



**Roadmap
for a competitive single gas market
in Europe**

**An EREG Discussion Paper
for Public Consultation**

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1. Summary of the roadmap approach

1. This document sets out, for consultation, ERGEG's gas roadmap. It reviews the current state of European gas markets, describes regulators' views of the eventual goal of a competitive single European market for gas, sets priorities, and identifies a timetable and process for making progress. The consultation document also seeks the views of industry and other stakeholders on a number of general and specific questions. Important wider strategic considerations, such as the political framework necessary to facilitate commercial agreements for supplying gas between producer countries outside Europe and the EU, are referred to only briefly here.
2. The roadmap aims to deliver practical improvements to European gas markets. The immediate priority is to take steps necessary to promote liquid and competitive trading at and between gas hubs, because liquid and competitive wholesale markets are a prerequisite for the benefits of competition to flow to end users. These steps can only be identified by close examination of the current situation in specific regions across Europe. ERGEG is therefore seeking stakeholders' support for a set of regional initiatives.
3. At the same time, certain topics where progress is clearly needed, and where action by regulators offers the prospect of benefits for customers, need to be addressed in parallel at European level, in order that solutions are adopted which do not hinder trade between regional markets, and eventual progress to a competitive single European market for gas. Work on these common principles will be taken forward by ERGEG through its Gas Focus Group.
4. The proposed regional initiatives will concentrate on two aspects of market development: trading at hubs within the regional market, and hub-to-hub trading within and between regional markets. The regional initiatives will set out what needs to be done to facilitate trading and unlock liquidity at hubs within each region, and the removal of barriers to trade between hubs and regions. Regulators' initial view is that regional initiatives should be take place in the following regions:
 - Spain/Portugal/ southern France
 - Italy (PSV)
 - Zeebrugge, Eurohub, TTF, NBP (as a North Sea region, Norway, Netherlands, Germany, Belgium, northern France – which will build on published research)
 - Baumgarten (Austria, Hungary, Slovakia)
 - at least one region with no currently operating hubs, probably to the east

CEER through its South East Europe (SEE) Work Group is also working to help establish an effective and competitive SEE energy market.

5. The regional initiatives will look at what steps need to be taken to unlock liquidity and at issues such as: experience of the development of existing successful hubs; access to capacity into and out of hubs (including capacity trading); incentives for investment in transportation capacity between hubs and in storage; transparency; availability of gas sources; communication and transaction arrangements; cross-border compatibility (eg, of balancing and flexibility regimes); cross-border capacity; the arrangements for

- regulatory oversight; and existence of regulatory gaps relating to cross-border activity. The focus will be on revealing the practical issues that are most important to the further development of effective competition within each region.
6. The purpose of this paper is not to define in detail the work of the regional initiatives, because it is important that the work of each is relevant to the situation in each region. However, it is important that there is a clear timetable, process, and set of outputs.
 7. For each regional initiative there will be a steering committee of the regulators from the MSs in the region which will direct the work of a study group, made up of regulators, transmission system operators (TSOs), hub operators, and network users. It will be the task of the steering committee to establish the study group, define its ways of working (and in particular, how to involve relevant stakeholders, including TSOs, storage operators, and network users), and define a detailed timetable. The steering committee may decide to hold one or more workshops. The steering committee will also consider how to involve Member State Governments and the European Commission. Involving Member States and the European Commission will be particularly important in cases where individual national regulators may lack specific powers necessary for implementing recommendations of the roadmap paper.
 8. Each steering committee will prepare regular progress reports to ERGEG, and ERGEG will provide updates to the Commission. ERGEG will also seek feedback from the participants in the Madrid Forum by presenting progress reports at meetings of the Forum.
 9. The outputs from each regional initiative will include a report covering the following questions:
 - what is the state of hub-based and hub-to-hub trading in the region, including how this relates to the possibility of swaps and backhaul?
 - what are the factors that have led to successful development up to this point?
 - what barriers are preventing further progress? (or, in the case of a region with no effective hub, what is preventing a hub from being developed?)
 - what are the options for overcoming these barriers, and which parties (eg, regulators, TSOs, Member States, shippers, traders) need to act?
 10. The report will conclude with a draft plan of action, identifying how progress will be made, and identifying an appropriate allocation of responsibilities to the various parties involved.
 11. An indicative timetable for the work is set as follows:
 - March 2006
 - ERGEG publishes conclusions following consultation on this paper
 - regional initiatives set up, membership of the various groups defined
 - May to June 2006
 - data collected
 - progress report explaining ways of working, stakeholder participation, and a forward action plan

- June to September 2006
 - data analysed
 - October 2006
 - reports published for consultation
 - January 2007
 - ERGEG publishes an implementation plan based on the outcomes of the regional initiatives studies (including the consultation responses)
12. In order to allow this work to start in good time, Regulators will, in parallel with this consultation exercise, begin to set up the organisational arrangements through which the regional initiatives will be taken forward.
13. The support and active participation of industry and other stakeholders will be essential to the success of the work set out in the roadmap. Regulators encourage all interested parties to respond to this consultation paper by January 22nd 2006 and to participate fully in the regional initiatives described above. ERGEG invites stakeholders to comment on issues raised in this paper, and in particular to respond to the detailed questions (which are repeated for convenience in section 7).
14. Responses should be sent by email to gasroadmap@ergeg.org.
15. Unless marked as confidential all responses will be published by placing them on the ERGEG website.

2. Introduction

16. This document is ERGEG's proposed roadmap setting out the European regulators' views on how progress towards the goal of the single European market for gas should be achieved. It builds on previous initiatives, including discussions at the September 2005 Madrid Forum of the ERGEG summary paper introducing the gas roadmap work.
17. The roadmap paper will be published in early 2006, and will take account of responses to this consultation paper and the recently-published reports from DG TREN on implementation of the liberalising Directives, and from DG COMP on the issues emerging from its inquiry into the European gas market.¹
18. Despite considerable progress towards achieving a single European market for gas, this goal remains some way off. Most markets are characterized by a lack of wholesale gas supplies available to new entrant retailers, making competition practically impossible in many Member States. With few exceptions, effective competition in Europe is still limited. There is a small number of gas exporters supplying Europe, some of which have monopolies. Commercial incentives may therefore be to hinder

¹ These reports are available at http://europa.eu.int/comm/energy/electricity/report_2005/index_en.htm and http://europa.eu.int/comm/competition/antitrust/others/sector_inquiries/energy/

development of effective gas-to-gas competition within Europe. In addition, North Sea gas production is declining. However, the long-term vision is clear: effective competition delivering real benefits for gas consumers throughout the EU; a stable regulatory framework facilitating efficient levels of investment; secure supplies; choice; and gas suppliers able to market their services to all consumers across the EU. This vision also now includes the availability of new sources of gas supply to Europe, notably LNG.

19. To achieve this vision requires the basic building blocks that will underpin a competitive gas market to be in place in all Member States.
20. At a technical level, these building blocks are well known: real supply-side competition (ie, in a given location, gas available on the wholesale market from a range of competing suppliers), contractual flows becoming significantly decoupled from physical flows in many locations, entry–exit tariff arrangements for access to transmission networks; liquid hub-based² trading;³ and fair and non-discriminatory access to other key services and facilities (such as storage).
21. These building blocks, together with a robust and comprehensive regulatory framework, support the long-term vision described above, and are necessary if the benefits of liberalisation and competition are to flow to gas and electricity consumers. However, other factors are frustrating progress: in particular, industry structures which are anti-competitive due to vertical or horizontal relations among market participants and network operators, together with ineffective unbundling provisions under the current European and national legislative framework. In addition, implementation and enforcement of the legislative provisions is not universal; independent regulators do not always have adequate powers to discharge their functions, particularly in relation to issues crossing borders; and wholesale markets are insufficiently transparent.
22. This consultation paper takes stock of progress made so far towards this goal, and sets out a ‘roadmap’ for achieving a competitive single European market for gas, through the intermediate step of creating effective regional markets. Regional markets (an approach which takes the existing state of development of gas hubs as the starting point) are a stepping stone on the way to a single European market for gas. The regional markets concept takes into account the different stages of development currently exhibited by European gas markets, but must not raise barriers to, or slow down the achievement of an eventual single European market. Development of regional markets should take place as far as possible in parallel, recognising the eventual goal of a competitive single European market for gas.
23. The roadmap paper sets priorities, explains regulators’ current thinking, and describes the further work that will be undertaken. It describes how practical progress can be made from the current situation towards the eventual goal of a competitive single European market for gas, by moving first to better-functioning regional markets. The

² A hub is a physical or notional reference-point within a network at which liquid trading can develop because the hub is well connected to multiple sources of gas supply and demand.

³ These goals were described in “A long-term vision of a fully operational single market for gas in Europe – a strategy paper (draft)”, Joint Working Group of the European Gas Regulatory Forum (2002).

focus on regional markets is designed to ensure that progress can be made through focusing on the real practical barriers currently in place in the various regions. ERGEG welcomes feedback from stakeholders on all aspects of this paper, as well as on the specific questions raised in the text of the paper and repeated for convenience at the end.

24. In addition to examining progress to date and the present state of competition, this paper also identifies remaining barriers to achieving the goals of the long-term strategy, and takes account of the dynamic nature of competition within the market and recent changes in market fundamentals (notably LNG). This paper suggests a way forward, and how barriers to progress might be overcome. ERGEG's view is that detailed work, taking into account the actual experience of market participants, is needed in order that effective solutions can be proposed. A timetable for this is set out below.
25. Consultation with industry and other interested parties is therefore a crucial part of developing the roadmap, to ensure that all significant problems are identified and tackled in order of priority. We particularly welcome, in response to this consultation document, examples from industry participants of problems experienced in European markets that demonstrate the existence of obstacles to further progress towards a competitive single European gas market.
26. The principle underlying ERGEG's regional markets approach is that regional markets are a useful stepping-stone on the way to a fully-functioning single European market (with the geographic scope of regional markets evolving as markets develop). An important factor defining regional markets in electricity is congestion at borders. This factor appears to be less significant in gas markets. In addition, unlike electricity, much of Europe's gas demand is met by imports from outside the EU, which (also unlike electricity) are transported over great distances, typically under long term contracts with price largely insensitive to the short term balance between supply and demand. Regional gas markets correspond to geographic areas in which it is possible easily to retail gas available on the wholesale market at a nearby hub. In taking a regional approach, it is of course necessary to ensure that solutions adopted at a regional level do not themselves raise barriers to eventual completion of a competitive single European market for gas, so that market rules in each region may be different but are nevertheless compatible with those in adjacent regions.
27. Regulators welcome feedback on the concept of the regional market in gas, as well as on the appropriate definition of specific regional initiatives described below.
28. This roadmap concentrates on the regulators' role, but takes into account the important roles of other actors, including industry, Member States, the European Commission, and competition authorities.

3. Current state of European gas markets

29. Full implementation and effective enforcement of existing legislation in all Member States—which has not yet been achieved—is a prerequisite for achieving a single European market for gas. An ideal legislative and regulatory framework would set out

the fundamental principles that underpin the market, around which the necessary detailed market rules are defined (and adapted flexibly to the changing needs of the market, in light of experience of operating them). For example, TPA to networks is a principle set out in legislation, and detailed market rules, consistent with this principle, are designed by individual regulators in each national market. Transparent, liquid, and competitive gas markets can develop within this framework, with regulators responsible for enforcing compliance with the detailed rules, and supervising the evolution of the market rules over time. Competition authorities also play an important role in enforcing competition law.

30. The current situation is one in which the legislative framework does not address everything required for the establishment of a competitive single market, and the building blocks listed above have not yet been achieved. The European Commission is currently undertaking an inquiry into European gas markets—despite the provisions of the liberalisation Directives, concerns have been raised that network operators nonetheless favour their affiliates, and it has been suggested that the design of network rules appears not always to take into account in a sufficient manner the needs of a competitive market at a European level. The degree of concentration, especially upstream, where some exporters have monopolies, remains a very significant challenge. The need for a roadmap between the current situation and a competitive single European market for gas is therefore reinforced.
31. There has been progress towards the long-term goal, although progress has been slow: for example, hub-based trading continues to develop across Europe, third-party access to storage facilities has improved, and investment is bringing new sources of piped gas and LNG to European markets. Implementation of the Directive is progressing, for example with the recent creation of a regulatory authority in Germany. However, it is clear that the goal has not yet been achieved, and that Continental markets are characterised by a lack of liquidity. Further progress is needed.
32. The following paragraphs describe the current situation in European gas markets with reference to the elements of the long term goal (real supply-side competition, decoupling of physical and contractual flows, entry–exit tariffs, and liquid hub-based trading, supported by a robust and comprehensive regulatory framework, and effective mechanisms for investment in cross-border infrastructure).

3.1. Supply side competition—is not yet real

33. Upstream market concentration, including outside the EU, is a threat to effective competition to supply European gas consumers. There is a small number of gas exporters supplying Europe, some of which have monopolies. Commercial incentives may therefore be to hinder development of effective gas-to-gas competition within Europe. In addition, North Sea gas production is declining. This reinforces the benefits of gaining access to new supplies (including LNG), thereby reducing the risk that producers may be able, individually or collectively, to exert market power as the EU develops its position in the growing global gas market. In addition, the importance of market rules that promote competition between downstream suppliers is also reinforced.

34. Where there are barriers to effective cross-border trade, and where suppliers find it difficult to enter new markets, competition problems associated with market concentration upstream can be exacerbated. For example, where total gas demand within a national market is small, suppliers in that market may find it difficult to obtain competitively-priced gas upstream, because the volumes involved are small. In such a situation, breaking down barriers to cross-border trade, and moving from individual national markets to larger regional markets, is crucial.

3.2. Decoupling contractual and physical flows—further progress needed

35. If competition and cross-border trade develop successfully as a result of actions taken by regulators and others to improve the working of European gas markets, it will be increasingly common for trade to take place without corresponding physical flows of gas (because only the net result of all trading activity across Europe is reflected in physical flows). This will be based on liquid trading on wholesale markets based around hubs, but this requires that there is decoupling of physical and contractual flows. In addition, TSOs must be prepared to make available transportation capacity that exceeds the physical capacity of the network (ie, by netting off counter flows).
36. Due to a lack of publicly-available information on actual gas flows, it is difficult to assess the extent of physical congestion on many parts of the European gas network. In some locations, physical congestion is already hindering the development of effective competition. However, although the European Union's demand for gas is significant and growing, and most of this gas is imported, physical constraints are not generally thought to be a significant barrier to developing competition in most regions. Nevertheless, many European gas markets are not very liquid, and price differentials between adjacent markets can persist. This suggests that where there is sufficient transportation capacity, gas may be unavailable for contractual reasons, thereby preventing liquid trading from developing.
37. Contractual barriers to trade could result from network capacity or the gas itself being unavailable for contractual reasons. The former could result if network capacity has been sold to a third party which subsequently neither uses the capacity nor sells it on. The latter could result if gas has been sold on a take-or-pay contract, with the purchaser electing to pay rather than to take the gas which is contractually available.
38. Different upstream sources may produce gas of different quality (in relation to a number of important technical parameters). In order to be compatible with local network specifications—and with the requirements of end-users—gas from some sources may require treatment or blending. It is important that European gas consumers can have access to a wide range of upstream sources of gas, in order to promote competition, and it is also important that gas quality issues do not restrict cross-border trade.
39. At the same time, treatment and blending is a cost. In order that competition and cross-border trade are not restricted by gas quality issues, and the cost of treatment or blending is not excessive, there need to be adequate arrangements to provide access to treatment or blending facilities, for encouraging the necessary investment, and for recovering the cost of such investment. This investment should be subject to the same principles (for example, as regards cost recovery and charging) as investment in other

kinds of network infrastructure. Similarly, investment in and access to gas quality conversion facilities needs to create a level playing-field for all suppliers.

40. Work, led by the Commission, is being undertaken to establish the costs and benefits of moving to a single EU-wide gas specification in the longer term. Regulators' work on ensuring that gas quality is not a barrier to competition and cross-border trade is described below.

3.3. Entry–exit tariffs and third-party access to networks—must be universally available

41. Effective non-discriminatory third-party access is an essential precondition for competition to develop.⁴ A consensus has emerged that entry–exit tariffs represent the best approach because this promotes liquidity and is transparently non-discriminatory. The existing legislative package has gone some way to providing third parties with rights to non-discriminatory access to network capacity. However, the extent to which such rights are actually exercised across Europe suggests that barriers remain. These barriers could include ineffective monitoring and enforcement of the non-discrimination rules or insufficient unbundling of network businesses from affiliates using the networks, as well as the effects of legacy capacity reservations.
42. Cross-border trade may be hindered by legacy long-term capacity reservations (eg, if there are no effective Use-It-Or-Lose-It mechanisms or secondary trading). Given the significance of these contracts, it is important to understand how the legislative and regulatory framework in the Gas Directive (and new gas Regulation) is to be applied to these contracts, as well as the effects of these contracts on competition. Investment in cross-border infrastructure is discussed further below.
43. Interoperability problems between adjacent systems, and tariff issues may also hinder cross-border trade. Where gas is transported across more than one transportation system each TSO will levy a charge for the use of its system, and it is difficult to maintain efficient locational price signals (entry–exit tariffs) while allowing all TSOs to recover their costs and avoiding excessive cross-border charges (pancaking).
44. Where there are effective mechanisms in place for ensuring non-discriminatory third-party access and for appropriate management of contractual congestion, physical congestion will result if insufficient physical network capacity is made available to those wishing to use the network. Systems are generally in place for making investments in additional capacity within a network operated by a given TSO, though these systems must work well if the impact of physical congestion is to be kept low. However, arrangements for ensuring investment in sufficient cross-border transportation capacity are inherently more difficult to operate. This can be for many reasons, including the need to co-ordinate investment activity and the appropriate allocation of costs between multiple TSOs, possibly under the jurisdiction of several national regulators.

⁴ CEER Entry–Exit System Guidelines, presented by CEER to the European Gas Regulatory (Madrid) Forum, September 2003.

3.4. Liquid hub-based trading—is present in only a few national markets

45. The prevailing situation in continental Europe is characterised by a lack of liquidity, so that it is often impossible to buy or sell a large quantity of gas in this area at a traded market price, whether via a broker or on a gas exchange. There are no reliable and transparent spot gas prices in most of European gas markets.
46. If wholesale markets are not liquid new companies will find it difficult to manage their commercial risks, and are less likely to enter the markets. Prices are less likely to be competitive and are less transparent, it is more difficult to plan investment in new supplies, and as a whole the benefits of a liberalised market are much reduced. Where wholesale markets are not liquid, new entrants would not be able easily to source gas to supply their retail customers or to balance their portfolios.
47. Both organised exchanges and bilateral or over-the-counter trading contribute to liquidity, and both are important in well-functioning commodity markets. Hubs are real or notional points within a network at which it is convenient to locate traded gas volumes. Standardising the location in this way contributes greatly to liquidity because without a standard location, the total volume of gas traded may be spread over many different locations in the network (or at its entry/exit points), and volumes of gas at different locations are not equivalent because of the need to arrange for transportation rights between the two locations. Both organised (exchange based) trading and OTC trading can take place at hubs.
48. Contractual factors other than location may also be important in promoting liquid trading. For example, standardisation of other terms and conditions of gas contracts in addition to the locational element may also be helpful. Some of these factors may emerge as a result of market demand, whereas others may result (partly) from regulatory intervention.
49. Many other factors will influence the development of liquidity, including market participants' confidence that the market will not be abused by dominant companies. Where there is market power, even if it is not abused, a credible threat of potential abuse may be sufficient to prevent potential entrants from competing with existing firms.
50. The independence of TSOs and other parties with access to commercially-sensitive information (which could include storage or hub operators)⁵ from market participants—especially the main importers and suppliers—is also vitally important.
51. Although hubs have developed in several markets, trading is not yet very liquid. There are also many markets where hubs have not yet developed at all. The National Balancing Point (NBP) in Great Britain is the most liquid European gas hub, and has had a churn rate (ratio of gas volumes traded to volumes physically delivered) of up to 20. However, even this hub is not liquid (and liquidity has fallen recently) in comparison to the Henry Hub in the USA, which has a churn ratio of around 100.

⁵ As appropriate, throughout this document references to TSOs should be taken to include storage and hub operators

52. Access to and availability of transportation capacity to and from hubs can also be a problem. It is often the case that price differentials between adjacent European hubs are persistent (and higher than the relevant transportation cost), because of the difficulty of obtaining the necessary transportation (or quality conversion) capacity. For example, there are sometimes significant price differentials between the TTF in the Netherlands and the Zeebrugge hub. Capacity is likewise congested (both physically and contractually) on the transportation systems exiting the Central European hub at Baumgarten.

3.5. Regulatory gaps—need to be filled

53. In some areas, voluntary agreements are being used to fill gaps in the legislative framework. For example, in gas storage the detailed rules for how the market should operate are not sufficiently specified in legislation, so regulators have developed voluntary guidelines for storage operators.⁶ These arrangements have not been in place long enough to tell whether they will be effective. There is a significant risk with the use of voluntary guidelines that the relevant authorities are unable to take monitoring and enforcement action to ensure that the market operates effectively.
54. Other examples of gaps in the current framework include effective arrangements for investment in cross-border infrastructure (regulated or merchant) so that cross-border flows are not hindered, tariffs for cross-border transportation, and transparency requirements. These regulatory gaps are described below.
55. Investment in cross-border infrastructure may be complicated by either a lack or an overlap of regulatory jurisdiction—ideally, jurisdictions should mesh. For example, regulated cross-border infrastructure might require the costs of a single asset to be shared between the regulated asset bases of two TSOs, and the process for approving the investment (which could be different in the two MSs) would have to be coordinated. In some cases, eg sub-sea interconnectors, formal treaties between MS governments may also be needed. Tariffs for access to cross-border infrastructure could have an impact on markets and consumers on both sides of the border, suggesting that regulators on both sides would have an interest in the tariff methodology. However, within current legal frameworks it may be difficult for one regulator to take into account the views of another regulator in its own decision-making process, or for regulatory decisions to be made jointly.
56. Where markets are physically connected, the actions by market participants in one market can affect competition (and hence consumers) in the connected market. This can raise issues of transparency and information gathering powers, if regulators or competition authorities are unable to obtain information from market participants in neighbouring markets. For example, during Ofgem's study into the causes of high gas prices in GB in October and November 2003, a number of hypotheses could not adequately be explored due to a lack of information from neighbouring markets (both because some regulators do not have the legal power to extract the information from

⁶ Guidelines for good TPA practice for storage system operators (GGPSSO), March 2005.

companies, and because others do not have the legal power to share the information they hold with other regulators). Ofgem was concerned that the lack of transparency prevailing in the period under investigation could have allowed operators to act in ways that, although perhaps consistent with the prevailing market rules, might nevertheless be in breach of competition law. In particular, Ofgem was not able to satisfy itself fully that all contractually available gas was being released into the market, that the use of storage capacity was appropriate, and that transit capacity was not inappropriately withheld.

57. Much of the necessary detail of the market rules is not contained within the Gas Directive or Gas Regulation, but is implemented by means of industry codes (similar to framework agreements or standard contracts, governing key aspects of the commercial arrangements between network operators and network users (eg, gas suppliers and shippers). These are important mechanisms for filling in the detail of the regulatory framework, because they can be flexible. Examples include the standard agreement between a storage operator and its customers, network codes governing conditions of access to the transportation network, or standard connection agreements. The high-level principles of the liberalising legislation—such as cost-reflectivity and non-discrimination—underpin and are reflected in these detailed rules. In order to ensure that the rules effectively implement and are fully compatible with the relevant legislation, and that necessary flexibility is not abused, it is important that there is appropriate regulatory oversight of the rules, and that regulators are able to monitor and enforce compliance. Typically this requires information collection powers and a decisive role for regulators in the governance of these detailed market rules. At the same time, it is important that regulatory decision-making is consistent and certain, because otherwise investors will be reluctant to invest in the industry under an uncertain regulatory environment. This is an important reason for regulators to be fully independent of political control.
58. Within the current legislative framework, the precise remit and powers of national regulators depends on the relevant national legislation. Thus the powers of national regulators may vary widely from one MS to another. For example, the extent to which regulators are able to influence or change market rules, and to punish non-compliance with regulatory standards, is different in different MSs. For example, Ofgem's powers in GB gas and electricity markets are relatively strong. The framework agreements containing the detailed rules for market operation, such as the calculation of imbalance prices, cannot be changed unless Ofgem agrees. In contrast, after the last modification of the Belgian gas act officially transposing the second Gas Directive, a lot of the powers of the regulator have been changed. In almost all domains, the advice of the CREG is necessary, but can be overruled by the Government. An example is the approval of the tariffs, where the CREG used to decide upon the transmission tariffs, and had the power to decide how the profit margin of the TSO should be calculated. Now the profit margin will be defined in a royal decree.
59. Where national regulators have limited jurisdictions, or there is a lack of national regulatory powers in respect of wholesale market issues (eg, enforcing effective unbundling of TSOs), effective cross-border trade may be hindered. A lack of regulatory powers within a MS may therefore have a wider impact on regional (or European) markets and consumers. An important part of the regional markets approach described in this paper will be to identify whether national regulators lack

specific powers to implement improvements within a regional market (and, if so, which other decision-makers can act).

60. Regulators would like to hear the views of respondents on whether there are other important regulatory gaps not discussed here.

3.6. Cross-border infrastructure—must be adequately addressed by the legislative framework

61. The supply of gas to end customers in Europe depends on a set of physical assets including: the upstream source of gas; LNG production and transport infrastructure; export pipelines situated outside the EU; long-distance pipelines within the EU, some of which have traditionally been considered separate from national transmission and distribution networks; LNG receiving terminals; a network of high-pressure transmission networks and lower pressure distribution networks within each MS; gas storage facilities; and gas treatment or quality conversion plant. This infrastructure represents a very large investment (by a range of investors), which is recovered by means of direct or indirect charges levied on the users of the infrastructure.
62. In order for European gas markets to function efficiently and effectively as a whole, it is necessary that:
 - Charges (and other terms of access) promote efficient use of existing infrastructure. In particular, charges should reflect costs and costs should be properly allocated. Where there is physical congestion, this needs to be managed using market-based mechanisms.
 - Where new infrastructure is needed, timely and efficient investment is adequately secured and rewarded through usage charges, and total revenues recovered should reflect the risks faced by investors.
63. Risks associated with investment in new infrastructure need to be appropriately allocated—investors in infrastructure need to manage their risks. For example, investors will look to secure a stream of forward revenues in order to recover their investment. A fully regulated investment allows investors to secure forward income from tariffs, set by regulators across the network as a whole (with its associated regulatory asset base). Alternatively, some investments are secured against the forward income from long-term contracts for the use of the infrastructure. It is important that such contracts are compatible with the development of effective competition.
64. The usage charges and access terms determine the allocation of commercial risk between the infrastructure investors and users, and determine how the investors receive a return on their investment. In principle, two approaches are possible: regulation or contracts.
65. If access to the infrastructure is regulated, the regulator determines to a significant extent returns and the allocation of risk. In many cases, total revenues will be set with reference to the costs of the network as a whole, including new infrastructure, with the risk thereby spread across all network users. If, however, the access is not regulated,

the investors and users will determine returns and allocate risk through commercial negotiation resulting in contracts. This means that the risk associated with the specific piece of infrastructure, rather than the network as a whole, will be shared between investors and users (according to the contracts).

66. Historically, the regulatory model has been applied to (most) transmission and distribution networks within the EU. The contracts model has been applied to infrastructure outside the EU, as well as to long-distance pipelines carrying gas within the EU.
67. The extent to which each model is able to deliver the two requirements (efficient use and efficient investment) described above, and the mechanisms for doing so, are different.
68. Under the contract approach, use of the infrastructure would be determined by the terms of the contracts (and by the application of general competition law). This cannot prevent inefficient outcomes: for example, a gas shipper may have the right to use a certain amount of transportation capacity in a long-distance pipeline, but may decide neither to use all of its capacity nor to sell it to a second shipper that would use it. Under the regulated approach, use of the infrastructure is efficient because regulators can require that access be offered to all third parties on a non-discriminatory basis.
69. Investment would take place under a contractual approach whenever investors are able to find users willing to sign long-term contracts to use the infrastructure, or where investors themselves are confident that they will, over the lifetime of the asset, be able to find users willing to pay the usage fees. Under a regulated approach, provided that the regulator agrees that investment was efficient, the regulator would allow investors to recover a reasonable return on their investment through usage charges on the network as a whole. Under the two approaches, the sharing (between investors and users) of the risks associated with a particular investment would therefore be very different.
70. Infrastructure outside the EU is clearly outside the scope of energy regulation, and therefore the contractual model continues to apply. Infrastructure within the EU is potentially subject to the framework of liberalising legislation, and is therefore regulated, unless an exemption is operating (and in the case of exemptions, the requirement for non-discrimination is likely to be a pre-condition for obtaining an exemption). However, since the legislative framework is not yet complete (the Gas Regulation is not yet in force, and some MSs have failed to implement the Gas Directive), it is not yet clear precisely how it will apply to each class of asset described above.
71. This discussion therefore raises a number of questions on which regulators would like feedback from respondents. Long contracts give security to investors, but may frustrate the development of effective competition. Under the regulated approach, what steps are needed to provide the necessary degree of security to investors (for example, the existence of a regulated asset base)? If the two approaches co-exist (for example, where non-regulated infrastructure outside the EU meets regulated infrastructure inside

the EU at the border), what issues are raised by the interaction? Finally, how do legacy contracts fit into this picture?

3.7. Customer switching—a priority at local level

72. A separate, but very important issue, is that for the liberalisation process as a whole to be successful, its benefits (such as lower costs as a result of increased efficiencies) must reach gas and electricity consumers.
73. If customers are unable (or find it too expensive or inconvenient) to switch from one supplier to another, customers are unlikely to benefit from competition and, and the development of competition will be stifled. The commercial pressure from customers seeking better terms from their supplier can be an important driver for increased competition at the wholesale level. It is therefore important that there are no barriers to customers being able to switch supplier.
74. Long-term downstream contracts between suppliers and customers can prevent new suppliers from entering a market, because customers are committed to a particular supplier under a long-term contract. It is therefore important that the benefits to the customer (of being able to fix their energy costs) are effectively weighed against the possible detriments, both to the individual customer and to the market as a whole. The sector inquiry by DG COMP is to be welcomed in this regard. It is also important that, where there remain controls on final prices paid by customers that have not switched supplier, these controls maintain a proper balance between protecting the interests of these customers, and allowing competition to develop. This requires that there is careful regulatory oversight of the allocation of costs between network and supply.
75. These issues are important because they determine the extent to which the benefits of competitive wholesale markets reach end consumers. However, the focus of this roadmap is on improving the state of wholesale markets, and particularly the effectiveness of cross-border trade.

4. Priorities for action

76. The preceding sections of this paper have highlighted some of the areas in which further progress needs to be made. This roadmap paper focuses on the regulatory framework, and identifies where regulators need to take the lead. Making further progress towards a single European market for gas will require support from and action by all relevant parties—TSOs, market participants, MSs and the European Commission, as well as national regulators (individually and through CEER/EREG). Since the benefits of progress towards the single European market for gas will reach consumers through the operation of effective competition, competition authorities also have a part to play. The European Commission's inquiry into the gas sector is a particularly important opportunity to make progress.

77. In some areas change is already underway, either because of new legislation (the new Gas Regulation) or because of changing market fundamentals (namely the increased availability of LNG). In order to take these factors into account, and to make a complete analysis of where progress needs to be made, ERGEG has reviewed what it considers to be the four key components of the gas market: access to gas, networks, flexibility, and customers.
78. Access to gas means that wholesale markets exist and that suppliers that are successful in winning customers do not find themselves shut out of the market through being unable to obtain gas to supply those customers through the wholesale markets. Access to networks means, provided that there is sufficient physical capacity available, new suppliers should be able to obtain access to the network capacity they need to serve their customers, and that, for example, contractual congestion should not prevent such access. Access to flexibility is needed because, even if the other elements are in place, a new supplier will need access to storage or other forms of flexibility, in order to be able to match the profile of its customers' demands with the profile of its wholesale gas supply. Arrangements are therefore needed to ensure non-discriminatory access to storage, and to ensure that there is no discrimination in respect of other forms of flexibility (such as interruption rights, linepack, and tolerance).⁷ Access to customers means that suppliers should be able to compete with each other to win customers, and that network operators should facilitate the switching process (for example, by providing the necessary information on a non-discriminatory basis).
79. Within each of these components, ERGEG has considered what needs to be achieved in detail; the current situation; change that is in progress; remaining gaps; and possible solutions. ERGEG's analysis has been used to derive the priority areas described in the following section. In some cases action could potentially be taken either at European or at national (MS or national regulator) level. This roadmap, which addresses primarily action at the European and regional level, concentrates on those issues which cannot be dealt with at the national level. Thus the roadmap gives a higher priority to transmission and wholesale market issues than to distribution and retail issues. The focus of the roadmap is on facilitating cross-border trade and developing effective cross-border competition. Nevertheless, if the benefits of competition are to reach end consumers, distribution and retail issues must also be fully dealt with at the national level. The difficulties faced by some regulators in achieving this are symptomatic of the extent to which regulatory powers differ from MS to MS.
80. The Gas Regulation is important because it addresses a number of the areas outlined above in which problems are currently being experienced. In particular, it addresses tariffs, TPA, congestion management, and transparency—all of which are directly relevant to the problems highlighted above.
81. The priority areas for action under the roadmap are described in the following sections. The priorities relate to:

⁷ Guidelines for good TPA practice for storage system operators (GGPSSO), March 2005, and Gas Balancing: An ERGEG Discussion Paper for Public Consultation, July 2005.

- regulatory co-operation
- unbundling
- transparency and information handling
- availability of gas
- effective access to network capacity
- and gas quality.

4.1. Regulatory co-operation and gaps between jurisdictions

82. Within national markets, each regulatory authority has national responsibilities and duties, and associated powers within its jurisdiction such that it is able, where required, to act. In relation to the competitive part of the industry, the principal purpose of the regulatory framework is to provide the basis for a level playing field, in order that market participants can compete effectively with one another. The main focus of regulation in seeking to provide a level playing field is in the provision of equal access to the monopoly transmission networks.
83. Regulated tariffs provide users with access to the transmission network. For regulated companies the regulatory framework provides an expectation of a reasonable return on the capital that they invest. This balance is fundamental since tariffs must be regulated to protect users but a reasonable return on efficient investment is required to promote future investment.
84. Within a wider regional (or European) market, there needs to be strong co-operation between regulatory authorities to ensure the mutual compatibility of national arrangements within the wider market, and to ensure that the aims of the wider market are realised as well as the aims of the national market. In essence, this means that the regulatory framework, involving regulators, TSOs and market participants must take full account of cross-border trade. For example, this might be particularly important in respect of remunerating investment by TSOs in cross-border capacity, where regulators on both sides of the border would have to support the TSOs' investment plans. Regulatory co-operation is also needed in order to ensure that arrangements for access to pipelines crossing borders support effective cross-border trade.
85. A similar issue arises in respect of monitoring wholesale markets. A market participant, or a TSO, may be able to take an action in one jurisdiction which has an impact on consumers in a second jurisdiction, in relation to which the regulatory authorities in the second jurisdiction would have no authority to act. In such instances the regulatory authorities in the first jurisdiction should act, but this will also require effective co-operation to ensure that the first regulator accords the issue appropriate priority. In the absence of effective regulatory co-operation, the risk of regulatory gaps causing problems, as described above, is worsened.
86. Where there are regulatory gaps, regulatory co-operation may be insufficient to fill the gaps in the absence of legal competence to do so, and to allow decisions relating to cross-border issues to be enforced. If this proves to be the case, action at EU or national level will be needed to complete the legislative framework.

4.2. Unbundling

87. TSOs have a central role in a competitive wholesale market because both operational and investment decisions by TSOs have a significant commercial impact on market participants (the TSOs' customers). Achieving effective competition therefore requires a TSO which acts, and is perceived to act, independently of commercial interests in the

market, in a strictly non-discriminatory manner. Affiliations⁸ between the TSO and participants in the market (ie, gas producers, shippers, suppliers, or even large consumers) is likely to raise concerns that the transmission licensee will be biased in favour of its own affiliated interests. At the least, in such a case it will be far more difficult to ensure that the TSO behaves in such a way as to promote effective competition, for example through implementing strictly non-discriminatory third-party access, and investing to expand capacity where there is a market need. For this reason, unbundling arrangements are crucial.

88. Unbundling needs to take into account cross-border affiliations. Where a TSO in one MS has affiliations with parties active in the gas market of a neighbouring MS, there is a risk that the TSO in the first MS will operate its network (particularly as regards cross-border flows) to benefit its affiliate (eg, a supplier) in the neighbouring MS. In such a situation regulatory authorities must have the necessary powers to monitor and enforce unbundling provisions to the same degree as would be needed in relation to TSO affiliations within a single MS. More generally, it can be said that many companies in European gas markets are becoming pan-European. Regulation, encompassing both the detail of regulatory rules and regulators' monitoring and enforcement powers, must keep up.
89. The ineffectiveness of existing unbundling arrangements is one important reason for the slow pace of market integration and the slow growth in cross border trade observed in EU gas markets.
90. In the absence of ownership links with market participants, TSOs have a reduced incentive to discriminate between market participants, for example in relation to access to the networks. Market participants can be confident that confidential information will be handled properly by the TSOs. TSOs can also be directly incentivised to maximise the availability of network capacity because there is no risk of perverse incentives due to affiliates holding long-term access rights.
91. The presence of affiliations between TSOs and network customers, even where no abuse takes place, could damage market confidence and limit the extent to which effective competition develops in both wholesale and retail markets. Key areas where such concerns might arise include:
 - arrangements for access to the network (including capacity availability, connection arrangements and charging);
 - real-time operation of the system, including the imbalance rules, tolerance, linepack, and interruption;
 - the management and use of market sensitive information provided by network users to the transmission licensee for system purposes—ie, transparency and information handling; and
 - longer term system planning and investment.

⁸ Unbundling needs to take account of both direct ownership links between TSOs and their customers and contractual relationships which can have the same effect in terms of undesired incentives.

92. Transmission companies play a crucial role in the operation of liberalised gas markets, for example in determining the quantity of network capacity available to the market, and through their access to key network information which may impact upon market participants' commercial decisions. It is therefore absolutely central to the success of the European gas market that TSOs act independently of any interest in the competitive parts of the market, and behave in a manner that is compatible with effective competition. In the absence of ownership separation, the legal and management unbundling required by current EU legislation, as a basis for ensuring that TSOs of integrated companies act independently, must be evaluated against the results obtained in terms of ensuring non-discriminatory access to infrastructure. Appropriate national legislation and detailed regulatory rules are also needed and compliance must be effectively monitored and fully enforced by regulators with adequate resources and powers.
93. Experience from the GB gas market was that even where ringfencing and other rules are in place, and regulators do have strong monitoring and enforcement powers, the outcome is second-best to full ownership separation. Nevertheless, the experience also shows that rigorous regulation of business separation can have a beneficial outcome. In the case of British Gas, the breadth and depth of business separation requirements enforced by regulators was a factor in the company's decision voluntarily to undertake full ownership separation via demerger as it clearly saw no benefit in remaining as an integrated entity.
94. Where there are affiliations, there need to be strong (and intrusive) regulatory arrangements to ensure that no abuse actually takes place, and to provide reassurance to market participants that unbundling provisions are effective and are being effectively monitored and enforced. Where the TSO is also a hub operator, unbundling provisions should also establish, as far as is possible, independent hub operation, thereby enabling third-party trading.

4.3. Transparency and information handling

95. TSOs possess a large amount of information about the operational performance of the network, as well as information from individual users of the network that is used for planning purposes over operational and longer timescales. TSOs also take decisions about future operations of the network (eg, maintenance schedules). Much of this information, in aggregate form, needs to be published (because without it network users cannot decide how to make efficient use of the network), whereas confidential disaggregated information provided to the TSO by individual users needs to be kept confidential. Aggregate information is important because it helps market participants take informed and efficient decisions, and thus contributes to the overall efficiency of the industry as a whole (and therefore benefits consumers). For example, information about patterns of interruption in the past will allow network users to form a more accurate view of the likely future value of non-firm network capacity. Information on historic flow patterns helps new entrants determine where there may be scope for additional trading activity (eg, cross-border imports). The independence of TSOs needs to be demonstrated by the transparency of information released to all market players. TSOs should make available to the market all information in their possession that does not relate to the commercially confidential aspects of an individual third-party account.

96. Real-time or close to real-time information about the system as a whole (ie, the transmission network and the overall supply–demand balance) must be available to network users if they are to contribute fully to overall efficiency of the industry. Any information which would be relevant to market participants' decision-making should be made available (for example, network maintenance schedules; planned production and import flows; storage stocks; aggregate demand forecasts). In many cases the TSO will be best placed to make this information available (because it will have the information anyway for system operation purposes). Information from other industry participants (eg, storage operators) is also important.⁹
97. The role of the TSO in handling confidential information (ie, whether, when, and how it is published, and how commercially-sensitive information is to be kept confidential), and publishing aggregate data in a non-discriminatory fashion is very important for overall market efficiency and for building confidence in the market on the part of competing network users and customers.
98. Where information held by TSOs is not published (ie, made available to all market participants at the same time and in the same way), it is essential that the information is kept strictly confidential. In particular, if the TSO has commercial affiliations with one or more market participants, the information held by the TSO must be strictly ring-fenced from its affiliates. Arrangements for monitoring and enforcing such ring-fencing provisions must be robust if effective competition is to develop, and they are an important component of effective unbundling provisions (discussed above).
99. In some European gas markets market participants would benefit from additional information being made available by TSOs. The new Gas Regulation will make important improvements to the availability of information from TSOs. Improvements in transparency and information handling by TSOs (and hub operators) would bring benefits in terms of market efficiency, liquidity, reduced barriers to entry, and general confidence in the market. It would also assist regulators and competition authorities to monitor compliance with market rules and competition law. In order to make such improvements, lessons need to be learned from the approach taken in national gas markets (and other markets, including electricity) where effective arrangements are in place.

4.4. Competition and choice of gas source—availability of gas

100. Important benefits of the single European market for gas will include all European consumers having a choice of gas supplier. In addition, suppliers will be able to offer their gas to consumers across Europe. At the upstream level, the choice of where to buy gas is limited by the physical location of gas reserves, the availability of the necessary infrastructure, and the cost of transportation. About half of Europe's gas demand is imported, though the proportion is rising as European production falls and consumption rises. Currently, the supply of gas to the European Union as a whole is relatively concentrated (in terms of country of origin). Russia, Norway, and Algeria have

⁹ Guidelines for good TPA practice for storage system operators (GGPSSO), ERGEG 2005.

a combined share of about 95% of imports. Some gas exporters have monopolies. As a result, commercial incentives may therefore be to hinder development of effective gas-to-gas competition within Europe.

101. It is likely that almost all new European gas demand, as well as some demand that is currently met by supply from within the EU, will be met from imports. It is therefore important that the necessary political framework is in place to provide continued access to the current sources of gas, as well as facilitating access to new sources as they become available, in such a way as to facilitate effective competition within the EU. It is important that gas shippers and suppliers have the opportunity of accessing a diverse portfolio of upstream gas supplies, so there needs to be an effective political relationship between the EU and current and possible future gas exporters outside the EU. The benefits of diversity are a reduced dependence on supplies from any one source, and thus reduced risk. The degree of upstream concentration suggests that the necessary political steps should be taken to facilitate imports from as wide a range of sources as possible. Gas shippers and suppliers should then be free to make a commercial judgement about which sources of gas to use to supply their customers. It is important that this decision is a commercial one (ie, that market participants are free to choose from a range of sources, taking a commercial judgement about the costs and benefits of each component of a diverse portfolio of supply sources). There is a tradeoff between different risks, which market participants are best able to make. It is therefore important that the political process should not attempt to favour one supply source (or possible future supply source) over another.
102. A proportion of new gas supplies to Europe is likely to be LNG. This offers the prospect of increased competition for the existing suppliers, and is therefore potentially a very positive development. LNG could also lead to a change in the established patterns of both contractual and physical gas flows in Europe, and could therefore contribute to the uncoupling of contractual and physical flows. One result of changes to the established pattern of gas flows, and the uncoupling of physical and contractual flows, could be that LNG may increase competition even in parts of Europe that are physically remote from LNG import terminals, as existing piped gas (physically or contractually) displaced by LNG imports becomes available.
103. Sometimes gas may be physically available (ie, existing gas suppliers have gas available through upstream contracts), but not contractually or commercially available to new suppliers. Even if the downstream customers are prepared to switch (and therefore to stop consuming gas supplied by the existing supplier), the existing supplier may be unwilling to release the gas to the wholesale market, or the existing upstream producer may not wish to supply a new entrant supplier. Easy access to liquid gas markets at hubs could address the problem of gas availability. Where markets are liquid and there is easy access to transportation capacity between hubs, it will be easy for market participants (including exporters outside the EU) with excess gas to realise the value of that gas by selling it on in the marketplace, rather than declining to make the gas available (perhaps fearing that there is insufficient liquidity to prevent a strong price reaction). As with capacity hoarding (ie, neither using nor reselling transportation capacity that is not going to be used), the impacts on competition of paying for but not taking gas volumes bound under take-or-pay contracts needs to be analysed. The ongoing inquiry by DG Competition is particularly important in light of these issues.

104. On previous occasions, in order to offset the lack of gas available to new entrants, some regulators/competition authorities have implemented gas releases programmes.

4.5. Effective access to network capacity

105. Effective access to network capacity is a pre-requisite for new entrants to be able to kick-start the development of competition across Europe. Such effective access in turn requires:

- Effective mechanisms for decoupling physical and contractual flows, so that contractual congestion does not prevent access to physical capacity that is not being used.
- Non-discriminatory access arrangements providing equal treatment for all users (this implies non-discrimination in terms of at least the following: charges; information provision and information handling; interruption, firmness, and management of physical congestion; treatment of imbalance).
- Availability of sufficient capacity to handle the demands of market participants and to respond to new sources of gas becoming available (ie, including mechanisms to provide for investment in new capacity, including cross-border capacity, when needed).
- Confidence of market participants and potential new entrants in the working of the market and the arrangements for non-discriminatory TPA to the networks.

106. If third parties do not have confidence in the operation of the market and the arrangements for non-discriminatory TPA, they are less likely to invest in seeking access to the networks themselves. As a result, competition is stifled. It can be seen from this analysis that effective access to the networks requires much more than publication of a set of non-discriminatory network tariffs.

107. In practical terms, there needs to be effective unbundling of the network operator, with detailed regulatory unbundling provisions monitored and enforced where there is no ownership unbundling. All access to a network must be on equal (ie, non-discriminatory) terms, including 'legacy' contracts. There must be effective 'use it or lose it' provisions, matching the needs of market participants wishing to purchase the released capacity, to preclude capacity hoarding. There must be a mechanism to provide for investment in new capacity, including cross-border capacity. Where introducing such provisions would infringe existing contracts there is need for regulators and competition authorities to analyse the impacts of such contracts and develop an appropriate response (the recent Court of Justice judgment in respect of legacy electricity contracts may be relevant here). There must be effective transparency and information-handling provisions that engender confidence in the operation of the market. In this context it can be seen that the level of network charges, and the way in which the charging methodology implements non-discrimination, is only a small element in the overall framework.

108. The process of decoupling contractual and physical flows gives rise to the prospect of increased contractual congestion. Contractual network congestion can be overcome where there are effective secondary markets for capacity, sale of interruptible capacity,

and use-it-or-lose-it provisions in place (although some older 'transit' contracts may be more difficult to deal with).

4.6. Cross-border trading

109. Tariffs must not distort cross-border trade. It is therefore important that the principles used by individual TSOs to set tariffs take account of the need for harmonisation where cross-border trade would otherwise be distorted.
110. Tariff methodologies for cross border trade have to be developed consistent with the new Gas Regulation. In order to achieve a competitive gas market, distortions to cross border trade have to be avoided. In particular, cross-subsidies between different classes of network user (eg, domestic and cross-border flows) must be avoided.
111. Under the Gas Regulation, the extent to which tariffs and charging principles should converge, and the degree to which harmonisation is needed, will be studied by ERGEG in 2006. The guiding principle is the need to avoid distortions to cross-border trade.
112. Cross border trade can also be hindered by 'interoperability' issues. This term encompasses technical issues (such as IT, balancing and nomination timetables) that could hinder cross-border trade by raising transaction costs unnecessarily. Monitoring of market participants' behaviour indicates significant differences between individual systems. A single European market will require a degree of convergence of standards in order to remove barriers to cross-border trade. This suggests that co-operation between TSOs will be necessary in addition to co-operation between regulators.
113. Cross-border trade requires effective TPA to two or more TSO networks. It is possible that 'pancaking' of transaction costs (associated with booking capacity in several systems) and of access tariffs may be a significant barrier to cross-border trade.
114. When investment in new infrastructure is needed, that investment needs to be secured in some way. As discussed above, this can be done by long-term contracts guaranteeing future income. Where infrastructure is regulated, efficient investment can be included within a regulatory asset base, such that regulators subsequently set access tariffs (for the network as a whole) on the basis of the cost incurred in building the infrastructure. The issue of ensuring that necessary investments can be secured (on a regulated or merchant basis), as well as the interaction between regulated and non-regulated (eg, outside the EU) infrastructure, needs further work and will be addressed by regulators in the coming year.

115. Pancaking of transaction costs could, in the longer term, be dealt with by requiring TSOs to co-operate such that market participants would only contract with a single TSO (eg, at an entry point or, as in Spain where DSOs deal with relevant TSOs, an exit point), with subsequent contractual matters being dealt with by the relevant TSOs).¹⁰ Alternatively, independent third-parties could offer a commercial service that would manage the interface between network users and multiple TSOs (such a system used to operate in Germany). Regulators are interested to hear the views of market participants on a) whether there is a market need for such a service, and b) if there is, should TSOs be obliged to offer it?
116. Pancaking of access tariffs could be dealt with by instituting a Europe-wide entry–exit system, with a corresponding system of inter-TSO compensation payments to allow for individual TSOs to recover their costs. Regulators would like to hear the views of respondents on the possible advantages and disadvantages of an ITC (inter-TSO compensation) scheme covering the EU-wide gas network.
117. An important aspect of the regional initiatives described below will be to generate evidence of the extent to which either one of these issues is likely to be a significant barrier to cross-border trade, as well as the impacts of differing tariff methodologies and congestion management.
118. Co-operation between TSOs is required in relation to calculation and verification of availability of cross-border capacity, operational matters associated with cross-border flows, safety standards, and long term system planning.
119. Congestion (whether contractual or physical) can constrain cross-border trade. Therefore effective congestion management mechanisms need to be in place to ensure efficient use of available capacity (for example, auctioning of scarce capacity, UIOLI arrangements).
120. CEER intends to build on this work by looking at how TSOs should be incentivised to ensure that the maximum amount of capacity is made available to market participants on a fair and non-discriminatory basis. It is also necessary to consider what arrangements need to be in place to deal with situations where capacity availability is withdrawn (i.e. interrupted). It is also important that there are effective use it or lose it (UIOLI) and congestion management arrangements and the right regulatory/market arrangements are in place.
121. It is also important that investment in cross-border capacity is undertaken on an efficient basis to ensure that there are no barriers to trade. ERGEG will also be looking at this issue as part of its work on gas market integration.

¹⁰ For example, the concept of a 'European train ticket' follows the principle of network user having only one contractual relationship (e.g. to the TSO they are connected to/the first system operator on their path) to one system operator. Network users are provided a one-stop-shop system allowing simple and efficient transportation. For example, the concept of a 'European train ticket' follows the principle of network user having only one contractual relationship (e.g. to the TSO they are connected to/the first system operator on their path) to one system operator. Network users are provided a one-stop-shop system allowing simple and efficient transportation between two points within Europe. All relevant relationships between concerned TSOs are organised on a contractual basis between TSOs.

4.7. Capacity availability

122. Transparency (eg, of physical capacity at various points on the network, historic flows, capacity bookings, maintenance schedules) is crucial because it allows network users to determine where there is physical congestion and where there should be opportunities for making additional use of the network. Where TSOs are not affiliated with market participants, it may be possible to provide incentives for the TSO to maximise the quantity (and firmness) of capacity that is made available to network customers. Where there are such affiliations, regulatory solutions are required in order to deliver an equivalent outcome (namely, maximisation of capacity availability).
123. The capacities published by the TSOs today and those given in the GTE map are usually firm capacities, assessed on a rather conservative basis (and based on mutually-inconsistent assumptions). For example, some TSOs are reluctant¹¹ to make available firm 'backhaul' capacity (ie, capacity to flow gas counter to the normal direction of physical flow), even where future physical flows can be forecast quite well by the TSOs. In practice, however, it is very likely that some additional capacity could be made available because the actual utilisation is very likely to be lower than that guaranteed. Changes to operational practice, or small investments (eg, in compressor stations), can have large impacts on capacity availability. Generalizing this observation, optimal results (ie, maximisation of capacity availability) may only be achieved by considering the pipeline network as a whole, and will be best achieved by incentivising TSOs to do so.
124. Where there is physical congestion, arrangements are needed to ensure that capacity is expanded in response to demand from network users. Where TSOs invest to expand capacity, regulators have a role to play in ensuring that, where the investment is reasonable in light of information about demand for network capacity (and efficiently carried out) the TSO is able to earn a reasonable rate of return on its investment through regulated tariffs for access to its network. The allocation of risks associated with infrastructure investment, according to whether tariffs are regulated or not, is discussed above. Regulators would be interested to hear the views of market participants on how the detail of the regulatory framework should be developed to ensure an appropriate allocation of risks between infrastructure investors and users.
125. Mechanisms are needed to ensure that TSOs support the development of a market in capacity that is responsive to the needs of market participants in terms of the nature of products and services offered. This could start with the offer of flexible capacity services on the primary market, but would also include the tradability of capacity rights on the secondary market, the implementation of appropriate capacity allocation procedures, and congestion management mechanisms. Effective UIOLI provisions must be in place. Where introducing such provisions would infringe existing contracts there is need for regulators and competition authorities to analyse the impacts of such contracts and develop an appropriate response.

¹¹ eg, Fluxys, Transitgas, Ruhrgas and GTS

126. Where capacity markets are concentrated, regulatory oversight of swap and secondary market trading, as well as congestion management mechanisms, is also needed to ensure that entrants are able to gain access to capacity.

4.8. Gas quality

127. It is important that the EU has access to gas from a number of different sources—both domestic production and also from imports from outside the EU (including LNG). This gas has different quality characteristics, and so may need to be treated or blended, at source or at entry points to transportation/transit systems (including border crossings). For trade to take place between networks with different gas quality specifications, treatment of gas physically moved between networks may be necessary (however, it should be noted that only net trading activity results in physical flows, so it is only physical but not contractual flows that may require treatment). It is important that gas quality treatment does not create barriers to trade—neither within Member States (such as where conversion from high calorie to low calorie networks may be required) nor across borders. This means there should be no artificial restrictions on flows of gas. Where gas quality issues constitute a question of non-discriminatory TPA and gas-to-gas competition, regulatory rules for access have to be defined, monitored, and enforced.
128. Costs associated with quality conversion (including from H-gas to L-gas and vice versa) should in principle be managed as other network costs and should thus be recovered in the same cost reflective way. As with any network cost, it may sometimes be necessary to make a trade-off between cost-reflectivity and reducing barriers to entry in order to promote competition. It should be noted that, as with transportation capacity, the capacity of treatment facilities and services needs to be sufficient only to deal with volumes of gas which move physically between areas of different gas quality and not of all gas traded between the areas. It is also important that access to any facilities is provided to third parties on a fair and non-discriminatory basis. This will help avoid creating barriers to the development of competition. It would also be important (as with other network infrastructure/services) that rules for access are adequately specified in legislation and that relevant authorities have sufficient powers to monitor access arrangements and to take enforcement action. Similarly, investment in and access to gas quality conversion facilities needs to create a level playing-field for all suppliers.
129. As with transportation capacity, the availability of gas treatment facilities and services should not serve to create barriers to trade. It will be important therefore to ensure that the market operates effectively by bringing forward efficient and timely investment to meet treatment requirements – including the possibility of providing TSOs with appropriate incentives to invest in and provide treatment facilities and services.
130. The key questions that will be addressed as part of the roadmap work are: what arrangements need to be put in place to ensure that access to treatment is available on a non-discriminatory basis, and that costs are allocated appropriately; and how can any necessary investment in the provision of treatment facilities/services be secured on an efficient and timely basis?

5. The way forward

131. The views of respondents to this consultation paper will be carefully considered by ERGEG in developing its conclusions on the way forward. Following publication of this consultation paper, therefore, the first step will be to analyse responses from industry and other stakeholders. Taking into account this analysis of responses, ERGEG will then publish a firm timetable and workplan for the regional gas markets initiative in its roadmap conclusions paper. The conclusions paper will also take into account the recently-published reports from DG COMP's sector inquiry and DG TREN's benchmarking report. Responses to this consultation paper are requested by **23rd January 2006**.
132. Some of the work described above needs to be taken forward on a regional basis, to ensure that practical solutions are developed. The necessary information about the current state of European gas markets, and the practical barriers to cross border trade in various locations, will be collected by means of regional initiatives led by ERGEG. Participation by industry and other stakeholders is also necessary.
133. An immediate priority is for regulators to take steps necessary to promote liquid and competitive trading at and between hubs, because liquid and competitive wholesale markets are a prerequisite for the benefits of competition to flow to end users. These steps can only be identified by close examination of the current situation in specific regions across Europe.
134. At the same time, certain topics where progress is clearly needed, and where action by regulators offers the prospect of benefits for customers, need to be addressed in parallel at European level, in order that solutions are adopted which do not hinder trade between regional markets, and eventual progress to a competitive single European market for gas. Work on these common principles will be taken forward by ERGEG through its Gas Focus Group.

5.1. Regional initiatives

135. The proposed regional initiatives will concentrate on two aspects of market development: trading at hubs within the regional market, and hub-to-hub trading within and between regional markets. European gas hubs are currently at different stages of development; in some regions some bi-lateral trading does take place, but liquid and transparent hubs have not appeared. The regional initiatives will therefore allow lessons to be learned about each stage of this development, and will provide solutions appropriate to each region. The regional initiatives will aim to set out what needs to be done to facilitate trading and unlock liquidity at hubs within each region, and the removal of barriers to trade between hubs and regions.
136. It may not necessary for the regional initiatives to cover the whole of Europe comprehensively, because lessons learned in one region can be applied elsewhere, but they need to cover the range from relatively well-developed and liquid hub based

trading at one extreme, to the absence of hubs and meaningful wholesale markets at the other. Furthermore, both regulators and stakeholders need to recognise that adequate resources will need to be devoted to the regional initiatives. The regional initiatives will take into account the conclusions of existing relevant research. Our initial view is that they should take place in the following regions:

- Spain/Portugal/ southern France
- Italy (PSV)
- Zeebrugge, Eurohub, TTF, NBP (as a North Sea region, Norway, Netherlands, Germany, Belgium, northern France – which will build on published research)
- Baumgarten (Austria, Hungary, Slovakia)
- at least one region with no currently operating hubs, probably to the east

CEER through its South East Europe (SEE) Work Group is also working to help establish an effective and competitive SEE energy market.

137. Regulators particularly request feedback from stakeholders on the appropriate choice of regional initiatives. Regulators would like views from stakeholders on some specific questions relating to the identification of relevant regions:

- is physical congestion at border crossings is important in gas markets, and what is the relative significance of contractual constraints?
- In what way is this situation likely to change with increasing imports in the future?
- How can different regions be distinguished in terms of:
 - the sphere of influence of different gas hubs;
 - physical and/or contractual constraints at the region's borders;
 - different pricing mechanisms;
 - other (explain)?

138. The regional initiatives will look at what steps need to be taken to unlock liquidity and at issues such as: experience of the development of existing successful hubs; access to capacity into and out of hubs (including capacity trading); incentives for investment in transportation capacity between hubs; transparency; availability of gas sources; communication and transaction arrangements; cross-border compatibility (eg, of balancing and flexibility regimes); cross-border capacity; the arrangements for regulatory oversight; and existence of regulatory gaps relating to cross-border activity. The focus would be on revealing the practical issues that are most important to the further development of effective competition within each region.

139. The purpose of this paper is not to define in detail the work of the regional initiatives, because it is important that the work of each is relevant to the situation in each region. However, it is important that there is a clear timetable, process, and set of outputs.

140. For each regional initiative there will be a steering committee of the regulators from the MSs in the region which will direct the work of a study group, made up of regulators, TSOs, hub operators, and network users. It will be the task of the steering committee to establish the study group, define its ways of working (and in particular, how to involve relevant stakeholders, including both TSOs and network users), and define a detailed timetable. The steering committee may decide to hold one or more workshops. The steering committee will also consider how to involve Member State Governments and

the European Commission. Involving Member States and the European Commission will be particularly important in cases where individual national regulators may lack specific powers necessary for implementing recommendations of the roadmap paper.

141. Each steering committee will prepare regular progress reports to ERGEG, and ERGEG will provide updates to the Commission. ERGEG will also seek feedback from the participants in the Madrid Forum by presenting progress reports at meetings of the Forum.

142. The outputs from each regional initiative will include a report covering the following questions:

- what is the state of hub-based and hub-to-hub trading in the region, including how this relates to the possibility of swaps and backhaul?
- what are the factors that have led to successful development up to this point?
- what barriers are preventing further progress? (Or, in the case of a region with no effective hub, what is preventing a hub from being developed?)
- what are the options for overcoming these barriers, and which parties (eg, regulators, TSOs, Member States, shippers, traders) need to act?

143. The report will conclude with a draft plan of action, identifying how progress will be made, and identifying an appropriate allocation of responsibilities to the various parties involved.

144. An indicative timetable for the work is set as follows:

- March 2006
 - ERGEG publishes conclusions following consultation on this paper
 - regional initiatives set up, membership of the various groups defined
- May to June 2006
 - data collected
 - progress report explaining ways of working, stakeholder participation, and a forward action plan
- June to September 2006
 - data analysed
- October 2006
 - reports published for consultation
- January 2007
 - ERGEG publishes an implementation plan based on the outcomes of the regional initiatives (including the consultation responses)

145. In order to allow this work to start in good time, Regulators will, in parallel with this consultation exercise, begin to set up the organisational arrangements through which the regional initiatives will be taken forward.

5.2. Common principles

146. The regional initiative approach described above will allow practical solutions to be developed that are targeted at the specific barriers currently preventing further progress. However, it is also essential that solutions developed in this way are compatible with wider cross-border trade within regions, and therefore compatible with the eventual goal of a competitive single European market for gas. Gas quality is one issue in which common principles are needed.
147. ERGEG's workprogramme for 2006 sets out how the regulators will contribute to the development of the overall regulatory framework. The following issues are particularly relevant to the gas roadmap:
- market integration, particularly
 - cross border trade (tariffs and investment issues)
 - interoperability (TSO co-operation and gas quality)
 - transparency and information handling
 - gas balancing and storage monitoring
 - the impact of 'legacy' transportation contracts
 - maximising the availability of capacity

6. Invitation to Interested Parties to Comment

148. ERGEG invites all interested parties to respond to this consultation paper and to participate fully in the regional initiatives described above. ERGEG invites stakeholders to comment on issues raised in this paper, and in particular to respond to the detailed questions (which are repeated for convenience in section 7).
149. Any comments should be received by **23rd January 2006** and should be sent by email to gasroadmap@erggeg.org. Any question to this document should in the first instance be directed to

Mrs. Una Shortall
Email: una.shortall@ceer-eu.org
Fax +32 2 788 73 50
Tel. +32 2 788 73 30

Unless marked as confidential all responses will be published by placing them on the ERGEG website. A conclusions paper with the results of the consultation exercise will be published in March 2006, whereupon ERGEG will kick off the regional initiatives described above. Active stakeholder participation will be crucial to the success of the regional initiatives, and regulators will, through the steering committee, be open to offers of participation.

150. Full implementation of existing and future legislative measures by Member States is of course essential. Currently the powers of regulators vary widely which restricts their

ability to play a full part in achieving the goal of a competitive single European market for gas.

151. The barriers to further progress towards a competitive single European gas market will be overcome by a combination of actions by various parties. This roadmap sets out a major contribution by regulators. Regulators are also actively supporting ongoing work by the European Commission (especially the sector inquiry by DG COMP, and DG TREN's review of liberalisation). Both of these exercises are highly important and complementary to the proposals in this draft roadmap.
152. Industry participants and other stakeholders are encouraged to respond fully to this consultation paper. Their support in the next stage of the road-map work—namely, detailed regional initiatives—will also be essential.

7. Summary of questions

General

- Does this paper identify the main problems in European gas markets today?
- Does EREG's proposed way forward address your concerns, or, if not, are there other actions you believe that the Regulators need to take?

Introduction

- We particularly welcome, in response to this consultation document, examples from industry participants of problems experienced in European markets that demonstrate the existence of obstacles to further progress towards a competitive single European gas market
- Regulators welcome feedback on the concept of the regional market in gas.

Current state of European gas markets

- Regulators would like to hear the views of respondents on whether there are other important regulatory gaps not discussed here.
- Long contracts give security to investors, but may frustrate the development of effective competition. Under the regulated approach, what steps are needed to provide the necessary degree of security to investors (for example, the existence of a regulated asset base)? If the two approaches co-exist (for example, where non-regulated infrastructure outside the EU meets regulated infrastructure inside the EU at the border), what issues are raised by the interaction? Finally, how do legacy contracts fit into this picture?

Priorities

- Pancaking of transaction costs could be dealt with by requiring TSOs to co-operate such that market participants would only contract with a single TSO. Alternatively, independent third-parties could offer a commercial service that would manage the interface between network users and multiple TSOs. Regulators are interested to hear the views of market participants on a) whether there is a market need for such a service, and b) if there is, should TSOs be obliged to offer it?
- Regulators would like to hear the views of respondents on the possible advantages and disadvantages of an ITC scheme covering the EU-wide gas network.
- Regulators would be interested to hear the views of market participants on how the detail of the regulatory framework should be developed to ensure an appropriate allocation of risks between infrastructure investors and users.

The way forward

- Respondents are requested to comment on the appropriate definition and selection of regions for the regional initiatives.
- Regulators would like views from stakeholders on some specific questions relating to the identification of relevant regions:
 - o is physical congestion at border crossings is important in gas markets, and what is the relative significance of contractual constraints?
 - o In what way is this situation likely to change with increasing imports in the future?
 - o How can different regions be distinguished in terms of:
 - the sphere of influence of different gas hubs;
 - physical and/or contractual constraints at the region's borders;
 - different pricing mechanisms;
 - other (explain)?