Project : TDE - MVV TECHNICAL ASSISTANCE DGTREN - ENV

Subject : Final Report

An inventory on Interoperability Issues on the EU Internal Market for Gas.

Final Report

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Final Report

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1. Introduction

In December 2005, the European Community DG TREN awarded Tractebel Engineering (TE hereafter) a study "An inventory Interoperability Issues on the EU Internal Market for Gas" to be conducted within a year time.

This report highlights the results and presents the conclusions of this study with in attachment all the related documents which have been generated to achieve the requested inventory.

This study has been successfully performed thanks to the collaboration of different actors present in the European gas sector that completed questionnaires, participated in meetings and gave us information and feedback.

In this context, we will first, start this report with some statistics to present the level of participation in the survey from various different points of view (by country, by company, by interconnection point and by topic).

Afterwards, to better understand the validity of the study and its complexity, we will review and describe the different steps of the work that Tractebel Engineering has carried out for each topic.

Most of the time, the study will be presented as separated into five topics: "Gas Quality", "Business Rules", "Harmonization of Units", "Questions of IT Communication and data forms" and "Measure point Codification".

However, as the gas quality was the most important topic perceived to be hindering the free flow of gas between the European countries and represents the biggest part of the work, this topic has been more deeply analyzed than the other topics and hence the description of the topic "gas quality" will be some what more detailed.

2. Participation to the survey

For the survey, TE has had a contact with 64 stakeholders. Two of them haven't given any data but the rest have taken part in at least one topic of the survey.

The complete list of the participants together with the inventory of the topics for which they have given information is available in the table of Exhibit 2 (named *follow-up by stakeholder.xls*) and in the online data-base (see 3.10).

In this table, a cell with the number "1" indicates that the company/stakeholder whose name is indicated on the left of the line has responded to the topic with the title indicated on the top of the column. The number "0" indicates that the stakeholder hasn't answered to the topic.

This document shows that:

- 56 stakeholders have given answers for Gas quality.
- 41 stakeholders have given answers for Nomination & Matching process.
- 42 stakeholders have given answers for the Harmonization of Units.
- 42 stakeholders have given answers for the IT Communication & Data Format.
- 41 stakeholders have given answers for the Measure point Codification.

The level of response to the gas quality topic has been more important than the other topics as most of the market regulators have only filled the questionnaire related to this topic.

The list of stakeholders shows that the transporters (TSOs) represent the biggest proportion of participants in the survey.

We have also generated the table 1 (see below) which summarize the number of participants by country.

During the study, we have been in contact with 25 countries. However, three of them (Malta, Croatia and Switzerland) haven't filled any questionnaires, for different reasons.

A detailed follow-up of the participation by topic and by interconnection point has been realized and appears also in the Exhibit 2.

However, the presentation of this statistic is done later in the section 3.5.7.

Country	number of participants	Country	number of participants
Austria	4		
Belgium	2	Luxemburg	1
Croatia	1	Malta	1
Czech Republic	2	Netherlands	4
Denmark	3	Norway	3
Finland	1	Poland	3
France	5	Portugal	1
Germany	8	Slovakia	1
Greece	1	Slovenia	2
Hungary	1	Spain	2
Ireland	4	Sweden	2
Italy	4	Switzerland	1
Lithuania	1	United Kingdom	6
TOTAL			64

TABLE 1 – Number of participants by country

3. Project execution and methodology description

3.1. Starting points

The first step of this project was to research, to collect and to become acquainted with the existing material which could be useful as basis for the survey, as for example the Common Business Practices (CBP's hereafter) adopted by the European Association for the Streamlining of Energy Exchange-gas (EASEE-gas hereafter) or the Gas Transmission Europe (GTE hereafter) interconnection point map.

A copy of the CBP's is given in Exhibit 3. The GTE map is available on the Gas Infrastructure Europe (GIE hereafter) website, given in Exhibit 4 and on the data base created as part of this project (see 3.10).

On 27 February 2006, TE organized a first meeting with EASEE-gas, to propose and discuss an efficient methodology for this project.

Following this meeting and taking into account the EASEE-gas suggestions, as requested in the terms of reference, TE developed an initial draft of questionnaire and sent it to the high-level representatives of all relevant stakeholders together with an invitation for the kick-off meeting.

This initial draft questionnaire, the presentation made for this meeting and the invitation to the kick-off meeting are available in Exhibit 5 and on the data base created as part of this project (see 3.10).

3.2. Kick-off meetings

A first kick-off meeting was held on 13 January at the European Commission. This meeting gathered people from TE and the Commission, and the minutes of this meeting are available in Exhibit 6 and on the database created as part of this project (see 3.10).

On 6 March, TE organized the second kick-off meeting gathering high-level representatives of all stakeholders relevant to the scope of this project.

The purpose of this meeting was the following :

- To present the project and its different objectives (scope, methodology, action plan, …);
- To explain that the success of the project was dependent on the effectiveness of the questionnaire and the quality of response from all the relevant stakeholders;
- To present the draft questionnaire and discuss the questions with the participants;
- To identify substantial issues not yet addressed and/or covered by the scope of the project.

During the initial draft questionnaires some suggestions were made by the participants. Accordingly, in the days following the meeting, the initial draft questionnaire was updated.

This revised draft questionnaire has been then sent to the participants in order to receive some last comments/reactions about the updated questionnaire. The deadline for this feedback was set as 30 March.

The presentations made at the kick-off meeting (one by the Commission and two by TE), the minutes of the meeting and the draft versions of the questionnaire made on basis of the comments during the meetings are available in Exhibit 7 and on the data base created as part of this project (see 3.10).

At GTE's request, an additional meeting was organized to discuss the questionnaire content, the objective of the study and the role of GTE in the study. The GTE Interoperability meeting took place on 22 March in Brussels.

It must be noted that no additional topics have been proposed by the stakeholders (neither during the kick-off meeting nor during the meeting with GIE).

3.3. Questionnaire

On basis of the draft questionnaire and taking into account the last comments of different stakeholders, as requested in the terms of reference, TE finalized the questionnaire.

As a consequence of the different comments, the draft questionnaire was modified with more detailed questions especially with the purpose to get a better identification of the cause of the problems.

However, numerous comments were raised data about the capabilities of the stakeholders to give any cost data not only in the given time frame but about a problem that was at this stage not yet identified.

The Cost-Benefit data requests were hence delayed to the preparatory meetings after having identified more clearly the related problems for each IP's.

The questionnaire was separated into the five topics given by the Commission in the terms of reference (in form of five separated worksheets).

Even if no additional issue was proposed during the kick-off meeting attended by high-level representatives of stakeholders, TE added a sixth worksheet to ask to each individual stakeholders any proposal of additional questionnaires which could cover additional issues not yet identified.

TE also enclosed a cover page on which each stakeholder had to nominate a main contact person as requested in the term of reference.

The final questionnaire was agreed with the Commission before submitting it to the stakeholders.

On 7 April, the questionnaire was sent by the Commission to all the stakeholders (transporters, shippers, end-users, market regulators, etc.) through the representative associations of companies (e.g. GIE and EASEE-gas) with a guideline to completing it in a proper and comprehensive manner (as requested in the terms of reference).

TE and the Commission jointly decided that the questionnaire should be sent by the Commission only for the sake of perceived "neutrality".

The guideline, the accompanying letter and the final version of the questionnaire are available in Exhibit 8 and on the data base created as part of this project (see 3.10).

The deadline for the answer to the "gas quality" topic was set as the 19th May while the deadline for the other topics was set as 15 July. This deadline had been strongly suggested by the participants of the kick-off meeting who declared to need adequate time to collect and collate the necessary information.

Both deadlines were not respected by a few participants. In addition, some companies didn't send their data to TE (as had been explicitly requested) but sent it to their representative association or directly to the Commission, causing further delay and confusion. These circumstances slowed down the progress of the project.

In must be noted that the representative associations did not consolidate the work of their members as expected in the terms of reference but simply forwarded the questionnaires to their members requesting them to respond on time, in accordance with the deadlines.

3.4. Draft fact sheets

Based on the outcome from the questionnaire, draft fact sheets were generated for each interconnection point and for each topic. Each draft fact sheet describes and analyzes for one topic the interaction between transporters at a given interconnection point (IP) and identifies actual and potential problems as requested in the terms of reference.

3.4.1. Gas quality

The gas quality draft fact sheets were generated during July and beginning of August. TE could not begin any earlier due to the delay taken by the stakeholders to answer this part of the questionnaire.

TE generated one draft fact sheet per IP (where at least one completed questionnaire was received) and split up (into two separate fact sheets) two IP's indicated as bidirectional on the GTE map (as the specifications in either flow direction were different). The gas quality fact sheets highlight the most important questions of the questionnaire and regrouped, by IP, the answer of the relevant companies in order to more easily compare the data.

After having analyzed the gas quality questionnaire responses in detail, TE mainly focused its effort on the gas specifications themselves. On each draft fact sheet, where adequate data was available, TE compared the parameters and data quoted by both transporters (upstream and downstream) to identify the potential problems. Furthermore, TE also compared the specifications of each TSO with its legal requirement (when relevant data were received from the market regulator or similar organism).

In order to facilitate the interpretation of the draft fact sheets (and hence of the final fact sheets), the methodology used to analyze the data is detailed below.

1. In each draft fact sheet, highlight for any text comment the cell in pale yellow.
2. Look at the gas specification (question A.11) in detail:
    1. Is the data from the 2 TSOs identical?
        - if yes, then color the background for the row in pale green.
        - if no, then if the receiving TSOs spec is “tighter” than the delivering TSO this means a potential constraint and so color the background for the row in pale red.
        - if no, and if the receiving TSOs spec is “wider” than the delivering TSO (this means that it isn’t a constraint in this flow direction but eventually in reverse flow) color the background for the row in pale amber/orange.
    2. Is any data missing? If so, make a note on the worksheet.
    3. Is any data quoted in the wrong units? If so, make a note on the worksheet.
        - If both TSOs use the same wrong units, the 2.1 test above can be used.
        - Where possible, convert the data to the correct units, but use a red font to highlight the fact that it’s not prime data from the original response and make a note on the worksheet.
    4. Check whether either of the TSOs publishes Entry or Exit specs for this TSO on its website (for example GTS, Snam Rete Gas)
        - If it does, then compare the data in their 11.1 response with the Website data.
        - If there are discrepancies add the Website data in an additional column in A11.1 answers and note the source.
        - Write a note on the discrepancies on the worksheet

5. Check whether the legal specifications of the country are known (due, for example, to market regulator answer).
    - If it does, then compare the legal data with the TSO's data.
    - If there are discrepancies, add the legal data in an additional column in A11.1 answers.
    - Write a note on the discrepancies on the worksheet.
6. Check whether any Shipper has provided specification.
    - If it differs from the TSO data ignore it for the Traffic Light spreadsheet (see below) but color the 11.1 cells in pale amber/orange.
    - Include and highlight the discrepancy in a note on the worksheet.

3. Look at all other text comments and whether an Interconnection Agreement (IA) is in place
    1. If an IA is declared to be in place but the 2 TSOs have data differences in 11.1 cells (i.e. Where TE has highlighted any rows in red or amber in 2.1 above), then include appropriate comment on the worksheet.
    2. If text comments need a clarification, write a remark on the worksheet.
4. Generate "Cost" and "Benefit" questions where appropriate. TE tried to include them wherever there is a data difference between the TSOs, or when TSO uses spec different than those proposed by CBP's.
5. Generate a Traffic Lights spreadsheet.
    1. Transfer the cell color code from each 11.1 cell to the Traffic Light.
    2. Add an appropriate comment to the left of the Traffic Light cells if differences appear.

In all there were approximately 100 Interconnection Points, each with 11 separate gas quality parameters and 22 items of data per IP to analyse, compare, comment on and verify. Each of the 22 data items then also had to be compared with the relevant parameter/data of the EASEE-gas CBP recommendation. In addition there was a need to analyse the responses to the other questions per IP.

Any *one* item of data at an IP could represent a barrier to trade/free flow of gas – hence the need for very detailed and thorough analysis. In many cases it was clear that the 2 connected TSOs had not compared their data before submission. Hence there were many differences to detect and analyze.

3.4.2. Other topics

In agreement with the Commission, TE gave priority to the gas quality topic and generated meticulously its draft fact sheets (see 3.4.1 above).

TE has focused its attention and resources on this aspect as gas quality is generally perceived to be the most important topics hindering the free flow of gas between the European countries. Indeed, the general question "Do you consider that any element(s) or parameter(s) of the *topic* at this IP (or country) presents a barrier to the free flow of gas?" has received nearly no answers for the four last topics of the survey.

In addition, as per the terms of reference, TE performed also the draft fact sheets for these topics.

3.4.2.1. Nomination & Matching Process

The "Nomination & Matching Process" draft fact sheets have been generated during October and the beginning of November.

TE generated one draft fact sheet per IP (where at least one completed questionnaire has been received) and split up some IP's (into two separate fact sheets) indicated as bidirectional on the GTE map (the same as those for gas quality, in order to keep consistency). These draft fact sheets highlighted all questions of the questionnaire related to this topic and regrouped, by IP, the responses of the relevant stakeholders in order to compare easily the data.

In order to facilitate the interpretation of the draft fact sheets (and hence of the final fact sheets), the methodology used to analyze the data is detailed below:

- On each draft fact sheet, highlight any text comment cells and the 'yes' cells in pale yellow.
- Look at the question B12 to see if the stakeholders think that the notice (sent between them) contains clear and sufficient information.
    - if yes, then color the background of the cell in pale green.
    - If no, then color the background of this cell and the cell which specifies the problem in pale red.

3.4.2.2. Harmonization of Units

The Units draft fact sheets have been generated during October and the beginning of November.

TE generated one draft fact sheet per IP (where at least one completed questionnaire has been received) and split up (into two separate fact sheets) some IP's indicated as bidirectional on the GTE map (same as those for gas quality, in order to keep homogeneity).

These draft fact sheets highlighted all questions of the questionnaire related to this topic and regrouped, by IP, the answers of the relevant stakeholders in order to compare easily the data.

In order to facilitate the interpretation of the draft fact sheets (hence of the fact sheets), the methodology used to analyze the data for this topic is detailed below:

- On each draft fact sheet, look at the question C1 to identify if the stakeholders currently use the set of units as recommended by EASEE-gas in their CBP 2003-001/01 (given in Exhibit 3)
  - if yes, then color the background of the cell in pale green.
  - if no, then color the background of the cell in pale red and color also the units' cells that differ from the CPB.
  - verify, even if the answer to the question is yes, that all the units and reference temperatures are in accordance with the CBP, if not color the cell in pale red.
- Highlight any text comment cells and other 'yes' cells in pale yellow.

3.4.2.3. IT Communication & Data Format

The IT Communication & Data Format draft fact sheets have been generated during October and begin of November.

TE generated one draft fact sheet per IP (where at least one filled questionnaire has been received) and split up some IP's indicated as bidirectional on the GTE map (the same as those for gas quality, in order to keep consistency).

These draft fact sheets highlighted all questions of the questionnaire related to this topic and regrouped, by IP, the responses of the relevant stakeholders in order to compare easily the data.

In order to facilitate the reading of the draft fact sheets of this topic (hence of the fact sheets), TE highlights any text comment cells and the 'yes' cells in pale yellow.

3.4.2.4. Measure point Codification

The Measure point Codification draft fact sheets have been generated during October and the beginning of November.

TE generated one draft fact sheet per IP (where at least one completed questionnaire has been received) and split up some IP's indicated as bidirectional on the GTE map (same as those for gas quality, in order to keep consistency). These fact sheets highlight all questions of the questionnaire related to this topic and regrouped, by IP, the responses of the relevant stakeholders in order to compare easily the data.

In order to facilitate the reading of the draft fact sheets of this topic (hence of the fact sheets), TE highlights any text comment cells and the 'yes' cells in pale yellow.

3.5. Preparatory meetings

3.5.1. Gas quality

For this topic, as the answers (especially the specifications) given by the transporters and by the shippers didn't match each other at most Interconnection Points (IP's), the number of required preparatory meetings would have been very significant and probably in some cases a very inefficient process as most of the meeting time would have been taken up with clarification and correction of data differences between TSOs.

In this context it was decided in agreement with the Commission, to organize the preparatory meetings by a list of specific questions sent to each respondent (TSO and shipper) for each draft fact sheets.

These questions have been generated as a result of observations (of data differences etc) made by applying the methodology described in the section 3.4.1. These questions had different objectives, including:

- Re-quote data in the same units and/or reference conditions as the EASEE-gas CBP (or confirmation by the stakeholder of the data that TE had derived and re-quoted).

  This clarification was inevitable. Even though TE had stipulated that the specifications have to be filled in accordance to the units as referred in the EASEE-gas CPB 2003-001/01, many respondents disregarded this request.

- Quote missing data or confirmation that no data exists for some parameters at several interconnection points.

- Explain the difference in the specification values quoted by connected TSO's (and/or shippers)

- Ask for information on the likely costs, benefits and risks that would arise from introducing a "harmonized" Gas Quality specification at the IP's.

  TE did this by asking the stakeholders for the cost/benefit to remove either where there were differences between the existing specifications of the connected TSOs or where a TSO used an additional parameter (in addition to/or in place of those proposed by CBP's).

  As explained above, no specific questions had been generated in the original questionnaire asking for cost/benefit data as at that stage the potential problems to be addressed were not identified.

  TE also enclosed the generic question: "Can you supply any information on the likely costs, benefits and risks that would arise from introducing a "harmonized" Gas Quality specification at this IP (the EASEE-gas recommendations for example)? We would particularly welcome any information with regard to changes to the Wobbe Index."

- Identify the origin of the differences between data quoted by a TSO for an Interconnection Point and the relevant legal data/obligations (given by the market regulator).
- Understand the difference between the specifications quoted by the TSO in the questionnaire and the specifications quoted by the same company in other available documents (e.g. their own website or other).
- Identify the name of the relevant transporters as some approximations/mistakes appear on the GTE map, which had caused some TSOs to fail to respond to the questionnaire.

The questions sheets (enclosed with the draft fact sheets) were sent to all respondents during August and September and also to the transporters that hadn't given any answer at this stage, in order to encourage them to respond to the questionnaire.

By the means of these additional questions, TE also tried to throw light on the origin of the confidentiality of some specifications in order to know where specifications were available for the concerned Interconnection Points. We come back on this point in the section 3.4.6.

The questions sheets with the received responses are available in Exhibit 9.

3.5.2. Nomination & Matching process

In view of the data received and the low number of answers to the question: "Please give your view if you consider that the current nomination process at this IP presents a barrier to the free flow of gas?" (only two stakeholders have written a specific remark), it was decided, in agreement with the Commission, to send out the draft fact sheets to the different participants to validate the draft and create fact sheets.

TE sent out all the facts sheets for this topic on Monday 13 November and put the deadline on Friday 17 November. All the additional comments and modifications received before the deadline have been taken into account.

The responses are available in Exhibit 10.

3.5.3. Harmonization of Units

In view of the data received and the low number of answer to the question: "Do you consider that any element(s) /parameter(s) related to units at this IP (country or subdivision) present a barrier to the free flow of gas?" (only one stakeholder has written a specific remark), it was decided, in agreement with the Commission, to send out the draft fact sheets to the different participants to validate the draft and create fact sheets.

TE sent out all the facts sheets for this topic on Sunday 12 November and put the deadline on Friday 17 November. All the additional comments and modifications received before the deadline have been taken into account.

The responses are available in Exhibit 10.

3.5.4. Questions of IT Communication and data forms

In view of the data received and the low number of answer to the question: "Do you consider that the lack of use of the Edig@s protocol, at this IP, is a barrier to the free flow of gas?" (only one stakeholder has written a specific remark: GRTgaz), it was decided, in agreement with the Commission, to send out the draft fact sheets to the different participants to validate the draft and create fact sheets.

TE sent out all the facts sheets for this topic on Sunday 12 November and put the deadline on Friday 17 November. All the additional comments and modifications received before the deadline has been taken into account.

The responses are available in Exhibit 10.

3.5.5. Measure point Codification

In view of the data received and the absence of any specific response (by any stakeholder) to the question: "Do you consider that the lack of harmonization of codification for message exchange related to company identifier, time/data and/or localization is a barrier to the free flow of gas?", it was decided, in agreement with the Commission, to send out the draft fact sheets to the different participants to validate the draft and create fact sheets.

TE sent out all the facts sheets for this topic on Sunday 12 November and put the deadline on Friday 17 November. All the additional comments and modifications received before the deadline has been taken into account.

The responses are available in Exhibit 10.

3.5.6. Confidentiality

For the sending of these questions sheets with the draft fact sheets, the question of the confidentiality has been an obstacle for two reasons:

- First, two transporters and one shipper had stated that the data concerning the gas quality topic was confidential and had not quoted any specifications.

  This issue has been partially solved by the means of the generated questions for the transporters. We overcame it by deriving data from other sources that were in the public domain, but not necessarily 100% accurate (e.g. from Ofgem in the case of NG) and then presenting this data back to the relevant TSOs/ Hence, this problem of confidentiality is not completely solved.

- Second, some shippers (and transporters) have given the data but specified that it was confidential. The confidentiality represented a hindrance to sending the draft fact sheets.

TE decided in agreement with the Commission to delete all the shippers' names and make them anonymous.

For "Nomination & Matching process", "Harmonization of Units", "Questions of IT Communication and data forms" and "Measure point Codification" topics, the name of the shippers have been replaced by the "shipper #". The shippers' name with their respective code-name is given in form of a table in Exhibit 11.

3.5.7. Level of participation for each topic (statistics by IP's).

In order to give an idea of the magnitude of the survey, we give here some details about the number of draft fact sheets which has been created and an inventory of the number of responses obtained.

3.5.7.1. Gas quality

The table 2 details the count of the generated draft fact sheets (taking into account the new responses arising from additional questions. The total (105) corresponds to the number of interconnection points analyzed in the survey for this topic.

number of IPs on the GTE map	113
new IP identified	+ 4
bidirectional IP split up as spec different in either flow direction	+ 2
LoCal IPs identified by GTE	- 5
IP which flow from the EU to out of the EU (i.e. Exit Points)	- 1
IPs without any received data/response	- 8
	105

TABLE 2 – Number of generated draft fact sheets for gas quality

TE has also generated a follow-up table of the responses to the gas quality topic, using a color code methodology. This table is available in the Exhibit 2 (named *gas quality follow-up.xls*) and on the online database (see 3.10).

In order to facilitate the interpretation of the follow-up, the methodology used to make the table is detailed below. Each line corresponds to one interconnection point (the reference numbers are the same as on the GTE map except for the bidirectional IPs 13A & 13B which have been split up in 13AA, 13AB, 13BA and 13BB as requested by the Commission).

1. Indicate in black all the shippers and transporters who have answered the questionnaire for the concerned IP (4 columns for TSOs, 4 for shippers) and for whom a specific questions sheet has been generated.

2. Indicate in orange all the shippers and transporters who have answered the questionnaire for the concerned IP and for whom a specific questions sheet has *not* been generated.

3. Indicate in blue all the relevant transporters who have *not* answered the questionnaire for the concerned IP and for whom a specific questions sheet has been generated in order to receive an additional response.

   By agreement with the Commission, TE have only generated additional questions sheets for transporters which are active on IP(s) and where we had already received at least one response.

4. Color the background of the cell in pale green if we have received an answer to our questions sheets.

The statistics realized on the left of the page allow us to identify the participation of the shippers and TSOs at each level of the survey. This is summarized in the table 3 below.

The percentage of received answers to the additional questions sheets is 58%.

number of responses from TSO or shipper to the gas quality questionnaire	243
number of responses for which we have generated questions sheets	214
number of generated questions sheets without having received data	42
Total of questions sheets created	256
Number of responses received to our questions sheets	149

TABLE 3 : Overview of the participations to the gas quality

It is important to note that the reference number of a shipper in the follow-up table corresponds to his number in the fact sheets (the name has been changed in order to keep the data confidential, as detailed in the section 3.6).

3.5.7.2. Other topics

Table 4 gives a summary of the count of the draft fact sheets generated. The total (99) corresponds to the number of interconnection points analyzed in the survey for these 4 topics.

number of IPs on the GTE map	113
new IP identified	+ 4
bidirectional IP split up as spec different in either flow direction	+ 2
Local IPs identified by the GTE	- 5
IP which flow from the EU to out of the EU (i.e. Exit Points)	- 1
IPs without any received data/response	-14
	99

TABLE 4 : Number of generated draft fact sheets for these topics

TE has also generated a follow-up table of the responses for each of these topics. These follow-up are available in form of a table in the Exhibit 2 and on the online data base (see 3.10).

Each line corresponds to one interconnection point (the reference numbers are the same as on the GTE map except for the bidirectional IPs 13A and 13B which have been split in 13AA, 13AB, 13BA and 13BB, as suggested by the Commission). The names of the stakeholders who have answered to the topic for the concerned IPs are indicated. If we have received a confirmation of the data (following our sending of the draft fact sheets), TE has coloreded the background of the cell in pale green.

3.5.7.2.1. Nomination & Matching

The follow-up table of the responses to this topic (named *Follow-up Nomination.xls* and available in Exhibit 2 and on the data base) allows us to make an inventory of the number of responses by IP. This inventory is given on the table 5 below.

The table shows that 269 questionnaire responses have been received as part of the "Nomination & Matching" survey.

TE has sent out the draft fact sheets to confirm the data (with a short deadline) and 70 responses have been confirmed by the stakeholders (or modified if required). This represents 26%.

Number of different responses per IP	0	1	2	3	4	5	6	7	8
Number of IPs	20	24	30	19	13	6	5	0	2
TOTAL	269 responses								

TABLE 5: Number of responses by IP for Nomination & Matching topic

3.5.7.2.2. Harmonization of Units

The follow-up table of the responses to this topic (named *Follow-up Units.xls* and available in Exhibit 2 and on the data base) allows us to make an inventory of the number of responses by IP. This inventory is given on the table 6 below.

The table shows that 270 questionnaire responses have been received as part of the "Harmonization of Units" survey.

TE has sent out the draft fact sheets to confirm the data (with a short deadline) and 70 responses have been confirmed by the stakeholders (or modified if required). This represents 26%.

Number of different responses per IP	0	1	2	3	4	5	6	7	8
Number of IPs	20	24	30	18	14	6	5	0	2
TOTAL	270 responses								

TABLE 6 : Number of responses by IP for Harmonization of Units topic

3.5.7.2.3. Questions of IT Communication and data forms

The follow-up table of the responses to this topic (named *Follow-up IT.xls*, available in Exhibit 2 and on the data base) allows us to make an inventory of the number of responses by IP. This inventory is given on the table 7 below.

The table shows that 282 questionnaire responses have been received as part of the "Questions of IT Communication & Data Forms" survey.

TE has sent out the draft fact sheets to confirm the data (with a short deadline) and 83 responses have been confirmed by the stakeholders (or modified if required). This represents 29%.

Number of different responses per IP	0	1	2	3	4	5	6	7	8
Number of IPs	20	23	26	22	12	8	5	1	2
TOTAL	282 responses								

TABLE 7 : Number of responses by IP for IT Communication and data forms topic

3.5.7.2.4. Measure point Codification

The follow-up table of the responses to this topic (named *Follow-up Codification.xls*, available in Exhibit 2 and on the data base) allows us to make an inventory of the number of responses by IP. This inventory is given on the table 8 below.

The table shows that 279 questionnaires have been received as part of the "Measure point Codification" survey.

TE has sent out the draft fact sheets to confirm the data (with a short deadline) and 83 responses have been confirmed by the stakeholders (or modified if required). This represents 30%.

Number of different responses per IP	0	1	2	3	4	5	6	7	8
Number of IPs	20	24	25	22	14	6	5	1	2
TOTAL	279 responses								

TABLE 8: Number of response by IP for Codification topic

3.6. Fact sheets

Taking into account the answers to the additional questions (for gas quality), TE updated each fact sheet and added all interesting comments and modifications of data (the cells background which contain added information are colored in violet). In some cases, TE had to ask respondents for further clarifications as significant changes had appeared between the first and the second answer.

It was significant to observe that in some cases the project (due to the clarification and the shared draft fact sheets) stimulated the relevant stakeholders to conduct or finalize negotiations between themselves. In other cases the legal gas quality requirements (for a country) were stated to be "in process of modification" at the time of the questionnaire.

If these are the major indirect positive consequences resulting from the scope of this project, they also had the negative effect of complicating the data analysis and slowing down the progression of the project.

This phase has been completed for the responses received until Friday 17 November. However TE continues to receive data or mail indicating the longer response period that they need. This means not before the middle of December at the earliest for some of them. This example shows, by itself, the difficulty in obtaining the data in a timely manner and this remark is applicable at all the steps of the survey where TE needed the participation of the stakeholders.

All the fact sheets are available in Exhibit 15, 18, 21, 24 and 27 (respectively for gas quality, nomination and matching process, harmonization of units, IT Communication & Data formats and Measure point codification). There are also available on the data base created as part of this project (see 3.9.4).

3.7. Preliminary progress reports

As preliminary progress reports, TE decided to generate one traffic light by topic, in addition to the fact sheets.

They take into account the most important information of the fact sheets (which are a combination of the data obtained by means of the questionnaire and the additional questions sheets/comments).

This form of Preliminary Progress Report has been chosen as it gives a good basis for an efficient discussion of the situation at the Meeting, as requested in the terms of reference. They can be considered as a summary of most of the problems.

3.7.1. Gas quality

For the gas quality topic, the traffic light is a table which contains a comparison of the specifications quoted by the upstream and downstream transporters at each Interconnection Point in the area.

In the first instance, TE has generated traffic lights where enough responses to our additional questions have been received. TE has generated a specific traffic light for the following areas: Spain borders (4 IPs), Belgian borders (19 IPs), Greek borders (3 IPs), North East of Europe (5 IPs) and the Slovakian-Hungarian area (7 IPs). These Traffic Lights with comments are available in Exhibit 12.

To color the cells inside the traffic light, TE has used the questions “Is the data from the 2 TSO’s identical?” as a test.

- *if yes, then color the background for the row in pale green this means no constraint in either flow direction.*
- *if no, then if the receiving TSOs spec is "tighter" than the delivering TSO this means a potential constraint and so color the background for the row in pale red.*
- *if no, and if the receiving TSOs spec is "wider" than the delivering TSO (this means that it isn't a constraint in this flow direction but eventually in reverse flow) color the background for the row in pale amber/orange.*
- *if no data, then color the background for cell in grey (this means that either the specification has not been quoted by the TSO, or specification doesn't exist).*

As the deadline of the project approached and even if TE had not received an answer to all additional question sheets (cf. 3.5.7.1), TE generated a global traffic light with some additional comments for all IP's. This global traffic light is available in Exhibit 16 and on the online data base (see 3.10).

The form of this traffic light has been used for both High Level Meetings and a majority of the participants showed their satisfaction to see such tables.

3.7.2. Nomination & Matching Process

For this topic, the traffic light is a table which contains, per IP, the answers from all stakeholders to the following questions:

1. Do you consider that at this IP, the notice sent between shippers and TSO's contain clear and sufficient information? (yes/no)
2. If the answer above is no, please specify the interface where improvements on the quality of exchanged information is required :
   a) From TSO to TSO?
   b) From shipper to TSO to shipper?
   c) From shipper to shipper?
   d) Other? If other, please specify.
3. Please give your view if you consider that the current nomination process at this IP presents a barrier to the free flow of gas? (yes/no)
4. All interesting comments made by the stakeholders in relation with the previous questions.

Below the traffic light, TE has added all reactions to the questions "Are there any other point that you would like to raise in relation with the harmonization of the nomination & matching process used on the European Gas Market?"

For information, this data corresponds to the questions B12 to B14 of the questionnaire. All other questions refer to the application of the EASEE-gas CBP. This data (which

appears on the fact sheets) is not useful for a Cost Benefit Analysis but constitutes an inventory of the application of the corresponding CBP.

The methodology used to color the cells is:

- If the answer to 1 is yes then color the background of the cell in green; if no, in pale red.
- If the answer to 1 is yes, color in red only the background of the cell where the answer to 2a, 2b, 2c, 2d is 'yes' (if the questionnaire had been correctly filled, this step would not have been done).
- If the answer to 1 is no, color in green the background of the cell where the answer to 2a, 2b, 2c, 2d is 'no' and in red where it is 'yes'.
- If the answer to 3 is yes then color the background of the cell in green; if no, in pale red.
- Color the background of all comments in pale yellow.

This global traffic light is available in Exhibit 19 and on the online data base (see 3.10).

3.7.3. Harmonization of units

For this topic, the traffic light is a table which contains, per IP, all data collected in the frame of the units' questionnaire.

The first column corresponds to the answers to "At this IP (country or subdivision) do you currently use the set of units as recommended by EASEE-gas in their CBP 2003-001/01?"

The last column corresponds to the remarks made by the participants.

The other columns specify the units and temperature references that the stakeholders use at this IP).

The methodology used to color the cell is:

- If the stakeholder declares that it uses the EASEE-gas CBP recommendations, then color the background of the cell in green, otherwise color the background of the cell in red.
- If the stakeholder declares that it uses the EASEE-gas CBP (but there are inconsistencies), add only the units or temperature which are not in accordance with the EASEE-gas CBP and color the background of this cell in red (if the questionnaire had been correctly replied to by the stakeholder, this additional step would not have been necessary).

- If the stakeholder doesn't use the EASEE-gas CBP recommendations, then indicate all units and temperature filled in the questionnaire and color the difference with EASEE-gas in red.

- color the background of all comments in pale yellow.

It is important to note that if the reference temperature for volume quoted by the stakeholder differs from the EASEE-gas CBP reference, it has an impact on both the GCV and the volume specifications (even if the 'units' are the same). In this case, however, TE has only colored the background of the reference temperature cells which differ from EASEE-gas CBP.

This global traffic light is available in Exhibit 22 and on the online data base (see 3.10).

3.7.4. Questions of IT Communication and data forms

For this topic, the traffic light is a table which contains, per IP, the answers from all stakeholders to the question "Do you consider that the lack of use of the Edig@s protocol, at this IP, is a barrier to the free flow of gas?". All interesting comments made by the stakeholders in relation with the previous questions have been noted in an additional cell.

Below the traffic light, TE has added all reactions to the questions "Are there any other point that you would like to raise in relation with the harmonization of the nomination & matching process used on the European Gas Market?".

For information, this data corresponds to the questions D4 and D5 of the questionnaire. All other questions refer to the communication system used by each TSO. This data (which appears on the fact sheets) is not useful for a Cost Benefit Analysis but constitutes an inventory of the communication system currently used (telephone, e-mail, fax, Edig@s, web etc).

TE has colored the background of the cell in red where the stakeholder has responded that the lack of use of the Edig@s protocol, at this IP, is a barrier to the free flow of gas; otherwise in green. TE has also color the background of all new comments in pale yellow.

This global traffic light is available in Exhibit 25 and on the online data base (see 3.10).

3.7.5. Measure point Codification

For this topic, the traffic light is a table which contains, per IP, the answers from all stakeholders to the following questions:

1. Is there a common codification of company names/identifiers at this IP?
2. Is there a common codification of shippers at this IP?
3. Is there a common codification of reference date/time at this IP?

4. Is there a common codification of reference to this IP?
5. Do you consider that the lack of harmonisation of codification for message exchange related to company identifier, time/date and/or localisation is a barrier to the free flow of gas?
6. In your area is there any framework for measure point identification?
   - If the answer to E6 is yes, please give the reference and an example of a final consumer identification code.
7. All interesting comments made by the stakeholders in relation with the previous questions.

For the question 5, TE has colored the background of the cell in red where the stakeholder has responded 'yes'; otherwise in green.

TE has also color the background of all new comments in pale yellow.

This global traffic light is available in Exhibit 28 and on the online data base (see 3.10).

3.7.6. General remark

It is important to note that for the last 4 topics, many stakeholders have not responded to the questionnaire in the part reserved for them (many have responded incorrectly in the upstream part).

So, even if (for the generation of the draft fact sheet), TE has regrouped together information given by these stakeholders (and respected how they have filled the questionnaire), some approximations are suspected.

It would be useful to highlight this point if further work in this area is initiated by the Commission (for the fact sheets but also for the traffic lights).

3.8. High level meetings

3.8.1. Introduction

Within the scope of the study, TE has organized 2 meetings to discuss the Gas quality topic.

Both were initially presented to the stakeholders as 'Preparatory Meetings'. However, as the subject was very sensitive, participating companies naturally have sent their most important gas quality experts together with hub and/or commercial transportation managers. Hence these meetings were considered by both TE and EC (Mark Van Stiphout, representative of the European Commission) as "High Level" meetings. In fact, as explained, the goal of the so-called "preparatory meeting" was already achieved by means of the clarification & additional questions phase.

3.8.2. Madrid meeting

The decision to organize a high level meeting for the Spanish area was justified by two reasons:

1. Spanish stakeholder had showed their enthusiasm to organize such a survey during the kick-off meeting.
2. TE had immediately identified potential problems which justified the organization of a meeting.

This High Level meeting in Madrid was held on 2nd October to discuss the problems identified on the Spanish borders on basis of the draft fact sheets. The focus was made on 4 IP's (two on the French border (Larrau and Biriatou) and two on the Portuguese border (Badajoz and Tuy). In fact, the questions of the LNG terminals (Barcelona, Bilbao, Sagunto,…) were also discussed.

At least one representative of each stakeholder was present, except for the Portuguese regulator.

At the meeting, TE used a power point presentation in order to introduce the potential problems, identify the origin of these and discuss them (based on the gas quality traffic light, see section 3.7.1).

For the second part of the meeting, TE split the participants into 3 different working groups in order to discuss in detail the physical and/or commercial problems, update the information if necessary and collect where appropriate cost-benefit data. In conclusion, it was clear that it was too early to get any quantitative data for a cost-benefit analysis for the moment and that some time would be required to allow the stakeholders to evaluate the situation and make their own cost investigation.

After the meeting, TE prepared the minutes and distributed them with the presentation (on 20th October) for comments. These minutes were then updated and considered as a progress report for the High Level meeting.

The list of participants to this High Level meeting, the minutes (progress report) and the presentation are all available in the Exhibit 13 and on the database.

3.8.3. Brussels meeting

The decision to organize a High Level meeting for the Belgian area was justified by three reasons:

1. The problem of the Wobbe Index in Great Britain needed to be discussed within the scope of this study even if the subject had already been studied for some time by different organizations such as Ofgem, the DTI, CREG etc.

2. TE had received enough responses to make an effective analysis and generate the traffic light for this area.

3. Other problems had been identified by respondents.

TE organized this second preparatory/High Level meeting in Brussels on 6th October to discuss the problems identified on the Belgian border on basis of the draft fact sheets. 18 interconnection points were concerned on this area. TE has noted the participation of about 30 people at this High Level meeting indicating the level of interest/concern about the topic.

At the meeting, TE used a power point presentation in order to introduce the potential problems identify the origin of these and discuss them (based on the gas quality traffic light, see section 3.7.1).

For the second part of the meeting, the participants were split into 5 working groups in order to discuss in details the physical and/or commercial problems, update the information and collect where appropriate cost-benefit data. As a conclusion again, it was clear that it was too early to get any data for a cost-benefit analysis and that some time would be required to allow the stakeholders to evaluate the situation and make their own cost investigation (although a certain amount had already been provided in the DTI Consultation Report published at the beginning of 2006)

After the meeting, TE prepared the minutes and distributed them with the presentation (on 20th October) for comments. As some additional clarifications were requested for parts of these minutes, TE has contacted the relevant TSO's to confirm its part before sending out the minutes.

After the sending them to all participants (on 20th October), these minutes were then updated and considered as the progress report for the High Level meeting.

As an example, TE received the following remark (from Sean Waring, Interconnector UK) in regard to the presentation: "Your slide 23 indicates a nitrogen spec at IUK Bacton of 5%. This limit was removed earlier this year and there is now no upper limit on inerts".

3.8.4. Comments

Before the meetings, TE also sent out a general new questionnaire to the relevant shippers in order to receive new information for the cost-benefit analysis. Unfortunately, the feedback of the shippers has been very limited/poor.

3.9. Cost - Benefit Analysis

As per the terms of reference, TE proposed to the EC the methodology to follow to proceed with the cost benefit analysis.

This methodology is given in Exhibit 14.

The Cost benefit analysis has been performed accordingly and is to be found

- in Exhibit 17 for the Gas Quality topic
- In Exhibit 20 for the Nomination topic
- In Exhibit 23 for the Unit topic
- In Exhibit 26 for the IT topic
- In Exhibit 29 for the Codification topic

It must be noted that the information collected for the cost–benefit analysis has been essentially qualitative and not quantitative.

Indeed, as was observed during preparatory/high level meetings, the stakeholders are very reluctant or unable to provide any quantitative data at the moment. The reason is that either the cost is minor, is difficult to quantify (e.g. modification of internal procedures with internal resources), or is major and not limited to any individual stakeholder (and hence impossible for any one stakeholder to assess. (As an example of this, in the UK the regulator Ofgem has recently found it necessary to launch an initiative to set up Gas Quality "Workstreams" involving interested stakeholders to try to jointly establish credible gas quality "scenarios" and to set out various options for the economic (and hence commercial) regulation to address the perceived gas quality issues with a view to giving the market the necessary data and signals to address the various costs, benefits and risks and to make the appropriate investments to resolve the problems)

3.10. Data base

Finally, as per the term of reference, a data base has been elaborated on a dedicated internet site.

All the important documents produced in the frame of the study have been put on this site including the inventory traffic lights.

As per the Commission instruction, a remote access has been already given to Mr. Mark Van Stiphout, Administrator DGTREN European Commission.

In the future, it may be possible to put this data-base (or part of this data base) to an internet site with remote access to dedicated stakeholders with permission and level of accessibility to the documents.

Before this, confidentiality issues shall be solved and final validation of the "published" data shall be given officially by the stakeholders.

The objective is to allow (under controlled way) the stakeholders to update their data and to make this data base evolutionary.

Ideally, the data base could be also in the future linked to graphical interface like the GTE map with automatic update in both directions (GTE map data and inventory data).

The structure of the data base main page is given hereafter and is divided in six parts:

- Generalities
- Gas Quality
- Business rules/Nomination
- Units
- IT/communication
- Codification

EC : Gas Interoperability

European Gas Market

General

- MVV-TA/4N/83591/0/0 15/11/2006 GIE map
- MVV-TA/4N/83621/0/0 15/11/2006 Participation follow-up (by country, by stakeholder)
- MVV-TA/4N/83631/0/0 15/11/2006 Questionnaires (with guideline)
- MVV-TA/4N/83652/0/0 16/11/2006 Kick-off meetings (with CE on 13 January 2006 and with stakeholders on 6 March 2006)
- MVV-TA/4N/83654/0/0 16/11/2006 EASEE-gas meeting on 27 February 2006

Topic 1 : Gas quality

- MVV-TA/4N/83597/0/0 15/11/2006 Fact sheets : Gas quality
- MVV-TA/4N/83603/0/0 15/11/2006 Follow - up of the answers for this topic
- MVV-TA/4N/83727/0/0 18/11/2006 Summary of the gas quality specification (traffic lights)

Topic 2 : Business Rules

- MVV-TA/4N/83616/0/0 15/11/2006 Facts sheet : Business rules
- MVV-TA/4N/83617/0/0 15/11/2006 Follow - up of the answers for this topic
- MVV-TA/4N/83729/0/0 18/11/2006 Summary of the nomination data (traffic lights)

Topic 3 : Harmonization of Units

- MVV-TA/4N/83596/0/0 15/11/2006 Summary of the units data (traffic lights)
- MVV-TA/4N/83599/0/0 15/11/2006 Fact sheets : Units
- MVV-TA/4N/83619/0/0 15/11/2006 Follow - up of the answers for this topic

Topic 4 : Questions of IT Communication and data forms

- MVV-TA/4N/83598/0/0 15/11/2006 Fact sheets : IT Comm. & Data Formats
- MVV-TA/4N/83605/0/0 15/11/2006 Follow - up of the answers for this topic
- MVV-TA/4N/83728/0/0 18/11/2006 Summary of the IT data (traffic lights)

Topic 5 : Measure point Codification

- MVV-TA/4N/83606/0/0 15/11/2006 Fact sheets : Codification
- MVV-TA/4N/83632/0/0 15/11/2006 Follow - up of the answers for this topic
- MVV-TA/4N/83730/0/0 18/11/2006 Summary of the codification data (traffic lights)

4. Conclusions - additional comments

During the project execution, TE has encountered a lot of difficulties as the trade of gas is a sensitive topic.

The most important point is that this project doesn't affect only the gas industry players. The problem is not only a technical issue but also a commercial, political and economical issue and is also linked to the safety of the public/household consumer.

Another difficulty was the confidentiality. In most cases, when this problem occurs, TE has found a solution to receive the data (thanks to our additional questions) but this operation took extra resources, some time and delay.

A few barriers to the free flow of gas in Europe are caused by differing legal requirements of some member states.

In view of the magnitude and complexity of the problem, TE has been obliged to put a lot of resources into the completion of the most important phase of the project (gas quality) which consumed all the man-day's allowed for the whole project.

In the context of study, the Terms of Reference of the study have proved to be considerably more complex than foreseen in the contract and difficult to achieve within the given timeframe. Short cutting the methodology applied and explained here above would have resulted in an invalid inventory.

In fact, on the contrary, the systematic and slower approach needed to conduct the study in an adequate and rigorous manner has had the following positive consequences:

- It has given more confidence to the stakeholders (and hence much more "industry" credibility to the resultant inventory and database) which were reluctant to collaborate initially contesting the quick and simple approach which they considered to be unrealistic.
- It has exposed many differences between the specifications of connected TSOs which represent a commercial and/or physical risk to the shippers trading gas across the particular IP. In many cases the shippers were unaware of these differences and associated risks due to a combination of:
  - the lack of transparency of both the commercial gas quality specification and the physical quality of the flowing gas.
  - The fact that the trading terms between shippers at any IP often simply refer to mutual obligations to comply the normal operations at the IP without specifying the detailed exit and entry gas quality specifications. Hence specification differences can go undetected until there is a physical problem at the IP.
  - The fact that, in many cases, the physical gas has to date not caused any off-spec situations and hence the shippers are unaware of *potential* problems.

  - Lack of technical expertise in the shipper companies on this very complex and specialized subject. Most of the expertise resides in the TSO companies.

- It has stimulated widespread discussion of gas quality issues in Europe:
  - Many conferences have appeared on the topic, and
  - A number of studies and working groups are under development.
  - Several agreements between TSOs have been reviewed.
  - The stakeholders have become much more aware of the potential problems and are beginning to address them in order to positively influence any decisions that the European Commission will take.
- The establishment and existence of the inventory and associated database will, in itself, encourage and provide the market with greater transparency on gas quality than has been the case hitherto.
- For gas quality, each parameter within each specification at each IP has a complex technical and/or contractual historical reason for its presence in the specification and for the current value. Any cost-benefit analysis will need to review the upstream and downstream consequences on the many gas chain actors of changing the value of each and any parameter.

5. Gas Quality – CBA conclusion

As a consequence of EASEE-gas works but also of the present study of the Commission, the stakeholders are now putting a lot of efforts to harmonize the gas quality at each interconnection point.

At some Interconnection Points, the gas quality remains a barrier for free flow of gas. To temporary by-pass these barriers, internal agreements are put in place but this does not touch to the origin of the problem itself.

In fact, for gas quality, each parameter within each specification at each IP has a complex technical and/or contractual historical reason for its presence in the specification and for the current value.

Instead to be a problem of IP, it is not a regional problem but well a European problem.

The problems linked to the Wobbe Index specification in UK and Spain that were each the subject of high level meeting are the most obvious examples. These specifications affect indeed all the Northern part of EC and the West part of EC respectively.

The approach by IP of the ToR (followed in this study) appears to be perfect to detect the problem but not ideal to get solutions to solve these problems.

Indeed, any efficient cost-benefit analysis needs to review the upstream and downstream consequences on the many gas chain actors of changing the value of each and any parameter. This collaboration and cooperation between the actors start to take place and none actor individually is able today to give any input. The transfer capacities for which the gas processing plants or blending facilities have to be designed are not known by the different stakeholders and hence it is useless to conduct any quantitative cost benefit analysis at this stage.

A new approach based on examination of the problems at a European level is mandatory to continue the harmonization of the gas quality. This may takes some time. This was not the purpose of the study and the cost benefit analysis performed in the present study has been therefore most of the time limited to qualitative solutions.

6. Nomination & Matching – CBA conclusion

As highlighted, only two stakeholders consider that the current nomination process at this IP presents a barrier to the free flow of gas.

Furthermore, at a lot of IP's the notice contains insufficient and unclear information. As explained by Energinet, "*the European gas industry, including gas transmission system operators (TSO) is developing detailed processes, rules (network codes) and supporting IT-systems. However, these have only to a small extent been coordinated across borders; in each country or in Europe as a whole.*

One suggestion is to start on a European level to prepare common detailed descriptions of processes and rules, which the individual country and/or TSO could finalise in accordance with the specific national circumstances and setup ".

The benefit of Harmonisation would be qualitatively a better access to the real transportation capacity of the network which will be in future critical due to more and more remote location of the gas sources.

This is not possible at this stage to quantify per IP any cost or benefit for this topic and none stakeholders have been able to communicate any cost data on the subject.

This topic should be better studied at European level.

7. Harmonisation of units – CBA conclusion

The harmonization of the units on the European level is not ready to be completed but is not a barrier for free flow of gas in Europe. In order to meet the requirements of the CBP considerable changes involving a range of industrial stakeholders is required

The introduction of new parameters would require software changes, regulatory amendments and contractual renegotiations. All these operations would involve significant cost in terms of resources, time and software changes and it is not quantifiable.

The benefit is limited and would be principally a saving of time, as the stakeholders would not have to convert the data when agreement between stakeholder using different specifications will be finalized.

8. IT Communication & data format – CBA conclusion

The harmonization of the IT Communication is in process, however not all stakeholders see actually the advantage of the use of Edig@s protocol (or any other protocol) and so, the harmonization is not ready to be completed on the European level. Some consider it a barrier others consider the lack of implementation a barrier.

TE has, however, not received any information showing that the lack of use in Edig@s (or any other protocol) is an additional cost that prevents for the free flow of gas on the European Market.

9. Codification – CBA conclusion

In view of the number of 'yes' in the column corresponding to the questions E1, E2, E3, E4, a common codification by IP is already widespread.

TE has not received any real information showing that the lack of codification presents additional cost that is a barrier to the free flow of gas on the European Level

Therefore, a more detailed cost-benefit analysis is for this topic superfluous.