and it could be misunderstood.

For example, all pipelines should be analyzed in the same group, as it's difficult to establish the boundaries between pipelines for internal and for international transit transmission. The pipelines are part of a meshed network and so, there will be other pipelines, apart from those physically in the interconnection that will be used in international transit.

Another example of this problem can be found with the wall thickness. As a single project may have different wall thickness, the pipeline should be split into different sections or on the other hand just inform of the average thickness.

In the Annex the information used in a previous benchmarking study carried out by TSOs and that result enough detailed is presented.

4.11 Is it feasible for you to provide information corresponding to that presented in the table above for your corresponding assets?

It can be very time consuming due to the high number of stations. Moreover other information that can be relevant should be considered, such as the size of the station (square meters), type of building, etc.

In the Annex the information used in a previous benchmarking study carried out by TSOs and that result enough detailed is presented.

4.15 Is it feasible for you to provide information corresponding to that presented in the table above for your corresponding assets?

The same response as in 4.11

4.17 Is it feasible for you to provide information corresponding to that presented in the table above for your corresponding assets?

In principle yes.

4.19 Is it feasible for you to provide information corresponding to that presented in the table above for your corresponding assets?

In principle, yes. However, the information is too detailed and some of it may be considered irrelevant.

4.21 Is it feasible for you to provide information corresponding to that presented in the table above for your corresponding assets?

N/A

4.23 Is it feasible for you to provide information corresponding to that presented in the table above for your corresponding assets?

In principle yes. However, in this case the information is not enough to depict a LNG terminal properly

4.25 Is it feasible for you to provide information corresponding to that presented in the table below for your assets? Is it pertinent to adequately describe cost differences?

In principle yes although a more detailed explanation should be necessary in order to identify the type of data and information required.

5.26 Is there any aspect (cost driving) of grid construction that you believe is not represented in the approach in this chapter?

TSOs should agree the definition of the format with the consultant.

5.27 Is it feasible for you to provide information corresponding to that presented in Table 11 for your pipelines?

In principle yes although not with the detail required. Anyway a more detailed explanation should be necessary in order to identify the type of characteristics and information required.

See Annex.

5.28 Is heterogeneity primarily an issue for CAPEX or OPEX differences in your opinion?

Yes, in our opinion is a key aspect to take into account. The heterogeneity of the TSOs conditions (market, regulatory, etc.) and the complexity of the project have to be considered by the consultants and the NRAs in the analysis of the results

6.59 The Chapter argues that frontier analysis is more suited for regulatory benchmarking than other methods, such as unit-cost analysis. Do you agree with this statement?

More detail regarding the statistics methodology to be used in the study should be required

6.60 DEA is advocated to be a good alternative for a frontier model, provided an activity model is developed. Do you agree with this position?

The same response as in 6.59

6.61 The last section argues that a set of comparable non-European TSOs could be used to estimate dynamic effects, e.g. productivity improvement rate. Is this a feasible and sound approach in you view?

They could be used, but as these TSO are more different than the EU TSOs, they probably will have more heterogeneity. It will more difficult to obtain comparable results.

7.06 Are the requirements above all necessary and complete for the project organization?

It's necessary that the TSOs have a direct and continuous interaction with the consultants.

7.16 The section assumes that transparency is important and feasible using a combination of workshops and project platforms. Do you agree with the assumption and the assessment?

Same response as in 7.06.

7.19 A full project is estimated to a year, based on other observations. Do you agree with this assessment? Is it an objective to shorten the time, even if that would require more resources mobilized at the NRA and/or TSOs respectively?

Depending on the final data collecting more time could be necessary due to the length of the network and number of high number of stations.

7.32 The section outlines a procedure with two rounds of calculations, both providing feedback to TSOs. Is this a good approach?

More information should be necessary. Once a change is proposed by a TSO it's not clear if this information will be known by the other TSOs, if the review is done between the consultant and each TSO.

7.37 To what extent is auditing a prerequisite for you to assign credibility to the results?

It's important in order to validate the correctness of the costs allocation among the TSOs. Nonetheless, it is not clear if the costs of the audits will be borne by NRAs within the scope of the PE2GAS project.

7.38 Is there a better way of organizing the data validation of the incoming data?

More information will be needed to answer the question.

8.21 Do you share this assessment? In particular, is it likely that you would retain valuable information from a benchmark performed along the lines in Chapter 6?

The benchmarking project should be designed in order to guarantee that valuable information is returned to TSOs. In principle, with the information available it doesn't seem possible to learn from the exercise.

8.27 Do you share this assessment on the risks identified?

Apart of those, more risk could arise due to the statistical methodology used.

8.28 Are there other risks or contingencies that should be mentioned and addressed here?

The same response as in 8.27

ANNEX

OPEX INFORMATION

COSTS	A Staff - Opex (own & third parties)	B Staff - Capex (own & third parties)	TOTAL (A+B) Staff - (own & third parties)	C Non-Labour Opex	D Non-Labour - Capex	TOTAL (C+D) Non-Labour	TOTAL (A+B)+(C+D)
GRID O&M							**0**
GRID Odourisation							**0**
GRID Heating and Losses							**0**
1. GRID (pipeline + above ground installations)							**0**
Compressors O&M							**0**
Compressor Fuel							**0**
Compressor Losses							**0**
2. Compressors stations							**0**
Dispatching O&M							**0**
3. Dispatching							**0**
(1+2+3) Gas Transmission System	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Human Resources							
Information Technologies & Communications							
Procurement							
Finance							
Facilities Management							
Business & development							
Other overhead costs							
4 Sub-total Overheads	**0**	**0**	**0**	**0**	**0**	**0**	**0**
GRAND TOTAL (1+2+3+4)	**0**	**0**	**0**	**0**	**0**	**0**	**0**

TECHNICAL INFORMATION FOR OPEX

General	**Units**		**Value**	**Comments**
Gas Transported	Bcm			
Capacity Available for Shippers	Bcm			
Pipeline Length (Actual Total Own Operated Pipeline Length)	km			
		Total	0,0	
Volume of Gas Odourised	Bcm			
Total Number of Own Staff Employed at Year End	Number			
Number of Hours per FTE (Number of Hours That Normally Comprise a FTE in the Company)	Hours			

Value of Spares (k€)	Grid (pipeline)	Compressors stations	Re-valued?	Brief Description of Spares Held	Comments
Strategic Spares					
Operational Spares					
Total					

Preventive & Corrective Maintenance	Units	Pipeline + Above ground installations	Compressor statios	Comments
Preventive Maintenance	k€			
Corrective Maintenance	k€			
Modifications	k€			
Maintenanace Projects	k€			
Total	k€			

Pipeline				Comments
Rail crossings	Number			
Non-navigable river crossings	Number			
Navigable river crossings	Number			
Coastal zone crossings	Number			
Pipeline Route: % Single pipeline route	%			
Pipeline Route: % Multiple pipeline route	%			
Average maximum operating pressure	bar			
Pipeline Route: % Urban	%			
Pipeline Route: % Suburban (intermediate)	%			
Pipeline Route: % Rural	%			
Pipeline Route: % Subsea	%			
Piggable NTS pipeline length	km			
Piggable RTS pipeline length	km			
Line block Valves	Number			
Pressure reduction stations	Number			
Flow control stations	Number			
Fiscal metering installations (company owned)	Number			
Fiscal metering installations (maintenance performed by the Company)	Number			
Average NTS pipe diameter	mm			
Average RTS pipe diameter	mm			
Average NTS pipeline age	Years			
Average RTS pipeline age	Years			
NTS Valve stations remotely operated	Number			
Total Number NTS Valve stations	Number			
RTS Valve stations remotely operated	Number			
Total Number RTS Valve stations	Number			
Pressure reduction & flow control stations remotely operated	Number			
Pressure reduction & flow control stations (total)	Number			

Compressor Stations	Units		Value	Comments
Compressor Stations	Number			
Compressor Units	Number			
Compressor Units In Use	%			
Compressor Units In Back-up (redundancy)	%			
Average Operating Lift	%			
Compressor Fuel Gas (including Total Electrical Energy) Consumed	MWh			
Total Volume Gas Compressed	Bcm			
Total Compressor Power Installed	MW			
Total Compressor Hours of Operation	Hours			

Compressor Units				Comments
Electric Centrifugal	%			
Electric Reciprocating	%			
Gas Centrifugal	%			
Gas Reciprocating	%			
Average Compressor Unit Age	Years			

Compressor Reliability	Units	Electric Motor Driver	Gas Turbine Driver	Comments
Total "on-line For Grid" Hours During Year	Hours			
Total Number Running Trips During Year	Number			
Mean Time To Failure (MTTF)	Hours	0	0	
Total Number Starting Trips During Year	Number			
Total Number Start Attempts During Year	Number			
Start Probability	%	0,0	0,0	
Start Frequency	Hours	0,0	0,0	
Availability (Operational)	%			
Reliability (Intrinsic Availability)	%			

Dispatching				Comments
Entry points	Number			
Exit points	Number			
Control/dispatching centres	Number			

CAPEX PIPELINES

Project Characteristics: Please include details about the physical characteristics of the project						
PROJECT DETAILS						**Start of onsite construction**
Pipeline	**Length (km)**	**Diam (mm)**	**Steel Grade**	**Coating Type**	**Max Operating Pressure (bar)**	**End of onsite construction**
Historic Project 1						
						No. of Months Build
				1	**2**	**3**
Crossings		**Number**	**Auger (No.)**	**HDD (km)**	**Micro/Pipejack (km)**	**Other Techniques Please complete additional information if used**
Crossing - Road						
Crossing - River						
Crossing - Rail - Major (Mainline)						
Other Installations			**Number**	**AGI's**	**Pig Trap**	**Block Valve**
Number of Installations						
Terrain				**Flat (km)**	**Hills (km)**	**Urban (km)**
Difficult (km)						
Average (km)						
Easy (km)						
Major Tunnels				**Major Tunnels (km)**		
Length of Major Tunnels (km)						
Extraordinary Expenditure/Extra Complexity (not accounted for above)				**Description**		
Rock (Excavation and Padding)						
Please include extra lines if necessary						
MATERIALS (STEEL LINEPIPE)						
Steel Pipe Diameter (mm)				**WT (mm)**		**Length(km)**
450						
450						
450						
500						
500						
500						
600						
900						
900						
900						
1050						
1220						
1220						
1220						
1220						
1220						
Other						
Other						
Additional Information: Please include any additional information that may have affected the outturn cost of this project.						

Project Costs: Please include costs for this project in the relevant areas	
PROJECT COSTS	
Diam (mm) 0	Pipeline Length (km) 0
Project 1	
Year of Completion 00/01/1900	
Project Details	**Actual Cost (m)**
Augers	
HDD	
MT / Pipe Jacks	
Other techniques	
Major Tunnels	
AGIs	
Pig Trap	
Block Valve	
Residual MWC (inc Provisional sums)	
Extraordinary Expediture	
Total MWC	0,00
Linepipe	
Project Services	
Planning and Access (e.g. easements and compensation)	
Design	
Other costs	
Total Other	0,00
Grand Total	0,00
Cost per Km	#¡DIV/0!

TIMING BREAKDOWN											Total
Year	1	2	3	4	5	6	7	8	9	10	
Actual Year											
Actual Spend											0

CAPEX COMPRESSOR STATIONS

ENAGÁS Data -

Site	CS 1	CS 2	CS n
Number of Machines			
Year Completed			
Project length (Years)			
Total Cost			
Currency			
Price Base			
Existing or New site?			
Other included works? (Y or N)			
If 'Yes' cost of other included works			
Extraordinary Expenditure factors?			
If 'Yes' cost attributable to Extraordinary Expenditure factors			
Project Driver			
Other Comments			

Unit 1	CS 1	CS 2	CS n
Output power (MW)			
Unit & fuel type			
Total cost			
Machinery Train cost			
HV cost (if applicable)			
Design Cost			
Main Works cost			
Internal / Management costs			
Extraordinary Expenditure?			
If 'Yes' cost attributable to Extraordinary Expenditure factors			

Unit 2	CS 1	CS 2	CS n
Output power (MW) (ISO)			
Unit & fuel type			
Total cost			
Machinery Train cost			
HV cost (if applicable)			
Design Cost			
Main Works cost			
Internal / Management costs			
Extraordinary Expenditure?			
If 'Yes' cost attributable to Extraordinary Expenditure factors			

Unit 3	CS 1	CS 2	CS n
Output power (MW)			
Unit & fuel type			
Total cost			
Machinery Train cost			
HV cost (if applicable)			
Design Cost			
Main Works cost			
Internal / Management costs			
Extraordinary Expenditure?			
If 'Yes' cost attributable to Extraordinary Expenditure factors			