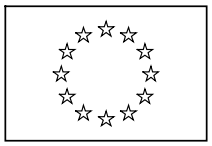

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COMMUNICATION FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT

Final report on the the Green Paper "Towards a European strategy for the security of energy supply"

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Final report on the the Green Paper "Towards a European strategy for the security of energy supply"

1. The Green Paper on the security of energy supply, adopted by the Commission more than a year ago, opened up a debate on energy policy unprecedented in 30 years.[1] In most of the Member States this debate revived discussion on national options in the energy field. It was used for reference in some third countries, like the United States (during the preparation of the Bush energy plan), Japan and Russia. The Barcelona European Council of March 2002 notes in its conclusions "*the intention of the Commission to present the report on the security of supplies based on the results of the debate generated by the Commission's Green Paper on Security of Energy Supplies, in view of its next meeting in Seville*".

2. Looking ahead to the next twenty to thirty years, the Green Paper drew attention to the structural weaknesses and geopolitical, social and environmental shortcomings of the EU's energy supply, notably as regards European commitments in the Kyoto Protocol. Enlargement will do nothing to alter the situation. Even before the events of 11 September the Green Paper also underlined the need to include plant safety questions in the security of supply concept.

3. The European economy, steadily demanding more and more energy, is essentially based on fossil fuels (oil, coal and natural gas), which make up four-fifths of its total energy consumption and almost two-thirds of which it imports. Natural gas from Russia alone represents nearly 20% of our consumption. The EU's own energy supply covers barely half of its needs. If nothing is done by 2030 the share of fossil fuels is going to increase. Energy imports will be much higher in 30 years' time, amounting to 70% of total needs. 90% of oil is likely to be imported.

[1] The Green Paper and the web page on the debate are accessible on the Internet at the following address: http://europa.eu.int/comm/energy_transport/en/lpi_lv_en1.html. Since the start of 2002 there have been an average 30 000 visitors a month to the different parts of this website.

Import dependence and rising import ratios may lead to concern about the risk of interruption to or difficulties in supply. However it would be simplistic and wrong to conceive security of supply as merely a question of reducing import dependency and boosting domestic production. Security of supply calls for a wide range of policy initiatives aimed at, inter alia, diversification of sources and technologies and without ignoring the geopolitical context and its implications.

4. The Green Paper offers a clear strategy based on demand management. It has the merit of pointing out that the EU has little room for manoeuvre with regard to energy supply – notably due to its low, or in certain cases less competitive (e.g. coal), energy resources. Therefore it is appropriate for the Union to concentrate on guiding and steering demand, unlike the United States which, in the energy plan it announced in May 2001, seeks to meet demand by constantly boosting supply.

5. The Green Paper put 13 questions as a framework for the general debate. These have triggered a number of responses and reactions both from Member States - including parliamentary and regional assemblies - and from companies, consumer associations or NGOs. The Council has put together some provisional conclusions and the European Parliament, the Economic and Social Committee and the Committee of the Regions have delivered their opinions[2].

From the many answers received it is clear that the discussions on the Green Paper responded to a need, and their content shows approval for the line taken by the Green Paper and most of the proposals. It has even been possible to enter into a dispassionate debate on the place and role of nuclear power, which has helped to shed some light on the national debates.

6. The conclusion is that there is virtually unanimous agreement on the strategic axis of demand management: energy consumption must be guided and steered. The conclusions of the Barcelona European Council, stressing in particular the need for better energy efficiency by 2010 and rapid adoption of energy taxation proposals, clearly give political backing to this priority. Without waiting for the debate to end, the Commission made some very well-received proposals along these lines, involving actual legislation and not just encouraging words or exchange of good practice, some of which have already been adopted by the Council and the European Parliament.

One of these proposals in particular was the Directive on electricity production from renewable sources, adopted in 2001, under which Member States undertake to comply with national targets for future consumption of electricity produced from renewable energy sources, to set up a system of guarantees of origin of green electricity, and to introduce accompanying measures to facilitate the market penetration of green electricity on the internal market. Within this regulatory framework, 22% of the electricity consumed in the European Union by 2010 should have been produced from renewable energy sources.

Another was the proposal for a Directive on energy saving in buildings, which provides a precise legislative framework for limiting energy consumption in this sector, representing 40% of the energy consumed in the European Union. Given the right conditions for economising and improving efficiency, it should be possible to save about 22% of this energy consumption. The Directive proposed will help to achieve this objective by the establishment of a common methodology for calculating and regularly updating minimum energy performance standards for new and existing buildings, to be adopted by the Member States in accordance with the subsidiarity principle, and certification schemes. In addition to these arrangements there will be improved inspection of heating and cooling installations.

Finally, the Commission has also made regulatory and fiscal proposals to promote biofuels, providing that these will make up a minimum of initially 2% of all fuels sold in 2005, rising to 5.75% in 2010. In the longer term the great progress being made by substitute fuels, including biofuels, might make it technically possible to replace 20% of the petrol and diesel used for road transport with these products by 2020.

Implementing these proposals will bring a saving of approximately 10% in conventional energy use in the coming years and make it possible to limit the rising trend in energy demand in the Union due to increased consumption by households and the tertiary sector (estimated at 2-4% per year by 2010 in the Member States and 3-6% per year in the candidate countries).

Certainly in the transport field - representing 32% of energy consumption and 28% of total CO_2 emissions - the effort to reduce demand is key. Measures recommended by the Transport Policy White Paper for judicious management of mobility, modal rebalancing and true complementarity between transport modes will actively contribute to achieving this objective, as called for by the Gothenburg European Council. Revitalising the railways, investing in the

[2] A summary of replies to the questions in the Green Paper is annexed.

trans-European networks and harmonising fuel taxes for commercial users are all instruments towards the same goal, as is the impending proposal for a framework directive on charging for infrastructure use - the importance of which was re-emphasised by the Barcelona European Council in its conclusions - in order that by 2004 the prices of the different transport modes better reflect their cost to society.

7. A wide debate also developed around the Green Paper proposal for a new approach to oil stocks. The Green Paper proposal for strategic oil reserves would aim to increase greater reliance on solidarity between the Member States in time of crisis. It should be remembered that in 2004 the enlarged Union will be consuming more than 20% of world oil production. Geopolitical uncertainties and oil price volatility raise the issue of improving the organisation of strategic oil stocks and co-ordinating their use. The Commission is analysing whether proposals on this subject are necessary, taking account of various positions. Similartly a discussion took place as regards the need for strategic gas stocks. The Commission is assessing the situation taking into account amongst others whether complementary measures have to be taken for the stability and successful completion of the internal energy market..

Against this background, increased dialogue between the European Union and the producer countries is imperative for improving market transparency and concluding satisfactory supply agreements. This dialogue also contributes to improved conditions of stability in those countries. Support for this idea has been expressed in several contributions to the Green Paper debate. Such consultation has to continue whatever the international economic situation, whether prices are rising or falling. and must also include discussion on infrastructure safety aspects

8. The debate on the Green Paper has shown the need to develop a Europe-wide security of supply concept which alone will enable Europe to control its energy future. As recently emerged from the Paris, Brussels and very recently Moscow summits, the dialogue the EU is entering into with Russia aims to create a new energy partnership. Projects have been launched on network security, protection of investments or identification of major projects of common interest. Hopefully, this dialogue will make it possible to determine the best future use of long-term supply agreements and production sharing agreements, on which the representatives of industry expressed some major concerns in the Green Paper debate.

9. Efforts to promote new and renewable energy sources, representing only 6% of the EU's energy balance, have been too feeble so far: on present trends they will account for only 9% of total European consumption by 2030[3]. The Green Paper's proposal for the development of these sources to be financed by conventional energy sources prompted a mitigated response.

10. The nuclear factor remains an inseparable part of the debate. The Green Paper made it possible to hold a frank and open exchange of views on nuclear energy, which arouses diverging views within the Union. The Green paper noted that 'concerns about global warming have changed the perception of energy supply constraints' and that this was 'particularly pertinent for nuclear energy' as its use for electricity generation together with renewable energies and energy efficiency makes it possible to avoid emissions of greenhouse gases that result from burning fossil fuels. The saving in greenhouse gas emissions it represents amounts to more than 300 million tonnes of CO_2 (equivalent to half of the vehicles on EU roads). This figure is far from negligible and no-one disputes the fact, on the understanding that it is seen in the context of a large range of other measures aimed at reducing emissions. Under its European Climate Change Programme (ECCP), the Commission has announced a set of measures that can potentially cut emission by some 122 to 178 million tonnes of CO2 equivalent, and is further identifying emission reduction options.

The phase-out or moratoria which certain Member States have adopted for their nuclear industry will not affect the capacity of the Community to achieve its Kyoto commitments, since those decisions, on current planning , will only have an effect after 2012. In the medium and long term and with the current state of the art, it must be considered that the total abandonment of nuclear power would mean that 35% of electricity production would have to come from renewable and conventional energy sources, to which must be added considerable efforts in energy efficiency and the fact that energy demand is forecast to rise.

Against this background, the range of choices available to the Member States has to be as wide as possible, without prejudice to their sovereignty in these matters. The nuclear option remains open to those EU Member States who would like it. This is the case in Japan, the United States, Canada and elsewhere.

[3] Source: PRIMES modelling

But one major lesson to be drawn from the Green Paper debate is that the future of this industry depends on finding a clear and unequivocal answer to the question of the processing and transportation of radioactive waste.[4] Under the sixth Research Framework Programme for 2000-2006 the European Union is committed to supporting nuclear research and especially to improving nuclear safety and waste management[5]. It will be remembered, also, that nuclear safety has been treated for the first time as a specific subject in enlargement negotiations. In particular, the Union has insisted that candidate countries that operate nuclear reactors of certain vintage types that cannot be upgraded at a reasonable cost commit themselves to their early closure according to a fixed timetable. The Commission considers, as it underlined at the Gent European Council, that these commitments should be included a fortiori in the adhesion Treaty. Since 1999, the Commission has been mobilising considerable Community funds necessary for the decommissioning efforts in the three countries affected.

The question of nuclear safety in an enlarged Union remains a major concern for most of the participants in the debate on the Green Paper. It is not surprising, therefore, that the Laeken European Council in December 2001 demanded a high level of nuclear safety in the enlarged Union, including regular reporting.

For the next stage, the Commission will examine a proposal opening the way to a truly Community approach to nuclear safety in the form of common standards and practices and European control mechanisms and peer review. The Union could also contribute to rapid progress towards lasting solutions to the management of radioactive waste by fixing precise deadlines at Community level for the introduction of more effective waste storage systems at national level.

11. Concrete proposals for harmonising taxation as well as questions of charging in transport are met with some reservation. However, the lack of tax harmonisation is causing some distortion of competition between Member States. Furthermore, sustainable development calls for charging and taxation measures which will take negative external factors into account. The Barcelona European Council reinvigorated these aspects by asking for the energy taxation

[4] A Eurobarometer survey carried out on behalf of the European Commission in October-November 2001 shows that two-thirds of respondents thought nuclear must remain an option for electricity production if a reasonably safe solution can be found for managing nuclear waste.

Directive to be adopted by the end of 2002. Similarly, the European emission permit arrangements which the Commission has proposed should be put quickly into place. .

The internal energy market contributes to establishing healthy competition, guaranteeing the safety of energy supplies, reinforcing the competitiveness of the European economy and requires a better use of existing cross-border capacities. A power blackout like the one in California recently is not possible in the internal market, which is reinforced by rules governing investment, competition and access to resources and transport networks which protect against this type of breakdown. To refute a common misconception, the internal energy market does not only seek systematically to reduce prices to consumers, but to set a fair price in compliance with public service obligations. An evaluation of the openness of markets was carried out at the request of the Stockholm European Council (benchmarking). This report confirms one of the main themes of the Green Paper, the need for more openness in the electricity and gas market coupled with new needs for regulation and evaluation.

Trade within the European Union - in the case of electricity still only 8% of production - is suffering from a lack of interconnection infrastructures. As the Barcelona European Council brought out, improving the use of existing networks and completing missing links will help to improve long-term security of supply. In this regard, as stated in the Green Paper the Commission has proposed a European plan for the development of gas and electricity infrastructures and priority co-financing, within the trans-European networks budget, of a dozen interconnection projects declared to be of European interest. Generally speaking, the Barcelona European Council has taken a decisive step towards completion of the internal energy market, especially in deciding to guarantee industrial and commercial consumers the freedom to choose their electricity and gas suppliers from 2004 onwards.

12. During the Green Paper debate, some, notably the European Parliament, wondered about the limited legal and institutional means at the EU's disposal to implement an energy policy adapted to the potential weaknesses in its supply.

It remains the case that the Union has achieved significant progress in the energy area by using several instruments : the implementation of the internal energy market relies on the

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[5] Nuclear research therefore benefits from an 8% increase in its research budget compared with the fifth framework programme, and out of a total budget of €17.5 billion, €1.23 billion has been allocated to the nuclear sector.

chapter dealing with the approximation of laws; the promotion of renewable energy on the basis of articles relating to environmental protection; or the development of gas and electricity networks in the context of the chapter on trans-European networks.

One message of the debate is to reflect on a global concept of security of supply. Such a policy calls for a long-term anticipation effort, market surveillance mechanisms, policy tools and reinforced relations with third countries. The Green Paper debate has revealed that at the very time when the European Union has the world's most integrated internal energy market, it is necessary to reinforce the co-ordination of the measures ensuring security of supply.

Annexes :

(1) General response to the Green Paper

(2) Replies to the 13 questions

ANNEX I - The Green Paper debate

The Green Paper debate (30 Nov 2000 – 15 February 2002) took place in the many contributions received, in face-to-face meetings, in the distribution of information, in conferences, workshops, seminars, in special parliamentary hearings, in consultations within and between industries and associations. The Green Paper debate has also fed into policy documents produced by several Member States and non-EU countries. This Annex quantifies some of these activities.

Dissemination and discussions:

- around ***1000 visits per day*** to the Green Paper website (Jan 2002), of which around 340 "downloads";
- over ***20 000 copies*** of the Green Paper and 100 000 leaflets disseminated;
- over ***300 conferences***, workshops etc on the Green Paper attended by Commissioners and officials, of which 28 in candidate countries;
- ***national*** Green Paper information programmes, with national consultations, national parliamentary hearings or other events across Member States;
- debate in ***European Community bodies***: Council of Ministers (initial conclusions), European Parliament, Economic and Social Committee, Committee of the Regions, European Coal and Steel Community Consultative Committee, EURATOM Scientific and Technical Committee, EURATOM Supply Agency Advisory Committee, Energy Consultative Committee

Formal written contributions:

- **236**[6] received by the Commission during the consultation period;
- wide range of contributors, as follows:

EU and Member States governments, EFTA, energy policy advisory b parliaments, representatives	33
Public energy agencies, local government	17
Energy industries, their trade associations and associated technical bodies	76
Energy consumer industries, their trade associations and associated technical b	30
NGOs[7] and associations for energy promotion or conservation	19
Unions, professional and scientific bodies, universities, study groups	41

[6] Some 7000 individuals sent submissions (identical) as part of a Greenpeace cyberaction
[7] See footnote 1

Individuals	20
Total	**236**

The debate in Member States and EU institutions:

All Member States made written contributions. They generally welcomed the debate, including its long-term perspective and integrated approach. Most Member States organised some form of national public consultation, stakeholder workshop, report by advisory body or parliamentary debate, supporting a new look at their options in the energy field. For example, the EU Select committee in the UK House of Lords undertook an inquiry focused on the Green Paper, with hearings, over several weeks. The EU Committee in the Danish Folketing made an contribution. Parliamentary hearings were held in Italy, Sweden and Spain and the Green Paper featured in discussions in parliament in most Member States, often with Commission participation. The Vice-President was invited to participate in several of these.

Public debate and stakeholder involvement was widely encouraged. In Italy, for example, the Ministry organised a series of nine national discussion days on Green Paper topics, with broad stakeholder participation. In the Netherlands, the Ministry organised discussions among experts and stakeholders before preparing their contribution. In Germany, in additional to the federal level, several Länder organised discussions. In-depth contributions were made by technical bodies advising the government on energy matters, alongside the government contribution, in several Member States, such as Spain and Ireland. These examples suggest the multiplier effect of the Green Paper debate in the Member States. Against this background, contributions from Member States were generally thorough and detailed.

The contributions indicate areas in which there is clear consensus on the relevance to security of supply and the importance of finding the most effective way forward. This applies, for example, to the strengthening of relations between the EU and producer countries, and to diversification, renewables and energy saving and efficiency. In other areas, the contributions suggest differences of views on the relevance of the issue and the need and scope for a common approach. Nevertheless, all Member States supported the focusing of attention on the security of supply issue and Green Paper debate.

Council, in its initial conclusions in May 2001, welcomed the Green Paper and the debate and underlined the need for a long-term strategy at national and EU level for improved security of energy supply in the EU. Council agreed that both demand growth and supply dependence management should be addressed, as should the impact on security of supply of existing or planned policies and measures, notably the internal energy market. In December 2001, Council continued its examination, focusing on physical security of infrastructures (after September 11), stocks, and the strengthening of dialogue between the EU and producer countries.

Security of energy supply was one of the areas included in a follow-up study to the Nice European Council, which requested an examination of the arrangements to ensure the security of supply of certain strategically important products in the EU. The Barcelona European Council, in its focus both on economic and on energy matters, noted security of energy supply as an issue.

The European Parliament adopted a very thorough Resolution, after extensive work led by Mr Chichester (PPE, UK) as rapporteur. In the debates in committee and at Plenary, the range of

contributions, issues and stances was remarkable. Consensus on some issues was accompanied by divergences of views on others. The Committee on Industry, External Trade, Research and Energy was the lead committee, the issue was also taken up and examined by the Committee on Environment, Public Health and Consumer Policy and the Committee on Economic and Monetary Affairs. A public hearing and a hearing with the Vice President were held.

In its wide-ranging and very detailed Resolution[8], Parliament said that security of supply is a concern and should be given high priority by the Commission, Council and Member States. It welcomed the Green Paper as a basis for discussion. Parliament saw energy efficiency and savings as first priority. It called for the promotion of an "intelligent" approach to energy use, making Europe the most energy-efficient economy in the world. Members argued for diversity, notably in infrastructure, renewables and indigenous sources. They called for a Treaty for renewables energies. They saw the range of scenarios included in the Green Paper as too limited, especially as regards the demand side, renewables and cogeneration, and called for more comprehensive scenarios to be developed. The environmental aspect was prominent in the Parliament's Resolution. For example, the Parliament supported a European initiative for the development of an emission-free coal-fired power station. Views differed on the role of nuclear energy and how its use should be managed. Stronger relations with producer and transit countries should be pursued. Cooperation with developing countries should include a focus on sustainable energy. The Parliament called for an enhanced role for the Commission in the coordination of national energy policies in the interests of the EU as a whole, as well as in international diplomacy with producer and transit countries and international organisations, including WTO. While recognising the importance of the principle of subsidiarity, and specifying areas where national and local administrations should act, they called on Member States to include in the EC Treaty a Chapter on energy policy.

The Economic and Social Committee, in its Opinion[9], welcomed the Green Paper, notably its long-term perspective. They emphasised the significance of energy to the economy, growth and competitiveness. They recommended linking energy policy more closely to other EU policy areas, notably climate, research and agriculture. They emphasised the need for diversification and a European framework for energy supply which recognises Member States' competences in the energy field. They recommended maintaining the share of nuclear energy in energy supply at at least the present level, in order to achieve greenhouse gas objectives.

The Committee of the Regions[10] welcomed the attention paid to increasing the contribution of renewables in building sector. It recommended that the contribution of nuclear power be evaluated on very wide and different basis from other fuels. It favoured giving priority to demand management and expressed concern at the impact of energy market liberalisation on demand management. The Committee proposed energy efficiency targets for Member States accompanied by action plans. They considered fiscal policy to be a necessary tool of demand management and call for the inclusion of an energy chapter in the Treaty.

Interim report by Commission: issued 3 December 2001, ref: SEC(2001)1962

Full texts of contributions are available on the Green Paper website: *http://europa.eu.int/comm/energy_transport/en/lpi_lv_en1.html*

[8] PE:A5-0363/01
[9] ESC Opinion
[10] CoR Opinion

ANNEX II – Summaries of the contributions by question

Question 1 : ***Can the European Union accept an increase in its dependence on external energy sources without compromising its security of supply and European competitiveness? For which sources of energy would it be appropriate, if this were the case, to foresee a framework policy for imports? In this context, is it appropriate to favour an economic approach: energy cost; or geopolitical approach: risk of disruption?***

Ensuring ***diversification*** by energy source, supply countries and supply routes is widely seen as the key response to growing import dependence.

Contributors see a key role for ***policy makers***, notably in the creation of a favourable ***investment climate***, both within and outside the EU. Europe should work to improve the investment climate in third countries by diplomatic means, co-operation agreements and by developing good, stable relations. One goal should be the reduction in the power of cartels. Diversification should also be achieved via the ***market***. Some contributors argue that open and competitive markets, free energy prices and market-based instruments are the best way to ensure the most appropriate energy mix and diversification. They look to the completion of the internal energy market, the GATS negotiations and the Energy Charter Treaty.

Some point to the advantages offered by ***solid fuels*** and ***nuclear*** in the energy supply of the EU, providing reliability with stable prices, abundance of reserves and large diversity of suppliers. ***North Sea reserves*** of oil and gas should not be neglected in a security of supply context, according to some. The right regulatory framework is the key, encouraging rather than discouraging the necessary investments. Some argue for support of R&D efforts on unconventional reserves. A minority of contributors argue that the maintenance of a « socle » of ***domestic coal production*** is important for longer-term security of supply. However, others underline the high costs involved and environmental problems. Monitoring the European ***fuel mix*** including *dual firing capacity* and *risk management measures* are proposed by several contributors.

Comments on a ***framework policy for imports*** are often doubtful, noting risks of distortion of competition, increased costs and prices, artificial discrimination against energy sources and restriction of consumption, all tending to reduce, not enhance, security of supply. Among those who support a pro-active policy at EU level, many note that geopolitical, economic, environmental and sustainability aspects are interlinked and some argue for a more radical approach at EU level to the issue of security of supply.

Some regard ***import dependence*** as a normal consequence of the international division of labour and globalisation, and consider that dependence risks are reduced by mutual trade and investment and by good relations between producers and consumers. They argue that increased interdependence can be beneficial and that efforts towards a goal of energy self sufficiency would harm EU competitiveness and economic welfare. A less optimistic view is taken by contributors who warn of danger to security of supply in oil and gas cartel power, beyond EU control, and of sharply rising global population, bound to increase competition for limited resources.

Some contributors argue for a fundamental ***restructuring of the energy sector***, notably in the development of renewables, which, together with feasible energy efficiency gains, offer the prospect of reduced import dependence and of meeting environmental goals. This strategy is advocated by only a minority of contributors but many contributors put forward a wide

variety of actions, on energy ***demand*** as much as energy ***supply***, as relevant responses to growing import dependence.

Question 2 : ***Does not Europe's increasingly integrated internal market, where decisions taken in one country have an impact on the others, call for a consistent and co-ordinated policy at Community level? What should such a policy consist of and where should competition rules fit in***?

Strong support is evident in the contributors for the effective implementation of the Commission's current ***internal energy market proposals***. Many consider that the internal energy market, if it functions in an integrated and competitive way, should efficiently deliver *secure supply*, via a larger market with a variety of suppliers, more flexibility on the supply and demand sides, more effective price signals, competition-inspired efficiency gains and innovation, etc. However, this represents an ideal situation. Some note that security of electricity supply in particular is an ongoing concern. Comments on what still needs to be done include further development of ***cooperation*** among regulators, among TSOs, more adequate ***infrastructure*** across an enlarged Europe, and attention to ***investment*** trends.

Many comments relate to the ***EU energy system*** as a whole (diversity of sources, value of local sources, complementary use of different technologies etc) The EEA EFTA States say that their part in the internal energy market is not completely recognised in the Green Paper. The idea of a ***level playing field*** is mentioned frequently, mainly understood as *access* of new energy service providers to the market and internalisation of *external costs*. The ***EU role*** is emphasised here, especially competition and state aid rules, taxation, the Renewables Directive, and EU frameworks for market-based environmental instruments, notably emissions trading, green or renewables certificates etc.

Some contributors, notably the European Parliament, call for an ***energy chapter*** in the Treaty. Others consider existing Community competences sufficient. The Green Paper idea that the internal energy market, along with enlargement and Kyoto, are creating a ***new context*** for energy policy decisions in Europe, is widely accepted.

Some contributors believe that the market, driven by needs for short term profits, may not accommodate investments for ***shared*** *or* ***longer-term*** *needs* (eg. reserve and new capacities) and conclude that some re-regulation will be necessary. Some Member States regard themselves as responsible for safeguarding a minimum generation capacity. Some contributors hold that liberalisation and market forces may conflict with protection of the ***environment***, as well as ***social justice*** and security of supply. Some comment that ***social aspects***, including employment effects, deserve more consideration.. A number raise the idea of ***public service objectives*** for *quality of service*, preventing exclusion. Some link them to investments (reserve capacities, diversity etc) and the question of who should be the supplier of last resort.

Some contributors advocate further development of ***commonly-agreed targets***, for energy efficiency, renewables etc. Many, referring to the ***subsidiarity*** principle, underline the need for flexibility to accommodate national differences as regards climate, traditions etc. Member States must retain enough freedom to develop appropriate instruments. Several contributors note that choices about energy mixes should be left to each Member State

The EU role in ***external relations***, widely supported by contributors as beneficial in the global market and geopolitical relations, reflects also internal energy market developments and enlargement. Several contributors are concerned about the issue of ***long-term gas contracts***, arguing that they are essential for financing the investments needed to secure supply from third countries.

Question 3 : ***Are tax and state aid policies in the energy sector an obstacle to competitiveness in the European Union or not? Given the failure of attempts to harmonise indirect taxation, should not the whole issue of energy taxation be re-examined taking account of energy and environmental objectives***?

Tax harmonisation is broadly supported for different reasons. For some, harmonisation of energy taxation would be helpful in the *internal market*, but this should not be at a cost of increasing taxation. Large energy consumers say that any unilateral EU increase in energy taxation would further disadvantage European consumers, competing in global markets. Conventional energy producers argue that additional energy taxation would threaten the exploitation of indigenous reserves of oil and gas, by reducing the attractiveness of investment in these sectors in the EU. Others see harmonisation as an opportunity for *promoting energy taxes* to achieve the higher energy prices which they believe are necessary in order to encourage efficiency and new sources. For them, energy prices should not drop, this should not be the main focus of the internal energy market.

The idea of a ***reexamination of the issue of energy taxation***, taking account of energy and environmental matters, is taken up by many contributors. Some say that energy taxation should be tackled as part of the *broader debate on fiscality* at EU level. The environmental angle dominates in most contributions. Among conventional energy sectors, a *differentiated approach* to energy taxation, reflecting *environmental impacts* of different sources, is advocated by some contributors in the gas, LPG and nuclear sectors. The latter are among those favouring a *carbon tax or a Europe-wide fiscal exemption for zero-carbon emission fuels*. Renewables and efficiency supporters often favour an approach to energy taxation based on a goal of *internalising external costs*. These are normally understood to be environmental, but some contributors add more general socio-economic costs. Some contributors accept the *principle* of an approach based on internalising external costs but regard the methodologies as not yet sufficiently developed for reliable practical application.

Some see ***state aids*** to conventional energies as undermining the potential competitiveness of new and renewable energies. Many call for an end to fossil fuels subsidies. However, other contributors argue for state aids for coal production, on the basis of security of supply as well as social justifications. Some argue that support for a « socle » of domestic energy production, essentially solid fuels and renewables, is important for security of supply purposes. A broad range of contributors from all sectors support state aids to renewables for a certain time, to help them to become competitive. Some consider that there is continued justification for such aid, as long as external costs are not internalised. (See also Q.7)

As noted in the Q.2 summary, a number of contributors see tax and state aid policies, and more generally the internalisation of external costs, as part of the establishment of a ***level playing field*** in the internal energy market, essential for achieving a diverse, innovative energy market compatible with environmental goals.

Several contributors point to ***means other than energy taxation and state aids***, for levelling the playing field and achieving energy and environmental goals. The *effectiveness* of energy taxation in altering consumer behaviour is doubted by some, pointing to poor price elasticity of demand, notably in transport. Industry people put forward *technological* developments and *voluntary* commitments as effective ways forward. Some point out that the biggest investors in renewable energies are the conventional energy sectors. Broad support for *market-compatible approaches* (eg green certificates, emissions trading) is evident among contributors. Some argue for *holistic approaches* to promotion of new sources and energy savings, via agricultural policy, land planning, public transport etc. (See also Q.10)

Question 4. ***In the framework of an ongoing dialogue with producer countries, what should supply and investment promotion agreements contain? Given the importance of a partnership with Russia in particular, how can stable quantities, prices and investments be guaranteed***?

Most contributors support the EU's ***producer-consumer dialogue*** and think that it should be strengthened, with all regions and countries, at all levels – bilateral, regional and international. The scope of the dialogue should be extended, encompassing economic development and investment issues. Some argue that a more adequate legal framework is necessary and should be established. For some, this should include provision for supply and investment promotion agreements, to be followed up by identification of joint cooperation projects. Common understanding should improve, encouraging oil prices more compatible with global economic development.

Contributors consider that the EU's normal ***bilateral political relations*** with the relevant countries should be used as an opportunity to proactively raise energy issues, notably security of supply. Being more proactive in raising the crucial issues would benefit the EU's policy for securing supplies in affordable and not too volatile prices, according to some contributors.

Reflecting the importance of diversification, most contributors consider that political dialogues should be pursued with ***all the relevant partners***. ***Russia*** is a key partner. EU common foreign policy could promote agreement among the countries bordering the Caspian Sea, the Mediterranean, also Latin America.

Contributors see the establishment of political confidence as going hand-in-hand with the creation of the necessary conditions for ***promoting investments***. Geopolitical and economic aspects of relations are interlinked. The promotion of investments in producer and transit countries is particularly important for EU security of energy supply. Major investments are involved, which, several contributors commented, offer opportunities for developing mutually-beneficial ***interdependence***. For some contributors, growing import dependence is not per se a major concern, as EU firms may be present in this growing energy production and trade. Some contributors argue that the promotion of foreign direct investment in producing regions is the corner stone of an approach to increasing energy supply security.

Improvements in investment conditions in general, including political, legal, fiscal and financial, will help energy investments. Several contributors mention the ***WTO*** as the most suitable forum for negotiating commercial energy issues. More specific to energy, many contributors note the importance of ***European Energy Charter*** developments, including provisions on investments, trade, transit, the environment and energy efficiency. Some concern is expressed about its non-ratification by Russia. Several contributors comment on the "stable quantities and prices" in the text of the question, and understand it as referring to the calming of speculative movements. Many note that the development of the energy sector in Russia is essential and that a suitable legal and fiscal framework in Russia is necessary to facilitate Western investments and joint ventures. Contributors to the debate underline that long term agreements including production sharing agreements will play a crucial role in achieving the investments needed for reliable, secure energy flows from Russia to Europe.

Some contributors underlined the importance of ***transfer of technology*** related to the increase in direct investments in energy-producing countries. A number referred also to the Joint Implementation and Clean Development Mechanisms in the Kyoto Protocol. It is important that as a consequence of foreign investments, the necessary links are established between the social actors, such as research institutes, universities, R&D departments etc. In this way the

positive interdependence becomes more stable and time lasting, contributing to the security of supply.

Question 5: ***Should more reserves be stockpiled - as already done for oil - and should other energy sources be included, such as gas or coal? Should the Community take on a greater role in stock management and, if so, what should the objectives and modalities be? Does the risk of physical disruption to energy supplies justify more onerous measures for access to resources***?

The ***diversity of approaches*** and policies in Europe is reflected in contributions on this question. Those favouring an ***extension of oil and gas stock regimes*** point to deficiencies in the current system, limited to oil and implemented differently in different Member States. It is suggested that ***chemical feedstocks*** should be included in stock obligations. Some contributors envisage a greater ***EU role*** in oil and gas stock management. This would be founded on accurate ***analyses*** at EU level of risks and economic consequences, notably in the internal market. Adequate provision for this work would have to be made. Developing it further, the elaboration by the Commission of a ***framework for oil and gas stock agreements*** between Member States and/or companies is proposed. Some argue for the constitution of gas reserves in the form of ***swing production agreements***. As regards ***costs***, some proposals include funding through the EU budget, burden sharing among all beneficiaries, and maintenance by companies of fuel and generation capacity reserves, possibly with fair compensation from public funds allowed

A number of contributors argue that the long absence of any severe supply interruption in oil or gas supply is a reflection of massive oil and gas industry investments and diversification. They note that available ***oil*** stocks are sufficient to cover a 10% shortfall over two years and temporary shortages. As regards ***gas***, some refer to the Commission's earlier conclusion that with currently available tools and by filling gaps in infrastructure, many Member States could withstand their most serious foreseeable supply disruption for more than 12 months. For ***coal***, although relatively easy to stock and useful as a substitute fuel during supply disruptions, and for ***nuclear*** fuel, contributors consider that the diversity of suppliers in the world market obviates any need for stocks. It is pointed out also that three years' nuclear fuel supply is already stocked in Europe.

Arguing against extensions of ***oil and gas*** stocks régimes, critics say that they could harm the ***market***. Most industry contributors are not persuaded of the utility of using stocks for ***anti-speculative measures*** or combating ***price peaks***, as detrimental to free markets and optimal resource allocation. Price peaks provide signals for investors. Critics argue that extensions could undermine long-term ***relations with exporting countries.*** They believe that they would not be a ***cost-effective*** way of pursuing supply security. Some contributors point out that ***instruments already exist*** which could considerably increase security, notably supply flexibility, production swings and fuel switching. Given differences in the situations of Member States, some say that ***cooperation*** could be beneficial.

Some approach the issue of stockpiling more broadly. Some argue for competitive access to gas ***storage facilities***. Some argue that more storage facilities are needed. Some point out the potential of ***small domestic oil and gas fields.*** For several contributors, the focus on fossil fuel stocks is wrong, it should be on increasing the ***share of renewables and the implementation of demand side measures*** in the market. Many note that stocks do not address longer-term risks related to growing import dependence.

Question 6 : ***How can we ensure the development and better operation of energy transport networks in the European Union and neighbouring countries that enable the internal market to function properly and guarantee security of supply***?

Responses are based on developments in the ***internal energy market***. Some look to the implementation of current Commission proposals, further cooperation in the Florence and Madrid frameworks, ***encouraging investments*** across Europe. Some think that a more open attitude to mergers within the internal energy market would also help investments and security of supply.

Concern that the market will not meet needs is evident among some contributors, arguing for ***re-regulation***. Some argue for public ownership and/or responsibility for ***networks***, especially the electricity grid, and an EU role, with proposals such as making the European Transmission System Operators an EU agency. Others focus on the necessary ***network "over-design"***, valuable insurance against regional shortages. This relates to the question of reserve capacities and who should provide and pay for them (see Q.2).

Many contributors focus on the further development of ***physical energy links***. The need to promote the construction of interconnectors between some Member States where there is now congestion is widely acknowledged. Some comment on the need for improved networks within Member States and regions as well as between them. The European Parliament highlights certain projects of regional character. N-S and E-W gas links should be improved. The challenge of ***enlargement*** in terms of infrastructure draws relatively few comments. There is widespread support for ***TENs***: while some Member States say that only feasibility studies for TENs projects should be financed, other contributors argue that first priority should be given to expanding embedded generation as much as possible, with fewer long distance interconnections and smaller transmission losses.

The conditions for ***investments*** come up in many contributions. Within the EU, ***tariffs*** must be sufficient to accommodate new investments. Concern is expressed, primarily by the power industry, about the ***authorisation of new power plants and transmission lines***. It is virtually impossible to have new overhead transmission lines accepted, they say, because of public concern about health risks from electromagnetic fields, ecological and visual impacts. The result is that private companies will shy away from such controversial investments, and security of supply will be threatened.

As regards investments in neighbouring countries, many note the importance of the ***Energy Charter*** and the ***Transit Protocol***. Some argue that necessary investment in neighbouring countries and other important regions should be promoted, using specific ***EU funding*** and EBRD and EIB loans. For example, the Balkans is an important region, restoration of the damaged transmission network in the former Yugoslavia will extend access to the UCTE network. Possibilities to increase electricity imports and the related infrastructure questions are not much addressed by contributors, the debate focusing rather on the need to make sure that imported nuclear power, from Russia and FSU countries, is up to EU safety and environmental standards.

Gas companies argue that ***long-term agreements*** are essential for security of gas supply. Some contributors argue for the development of ***LNG terminals*** to increase diversity of supplies. Some call for support for R&D on gas pipelines and storage.

Question 7: ***The development of some renewable energy sources calls for major efforts in terms of research and technological development, investment aid and operational aid. Should co-financing of this aid include a contribution from sectors which received substantial initial development aid and which are now highly profitable (gas, oil, nuclear)?***

This question sparks off many comments in the debate. Most contributors go well beyond the specific question posed, to their views on ***how far society should go*** in pursuit of energy goals, how this should best be done, at what cost to whom.

For some, the important thing is that a ***level playing field*** be established, in which all energy technologies, fuels and sources can compete fairly. They argue that this requires external costs, notably of environmental damage, normally borne by society, to be ***internalised*** in the production costs of each energy. Considering that this is unlikely to be achieved in the short term, many justify ongoing support for renewables. Others accept the need for support for renewables to help them to break into the established energy market, but see this as for some ***limited time*** only. A few contributors, sceptical of the potential contribution of renewables, argue that public support should reflect this. Many regard the Directive on electricity from renewables as a step in the right direction.

In a similar vein, some believe that public support should not be limited à priori to renewables. A number argue, for example, for support for kick-starting the commercial development of clean coal stations. But mainly what contributors have in mind is research and development support, oriented to ***innovation*** and ***change***, exploiting the potential of ***all energy technologies***, including on the demand side. On this point, some point out that the scale of research support for nuclear energy, notably for fusion, is taking away research funds for renewables and efficiency.

As regards how this should be pursued, organised and financed, many contributors say that ***market-based instruments*** should be used as much as possible, such as emissions trading, green certificates, Kyoto flexible mechanisms. Others argue that energy policy goals are of general public interest and that therefore public support should be raised through the ***general tax system***. Some think that a levy or equivalent, shared among all electricity consumers, could also be appropriate.

The ***cofinancing*** idea is approached in various ways. Among those supportive of pursuing the idea, some note existing schemes such as one in which power companies not meeting renewables targets pay into a fund for the promotion of sustainable facilities. Arguments against the idea include that these sectors already contribute through high energy taxes; that the effort would be counterproductive as the sectors are major investors in renewables; that they did not receive initial development aid as implied; that the nuclear industry has already paid back the public support it received via cheaper electricity for consumers; that such subsidisation is economically inefficient. On the renewables side, some dislike the implied dependence on conventional energy sectors.

Some contributors commented that the financing of support for renewables is a matter mainly for individual Member States, albeit within an EU framework.

Many contributors underlined the need for a ***stable framework***, including legal security, in which the ***large investments*** needed in energy systems and the technology base can be planned and undertaken, over the necessary time scale, typically quite long. Without this, the development of a ***diverse, innovative*** energy supply and demand system will be hampered,

the potential of the internal energy market will be underused and energy and environmental goals will be difficult to achieve.

Question 8: ***Seeing that nuclear energy is one of the elements in the debate on tackling climate change and energy autonomy, how can the Community find a solution to the problem of nuclear waste, reinforcing nuclear safety and developing research into reactors of the future, in particular fusion technology*****?**

Many contributors welcome the Green Paper debate as an opportunity for dispassionate consideration of the idea that ***all energy technologies*** have a role to play in the European energy mix. Most respondents are ready to assess ***nuclear energy*** on a comparative basis with other energy technologies and fuels and to address their roles in meeting energy, environmental and other objectives.

The written contributions to this debate are clearly ***polarised***. A less clear picture emerges from public opinion surveys (eg Eurobarometer) and investigations (OPTEM study) carried out alongside the Green Paper debate.

Some argue that nuclear energy makes an important contribution to ***baseload electricity***, with a high-quality product, abundantly available, not vulnerable to fuel supply or price disruptions. In the energy mix, it can thus function as a ***buffer*** against external disruptions (geopolitics, price instabilities, climate) to other energy sources.

Some hold that ***Kyoto*** and likely subsequent commitments imply that Europe must retain and develop the nuclear option. Without nuclear, Europe cannot meet its ***Kyoto*** commitments at ***realistic cost***, they argue. It and hydro are the only large-scale, CO2-free options for electricity generation which are also ***economically viable*** without subsidies. For some, the scale of the climate challenge is such that ***all realistic options*** must be kept open. Some say that nuclear energy should be included in all Kyoto Flexible Mechanisms.

Other contributors criticise the treatment of nuclear power issues in the Green Paper. They reject the argument that nuclear power is essential for the achievement of ***Kyoto*** commitments, seeing it as simplistic, based on a misrepresentation of earlier studies and inconsistent with accepted projections. For some, there is ***no case***, economic or otherwise, for building new nuclear power stations. For some, nuclear power is unacceptable because the ***risks*** are too great and thus decisions to close nuclear power stations should be taken immediately. Some nuclear supporters advocate a comparison of risks related to global warming and to nuclear power as used in Europe.

As regards ***waste***, some say that technical and financial means for final repositories are available, political and public support is needed to implement practical solutions, and the Commission should support such public and political processes. Some argue that there should be a Europe-wide economic and environmental ***optimisation of repository siting***. ***Research*** on waste management is supported by many. Some argue that the more operational waste management research should be a matter for those Member States which produce the waste.

On ***safety***, some contributors say that harmonised rules or ***European standards*** are needed, others disagree. Many support an EU role in nuclear safety in the enlargement process. Some advocate strict criteria for the import of electricity from 3rd countries.

Some contributors oppose seeking solutions to safety and waste problems by research into ***new reactors,*** arguing that this ignores other ways of meeting energy-related objectives, will be unreasonably costly and is unlikely to produce results acceptable for human health and the

environment. Such criticisms of cost and likely benefit are applied by some to ***fusion research***. Others support research and development of new reactor designs, including improvements in safety, flexibility and economic competitiveness. Some argue that European leadership in civil nuclear technology should be maintained.

Question 9. ***Which policies should permit the European Union to fulfil its obligations within the Kyoto Protocol? What measures could be taken in order to exploit fully potential energy savings which would help to reduce both our external dependence and CO2 emissions***?

Contributors are virtually unanimous about the need to reduce greenhouse gas emissions as a matter of urgency and that this will need additional measures and investment. There is support for a more ***strategic and multi-facetted approach*** to tackling climate change using ***energy policy instruments.*** The need to extend policies to accession countries as quickly as possible is also stressed.

Energy efficiency and energy demand management are almost universally seen as key tools for improving energy supply security, reducing import dependence and reducing greenhouse gas emissions, although the point is also made that the energy saved may not necesssarily be imported energy. Some comment that far more could be done cheaply and quickly to reduce energy needs substantially, notably in the buildings sector. The most common proposals are for incentives, legislation, new taxes and more clean technology investment, including CHP. Several organisations offer detailed and sometimes quantified ***action plans*** aimed at reducing energy needs, increasing the take up of renewables and using fossil fuels more cleanly.

High priority is given to the ***European Climate Change Programme,*** the use of Kyoto Flexible Mechanisms and to Member State climate change policies. Many call for the US to respect its original acceptance of the Kyoto Treaty and would like large developing countries to be covered by the Protocol. Some note that emissions reductions beyond Kyoto commitments are likely to be necessary.

The other instrument to fulfil Kyoto obligations which receives unanimous support is ***renewables*** energy production, not only solar, biomass and wind, but also photovoltaic (wrongly neglected in the Green Paper, according to some), heat pumps, tidal, wave and mini-hydro. The energy potential of some wastes is underlined by some contributors. Some prefer ***CO2 sequestration***, along with ***clean coal technologies*** and the production of ***hydrogen*** from gas. Some recommend replacing oil and coal burning by ***gas***; some see ***nuclear generation*** as helping the EU fulfil its obligations, usually in combination with greater energy efficiency and renewables production. The conventional energy and manufacturing industries advocate the use of ***voluntary instruments*** while the bulk of other contributors call for ***legislation***.

Investment in clean technologies is almost universally recommended, for both renewables and fossil fuels, both to implement existing technologies and to research and develop new ones. In particular, many support extra aid for renewables, which some justify by the inheritance of state aid from which conventional sectors are alleged to have benefited. Proposals for carbon taxes, or a new energy pricing system which reflects the external costs of energy use, are also frequent. Finally, ***information and training*** and ***higher norms for appliances*** are seen as ways of encouraging the end user to think about energy use and thus promote energy savings. In some contributions, the ***transport sector*** comes under particular scrutiny. This involves managing and reducing energy demand for transport generally, and specifically for increasing the use of cleaner fuels, including hydrogen and biofuels.

Some comment on what is feasible at European level, what at national and local levels. In general, the ***European Union role*** is seen as one of facilitating approaches at a national or local level, and of taking a longer term vision, for example by setting a regulatory framework for energy saving, setting - and monitoring – targets for the EU as a whole and developing

scenarios and prognoses at the EU level for policy options and decisions at national or international level.

Question 10: ***Can an ambitious programme to promote biofuels and other substitute fuels, including hydrogen, geared to 20% of total fuel consumption by 2020, continue to be implemented via national initiatives, or are co-ordinated decisions required on taxation, distribution and prospects for agricultural production***?

Contributors are divided on the question of biofuels for transport uses.

Those who believe biofuels should be promoted put forward various proposals. A common EU programme promoting the development and use of biofuels for transport could be a means of harmonising support and other measures and incorporating this question into the ***Common Agricultural Policy***, according to some. Some say that the EU should work for removal of restrictions in the ***WTO*** framework on the growing of such materials. Some point to the possibilities of siting this agricultural production in the countries south of the Mediterranean, contributing to local development and reducing immigration pressure on the EUs Mediterranean Member States. A number of contributors note the need for ***harmonised tax exemptions*** for biofuels.

Other contributors are more guarded in their appreciation of the potential contribution of biofuels and more doubtful about what can be done.

Some argue that they will lead to an ***industrialised, polluting agriculture*** and insist on the importance of limiting promotion of biofuels to products derived from agricultural practices which are less environmentally harmful and which require less chemical inputs than today's agriculture. Doubts are expressed about the likely ***costs*** of biofuels. Some say that they would be more cost-effectively used for ***heating*** than for transport purposes.

Some argue that there is a ***broader range of options*** available to reduce fuel use in transportation and improve efficiency than those considered in the Green Paper, such as pricing of vehicles and transportation, and tax and technology support to increase energy efficiency.

Several contributors comment on the idea of a ***target.*** Some find it wrong in principle and argue that development should be left to the market. Some find the 20 % target for 2020 rather optimistic, maybe unrealistic. Some caution that ***land availability*** might cause a problem.

The ***hydrogen*** issue draws few contributions. Most of those who address it note that electricity is needed to produce the hydrogen, hydrogen is only an energy carrier, and if the electricity is produced from fossil fuels, then there is no increase in security of energy supply. Some point out that hydrogen can be produced with emission-free nuclear power, others note renewables as a means. Some advocate natural gas as a source.

Question 11 : *Should energy saving in buildings (40 % of energy consumption), whether public or private, new or under renovation, be promoted through incentives such as tax breaks, or are regulatory measures required along the lines of those adopted for major industrial installations*?

Contributors addressing this question largely agree that energy savings in this area could be achieved cheaply and quickly, and that this should be a ***priority for future action***. The figure of up to 70% savings is cited in one submission.

A combination of ***fiscal or financial*** incentives and ***regulatory*** measures is advocated. There is some support for more ***research*** and technological development and greater dissemination of ***existing technologies*** – timers, thermostats, insulation, CHP, energy efficient lighting, biomass, heat pumps, and ***labelling*** and building ***design*** are also considered important. Some contributions contain detailed proposals for, eg, energy audits, mortgage relief for energy efficiency investments, tax breaks for energy efficient investments. Some stress the general issues of implementing the principle that the polluter pays and the internalisation of external costs. Some suggestions would make the use of more efficient appliances ***mandatory***, such as condensing boilers or "A" label appliances and energy saving lighting. The role of ***information***, training and awareness raising is frequently highlighted.

A ***distinction*** is made in some contributions between existing and new buildings, in which case, ***regulations*** are most frequently recommended for new buildings, whilst ***substitution*** of existing equipment and ***integration of renewables*** are given priority for existing buildings.

An ***additional angle*** highlighted in several contributions is inspection and control of standards, in order to ensure that equipment works at its most efficient.

Many contributors comment on how much should or could be done at the ***European level***. Most agree that the EU could set targets, possibly a regulatory framework, but most add that the EU should not get involved in implementation, which should be at the national and local level. A small number of contributors (particularly those opposed to regulation) prefer to leave it all to Member States. One suggestion is that all Member States should adopt the standards in the most efficient Member State.

Although contributors addressing this question are almost unreservedly positive about the value of saving energy in buildings, the number of contributors on this question is lower than on more general questions. Of the very small number of reservations**,** there is the observation that energy efficiency could ***only be marginally improved*** in Member States with existing high levels of efficiency, and that ***demand will continue to rise***, even if efficiency improves.

Overall, the response shows a broad agreement for the current approach from the Community, providing that the proposals are ***flexible*** enough to be adapted to the differing situations of Member States. Contributions provide support for the idea of energy savings in buildings as an area to be exploited further, given the rate of improvement which can be made and the short pay-back time for most energy saving devices. They suggest that information, persuasion and pricing will also be important instruments. Also, the value of individual efforts needs to be fully demonstrated and, if necessary, rewarded.

Question 12: ***Energy saving in the transport sector (32% of energy consumption) depends on redressing the growing imbalance between road haulage and rail. Is this imbalance inevitable, or could corrective action be taken, however unpopular, notably to encourage lower use of cars in urban areas? How can the aims of opening up the sector to competition, investment in infrastructure to remove bottlenecks and intermodality be reconciled***?

The contributions here tend to focus on ***two separate problems*** – growth in road freight, and desire for personal mobility in towns and longer distance travel.

For the freight issue, ***railways*** and ***maritime/inland waterways*** are seen as a large part of the solution (the idea of reducing the ***need*** for long distance freight transport is barely mentioned). The link between rail transport and ***electricity use*** is highlighted in several contributions. Some argue that nuclear generation must provide at least some of the extra demand, otherwise greenhouse gas emissions are bound to rise. Some support changes in ***planning regulations*** to favour more sustainable transport options and promote more local provision of goods.

For personal mobility, a long recipe of measures emerges, with much support for less polluting and lower emission ***vehicles***, ***alternative fuels*** and better public-private transport links. Some call to ***restrict car use***, particularly in urban areas, and to instigate car pooling, although they acknowledge that these cannot succeed in isolation and that a broader policy is needed. Several contributors call for more attention to be given to getting people out of cars and onto their feet or bicycles, and to making roads safer and more accessible for ***non-car users***.

Support for investment in ***public transport*** infrastructure comes mainly, but not exclusively, from local authorities or agencies. For others, the issue is ***intermodality*** of different transport forms. The management of public transport is seen here as the exclusive domain of local authorities.

Several contributors argue for a ***more holistic approach***, comparing the various effects of different options in the particular situations. Some develop ***structured proposals***, on infrastructure, compatibility of energy and transport policies, strategies based on reducing travel needs, reallocating road space from cars to public transport, strategies for reducing energy use in urban areas, intermodality, a long-term strategy aimed at moving towards a hydrogen-based economy, etc.

Several contributors comment on the forecast growth in ***air travel***. There are calls for the full taxation of kerosene. Some contributors would welcome more attention on the ***modal split*** (road/rail/maritime/inland waterway). Others favour more use of ***telematics*** in means of transport.

The response to the second half of the question is largely ***taxation***-based. Some point out the contradiction between tackling rises in road freight and tax reductions to the road freight industry to compensate rising fuel prices. Others call for greater taxes on road infrastructure and the internalisation of external (societal and environmental) costs for transport modes and fuels. A small number reject the use of the pricing mechanism in favour of more stringent emissions standards, investment in infrastructure, interoperability etc.

The main area for disagreement is liberalisation of the ***railways.*** While some see competition as an instigator for refurbishment and a revival of rail traffic, others argue that this should be

done while keeping the railways within public ownership. It is also argued that liberalisation of the railways will work against moving freight onto the railway.

<u>Question 13</u>: ***How can we develop more collaborative visions and integrate the long-term dimension into deliberations and actions undertaken by public authorities and other involved parties in order to evolve a sustainable system of energy supply. How are we to prepare the energy options for the future*****?**

There is considerable support for a ***global and long term approach*** to the subject of security of supply – both in terms of looking at the *totality* of energy supply, not compartmentalising the analysis into sectors, and including energy demand management; and in terms of following the *global picture*, i.e. linking energy policy decisions into wider international developments and broader policy issues, including foreign policy, internal market, transport, agriculture, environment, education, employment, international poverty issues etc.

A repeated argument is that the forecasts of the Green Paper should be complemented by *scenarios* reflecting and balancing possible policy options, e.g., an intensive programme for energy saving, a substantial injection of funding for renewables.

Some argue for a more *panoramic outlook* for energy policy, which analyses the impact of decisions in one sector and in one Member State on another.

There are many calls for a ***longer term perspective***. This is partly to help establish the *stable planning framework* needed for the long time-scale typical of energy sector decision-making and investments. It is partly necessary for proper consideration of the *interactions* between policies, examples being the concern expressed by contributors about the compatibility of the internal market and long term energy supply contracts, and the fundamentally important interaction of *energy* and *environment* policies.

Some submissions offer a blueprint for an ***EU energy strategy***. The general argument is that Europe needs a strategy which is *more forward looking*, leading to a greater diversity of energy types and sources, and more in touch with new developments, including renewable and indigenous fuels and moves towards distributed and micro-generation. Such a strategy, it is argued, would provide the conditions needed for necessary investments in the energy field, at the industrial and individual level.

In terms of ***approach***, a more *lateral approach* is advocated by some. Submissions call for more general awareness raising on energy issues among the population at large, and in particular young people, and for detailed strategies to combine incentives, regulations and information tools in the push for greater efficiency and the wider use of renewable energy. The usefulness of setting and monitoring targets is defended by some. Other ideas are to make better use of domestic energy policy, aid to developing countries or strategic stocks as an instrument of the producer consumer dialogue. There is support for a more interventionist approach, including tight restrictions on energy-hungry appliances/vehicles and practices and public awareness raising of the effects of behavioural choices today on quality of life in the future.

In terms of ***responsibilities***, several respondents draw attention to the need for *co-ordination between different levels*, European, national and local/regional. Representatives of local authorities in particular highlight their role in realising strategies to reduce energy demand. Although some prefer the status quo, there are in other responses varying levels of support for more co-ordination or intervention at the Community level. Many support the ***international role of the EU*** in the energy field, some would like to see it developed further. The possibility of a European energy agency in order to improve coordination or information provision is

raised, as well as a ***Treaty article*** related to energy policy (i.a. in the European Parliament opinion).

Among ***policy options***, the areas attracting most attention are a) *fiscal*, such as the internalisation of external costs in order to create a level playing field for all sources; b) *markets*, with calls for close monitoring of market developments, conditions for long term planning by the private sector and corrective mechanisms and c) *technology,* including the marketing of environmentally attractive but initially uneconomic technologies. The value of *cost benefit analyses* of differing options is mentioned by some.

More radical ***visions*** come from some, often based on the widespread use of wind and solar (photovoltaic) energy in the medium term, combined with a more conservationist approach to energy. Some foresee a bright future for nuclear, due to its low carbon emissions.

Overall, the future picture which emerges from the Green Paper debate is one based on a ***broad policy*** embracing energy demand and supply, with a clear role for ***public authorities,*** including at the European level, and where ***collaboration, co-operation and co-ordination*** play a large part in improving the effectiveness of policies and programmes. This includes among Member States and accession states, across different policy areas – energy, environment, transport, agriculture, etc, but also with energy partners in other parts of the world, whether suppliers or consumers. Whether with reference to scenarios, commercial arrangements, diplomatic relations or consumer education, the response to the Green Paper clearly advocates a long ***term and resolute*** vision aiming at ***secure and sustainable*** energy supplies for Europe.