

EXXONMOBIL CONTRIBUTION TO THE DEBATE ON THE GREEN PAPER Towards a European Strategy for the Security of Energy Supply

Summary

Exxon Mobil Corporation, a key player in Europe's energy markets, welcomes the opportunity to participate in the important review of the inter-linked issues of energy policy, economic growth and the environment. The European Commission's Green Paper *'Towards a European Strategy for the Security of Energy Supply'* makes an important contribution to the debate.

As always, there are tensions between the potentially conflicting goals of supply security, environmental protection, improving economic prosperity and satisfying consumers. While many approaches have been tried over time to resolve these potential conflicts, history illustrates that the operation of the free market, promoted by government policies that ensure a rational and predictable regulatory and legal framework, provides the best opportunity to make progress towards all these goals.

Within this free market approach, there is an important role for the EU and Member States to play. We would welcome the EU contributing to the promotion of energy supply security by using international diplomacy to encourage investment conditions which will bring forward the new energy supplies Europe will require. Maintaining fiscal and regulatory conditions in Europe which will ensure the maximum economic recovery of indigenous energy resources will also be a key task for the EU.

However, potential future centralised EU policies relating to supply security may cause unintended consequences. Indeed, some of the measures proposed in the Green Paper are likely to be inimical to the aim of securing for the EU diverse and secure supplies at competitive prices.

ExxonMobil would welcome the opportunity to develop further the themes outlined in this submission.

Background

ExxonMobil, through its affiliated companies, conducts major operations in most of Europe, where it has been operating for over 100 years. The Company's net oil production in Europe during 2000 was 704 thousand barrels per day while natural gas production available for sale in 2000 averaged 4463 million cubic feet per day. On an oil equivalent basis, combined oil and gas production represented around one third of ExxonMobil world-wide production. Petroleum product sales in Europe in 2000 amounted to 2.1 million barrels per day, a little over a quarter of world-wide sales. The company has interests in ten refineries in Europe and Esso trademark appears at more than nine thousand service stations throughout Europe.

Globally, Exxon Mobil Corporation is the world's largest publicly quoted oil and gas company and, on the basis of revenues in 2000, the world's largest corporation. The company does business in some 200 countries world-wide and produces more than 4.5 million oil-equivalent barrels of energy resources every day from some 1600 fields. ExxonMobil is the world's largest non-government marketer of natural gas. Downstream, the company has interests in 50 refineries in 27 countries and through 45,000 service stations in 118 countries is the leader in petrol sales world-wide.

Introduction

The European Commission's Green Paper *'Towards a European Strategy for the Security of Energy Supply'* is an important first stage of an EU debate on the inter-linked issues of energy policy, economic growth and the environment. ExxonMobil commends the Commission for stimulating a needed debate on energy policy and welcomes the opportunity to participate in it.

ExxonMobil has already played a significant role in the debate to date. The company commented directly to the Energy and Transport Directorate-General on early drafts of the Technical Document which accompanies the Green Paper. The company is also an active member of the taskforce drawn from members of the International Association of Oil and Gas Producers (OGP) and the European Petroleum Industry Association (EUROPIA) which produced a major submission on the Green Paper.

Operating functions have also taken the opportunity to discuss security of supply issues with Commission officials in the course of routine meetings.

At the Member State level, local ExxonMobil affiliate functions have been active in discussions with national governments and industry/employers organisations.

ExxonMobil supports the analysis and key messages contained in the OGP/EUROPIA submission. As trade associations, OGP and EUROPIA are constrained from commenting in detail on commercial matters such as contractual arrangements relating to the supply of natural gas. This memorandum therefore builds on the main points of the OGP/EUROPIA submission regarded by ExxonMobil as important, but focuses on those issues where we believe our experience can add value to the debate.

- 1. Security of supply cannot be looked at in isolation from other policy goals. Inevitably, there are tensions between conflicting goals relating to supply security, environmental protection, competitiveness and satisfying consumers. Different stakeholders will take different views of where the priorities should lie -- and such views may be different across national boundaries within the EU. ExxonMobil believes that the operation of the free market, within a rational and predictable regulatory and legal framework, provides the best long-term approach to making progress towards all these goals. The case for centralised EU policies relating to supply security does not appear to be entirely persuasive.**

- Energy self-sufficiency is neither an attainable nor a necessary objective for an appropriate energy security policy and energy trading is a permanent part of the EU's energy future.
- While trading may bring risk, it also offers the benefits of specialisation, allowing the EU to focus on those activities where it has a comparative advantage. Not to participate in the trade process is to forgo the economic benefits of comparative advantage, with inevitable adverse consequences for EU competitiveness and economic welfare.
- Inevitably, balanced judgements have to be made. A potential source of supply may be lower cost than others simply because there is a higher risk of supply disruption. Alternative back-up facilities can be provided, but potentially they incur significant cost. High cost indigenous coal may be favoured over imported natural gas for power generation. Not only does this increase the price of electricity but it also negatively impacts CO₂ and other emissions. On the demand side, some industrial premises may be prepared to accept interruptible supplies in return for a price discount where others will pay a premium for guaranteed supply availability.
- Different Member States and market participants will make differing assessments, and these assessments might vary across Member States. The energy policy, for example, of the UK (which is essentially currently more than self-sufficient in oil and gas) is unlikely to be appropriate, for example, for France (which has comparatively few indigenous energy resources).
- A stable and predictable regulatory and legal framework is essential to underpin short and long term security and diversity of supply. Efficient economic signals between producers and consumers will be promoted, including the value the latter place on particular levels of supply continuity.
- Consumers and suppliers, when operating in this type of market, will be guided by it in making their own decisions on how to resolve the tensions between security of supply and other policy goals.
- Any decision as to specific regulatory intervention, which is in itself liable to fail as the California case shows, should benefit from prior extensive consultation to minimize the risk of unintended consequences. We believe that markets tend to self correct in the most efficient manner, if the right framework conditions are in place.

2. For more than a quarter of a century, the oil and gas industry has provided Europe with an uninterrupted supply of energy to meet growing demand. The short-term volatility of oil prices between 1998 and 2001 does not signal a new energy supply crisis. For the future, it is important to separate short, medium and long-term security issues and address the specific factors influencing each time horizon.

- Over the last 25 years, the Industry has been able to produce higher volumes of non-OPEC reserves at lower cost through the application of innovative technology.

- This has brought benefits to consumers, employees and contractors (some 1.7 million jobs are dependent on the Industry across the EU) and, through taxation, to governments.
- Over this period, the industry's investment in, and application of, new technology has driven down the unit cost of discovery and production of oil and gas.
- In the event of short-term crises, market prices will work efficiently to balance supply and demand requirements. In addition, there are already strategic oil stocks and an emergency oil sharing mechanism covering the membership of the International Energy Agency. EU directives already provide for a 90-day cover for oil consumption, which is sufficient to cover a 10% shortfall for a period of over two years.
- In terms of gas, the 1999 Communication on Security of Gas Supply [COM(2000) 571], based on a study by Wood Mackenzie determined that using existing load balancing tools, seven Member States (covering some 90% of EU gas consumption) could withstand their most serious foreseeable supply disruption for more than 12 months. A further three Member States could use bilateral co-operation to enhance security and the remaining States would be able to attain similar levels of supply security once gaps in physical interconnections were remedied.
- In the medium term, the main economic risk arises from the potential for higher prices adversely impacting the balance of payments, the terms of trade and hence national wealth. However, it should be noted that the potential exposure of the EU (measured on the basis of the proportion of export revenues used to purchase imported energy) is lower than that of any other major industrial country.
- It should also be noted that oil and gas exporting nations have a vested interest in the economic well-being of their customers. Dependence on the benefits of trade is two-way as the oil and gas-exporting countries also depend on this expansion for their economic and social well-being. With increasing competition between oil and gas and an increasing geographical diversity, producer/consumer interdependence seems assured.
- Policies designed simply to reduce import dependence may deny to European consumers the benefits of access to competing, lower cost supplies through international trade.
- For the longer term, as is outlined below, concerns over the availability of resources are overstated and an EU-wide security of supply policy would not seem justified on that basis.
- The Green Paper characterizes environmental issues, particularly relating to climate change, as another aspect of long term supply security. ExxonMobil believes this is drawing the definition of supply security too widely. While it is true that many of the policy measures appropriate for reducing greenhouse gas emissions (for example, a greater emphasis on energy conservation) would enhance supply security (if narrowly defined as a reduced dependence on imported energy as a consequence of lower energy demand), the fact remains

that security of supply considerations potentially conflict with considerations over competitiveness and greenhouse gas emissions.

- However, as is outlined below, there can be synergies between reduced emissions, enhanced security of supply and improved EU competitiveness. In particular, this involves ensuring that already cost-effective energy conservation opportunities are fully exploited.
- ExxonMobil believes climate change is an issue to be taken seriously and doing nothing is not an option. Both the EU and industry agree that the focus should be on those measures which are cost-effective in their own right. Implementation of such measures would yield the additional benefit of potentially enhancing supply security.

Climate Change: What ExxonMobil is Doing

- EM is a leader in the installation of co-generation, which now meets about 70 percent of our refining and chemical plant energy needs. We have co-generation plants operating at 28 ExxonMobil sites worldwide. Another 1000 megawatts of co-generation is under development, and our ultimate potential is even greater.
- With Toyota and General Motors we are pushing the envelope to make fuel cells a viable transportation alternative.
- A new Global Energy Management System (GEMS), initiated in 1999, is expanding across refinery/chemical facilities. Near-term energy savings have been 2-3% with estimated potential savings of up to 15%.
- By planning tanker truck routes more carefully, we've cut internal fuel use. In the UK for example this amounts to a saving of 11 percent or 1.5 million litres of diesel p.a.
- We spend many millions every year to support scientific and economic research on climate change to improve understanding of its many complex dimensions.
- We continuously research and introduce new, cleaner fuels.
- We support programs to plant millions of trees.

3. ExxonMobil agrees in broad terms with the European Commission's analysis that the EU will continue to rely on oil and gas for the majority of its energy needs for at least the next 20 years.

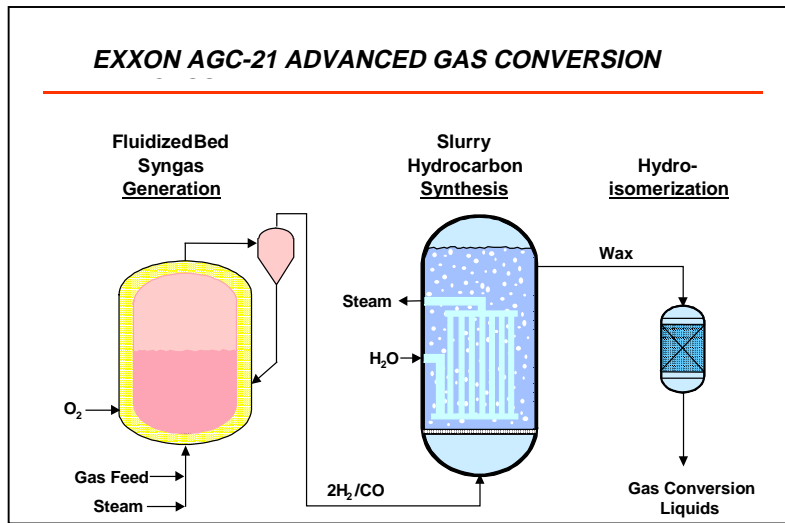
- The Commission's assessment that oil and gas consumption will rise from 63% today to 67% of the EU's energy mix by 2020 appears realistic.
- Even if renewable energy (such as wind, tide and solar power) grow at double digit rates in the future, their contribution to total primary energy supply would remain modest. ExxonMobil currently forecasts that wind and solar power will grow at cumulative growth rates of 14% and 10% respectively over the next two

decades -- but will still by then represent less than 0.5% of total primary energy supply.

- The magnitude of the task confronting the renewables industry should also not be underestimated. For example, the UK has a goal of supplying 10% of its power from renewable sources by 2010. Assuming 100% load factor and an average turbine size of 1.3MW, this would suggest that one new wind turbine needs to come on-line every day between now and 31 December 2010 if the target were to be achieved through wind power alone.
- Though the costs of some technologies (particularly wind power) have fallen over recent years, it should also be noted that most renewable sources of electricity are significantly higher cost than gas-fired combined cycle gas turbines -- with implications for EU competitiveness. Though the UK example quoted above assumes 100% availability, operating experience suggests that at best wind power achieves a load factor of around 30%. To give a similar degree of reliable power availability to more traditional technologies would therefore require the provision of back-up facilities. Typically, the cost of such facilities is not included in the economics of renewable energy projects.

4. There need be no shortage of oil and gas world-wide with the right investment climate and sufficient lead-times. The magnitude of the task, however, should not be underestimated. The Industry forecasts that at least US\$1 trillion of investment in new upstream facilities will be required in the next decade alone.

- Commentators tend to focus on reserve to production ratios as the measure of resource availability. Such measures typically look at proved reserves to today's production. *'Oil and Gas Journal'* on this basis suggest a world-wide R/P ratio for oil of 40 years for oil and 61 years for gas. However, such ratios fail to take account of probable reserves and reserves yet to be discovered. In addition, the development of new technologies will make the exploitation of the heavy oils of South America and the tar sands of Canada economically viable. Beyond that, emerging technologies will render the synthesis of natural gas into high quality liquid hydrocarbons economically viable. On this basis, R/P ratios in excess of 100 years will likely be achieved. Resource availability is simply not the issue.



Since 1981, Exxon has spent in excess of \$300 million on research to improve on processes developed in the 1920's to produce hydrocarbon liquids from coal. Multiple improvements to catalysts and reactor designs have significantly reduced the cost of converting natural gas into liquids -- down to a level that is economic in the right settings. Exxon's proprietary process is known as *Advanced Gas Conversion for the 21st Century (AGC-21)*. Research is continuing with the near-term goal of reducing costs by a further 30%.

Not only would the technology allow the commercialisation of remote gas reserves but also the liquids produced are free of contaminants such as sulphur and heavy metals which are expensive to remove from crude oil. In addition, process heat from gas conversion can produce enough electricity to run the conversion plant with some heat left over. This residual heat could, for example, be used to desalinate seawater. It is estimated that a 100,000 barrel per day gas conversion plant could make more than 20 million gallons per day of fresh, drinkable water.

AGC-21 technology is on the threshold of viability and Exxon is currently negotiating to build a gas-to-liquids plant in the Middle East that will produce 80,000 - 100,000 barrels per day of liquids.

The pace of technological advancement in this field demonstrates the high degree of caution which must be applied to any long-term forecast of energy and oil demand.

- It should also be noted that in the early 1970's, global proved oil reserves were estimated to be 700 billion barrels. Since then, almost 600 billion barrels have

been produced, yet today's estimate of proved oil reserves is close to 1100 billion barrels.

- Though the resource base is not a constraint, the magnitude of the task of meeting future demand should not be underestimated. While depletion rates around the world are difficult to assess, assuming an average depletion rate of 4 to 5% per annum, about half of the total oil and gas required 10 years from now is not yet in production. Assuming growth in demand of around 2-3% per annum, this implies some 80-90 million barrels per day of new production will need to be brought on stream by 2010. It is this analysis which results in the estimate of US\$1 trillion being required. A business and political climate where investments of this magnitude can be made with confidence is essential.
- In terms of natural gas, 70% of global reserves lie within economic transportation distance of the EU. There are increasing options for greater flexibility. Discoveries in the Caribbean, the Caspian, Egypt, Qatar and offshore West Africa have widened the range of potential suppliers. In addition, the cost of moving gas by ship as liquified natural gas (LNG) rather than the more traditional, relatively inflexible, pipeline option has been falling as the industry has invested in innovative technology. All these trends add to the flexibility and diversity of gas markets and ease security of supply concerns.

5. The EU can play a key role in the promotion of security of energy supply by using international diplomacy to encourage appropriate investment conditions and to facilitate a range of new import routes into Europe for diverse, additional sources of oil and gas; ensuring fiscal and regulatory stability to encourage maximum exploitation of indigenous supplies; avoiding some of the new policies proposed in the Green Paper which could be counter-productive to the oil and gas industry's ability to continue its contribution.

- The Green Paper starts from the premise that 'the European Union has very limited scope to influence energy supply conditions' -- particularly in terms of indigenous production. ExxonMobil believes this assumption deserves reconsideration. The experience of the UK Continental Shelf clearly demonstrates that putting in place a stable, predictable taxation and regulatory regime which is responsive to changing business conditions can favourably shift the supply curve. As a mature province, however, the scope for maintaining production at today's record levels may be challenging. The risks lie on the downside. Inappropriate high taxation, regulatory and other policies which increase costs in an already high cost province may result in resources not being exploited which would otherwise have been recovered. This would have adverse implications not only for energy self-sufficiency but also employment, the health of the industries which support oil and gas exploration and production and for government revenues. Mandated depletion policies, the imposition of taxes to fund renewable energy technologies and additional compulsory stock holding are all examples of measures proposed in the Green Paper which would potentially have such adverse consequences.

- The EU is situated in a geographically advantageous location to attract diverse new supplies of oil and gas. The options for diversifying sources of supply are wide-ranging.
- However, ExxonMobil does not underestimate the political challenges implicit in developing and exporting oil and gas from some of the states in question. The EU has an important potential role to play in encouraging such states to adopt outward looking, market oriented economies with business, political and legal systems in place which will facilitate the introduction of the large quantities of foreign direct investment which will be required to develop the oil and gas resources.
- The EU may also have a role in facilitating the evaluation of new transportation links. Market forces, however, should dictate which links are actually built. Where a project is commercially attractive, there will be no need for direct investment by the EU or other institutions such as EBRD
- The idea of bilateral agreements between the EU and exporting countries on 'stable quantities and prices' would lead to government intervention in the sourcing of imports, the direction of investment and the pricing of favoured supply sources. This would run counter to the free market principles which ExxonMobil believes are the essential underpinning of energy markets, would interfere with the EU single market and require the setting up of new institutional arrangements such as price controls and import allocation mechanisms. ExxonMobil is concerned that bi-lateral negotiations between the EU and potential import sources may be counter-productive as such arrangements may delay the time at which fundamental reforms are initiated to create an attractive business investment climate.

6. Introducing new taxes on hydrocarbons to fund the development of renewable fuels or for other reasons, risks jeopardising exploitation of indigenous hydrocarbon reserve, increasing external dependency; in the transport sector, where demand is largely inelastic, increasing transport costs would disproportionately affect lower income groups and consumers in rural areas.

- ExxonMobil has concerns over the imposition of new energy taxes, whether on the upstream or downstream. As outlined above, such taxes would likely render the EU upstream uncompetitive. The resultant higher costs on EU businesses, as a consequence of higher downstream taxes, would also adversely impact their ability to compete in world markets.
- In relation to duties and taxes on road transport fuels, there is a considerable body of evidence to confirm the view that given the relatively low elasticity of demand with respect to price, such taxes are a blunt policy instrument in terms of achieving environmental and other goals. Several studies have also confirmed that the impact of such taxes falls disproportionately on households with lower incomes -- particularly in rural areas, where the fewest alternatives to the car exist.

- Given that taxation appears to be relatively ineffective at influencing behaviour and often results in adverse consequences for particular groups of consumer, it is reasonable to ask what alternatives exist. A considerable body of research exists across the EU to demonstrate that even at today's energy prices, many attractive energy conservation opportunities are not taken up -- particularly in sectors where energy costs are a relatively small proportion of total outgoings. This often reflects the limited availability of capital or management time. More information, better education on the opportunities available, bench-marking and the spreading of best practice are more likely to lead to such energy saving opportunities being taken up. Organisations such as the Rocky Mountain Institute have outlined numerous case studies where the tax system introduces perverse incentives or where markets can be streamlined to induce more desirable outcomes. Examples of the former include a reform of company car taxation in the UK to remove the tax incentive to travel in excess of 29,000 kilometers per year and the fact that energy conservation materials are often subject to sales tax at a higher rate than the fuel they save. An example of the latter might be using building regulations to overcome the fact that the owner of an office block may pay the capital cost of the heating/cooling system while the operating costs are paid by the tenant. Finally, in terms of energy consumption by individuals (whether in the domestic environment or personal transport use), the key is changing consumer behaviour. As with the business sector, education and awareness are significant drivers of changed behaviour but they can be reinforced by measures such as better labelling of appliances and vehicles and encouragement for 'green' travel plans.
- Biofuels and other renewable should be pursued within the framework of a free energy market based on the principles of sound science and cost effectiveness. In the case of biofuels this means that thorough well-to-wheels analyses are needed to understand the overall energy balance. The amount of conventional fuel displaced by biofuels is reduced by the energy input needed for biofuel production. In some cases this can equal or exceed the energy content of the biofuel. Where such technologies are both cost and environmentally effective, they will find their way into the market. Premature or prescriptive advancement of particular fuels or technologies without sound environmental, logistical and economic consideration may lead to regretted actions.
- ExxonMobil believes that artificial barriers to the entry of technologies should be removed. For example, the subsidy of indigenous coal in power stations damages the prospects for renewable sources of electricity generation.
- Though ExxonMobil does not currently see a business case for investing in renewables such as wind and solar power, other oil and gas companies do. This suggest that these technologies are attractive in today's market and it is not therefore obvious that the potentially most promising renewable technologies need the kick-start of subsidies and protected market shares. It is also not clear what the 'most promising' technologies might be. We would anticipate significant technological changes over the next 10-20 years would result in rapid changes in the market's assessment of which technologies are promising.
- ExxonMobil is, however, devoting considerable resource to developing more efficient conventional vehicle engines and fuels, new engine technologies such as

fuel cells and gas-to-liquids technology. Again, the market is a neutral arbiter among technologies, fostering more rapid adjustments than government policies can accomplish.

7. The use of EU intervention stocks to influence prices would be commercially perilous and almost certainly unworkable. No plausible case can be made for extending compulsory stocking rules for oil to natural gas.

- OPEC's intervention over the last two years to first raise the crude oil price from historically low levels in early-1999 and then to halt the escalation of prices in late 2000 involved volumes which dwarfed those held in EU and other IEA Government stocks. For example, the increase in OPEC supply which halted the rapid acceleration in the rise in the price of crude oil in 2000 amounted to some 500 million barrels over a six-month period. EU government stocks are currently estimated by the IEA to be around 350 million barrels.
- If it appeared that an EU intervention was likely to have an impact unacceptable to OPEC, they (OPEC) could easily counter with their own intervention to neutralise the EU's actions. Indeed, such interventions could actually exacerbate market instability.
- The use of strategic stocks would also be commercially perilous, running the risk of speculators betting against intervention targets should they be made public.
- The Green Paper appears to suggest unilateral EU intervention, thus disrupting the existing free market for oil. The experience of the United States during the 1970's would caution against such intervention.
- As outlined above, in the gas market, the 1998 Wood Mackenzie study concluded that EU storage was adequate to meet foreseeable supply disruptions.

8. Short-term distribution and supply problems should not prompt long-term policy on pump prices. Those prices reflect different market structures and conditions among member states, as well as the increasing element of excise duty and VAT in recent years.

- The downstream European oil market is fiercely competitive. Some 25 integrated companies operate within a highly competitive market structure. The market is also highly fragmented with the five largest EU retailers having market shares ranging only from 7-11%. The fact that hypermarkets and other 'non traditional' marketers have been able to build significant market shares (now 15% of the EU retail market) over recent years demonstrates that barriers to new entrants are low.
- Variations in pump prices across the EU largely reflect variations in the levels of duties and taxes imposed by Member State governments. Such taxes and duties make up around 70% of the total price of motor fuel.
- Variations in pre-tax prices largely reflect differing refining, distribution and marketing costs across the EU.
- There is no evidence to support the assertion made in the Green Paper that 'efforts must still be made in the refining and distribution sector in order to create a more open market'. For instance, a recent decision by the Italian Supreme

Administrative Court cleared all retail market participants of any accusation of having engaged in conduct illegal under national antitrust law.

9. The oil refining industry has made great strides in meeting the growing quality and cleaner fuels product specifications introduced through the Auto-Oil programme. These efforts have dramatically reduced emissions from road transportation. Tighter and/or EU specific refined oil specifications which are not justified on the grounds of sound science and rational cost-benefit analysis would hinder imported products from offsetting short-term supply problems and would deliver little additional environmental benefit.

- It is anticipated that with policies and measures already in place, non-CO2 emissions from road transport will in 2010 be some 70-80% lower than in 1990. Further changes in conventional fuels specifications would give only a limited reduction in emissions and a barely measurable improvement in air quality – but would be costly to implement. Calls for tighter fuel specifications may be inevitable, but likewise the costs to the public would seem to be increasingly high relative to benefits. Sound public policy requires appropriate weighing of limited resources to pursue all public policy objectives most effectively.
- In addition, such over-prescriptive EU product specifications could limit the availability of imported fuel suitable to offset short-term supply problems. Imposition of such specifications would therefore directly work against the goal of improved supply security.
- They would also have an indirect impact by increasing the energy required to produce the products in refineries, hence increasing the requirement for crude oil imports (and increasing emissions of greenhouse gases).

10. ExxonMobil cannot share the conclusion that the rapid growth in the use of gas ‘could give rise to fresh structural weaknesses in the EU’. We also disagree with the assertion that a combination of oil price indexation, long-term ‘take or pay’ contracts and limited pipeline access ‘makes the gas market into a regional market characterised by reduced competition between exporters which diminishes supply security’.

- The Green Paper correctly identifies that gas is increasingly becoming the fuel of choice for power generation and space heating applications. Drawing on the Shared Analysis Project, the Green Paper extrapolates existing trends to suggest that by 2020-2030 almost half of the EU’s electricity will be produced by natural gas and that power generation will represent around 45% of the EU’s total gas consumption. ExxonMobil agrees with this analysis, which is shared by many other energy commentators.
- Such a development does not, however, signal a fresh structural weakness. As is outlined above, gas reserves are much less geographically concentrated than oil reserves and some 70% of the world’s gas reserves lie within economic transportation distance of the EU. The ‘traditional’ suppliers of the EU’s gas

imports (the Russian Federation, Algeria and Norway) are being joined by a multiplicity of new suppliers such as Trinidad, Egypt, Nigeria, and Qatar. Other new players, such as Iran and Turkmenistan, seem likely to be competing for access to the European market in the future. Such diversity of supply enhances supply security rather than diminishes it.

- The gas supply infrastructure is growing in breadth and depth of coverage to create a supply and distribution network of enormous flexibility. Technological advances in pipeline technology continue to reduce the costs of building transmission systems both onshore and offshore and allow ever more remote gas reserves to be economically exploited. The development of new LNG liquifaction, shipping and regasification facilities in particular offer enhanced supply flexibility over pipeline systems.
- Diversification of supply should be left to the market, and the role of government should be to provide a stable and predictable market framework both inside and outside the EU. It is essential for many large-scale investments that they be underpinned by stable commercial frameworks. Whilst not the only form of commercial arrangement currently used in the gas market, we do anticipate that long-term contracts will be necessary in the future to maintain both security of supply and to secure financing. The key consideration for an effective market is that the customer has a range of supply options open to him, be they long-term, short-term or 'spot' purchases. By entering into a mix of commercial arrangements the buyer is able to set their own level of supply security.
- In markets such as Europe where no liquid third-party published gas index is available, oil price linkage continues to be the most appropriate and fair form of price indexation. In those markets (such as the US) where transparent, liquid exchanges exist for the trade of short-term gas, then these gas exchange prices are the preferred form of indexation for trade in short-term gas. These gas exchange prices tend to fluctuate with other competing energy sources.

11. Gas liberalisation has the potential to underpin short and long term security and diversity of supply by promoting efficient economic signals between gas consumers and suppliers, including the value placed on particular levels of supply continuity. A satisfactory conclusion is not, however, a foregone conclusion.

- Liberalisation is more likely to enhance supply security where it liberates commercial forces and keeps regulation to a minimum; where it establishes a level playing field for competition; and makes a clear and fair assignment of responsibilities and costs for delivering national security of supply requirements/obligations between the different market participants.
- There are significant contrasts between regulated and competitive markets, as outlined below. In all cases, the competitive market model is likely to deliver a more satisfactory outcome.

<u>Market feature</u>	<u>Competitive</u>	<u>Regulated</u>
Infrastructure		
- Ownership	Unrestricted	Restricted
- Tariffs	Negotiated	Cost Based
- Investment	Market Drive	Required
- Business structure	Unrestricted	Separated
Imports/exports	Unrestricted	Constrained
Production	Unrestricted	Limited
Eligible customers	All	Limited
Commodity prices	Market Value	Capped
Contract structure	Negotiated	Restricted

- There needs to be free market entry to build, own and operate pipelines sustained by adequate investment returns and incentives which meet both customer and supplier requirements for capacity over the longer term.
- There also needs to be the opportunity to book for contract for long- as well as short-term capacity rights in EU gas transportation networks – at prices set by the free market. This would provide assurance to producers in developing new fields and signals to network operators about the need for capacity investment. For both, this could ensure the ability to attract project financing.

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