



Annexes to the monitoring report 2010

on the regulatory oversight
of natural gas hubs

Ref: E10-GMM-11-03a
15 October 2010

Table of Contents

ANNEX 1 – RESPONSES IN DETAIL: QUESTIONNAIRE TO NRAS.....	7
A.1.1. Definition for natural gas hub.....	7
A.1.2. Question set 1	8
A.1.3. Question set 2	15
A.1.4. Question set 3	24
A.1.5. Question set 4	35
ANNEX II FINDINGS FROM TSOS/NATURAL GAS HUB OPERATORS.....	38
A.1.1. Definition for natural gas hub.....	38
A.1.2. Question set 1	39
A.1.3. Question set 2	50
A.1.4. Question set 3	57
A.1.5. Question set 4	68
ANNEX III: FINDINGS FROM USERS OF NATURAL GAS HUBS	72
A.1.6. Question set 1	72
A.1.7. Question set 2	84
A.1.8. Question set 3	93
A.1.9. Question set 4	106

List of Figures

Figure 1: Was your organisation involved in the development of the hub?	9
Figure 2: What was the initial trigger for the constitution of the gas hub?	10
Figure 3: Are there any fees to be paid for trading at the hub?	11
Figure 4: Which components are being used to specify the fee?	12
Figure 5: Are there other trading points?	13
Figure 6: Is there more than one hub?	14
Figure 7: Is there exchange based trading going on at the hub?	15
Figure 8: What kind of data does the hub operator publish on its website?	16
Figure 9: What other kind of information related to hub activity is publicly available?	17
Figure 10: What kind of services does the hub operator provide?	19
Figure 11: What kind of services does the TSO provide in relation to the hub?	20
Figure 12: Is the hub mature?	21
Figure 13: Is the hub liquid?	22
Figure 14: Which parameters do you use for assessing the liquidity?	23
Figure 15: Do you have enough information available to calculate these parameters?	24
Figure 16: Does regulatory oversight of the business activities of the hub operator exists?	25
Figure 17: On which area?	26
Figure 18: Is/are any of the following hub services regulated?	27
Figure 19: How do new services come into place?	28
Figure 20: Does the procedure described in 3.5 differ for regulated and non regulated services?	29
Figure 21: Is the transmission system operator offering its services taking into account the needs of all hub members?	30
Figure 22: Are NRAs receiving data from the hub operator on a regular basis?	31
Figure 23: Is there a legal basis for data collection by the NRA?	32
Figure 24: How can complaints against the behaviour of the hub operator being dealt with?	33
Figure 25: Is there a code of conduct for the hub operator to guarantee non-discriminatory access?	34
Figure 26: Is there a legal basis for reporting trade deals?	35
Figure 27: What kinds of transactions are offered to market participants?	36
Figure 28: If transactions are offered, what is the range of the main products traded?	37
Figure 29: Was your organisation involved in the development of the hub?	40
Figure 30: What was the initial trigger for the constitution of the gas hub?	41
Figure 31: When was the hub established?	41
Figure 32: Are there any fees to be paid for trading at the hub?	42
Figure 33: If yes, which components are being used to specify the fee?	43
Figure 34: Are there other points of trading?	44

Figure 35: Is there more than one hub?.....	45
Figure 36: Is there exchange based trading going on at the hub?.....	46
Figure 37: Were there market makers?	47
Figure 38: If yes, were market makers officially appointed?	48
Figure 39: Is the conclusion of a contract prerequisite for trading at the hub?	49
Figure 40: If the conclusion of a contract is a prerequisite for trading at the hub, what other prerequisites are there?	50
Figure 41: What kind of data does the hub operator publish on its website?	51
Figure 42: What other kind of information related to hub activity is publicly available?.....	52
Figure 43: What kind of services does the hub operator provide?.....	53
Figure 44: What kind of services does the TSO provide in relation to the hub?.....	54
Figure 45: Is the hub mature?	55
Figure 46: Is the hub liquid?.....	55
Figure 47: Which parameters do you use for assessing the liquidity?.....	56
Figure 48: Do you have enough information available to calculate these parameters?	57
Figure 49: Does regulatory oversight of the business activities of the hub operator exist?	58
Figure 50: If yes, on which area?	59
Figure 51: Is/are any of the following hub services regulated?.....	60
Figure 52: How do new services come into place?.....	61
Figure 53: Does the procedure differ for regulated and non regulated services?.....	62
Figure 54: Are data on the transmission system being offered and accessible.....	63
Figure 55: Do you deliver data related to a supervisory body on a regular basis?.....	64
Figure 56: Is there a legal basis for data collection by the NRA?	65
Figure 57: How are complaints against the behaviour of the hub operator being dealt with?	66
Figure 58: Is there a code of conduct for the hub operator to guarantee non-discriminatory access?.	67
Figure 59: Is there a legal basis for reporting trade deals to keep oversight and control possible?.....	69
Figure 60: What kind of transactions are offered to market participants?	70
Figure 61: If transactions are offered, what is the range of the main products traded?.....	71
Figure 62: Was your organisation involved in the development of the hub?	74
Figure 63: What was the initial trigger for the constitution of the gas hub?	75
Figure 64: When did your company become active on the hub?	76
Figure 65: Should there be any separate fee for trading at the hub?	77
Figure 66: If yes, which components should there be used to specify the fee?.....	78
Figure 67: Only one trading point per transmission system/per balancing zone	79
Figure 68: Can there be more than one hub on the same transmission system/on the same balancing zone?.....	80
Figure 69: Is exchange based trading on the hub necessary in the development of a gas market?....	81

Figure 70: Did you act as a market maker?	82
Figure 71: Is the conclusion of a contract prerequisite for trading at the hub?	83
Figure 72: If yes, what other prerequisites are there?.....	84
Figure 73: What kind of data should the hub operator publish on its website?	85
Figure 74: What other kind of information related to hub activity is publicly available?.....	87
Figure 75: What kind of services should the hub operator provide?.....	88
Figure 76: What kind of services does the TSO provide in relation to the hub?	89
Figure 77: Is the hub mature?	90
Figure 78: Is the hub liquid?.....	91
Figure 79: Which parameters do you use for assessing the liquidity?.....	92
Figure 80: Do you have enough information available to calculate these parameters?	93
Figure 81: Is regulatory oversight of the business activities of the hub operator necessary?	94
Figure 82: If yes, by whom?	95
Figure 83: If yes, on which area?	96
Figure 84: Is regulation of any of the following hub services necessary?.....	97
Figure 85: How do new services come into place?.....	98
Figure 86: Does the procedure differ for regulated and non regulated services?.....	99
Figure 87: Are data on the transmission system being offered and accessible for all hub members?.....	100
Figure 88: Should data related to hub activity being given to the NRA on a regular basis?.....	102
Figure 89: Is there need for a legal basis for collecting data by the NRA?.....	103
Figure 90: How are complaints against the behaviour of the hub operator being dealt with?	104
Figure 91: Is non-discriminatory access guaranteed at an acceptable level?	105
Figure 92: Is there a legal basis for reporting trade deals?.....	107
Figure 93: If yes, by whom is this oversight being performed?.....	108
Figure 94: What kind of transactions are offered to market participants?	109
Figure 95: If transactions are offered, what is the range of the main products traded?.....	110

List of Tables

Table 1: NRA participation in this monitoring exercise..... 10

Annex 1 – Responses in detail: Questionnaire to NRAs

A.1.1. Definition for natural gas hub

National regulatory authorities provided the following answers (responses have been abbreviated for the purpose of better understanding where appropriate without loss of information, underlining by the authors of the report):

- AUSTRIA : A "hub" shall mean a gas pipeline node where logistic and/or commercial hub services are rendered [...].
- BELGIUM :A hub is defined as “every location where network users can physically put natural gas at disposal with a view to resale; operations which are logistically supported from a technical and commercial point of view by a service provider [...].”
- DENMARK A natural gas hub is a trading point/platform that allows transport customers to execute transactions in the natural gas transmission system.
- FRANCE A place whether contractual or physical where shippers can trade gas. In particular: A virtual point attached to a balancing zone, where one shipper can exchange (ie buy or sell) gas to another. Transactions should be guaranteed by the TSO
- GERMANY Virtual or physical delivery point for gas-trading activities (intra-day and long-term) [...].
- GREAT BRITAIN A gas trading hub is a common delivery point where many buyers and sellers are able to trade [...].
- ITALY Gas hub as [a] place where gas shippers are provided with more flexibility and opportunities to exchange gas between them [...].
- SPAIN A hub is a virtual or physical point where buyers and sellers merge offers to trade gas.
- THE NETHERLANDS A virtual location, serving as an entry and exit point, at which shippers and traders can transfer gas.

ERGEG's conclusion:

The received responses indicate that a natural gas hub can be defined as a node, place, point or location. In general terms these are synonym to “a common delivery” point”, “trading point”, “a contractual place” or “an entry and exit point”. Some of these terms refer to the link with the underlying network (delivery; exit and entry), some of them refer to the activity (trading; contracts). Differentiation can be made between a virtual or physical node/place/point/location, dependent on the situation.

Besides the above specified wording to identify the location, reference is also made towards “a platform”, towards “operations which are logistically supported” or towards “where logistic and/or commercial hub services are rendered”. Convinced that it is specific to clarify further what is meant by “a natural gas hub”, the ERGEG is to insert the wording “logistically supported by services” into the definition that is being developed.

As to the activity that is taken place on these hubs, there is a broad consensus that it is related to the exchange/transfer of natural gas or natural gas trading activities. This implicitly relates to the buying and selling of gas. No further differentiation is being made in the responses to the kind of trade that can take place, i.e. bilateral or cleared. It is interpreted by ERGEG that for NRAs that responded, this is of no relevance for defining a natural gas hub.

The actors on the hub are being referred to in a different way. In four definitions, they are called “network users”, “transport customers” or “shippers”. In another three definitions, they are called “buyers and sellers” or “shippers and traders” in a more general way. And at last in two definitions there is no reference to these actors. More in-depth analysis has to be made on this point in combination with the type of users that have taken part to this monitoring task. .

As a result, ERGEG concludes from the definitions given by the NRAs, that a hub can either be a physical or a virtual point within a network, where the transfer of natural gas is logistically supported by services. Further details on the kind of services provided at such points remain to be subject to a more in depth analysis in combination with other info received during this monitoring exercise. A common definition, adopted for the purposes of the analysis in the following sections of this report, could be as follows (“working definition”):

“A natural gas hub is either a virtual or physical point where the transfer of natural gas is logistically supported by services.”

The range of received responses indicates that there seems to be brought agreement amongst respondents on what constitutes a natural gas hub, although there are minor differences when it comes to details.

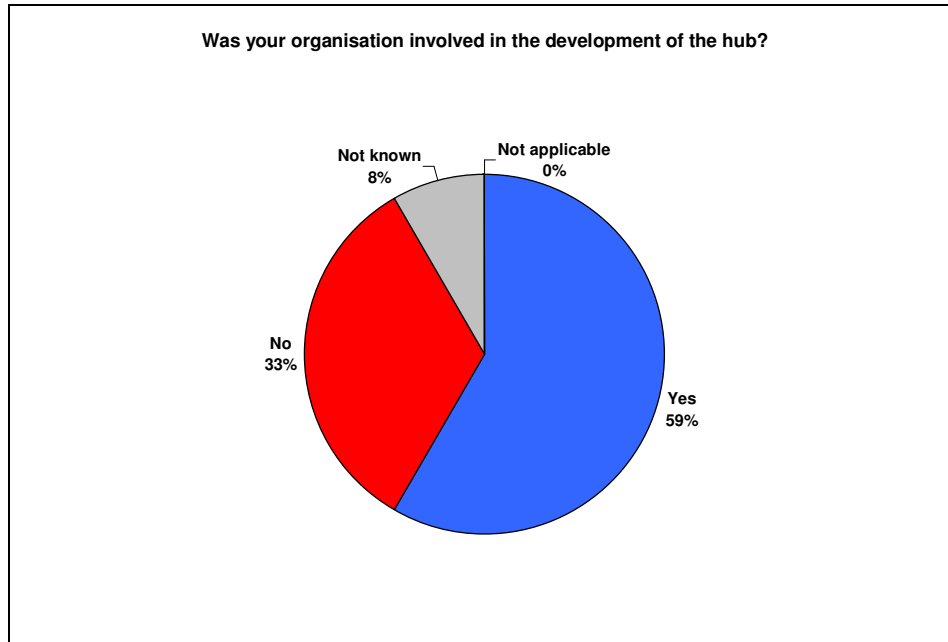
A.1.2. Question set 1

Question set 1 relates to aspects related to the history of the hub.

Question 1.1 Was your organisation involved in the development of the hub?

Analysis of responses:

Figure 1: Was your organisation involved in the development of the hub?



Source: ERGEG Gas Market Monitoring Report 2010

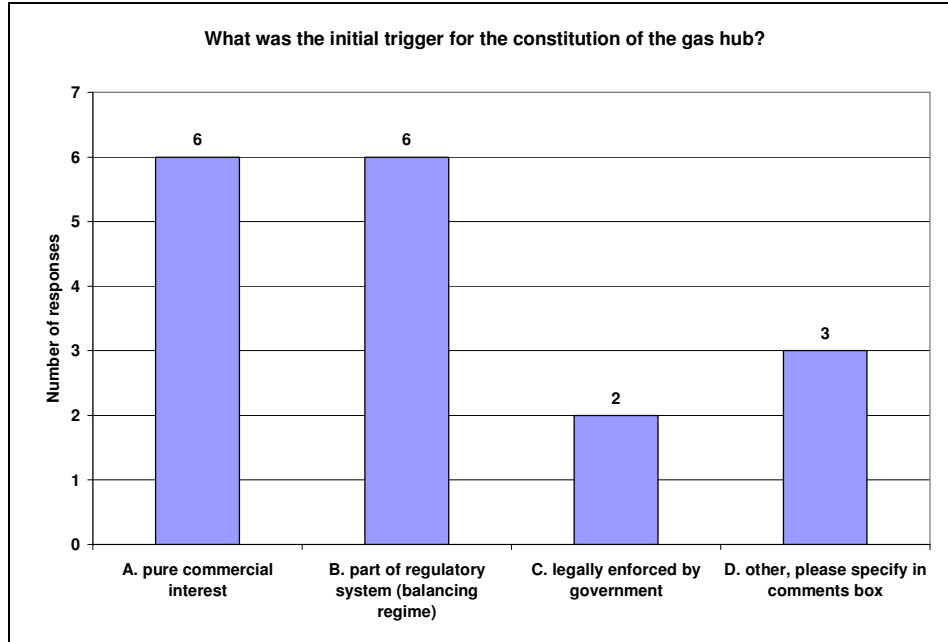
ERGEG's conclusion:

Results from the survey show that in about 2/3 of the cases, NRAs were indeed involved in the creation of the hubs. When being asked more specifically in question 1.2 how this was the case, respondents said that this was mainly through the involvement in drafting the network code and/ or balancing arrangements.

Question 1.3: What was the initial trigger for the constitution of the gas hub?

Analysis of responses:

Figure 2: What was the initial trigger for the constitution of the gas hub?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

Responses reveal that in NRAs views hubs have been set up due to purely commercial interest and/or as part of the regulatory system, such as the balancing regime. This confirms that the hub development can be triggered from different directions, purely commercial, with emphasis on trading or mainly from a system design viewpoint, where the hub serves as a reference point for balancing. Other responses include legal enforcement by the government and other reasons. Amongst other, respondents named ratification, standardisation of delivery conditions and the creation of a secondary market platform.

Question 1.4: When was the hub established?

Analysis of responses:

Table 1: NRA participation in this monitoring exercise

n.a.	NBP
01/11/1999	Zeebrugge Hub
01/10/2002	CEGH
01/01/2003	TTF
01/10/2003	PSV
01/01/2004	Danish Hub
01/01/2004	PEG North
01/01/2004	PEG South
01/01/2004	PEG South-West
15/09/2005	MS-ATR
01/10/2006	NCG VP (H-Gas)
01/10/2006	GVP

Source: ERGEG Gas Market Monitoring Report 2010

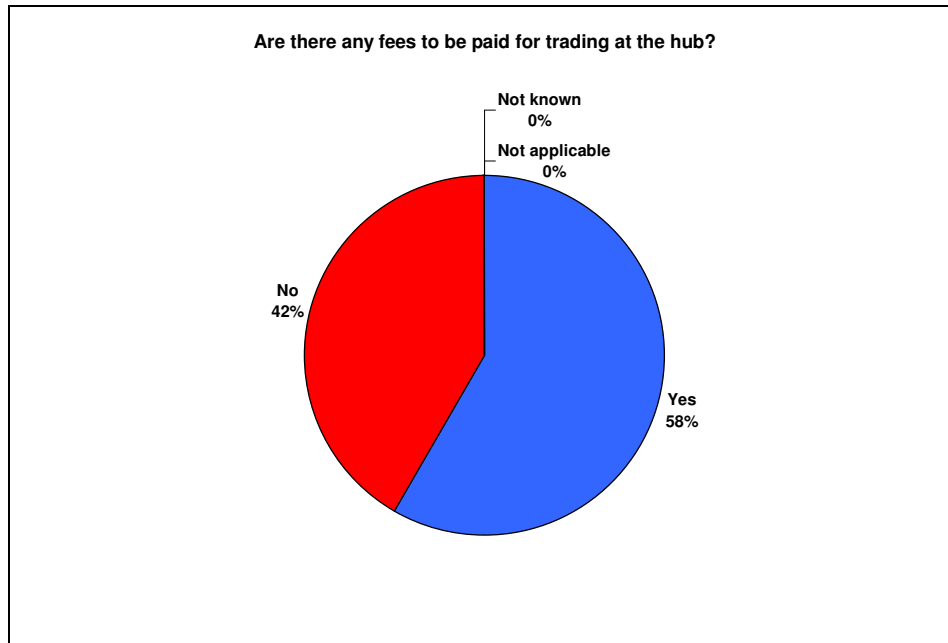
ERGEG's conclusion:

The data provided in the table show that natural gas hub differ in terms of when they have been established. Although the date is not been given, it is well known that NBP in Great Britain was the first hub in Europe. It is important to know thought that age is not necessarily related to maturity and liquidity. The latter two are aspects that will have to be analysed at a later stage. Age purely means that in different countries, different experiences have probably been made with the existing and activities regarding natural gas hubs.

Question 1.5: Are there any fees to be paid for trading at the hub?

Analysis of responses:

Figure 3: Are there any fees to be paid for trading at the hub?



Source: ERGEG Gas Market Monitoring Report 2010

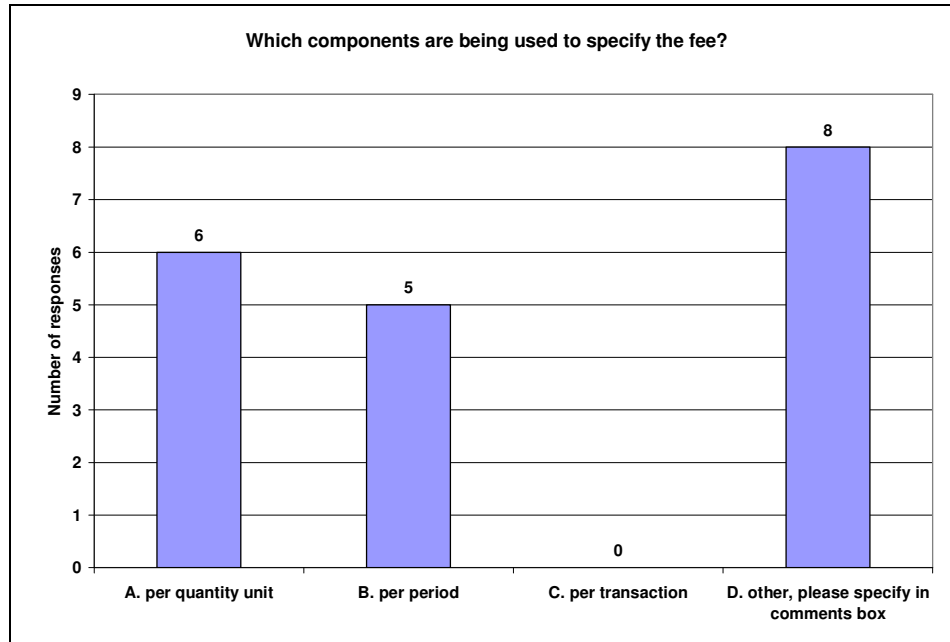
ERGEG's conclusion:

ERGEG's analysis shows that in almost 60 per cent of the cases, fees have to be paid in order to trade at the natural gas hub.

Question 1.6: If yes, which components are being used to specify the fee?

Analysis of responses:

Figure 4: Which components are being used to specify the fee?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

The analysis of tariff regimes in place reveals that tariffs consist in most cases of

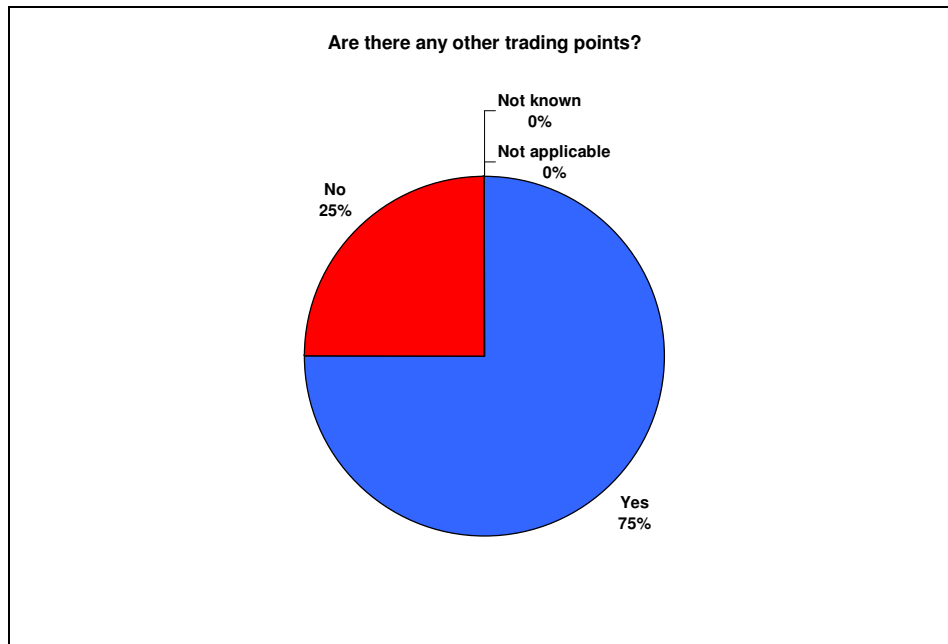
- a fixed part and
- a variable part.

The fixed part can be fixed per amount graded or for a given time period, the variable part in most cases refers to quantities exchanged. ERGEG's analysis has revealed that the degree of complexity of these tariffs can vary considerably.

Question 1.7: Are there other points of trading on the same transmission system/on the same balancing zone (e.g. at different border points/border of balancing zone)?

Analysis of responses:

Figure 5: Are there other trading points?



Source: ERGEG Gas Market Monitoring Report 2010

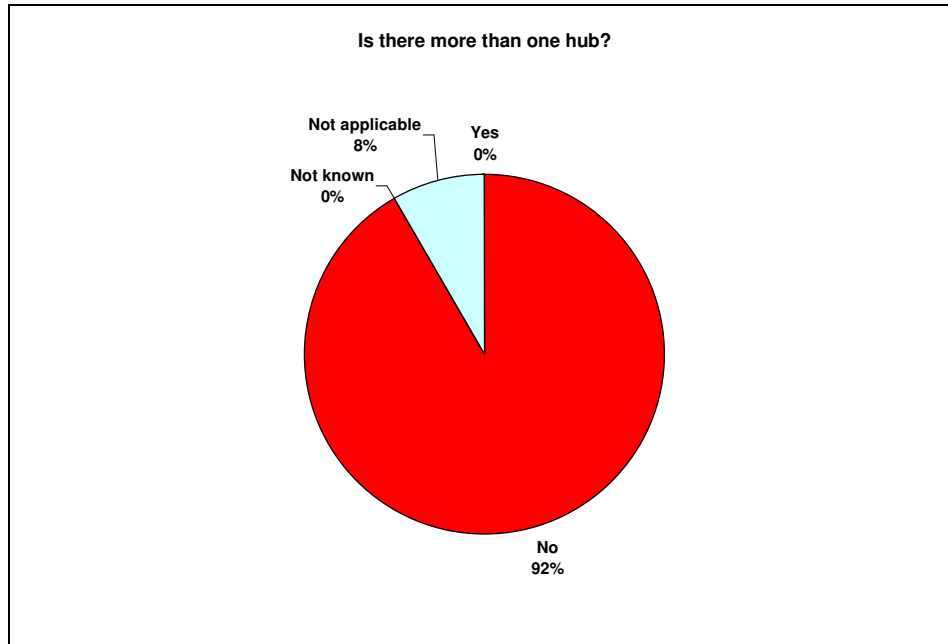
ERGEG's conclusion:

ERGEG's analysis shows that in 75 per cent of the cases, NRAs report that there are other trading points as well. Such trading points can either be on the same transmission system or on the same balancing zone. Examples being given are "different border points" and "borders of balancing zones". This shows that trading can be carried out on multiple points of the system, not necessary all being referred to as "hubs" (see next question).

Question 1.8: Is there more than one hub on the same transmission system/on the same balancing zone?

Analysis of responses:

Figure 6: Is there more than one hub?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

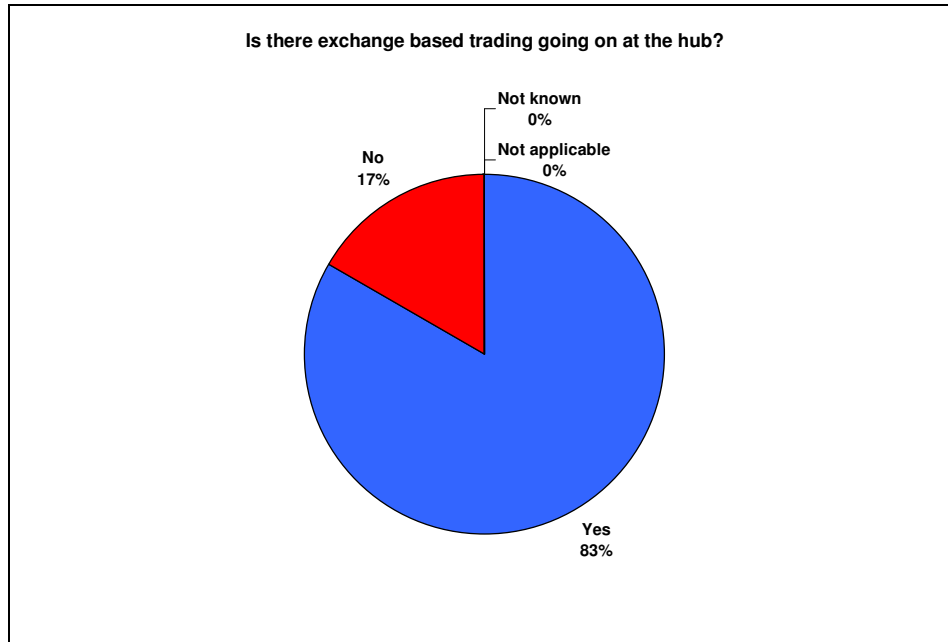
Respondents state that in more than 90 per cent, there is not more than one hub on the natural gas transmission system. This shows that there is a tendency to have one single natural gas hub on a given natural gas transmission system, whilst there can be several points where the trade of natural gas can take place, as outlined in the previous question.

Where respondents stated that there is no more than one hub, the answers provided to question 1.9 indicate that this is because only one transmission system operator can operate the same hub, as hubs have a de-facto monopoly or because there can only be one hub per balancing zone,

Question 1.10: Is there exchange based trading going on at the hub?

Analysis of responses:

Figure 7: Is there exchange based trading going on at the hub?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

In more than 80 per cent of the responses received, there is exchange based trading going on at the hub. As answered to question 1.11, in none of these cases exists an obligation to trade via the exchange.

At only two hubs in the sample, no exchange based trading is organised. Differentiation in the kind of trade is not a *condition sine qua non* for a hub.

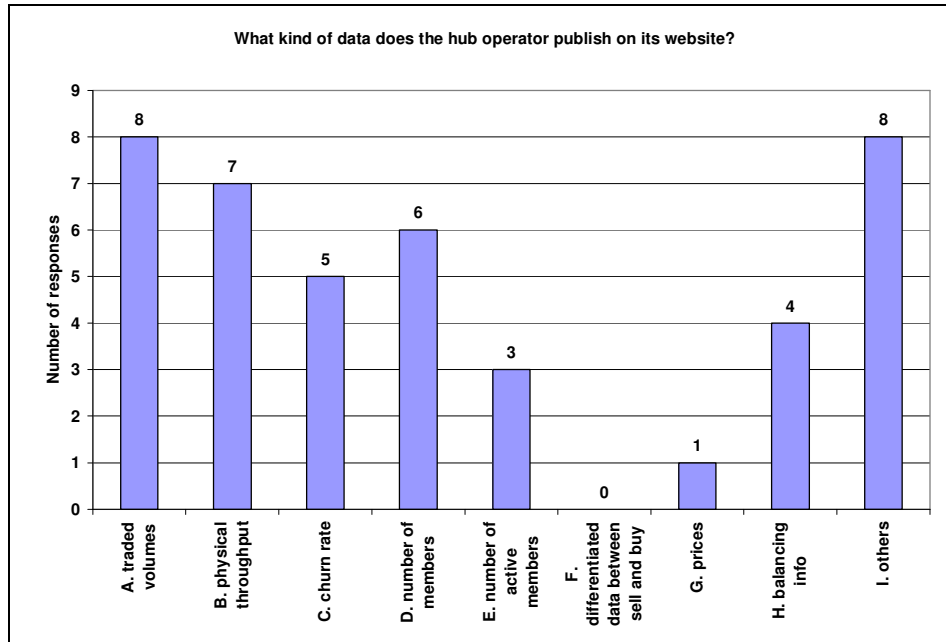
A.1.3. Question set 2

Question set 2 relates to the development of the hub and here particularly to transparency related issues and publication of relevant information.

Question 2.1: What kind of data does the hub operator publish on its website?

Analysis of responses:

Figure 8: What kind of data does the hub operator publish on its website?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

The aforementioned graph shows the kind of information that NRAs see what hub operators publish on their web page. Where respondents said "other" in response to that question, answers include detailed lists of members/traders (see also next question 2.2) and price information from surrounding hubs. One NRA responded that some of the information, like physical throughput and prices, is not accessible on the general website but only to registered platform users even though they are not operating in the market. In other countries, some data (like the traded volumes) are published by the gas exchange.

Examples of published details on "traded volume" information:

- Monthly, mcm, GWh, since 10/2005
- Daily for the last three years (since Jan 2007) and monthly since the beginning (Jan 2000) in "10³ GJ", "GWh" and "million m³(n)":
- Traded volumes published by the gas exchange (and not by the TSO); Frequency: daily; Historical period: since 28 November 2008; Unit: MWh/d;
- monthly, per month, GWh;
- monthly, per month, MWh;
- month, since 1/10/2003, standard cubic meters, number of transactions;
- Traded monthly volumes published on the TSO's web page and volumes per physical throughput published, on a monthly basis in MWh, by the regulator;
- The TSO publishes daily volumes (traded volume and net volume) on a weekly basis. The data goes back to the operational start of the hub. The unit is normal cubic meters: m³ (n; 35,17 MJ/m³)

Examples of published details on "physical throughput" information:

- Monthly, mcm, GWh, since 01/2007

- Daily for the last three years (since Jan 2007) and monthly since the beginning (Jan 2000) in “10³ GJ”, “GWh” and “million m³(n)”;
- Daily and monthly information since 1st January 2007 in GWh;
- Daily information since 1st January 2007 in GWh/d;
- monthly, per month, GWh;
- Traded monthly volumes per physical throughput are published, in a monthly basis in MWh, reported by the regulator.

Examples of published details on “price signals” information:

- An exchange publishes the Daily Average Price (euro/MWh) for trades on the hub (daily data since 26/11/2008); and prices for each transaction, for each product (daily data since 26/11/2008);
- per day, daily in Cent/kWh.

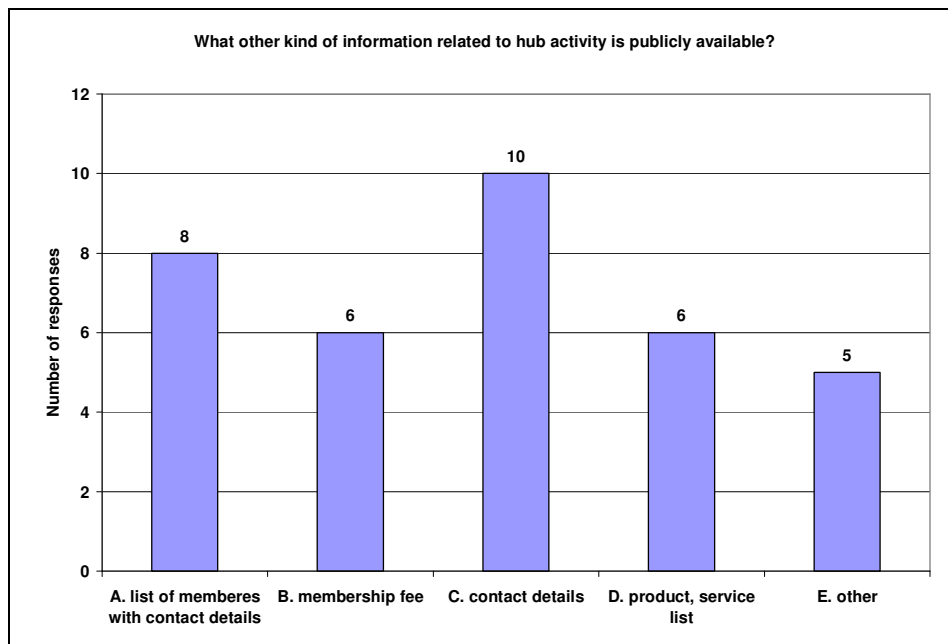
Examples of published details on “balancing info” information:

- Balancing price: daily since 1st January 2007 in euro/MWh, - Balancing information (for purchase and sell): Day ahead and within day, needs of the TSO, selected quantities, average price, best bid of the session, Best ask of the session;
- None;
- Description of nomination procedure;
- Commercial terms and conditions. online-tool to see individual data.

Question 2.2: What other kind of information related to hub activity is publicly available?

Analysis of responses:

Figure 9: What other kind of information related to hub activity is publicly available?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

This table shows the kind of information that is publicly available in relation to hub activities. The responses given most often are contact details, followed by list of members with contact details, fees, and list of products and services offered. Where respondents said "other", this included items such as manuals, contract templates, templates for documents such as bank guarantees, and information on general terms and conditions.

Question 2.3: What other kind of information is still needed?

Analysis of responses:

Respondents stated that the following information would still be needed:

- Detailed price information,
- Differentiated data between sell and buy activities,
- Balancing information (including data on usage of transport and storage capacity), and each shippers position,
- Indicators to assess liquidity of the hub as such.

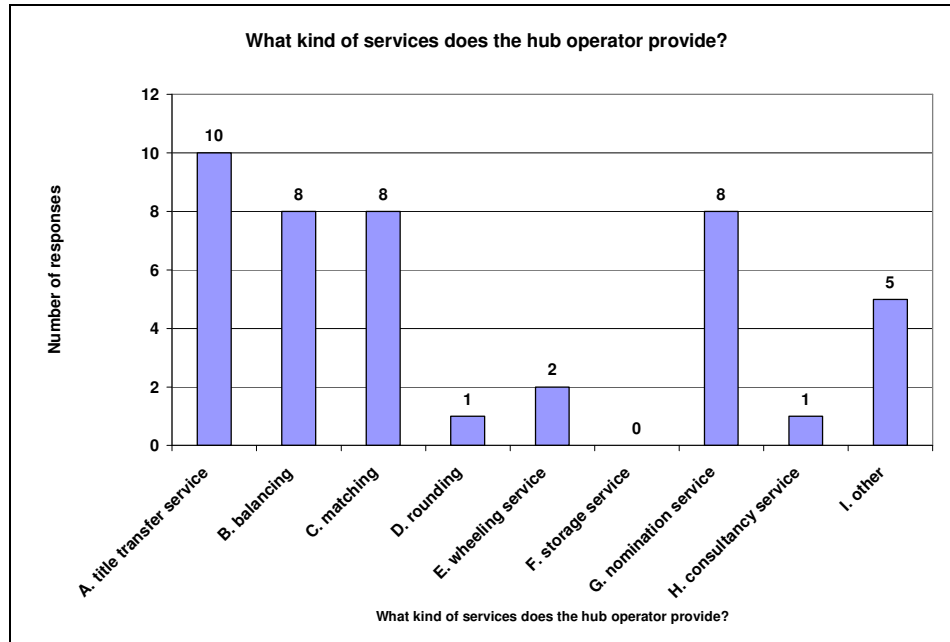
ERGEG's conclusion:

ERGEG concludes that there is still a need for the further development of the information provided at natural gas hubs and potentially the standardisation across natural gas hubs.

Question 2.4: What kind of services does the hub operator provide?

Analysis of responses:

Figure 10: What kind of services does the hub operator provide?



Source: ERGEG Gas Market Monitoring Report 2010

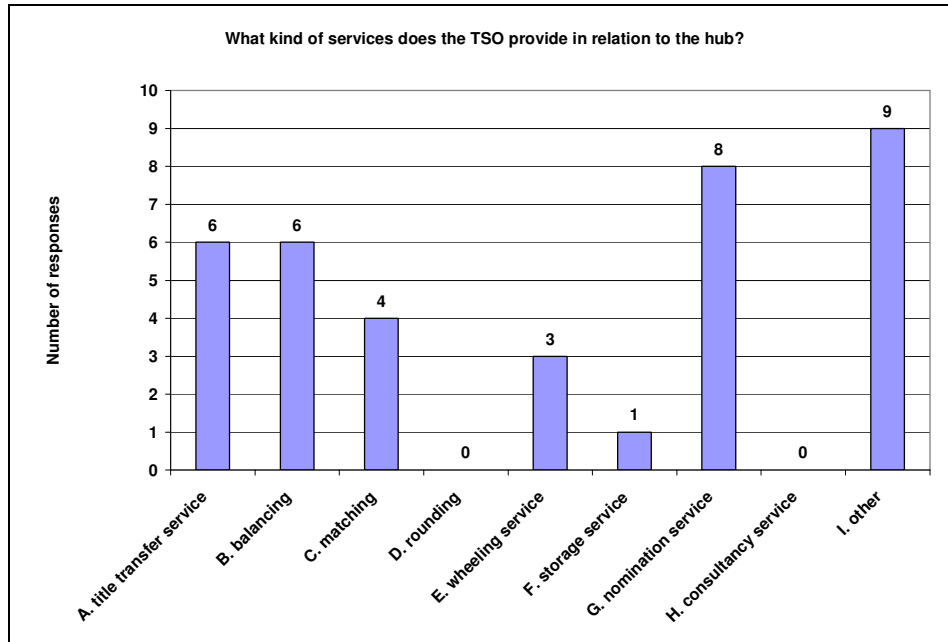
ERGEG's conclusion:

ERGEG's findings show that title transfer remains amongst the most often provided services, followed by balancing, matching and nomination. Other services are provided as well, although it needs to be pointed out that services provision differs from hub to hub. As a result, there is no unique set of services that is being provided at each hub. Amongst others, respondents named no notice storage nomination service (from 3rd parties), gas auctions, online bulletin board. Respondents also made it clear that the TSO is not necessarily the natural gas hub operator, or that there is no operator at all, especially in cases where the hub is purely virtual.

Question 2.5: What kind of services does the TSO provide in relation to the hub?

Analysis of responses:

Figure 11: What kind of services does the TSO provide in relation to the hub?



Source: ERGEG Gas Market Monitoring Report 2010

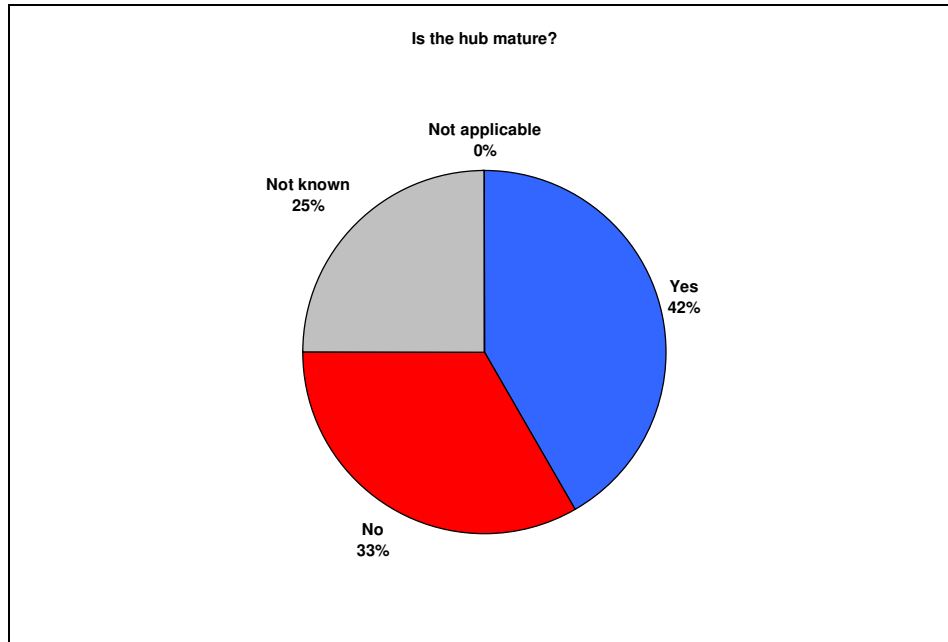
ERGEG's conclusion:

In response to this question, many respondents have indicated (under “other”) that the TSO can be the hub operator in some cases (mainly virtual hubs). These two do not have to be the same, especially since there can be several TSOs in one balancing zone. A differentiated view of services provided at hubs is therefore required.

Question 2.6: Is the hub mature?

Analysis of responses:

Figure 12: Is the hub mature?



Source: ERGEG Gas Market Monitoring Report 2010

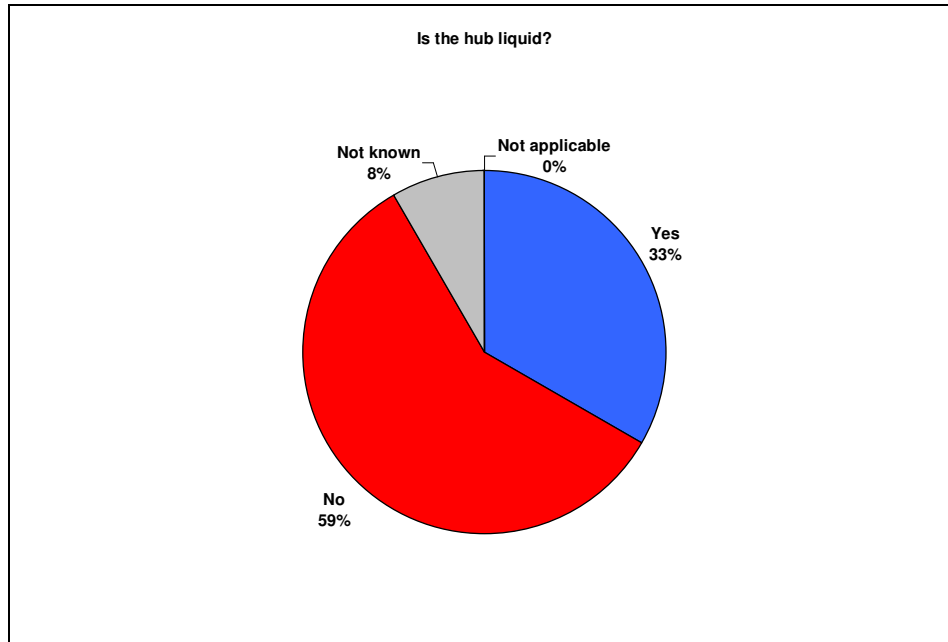
ERGEG's conclusion:

ERGEG's analysis shows that 42 per cent of responses say that the hub is indeed mature, 33 per cent say that this is not the case. However, amongst the responses that say "not known", respondents said that the definition of maturity is not clear. ERGEG therefore concludes that a clearer definition of maturity is therefore needed in order to assess whether hubs are mature or not.

Question 2.7: Is the hub liquid?

Analysis of responses:

Figure 13: Is the hub liquid?



Source: ERGEG Gas Market Monitoring Report 2010

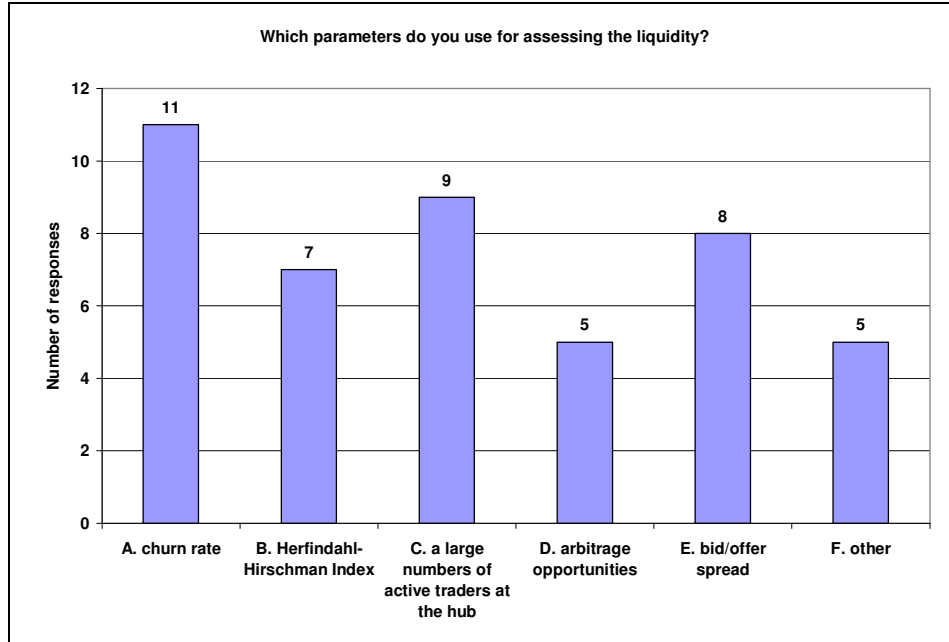
ERGEG's conclusion:

ERGEG's analysis shows that in 58 per cent of the cases, respondents say that the natural gas hub is not liquid. This is only the case in 33 per cent of the received responses. However, where respondents chose "not known" as the answer, they commented that there is no unique definition of liquidity. ERGEG therefore concludes that as with maturity, a clearer definition of liquidity is therefore needed in order to assess more comprehensively whether hubs are indeed liquid or not.

Question 2.8: Which parameters do you use for assessing the liquidity?

Analysis of responses:

Figure 14: Which parameters do you use for assessing the liquidity?



Source: ERGEG Gas Market Monitoring Report 2010

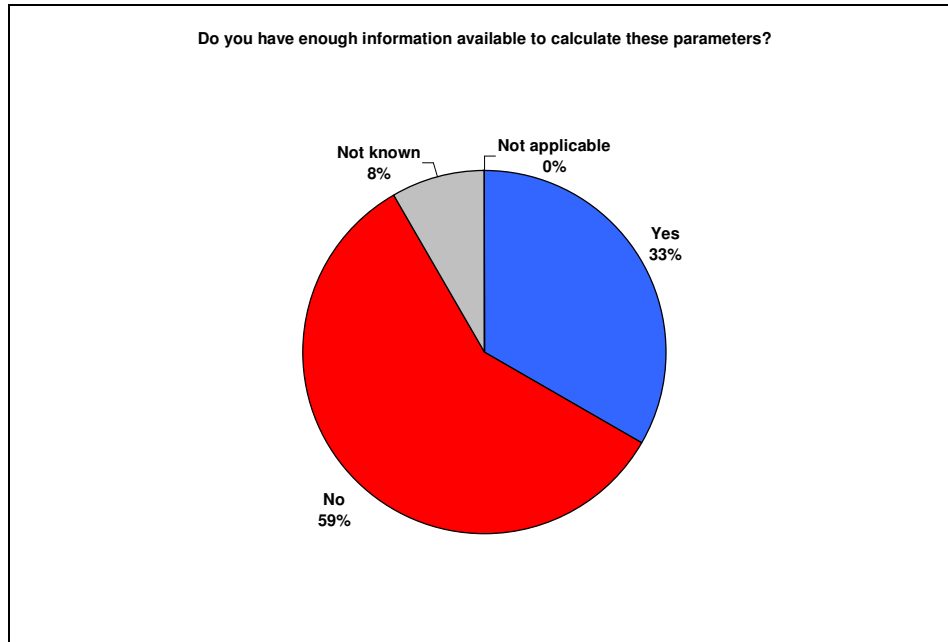
ERGEG's conclusion:

ERGEG's analysis reveals that the churn rate remains the most frequently used criterion to assess liquidity, followed by the number of active traders at a hub, bid-offer spread and the HHI. Where respondents chose other, they gave examples of additional parameters, such as the year-on-year progress in volatility of prices, and the resilience and depth of contracts traded at the natural gas hub. ERGEG concludes that whilst different parameters are used, there is no standardised set of parameters, probably due to differences in data availability.

Question 2.9: Do you have enough information available to calculate these parameters?

Analysis of responses:

Figure 15: Do you have enough information available to calculate these parameters?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

ERGEG's analysis shows that in almost 60 per cent, respondents state that information is insufficient to compute the aforementioned parameters. ERGEG therefore concludes that there are potential gains to be made from standardising data availability in order to ensure comparability across natural gas trading points and to enhance thereby the assessment of both maturity and liquidity.

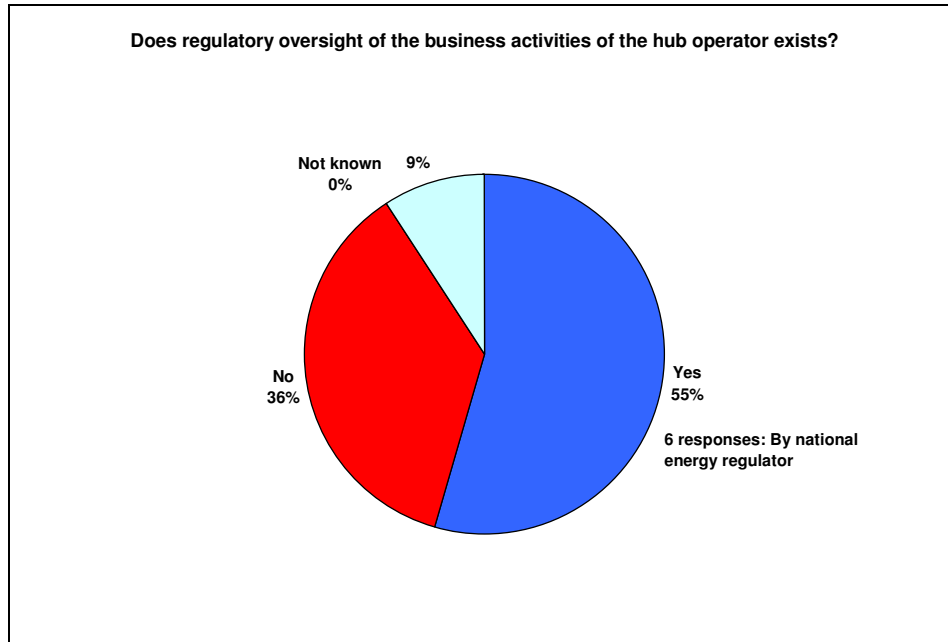
A.1.4. Question set 3

Question set 3 relates to the regulatory framework in place at natural gas hubs.

Question 3.1: Does regulatory oversight of the business activities of the hub operator exist?

Analysis of responses:

Figure 16: Does regulatory oversight of the business activities of the hub operator exists?



Source: ERGEG Gas Market Monitoring Report 2010

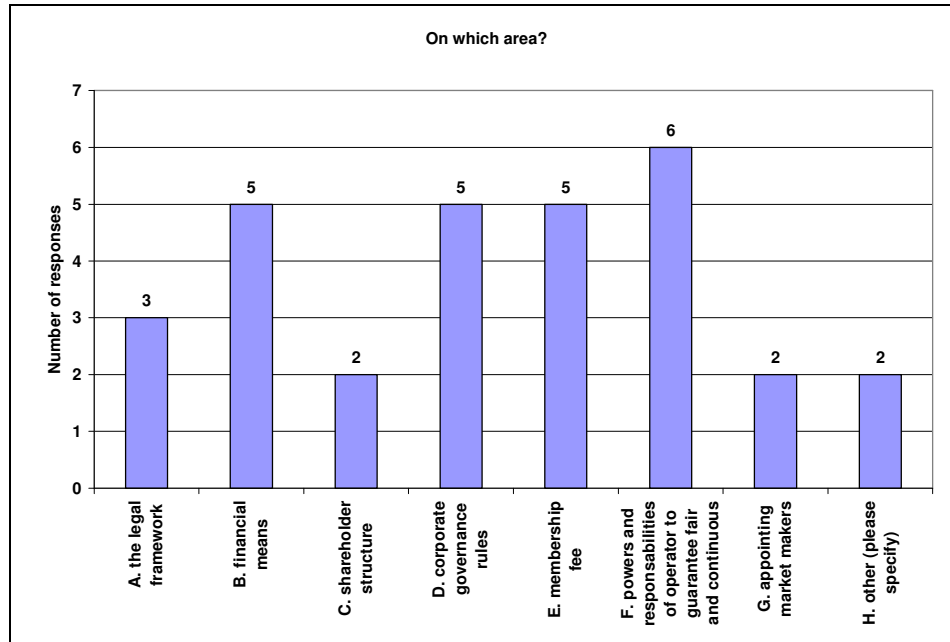
ERGEG's conclusion:

ERGEG's analysis shows that in more than 50 per cent of the cases, natural gas hub oversight is being carried out by the national energy regulator (question 3.2). In almost 40 per cent of the cases, there is no regulatory oversight at all.

Question 3.3: If yes, on which area?

Analysis of responses:

Figure 17: On which area?



Source: ERGEG Gas Market Monitoring Report 2010

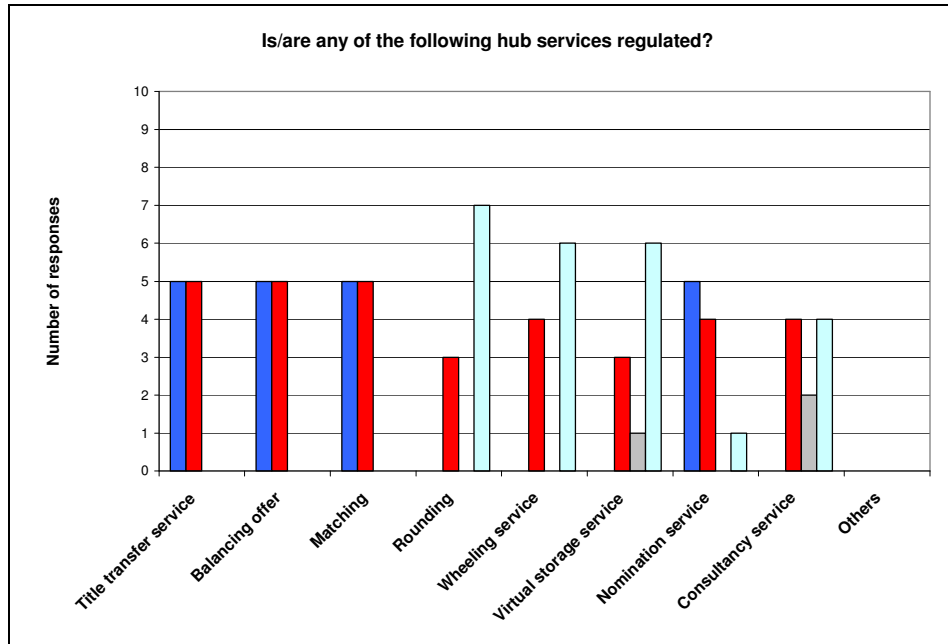
ERGEG's conclusion:

As far as the areas of regulatory oversight are concerned, ERGEG's analysis shows that this affects in most cases powers and responsibilities of operator to guarantee fair and continuous functioning of the hub, followed by financial means, corporate governance rules and membership fee arrangements. ERGEG concludes that whilst there are regulatory oversight arrangements in place for some natural gas hubs, this is not the case for all natural gas hubs. ERGEG suggests again that there are potential gains to be made from standardising regulatory oversight arrangements.

Question 3.4: Is/are any of the following hub services regulated?

Analysis of responses:

Figure 18: Is/are any of the following hub services regulated?



Source: ERGEG Gas Market Monitoring Report 2010

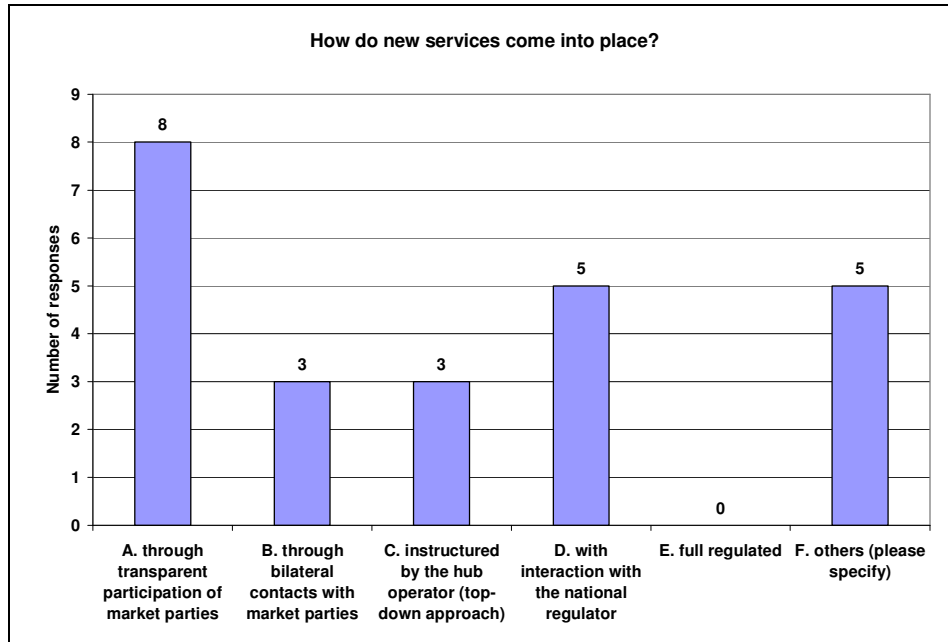
ERGEG's conclusion:

ERGEG concludes that regulatory oversight takes effect at different hubs in different ways which makes a generalisation difficult at this point. ERGEG would like to reiterate that there are potential gains to be made from standardising regulatory oversight arrangements.

Question 3.5: How do new services come into place?

Analysis of responses:

Figure 19: How do new services come into place?



Source: ERGEG Gas Market Monitoring Report 2010

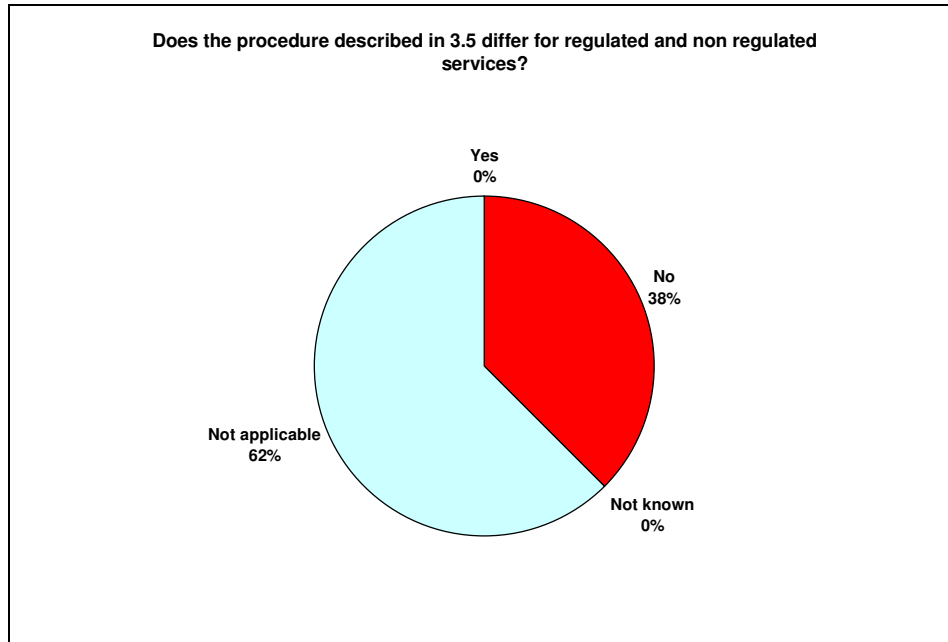
ERGEG's conclusion:

ERGEG's analysis shows that the creation of new hub services mostly takes place through a transparent process of participation with market participants, followed by interaction with national regulators. This underlines the importance of participation and engagement, both with the regulator and market participants. Where respondents chose "others" they mean the use of focus groups, such as representatives from shippers (shippers' forum) and through regular market meetings with market participants.

Question 3.6: Does the procedure described in 3.5 differ for regulated and non regulated services?

Analysis of responses:

Figure 20: Does the procedure described in 3.5 differ for regulated and non regulated services?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

ERGEG's analysis shows that most respondents chose "not applicable" as a response, followed by "no" in almost 40 per cent of the cases. ERGEG suggest that the differentiation of regulated services and not regulated services, should be subject to a more in depth analysis, since in some cases, there are no regulated services whilst in others, all services are regulated (especially when the TSO is the hub operator).

Question 3.7: Please specify why or why not hub and/or hub services are being regulated or not?

Analysis of responses:

Responses suggest that the question whether services are indeed regulated or actually not depends on the question whether the hub operator is a TSO and hence subject to regulation or not. Responses point in different directions, as indicated in the previous question.

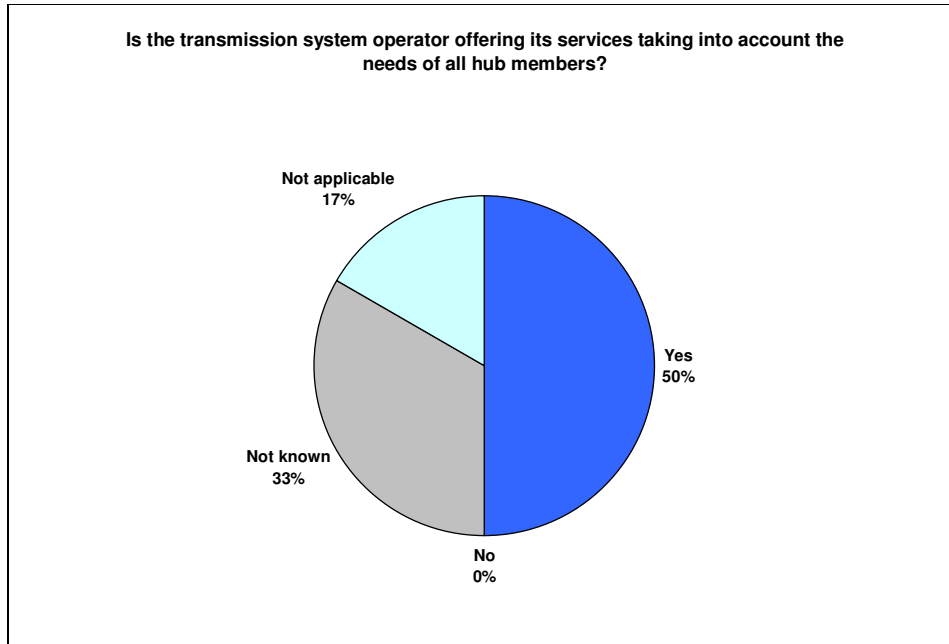
ERGEG's conclusion:

ERGEG concludes that a generalisation cannot be made at this point. Natural gas hubs differ in terms of their characteristics. As a result, services can be subject to regulation only in cases where the hub operator is a TSO. The opposite is in cases where the hub is virtual and where the hub operator is independent and hence not subject to regulation by the energy regulator.

Question 3.8: Is the transmission system operator offering its services taking into account the needs of all hub members?

Analysis of responses:

Figure 21: Is the transmission system operator offering its services taking into account the needs of all hub members?



Source: ERGEG Gas Market Monitoring Report 2010

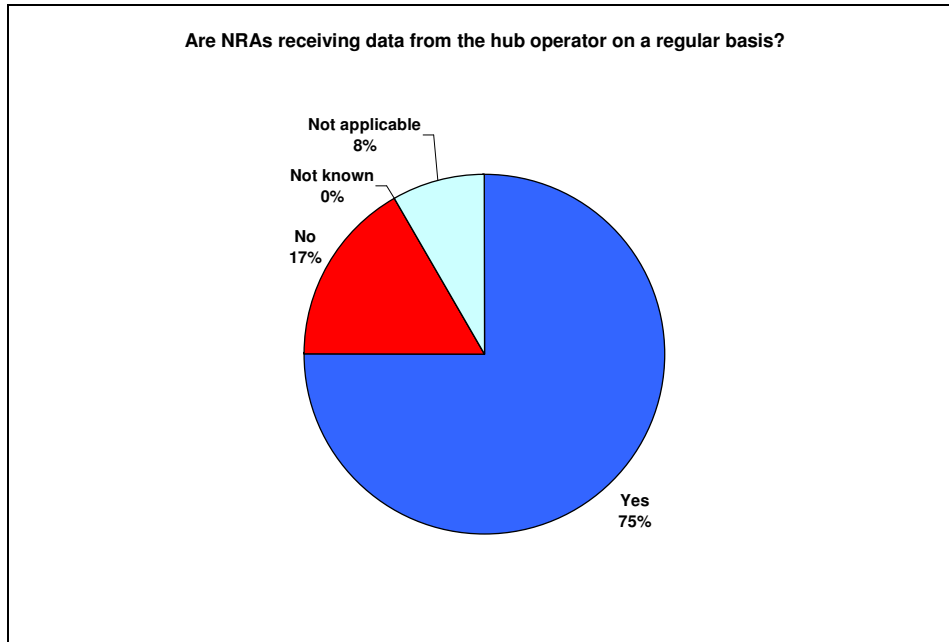
ERGEG's conclusion:

ERGEG's analysis shows that this is the case in 50 per cent of the cases, whilst in 33 per cent of the responses respondents said that they do not know. ERGEG suggests that this could be subject to further examination. No respondents chose "no" as an answer (question 3.9).

Question 3.10: Are NRAs receiving data from the hub operator on a regular basis?

Analysis of responses:

Figure 22: Are NRAs receiving data from the hub operator on a regular basis?



Source: ERGEG Gas Market Monitoring Report 2010

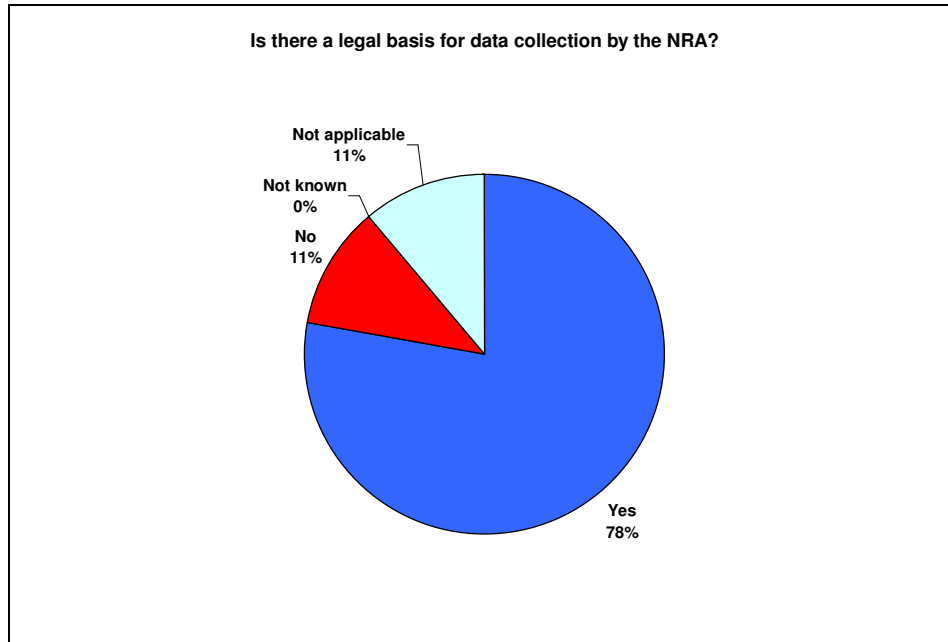
ERGEG's conclusion:

ERGEG's analysis show that in 75 per cent of the cases, NRAs receive data from the natural hub operators. Only in 17 per cent this is not the case. ERGEG concludes that whilst this seems positive, further analysis is needed to actually identify what kind of data is received and whether there is potential need for standardisation and further harmonisation.

Question 3.11: Is there a legal basis for data collection by the NRA?

Analysis of responses:

Figure 23: Is there a legal basis for data collection by the NRA?



Source: ERGEG Gas Market Monitoring Report 2010

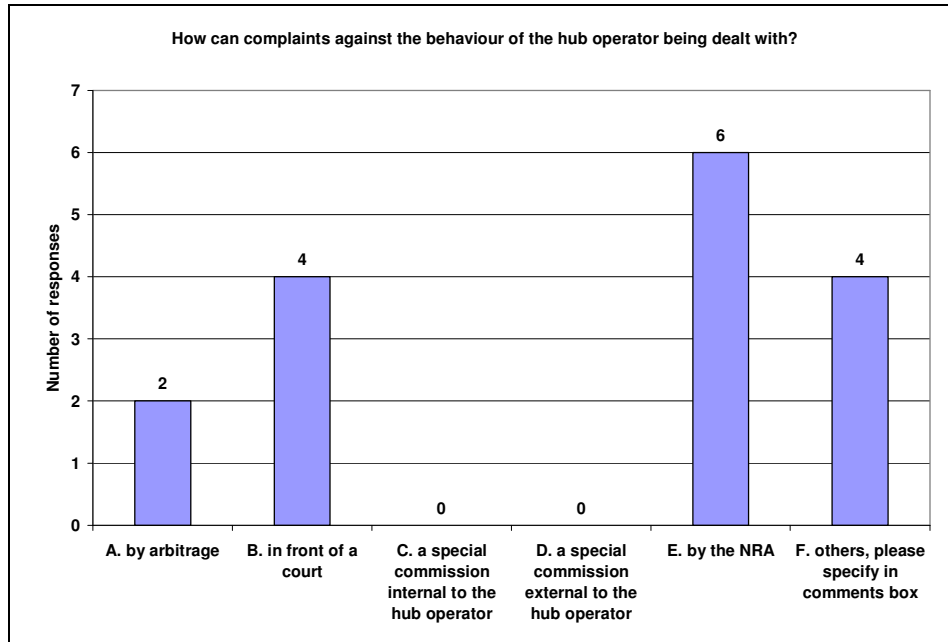
ERGEG's conclusion:

ERGEG's analysis shows that in more than 75 per cent of the cases, there is indeed a legal basis for the data transmission process. There are differences though as far as the data coverage is concerned (question 3.12). In some cases, data transmission is very explicit and precisely specified; in other cases data transmission can be carried out ex post subject to a specification of actual data.

Question 3.13: How can complaints against the behaviour of the hub operator being dealt with?

Analysis of responses:

Figure 24: How can complaints against the behaviour of the hub operator being dealt with?



Source: ERGEG Gas Market Monitoring Report 2010

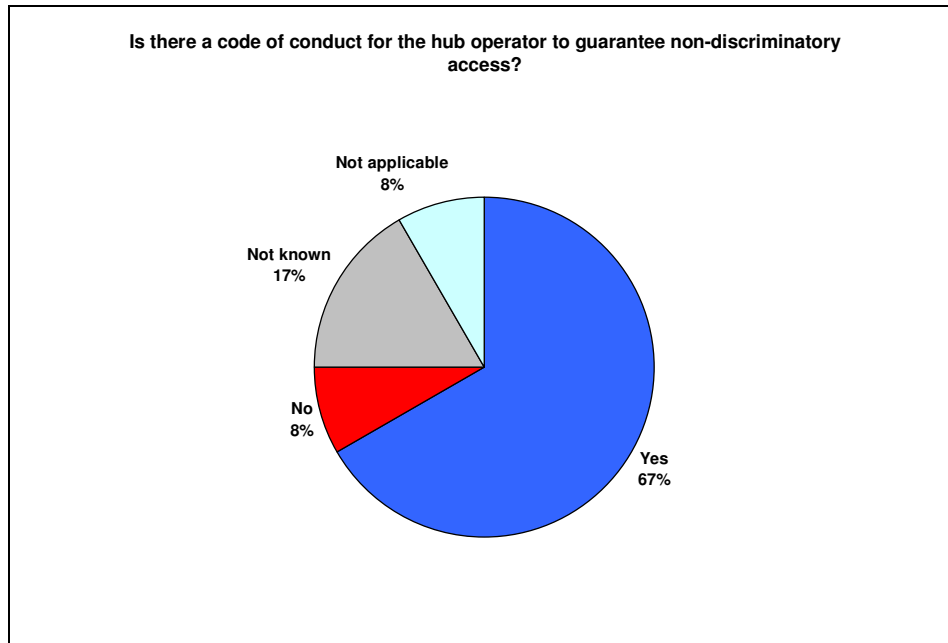
ERGEG's conclusion:

ERGEG's analysis shows that there are indeed procedures in place for complaint handling, firstly by the NRA or in front of a court or by other means. Where respondents chose to respond "other", this includes either complaint procedures within the NRA or with the national competition authorities. In some cases, NRAs have a dedicated disputes settlement and sanctions committee in place to handle these complaints.

Question 3.14: Is there a code of conduct for the hub operator to guarantee non-discriminatory access?

Analysis of responses:

Figure 25: Is there a code of conduct for the hub operator to guarantee non-discriminatory access?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

ERGEG's analysis shows that in almost 70 per cent of the cases, a code of conduct for the hub operator is in place to guarantee the non-discriminatory access to the natural gas hub and the services provided at the natural gas hub. ERGEG suggests that where this is not the case until now, provisions need to be made, to introduce such a code of conduct swiftly.

Question 3.15: How is confidentiality being preserved?

Analysis of responses:

As far as confidentiality is concerned, respondents from NRAs state that it is preserved e.g. by provisions as far as organisational structures within TSOs are concerned, anonymisation, aggregation of data and other measures.

ERGEG's conclusion:

In ERGEG's view, ensuring confidentiality is most important in order to protect commercially sensitive information from being abused. However, ERGEG's analysis has also shown that there are different ways to do it.. ERGEG therefore suggests that there is a need to introduce strict legally binding requirements to ensure confidentiality across all natural gas hubs in a standardised manner.

Question 3.16: Describe the penalties in case of misbehaviour of a market party.

Analysis of responses:

Respondents gave the following examples of penalties:

- Fines/financial penalties
- Sanctions in case of breach of licences

ERGEG's conclusion:

ERGEG concludes that the predominant form of penalties remain financial. However, ERGEG suggests that other forms of penalties, such as withdrawal of licences (to trade/to operate the natural gas hub) should be considered, too.

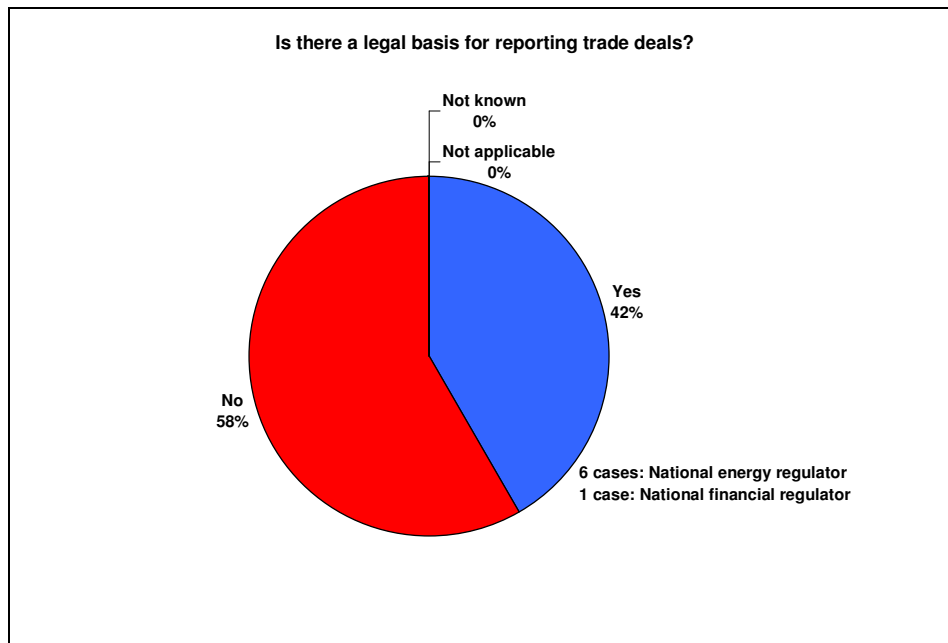
A.1.5. Question set 4

Question set 4 relates to oversight relation in detail, this covers both hub operator and OTC/Exchange traders.

Question 4.1: Is there a legal basis for reporting trade deals to keep oversight and control possible?

Analysis of responses:

Figure 26: Is there a legal basis for reporting trade deals?



Source: ERGEG Gas Market Monitoring Report 2010

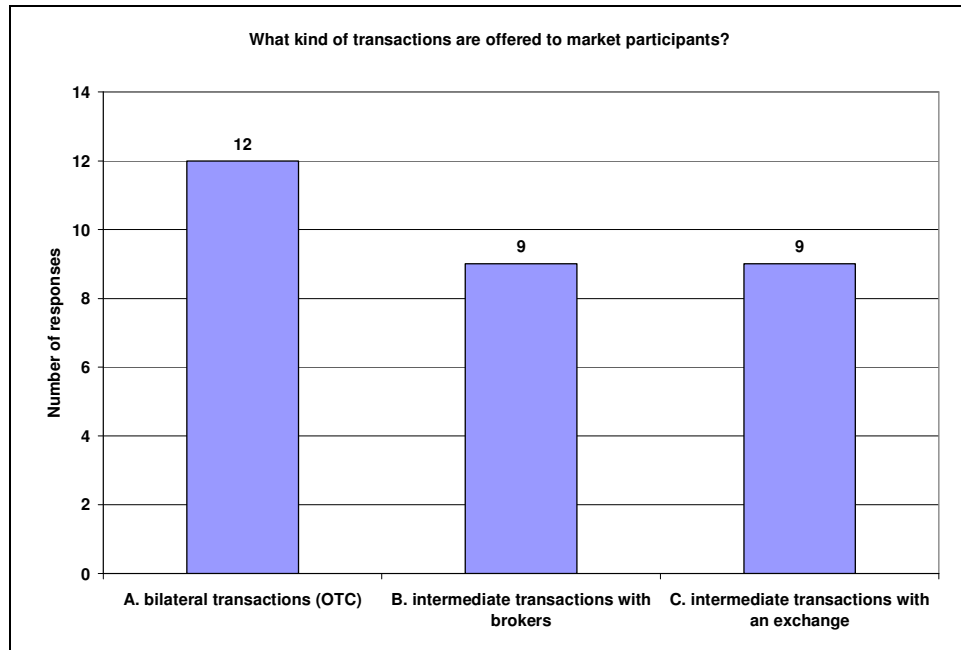
ERGEG's conclusion:

ERGEG’s findings show that in almost 60 per cent of the cases, there is no legal basis for reporting trade deals. This is only the case in approximately 40 per cent of the cases. In those cases, it is the national energy regulators responsibility to monitor the trades that are being carried out. Only in the case where there is an energy exchange in place, this falls within the responsibility of the national financial regulatory authority (question 4.2).

Question 4.3: What kinds of transactions are offered to market participants?

Analysis of responses:

Figure 27: What kinds of transactions are offered to market participants?



Source: ERGEG Gas Market Monitoring Report 2010

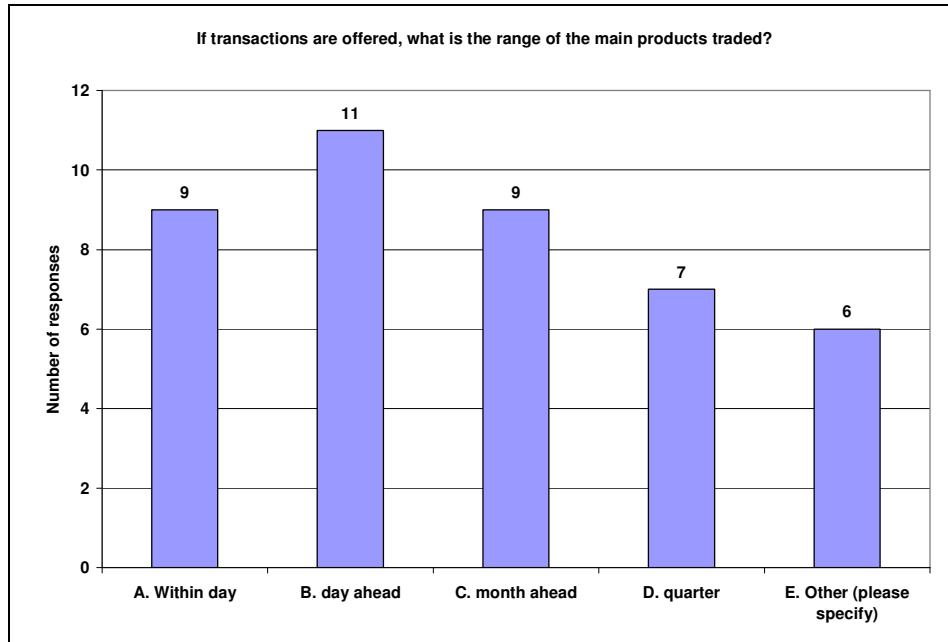
ERGEG’s conclusion:

The responses confirm that in most cases, OTC transactions are predominantly being offered to market participants, followed by intermediate transactions with brokers and exchanges. ERGEG concludes that this has potentially a huge impact on transparency and involvement of market participants in trading. ERGEG suggests that for reason of transparency, better information on all trades being carried out is a necessary prerequisite for further market analysis in many other adjacent areas.

Question:4.4: If transactions are offered, what is the range of the main products traded?

Analysis of responses:

Figure 28: If transactions are offered, what is the range of the main products traded?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

The analysis clearly indicates that day ahead is the predominant form of products being offered. Only in few cases does the period stretch further afield into the future. Where respondents chose "other" they indicate examples of time periods:

- Individual days,
- Weekend strips,
- Balance of week,
- Working days next week,
- Balance of month,
- Summer/winter, and
- Year(s) ahead.

ERGEG concludes that the range of products offered effectively depends on the market place. Not all products are being offered at all market places. This allows important conclusion to be drawn w.r.t. maturity and liquidity of a hub whereby no conclusion is made though on the direction of the relationship at this point.

Annex II Findings from TSOs/natural gas hub operators

A.1.1. Definition for natural gas hub

TSOs and natural gas hub operators provided the following answers (responses have been abbreviated for the purpose of better understanding where appropriate without loss of information, underlining by the authors of the report):

- AUSTRIA: trading platform offering various trading functionalities: - GRP; - OTC Trade; - Exchange Trade; - Capacity Exchange;
- BELGIUM: A geographical area where several gas systems connect, reachable by several players from different profiles (energy merchants, producers, integrated companies, financial,...), where an independent operator facilitates the market between registered parties through standard services;
- DENMARK: A virtual point in a TSO system where gas can change hands commercially, from one shipper to another.
- FRANCE:
 - A natural gas hub is a place where many different gas sources and gas consumers meet and can be exchanged. The greater the number and diversity of parties, the better the hub.
 - To facilitate gas exchanges by mutual agreement between consignors, TIGF offers, in the context of its transport contract, access to a notional point on its Main Network: the Gas Exchange Point (GEP).
- GERMANY:
 - A virtual trading point enables market parties to process trading activities (title transfers) connected to physical or non-physical gas transport.
 - At Gasunie's Virtual Trading Point gas quantities may be traded after entry and before exit within the H-Gas Northern Germany market area. The Virtual Trading Point enabled the purchase and sale of gas quantities between balancing groups. It is not allocated to a physical entry or exit point.
- GREAT BRITAIN: A point or zone (real or virtual) for the delivery that allows gas to be delivered to and exported from the zone and allows the trading of gas (both physical and title) within it.
- SPAIN: Is a point (physical or virtual) at which title of gas can be transferred between buyers and sellers
- THE NETHERLANDS: A natural gas hub is a place where natural gas from different sources - production, other hubs, transmission systems - comes together and has connections to different markets and other gas hubs where transmission capacity to and from the hub is offered to all interested party under non-

discriminatory access-conditions. It is a place where gas can be traded freely and services additional to transmission can and are offered by one or more parties, giving those that have title to the gas the options to trade, store and/or forward the gas to other destinations. A distinction can be made between physical hubs and market centres/virtual hubs. Because of its central position in gas infrastructure a hub attract other services operated by different types of companies:- storage by storage operators; - exchanges by exchange operators; - brokerage by brokers; - LNG-terminals by a terminal operator

ERGEG's conclusion:

The received responses indicate that a natural gas hub can be defined as an area, point, place or zone. In general terms these are synonyms to "a geographical area", "trading point" or "notional point". Differentiation can be made between a virtual or physical (real) area/place/point/zone, dependent on the situation. Trading at virtual hubs does not require physical access to the hub. Especially, when moving towards an entry-exit system, trading should take place at virtual rather than physical trading point. In addition, reference is made in the response from TSOs or hub operators to a place "where several gas systems connect", "in a TSO system", "where many different gas sources meet" and "where natural gas from different sources - production, other hubs, transmission systems - comes together".

To differentiate hubs from other places, the notion of independent operator (not always being the TSO) offering services to support hub activities can be used. As to the activity that is taken place on these hubs, there is a broad consensus that it is related to the exchange/change of hands of natural gas or natural gas trading activities. This implicitly relates to the buying and selling of gas. Occasionally, reference is made to "services additional to transmission" and "Capacity Exchange". There is probable no limit to the amount of services that can be offered by a TSO or hub operator but an attempt to define best practice should be recommended for clarification.

The respondents are referring to the actors on the hub in a different way. Examples are: "several players from different profiles (energy merchants, producers, integrated companies, financial,...)", "gas consumers", "consignors", "market parties", "buyers and sellers" and "all interested parties". ERGEG can conclude from the received suggestions that hubs are not made specifically for shippers.

Other interesting quotations mentioned in the responses of TSOs and hub operators is the offer of "standard services", under "non-discriminatory access-conditions". These should be further explored.

The range of received responses indicates that there seems to be brought agreement amongst respondents on what constitutes a natural gas hub, although there are minor differences when it comes to details.

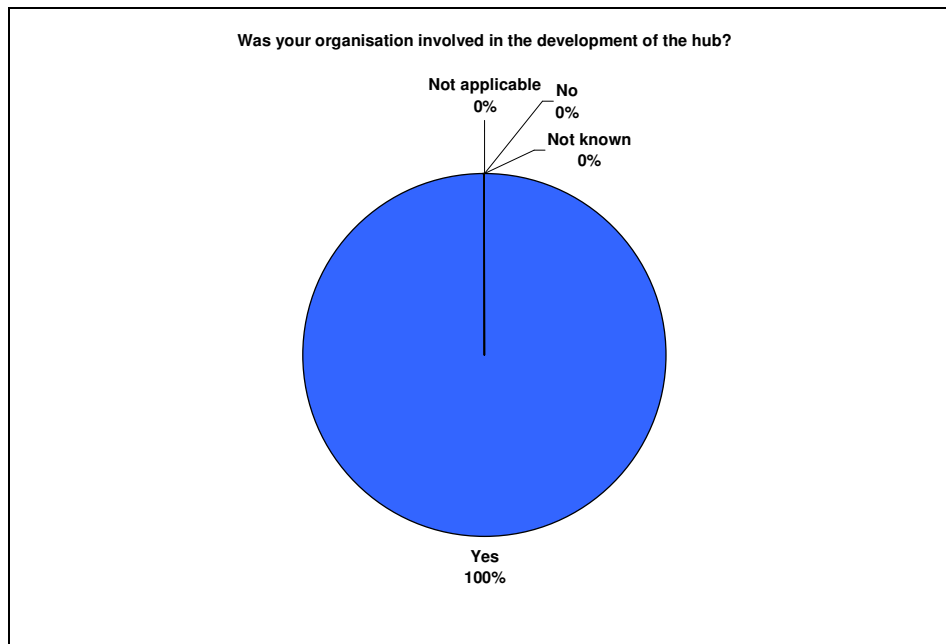
A.1.2. Question set 1

Question set 1 relates to the definition of definition for "natural gas hub".

Question 1.1: Was your organisation involved in the development of the hub?

Analysis of responses:

Figure 29: Was your organisation involved in the development of the hub?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

ERGEG's analysis shows that all TSOs/natural gas hub operators who responded to the questionnaire have been involved in the creation of the natural gas hub.

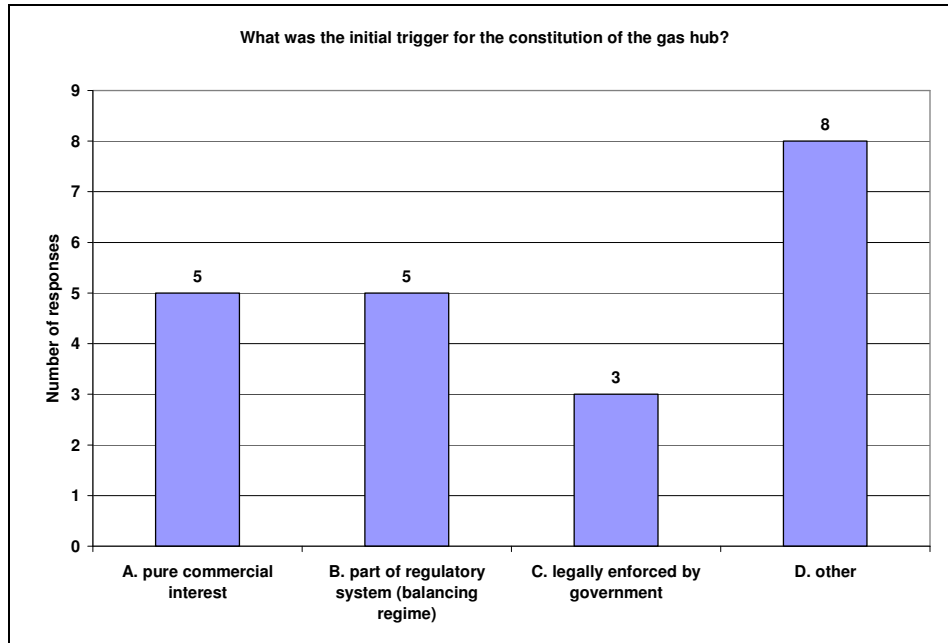
Being asked how this has been done (question 1.2), respondents gave answers that pointed in the following directions:

- Via participation in a focus group, drafting a standard agreement for the services, and a standard Trading Agreement;
- As initiator for the development of the hub;
- By analysing, development, design and implantation of an electronic platform;
- By setting out the contractual framework, by improving access to the hub (through availability of firm capacity) and more importantly, by making the hub firm, which provided confidence to the market;
- By developing the entry/exit transmission and tariff system;
- As an integral part of the development of a liberalised gas market.

Question 1.3: What was the initial trigger for the constitution of the gas hub?

Analysis of responses:

Figure 30: What was the initial trigger for the constitution of the gas hub?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

ERGEG's analysis reveals that in most cases, hubs have been set up mostly due to purely commercial interest and/or as part of the system design, such as the balancing regime. Three of the respondents feel a strong influence from the policy makers like the government, but this is rather limited. Most of the "other" responses specified explicitly in a comment box can be summarised as a mix of all three previous options:

- creation of an independent trading point (system design);
- introduction of the entry-exit-system(system design);
- overall market development (commercial interest);
- facilitation of gas trading (commercial interest);
- introduction of the Network Code (legally enforced).

Question 1.4: When was the hub established?

Analysis of responses:

Figure 31: When was the hub established?

01/04/1996	NBP
01/11/1999	Zeebrugge Hub
01/01/2003	TTF

01/07/2004	GVP
01/12/2004	Danish Hub
01/12/2004	PEG North
01/05/2005	PEG South-West
01/12/2005	MS-ATR
01/01/2006	CEGH
01/10/2006	Eon.GT (L-Gas)
01/10/2008	NCG VP (H-Gas)

Source: ERGEG Gas Market Monitoring Report 2010

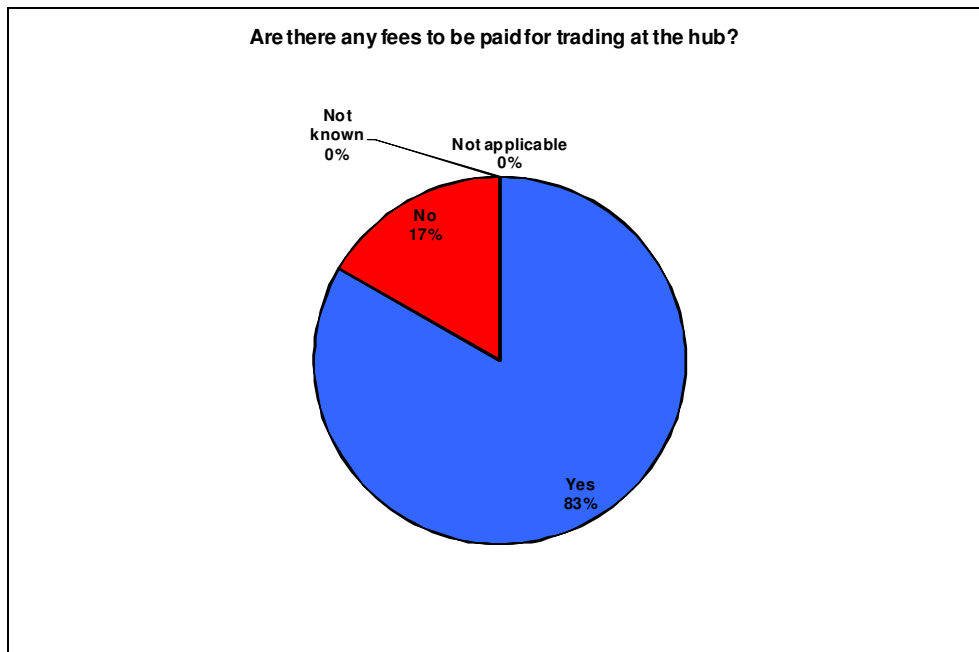
ERGEG's conclusion:

The information on the hub establishment provided by respondents shows that there are differences w.r.t. to dates when the hubs were established. Compared to the standard list as proposed in the questionnaire, dates for PSV and PEG South were not available. This confirms the information provided by the NRAs. Further analysis needs to be carried out to establish the potential link between the age of the hub and issues such as maturity and liquidity.

Question 1.5: Are there any fees to be paid for trading at the hub?

Analysis of responses:

Figure 32: Are there any fees to be paid for trading at the hub?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

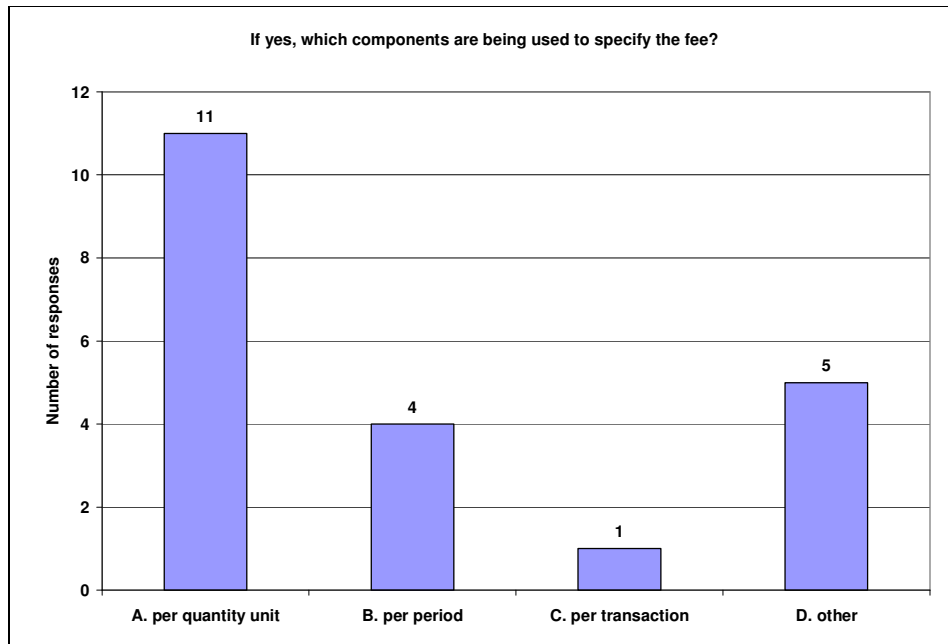
ERGEG's analysis shows that trading at the natural gas hubs is not free. Where "no" is answered, the fee is integral part of the access fee to the transmission network. It

remains to be examined whether such fees provide an obstacle to trading and a barrier for new traders to access trading at the natural gas hub.

Question 1.6: If yes, which components are being used to specify the fee?

Analysis of responses:

Figure 33: If yes, which components are being used to specify the fee?



Source: ERGEG Gas Market Monitoring Report 2010

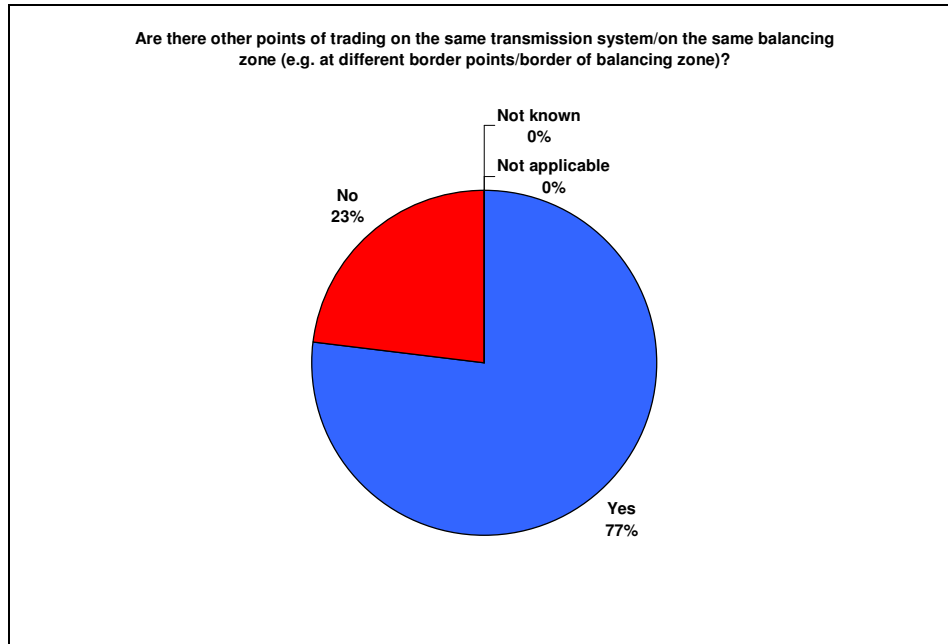
ERGEG's conclusion:

ERGEG's analysis shows that most fees consist of a quantity per unit, in some cases a fee per period and exceptionally per transaction. Where respondents chose other, they mainly provided clarifications and explanations.

Question 1.7: Are there other points of trading on the same transmission system/on the same balancing zone (e.g. at different border points/border of balancing zone)?

Analysis of responses:

Figure 34: Are there other points of trading?



Source: ERGEG Gas Market Monitoring Report 2010

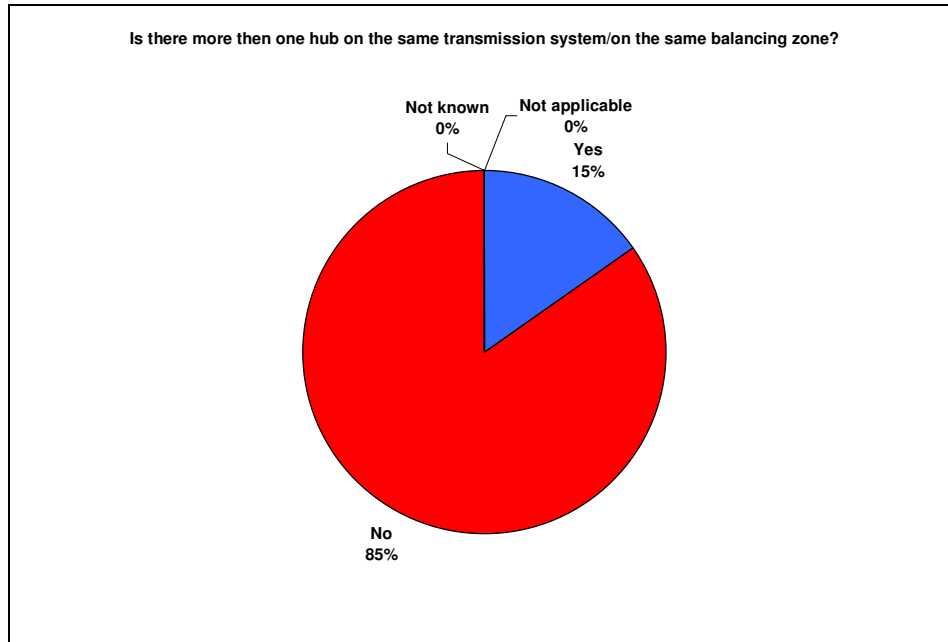
ERGEG's conclusion:

According to the responses received, in more than 75 per cent of the cases, there are other points of trading. Such trading points can be either on the same transmission system or on the same balancing zone.

Question 1.8: Is there more than one hub on the same transmission system/on the same balancing zone?

Analysis of responses:

Figure 35: Is there more than one hub?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

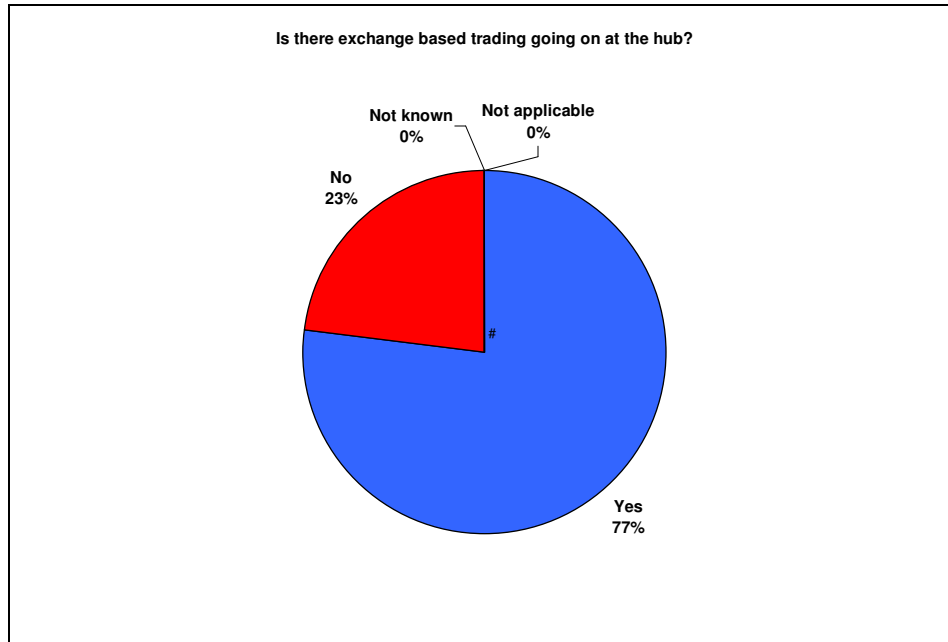
Respondents state that in 85 per cent, there is not more than one hub on the natural gas transmission system. The other 15 per cent represent two hubs on one transmission system, which in fact stand for one hub on each balancing zone on the same transmission system. This shows that there is a tendency to have one single natural gas hub on a given natural gas transmission system. ERGEG concludes that there can only be one hub per balancing zone.

Being asked in question 1.9 why this was not the case, respondents replied that because hubs have a de facto or legal monopoly or because it is part of the system design that covers the total transmission system.

Question 1.10: Is there exchange based trading going on at the hub?

Analysis of responses:

Figure 36: Is there exchange based trading going on at the hub?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

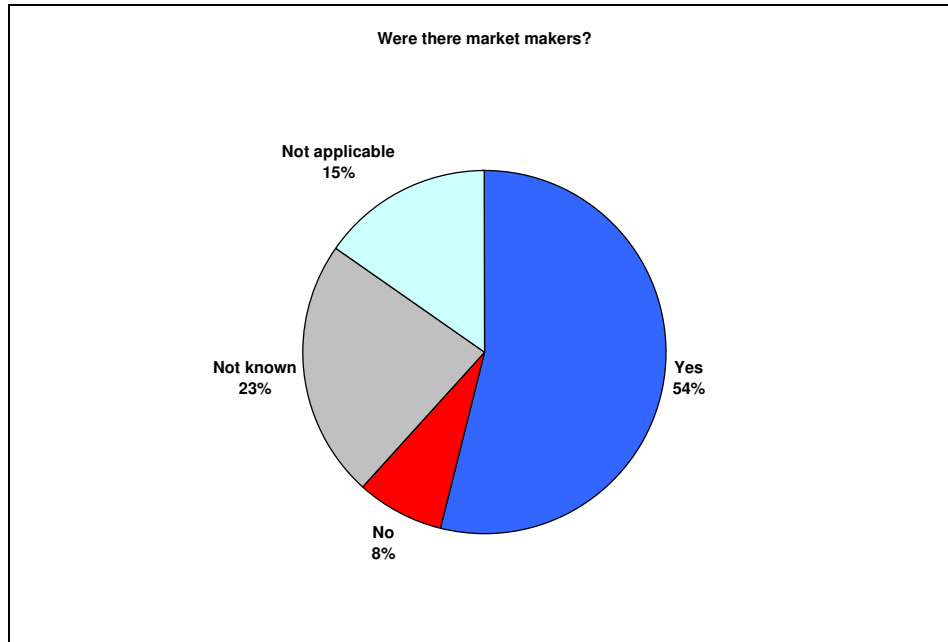
ERGEG's analysis shows that in more than 75 per cent of the cases, there is an exchange based trading at the natural gas hub. As answered to question 1.11, in none of these cases an obligation to trade via the exchange exists.

Only in three cases in the sample no exchange based trading exists. This includes also CEGH in Austria at which in the meantime an exchange was established. This leaves only the Danish hub and the Eon.GT (L-gas) on which no exchange exists. The reasons are to be discussed in the main part of this document.

Question 1.12: Were there market makers?

Analysis of responses:

Figure 37: Were there market makers?



Source: ERGEG Gas Market Monitoring Report 2010

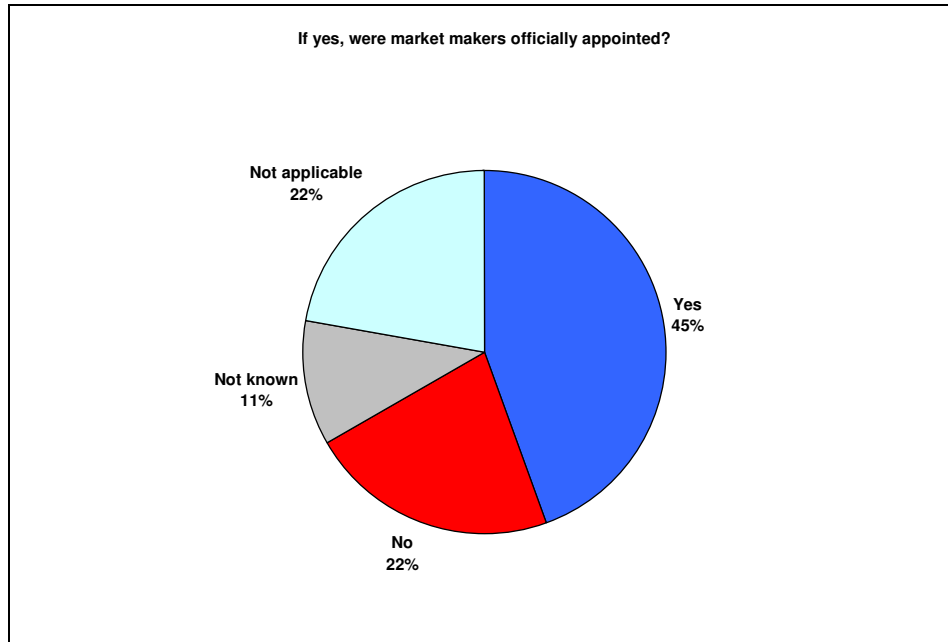
ERGEG's conclusion:

ERGEG's analysis shows that in more than 50 per cent of the cases, market makers played a role in the starting up of the hub. However, when reading the examples that are being asked in question 1.13 on roles and obligations, in all except of one case, reference is made to the exchange and not the hub. Therefore, ERGEG concludes that the use of market makers for starting up hub is not a common practice. One exception being noted: the Zeebrugge hub where market makers have provided for back-up and offtake of commodity between 2001 and 2005.

Question 1.14: If yes, were market makers officially appointed?

Analysis of responses:

Figure 38: If yes, were market makers officially appointed?



Source: ERGEG Gas Market Monitoring Report 2010

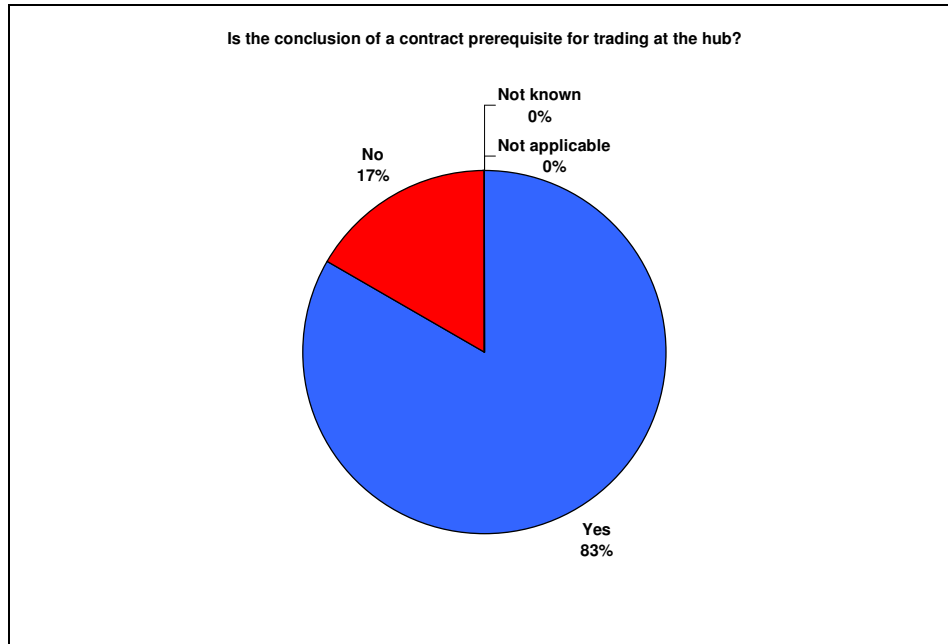
ERGEG's conclusion:

In almost 50 per cent of the cases, those market makers were appointed.

Question 1.15: Is the conclusion of a contract prerequisite for trading at the hub?

Analysis of responses:

Figure 39: Is the conclusion of a contract prerequisite for trading at the hub?



Source: ERGEG Gas Market Monitoring Report 2010

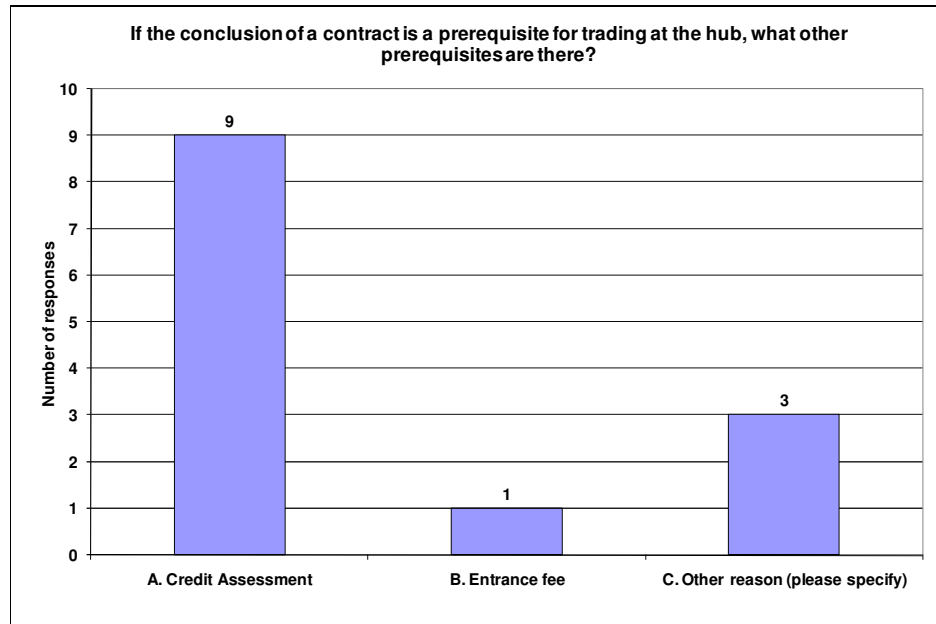
ERGEG's conclusion:

ERGEG's analysis shows that in more than 80 per cent of the cases, the conclusion of a contract is a prerequisite for trading at a hub. ERGEG concludes that without a firm contractual commitment, trading is not possible. Comments added by the TSOs and natural gas hub operators clarify that the kind of agreement may differ dependent on the framework. In some cases it may be a specific agreement related to trade on the hub, in other cases it is incorporated in the transmission agreement with the TSO, the latter only possible if the TSO operates the hub. It is to be noted that the two hubs where no fees have to be paid for trading (see question 1.5), an agreement with the TSO is prerequisite for trading.

Question 1.16 If the conclusion of a contract is a prerequisite for trading at the hub, what other prerequisites are there?

Analysis of responses:

Figure 40: If the conclusion of a contract is a prerequisite for trading at the hub, what other prerequisites are there?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

Responses received by the TSOs and natural gas hub operators clarify that the credit assessment is by far the most important prerequisite before trading at a hub becomes possible. One respondent also mentions the payment of an entrance fee. The other reasons given in the answers are all in relation to the signing of an agreement, not to a specific prerequisite.

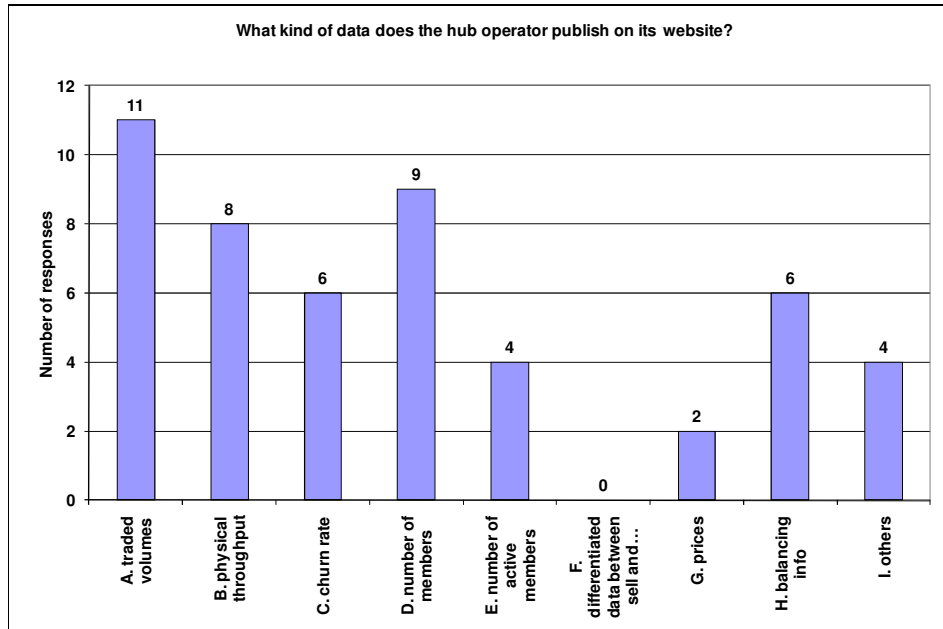
A.1.3. Question set 2

Question set 2 relates to the development of the hub, in particular transparency and publications.

Question 2.1: What kind of data does the hub operator publish on its website?

Analysis of responses:

Figure 41: What kind of data does the hub operator publish on its website?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

The aforementioned graph shows the kind of information that hub operators do tend to publish on their web page. Where respondents said “other”, answers include a price indicator, the number of exchanges, the market share of each shipper and historical data of more than 2 years. In Spain it is to be mentioned that relevant data is not published by the hub operator but by the regulator. Where TSOs and hub operators have indicated that “prices” are being published, the prices are in fact being published by the exchange.

Examples of published details on “traded volume” information:

- monthly, since Oct. 2005, standard cubic meter (at 0/ °C);
- Daily volumes expressed in m/(n), GWh, MMJ;
- Daily volumes expressed in m/(n), GWh, MMJ with daily updates;
- Since 1st of October 2007, Monthly;
- Monthly volumes of at least 12 month; cumulative yearly traded gas volumes of the last year;
- Daily, 3 years back, kWh/h;
- Daily data, since 01/01/2007, MWh/d (25 °C);
- The data is published in a monthly basis since the beginning. In the web site only shows the last two years of traded volumes. The units used are MWh;
- Traded volumes, as they are known to the TSO, are published on a weekly basis with a history going back to the start of the hub on 1 January 2003. The volumes are published in m³(n;35,17), the Groningen-equivalent (which has a fixed conversion factor with both MJ and MWh).

Examples of published details on “physical throughput” information:

- monthly, since 2007, standard cubic meter (at 0 °C);

- Daily volumes expressed in m³(n), GWh, MMJ;
- Daily volumes expressed in m³(n), GWh, MMJ with daily updates;
- Since 1st of October 2008, Monthly;
- Since 1st of October 2007, Monthly;
- Daily data, since 01/01/2007, MWh/d (25 °C);
- See 2.1a.

Examples of published details on “price signal” information:

None.

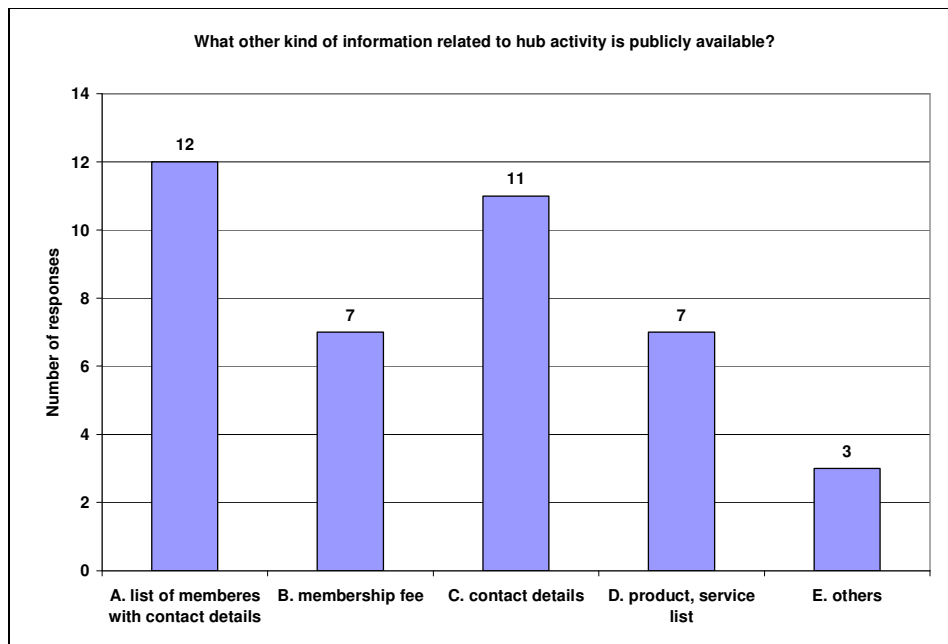
Examples of published details on “balancing info” information:

- Daily indexes for Back-up and Offtake commodity fee;
- Reference price used for the settlement of imbalances;
- Transaction prices of TSO’s balancing actions.

Question 2.2: What other kind of information related to hub activity is publicly available?

Analysis of responses:

Figure 42: What other kind of information related to hub activity is publicly available?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG’s conclusion:

ERGEG’s analysis reveals that a wide range of additional information is being made available to the public. This includes list of members with contact details, own contact details, list of products and services, fee structure and other data. Where respondents chose other, this included items such as information related to Gas Release Programs (1), the list of licensed and active shippers (1), the market shares of shippers in the secondary gas market (1).

Question 2.3: What other kind of information are you still prepared to publish?

Analysis of responses:

Respondents stated that they would be still prepared to publish the following information:

- Detailed price quotations (see 2.1)
- Whatever the market requires and the regulator approves cost wise.

But most of the responses are “not known” or “not applicable”.

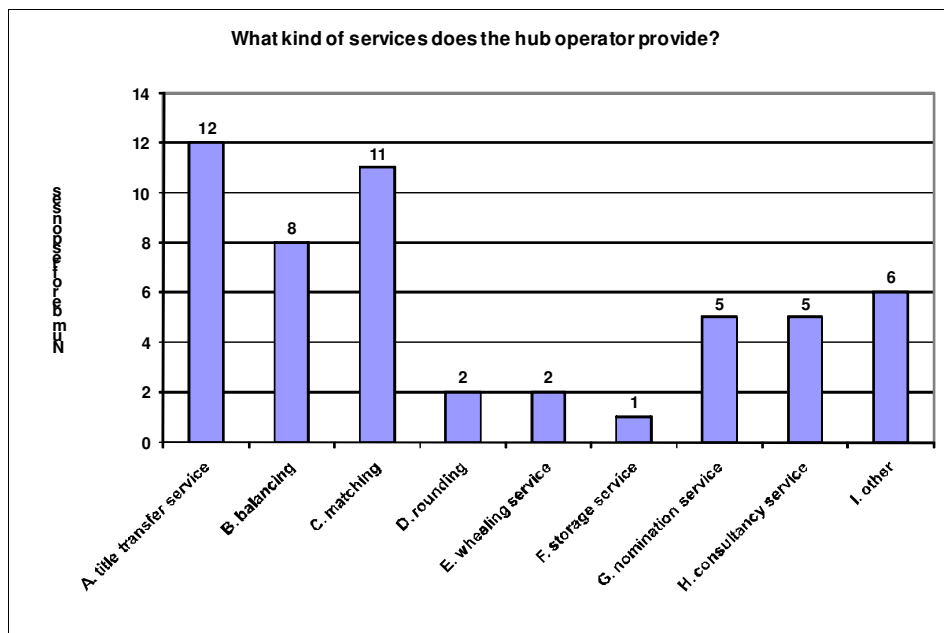
ERREG’s conclusion:

ERREG’s analysis reveals that TSOs and hub operators overwhelmingly responded that they do not know what other kind of information still to publish. ERREG concludes that this might be an issue that needs to be further examined.

Question 2.4: What kind of services does the hub operator provide?

Analysis of responses:

Figure 43: What kind of services does the hub operator provide?



Source: ERREG Gas Market Monitoring Report 2010

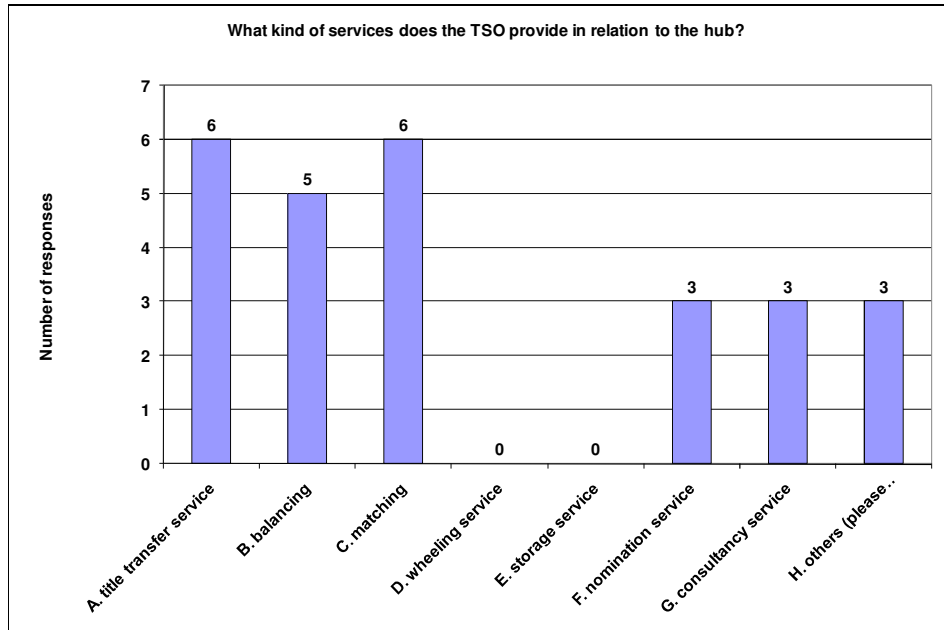
ERREG’s conclusion:

ERREG’s analysis shows that the services provided the most frequently is title transfer, followed by matching and balancing and on a lower level nomination and consultancy services. Rounding, wheeling and storage are only being provided to a lesser extent. As a result, there is no unique set of services that is being provided at each hub.

Question 2.5: What kind of services does the TSO provide in relation to the hub?

Analysis of responses:

Figure 44: What kind of services does the TSO provide in relation to the hub?



Source: ERGEG Gas Market Monitoring Report 2010

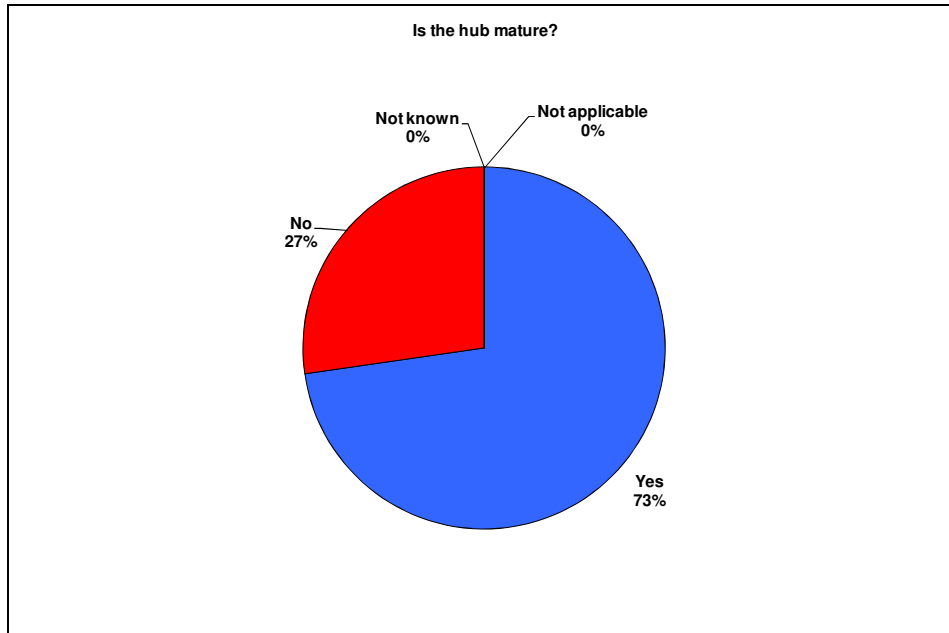
ERGEG's conclusion:

ERGEG's analysis shows that the TSOs are predominantly in charge of providing title transfer services, matching, balancing and nomination. TSOs who responded to this survey do neither provide wheeling nor storage. ERGEG therefore concludes that running a hub is based on key TSO activities, whilst other activities are provided by other market parties.

Question 2.6: Is the hub mature?

Analysis of responses:

Figure 45: Is the hub mature?



Source: ERGEG Gas Market Monitoring Report 2010

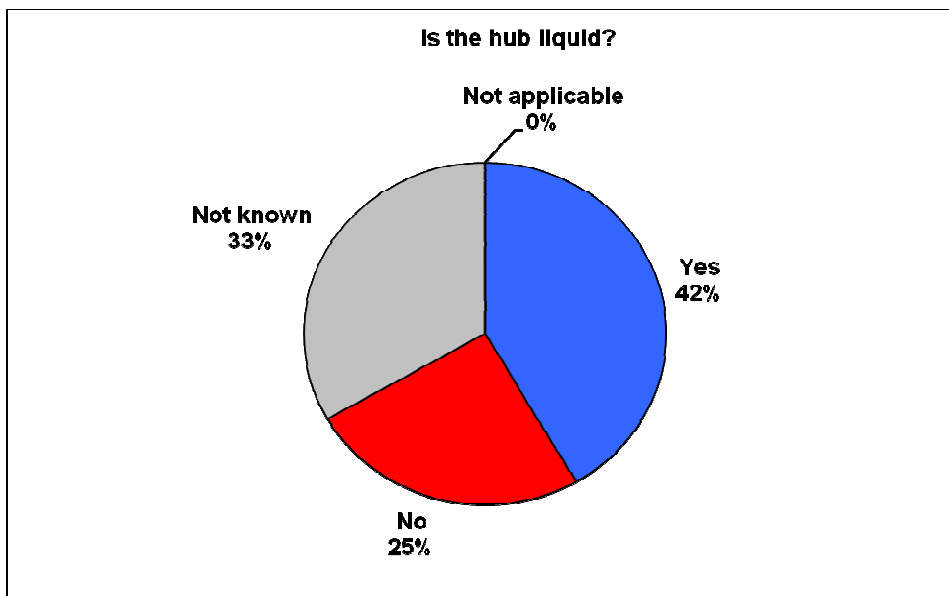
ERGEG's conclusion:

More than 70 per cent of respondents say that their hub is mature. ERGEG concludes that this is not the case in a small number of hubs in this survey.

Question 2.7: Is the hub liquid?

Analysis of responses:

Figure 46: Is the hub liquid?



Source: ERGEG Gas Market Monitoring Report 2010

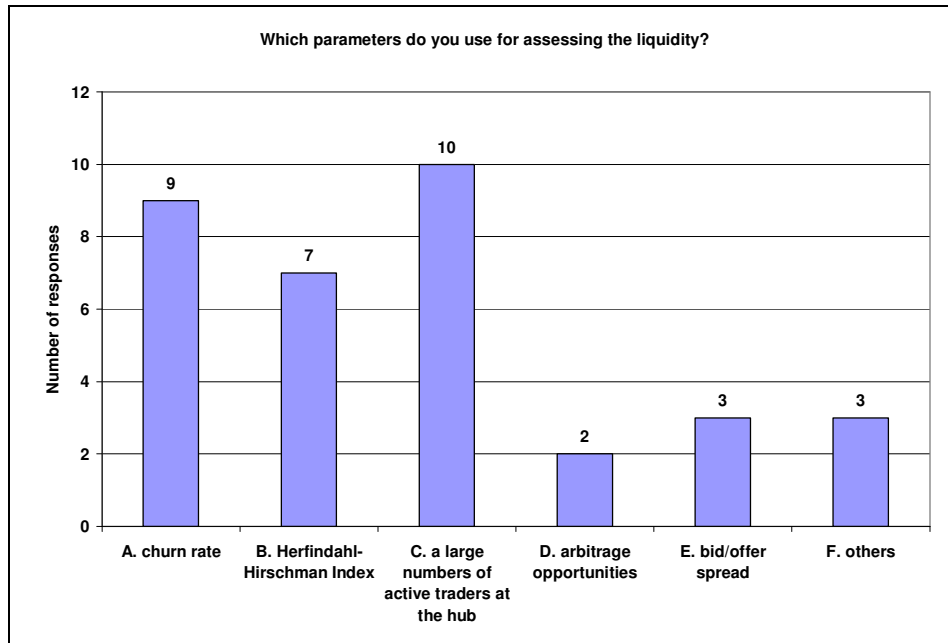
ERGEG's conclusion:

ERGEG's analysis shows that only in 25 per cent of the cases respondents say that the natural gas hub is not liquid. In some of the comments, where respondents choose "not known" as the answer, it is clear that TSOs and hub operators had some difficulty to declare "their" hub liquid, although they sum up the levels reached by some indicators. The two most important reasons that were given why a hub is not liquid was firstly the lack of capacity to get access to the hub and secondly the absence of price transparency in the OTC trade.

Question 2.8: Which parameters do you use for assessing the liquidity?

Analysis of responses:

Figure 47: Which parameters do you use for assessing the liquidity?



Source: ERGEG Gas Market Monitoring Report 2010

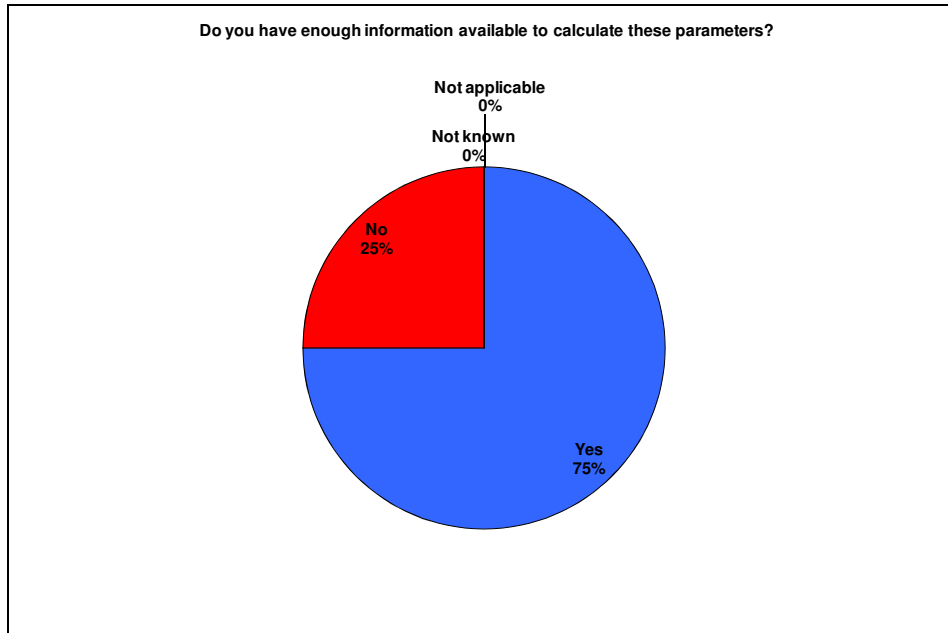
ERGEG's conclusion:

ERGEG's analysis reveals that mostly the number of active traders is used as a criterion to assess liquidity, followed by the churn rate, indices such as the HHI. Where respondents chose "others", they specify the number of exchanges and the market share. ERGEG concludes that whilst the number of active traders is predominantly used as a criterion to assess liquidity, other indicators need to be considered as well.

Question 2.9: Do you have enough information available to calculate these parameters?

Analysis of responses:

Figure 48: Do you have enough information available to calculate these parameters?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

ERGEG's analysis reveals that almost 75 per cent of respondents state that they have sufficient information to compute the aforementioned parameters.

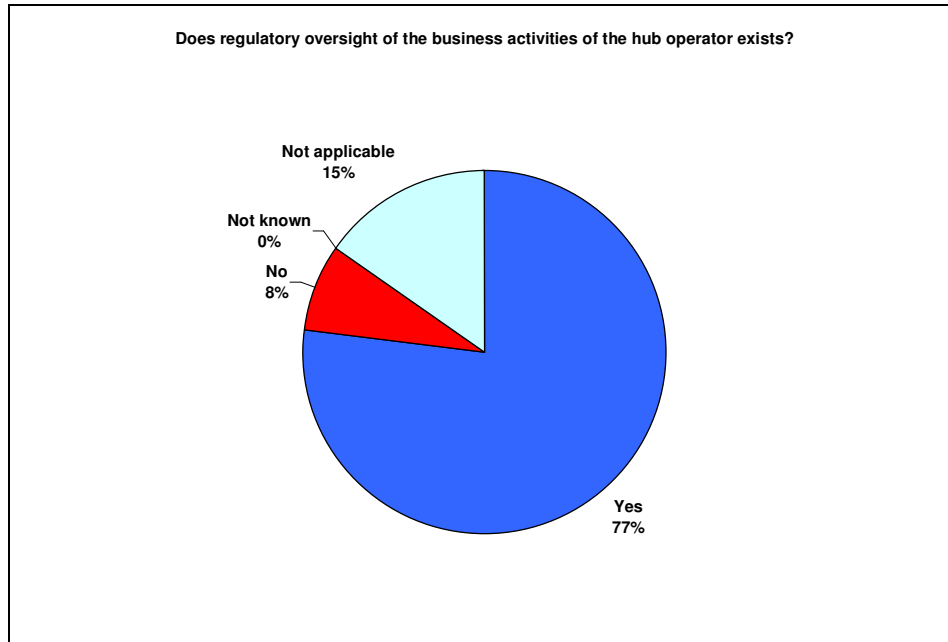
A.1.4. Question set 3

Question set 3 relates to the regulatory framework of natural gas hubs.

Question 3.1: Does regulatory oversight of the business activities of the hub operator exist?

Analysis of responses:

Figure 49: Does regulatory oversight of the business activities of the hub operator exists?



Source: ERGEG Gas Market Monitoring Report 2010

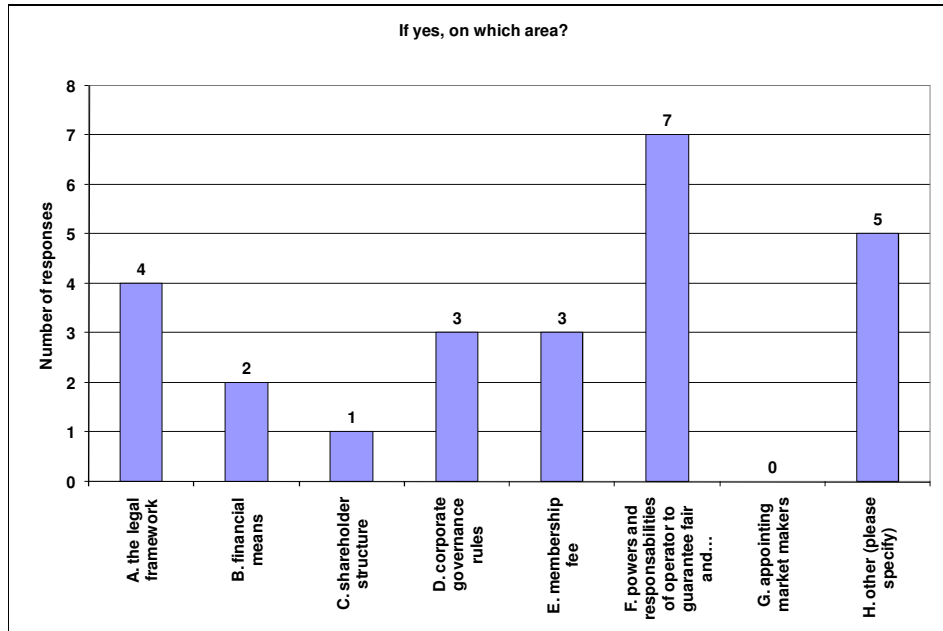
ERGEG's conclusion:

ERGEG's analysis shows that in more than 75 per cent of the cases, regulatory oversight is in place. Only in relation to the Belgian Zeebrugge hub and the Dutch TTF, the answer is "no" or "not applicable". In all positive cases, the oversight is being carried out by the national energy regulator (question 3.2). In the case where the government (2) or where the financial regulator (1) are involved, it is always in joint cooperation with the national energy regulator.

Question 3.3: If yes, on which area?

Analysis of responses:

Figure 50: If yes, on which area?



Source: ERGEG Gas Market Monitoring Report 2010

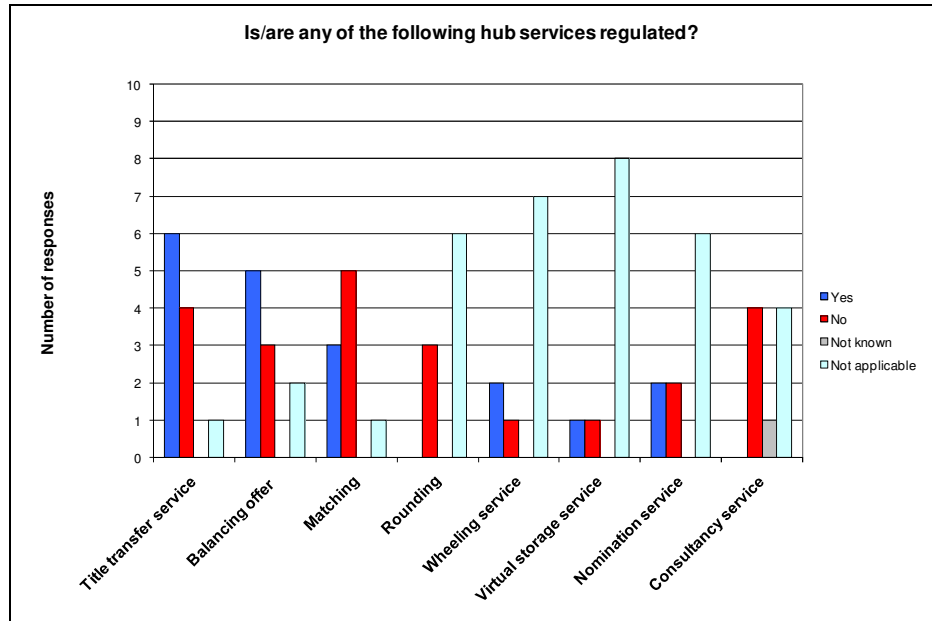
ERGEG's conclusion:

ERGEG'S analysis reveals that in most cases, powers and responsibilities of operators to guarantee the fair and continuous functioning of the market has been given as the main response, followed by the legal framework, governance rules & fees. Among other areas, respondents mention the contractual framework, general update on the development and information on all transactions.

Question 3.4: Is/are any of the following hub services regulated?

Analysis of responses:

Figure 51: Is/are any of the following hub services regulated?



Source: ERGEG Gas Market Monitoring Report 2010

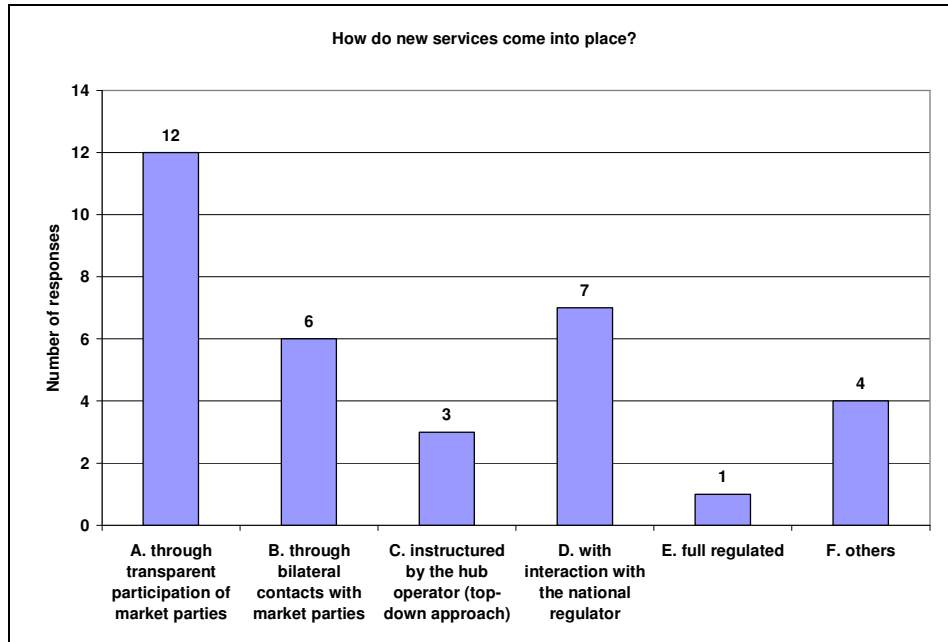
ERGEG's conclusion:

ERGEG's analysis reveals a mixed picture on what kind of hub services are actually being regulated. Some respondents name title transfer, balancing, matching and wheeling as the most regulated services. As mentioned in one of the comments, in the cases where the TSO operates the hub, hub services are regulated as far as TSO services are regulated. ERGEG concludes that further clarification is needed on whether hub services should be regulated in the first place and if so, which ones these should be.

Question 3.5: How do new services come into place?

Analysis of responses:

Figure 52: How do new services come into place?



Source: ERGEG Gas Market Monitoring Report 2010

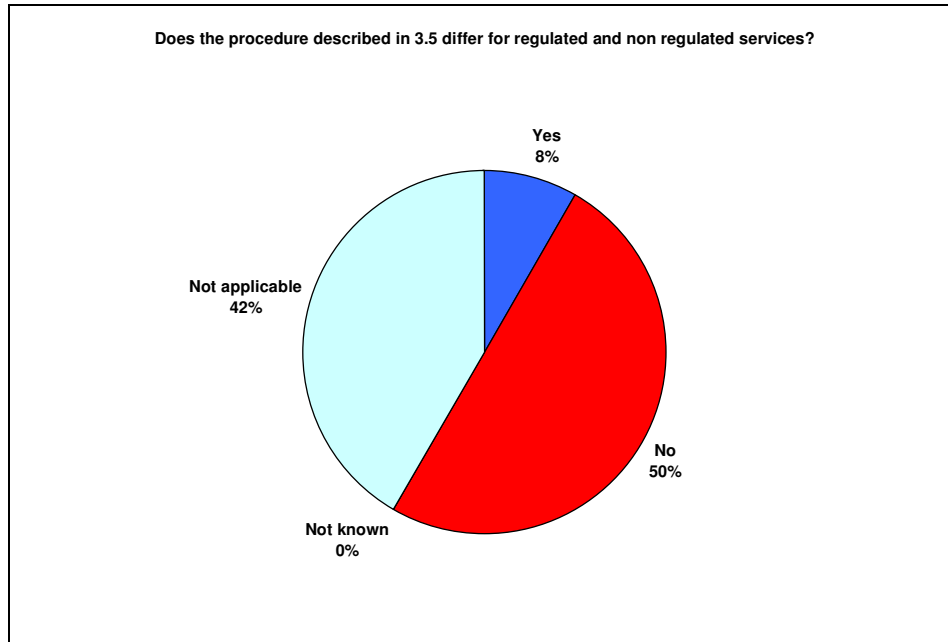
ERGEG's conclusion:

ERGEG's analysis shows that there are various mechanisms on how new services can come into place. ERGEG concludes that given that there are various mechanisms in place, such diversity is beneficial for the overall development of new services. Where respondents chose other, the examples provided refer to a customer questionnaire, interaction with EFET, a formal market consultation under the supervision of the national regulator and through discussions with market organisations, GRI or Gasplatform.

Question 3.6: Does the procedure described in 3.5 differ for regulated and non regulated services?

Analysis of responses:

Figure 53: Does the procedure differ for regulated and non regulated services?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

ERGEG's analysis shows that in 50 per cent of the cases, the procedure does not differ for regulated vs. non-regulated services. Most of the "not applicable" or "no" responses are due to the fact that the hub is only offering regulated services, or in the opposite way, only offering non-regulated services. ERGEG suggests that before a more detailed conclusion can be derived from this result, the data should be subject to a more in depth analysis, for example with the data received on question 3.4 related to which service is regulated and which is not.

Where respondents chose to answer this question with "yes", the explanation in question 3.7 on why some services are being regulated and others not, included the following items:

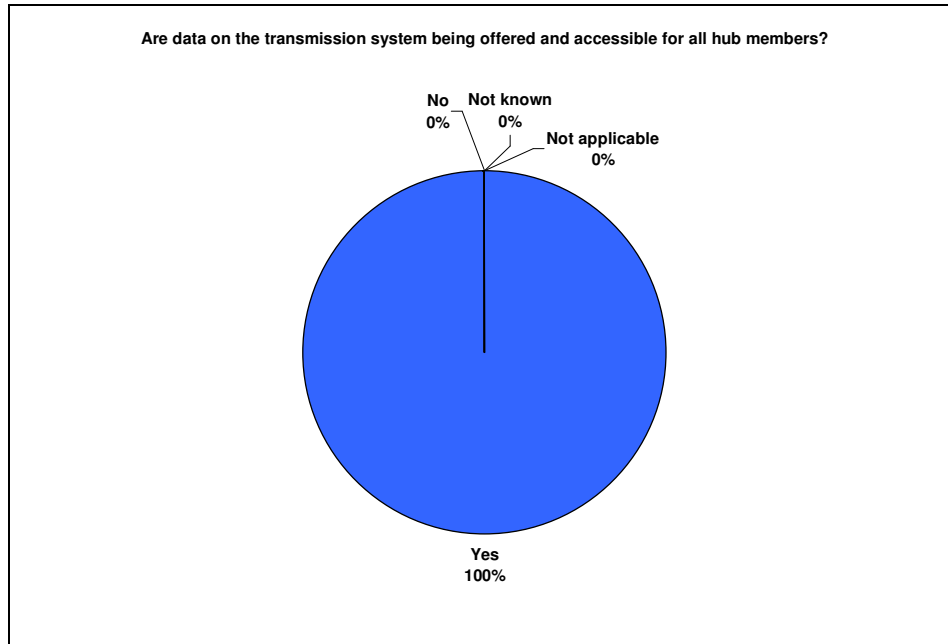
- Hub services are no monopoly activity; they were developed and evolve according to the users' needs, supported by them.
- Hub services are regulated as far as TSO services are regulated,
- Hub is part of a TSO, which is a regulated state owned company,
- Not known,
- Regulated as TSO is a de-facto monopoly,
- Balancing, wheeling and virtual storage are part of the transmission tariff-system, which is regulated.

Natural gas hubs differ in terms of their characteristics. But a line can be drawn between non regulated hubs operated by an independent entity and part or full regulated hubs operated by the TSO. The last comment received in the list might be the key to the answer when a service is regulated and when not.

Question 3.8: Are data on the transmission system being offered and accessible for all hub members?

Analysis of responses:

Figure 54: Are data on the transmission system being offered and accessible



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

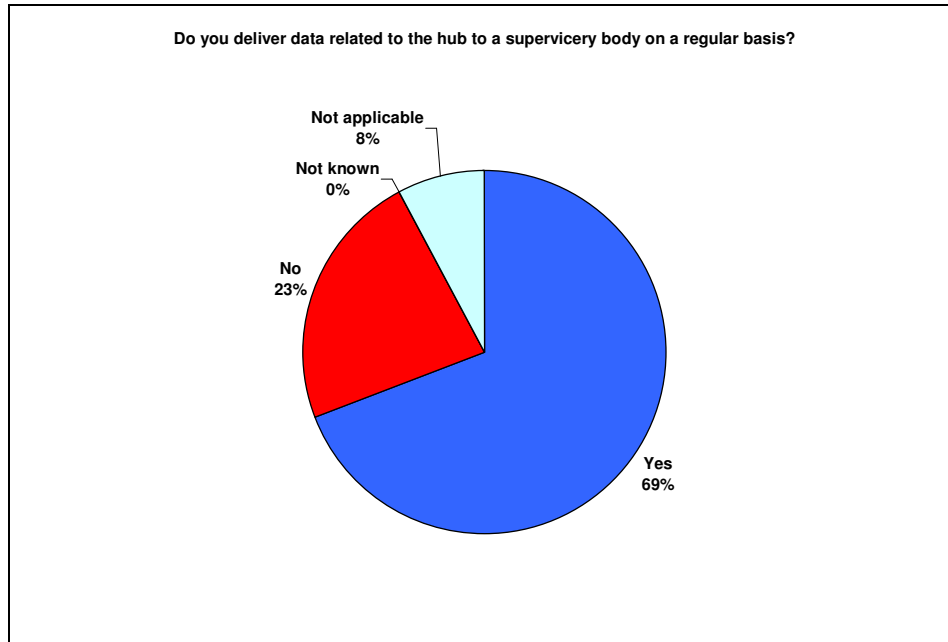
ERGEG's analysis shows that in 100 per cent of the case, data on the transmission system are being offered to the public and made available in an accessible manner. However, ERGEG would like to state that further analysis might be needed to assess what are these data and whether they are indeed sufficient to allow fair and non-discriminatory access to hubs services and hub trading.

No respondent provided an answer to question 3.9: "If no, please specify?"

Question 3.10: Do you deliver data related to the hub to a supervisory body on a regular basis?

Analysis of responses:

Figure 55: Do you deliver data related to a supervisory body on a regular basis?



Source: ERGEG Gas Market Monitoring Report 2010

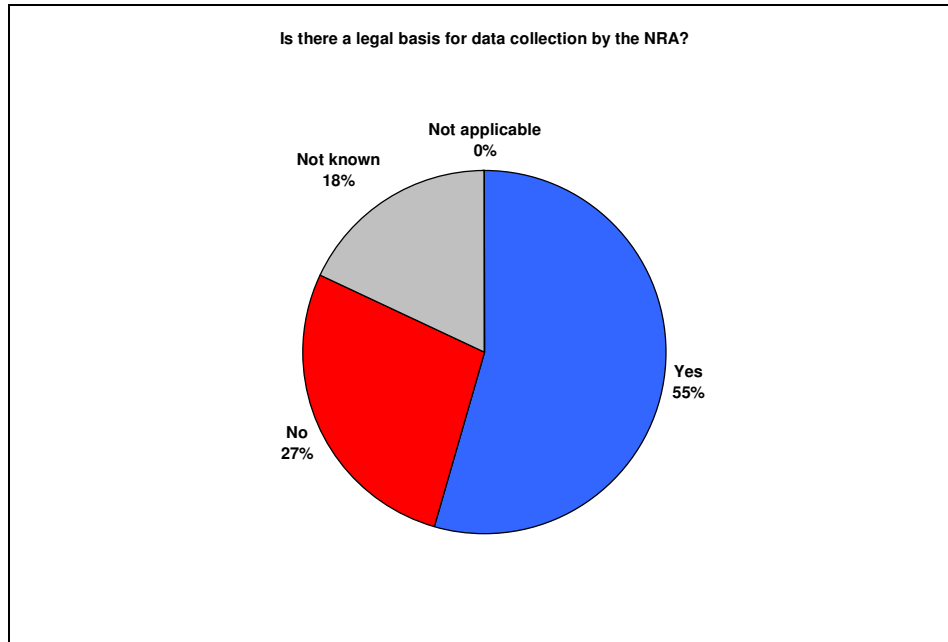
ERGEG's conclusion:

ERGEG's analysis reveals that in almost 70 per cent of the cases, data related to hub activities are being made available from the TSO or hub operator to the relevant supervisory body, except for two hubs. The "non applicable" is being given in the case where the hub is part of the TSO and as such integrated in the regulatory framework. ERGEG concludes that harmonisation might be needed to ensure that there are clearly defined legal bases for data submission to regulatory and supervisory bodies.

Question 3.11: Is there a legal basis for data collection by the NRA?

Analysis of responses:

Figure 56: Is there a legal basis for data collection by the NRA?



Source: ERGEG Gas Market Monitoring Report 2010

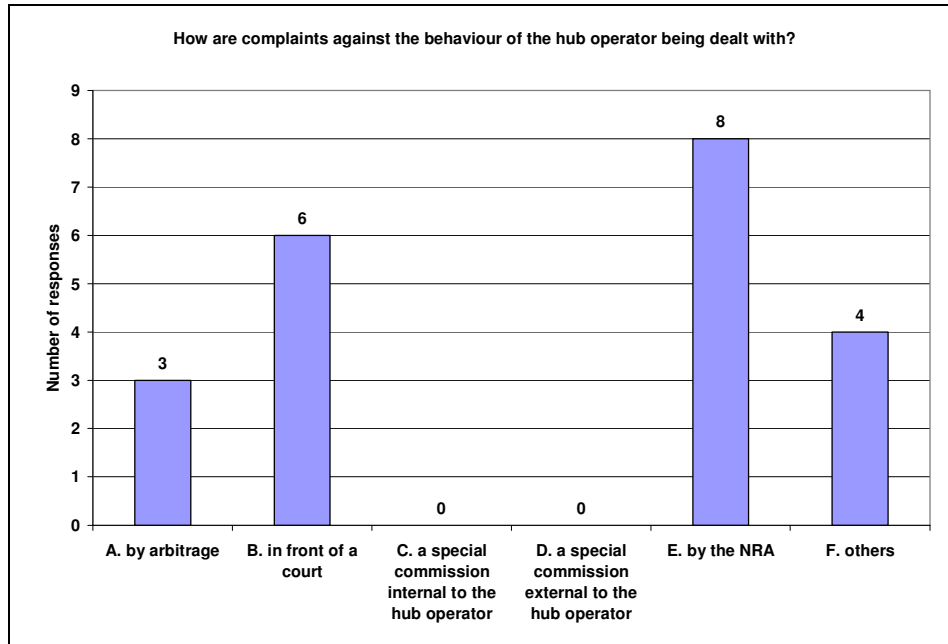
ERGEG's conclusion:

ERGEG's analysis shows that according to TSOs and hub operators, there is a legal basis for data collection by the NRA in only almost 60 per cent of the cases. In almost 30 per cent of the cases this is not the case. The two "not known" answers correspond with a "yes" answer on the previous question 3.10 concerning the delivery of hub related data on a regular basis. The "no" answers correspond to a "no" in the previous question 3.10. There are differences in the legal basis, in most of the cases. The data transmission is based on general prescriptions and related to the legal competences of the NRA. Only in two cases have NRAs access to the customer extranet to look for available data related to the hub.

Question 3.13: How are complaints against the behaviour of the hub operator being dealt with?

Analysis of responses:

Figure 57: How are complaints against the behaviour of the hub operator being dealt with?



Source: ERGEG Gas Market Monitoring Report 2010

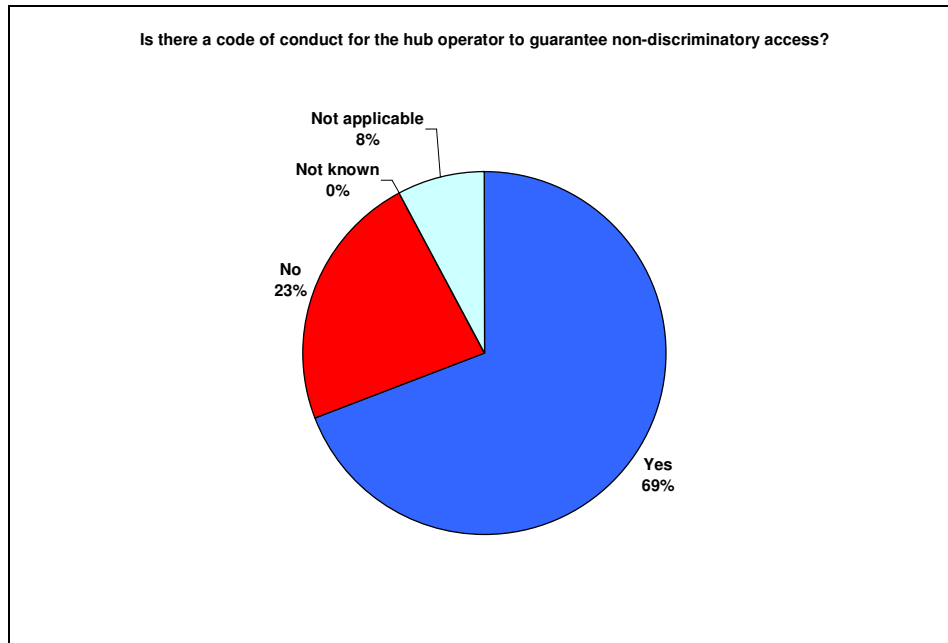
ERGEG's conclusion:

ERGEG's analysis shows that in most cases NRAs are in charge of handling complaints against TSOs/hubs operators, followed by court arbitration or bilateral arbitration. Examples provided under the heading of "others" included entities such as the Competition Commission and Financial Services Authority. ERGEG concludes that whilst such procedures are in place, the responsibility is not always assigned to the same entity, i.e. in different jurisdictions this function can be performed by different entities.

Question 3.14: Is there a code of conduct for the hub operator to guarantee non-discriminatory access?

Analysis of responses:

Figure 58: Is there a code of conduct for the hub operator to guarantee non-discriminatory access?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

ERGEG's analysis reveals that in almost 70 per cent of the cases, a code of conduct is in place for the hub operators to guarantee the non-discriminatory access to the natural gas hub and the services provided at the natural gas hub. As many of the gas hubs are being operated by the TSOs, non-discriminatory access is incorporated in the general code and obligations for TSO.

Question 3.15: How is confidentiality being preserved?

Analysis of responses:

Respondents gave the following examples on how confidentiality is being preserved:

- Confidentiality policy in place within the TSO (internal rules and procedures), including externally audited governance processes and business separation processes in place,
- Contractual confidentiality clauses in place,
- Full ownership unbundling,
- Usage of safe IT-systems,
- Publication of only aggregated figures to ensure anonymity.

ERGEG's conclusion:

ERGEG concludes that although procedures are in place to ensure confidentiality, there are differences in these procedures. Where the TSO operates the hub or regulation of the hub is in place, ERGEG finds that there are strict legally binding requirements and regulatory supervision to ensure confidentiality. This however cannot be said in all situations.

Question 3.16: Describe the penalties in case of misbehaviour of a market party.

Analysis of responses:

Respondents have given the following examples of penalties in place:

- Fines/financial penalties: as set in balancing rules or under competition ruling;
- Sanctions in case of breach of licences: suspension of access;
- Penalties determined by Ministry, NRA or settlement courts;
- No penalties.

ERGEG's conclusion:

ERGEG concludes that a whole set of answers has been given by respondents. In five cases no answer was received. In all these cases ERGEG concludes that in question 3.13 respondents have stated that complaints are being handled by arbitration or in front of the court. Therefore specific rules and conditions have to be checked before question 3.16 can be answered.

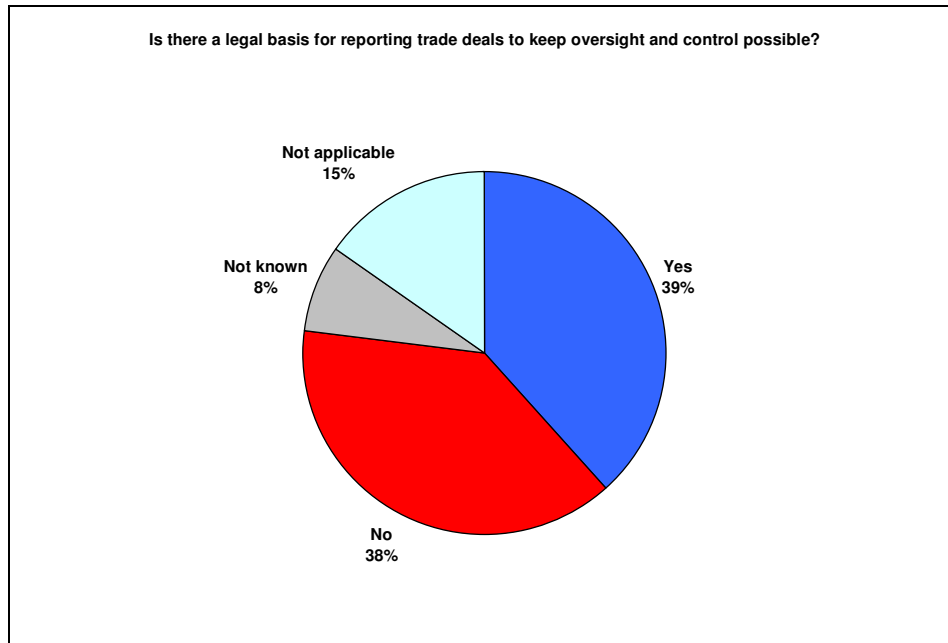
A.1.5. Question set 4

Question set 4 relates to oversight regulation, in particular issues related to hub operator(s) and OTC/Exchange traders.

Question 4.1: Is there a legal basis for reporting trade deals to keep oversight and control possible?

Analysis of responses:

Figure 59: Is there a legal basis for reporting trade deals to keep oversight and control possible?



Source: ERGEG Gas Market Monitoring Report 2010

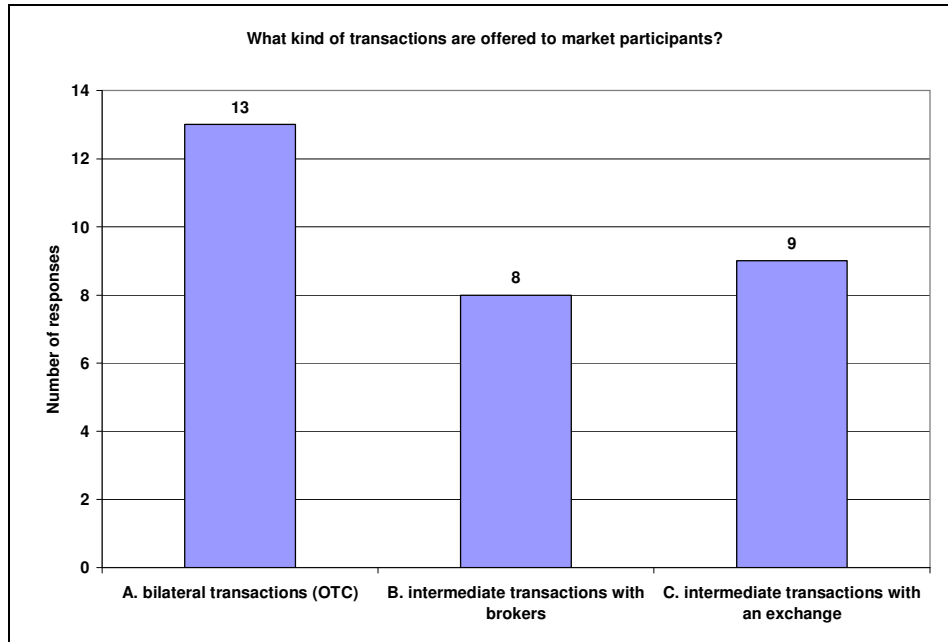
ERGEG's conclusion:

ERGEG's analysis shows that for some gas hubs, there is a legal basis to report trades, whilst in other cases, this is not the case. In cases where there is a legal basis, it is the national energy regulator, the national financial regulator or both together who are responsible to monitor the trades that are being carried out (question 4.2).

Question 4.3: What kind of transactions are offered to market participants?

Analysis of responses:

Figure 60: What kind of transactions are offered to market participants?



Source: ERGEG Gas Market Monitoring Report 2010

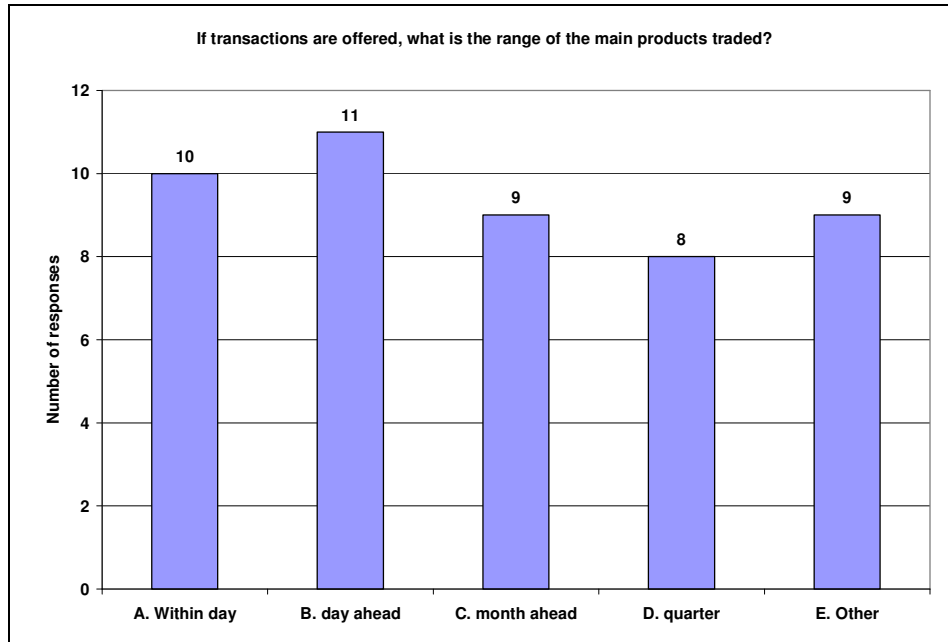
ERGEG's conclusion:

ERGEG's analysis shows that most transactions are bilateral transactions (OTC), followed by intermediate transactions with an exchange, and followed by intermediate transactions with brokers. ERGEG concludes that OTC is the predominant form of trading at a gas hub. ERGEG suggests that in light of the transparency debate, this issue might warrant further examination.

Question 4.4: If transactions are offered, what is the range of the main products traded?

Analysis of responses:

Figure 61: If transactions are offered, what is the range of the main products traded?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

From the answers received, respondents indicate that short term trade is predominant on gas hubs (day-ahead and within day). They specify in the comment section, that bilateral trades are based on hourly nominations, nominated on a day-to-day basis. Where respondents gave "other" as the answer, the responses included:

- Month+2,
- Yearly,
- Seasonal,
- Weekly,
- Weekend,

all depending on the bilateral contracts of the shippers/traders.

ERGEG concludes that the range of offered products effectively depends on the market place. Not all products are being offered at all market places. This allows important conclusion to be drawn w.r.t. maturity and liquidity of a hub whereby no conclusion is made on the direction of the relationship at this point.

Annex III: Findings from users of natural gas hubs

A.1.6. Question set 1

Question set 1 relates to the definition of definition for "natural gas hub". Respondents provided the following suggestions for such definitions:

- A zone accessed via an entry/exit contract for market participants & shippers without any entry/exit costs,
- A virtual trading point at which supply and demand in one balancing zone meet,
- TSOs are managers of the mentioned hubs. The Virtual Trading Point can reach and can be reached by any entry and exit point of the balancing zone.
- An natural gas hub offers standardised trading conditions. Natural gas hubs are virtual transfer points within an entry-exit system of a gas grid. Gas hubs allow the title transfer of gas after being fed into the gas transmission system at a physical entry point and before being taken off at a physical exit point. While the booking of transportation capacities is not a prerequisite for the virtual hub trading (pure "paper trading" is possible as well), the partaking in the balancing process is. Gas hubs are not and do not include broker platforms or exchanges. These platforms are trading systems that refer to the hub as a delivery point/area. They are not identical to the underlying hub.
- A virtual or physical point in which you can buy and sell natural gas, both spot and forward, physically or financially.
- A hub is a physical place where gas transfers and transactions take place with the operational and commercial support of a service provider (the Hub Operator) who ensures the follow-up of the transfer of ownership and offers a full range of additional services that facilitate trading of natural gas.
- Gas hubs can be local or notional. In a local hub, the physical place where the gas is exchanged corresponds to a specific and well identified geographical point on the transmission network. In a notional hub, the physical place where the gas is exchanged corresponds to the entire transmission network. This means that the gas can be present at any point in the transmission network to be exchanged at the hub.
- Gas trading and exchange point operated by an independent entity where multiple participants can exchange gas through trading transactions and enabling physical in and out put flows from entry/exit points.
- A market place where it is possible to handle gas through standardized contracts, for standard periods and products, at freely negotiated prices. Whether the exchange point is virtual or not, this market place can work only if its rules are consistent with the possibilities offered by the gas transport system. On the other hand, the market place is not bound to the availability of an exchange.

- A natural gas hub is a virtual or physical point for the exchange of natural gas among several shippers,
- A virtual and/or physical location where the transfer of gas takes place,
- A contractual point - physical or virtual - where gas can be traded between gas market participants,
- A natural gas hub is a collection of transmission pipelines and/or networks which are balanced as a whole on which the inflow and outflow of gas (either virtually or physically) creates imbalance positions for those hub participants, which are settled financially.

ERGEG's conclusion:

Users answering the questionnaire perceive a natural gas hub as a point - physical (local) or virtual (notional) - where multiple participants can exchange gas through trading transactions and where physical input and output flows from entry/exit points are enabled with the operational and commercial support of a TSO, service provider or independent body.

An attempt is being made by one of the respondents to clarify the difference between physical (local) or virtual (notional). In a local hub, the physical place where the gas is delivered/exchanged corresponds to a specific and well identified geographical point on the transmission network. In a notional hub, the physical place where the gas is delivered/exchanged is being defined as a group of entry and exit points to a whole transmission network or balancing zone. This means that the gas can be present at any point in the transmission network to be exchanged at the hub.

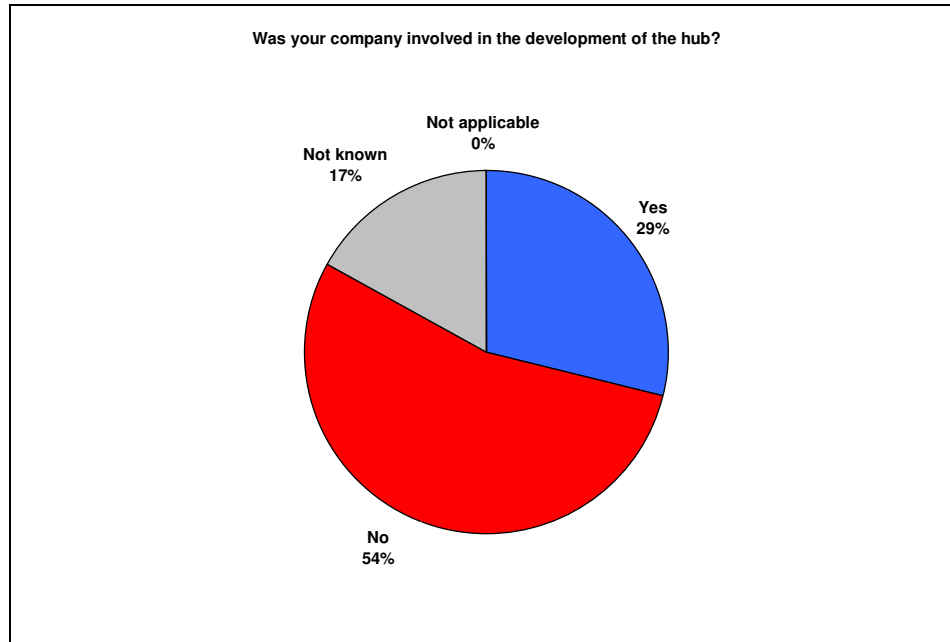
When users refer to the activities taking place on a hub, reference is made to the title transfer of gas (also described as the follow-up of the transfers of ownership) through standardized contracts, for standard periods and products at freely negotiated prices. It is clear that users expect this to be supported by the hub operator/TSO as part of the normal functioning of a hub. Additionally, the existence of a full range of additional services to facilitate trading of natural gas is being identified, but clearly differentiated from broker platforms or exchanges. These platforms are trading systems that refer to the hub as a delivery point/area. They are not identical to the underlying hub.

At last, one respondent describes from a user perspective what is expected from a gas hub. For a gas trading hub to be successful, it must be possible to easily move gas into and out of the market, whether the market is defined as a single point or as a whole area (virtual hub). Secondly, there must be a use for the gas, either through the existence of a significant customer base, or through the demand from other markets that can be reached from the traded hub. There is also a very important criterion for gas trading hub, it must offer the ability for market participants to manage volume risk at a competitive cost.

Question 1.1: Was your organisation involved in the development of the hub?

Analysis of responses:

Figure 62: Was your organisation involved in the development of the hub?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

ERGEG concludes from the answers received that most users have not been involved in the development in the natural gas hub (more than 50 per cent).

On the question "how" (Question 1.2), users that where involved gave answers along the following lines:

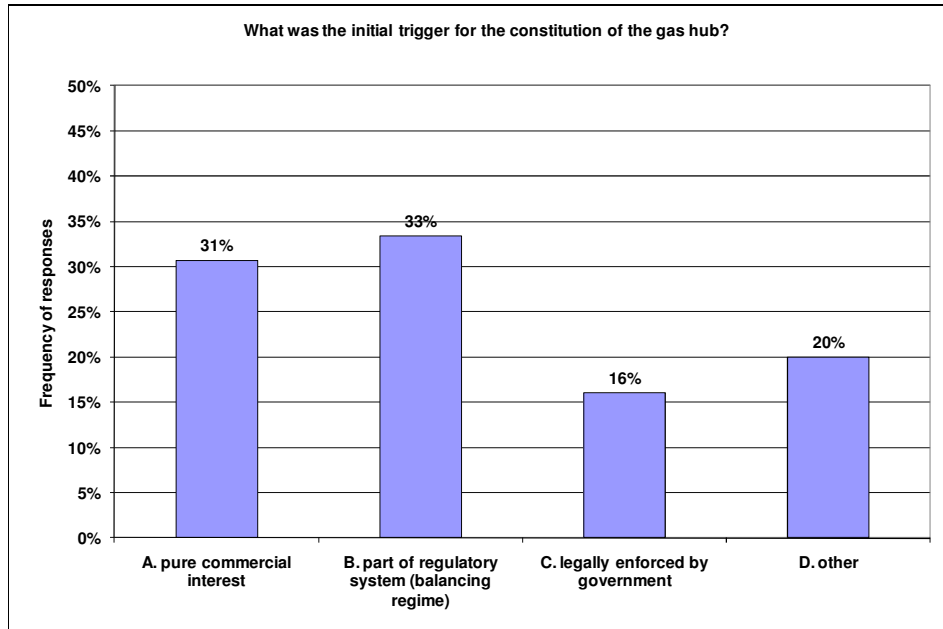
- active participation on national and European level;
- direct participation in the design of the hub, mostly as former incumbent or one of the biggest players;
- participation in task forces and meetings through EFET;
- public consultation of NRA.

ERGEG stipulates that forms of participation and involvement are highly welcomed. However, the way the participation differs and can not to be called transparent.

Question 1.3: What was the initial trigger for the constitution of the gas hub?

Analysis of responses:

Figure 63: What was the initial trigger for the constitution of the gas hub?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

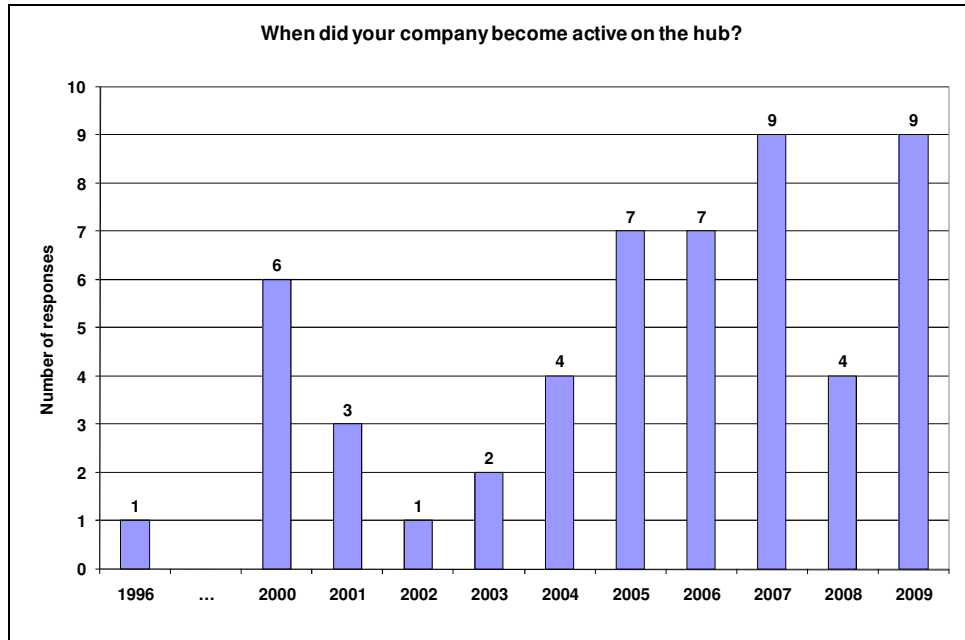
ERGEG's analysis shows that users state that the trigger for the development of the natural gas hubs is to be found in the establishment of the regulatory system, followed by commercial interest and legal enforcement. Where respondents gave "other" as the answer, they provided explanations such as:

- development based on recommendations of the European Commission and on the liberalisation effort of the government;
- not the right stakeholder to answer that question;
- own assessment, not related to the foundation of the hub;
- participation only;
- respondent is only the shipper, not in charge of the design of the virtual point.

Question 1.4: When did your company become active on the hub?

Analysis of responses:

Figure 64: When did your company become active on the hub?



Source: ERGEG Gas Market Monitoring Report 2010

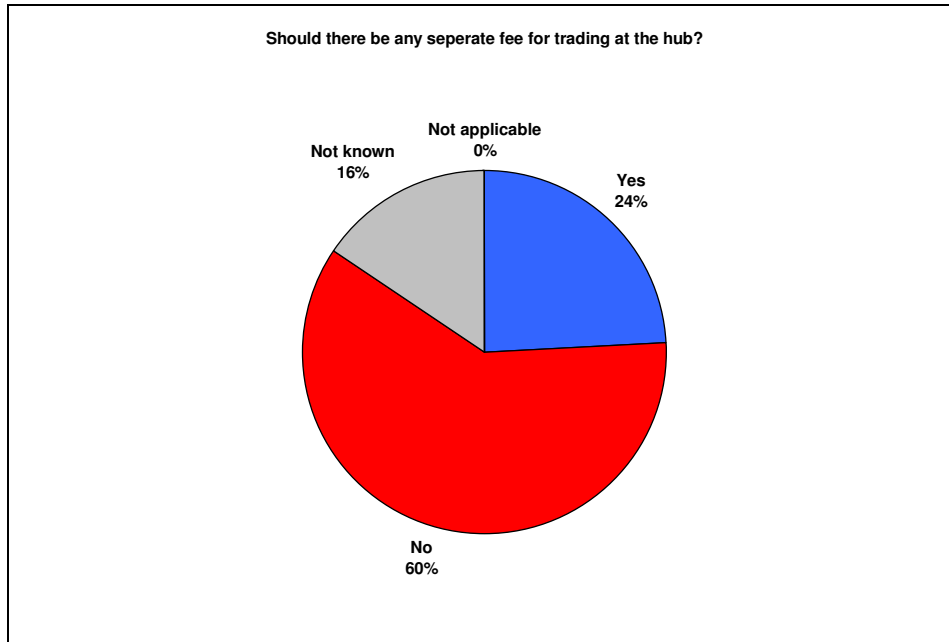
ERGEG's conclusion:

ERGEG notes that new participation at a hub or that the point to start active involvement as hub user differs in time. However, ERGEG concludes that the latest years, involvement is rising. This is due to existing users starting to differentiate at different hubs or due to new players becoming active at a hub.

Question 1.5: Should there be any separate fee for trading at the hub?

Analysis of responses:

Figure 65: Should there be any separate fee for trading at the hub?



Source: ERGEG Gas Market Monitoring Report 2010

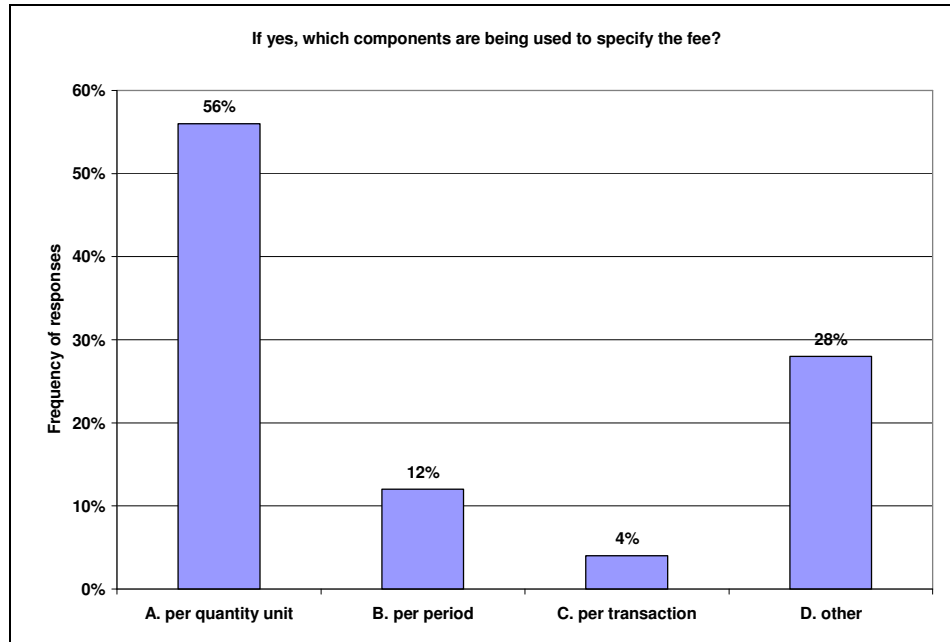
ERGEG's conclusion:

Being asked, if there should be a separate fee for trading at a hub, the overwhelming majority of respondents stated that they are against such fees (60 per cent of the received responses). At first sight this is not surprising, but in combination with the answers given by users to question 1.6. ERGEG concludes that already at this stage users are against such trading fees.

Question 1.6: If yes, which components should there being used to specify the fee?

Analysis of responses:

Figure 66: If yes, which components should there being used to specify the fee?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

Being asked what the components of such a fee should be, most of the users who were agreeing with a separate fee, stated that it should be a fee per quantity unit. Where respondents said "other", they provided the following comments:

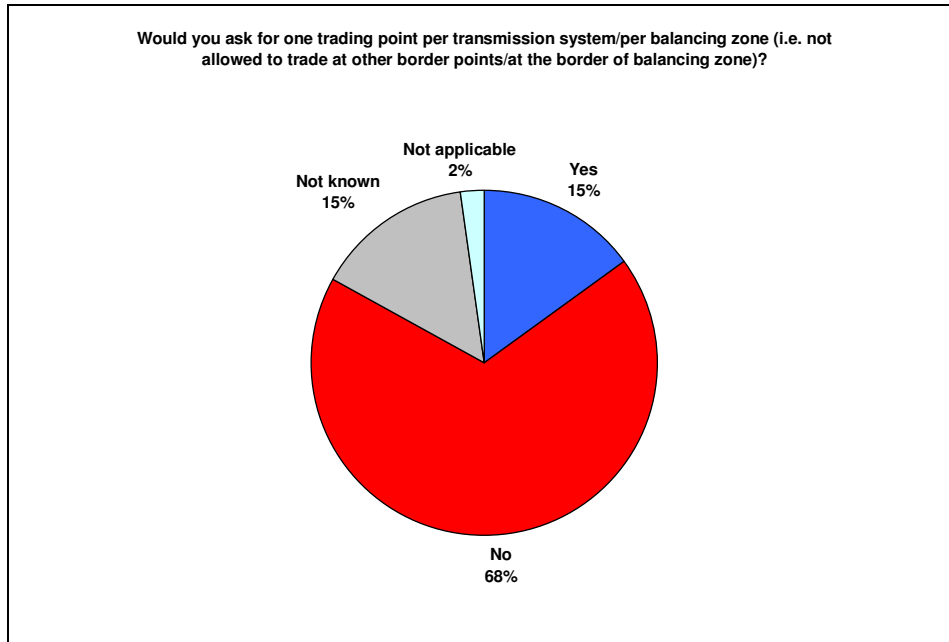
- Where indicated "per period", a participation fee is being suggested;
- Even though a fee per quantity unit is being suggested, users ask fees to be reasonable and cost-reflective, letting the operator to recover its costs but not to take advantage of its monopoly;
- Cost structure should reflect the structure of the cost incurred by the particular service provided.

If a separate fee should exist, ERGEG concludes from the responses that users favour a fee per quantity unit and that such a fee should be cost-reflective. Fees per period should only be used until considerable trading activity has developed.

Question 1.7: 1.7 Would you ask for one trading point per transmission system/per balancing zone (i.e. not allowed to trade at other border points/at the border of balancing zone)?

Analysis of responses:

Figure 67: Only one trading point per transmission system/per balancing zone



Source: ERGEG Gas Market Monitoring Report 2010

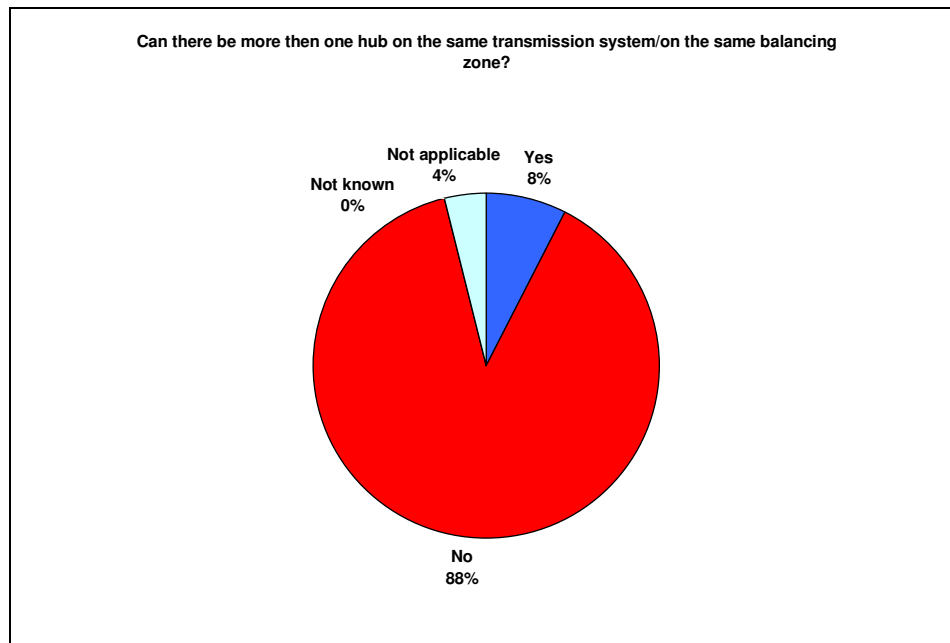
ERGEG's conclusion:

Being asked if users would ask for one trading point per transmission system/per balancing zone, more than 65 percent of respondents indicate that they are against this. ERGEG concludes that users do not wish to be limited in that respect and wish to trade freely at several trading points.

Question 1.8: Can there be more than one hub on the same transmission system/on the same balancing zone?

Analysis of responses:

Figure 68: Can there be more than one hub on the same transmission system/on the same balancing zone?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

Being asked if there can be more than one hub on the same transmission system or on the same balancing zone, users clearly indicate that this cannot be the case (more than 85 per cent of responses). Being asked why not in question 1.9, respondents mainly provided the following answers:

- A hub is a de facto or legal monopoly;
- Several hubs in one system would potentially lead to a fragmentation of liquidity;
- Inside a balancing area it is simpler to operate on one hub only.

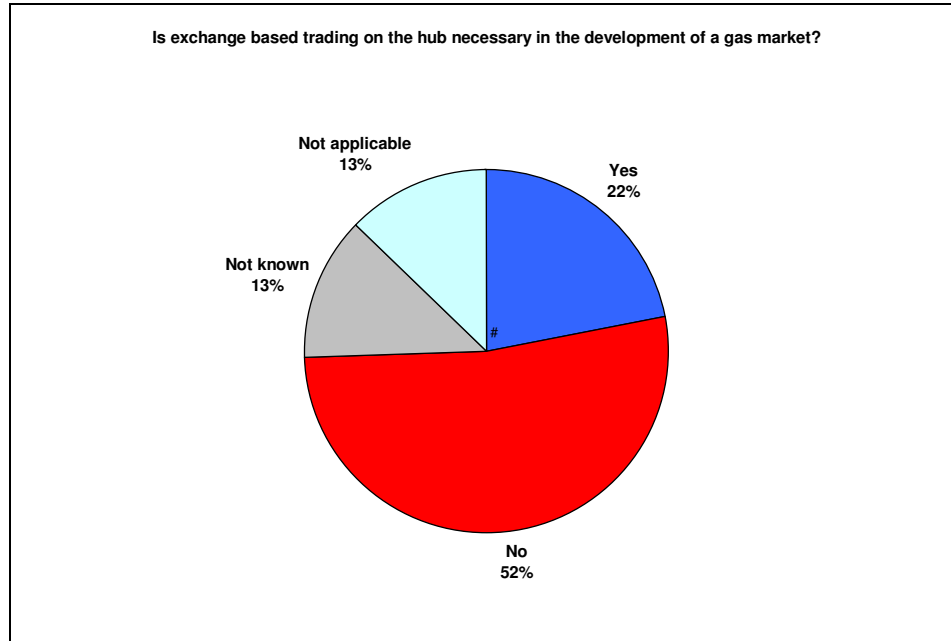
ERGEG concludes that users only see a system with maximum one hub per balancing zone. Even if in theory, there's no real impossibility to have more than one hub on the same balancing zone, it seems inconsistent to have more than one. Hubs should facilitate trading within a market and fragmentation of liquidity should be prevented.

However, in combination with the answers to the questions 1.7 and 1.8, the above does not mean that market parties wish to limit the possibility to trade at other points. At least one user states that until all restrictions are not lifted and the European gas markets are not fully developed, it should still be possible to trade at other points than the traded hubs.

Question 1.10: Is exchange based trading on the hub necessary in the development of a gas market?

Analysis of responses:

Figure 69: Is exchange based trading on the hub necessary in the development of a gas market?



Source: ERGEG Gas Market Monitoring Report 2010

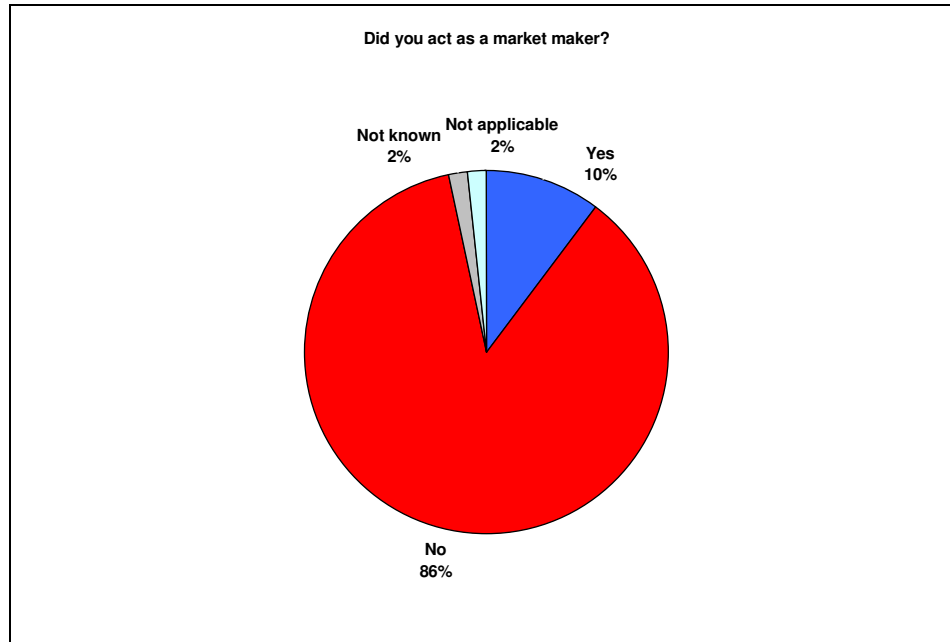
ERGEG's conclusion:

Being asked if exchange based trading on the hub is necessary in the development of a gas market, a slight majority of users (more than 50 per cent) responded that this is not the case. Where respondents have the opinion that an exchange is needed, 80 per cent of them feels that there is no need for an obligation to trade via this exchange (see question 1.11).

ERGEG concludes that users prefer to trade freely, i.e. without restrictions on how and where to trade.

Question 1.12: Did you act as a market maker? Analysis of responses:

Figure 70: Did you act as a market maker?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

Being asked if they acted as market makers, respondents stated that this was not the case (in more than 80 per cent of the received responses). ERGEG concludes that most respondents commenting on the survey did not act as market makers.

When responding to question 1.13, users mainly stated that such an appointment was:

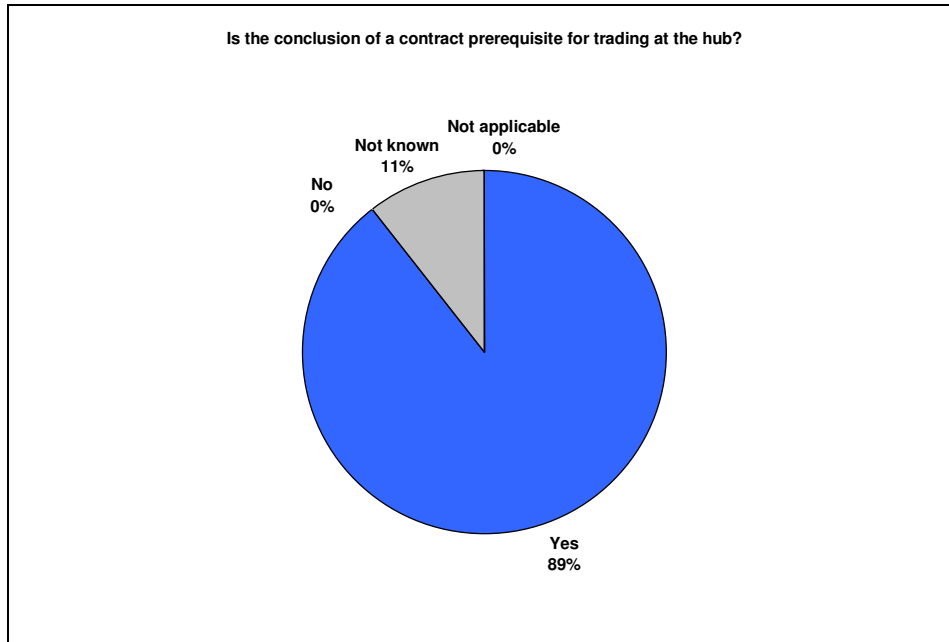
- to quote bid/ask prices for certain products within certain time windows;
- to provide quotes (buy and sell) on defined hours and products;
- without obligation to put offers though.

Related to question 1.14, only one user that did act as a market maker responded that he was officially appointed. As response to this question was limited, ERGEG states that no conclusion can be derived from these answers. Further analysis might be required to assess whether the use of market makers is beneficial to stimulate trading and liquidity or not.

Question 1.15: Is the conclusion of a contract prerequisite for trading at the hub?

Analysis of responses:

Figure 71: Is the conclusion of a contract prerequisite for trading at the hub?



Source: ERGEG Gas Market Monitoring Report 2010

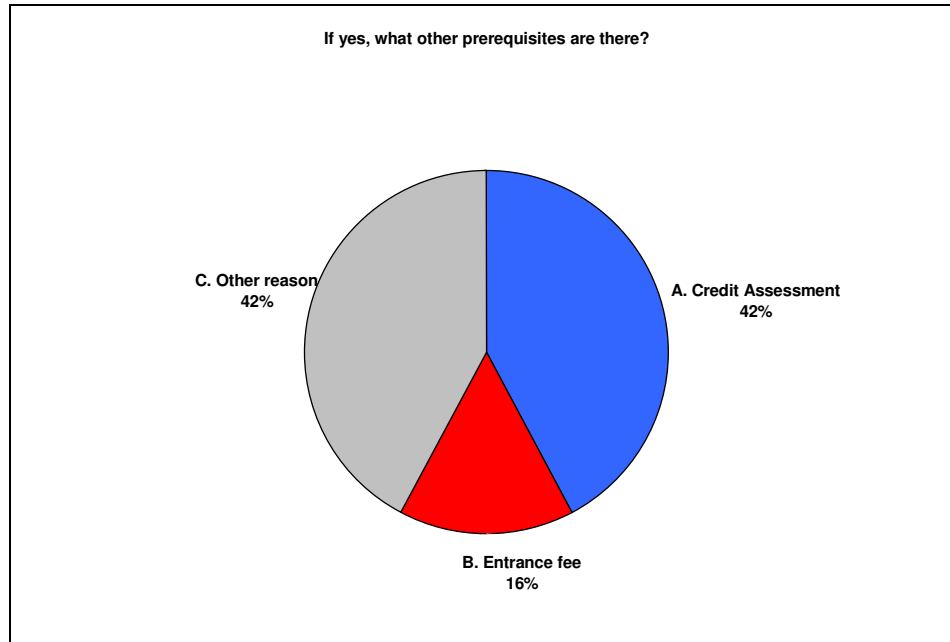
ERGEG's conclusion:

ERGEG's analysis shows that in almost 90 per cent of the cases, respondents state that the conclusion of a contract is a prerequisite for trading at the hub. The answers "not known" are related to the answers of one shipper but concerns a hub where other shippers responded "yes". As a result, ERGEG is able to conclude that the conclusion of a contract is a prerequisite for trading at the hub.

Question 1.16: If yes, what other prerequisites are there?

Analysis of responses:

Figure 72: If yes, what other prerequisites are there?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

Next to the signing of a contract, the most important prerequisite to trade on the hub is the credit assessment. Others are:

- subscription of a balancing responsible agreement;
- a communication test;
- fulfilment of licences, contracts and code arrangements with the exchange operator and TSO;
- access subscription to the grid with a transmission company;
- a shipper licence (to ensure adherence to the licence regime and network code);
- subscription of balancing codes, hub contracts.

ERGEG concludes that contractual arrangements differ as far as access to the natural gas hub is concerned. There might be a need for further standardisation and harmonisation at this point.

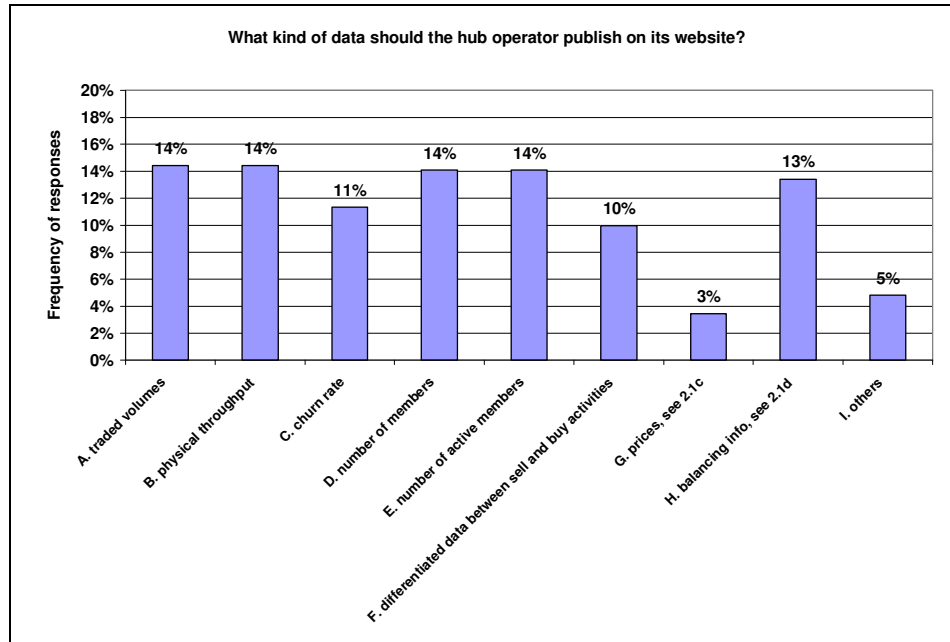
A.1.7. Question set 2

Question set 2 relates to the development of the hub, in particular transparency and publications.

Question 2.1: What kind of data should the hub operator publish on its website?

Analysis of responses:

Figure 73: What kind of data should the hub operator publish on its website?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

ERGEG's analysis shows that respondents feel that data should be published, most important are (in order of relevance) the traded volumes, physical throughput, number of members, number of active members, balancing information, churn rate, and differentiated data between sell and buy activities. Only when it comes to prices, users do accept less publication. Where respondents stated "other", they gave the following examples:

- aggregated information only to ensure confidentiality;
- number of trades;
- flow information, upstream and downstream;
- force majeure conditions and maintenance periods.

Details given on "traded volume" information (frequency, historical period and unit):

- daily; -5 years; -EASEE-gas standard;
- for the last 24 hours - publishing hourly data; historically: aggregated daily data is sufficient;
- daily; from the start of the hub until today; in MWh;

- frequency = instant data for each single date incl. aggregator should be available from start date of hub;
- frequency: This information should be provided in real-time; Historical period: since the opening of the hub; Unit: kWh/hour ;
- monthly;
- "frequency" should be daily, "historical period" should encompass all maturities since the beginning of the hub and "unit" should be at least GWh (high calorific value with indication of reference temperature);
- they should be published at least once a week, with daily detail, in MWh as unit of measurement;
- frequency: per day; per product; Historical period: from the start of the hub; MWh/h;
- the market operator should publish traded energy volumes (GWh, MMJ or therms) in real time (split between buy and sell) to hub market participants. The hub operator/TSO should publish aggregated buy and sell traded energy volumes on the preceding day on its website and make this information historically available for at least 5 years.

Details given on "physical throughput" information (frequency, historical period and unit):

- Daily; -5 years; -EASEE-gas standard;
- For the last 24 hours - publishing hourly data; historically: aggregated daily data is sufficient;
- Daily; from the start of the hub until today; in MWh;
- Daily updates, periods: vol/day and historical aggregated per month;
- Frequency: This information should be provided in real-time; Historical period: since the opening of the hub; Unit: kWh/hour;
- Daily;
- "Frequency" should be daily, "historical period" should go up to the beginning of the hub and "unit" should be at least GWh (high calorific value with indication of reference temperature);
- Frequency: per day - per product - Historical period: from the start of the hub - MWh/h;
- Throughput corresponding to the balancing period, going back many years, as per the NBP;
- The hub operator/TSO should publish physical throughput data (by energy and volume) on the preceding day (updated after reconciliation). Energy units should be either GWh, MMJ or therms and volume units should be mcm. Physical throughput data should historically be available for at least 5 years.

Details on "price signal" information (type, historical period and currency):

- Hourly data; daily average prices; closing price; min/max prices;
- For an exchange, data on prices (infra-day, forwards from day-ahead until the following calendar years or gas years) should encompass bid and offers, specifying how they are calculated (daily average, max-min, open-close), Eur/MWh;
- Achieved prices per product per day; Historical period: from the start of the hub; MWh/h;
- Price corresponding to the balancing period, going back many years, as per the NBP;

- Traded energy prices should be available in real time to market participants and after the day (in average and marginal form) on its website. The currency should reflect the currency of the country(s) where the hub operates.

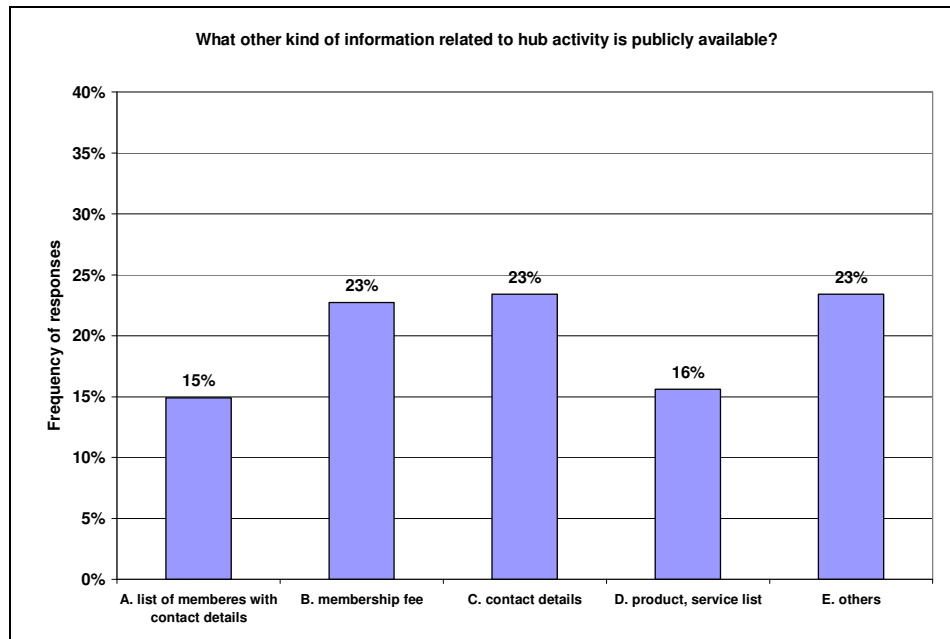
Details on “balancing info” information (type):

- as NBP;
- Unit: MWh; Frequency: Daily; Historical period: from the start of the hub until today;
- System signal and individual shipper's portfolio signal as close as possible to real time;
- When the hub operator operates in the market in order to provide the back-up/back-down service to any hub members, it should publish the prices and the volumes traded in real-time;
- Daily;
- All transactions realized by grid operator;
- Daily, after the day; and balancing prices throughout the day, as per the NBP. Record of TSO actions & imbalance prices (or components of balancing price) for each balancing period;
- To the extent that within day balancing applies the hub operator/TSO should publish linepack data regulatory throughout the day such that market participants can assess the extent to which the systems is out of balance and the likelihood of this resulting in market balancing action by the TSO.

Question 2.2: What other kind of information related to hub activity is publicly available?

Analysis of responses:

Figure 74: What other kind of information related to hub activity is publicly available?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

Being asked what other kind of information is publicly available, answers showed that some information is already available. However, respondents also stated quite clearly (under “other”) that transparency needs to be improved, in line with user friendliness and information access. ERGEG concludes that there is a need for more data publication and potentially more harmonisation across natural gas hubs.

Question 2.3: What other kind of information is still needed?

ERGEG’s conclusion:

Being asked what other kind of information is still needed, respondents gave the following examples:

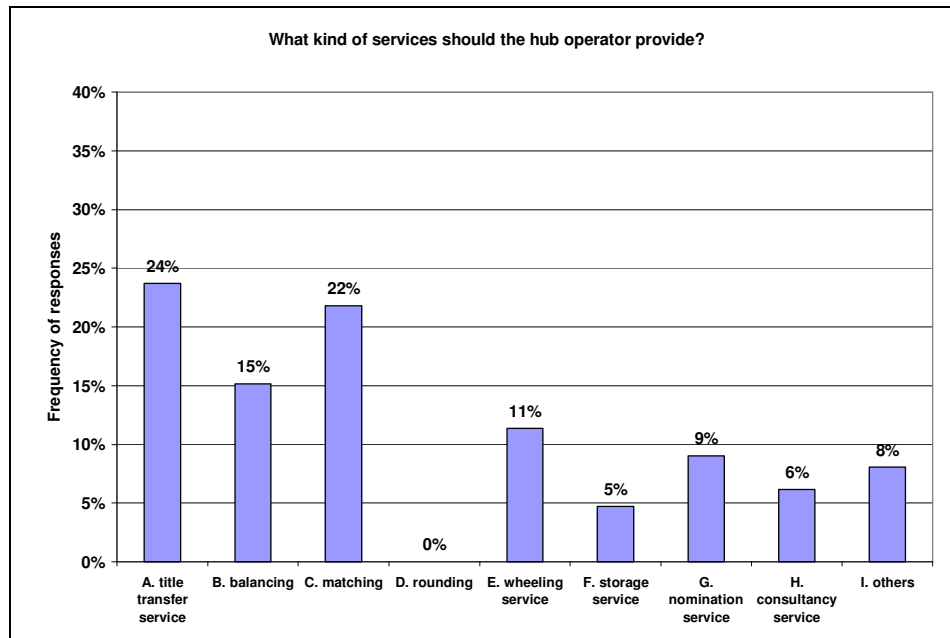
- dates of shipper meetings; info boards; news ticker about system changes;
- A list of members (active traders) with contact details (in some cases only distributed among hub members);
- Activity by different operators, in order to differentiate between balancing and trading deals;
- Capacity information, including open season dates.

ERGEG concludes that there is a need for more data publication and potentially more harmonisation across natural gas hubs.

Question 2.4: What kind of services should the hub operator provide?

Analysis of responses:

Figure 75: What kind of services should the hub operator provide?



Source: ERGEG Gas Market Monitoring Report 2010

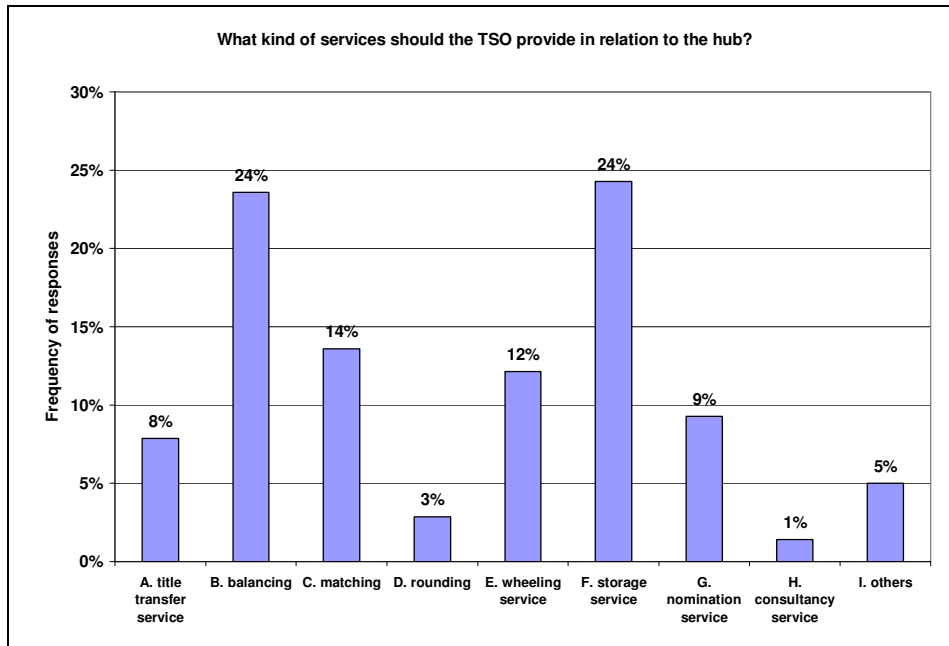
ERGEG's conclusion:

ERGEG's analysis shows that users at least have a clear understanding that title transfer and matching are services to be provided by the hub operator. When it comes to the balancing service, the remark is made that the balancing of the market belongs with the hub operator, whilst physical balancing of the system belongs with the TSO. Some users stipulate that differentiation between hub operator and TSO is difficult to make. Anyhow, whether the roles of hub operator and TSO are separate or combined, users should get the same information overall.

Question 2.5: What kind of services does the TSO provide in relation to the hub?

Analysis of responses:

Figure 76: What kind of services does the TSO provide in relation to the hub?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

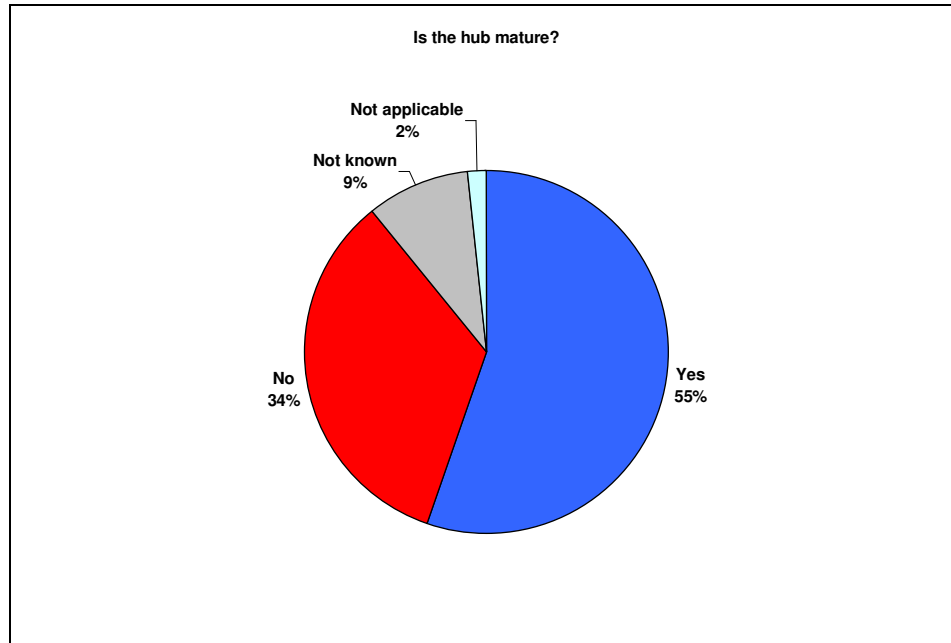
ERGEG's analysis reveals that users have the opinion that balancing and storage services are clearly services to be provided by the TSOs. It is however clear that the TSO should not provide the same services as the hub operator (if separated).

ERGEG would like to propose that the role of the hub operators, or hub service operator (HSO) should be sharpened and better defined in legal terms in order to provide a clearer distinction between TSO and hub operator.

Question 2.6: Is the hub mature?

Analysis of responses:

Figure 77: Is the hub mature?



Source: ERGEG Gas Market Monitoring Report 2010

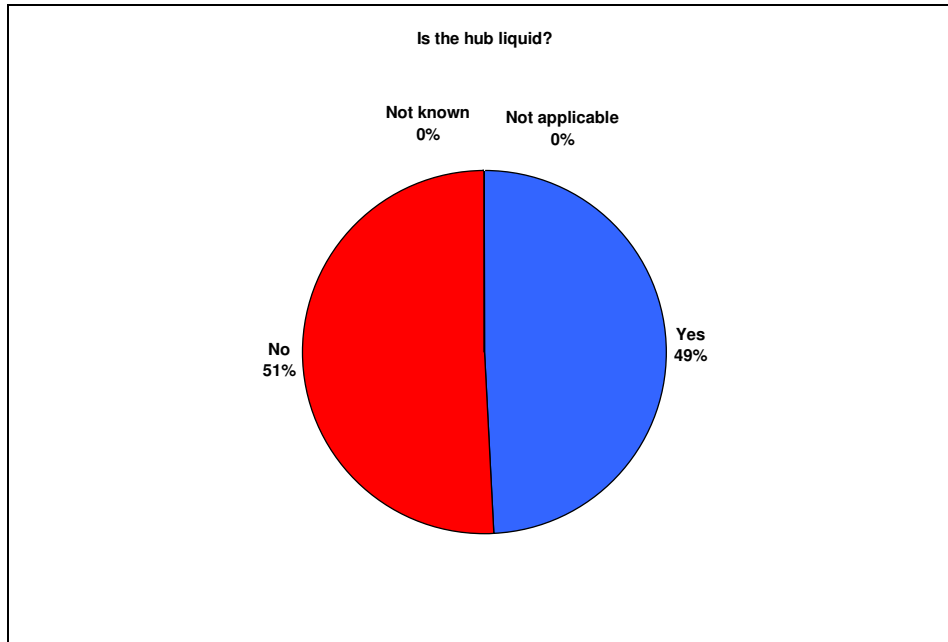
ERGEG's conclusion:

ERGEG's analysis shows that respondents feel that most of the hubs under consideration are mature. However, ERGEG also notices that there is a degree of heterogeneity amongst hubs. ERGEG concludes that it is difficult to provide a general view on maturity and that a better defined and more standardised definition of what maturity is might be required.

Question 2.7: Is the hub liquid?

Analysis of responses:

Figure 78: Is the hub liquid?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

ERGEG's analysis shows that more or less half of the respondents feel that the hubs under consideration are liquid, but then again, the other half feels that hubs are not liquid. ERGEG concludes that it is difficult to provide a general view on liquidity.

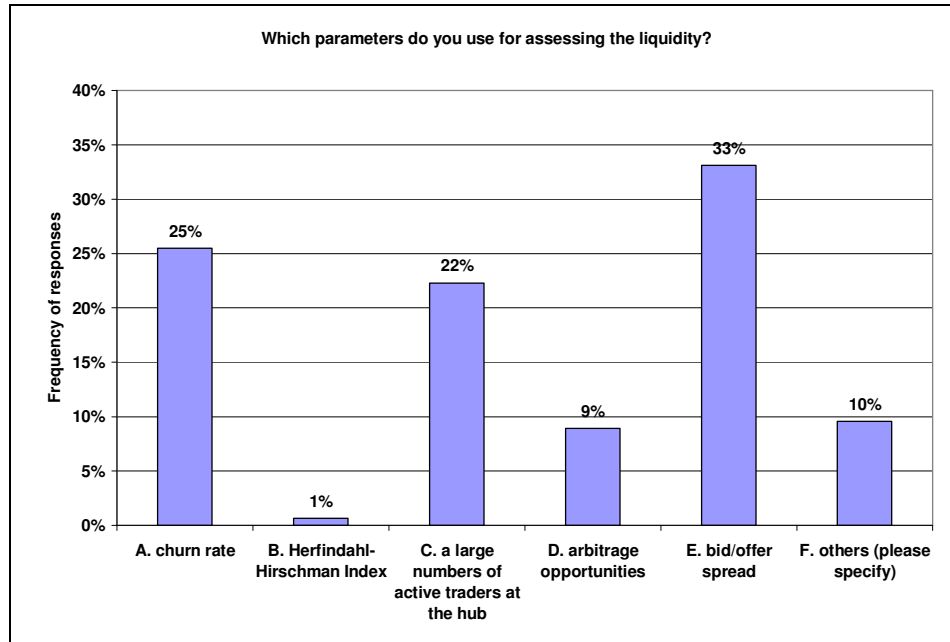
Some of the respondents give reasons why the hub in their views are not or relatively liquid. These are:

- Because the major supplier does not participate;
- Because not all products are being traded (e.g. not on the forward curve);
- Because only one counterparty can be found;
- Because separate virtual compartments exist.

Question 2.8: Which parameters do you use for assessing the liquidity?

Analysis of responses:

Figure 79: Which parameters do you use for assessing the liquidity?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

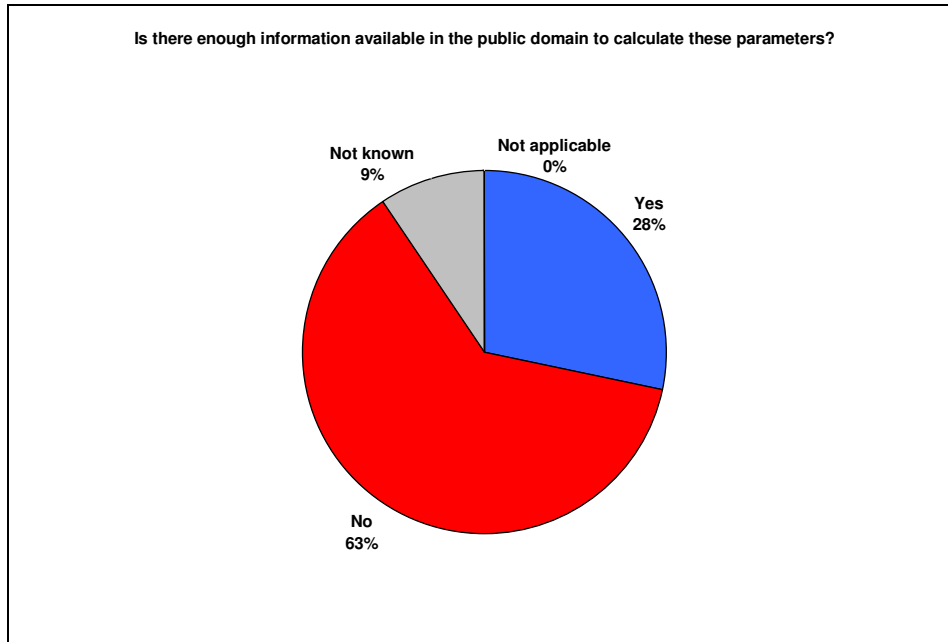
ERGEG's analysis shows that the bid-offer spread is mostly used to assess liquidity, followed by the churn rate and the number of active traders at a hub. ERGEG concludes that definitions vary and there is no unique way of assessing liquidity. Others are volume/demand and market depth.

ERGEG notices that it could be worthwhile to aim for a more standardised definition on how liquidity can be assessed.

Question 2.9: Do you have enough information available to calculate these parameters?

Analysis of responses:

Figure 80: Do you have enough information available to calculate these parameters?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

More than 60 per cent of the users feel that there is not enough information available to assess liquidity at natural gas hubs. As examples, lack on info on bid/offer spreads, lack of standardisation, not enough frequency, necessity to compile info from different sources or availability only to shippers and not to others are being mentioned.

ERGEG concludes that in order to improve information availability, clear information provision and transparency requirements need to be defined and implemented for natural gas hubs. Such requirements should be legally binding and where necessary, publication of such information should be enforced.

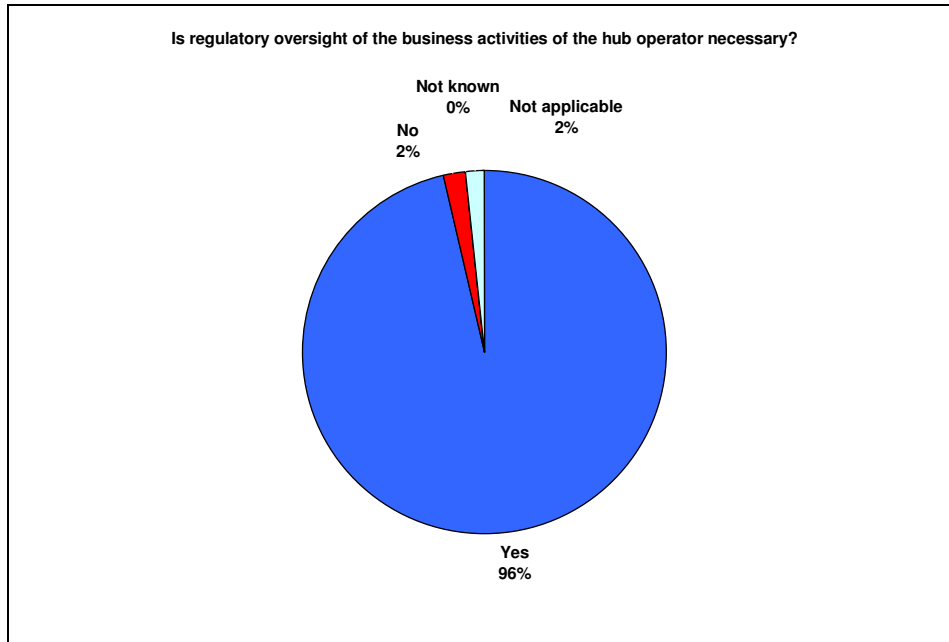
A.1.8. Question set 3

Question set 3 relates to the regulatory framework of natural gas hubs.

Question 3.1: Does regulatory oversight of the business activities of the hub operator exists?

Analysis of responses:

Figure 81: Is regulatory oversight of the business activities of the hub operator necessary?



Source: ERGEG Gas Market Monitoring Report 2010

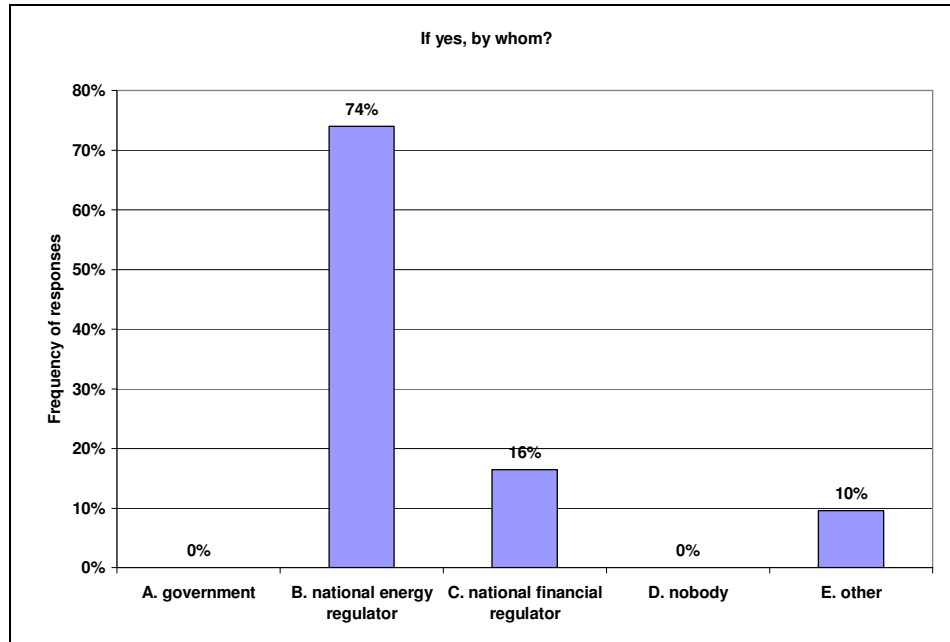
ERGEG's conclusion:

ERGEG acknowledges that almost 100 per cent of respondents (all but one) feel that regulatory oversight of natural gas hubs is required. ERGEG concludes that according to users, there is a need for regulation and for regulators to play their role.

Question 3.2: If yes, by whom?

Analysis of responses:

Figure 82: If yes, by whom?



Source: ERGEG Gas Market Monitoring Report 2010

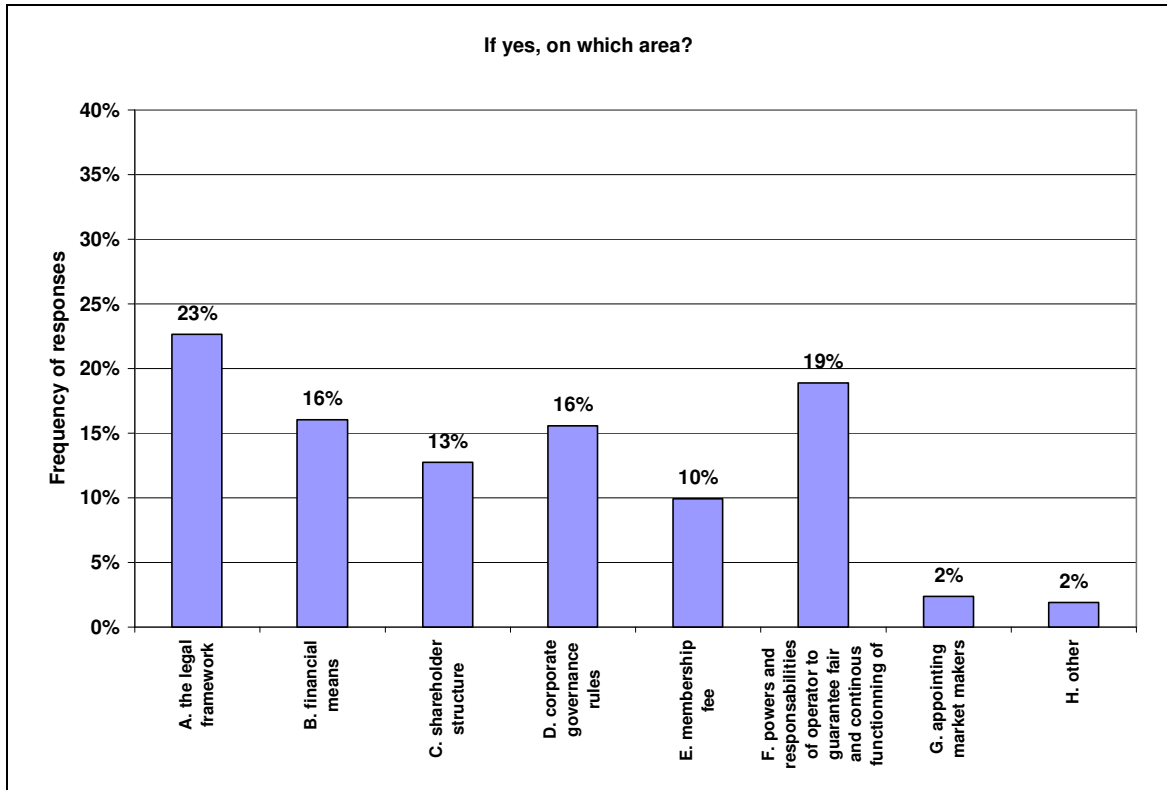
ERGEG's conclusion:

Users state clearly that such regulatory oversight should be performed by NRAs (seems the most expedient) and in some cases also by national financial regulators, i.e. more in relation to activities in financial instruments on the Exchange. However, one respondent makes the remark that in general, trading activities on the hub shall not be regulated in addition to the market abuse regulation.

Question 3.3: If yes, on which area?

Analysis of responses:

Figure 83: If yes, on which area?



Source: ERGEG Gas Market Monitoring Report 2010

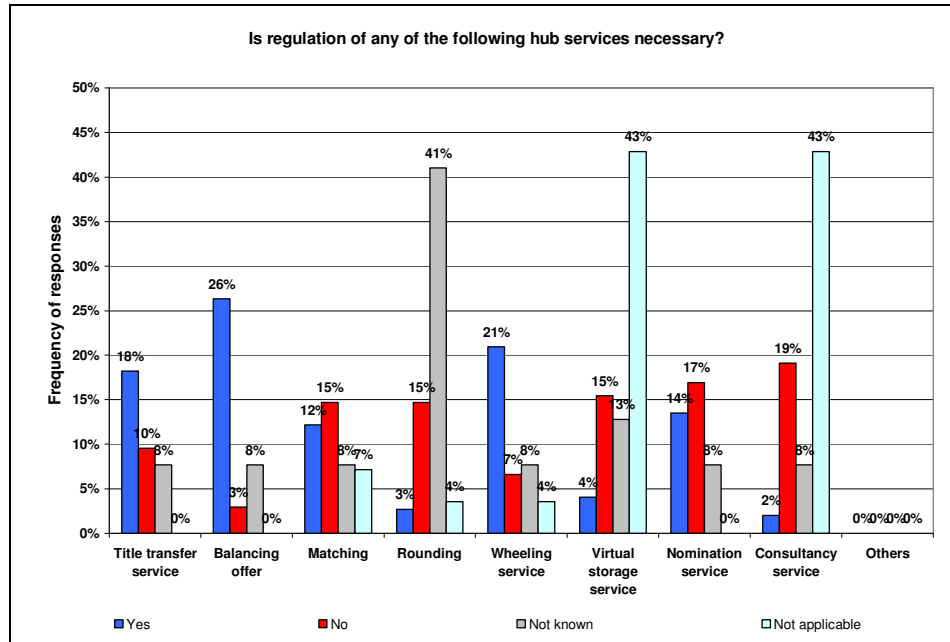
ERGEG's conclusion:

Being asked on which area such oversight should apply to, respondents said that this should mostly relate to the legal framework and the powers and responsibilities of the operator to guarantee the fair and continuous functioning of hub activities. As "other", supervision regarding insider trading and market manipulation is mentioned. ERGEG concludes that users feel that a clear legal framework needs to be in place at hubs in order to provide stability and help create trust in the marketplace.

Question 3.4: Is regulation of any of the following hub services necessary?

Analysis of responses:

Figure 84: Is regulation of any of the following hub services necessary?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

Being asked if any of the hub services provided should be regulated, users have a diverting view on this subject. Respondents are in favour of regulation of services like title transfer, balancing, and wheeling. On the other side, they are not in favour of regulation to consulting, virtual storage and rounding services. Opinions about regulation of matching and nomination services are somewhere between these two.

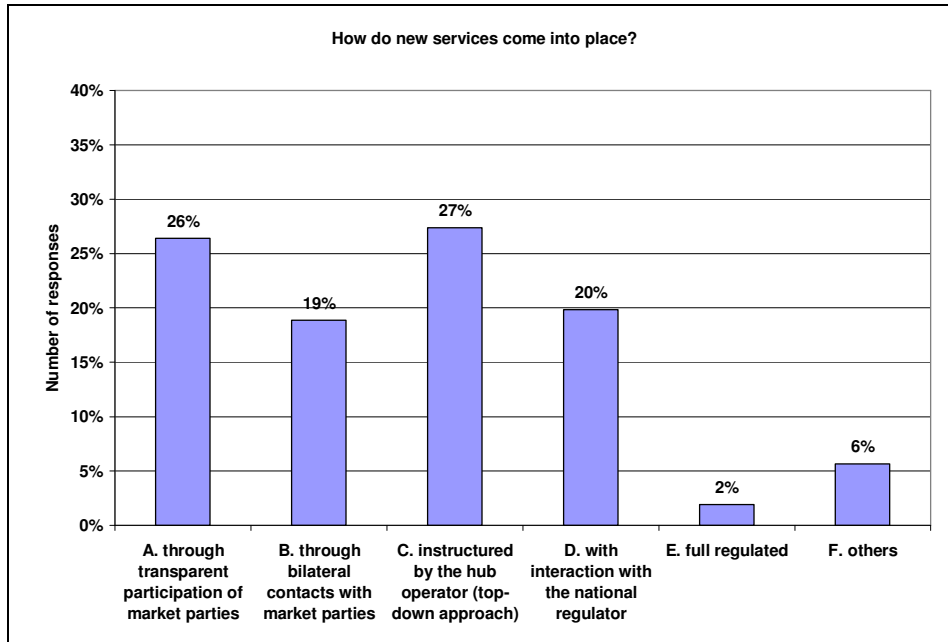
ERGEG concludes that users feel that some services should be regulated, others not. For clarification, some users have been given the following comments:

- regulatory oversight should be required when transactions interact with activities of the (regulated) TSO. The example is given of the NBP that does not have a hub operator as such. It is merely a legal contract of transfer which enables title transfer between parties within the National Grid. Regulation is only required for the way shippers and the TSO use the NBP to balance and the physical services that bring gas in and out of the NBP;
- a question mark is put to what type of regulation is being emphasised, for example monitoring or setting the rules.

Question 3.5: How do new services come into place?

Analysis of responses:

Figure 85: How do new services come into place?



Source: ERGEG Gas Market Monitoring Report 2010

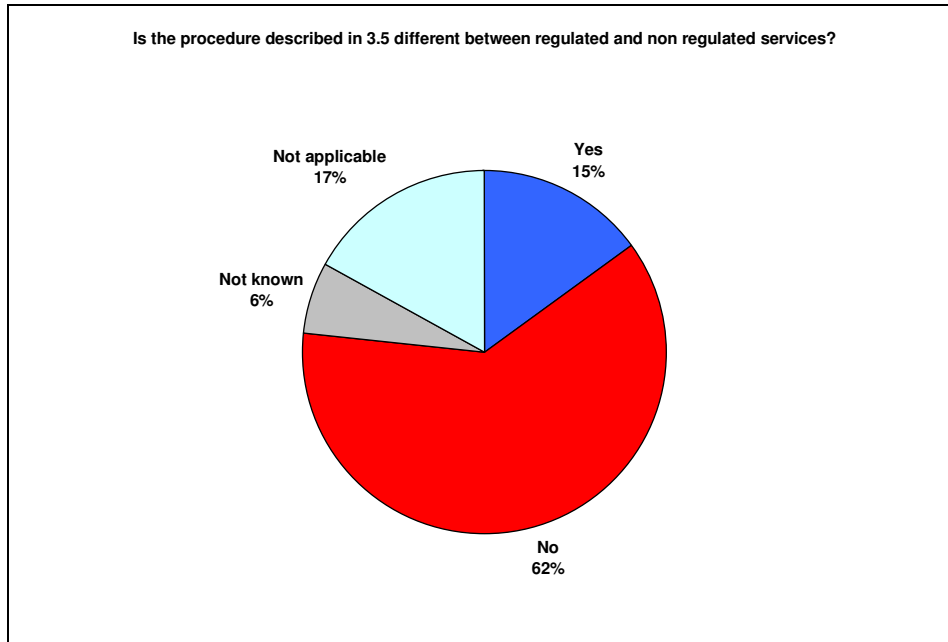
ERGEG's conclusion:

Being asked how new services come into place, respondents told ERGEG that this is mainly due to top-down approaches, participation with market parties and interaction with the regulator. ERGEG acknowledges that there are different ways of how new services can come into place. ERGEG suggests that there could be benefits from having standardised procedures that apply similarly to all natural gas hubs in order to ensure that users are given a chance to contribute to the creation of new services in a similar, not necessarily the same way, at all natural gas hubs in Europe.

Question 3.6: Does the procedure described in 3.5 differ for regulated and non regulated services?

Analysis of responses:

Figure 86: Does the procedure differ for regulated and non regulated services?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

ERGEG's analysis reveals that the way new services come into place does not differ for regulated vs. non-regulated services (no in more than 60 per cent of the cases). ERGEG concludes that there are no major differences, with minor exceptions).

Question 3.7: Please specify why or why not hub and/or hub services are being regulated or not?

ERGEG's conclusion:

Users provided ERGEG with additional information as to why or why not hub and/or hub services are being regulated. Essentially, users gave the following reasons:

Against regulatory intervention:

- Regulatory intervention will reduce the flexibility of the hub and its development.
- A distinction should be made between oversight and regulation.
- No more regulation needed, if the hub is a title transfer point, it is already part of the transmission system and therefore part of regulated business.
- OTC, broker or exchange based trading transactions which refer to the hub as transfer point should in general not be regulated.

In favour of regulatory intervention:

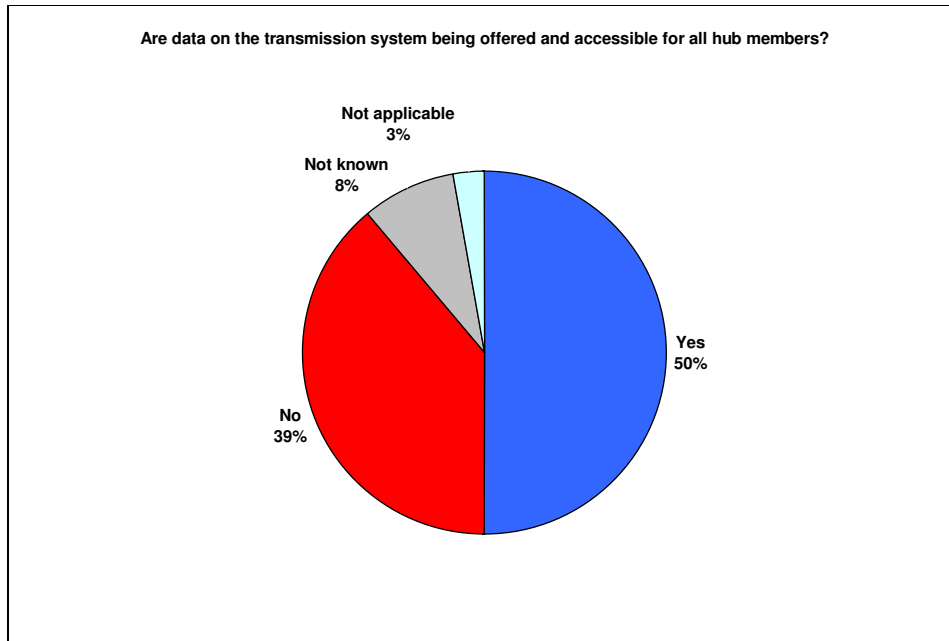
- Hub services are monopoly, hence supervision by the regulator is required in order to ensure a non-discriminatory access to the offered services and that the fees charged by the hub operator reflect efficiently the incurred costs.
- Financial regulatory authorities should ensure oversight of the trading activities in financial instruments but they should not regulate the hub itself.
- When it comes to services which are essential for the functioning of the hub, the regulator should in any case have a monitoring role and where strictly necessary the power to regulate the services (such as balancing).

ERGEG has taken this information into account when analysing the responses and forming its own view on natural gas hub regulatory oversight.

Question 3.8: Are data on the transmission system being offered and accessible for all hub members?

Analysis of responses:

Figure 87: Are data on the transmission system being offered and accessible for all hub members?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

ERGEG's analysis shows that in 50 per cent of the cases, respondents feel that data on the transmission system are being offered and accessible for all hub members. However, ERGEG also notices that in almost 40 per cent of the cases, users stated the opposite.

ERGEG concludes that it is of utmost importance to ensure that users have access to all the information that they need to carry out their own activities at the hub.

Question 3.9: If no, please specify?

Analysis of responses:

Being asked why that was the case, users gave the following answers:

- Absence of firmness of the hub;
- Lack of transparency, i.e. historical data or indicator of liquidity needed;
- Absence of OBA (operating and balancing agreement) in place;
- Interruptions of firm capacity;
- No effective balancing regime in place, e.g. not compatible with flexibility tools;
- No entry exit system;
- No online booking of capacities;
- Limited responsibilities of the TSO.

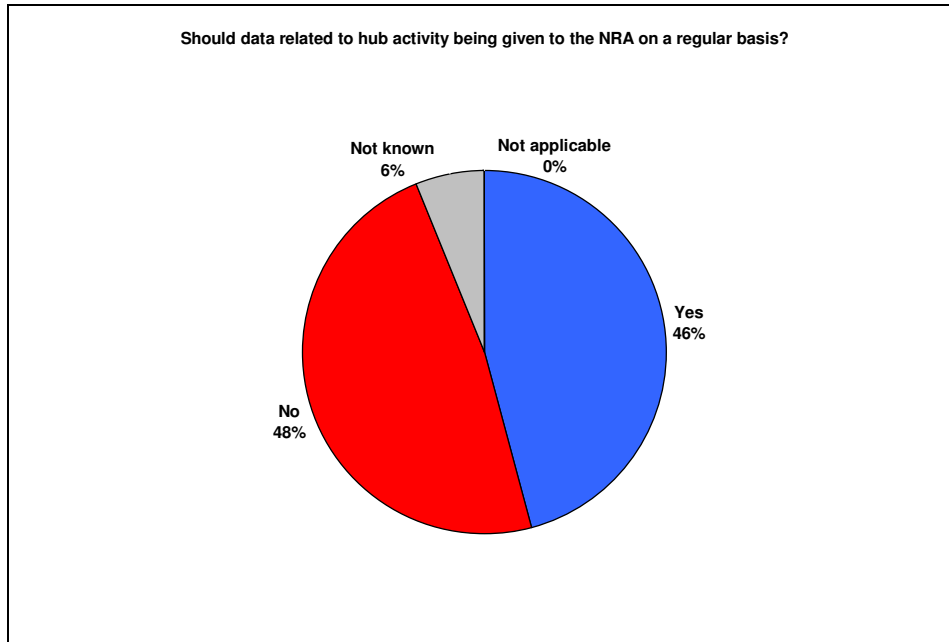
ERGEG's conclusion:

ERGEG concludes that based on the information provided by users, there is still a significant room for improvement as far as information provision and transparency at a natural gas hub is concerned. ERGEG notices that users demand for more information and more regulatory intervention.

Question 3.10: Should data related to hub activity being given to the NRA on a regular basis?

Analysis of responses:

Figure 88: Should data related to hub activity being given to the NRA on a regular basis?



Source: ERGEG Gas Market Monitoring Report 2010

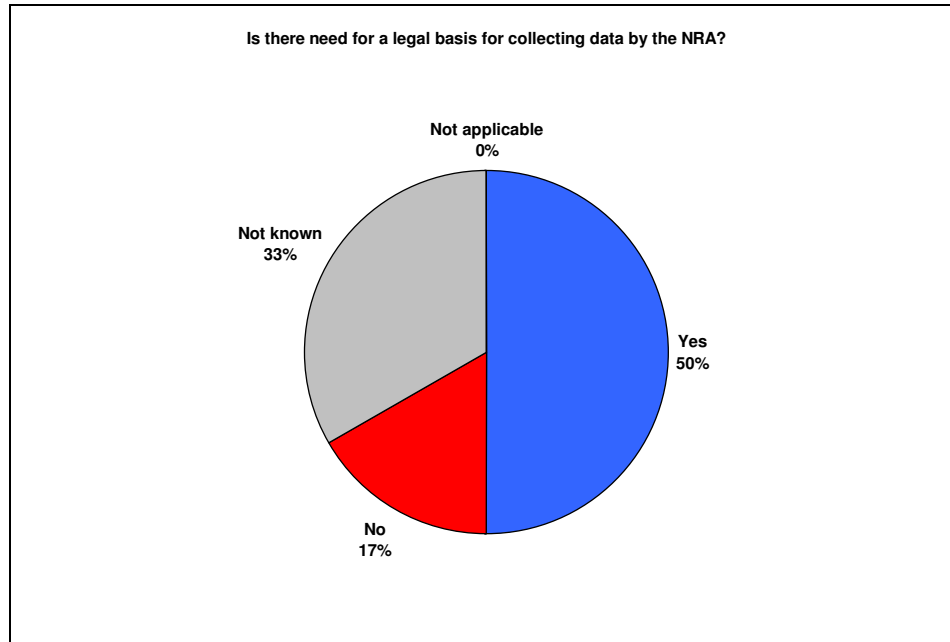
ERGEG's conclusion:

Being asked if data should be transmitted to the NRA on an ongoing basis, almost half of the users said that this should not be the case, whilst the other half said that this should be the case. ERGEG concludes that users feel that such information provision has to be fit for purpose and in line with potential regulatory oversight requirements. The exact extent still needs to be determined.

Question 3.11: Is there a legal basis for data collection by the NRA?

Analysis of responses:

Figure 89: Is there need for a legal basis for collecting data by the NRA?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

ERGEG notices that in 50 per cent users state that there is a need for a legal basis for the transmission of such data. ERGEG concludes that it needs to be assessed whether and how such a legal basis should be implemented.

Being asked how and for which data this should be done (question 3.12), users gave the following answers:

- For monitoring reasons, harmonization on European level needed.
- NRAs should have the power to seek information from hub operators/TSOs and exchange operators to the extent they are empowered to investigate potential market abuse/distortion.
- Regulator has to have sufficient powers to collect data on transactions at the hub if it should have any suspicions about events.
- Data on price formation should be revealed.
- Regulatory powers should include the possibility of information requests in specific cases of expected abuse.

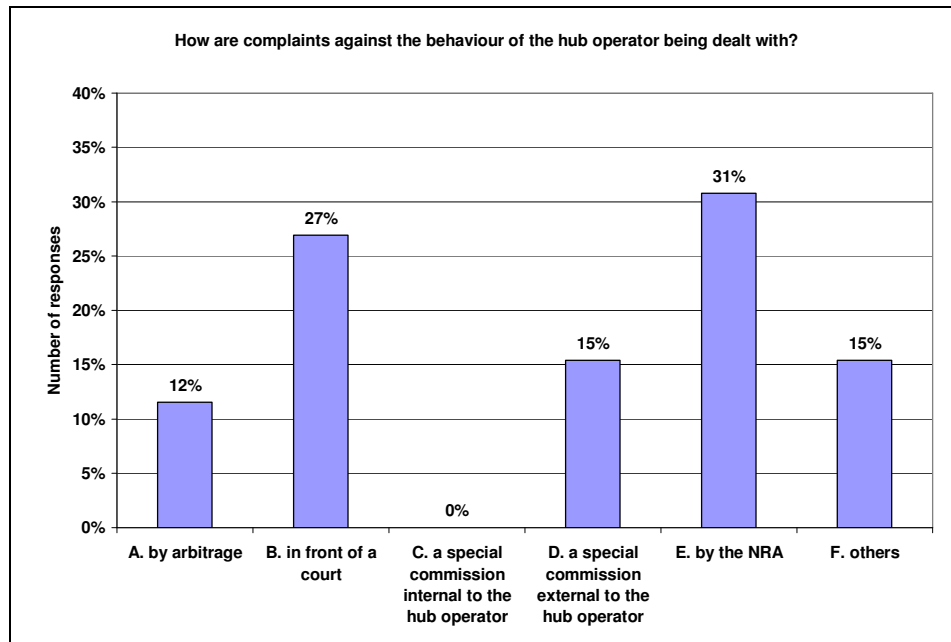
ERGEG's conclusion:

ERGEG concludes that users have very clear and strong feelings about how information provision and transparency should be enhanced in a legally binding manner. This includes the harmonisation of information availability at a European level, strengthening of regulatory powers, and the possibility to investigate potential market abuse issues. ERGEG will take this view into account when formulating its recommendations on how to improve the regulatory oversight of natural gas hubs.

Question 3.13: How are complaints against the behaviour of the hub operator being dealt with?

Analysis of responses:

Figure 90: How are complaints against the behaviour of the hub operator being dealt with?



Source: ERGEG Gas Market Monitoring Report 2010

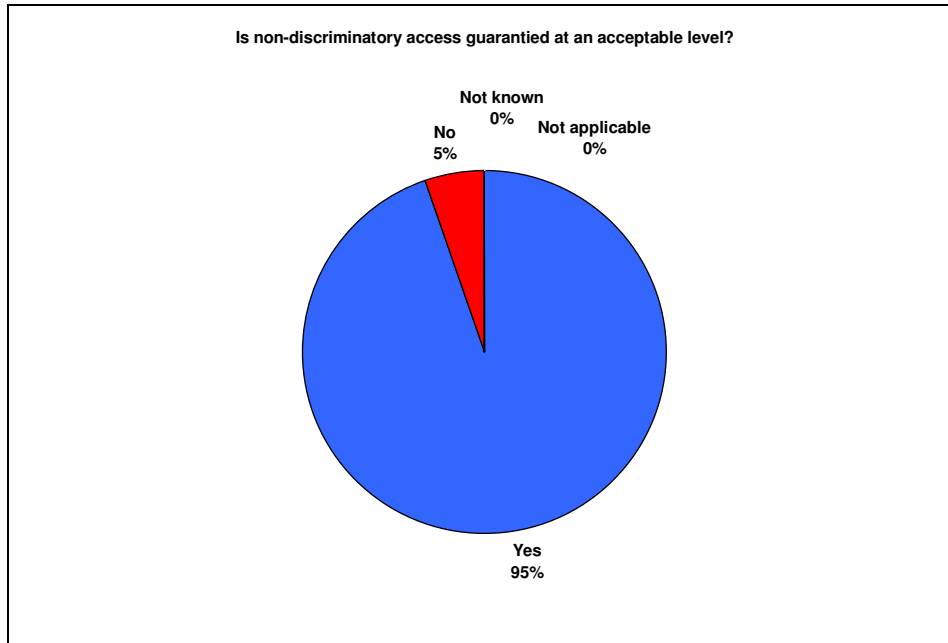
ERGEG's conclusion:

ERGEG's analysis reveals that there are complaint-handling procedures in place, most importantly via the NRA, via court procedures or via an external commission or by arbitration. ERGEG recognises that these procedures differ. ERGEG notes that there are potential benefits from harmonising procedures across natural gas trading points across Europe.

Question 3.14: Is non-discriminatory access guaranteed at an acceptable level?

Analysis of responses:

Figure 91: Is non-discriminatory access guaranteed at an acceptable level?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

ERGEG's analysis reveals that in 95 per cent of the cases, users feel that non-discriminatory access is ensured. Where "no" is being replied, users point at discrimination made depending on the origin of the gas, at a website with information only in the local language and at the need to be shipper with storage capacity.

Question 3.15: How is confidentiality being preserved?

Analysis of responses:

When being asked how confidentiality is being preserved, users gave the following answers:

- By publishing all data in an aggregated and anonymous way;
- By non-disclosure clauses in the TPA contract;
- By not publishing anything;
- By not publishing sensitive data.

ERGEG's conclusion:

ERGEG concludes that there are mechanisms in place to ensure confidentiality. It seems that the application of confidentiality can differ a lot. Some guidance to draw a line between confidentiality and transparency is recommendable.

Question 3.16: Are the penalties in case of misbehaviour of a market party clear and transparent?

Analysis of responses:

Respondents answered differently for the same hubs. The following comments are being added:

- Not sure what is meant by misbehaviour. There are default rules as well as imbalance charges;
- Penalties do not seem very useful. In case of misbehaviour of a market party, other parties will retaliate (no more transaction, blacklisting). Problem arise only if the misbehaviour comes from the major party on the hub;
- Any abuse or misbehaviour should be subject to the provisions of financial services or competition law.

ERGEG's conclusion:

ERGEG concludes that probably in most cases rules and consequences exist in case of misbehaviour. It is clear that further work is needed to make conclusions in more detail, however ERGEG has the feeling that most of the respondents are quite satisfied with the situation, leaving market abuse to be controlled under competition law.

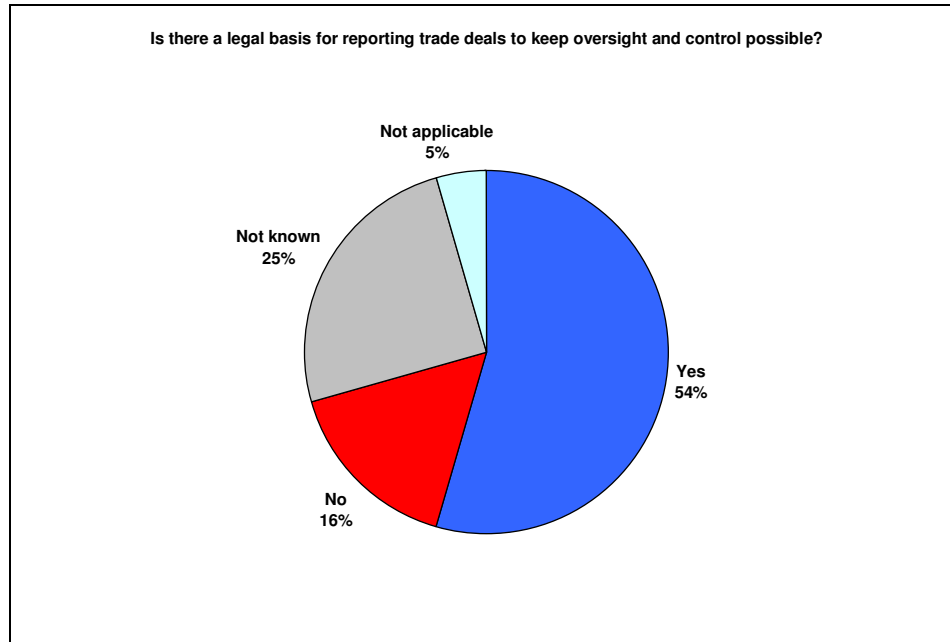
A.1.9. Question set 4

Question set 3 relates to oversight regulation, in particular issues related to hub operator(s) and OTC/Exchange traders.

Question 4.1: Is there a legal basis for reporting trade deals to keep oversight and control possible?

Analysis of responses:

Figure 92: Is there a legal basis for reporting trade deals?



Source: ERGEG Gas Market Monitoring Report 2010

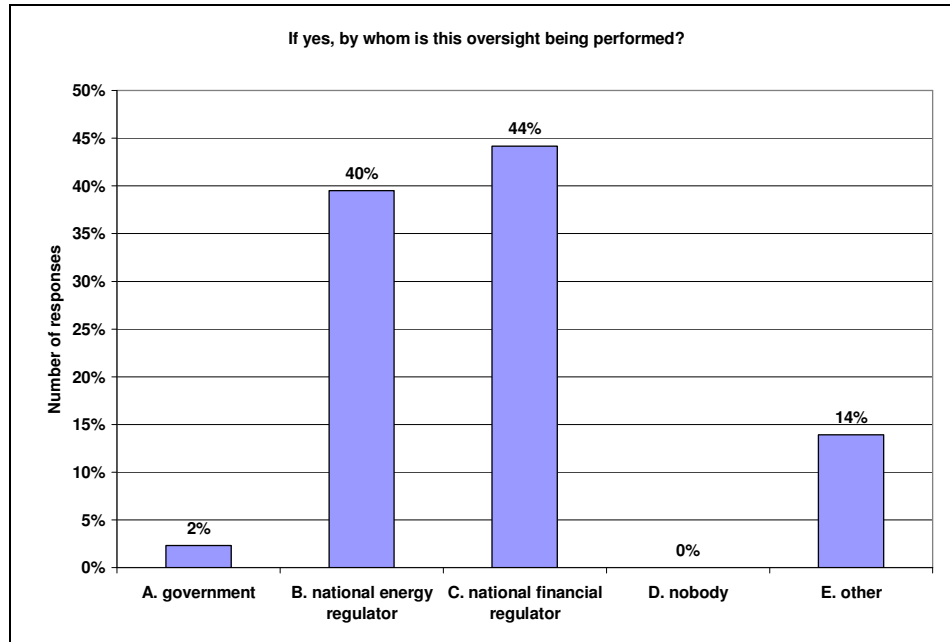
ERGEG's conclusion:

ERGEG's analysis shows that in more than 50 per cent of the cases, users are convinced that a legal basis for reporting trade deals is in place.

Question 4.2: If yes, by whom is this oversight being performed?

Analysis of responses:

Figure 93: If yes, by whom is this oversight being performed?



Source: ERGEG Gas Market Monitoring Report 2010

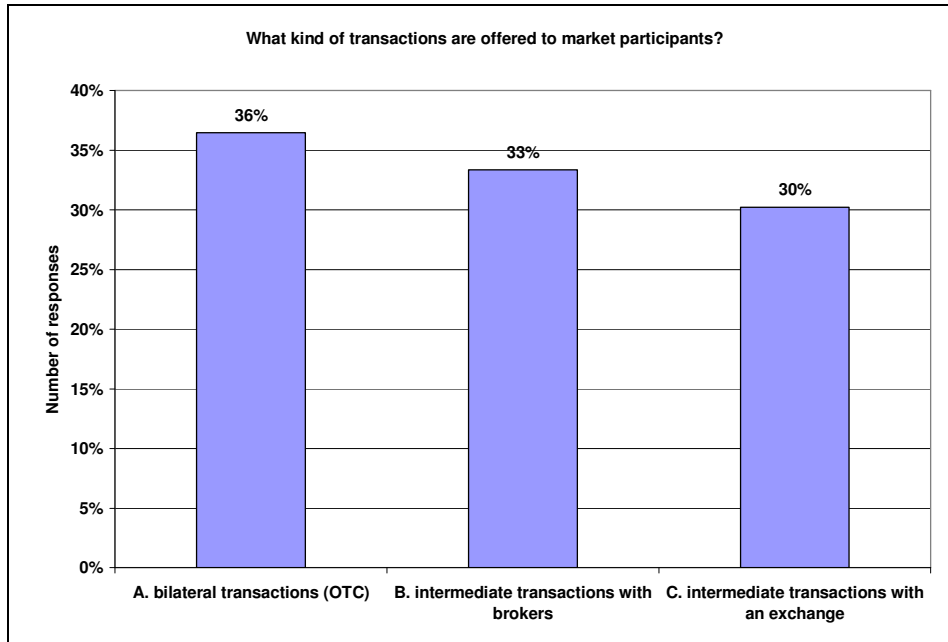
ERGEG's conclusion:

ERGEG's analysis reveals that in most cases, respondents see such oversight is given to the national financial regulator, followed by the NRA. As another authority, also the competition authority is being mentioned. Reading the explanations given, the oversight by the financial regulator is only related to the transactions of financial products on the exchange. While the oversight of NRAs is linked to the provisions of the 3rd Package, ERGEG concludes that as far as hub deals are concerned, oversight should be with the NRA.

Question 4.3: What kind of transactions are offered to market participants?

Analysis of responses:

Figure 94: What kind of transactions are offered to market participants?



Source: ERGEG Gas Market Monitoring Report 2010

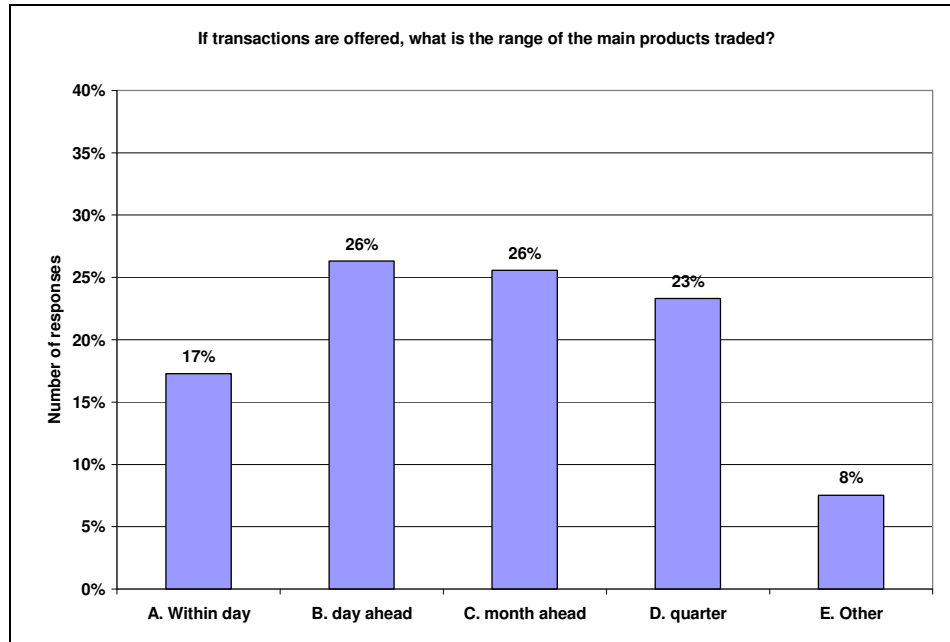
ERGEG's conclusion:

ERGEG's analysis shows that the aforementioned deals are mainly OTC based, followed by intermediate transactions with brokers and then intermediate transactions with an exchange.

Question 4.4: If transactions are offered, what is the range of the main products traded?

Analysis of responses:

Figure 95: If transactions are offered, what is the range of the main products traded?



Source: ERGEG Gas Market Monitoring Report 2010

ERGEG's conclusion:

ERGEG's analysis shows that most trades are day ahead, followed by month ahead, quarter and only then within day. Where users chose other, they gave the following examples:

- Seasons;
- Years;
- Multi-years;
- Specific blocks, such as working days, week-end, next week.

Users also stated quite clearly, that the more developed a market is, the more longer term products become available. In illiquid markets, mostly day ahead and front month products will be seen.