

**Eurogas response to the Green Paper**

## **“A 2030 framework for climate and energy policies”**

**2 July 2013**

**Eurogas** is the association representing the European gas wholesale, retail and distribution sector. Founded in 1990, its members are some 50 companies and associations from 26 countries.

Eurogas represents the sector towards the EU institutions and, as such, participates in the Madrid Gas Regulatory Forum, the Gas Coordination Group, the Citizens Energy Forum and other stakeholder groups.

Its members work together, analysing the impact of EU political and legislative initiatives on their business and communicating their findings and suggestions to the EU stakeholders.

The association also provides statistics and forecasts on gas consumption, as well as information on energy taxation in Europe. For this, the association can draw on national data supplied by its member companies and associations.

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## Summary of approach proposed by Eurogas

- The **2020 framework** has created **large momentum** to move towards a low-carbon economy, and important progress has been made.
- The **greatest challenge** that the 2020 framework has revealed is to implement it cost-efficiently and in such a way that other EU objectives are not compromised and helpful instruments already in place are applied:

Internal market mechanisms should be safeguarded and used; market-based investment for security of energy supply should be encouraged, particularly in the power sector; and the competitiveness of the EU economy should be maintained.

- A related challenge is the large **risk of fragmentation** caused by individual national action or inaction causing a negative impact on the single market and thus a loss of efficiency and higher costs.
- In this light, **common climate and energy policies and measures aiming to deliver results by 2030 should be adopted as soon as possible** to ensure a coordinated EU approach is maintained or enhanced.

Moreover, this will give a clear and reliable signal to all relevant partners, in particular investors, that decisions taken and benefitting a sustainable EU energy supply today will not be penalised tomorrow.

- **The EU should focus on greenhouse gas emissions reductions and** should only set **a binding economy-wide target of at least 40% by 2030**, to be in line with the agreed target of 80-95% by 2050, rather than revising other targets, too.

The burden should be shared appropriately and transparently between the Member States on the one hand and between ETS and non-ETS sectors on the other hand.

- **For the EU greenhouse gas emissions reduction target and effort to be successful it should be part of a global effort.** The 2030 framework should determine the negotiating position of the EU for a 2015 Global Climate Change Agreement. Until an equitable global agreement has been reached, the competitiveness of the EU economy should be appropriately addressed.
- **Cost-efficient greenhouse gas emissions reductions at all times whilst maintaining EU competitiveness and security of energy supply should be the guiding principle.** In sectors responsive to the price of carbon, this should be the main driver for investment and behaviour change.

No particular low-carbon technologies or techniques should be politically favoured in this effort, as this may distort competition within the internal energy market and reduce cost-efficiency.

- **The Emissions Trading Directive should be revised as a matter of urgency in the light of current and foreseeable circumstances.**

Cancelling allowances in Phase 3 would address the large oversupply of allowances, and an early revision of the annual linear reduction factor would provide greater certainty for investors and other market participants in the medium and long term.

Consideration should be given to the recycling of auction revenues in support of low-carbon investment, including in CCS, biomethane and power-to-gas technologies. In view of 2030, further revision of the Directive should be discussed.

- **Non-ETS sectors** sensitive to the price of carbon should also bear the costs associated with carbon dioxide emissions. Just as under the ETS, any government revenues arising should be recycled in support of low-carbon investment. Moreover, non-financial measures should be applied. Measures in non-ETS sectors should not overlap or undermine the ETS.
- **Mature renewable energy sources should compete on a level playing field amongst themselves and with other greenhouse gas reducing options in the EU internal energy market.**

Existing national support schemes should gradually be phased out for all mature technologies, but without retroactive effect. (As regulatory certainty is key to investment, regulation should not be changed retroactively in any sector.) Cooperation between Member States should be enhanced.

- **Non-mature renewable energy sources and other non-mature low-carbon options, for example CCS, biomethane and power-to-gas technologies, should be supported under the aspect of research, development and demonstration, receiving equitable treatment** on the basis of clear criteria.

Support measures should be well-targeted, coordinated and clearly limited in time and expenditure. Lack of economic viability alone should not be sufficient to be eligible for support. **Cost-benefit analyses with respect to reduction potentials would be helpful** before support is granted. Whilst support schemes are running, **progress should be measured regularly using key performance indicators.**

- Special attention should be given to a technology-neutral and hence cost-effective approach also in **energy efficiency**. For example, replacing the heating system can save more emissions at less expense than certain insulation measures.

Both **in housing** and **in transport**, the benefit of electrification should be weighed up against that of other technological options to reduce carbon dioxide and other emissions, for example through the use of gas, biogas, synthetic methane or hydrogen.

- **R&D programmes** should also be technology-neutral, and support should be made available to all promising, non-mature technologies that help reduce greenhouse gas emissions whilst being generally sustainable with respect to energy and environmental goals.

- **Indigenous production of energy, including conventional and unconventional gas, is desirable** because it contributes to security of supply, growth and employment within the EU. It goes without saying that production should be subject to the highest health, safety and environmental standards.

However, diverse imports remain important to maintain a competitive and secure energy supply. Import independence should therefore not be an aim in itself.

- The **implementation of the internal energy market and market-based investment in the interconnection of electricity grids and of gas networks** should be rigorously pursued to ensure that energy can be competitively traded across the borders of the Member States and beyond, thus also securing energy supply.

Private investment, however, will only be forthcoming if the framework for climate and energy policies provides long-term clarity and certainty for reasonable returns on investment.

- The 2030 framework should take account of **security of electricity supply** concerns and the link with the large influx of subsidised or otherwise supported electricity from variable renewable energy sources as well as the practice of price caps in some Member States.

These and other **market distortions need to be removed as a priority**, since they inhibit the internal energy market and have led to thermal power plants becoming uneconomic, although they are needed to ensure that electricity demand can be met at all times. Highly flexible and efficient gas-fired power plants are particularly affected.

Electricity from variable renewable energy sources should therefore assume the same responsibilities towards the system (scheduling, nomination and balancing) as electricity from other sources. The costs of grid connection, use, balancing, backup etc. should be made transparent to the consumer.

If relevant market distortions cannot be removed, or if their removal will take too long, **capacity remuneration mechanisms can be an effective measure** to address security of supply. An impact assessment on the introduction of capacity remuneration mechanisms should concentrate on the internal electricity market but should also pay due attention to the gas market.

- **Last but not least, gas is currently one of the most cost-efficient ways of reducing greenhouse gas emissions in all energy sectors.** For example, in the power sector, replacing coal-fired power stations with highly efficient combined-cycle gas turbine (CCGT) plants can reduce carbon dioxide emissions by 50%. They reach fuel efficiencies of over 60%, and combining them with the recovery of input fuel energy as usable heat (CHP) can lead to overall plant efficiency of around 90%.

## QUESTIONS

### 4.1. General

- **Which lessons from the 2020 framework and the present state of the EU energy system are most important when designing policies for 2030?**

On the positive side, the 2020 framework encourages different parts of society to apply and develop techniques and technologies to reduce greenhouse gas emissions.

On the negative side, the impact of the economic downturn on, and important repercussions of, the 2020 framework had not been anticipated.

The 20-20-20 targets combine an EU-wide greenhouse gas emissions reduction target and Emissions Trading System (ETS) with largely nationally focused measures on non-ETS sectors, renewable energy sources and energy efficiency. This has been a source of inconsistency and imbalance.

Moreover, as detailed below, the implementation of the 20-20-20 targets has not achieved sufficient balance between climate objectives, security of supply and competitiveness.

Greenhouse gas emissions in the EU have decreased although it is not clear to what extent this is due to the economic crisis and to what extent this has been achieved by active engagement.

The EU has not been able to engage the international community on greenhouse gas emissions reduction commitments as much as would have been desirable.

#### ***Binding economy-wide greenhouse gas emissions target***

The setting of a binding economy-wide greenhouse gas emissions reduction target with burden sharing amongst the different Member States has worked well.

#### ***Emissions Trading System***

The Emissions Trading System has proved to be an effective tool to reduce greenhouse gas emissions cost-efficiently. However, the number of allowances issued was misjudged. The predicted level of emissions did not occur. In particular, the possibility of a major economic downturn was not factored in. The result has been an oversupply of allowances and much lower than expected allowance prices, which do not provide a strong incentive for emissions reductions.

In the power sector, the low price of ETS allowances, together with the low global price of coal, the high influx of renewables and a lack of market mechanisms to reward the flexibility of gas-fired power stations, has led to the economics of coal-fired power stations being more favourable than those of gas-fired power stations, and the power sector is thus not achieving the emissions reductions that would otherwise be possible.

### *Renewables and energy efficiency*

A large amount of progress has been made on increasing the market share of renewable energy sources, and, although to a lesser extent, important energy efficiency gains have been achieved, which will be continued and enhanced through the implementation of the Energy Efficiency Directive. This development has largely been brought about by extensive support schemes.

By their nature, such support schemes and similar regulated advantages bear the risk of distorting the market and competition. This is because goods and services that benefit from such advantages may have higher production costs but not necessarily higher prices than others.

The implementation of the Renewable Energy Directive in several Member States, via support schemes and other special treatment, opened a window of opportunity for renewable energy sources. Their strong growth has displaced other forms of energy in a non-competitive manner and has led to stranded assets. This has raised doubts about compatibility with internal market principles and thus cost-efficiency. Moreover, the variability of certain renewable energy sources has caused concerns about security of supply.

Scepticism is growing in all parts of society whether these support schemes should continue. Investors are becoming uncertain about their reliability and duration.

Many of the current support schemes make no distinction between mature and non-mature technologies. However, all mature low-carbon technologies can be expected to compete on equal terms. Otherwise there is a risk of distortion of the market and competition at the expense of cost-efficiency.

In some Member States, the influx of electricity from variable renewable energy sources is particularly high owing not just to extensive support schemes and but also to exemptions from the grid obligations of electricity from conventional sources for scheduling, nomination and balancing. Moreover, this electricity benefits from priority grid access and dispatching as well as the right to inject into the grid irrespective of demand.

This contributes to Member States experiencing the challenge of securing both base-load and backup electricity generation capacity when the renewable energy sources are not delivering, i.e. the sun is not shining or the wind is not blowing.

The reason is that running hours of thermal power stations are so reduced and the prices that can be achieved when they operate are so low that these power stations hardly cover their costs or even run at a loss.

For the reasons explained above, gas-fired power stations are particularly hard hit, even though their flexibility is very much in need to back up electricity from variable renewables.

To ensure security of electricity supply, governments have either introduced or are considering capacity mechanisms which remunerate the availability of adequate power generation capacity.

Energy efficiency is a key tool in reducing carbon dioxide emissions cost-efficiently, in lowering energy bills and in enhancing security of energy supply by reducing demand.

Special attention should also be given to a technology-neutral and hence cost-efficient approach in the implementation of the Energy Efficiency Directive. For example, replacing a heating system can save more emissions at less expense than certain insulation measures.

In electricity production, carbon dioxide emissions from combined cycle gas turbine (CCGT) plants are equal to 50% of those from coal plants. They reach fuel efficiencies of over 60%, and combining them with the recovery of input fuel energy as usable heat (CHP) can lead to overall plant efficiency of around 90%.

***In summary, the lessons learnt are that:***

- The cost-efficiency of EU and national climate and energy policies and their impact on security of supply and competitiveness require much greater attention and should be assessed by the appropriate means.

EU and national measures should not form multiple layers of regulation affecting competitiveness, bearing the risk of distorting competition and hindering market integration; greater coordination should be sought as soon as possible.

- The setting of an economy-wide greenhouse gas emissions reduction target should be repeated for 2030 and the efforts of the EU to engage other countries and regions in similar action should be continued.
- Focussing on emissions reductions with a market-oriented, technology-neutral and non-discriminatory approach that encourages competition between the various ways and technologies available to reduce emissions in all sectors will ensure that they are achieved cost-efficiently.
- Measures related to implementing additional targets, such as for renewable energy sources and energy efficiency, risk causing strong side-effects: lack of cost-efficiency, conflicts with other measures, lack of consistency and transparency, and contradiction with internal energy market and competition rules.
- The Emissions Trading System should be amended as a matter of urgency in the light of current and foreseeable circumstances and in such a way that it can play its full role in reducing greenhouse gas emissions in the EU cost-efficiently.

Some structural changes should be made as soon as possible (see details below) for the ETS to regain momentum before 2020.

Consideration should be given to the recycling of auction revenues in support of low-carbon investment, including in CCS, biomethane and power-to-gas technologies. In view of 2030, further revision of the Directive should be discussed.

- Support schemes should be scaled down in favour of more competition between greenhouse gas reducing options to increase cost-efficiency, but a distinction should be made between support schemes and other favourable treatment for mature technologies and for non-mature technologies.

Non-mature technologies should continue to be supported under the aspect of research, development and demonstration. However, all promising non-mature greenhouse gas reducing options should be able to benefit. Cost-benefit analyses with respect to reduction potentials would be helpful. Any special support should be well targeted and clearly limited in time and expenditure. Progress should be measured regularly on the basis of key performance indicators.

Verifiable criteria should be developed to distinguish between what is considered mature and non-mature technology.

Existing national support schemes for all mature renewable energy sources should gradually be phased out without retroactive effect. (As regulatory certainty is key to investment, regulation should not be changed retroactively in any sector.) The costs of grid connection, use, balancing, backup etc. should be made transparent to the consumer. Electricity from renewable energy sources should assume the same system responsibilities as electricity from any other source.

- Capacity remuneration mechanisms for thermal power stations can be an effective measure to address security of supply if relevant market distortions cannot be removed, or if their removal will take too long. An impact assessment on the introduction of capacity remuneration mechanisms should concentrate on the internal electricity market but should also pay due attention to the gas market.

## 4.2. Targets

- **Which targets for 2030 would be most effective in driving the objectives of climate and energy policy? At what level should they apply (EU, Member States, or sectoral), and to what extent should they be legally binding?**

A legally binding economy-wide greenhouse gas emissions reduction target should be set for the EU. This should be at least 40% to be in line with the agreed EU target of 80-95% by 2050. It should be borne in mind that for this to be successful it should be part of a global effort on climate action. The 2030 framework should determine the negotiating position of the EU for a 2015 Global Climate Change Agreement.

A competitive environment will ensure that greenhouse gases are reduced cost-efficiently at all times. Further targets, e.g. for renewable energy sources or energy efficiency, are not desirable since they would prescribe how reductions are to be achieved. They would therefore bear the risk of limiting or distorting that competitive environment, thus negatively affecting cost-efficiency.

The burden of reducing emissions should be shared appropriately and transparently between sectors covered by the Emissions Trading System and non-ETS sectors.

- **Have there been inconsistencies in the current 2020 targets and if so how can the coherence of potential 2030 targets be better ensured?**

The 20-20-20 targets combine an EU-wide greenhouse gas emissions reduction target and Emissions Trading System with largely nationally focused measures on non-ETS sectors, renewable energy sources and energy efficiency. This has been a source of inconsistency and imbalance.

Moreover, the implementation of the 20-20-20 targets has not achieved sufficient balance between climate objectives, security of supply and competitiveness.

Generally, measures implementing multiple targets bear the risk of interference or incoherence, or the targets bear the risk of requiring support schemes or market intervention to be achieved. These tend to distort competition and decrease the cost-efficiency of reducing emissions.

For example, the impact assessment of the Energy Efficiency Directive underlined that full implementation of the Directive may reduce the price of carbon. Therefore, when the Commission made the proposal, it also recognised that there is a need to monitor the impact of new measures under the Energy Efficiency Directive on the ETS.

The high cost of implementing the Renewable Energy Directive has revealed the need for a more competitive approach to a low-carbon economy.

- **Are targets for sub-sectors such as transport, agriculture, industry appropriate and, if so, which ones? For example, is a renewables target necessary for transport, given the targets for CO<sub>2</sub> reductions for passenger cars and light commercial vehicles?**

Sectors that are currently not covered by the Emissions Trading System may be included to the extent that their emissions and reductions are verifiable and their inclusion is practically feasible.

Non-ETS sectors sensitive to the price of carbon should also bear the costs associated with carbon dioxide emissions. Just as under the ETS, any government revenues arising should be recycled in support of low-carbon investment.

Moreover, non-financial measures (see examples below) should be considered. These should not overlap or undermine the ETS.

Whilst the ETS should be the main policy instrument for the sectors that can be covered by it, the 2030 framework should also provide more guidance to Member States on the policy instruments that are most suitable for fulfilment of the share of emissions reductions to be achieved in non-ETS sectors.

This would be helpful in addressing the inconsistencies and imbalances caused by the largely nationally focused measures that Member States have taken in non-ETS sectors as part of the 20-20-20 framework. Such guidance should, again, be based on the principle that measures should be technology-neutral to be cost-efficient.

Targets for sub-sectors could interfere with such an approach. For example, there should therefore be no renewables target for transport or any other sector.

Two important energy sectors currently not covered by the ETS are the transport sector and the residential and services sector. About 30% of the overall carbon dioxide emissions in the EU are caused in the transport sector. The residential and services sector contributes about 18%. There are various options to reduce emissions in these sectors, of which many include gas, for example:

### **Transport**

- Fuel substitution in heavy-duty vehicles and maritime shipping as the quickest and least costly way to reduce greenhouse gas emissions in this sector;
- Improved vehicle efficiency, hybrid technologies, and applications for hydrogen and biofuels;
- Promotion of the use of alternative car fuels (natural gas, biogas and hydrogen, along with electricity) through the creation and extension of infrastructure for filling stations;
- Promotion of public transport, car sharing and logistic optimisation;

In the transport sector, natural gas is currently the best option to reduce carbon dioxide emissions by fuel substitution, especially for urban fleets, lorries and shipping. The penetration of biomethane enables a further and immediate decrease in the net emissions of vehicles fuelled with gas. There are no technology constraints and the existing European gas grid can be used.

Moreover, natural gas and biomethane have extremely low emissions of NO<sub>x</sub> and other pollutants and emit no particulates, thus improving air quality and significantly reducing noise and carbon dioxide emissions.

Gas in the form of compressed natural gas (CNG) is a flexible fuel that is already used, and has further potential, for passenger cars, vans and buses, just as electricity. For lorries, engines running on liquefied natural gas (LNG) are also a proven technology that can easily achieve emissions reductions in the freight sector at large scale from today on.

Growth targets for alternative filling stations and related local infrastructure are a useful policy measure to encourage emissions reductions in the transport sector. The decision whether this growth is in electricity, gas or both should be driven by cost-efficiency.

### ***Residential and services sector***

- More efficient equipment, such as gas heat pumps, gas condensing boilers, micro-cogeneration and hybrid as well as fully electric solutions;
- More rational use of existing equipment in dwellings;
- More renovation of buildings;
- Stricter energy efficiency standards for appliances.

In the residential and services sector, the quickest and cheapest way to reduce greenhouse gas emissions is to support and incentivise renovation by replacing existing technologies with improved appliances and by improving insulation.

The presence of gas in the current building stock is also the most efficient enabler for a higher penetration of renewables in this sector. Renewables and hybrid solutions, such as boilers combined with solar energy, can be introduced more quickly in this sector than changes that require households to undertake more complex or extensive structural work, such as the installation of ground-based electric heat pumps.

Useful policy measures in this sector would be gradually stricter average energy performance standards in existing buildings, taking into account buildings that will be difficult to renovate due to, for example, cultural or historical value.

Incentives and policy support for the renovation of buildings through market-based solutions, such as Energy Service Companies (ESCOs) and Revolving Energy Funds, form a valuable alternative policy solution.

- **How can targets reflect better the economic viability and the changing degree of maturity of technologies in the 2030 framework?**

This question assumes that multiple targets are set for 2030, which is not desirable and therefore not recommended.

Support schemes should reflect the maturity of technologies. Only non-mature technologies should be supported in a well-targeted manner for a clearly limited period of time. Expenditure should also be limited. Progress should be measured regularly on the basis of key performance indicators.

Target setting generally does not seem to be a suitable way to reflect either the economic viability or the changing degree of maturity of technologies. Criteria should be developed to establish the maturity of technologies.

As a rule, mature technologies should not be supported in the future, even if they are not economically viable, as they are unlikely to reduce greenhouse gas emissions in the most cost-efficient way. Cost-benefit analyses with respect to reduction potentials would be helpful.

- **How should progress be assessed for other aspects of EU energy policy, such as security of supply, which may not be captured by the headline targets?**

In the gas sector, the Regulation concerning measures to safeguard security of gas supply, the Regulation on guidelines for trans-European energy infrastructure, and the Third Package on the internal energy market are strong instruments on the basis of which security of supply is enhanced and monitored.

In the electricity sector, governments are concerned about security of supply in certain Member States because the operation of a number of thermal power stations, in particular that of flexible and efficient gas-fired power stations, has become uneconomic and their premature decommissioning is being considered or decided.

Strong contributors to such a situation are: regulated end-user prices, price caps and floors, and restrictions or unnecessary regulatory requirements on plant operations. Another factor is the increasing share of electricity from variable renewable sources, as this is promoted by certain support schemes and priority grid access with no responsibilities for meeting scheduling, nomination and balancing requirements.

The need for capacity remuneration mechanisms is closely linked to these barriers and limitations to the 'energy-only' market. They should therefore be removed as a priority. This is indispensable if the 'energy-only' market is to function efficiently.

However, in some Member States there seems to be no political support for removing or reviewing market distortions in the short to medium term. In these cases, it can be observed that the 'energy-only' market is failing partially or even mainly due to these out-of-market measures. This depends strongly on the geographical conditions and national energy policies, which may result in a missing money and/or backup problem.

In this situation, the introduction of a capacity remuneration mechanism might be an approach which would face the economic challenges of thermal generation and present a tool to provide the missing investment signals from the 'energy-only' market and to ensure a stable investment climate.

Due to the inherent risk of capacity remuneration mechanisms distorting the market, they should be carefully designed. To reach European integration, at least a supranational/regional assessment should be carried out. Negative impacts on European competition and market integration because of different approaches in the European countries should be avoided.

The issue of ensuring both sufficient firm and reliable power generation capacity, as well as flexible backup to electricity from variable renewable energy sources has been addressed in the Commission Communication 'Making the internal energy market work' and in a consultation undertaken by the Commission earlier this year, to which the Commission will no doubt give a follow-up soon.

Apart from security of supply, the cost-efficiency and impact on competitiveness of measures taken both at the EU and national level should be assessed by the appropriate means.

### 4.3. Instruments

- **Are changes necessary to other policy instruments and how they interact with one another, including between the EU and national levels?**

Most importantly, Member States need to agree a clear hierarchy in their approach. Cost-efficient emissions reductions based on an economy-wide EU target and on safeguarding competitiveness and security of energy supply in the EU, and the Emissions Trading System as the main market-based measure at EU level should be at the top of this hierarchy, along with the internal energy market. Other measures should be designed in such a way that they will not interfere with them.

#### ***Binding economy-wide greenhouse gas emissions reduction target***

This should be raised to at least 40% by 2030, compared with 1990, to be in line with the agreed EU target of 80-95% by 2050. The burden of such a target should be shared appropriately and transparently between ETS and non-ETS sectors. A market-oriented, technology-neutral and non-discriminatory approach should be applied in both sectors that provides the flexibility to make use of all current and future low-carbon technologies in the most cost-efficient way.

For the EU greenhouse gas emissions reduction target and effort to be successful it should be part of a global effort. The 2030 framework should determine the negotiating position of the EU for a 2015 Global Climate Change Agreement. Until an equitable global agreement has been reached, the competitiveness of EU industry exposed to international competition should be appropriately addressed.

#### ***Emissions Trading Directive***

This should be adapted as a matter of urgency in the light of current and foreseeable circumstances.

Cancelling a number of allowances in Phase 3 would address the large oversupply of allowances. An early revision of the annual linear reduction factor would provide greater certainty for investors and other market participants in the medium and long term.

The addition of new sectors should be considered to the extent that their current emissions and emissions reductions are fully verifiable and their inclusion is practically feasible.

Consideration should be given to the recycling of auction revenues in support of low-carbon investment, including in CCS. In terms of 2030, further revision of the Directive should be discussed.

#### ***Energy Efficiency Directive***

Energy efficiency is a key tool in reducing carbon dioxide emissions cost-efficiently, in lowering energy bills and in enhancing security of energy supply by reducing demand.

However, the implementation of the Energy Efficiency Directive should take due account of the differences in the ability and willingness of consumers to be more energy efficient. Different consumers are motivated by different measures.

Informational measures for behavioural change are important. Some consumers will only have their homes insulated or opt for energy-efficient appliances. Others will choose to generate their own energy. A market is best at developing and targeting activity for the best outcome.

Special attention should also be given to a technology-neutral and hence cost-efficient approach in the implementation of the Energy Efficiency Directive. For example, replacing the heating system can save more emissions at less expense than certain insulation measures.

In many cases, heating houses with gas is the most cost-efficient way of reducing emissions in buildings. Households and the commercial sector in particular should be made aware of the choices available and should be enabled to take informed decisions.

In the power sector, switching to gas from higher carbon fuels does not only reduce carbon dioxide emissions by 50%. Combined cycle gas turbines (CCGTs) also achieve efficiencies of over 60%. Combining with the recovery of input fuel energy as usable heat (CHP) can lead to overall plant efficiency of around 90%.

### ***CCS Directive***

Strong public resistance to carbon dioxide storage onshore is making it difficult for some Member States to implement the Directive on the geological storage of carbon dioxide in such a way that CCS is actually enabled to take place.

Moreover, despite the funding made available through various EU instruments, the high costs of undertaking demonstration projects for the capture and storage of carbon dioxide hinder the realisation of such projects. An equally strong obstacle is the uncertainty about whether CCS will be allowed and will become cost-efficient in the future.

As public opposition is largely based on lack of correct information regarding risks and benefits, an EU effort to inform EU citizens would be beneficial. This would be in addition to the efforts that are already made at the local level.

The implementation of the CCS Directive in such a way that CCS is allowed to happen should be rigorously pursued.

The development of CCS should be supported by the 2030 framework for climate and energy policies. Consideration should be given to prolonging the NER 300 facility and to other support measures that are well targeted and limited in time and expenditure, to help the development of demonstration projects.

### ***Internal Energy Market***

The full and speedy implementation of the internal energy market will make a large contribution to competitive cross-border sales of electricity and gas. No effort should therefore be spared to this end. There is broad consensus on this in the ongoing discussion on the Commission Communication 'Making the internal energy market work'.

### ***Energy Taxation Directive***

The Directive is in the process of being revised to take account of the carbon content of energy. Distinctions that may be made in the tax rates applied to different types of fuel and/or different consumer groups should be transparent and in line with the environmental objectives of the Directive.

There should be no overlap with the Emissions Trading Directive, leading to installations being subject to a double burden. Whilst national circumstances should continue to be considered, further harmonisation of tax levels is desirable. Dramatic tax rises should be avoided.

### ***Directives on Ecodesign and Energy Labelling***

In the implementation of these Directives care should be taken that the standards of equipment covered are not misjudged, and that the environmental benefits of gas are correctly reflected in the criteria. For example, in heating, there is a risk that electrical equipment is more highly ranked than gas equipment because of lower local emissions.

However, the quickest and cheapest way to reduce greenhouse gas emissions in this sector is to support and incentivise renovation by replacing existing technologies with improved appliances, such as condensing boilers, gas heat pumps, micro-cogeneration and ultimately fuel cells. Gas equipment should therefore not be disadvantaged and the consumer should not be misled.

### ***Draft Directive on the deployment of alternative fuels infrastructure***

This Directive, which the Commission proposed in January 2013, should ensure that different technologies can compete with each other on a level playing field.

Gas-fuelled vehicles have improved air quality and have reduced carbon dioxide emissions in cities around the world. In Europe, Athens is a good example. In Sweden, the use of biogas is particularly strong in transport. Other countries, such as Germany, already have a broad network of gas filling stations. Existing and new transmission and distribution pipelines can be used to transport the gas.

This leads to the issue of hydrogen and synthetic methane. Excess of electricity from renewable sources can be used to produce hydrogen by electrolysis. If that hydrogen is reacted with carbon dioxide, synthetic methane can be produced. Both can be used locally, including in transport, and/or transported in an existing or newly constructed gas pipeline infrastructure.

The large potential offered by the use of gas in lorries as well as inland waterway and maritime shipping should be fully recognised and reflected in the Directive.

### *Horizon 2020*

The EU framework programme for research and innovation, Horizon 2020, should, in the areas of climate and energy, be open to all promising, non-mature technologies that help reduce greenhouse gas emissions.

### *Environmental and Energy Aid Guidelines*

The Commission has recently undertaken consultations on such guidelines and intends to issue proposals in the near future.

The aim of such proposals should be to optimise market mechanisms and support schemes in such a way that climate and energy objectives, including security of supply and competitiveness, can be achieved in the most cost-efficient way.

To enhance competition and the choice of the most cost-efficient measures to reduce greenhouse gas emissions, existing national support schemes should gradually be phased out for all mature renewable energy sources without retroactive effect.

New support schemes should focus on non-mature technologies. Verifiable criteria should be developed to assess the level of maturity. Cost-benefit analyses with respect to reduction potentials would be helpful. Support schemes should be technology-neutral. They should be well targeted and limited in time and expenditure. Progress should be measured regularly based on key performance indicators.

Capacity remunerations mechanisms can be an effective measure to overcome security of electricity supply concerns, if related market distortions (see above) cannot be removed, or if their removal will take too long, so that maintaining, upgrading and building needed power generation capacities are incentivised over the short-term electricity prices, as well as the outlook for the future. Due to the inherent risk of capacity remuneration mechanisms distorting the market, they should be carefully designed. To reach European integration, at least a supranational/regional assessment should be carried out. Negative impacts on European competition and market integration because of different approaches in the European countries should be avoided.

### *Smart grids*

Initiatives on smart grids and smart cities should take full account of the possibilities of smart electricity and gas grids, as well as of the differences and the complementarity between them.

- **How should specific measures at the EU and national level best be defined to optimise cost-efficiency of meeting climate and energy objectives?**

Measures should be concentrated at the EU level where they are relevant to a well-functioning EU market, to ensure that greenhouse gas emissions are reduced in the EU where this is most cost-efficient. National circumstances should, of course, be taken into account to the appropriate degree.

The cost-efficiency of EU and national climate and energy policies, as well as their impact on security of supply and competitiveness, should be assessed by suitable means.

EU and national measures should not form multiple layers of regulation affecting competitiveness. At whichever level they are taken they should not overlap in such a way that one could impact the effectiveness of another, such as the Commission put forward on Energy Efficiency Directive, which may reduce the carbon price in the Emissions Trading System.

The price of carbon should be the main driver for investment. Moreover, investors must be able to rely on the 2030 framework to deliver an appropriate return on investment for the duration of the investment cycle.

Member States should agree a clear hierarchy in their approach. Cost-efficient emissions reductions based on an economy-wide EU target and on safeguarding competitiveness and security of energy supply in the EU, and the Emissions Trading System as the main EU and market-based measure at the top of this hierarchy, along with the internal energy market. This is because they form the most cost-efficient approach to meeting both climate and energy objectives. Other measures should be designed in such a way that they will not interfere with them.

- **How can fragmentation of the internal energy market best be avoided particularly in relation to the need to encourage and mobilise investment?**

There is a large risk of fragmentation of the internal energy market if uncoordinated national climate and energy policies continue to be pursued that result in trading or investment barriers.

The implementation of the internal energy market should be rigorously pursued. There is broad consensus on this in the comprehensive discussions that have been taking place since the Commission issued the Communication 'Making the internal energy market work'. Good progress is being made on the development of network codes and guidelines facilitating cross-border trade.

Although the social needs in some Member States must be recognised and addressed, investment can best be encouraged by removing price regulation and by generally providing investors with the certainty that the political and regulatory framework will continue to deliver an appropriate return on investment for the duration of the investment cycle. For example, changes to this framework should not cause unexpected deterioration in the business conditions for an investment.

- **Which measures could be envisaged to make further energy savings most cost-effectively?**

Energy efficiency has a key role to play in the transition to a resource-efficient economy and a sustainable energy system. A large amount of progress should be achieved by the implementation of the Energy Efficiency Directive.

As the Directive is in the process of being implemented by mid-2014, it would be premature to reflect on other measures, if any, that could be envisaged to make further energy savings most cost-efficiently.

However, the concept of “energy savings” should be re-examined giving consideration to the question of whether the focus should be shifted from energy use to energy intensity in the EU’s industrial sectors.

- **How can EU research and innovation policies best support the achievement of the 2030 framework?**

Support programmes, such as Horizon 2020, should be open to all promising, non-mature technologies that help reduce greenhouse gas emissions whilst being generally sustainable with respect to energy and environmental goals.

#### **4.4. Competitiveness and security of supply**

- **Which elements of the framework for climate and energy policies could be strengthened to better promote job creation, growth and competitiveness?**

The economic crisis is affecting most parts of the economy, but climate and energy policies can help improve the investment climate, which will create growth and jobs.

Eurogas estimates that at present some 280,000 people are directly employed in the gas sector in Europe along the gas supply chain. Whenever the number of jobs created in certain energy sectors is estimated, the number of jobs eliminated in other sectors as a result has to be considered, too, in order for deliberations on employment in connection with changes to the energy system to make sense.

Predictability in terms of reasonable returns on investment of any policy adopted for the 2030 framework, at EU or national level, is the prime prerequisite to encourage investment.

Moreover, it is proposed that the Commission gives greater attention to EU competitiveness in its impact assessments of proposals related to climate and energy policies. A market-oriented, technology-neutral and non-discriminatory approach, a level playing field and cautious use of support schemes are the very basic prerequisites for effective competition and competitiveness.

- **What evidence is there for carbon leakage under the current framework and can this be quantified? How could this problem be addressed in the 2030 framework?**

As long as the EU’s international trading partners do not make equivalent efforts to reduce greenhouse gas emissions, carbon leakage remains an important issue. This is comprehensively addressed in the Emissions Trading Directive.

If adaptations are necessary, these should be made on the basis of evidence provided by the sectors concerned and at the same time as the structural changes in the Directive that were recommended above.

Such adaptations should be discussed in the broader context of how competitive the general framework for business is in the EU as a whole and in individual Member States, compared with other parts of the world. Labour costs and law as well as taxation, for example, are part of that framework.

- **What are the specific drivers in observed trends in energy costs and to what extent can the EU influence them?**

To obtain a clear picture of energy costs for end users, all elements need to be taken into account, i.e. not just the cost of the energy as such but also grid fees, taxes, other levies (such as those used to finance support schemes), the price of carbon, etc.

Where the costs of the energy as such are generally determined by the global market, the EU cannot and should not seek to influence that mechanism.

Diversity of supply from indigenous and external sources and diversity of supply routes are important factors in ensuring energy supply at competitive prices. EU policy should encourage both indigenous production and imports by adopting appropriate and reliable long-term policies on the one hand and fostering good relations with export countries on the other.

Energy taxation varies strongly between the Member States. Multiple taxes frequently apply. The Energy Taxation Directive, which is currently being revised, can have an important influence on the prices paid by end users as well as on their choices.

The proposal for taxation to reflect the carbon content of energy should be pursued. However, distinctions that may be made in the tax rates applied to different types of fuel and/or different consumer groups should be transparent and in line with the environmental objectives of the Directive.

There should be no overlap with the Emissions Trading Directive leading to installations being subject to a double burden. Whilst national circumstances should continue to be considered, further harmonisation of tax levels is desirable. Dramatic tax rises should be avoided.

In some Member States, levies other than tax are imposed on energy, covering in particular support schemes for renewable energy sources. These support schemes should be considerably reduced in line with the recommendations made above.

- **How should uncertainty about efforts and the level of commitments that other developed countries and economically important developing nations will make in the on-going international negotiations be taken into account?**

For the EU greenhouse gas emissions reduction target and effort to be successful it should be part of a global effort. The 2030 framework should determine the negotiating position of the EU for a 2015 Global Climate Change Agreement.

The climate and energy policies proposed for 2030 in this response should help the EU to continue to lead by example and to be credible when urging for a global agreement by which the global climate objectives can be achieved. At the same time, the EU should support a broad and open discussion for a comprehensive approach, including specific unilateral measures.

With a view to reaching a global agreement in 2015, the EU should set itself a new economy-wide greenhouse gas emissions reductions target for 2030. Moreover, the EU should reform its Emissions Trading System by reducing the current surplus of allowances and by making an early revision of the annual linear reduction factor. These measures should take account of the EU's competitiveness.

Until an equitable global agreement has been reached, the competitiveness of the EU economy should be appropriately addressed in the broader context of how competitive the general framework for business is in the EU as a whole and in individual Member States, compared with other parts of the world. Labour costs and law as well as taxation, for example, are part of that framework.

- **How to increase regulatory certainty for business while building in flexibility to adapt to changing circumstances (e.g. progress in international climate negotiations and changes in energy markets)?**

The question does not specify which of the possible changes in energy markets these could be.

Generally, confidence should be given back to the market that investment in energy assets will not lead to stranded assets or significant decreases in return on investment due to market intervention or policy changes. Policy should be clear and long-term, measures should not be retroactive, changes or adaptations should be predictable, and the timeframe should be foreseeable.

The climate and energy policies proposed in this response can be expected to be still fully valid if optimal progress is made in international climate negotiations.

The Emissions Trading Directive foresees a link with the emissions trading systems of other countries and regions, and the link with the Australian emissions trading system is already planned.

During the transition to full integration of a higher share of renewable energy sources, an 'energy-only' market might no longer work in the power sector. Growing penetration of renewable energy in electricity generation has reduced the operating hours of conventional plants and the spread between base load and peak load prices. In some Member States, there is overcapacity or market distortion. Many gas-fired power stations have therefore become uneconomic, and investment in new plants is abandoned.

Where gas-fired power plants remain necessary to back up electricity supply from variable renewable energy sources, since other backup options are not available, are less flexible or are generally less economically efficient, the lack of sufficient revenue and, as a result, the potential mothballing and decommissioning of plants or abandonment of investment plants has caused considerable concern. According to the European Commission's Energy Roadmap 2050, the share of renewable energy in the European energy mix will increase further in all possible scenarios. There is thus evidence that the issues of concern may have a structural character.

This situation has led some national governments to consider alternative remuneration mechanisms. Capacity remunerations mechanisms for power plants are expected to provide a more assured route for recovering the value of capacity than relying on capturing peak energy prices.

Due to the inherent risk of capacity remuneration mechanisms distorting the market, they should be carefully designed. An impact assessment on the introduction of capacity remuneration mechanisms should concentrate on the electricity market but should also pay due attention to the gas market.

- **How can the EU increase the innovation capacity of manufacturing industry? Is there a role for the revenues from the auctioning of allowances?**

A new economy-wide greenhouse gas emissions reduction target and an adaptation of the Emissions Trading Directive should make carbon price the main driver for investment in innovation, whatever the sector.

Possible earmarking of revenues from the auctioning of allowances should be for non-mature, low-carbon technologies only and should be strictly in line with State aid rules and with the principles of a technology-neutral approach and competition on a level playing field, as set out above.

Consideration could also be given to the recycling of auction revenues in ETS sectors and revenues from equivalent measures in non-ETS sectors in support of low-carbon investment, including in CCS, biomethane and power-to-gas technologies. This would generate the triple benefit of preventing carbon leakage, increasing the attractiveness of low-carbon investment and making a well-functioning Emissions Trading System more acceptable in the face of the economic downturn.

- **How can the EU best exploit the development of indigenous conventional and unconventional energy sources within the EU to contribute to reduced energy prices and import dependency?**

Increasing the exploitation of indigenous energy sources deserves a general level of policy support, due to its various benefits:

- It contributes to diversity of supply and thus to security of supply and competition between different sources. However, the energy produced will only be bought if its price is competitive with those of imports.

- Given the large variety of goods and services required for the exploitation of indigenous energy sources, small and medium-sized companies in the EU can particularly benefit from this activity.
- The development of technology and know-how “made in Europe” is stimulated.
- There is an overall benefit to wealth and employment in the EU.

It goes without saying that the exploitation of indigenous energy sources should meet the highest health, safety and environmental standards.

Contrary to diversity of supply, reduced import dependency is not an aim in itself because it does not necessarily lead to lower energy prices overall. Moreover, such an aim would ignore the economic advantages of international trade in general and comparative advantages in particular. It would disregard the efforts of the World Trade Organisation and those of the EU to negotiate Free Trade Agreements with other countries and regions.

Import dependency is frequently associated with fossil fuels. However, other energy equipment, raw materials or components, including those for renewable energy sources and energy efficiency, are also imported and create other dependencies.

- **How can the EU best improve security of energy supply internally by ensuring the full and effective functioning of the internal energy market (e.g. through the development of necessary interconnections), and externally by diversifying energy supply routes?**

In the gas sector, the Regulation concerning measures to safeguard security of gas supply, the Regulation on guidelines for trans-European energy infrastructure, and the Third Package on the internal energy market are strong instruments on the basis of which security of supply is enhanced and monitored.

The implementation of this legislation should be progressed swiftly and stakeholders should be appropriately involved. No new legislative measures are considered necessary at present.

However, the EU can assist in diversifying energy supply routes towards the EU by tightening relations with producer and transit countries.

#### **4.5. Capacity and distributional aspects**

- **How should the new framework ensure an equitable distribution of effort among Member States? What concrete steps can be taken to reflect their different abilities to implement climate and energy measures?**
- **What mechanisms can be envisaged to promote cooperation and a fair effort sharing between Member States whilst seeking the most cost-effective delivery of new climate and energy objectives?**

- **Are new financing instruments or arrangements required to support the new 2030 framework?**

The approach of burden sharing with respect to achieving a greenhouse gas emissions reduction target in non-ETS sectors should be maintained, making adaptations, if necessary, on the basis of lessons learnt and developments in the ability of Member States to implement climate and energy measures.

The implementation of the internal energy market and additional market-based investment in interconnections will facilitate cross-border benefits and the availability of low-carbon energy throughout the EU.

Cooperation under the Renewable Energy Directive has been practised little and there is room for greater use.

The various EU funds available should be revised and, if necessary, made more effective in supporting the 2030 framework as soon as this has been agreed.

## **The Future of Carbon Capture and Storage in Europe**

CCS will remain an important option to reduce carbon dioxide emissions, particularly in the medium and long term. As energy efficiency gains are offset by further electrification, particularly in the heating and transport sectors, more electricity may be needed on balance in the future.

It appears useful to add here the replies to the questions asked in the Communication on the future of carbon capture and storage in Europe, which the Commission issued together with the Green Paper 'A 2030 framework for climate and energy policies'.

### **General remarks**

The cost of electricity produced with the application of CCS can be as competitive in gas-fired power stations as it will be in coal, lignite or biomass power stations, as long as dispatching is on a comparable basis. This is because there is less carbon dioxide to capture, move and store per kWh generated.

The economic choice will, of course, depend on relative fuel and carbon dioxide prices as well as on capital and operational costs. This approach to decarbonisation is also considered to be competitive with renewable electricity cost; it is likely that CCS is cost competitive with onshore wind and cheaper than offshore wind and photovoltaic. For such a comparison, the full costs of renewable electricity must be taken into account, including indirect costs for grid extensions or reinforcements and for backup generation capacity.

In order to allow the roll-out of CCS for base-load power stations on a wide commercial and economically efficient scale, the development of full-scale demonstration becomes ever more urgent.

There is also still further R&D work to be done in adapting and optimising generating technologies for variable load with CCS for flexible gas-powered plants as backup for variable renewables. This is in the interest of finding the lowest cost routes to reducing the carbon impact of the EU's economic activities.

From a private investor's point of view, it is important to assess what the CCS business model beyond 2020 could look like. As electricity generation with CCS needs to complement generation from renewable energy sources after 2030, long-term certainty beyond 2020 is key. Once the right framework is in place, including a level playing field, the market will and should decide what portfolio of technologies is needed.

However, learning by doing is still imperative, in parallel with R&D projects that test CCS on gas. In that respect, development of a sufficient number of demonstration projects will only take place if the necessary drivers for such development are in place.

The two main challenges here: providing suitable incentive mechanisms for CCS investment; and increasing public acceptance for carbon dioxide transport and storage. More attention should be paid to the legal framework regarding cross-border transport and storage and the need to prove storage at scale.

In terms of climate policy, current ambitious EU climate goals necessitate CCS for gas as part of the fuel mix, as a reliable base load low-carbon fuel next to variable renewable energy sources and higher carbon fuels. Unless CCS for gas technology is sufficiently tried and tested now, EU climate goals will prove elusive.

#### *Public Acceptance*

Industry can help to overcome the public acceptance issue by providing full information on envisaged and ongoing CCS activities and on the monitoring of the carbon dioxide stored. Member States that have not yet transposed the EU CCS Directive into national law should be encouraged to do so in such a way that CCS is allowed to take place, local or regional bans are lifted, and legal security is created.

Governments should communicate to the public the importance of CCS in its role as part of a decarbonisation strategy and in achieving greenhouse gas emissions reduction targets.

#### *Economic incentives*

If CCS is to be developed successfully, measures need to be aimed at decarbonising power generation at the lowest cost per megawatt hour produced, and not, as is currently the case under the NER300 facility, the largest possible amount of carbon dioxide that can be captured.

In the short and medium term, CCS is likely to need temporary and targeted measures, such as feed-in or other premium tariffs, or contracts for differences (CFDs), assuring an agreed price, to ensure a level playing field with low-carbon alternatives. They are likely to be needed until technology and practice has demonstrated the viability of CCS alongside other low-carbon options and the price of carbon dioxide emissions has risen to a level that incentivises industry to deploy CCS.

While the Emissions Trading System in principle provides a technology-neutral market signal for low-carbon investment, any measures that are taken to make the ETS fully effective in reducing greenhouse emissions via the price of emissions allowances will not be sufficient to trigger and support investment in CCS in the timeframe that is required for the first generation of demonstration projects to become operational by 2020. An effective ETS should nevertheless be the goal, and, in the longer term, reform of the ETS should be able to provide clearer, market-based incentives.

Alternative measures, such as compulsory CCS or universal carbon dioxide emissions performance standards, required at some pre-determined time in the future, may work against the lowest cost routes to a low carbon economy.

Specifically, such measures may lead to life-extensions for inefficient power stations instead of their replacement with efficient gas-fired power stations, which can significantly reduce emissions even where they are not yet equipped with CCS. Such measures may also endanger the role of gas-fired power plants as backup for renewable energy and may therefore diminish security of supply in the electricity sector.

Such alternative measures are therefore unacceptable.

**1) Should Member States that currently have a high share of coal and gas in their energy mix as well as in industrial processes, and that have not yet done so, be required to:**

- a. develop a clear roadmap on how to restructure their electricity generation sector towards non-carbon emitting fuels (nuclear or renewables) by 2050,**
- b. develop a national strategy to prepare for the deployment of CCS technology.**

A coordinated EU approach is preferable to fragmented national policies. The EU should adopt an economy-wide greenhouse gas emissions reduction target of at least 40%, compared with 1990, to be in line with the agreed target of 80-95% by 2050.

Member States should fully implement the CCS Directive, allowing CCS to take place. This, in connection with an adaptation of the Emissions Trading Directive to make it fully effective in reducing emissions through the price of emissions allowances, should form the long-term regulatory framework for the deployment of CCS. National roadmaps and strategies deviating from this approach are not recommended.

In the short and medium term, given the low level of maturity and the absence of the framework described above, temporary and targeted measures, such as feed-in or other premium tariffs, or contracts for differences (CFDs), assuring a competitive price, are required to ensure a level playing field with low-carbon alternatives. This would be clearly for demonstration and early deployment only, in a non-commercial phase.

**2) How should the ETS be re-structured, so that it could also provide meaningful incentives for CCS deployment? Should this be complemented by using instruments based on auctioning revenues, similar to NER300?**

The ETS should be adapted in the short term and revised further for the medium and long term so that it can play its full role in reducing greenhouse gas emissions cost-efficiently in a technology-neutral manner.

To this end, the ETS should continue to regulate greenhouse gas emissions allowances, thus providing an incentive but not an obligation to apply CCS. The choice of how obligations under the ETS Directive are met should be left to the ETS participants.

Possible earmarking of revenues from the auctioning of allowances should be fully compatible with State aid rules and with the principles of a technology-neutral approach and competition on a level playing field. Financial instruments should take account of the level of maturity of the technology supported in line with verifiable criteria. They should be well targeted and clearly limited in time and expenditure. Progress should be measured regularly on the basis of key performance indicators.

Extension of the NER 300 programme should be considered. The criteria should be adapted in such a way that they take account of the lower carbon content of gas and do not result in an advantage for coal on the basis of the cost of the tonnes of carbon dioxide abated.

Programmes supporting R&D, e.g. Horizon 2020, should include the adaptation and optimisation of electricity generating technologies for variable load with CCS in flexible gas-fired powered plants as backup for variable renewables.

**3) Should the Commission propose other means of support or consider other policy measures to pave the road towards early deployment, by:**

- a. support through auctioning recycling or other funding approaches**
- b. an Emissions Performance Standard**
- c. a CCS certificate system**
- d. another type of policy measure?**

Funding has been addressed above. Measures b. and c. risk working against the lowest cost routes to a low carbon economy.

More specifically, such measures may lead to life-extensions for inefficient power stations instead of their replacement with efficient gas-fired power stations. Such replacement would significantly reduce emissions even where plants are not yet equipped with CCS. Measures b. and c. may also endanger the role of gas-fired power plants as backup for renewable energy and may therefore have a negative impact on security of supply in the electricity sector.

**4) Should energy utilities henceforth be required to install CCS-ready equipment for all new investments (coal and potentially also gas) in order to facilitate the necessary CCS retrofit?**

Such measures should not be necessary under the described 2030 framework for climate and energy policies and other proposals made above to encourage the deployment of CCS in demonstration projects.

**5) Should fossil fuel providers contribute to CCS demonstration and deployment through specific measures that ensure additional financing?**

In light of the above, there should be no need for an obligation for fossil fuel providers to contribute. It should also be noted that some of them have already invested considerably in CCS related research, development and demonstration both in Europe and globally.

## **6) What are the main obstacles to ensuring sufficient demonstration of CCS in the EU?**

Strong public resistance to carbon dioxide storage onshore is making it difficult for some Member States to implement the Directive on the geological storage of carbon dioxide in such a way that CCS is actually enabled to take place.

Moreover, despite the funding made available through various EU instruments, the high costs of undertaking demonstration projects for the capture and storage of carbon dioxide hinder the realisation of such projects. A further obstacle is the uncertainty about whether CCS will be allowed and whether it will become cost-efficient.

Current electricity market conditions are such that many fossil fuel power stations do not run at base load, whilst this is a condition for current CCS technology to be fully efficient and effective. As further penetration of variable renewable energy sources is expected across Europe, most conventional power plants will continue to have a reduced load factor. This currently limits the economic potential for CCS.

## **7) How can public acceptance for CCS be increased?**

As public opposition is largely based on lack of correct information regarding risks and benefits, an EU effort to inform EU citizens would be beneficial. This would be in addition to the efforts that are already made at the local level.

### **Eurogas papers and publications on topics related to the 2030 framework, in descending chronological order:**

- General Block Exemption Regulation (the GBER) on State aid measures, June 2013
- Environmental and Energy Aid Guidelines 2014-2020, April 2013
- A Cost-Effective Energy & Climate Policy for Europe, March 2013
- Energy technologies and innovation, March 2013
- The Internal Energy Market, February 2013
- Generation Adequacy, Capacity Mechanisms and the Internal Market in Electricity, February 2013
- Carbon Market Report – Reform of the EU Emissions Trading System, February 2013
- Shale gas, February 2013
- OECD report on fossil fuel subsidies, February 2013
- Eurogas Statistical Report 2012
- Carbon Capture and Storage, June 2012
- Eurogas Roadmap 2050, October 2011