USG response to the Consultation on the Green Paper "A 2030 framework for climate and energy policies"

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Unit A.4 – Strategy and Economic Assessment

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Unit A1 – Energy Policy

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USG fully supports the responses from Cefic and IFIEC Europe, to which USG contributed. USG does not answer all questions but focuses on the main ones and further USG provides more detail on the chemical industry as USG's customers are chemical industries. We hope that we outlined concrete detailed alternatives in this response, which are doable and effective.

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?

Europe faces two main structural problems: (1) The "energy system" is not globally competitive which leads to a huge "energy leakage" and (2) the present European Climate Package is – despite numerous advices from industry federations (and also from USG) during many years in the past – not yet well geared to unlock a competitive European Industry by adopting effective measures to avoid "carbon leakage", which is essential for an efficient and low carbon future.

Therefore USG welcomes the opportunity to give its viewpoints on basis of the questions of the Green Paper concerning the development of a 2030 framework for climate and energy policies and hopes that the awakening awareness of the major structural problems within the European Commission, the European Parliament and the Member States indeed leads to drastic, real structural reforms.

EU energy system: The present problems of **maintaining and expanding a manufacturing base in Europe** are very much related to the position of the EU Energy system in the global market regarding the prices for electricity, natural gas and feedstock:

- The prices for natural gas and chemical feedstock are in important competing regions – Middle East, North America through unconventional (shale gas) – much lower than in Europe. Also in China unconventional gas has a high potential.
- Electricity prices for industry are significantly higher compared to the major competing regions: two times higher than in the US, three times higher than in China.

The present financial and economic crisis has heavily affected Europe and confirmed the important role that industry must play to drive growth, jobs and prosperity. Normally such a crisis is overcome within a timeframe of a few years. But the US shale development influences industrial markets more structurally – more significantly than recently expected –

and led already to an increasing investment shift of the energy intensive industries and related activities to the disadvantage of Europe. The consequences of this huge shift of investments are not yet felt today but unfortunately will be felt towards the end of this decade with a lasting negative effect on the European economy.

RES policies: Renewable energy sources (RES) policies cause increasingly high costs. These costs are in our perception much higher than anticipated in 2008 when the climate package was adopted. For example, the Financial Post of 13 May 2013 reports:
*"According to Austria's energy regulator, European consumers have subsidized renewable energy investors by a staggering **600 billion euros since 2004**. Germany's green transition alone may cost energy consumers up to a trillion euros by 2020."*

For comparison, the EU provided loans for Greece of € 52.9 bn in the period 2010-2011 and will provide additional loans for Greece of € 130.6 bn in the period 2012-2013.

The RES-E (electricity) costs arise from two main sources: (1) subsidies for the generation of RES electricity, for example in the form of feed-in tariffs and (2) costs for coping with intermittency of supply of sources like especially wind and solar power.

The costs for coping with intermittency of supply are still relatively moderate and hidden, but are likely to increase significantly in the future. The system to optimise various possible solutions and where to lay the bill is still under discussion and development. The ideal system optimises between supply response measures (back-up capacity but e.g. also restricting RES supply (like wind energy) during over-supply), storage (like pumped hydro storage, but also hydrogen and ammonia are brought forward), transport through (short and/or long distance) interconnections and demand response management by industrial consumers and small consumers.

The high cost for RES potentially affect competitiveness for industry and increase the risk of carbon leakage. The worrying aspect is that exemptions for the cost pass-through to energy intensive industries are not yet the general rule in all Member States and that existing exemptions might come under pressure.

EED: The Energy Efficiency Directive (EED) is a double regulation for the sectors falling under the EU Emissions Trading Scheme (EU ETS), which leads to higher overall costs and which partly have conflicting objectives. One interpretation of the EED is that the EU has an absolute energy cap, which would be in conflict with the Commission objective to increase manufacturing output from 16% now to 20% of GDP by 2020.

EU ETS: The allocation with benchmarks is still backward looking, it is ex-ante fixed based on historical production and it lacks a comprehensive solution for indirect (electricity) costs. The present rules appear to be insufficient and too uncertain for a sound long-term perspective to invest in maintaining and expanding European manufacturing industry. The present EU ETS rules are likely to cause considerable carbon leakage in the not too distant future.

The risk of carbon leakage is caused by:

(a) Uncertain and insufficient financial compensation of indirect (electricity) emissions;
(b) Absence of a new entrants' reserve for after 2020;
(c) Other lacking allocation rules for after 2020;
(d) Uncertainty about the carbon leakage status;
(e) Ineffective allocation rules and a too ambitious level ("top 10") of the benchmarks.

The present EU ETS rules with ex-ante fixed allocation for direct emissions based on stringent benchmarks and the incomplete and uncertain financial compensation pose several problems:

(a) The possibility of windfall profits if companies are able to charge the opportunity-cost into the product price.
(b) Over-allocation during recession or economic crisis.
(c) The clear incentive for *production carbon leakage*. In the current rules the production volumes can be lowered until and including 49% (partial cessation of operation rules) while the allocation of emission allowances remains unchanged. Above a break-even CO_2 price – which is product specific – the freed emission allowances from lowering production can be sold and the shortfall in production will be imported from outside the European Union. Then the revenues from this carbon trade will more than compensate for the cost of transportation into the European Union.
(d) Under-allocation in the case of growth and investments, due to complex and risky allocation rules. These rules deter investments in the European Union and are likely to cause significant *investment carbon leakage*, especially when carbon prices increase in the distant future. It is a significant barrier for growth.

See for details: Cefic-IFIEC (2012), *A reality check of the EU Emissions Trading Scheme; Does it allow growth – the major objective of the EU industry policy?,* Vianney Schyns (Utility Support Group), Lieven Stalmans (Borealis) and Els Brouwers (Essenscia), 18 June 2012.

To avoid carbon leakage three factors play a vital role: (1) the benchmark level, (2) the activity level (=production volume), (3) the compensation for indirect emissions. The conclusions of the Impact Assessment 23-1-2008 about carbon leakage are in error (page 120-122):

- Ex-ante (historical frozen production) or ex-post (actual production) allocation makes a crucial difference. Ex-ante allocation is in fact an *inbuilt incentive* for carbon leakage.
- Obviously the level of the benchmarks has also a crucial impact. The too stringent top 10% benchmarks decrease for incumbents with the CSF (after CSF is applicable) and for new entrants with the LRF, both with 1.74% points per year. When not acknowledged as exposed to the risk of carbon leakage, the benchmark level further drops dramatically. At a benchmark level of zero the allocation turns into full auctioning.
- The uncertain & restricted ETS financial compensation (not included!) will cause leakage
- In the European Commission impact assessments, there is a total lack of calculations about what auctioning would mean for carbon leakage and about what the effect of the benchmark level with an ex-ante versus an ex-post allocation would be on carbon leakage.

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?

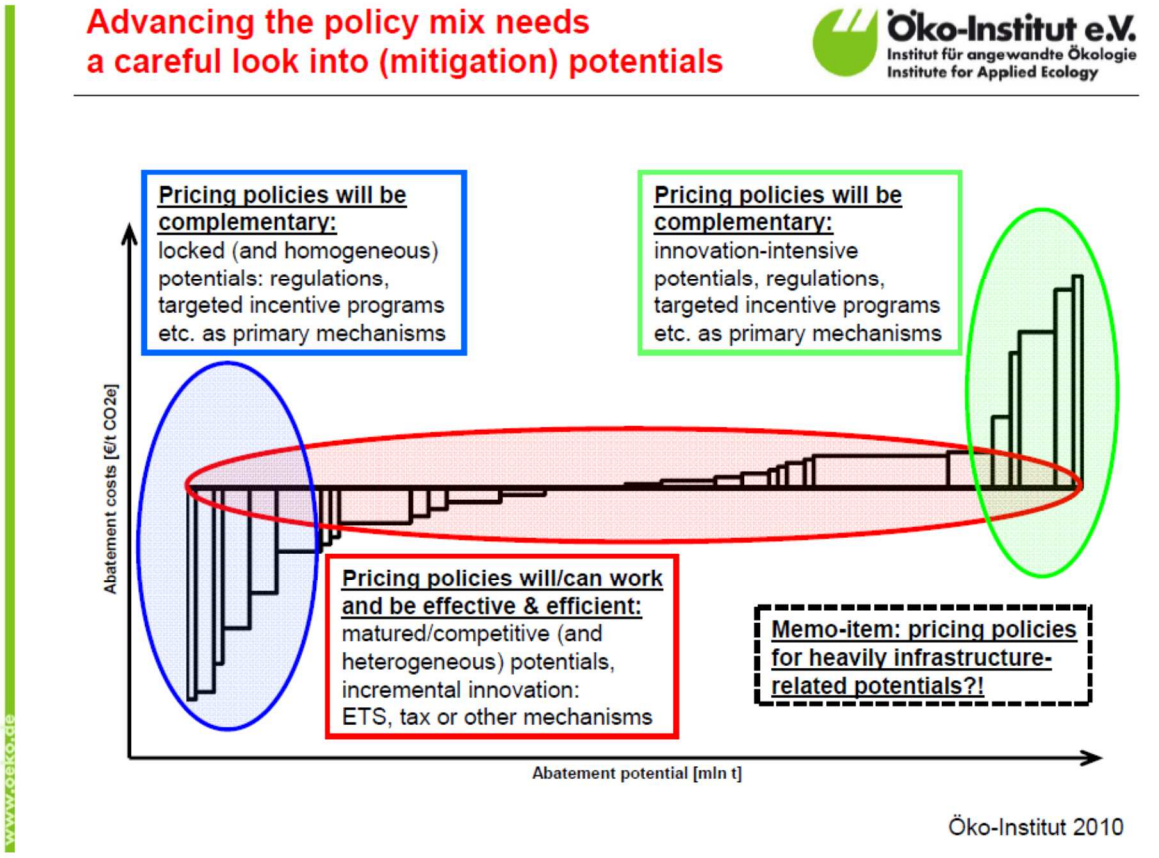
After a new global climate agreement with equal carbon burdens for industry globally, there should be one target for ETS sectors only, which is a GHG target. However, in absence of such a new agreement there should be an intelligent (cost efficient) support for renewables in order to avoid the risk of exploding carbon prices.

Therefore two situations should be foreseen, with and without a new global climate agreement. Without a new global climate agreement the present development of the EU ETS cap until 2030 with a decrease of 1.74% points per year should not be changed. We stress that the revision of the 1.74% factor was foreseen in the EU ETS Directive for after 2020 with a view to the adoption of a decision by 2025.

If EU decides to have more than one target (carbon reduction), because we are still in absence of a new global climate agreement, these other targets must be intelligently aligned with the carbon target and there must be more modest and cost effective financial support, in order to avoid that the carbon price would explode to unmanageable levels.

In absence of a global climate agreement, abatement measures with extremely different abatement costs should not be driven by the EU ETS, the EU ETS should just remain as a flanking support for RES and CCS.

The following picture presents an impression of the abatement curve. On the left side are cost effective measures with a negative CO_2 cost, such as insulation of buildings which still need stimulating policies. The EU ETS is in the middle area. On the right side are much more expensive abatement options such as RES (wind, solar) and also CCS.



Stakeholder meeting Structural Reform EU ETS 19 April 2013, presentation by Dr. Felix Matthes of Öko-Institut

For **CCS a limited number of demonstration projects** can be part of the learning exercise in the coming years, because CCS has the potential to be cheaper than various RES options such as wind off-shore and solar. Therefore, based on further investigations, the MSs should engage to treat CCS in a similar manner as RES.

Such **high costs for CCS and especially RES as indicated above cannot be shouldered by the EU ETS**, not before a new Global Climate Agreement is concluded as now planned for in 2015, so that a true global participation with equal carbon burdens for industry globally become effective as from about 2020 onwards. Anyway the EU ETS needs a proper Structural Reform in order to effectively avoid carbon leakage.

For the reasons as explained above, before a new Global Climate Agreement with equal burdens for industry globally is concluded a **more moderate combined RES-CCS target for 2030** should be adopted (preferably, on a budget basis; the cheaper the RES-CCS options are the more can be abated). More moderate if compared to the 2020 RES target, which may not be achieved by many MSs.

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

The targets as such:

EED: Double regulation for the ETS sectors, leading to higher overall costs. The EED is thus for ETS sectors not consistent.

One, contentious, interpretation of the EED is that there is a mandatory absolute cap on energy use in the Union of 1474 Mtoe in 2020. This absolute cap thinking is not consistent with the higher level objective of increasing the industry contribution to the GDP from 16% now to 20% by 2020 and with the undisputed objective of the European Parliament, the Council and the Commission to prevent carbon and energy leakage.

For example, when there would be invested in additional combined heat and power (CHP) in Luxembourg, the absolute energy increase would be a sin while the carbon and energy efficiency improvement is a virtue. The same question arises for an investment of new manufacturing installations in one Member State or another (good or bad for the hosting country) or when an outdated manufacturing plant would be closed and replaced by a new one outside the European Union. Therefore, the enforcement of mandatory energy caps without considering the level of economic activity would have negative impacts on economic growth and employment.

This double regulation should be ended, which requires a change of the EED. Double regulation is not a good policy approach.

RES: In a static situation, there is in itself no inconsistency with the EU ETS target. As mentioned, in absence of a new global climate agreement it must be avoided that the carbon price would explode to unmanageable levels.

However, it will be inconsistent if the 2020 RES would not be achieved, which is quite likely a.o. because of budgetary constraints of MSs, that then the EU ETS target would not be adjusted to a lower ambition level (and vice versa, if the MSs overachieve the RES target).

The target of avoiding carbon leakage:

Carbon leakage can be caused by the EU ETS, but also by the (possibly) pass-through of the significant costs for RES and CCS. Fortunately, the European Commission, the European parliament and the European Council want to avoid carbon leakage at all cost.

However, as mentioned above, there are **inconsistencies in the methods to avoid carbon leakage**:

RES: Exemptions for the cost pass-through to energy intensive industries are not yet the general rule in all Member States and existing exemptions might come under pressure.

The cost pass-through to industry exposed to the risk of carbon and energy leakage (the latter because of high prices for feedstock (e.g. shale gas), natural gas for firing and electricity in Europe) should be carefully mirrored to the same cost pass-through in the major competing regions and countries. This means: zero pass-through in the current market situation.

Moreover, there should be EU-wide certainty about this principle, otherwise the investment behaviour is not influenced positively.

EU ETS, we repeat here: To avoid carbon leakage three factors play a vital role: (1) the benchmark level, (2) the activity level (=production volume), (3) the compensation for indirect emissions. The conclusions of the Impact Assessment 23-1-2008 about carbon leakage are in error (page 120-122):

- Ex-ante (historical frozen production) or ex-post (actual production) allocation makes a crucial difference. Ex-ante allocation is in fact an *inbuilt incentive* for carbon leakage.
- Obviously the level of the benchmarks has also a crucial impact. The too stringent top 10% benchmarks decrease for incumbents with the CSF (after CSF is applicable) and for new entrants with the LRF, both with 1.74% points per year. When not acknowledged as exposed to the risk of carbon leakage, the benchmark level further drops dramatically. At a benchmark level of zero the allocation turns into full auctioning.
- The uncertain & restricted ETS financial compensation (not included!) will cause leakage
- In the European Commission impact assessments, there is a total lack of calculations about what auctioning would mean for carbon leakage and about what the effect of the benchmark level with an ex-ante versus an ex-post allocation would be on carbon leakage.

In other words, the sincere target of avoiding carbon leakage is not consistent with the methods which were proposed and adopted both for RES and for the EU ETS.

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_2 reductions for passenger cars and light commercial vehicles?

See the answers of IFIEC and Cefic.

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

See the answers of IFIEC and Cefic.

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?

See the answers of IFIEC and Cefic.

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 solutions are indicated above. To summarise:

The Energy Efficiency Directive (EED) is a double regulation for the sectors falling under the EU Emissions Trading Scheme (EU ETS).This leads to higher overall costs. Partly their objectives are conflicting. One dangerous interpretation of the EED is that EU should have an absolute energy cap, which would be in conflict with the EC objective to increase manufacturing output. This double regulation should be ended for ETS sectors.

The pass-through of RES cost to energy intensive industries are not yet the general rule in all Member States and should become zero pass-through in the current market situation. Moreover, there should be EU-wide certainty about this principle, otherwise the investment behaviour is not influenced positively.
Any revision of the Energy Taxation Directive (ETD) must ensure that the global competitiveness is kept in mind by allowing that energy tax levels are lowered in the context of e.g. local voluntary agreements, and that effective carbon leakage measures as for EU ETS are applied for CO_2 and energy taxation regimes.

The EU ETS requires a comprehensive structural reform package to improve global competitiveness and thus to avoid carbon leakage. See for more details the answer to the first question under 4.4.

See also the comprehensive 7-points program submitted by USG as response to the consultation of the Structural Reform of the EU ETS, which is fully in line with the responses of Cefic and IFIEC Europe.

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

See the answers of IFIEC and Cefic.

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

See the answers of IFIEC and Cefic.

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

See the answers of IFIEC and Cefic.

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?

Exemption for exposed industries of extra cost related to **European climate policies**.

- The cost pass-through of subsidies for renewables and CCS to industry exposed to the risk of carbon and energy leakage should be carefully mirrored to the same cost pass-through in the major competing regions and countries.

- With the present high prices for electricity, natural gas and feedstocks in the EU versus other major competing regions, this cost pass-through must be zero. This means that where there is now such cost pass-through, this should be ended.
- Moreover, there should be EU-wide certainty about this principle, otherwise the investment behaviour is not influenced positively.

A **growth proof EU ETS should be installed** with full allocation of direct and indirect emission, at least until globally equal carbon price burden for all major competing regions is realised. The solutions for a structural reform of the EU ETS should solve the structural problems as outlined above. Therefore the following aspects of the present EU ETS rules are ingredients for this reform:

a) The change from ex-ante (historical production) to ex-post (actual production) allocation;
b) The new entrants' reserve for after 2020;
c) The treatment of indirect (electricity) emissions;
d) The needed certainty of the carbon leakage status;
e) The allocation rules and the level of the benchmarks.

Possible solutions for the EU ETS are tested against the impact on competitiveness and how industrial growth is facilitated and tested against the resistance to carbon leakage. Therefore in the first place the EU ETS needs a change from ex-ante (a frozen historical baseline production) to ex-post (ex-post adjustment from the historical baseline to actual production).

Ex-post allocation and the new entrants' reserve for after 2020
Operational details of a system of benchmarks with actual production data are:

(a) The initial allocation distributed by 28 February of each year is based on the benchmark and on the historical baseline production, which is median production 2005-2008 or median production 2009-2010 per sub-installation.

The new entrants' reserve (NER) is used to balance the market:

(b) If the actual production determined ex-post after each year is lower than the historical baseline, the surplus (delta between historical and actual production, multiplied with the ex-ante fixed benchmark) is subtracted from previous year's allocation, this volume flows into the NER (or a new reserve created for this purpose as an option proposed by Cefic), which is a (kind of) structural backloading.
(c) If the actual production is higher than the historical baseline, the shortage (delta between historical and actual production, multiplied with the ex-ante fixed benchmark) is added to previous year's allocation, this volume is taken from the NER.
(d) The NER is replenished from the auctioning volume if depleted to provide certainty for investments and thus to avoid investment carbon leakage.
(e) A possible surplus of the NER at the end of a trading period must not be auctioned, which avoids over-allocation if the economic development was lower than anticipated. Such a surplus is kept in reserve for future industrial growth.

Ex-post for the fallback benchmarks also works well, it is a logical extension of the present EU ETS allocation rules, see Guidance document 7 on the allocation rules, chapter 5 page 27. This rule for the fallback benchmark allocations means de facto that each operator has obtained its own product benchmark: the average performance regarding the heat- fuel- or process emissions benchmark in the chosen period of median 2005-2008 or median 2009-2010.

Indirect allocation
The unstable and incomplete (in terms of scope and level through reduction factors) financial compensation for indirect (electricity) emission should be changed to a comprehensive long term predictable indirect allocation without the present reduction factors and without the restriction that only a limited number of sectors are eligible, to complement the allocation for direct emissions. This is now especially important because the electricity prices in Europe are relatively high compared to major competing regions.

Certainty of the Carbon Leakage Status
Industry sectors should have certainty to be categorised as 'exposed to the risk of carbon leakage', for example by complementing the present assessment with an assessment of the costs of CO_2 (which means carbon price level and allocation rules for direct and indirect emissions), the pass-through of RES costs, natural gas (ref. shale gas), feedstock and electricity in Europe versus the other major industrial regions in the world. Then the Carbon Leakage Exposure Factor (CLEF) can and should in practice be abandoned.

The level of the benchmarks
The ambitious "top 10%" benchmarks are to be multiplied with the linear reduction factor (LRF). The LRF of 1.74% develops as follows:

LRF		2013	2014	2015	2016	2017	2018	2019	**2020**
1,74%		100%	98,3%	96,5%	94,8%	93,0%	91,3%	89,6%	**87,8%**
2021	2022	2023	2024	2025	2026	2027	2028	2029	**2030**
86,1%	84,3%	82,6%	80,9%	79,1%	77,4%	75,6%	73,9%	72,2%	**70,4%**
2031	2032	2033	2034	2035	2036	2037	2038	2039	**2040**
68,7%	66,9%	65,2%	63,5%	61,7%	60,0%	58,2%	56,5%	54,8%	**53,0%**
2041	2042	2043	2044	2045	2046	2047	2048	2049	**2050**
51,3%	49,5%	47,8%	46,1%	44,3%	42,6%	40,8%	39,1%	37,4%	**35,6%**

This leads to a steep reduction of the benchmarks in the future. Cefic's Roadmap 2050 shows that technologies will indeed improve, but not at this relatively high rate. A typical improvement of the carbon efficiency of existing chemical processes (weighted average plants) – without CCS or biomass – is 30% by 2050, whereas this LRF implies an improvement of about 65% in 2050. For new manufacturing plants the efficiency improvement compared to the present state of the art technologies is most often (much) less than 30%. For example, for ammonia the possible improvement of the state of the art technology may be at best 11% between 2010 and 2050.

A higher benchmark gives a higher resistance to carbon leakage (a higher carbon leakage break-even price), The Weighted Average Efficiency (WAE) benchmark, to be applied for incumbents and new entrants (to keep the incentive to reduce emissions intact, for new plants to replace older less efficient plants) gives this higher resistance to carbon leakage. To improve competitiveness and the resistance to carbon leakage an industry linear reduction factor (ILRF) of 0.8% points per year is applied, which is more realistic in view of the expected technological improvement of existing stock.

ILRF		2013	2014	2015	2016	2017	2018	2019	**2020**
0,80%		100%	99,2%	98,4%	97,6%	96,8%	96,0%	95,2%	**94,4%**
2021	2022	2023	2024	2025	2026	2027	2028	2029	**2030**
93,6%	92,8%	92,0%	91,2%	90,4%	89,6%	88,8%	88,0%	87,2%	86,4%
2031	2032	2033	2034	2035	2036	2037	2038	2039	**2040**
85,6%	84,8%	84,0%	83,2%	82,4%	81,6%	80,8%	80,0%	79,2%	78,4%
2041	2042	2043	2044	2045	2046	2047	2048	2049	**2050**
77,6%	76,8%	76,0%	75,2%	74,4%	73,6%	72,8%	72,0%	71,2%	70,4%

Cefic's European chemistry for growth Roadmap shows that an improvement of existing stock of 30% in 2050 versus 2010 might be feasible, for example for steam crackers. This reflects an ILRF of 0.8% as can be seen from the table above.

Note that for ammonia the expected improvement is expected to be 11% in this period. This is caused by the fixed (thermodynamic) minimum of 20.7 GJ/ton, which is the process emission. Therefore a realistic solution should be envisaged for ammonia.

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?

USG believes that there has not yet been much carbon leakage. However, the "energy leakage is already now huge, see for example the IFIEC response with an impressive long list.

This new serious situation also means that the risk of pure carbon leakage should be taken much more serious than until now has been done.

In the 1st trading period the carbon price dropped to zero.

In the 1st trading period – when the economy was still prosperous – USG is aware of significant investment plan (in petrochemicals) which came in jeopardy because the allocation in the 2nd and subsequent periods could not be guaranteed (the Dutch government was aware of this problem and worked on solutions on request of Dutch Parliament). However, before the present crisis this investment plan was abandoned, so this was a "near miss" of carbon leakage.

In the 2nd trading period the present crisis started, therefore new investment plans were not opportune and the carbon price dropped again to lower levels.

In conclusion, the structural reforms as indicated above are essential to avoid carbon leakage in the future. The EU ETS cap is continuously going down and this cap will really start to bite after 2020.

For maintenance investments including replacement of older less efficient manufacturing plants and for expansion investments companies do not calculate with a short-term outlook of the carbon price but in a forward looking approach with e.g. € 60-90/ton CO_2, because for new investments the relevant time horizon is 2020-2035 to 2040.

The EU ETS should be of course be resistant to carbon leakage until such levels of € 60-90/ton CO_2. If the carbon price would increase above this level, a kind of safety valve should be applied, which should become part of the 2030 package.

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

See above for the prices of electricity, natural gas, feedstocks and climate policy costs (RES, EU ETS, EED, ETD) of Europe versus major competing regions.

See the responses of IFIEC and Cefic for the measure to influence the energy prices.

As submitted above, the EU has all the power to influence the climate policy costs for energy and CO_2 intensive sectors that are competing on the global market place.

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?

As mentioned, two situations should be foreseen, with and without a new global climate agreement. Without a new global climate agreement the present development of the EU ETS cap until 2030 with a decrease of 1.74% points per year should not be changed.

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)?

That is rather easy: the needed structural reforms as indicated above must provide regulatory certainty of effective measures against carbon and energy leakage.

After a new global climate agreement, there should be a convergence of carbon burdens for energy intensive industries globally. That should be part of a new 2030 package.

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

See the answers of IFIEC and Cefic.

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?

See the answers of IFIEC and Cefic.

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?

See the answers of IFIEC and Cefic.

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?

This was and will be part of a negotiation process that should be undertaken based on solid and reasonable argumentations.

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?

Cooperation between Member States must be encouraged. The **main instrument to promote cooperation and effort sharing is the EU ETS**, a genuinely trans-national instrument, provided that the present problems linked to carbon leakage and lack of proper flexibility and governance are solved. The EU ETS target should **become the only target once there is a true new Global Climate Agreement** with equal carbon burdens for industries competing globally.

The establishment of fully connected Emissions Trading Schemes (ETS) should be regarded as a most important pillar of the new International Climate Change Agreement. Then the emission space for individual nations largely becomes a **shared global emission space**.

To that end a more Upstream Global Emissions Trading System (upstream as was foreseen in US Waxman-Markey Bill, with the inclusion of e.g. transportation and energy use of buildings via the upstream energy suppliers) could be important to maximise the **shared global emission space** as percentage of the total emission space of the participating nations. Then some co-regulation, like performance standards for buildings and for cars, would be acceptable. It should be agreed that these performance standards should also converge in the future.

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

Instead of developing yet another instrument, a better solution is to refine, adjust and improve the existing instruments taking advantage of the experience, as submitted above in this USG response.