REN contribution for the

QUESTIONS on Green paper "A 2030 Framework for climate and energy policies"

Whereas REN is:

- The Portuguese TSO;
- In charge of the electricity and gas national transmission grids' concessions;
- Is a TSO with a significant RES share to deliver anywhere in the EU;
- Was accredited as a sustainable TSO (REN has been awarded IAIA's 2012 Regional Award).

Considering the most challenging issues to REN's Business, we present our contribution as follows:[1]

4.1. General

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

The development of EU 2020 strategy was clearly pursued at different speeds, with different engagements from the different EU MS. As a consequence, presently the fulfillments of the interim targets are very diverse and in some cases very distant from the objectives. Anyhow, the MS that followed the strategy and delivered the goals as successful early adopters with weak or no support from EU should noticeably be recognized as a crucial asset to the EU energy strategy and, somehow, be compensated for it. The evidence of this success is noted namely due to the very good coordination between the transmission grid developers and the evolving path of RES investors.
Taking benefits from previous investments should be a priority on behalf of a more efficient use of available infrastructures and natural resources.

Traditional generation facilities may be located, generally speaking, "anywhere". RES facilities may only be located where RES are available.

EU southern and western countries have very good competitive conditions to be one of the best locations for RES (and they have great potential to deliver it already at this moment). Indeed, their technology deployment, know-how and political stability are very competitive, as well as they have perfect natural

[1] At the end of this document you can find the full version of this Green paper questions.

conditions for RES (unpopulated mountain areas where the wind potential is very good), hydro basins and favorable conditions for hydro pumping storage, sun (specially on southern region) and a vast and unexploited ocean coast.

Furthermore, these EU southern and western countries would very much welcome an economic boost to invert their economic downturn and the expansion of RES should also mean an integrated effort to vertically develop the whole industry of RES in those territories, optimizing resources and potential of growth.

Nevertheless, the EU is still lagging behind in good interconnections between its MS or in other good potential location to install RES. EU's ability to deliver or receive RES, for example from the Iberian Peninsula or from the southern Mediterranean countries, is still weak. It was proven that the cooperation mechanisms, foreseen in the Renewable Energy Directive that enable renewable energy produced in one Member State to count towards the target of another (statistical exchanges), is not the most effective way in what concerns Portugal (and Spain). A much more effective solution to this case will be the physical flow of electrical energy in market operation, once this will allow, in real time, the trade of the cheaper production.

It is possible to conclude that a faster and more effective way towards 2020 goals has been jeopardized by the lack of interconnection capacities between countries and of a real functioning EU internal market. There has been an important spillage of RES electrical resources, mainly due to the short Spain-France interconnections (for gas and electricity). In electricity, the present level of interconnection capacity between France and Spain represents just around 1.4% of the installed production capacity in Spain, and less than 1.2% when the whole Iberian Peninsula Electricity Market is considered. So, in practice, the very low interconnection capacity between Spain and France makes the Iberian Peninsula an "energy island" with interconnection figures well below the objective adopted at the Barcelona meeting of the European Council in 2002 (which agreed on a target for EU Member States of a level of electricity interconnections equivalent to at least 10% of their installed production capacity. In this regard, it is worth mentioning that the 10% target was agreed in a context where no transits from North Africa to Europe were expected).

While developing interconnections, one should have in mind, a fair cost allocation to make bearable for consumers and investors to pursue this energy path.

The results of the three targets to be achieved in 2020 show clearly that the economic wealth and ability for action of each MS are very important factors that EU must take into consideration. In times of deep crisis these differences will increase dramatically. When designing policies for 2030, the national economic conditions of each MS have to be considered and supported accordingly.

4.2. Targets

4.2.1. 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 sectorial), and to what extent should they be legally binding?

Comparing the three main targets: a) Greenhouse Gas reduction, b) Increasing Renewable Energies and c) Energy Savings, some conclusions can be drawn.
The Emissions Trading System (ETS) is not having the success it was supposed to have. Regarding this problem there are two lines of thought in EU. On one hand, facing this present reality, EC proposed a back loading of ETS as an effort to revalue the system in times of crisis. That was recently refused by the European Parliament (EP), but the debate is still going on. Alternatively, some experts advocate the ability of having an ETS enforcement moratorium and in the meanwhile to tax carbon via final consumption, so that the system would reward with lower tax the most energy efficient and lower carbon oriented products.

Despite the choice of ETS mechanism or tax carbon approach, energy savings and increasing renewable energies seem to be the most effective solutions in driving the objectives of climate and energy policy. New equipment, technologies and adequate legislation will allow significant reductions in energy consumption in the next years. There are already good indicators of the huge potential for reduction, e.g. electrical vehicles, new lightening technologies, higher ecological conscience of EU citizens, etc. This demands a very strong political and financial commitment so that the 20-20-20 goals as regarding energy efficiency are accomplished.

Some renewable energy technologies are in the edge of becoming competitive without the need of subsidies. Others (as solar or ocean energies) are still not competitive and need a particular enhancement via RD&D, through the assumption by the EU of the technological leadership in this field and by taking profit from the great renewables' potential that some MS have. This potential

should be a clear option for the EU support schemes for these new RES technologies, so that the cost benefit of each euro invested in the development of these technologies will contribute with a clear added value to EU.

However, to achieve this target it is necessary to give special attention to the need of massive investments in grids (including cross-border infrastructure) and to strengthen the internal energy market, particularly based on the market needs and not only in short term vision of the present economic relations, i.e., not only via "*open season*" offers. This last point is very important in terms of internal equilibrium between the southern EU countries (where there is already a surplus of "run-of-river" renewables – Wind and Hydro– and a relative higher potential for new developments, like solar and more competitive wind coming from the RES projects in the north sea and east) - grading of existent farms and, most of the times, with low grid connection costs) and the Northern EU countries (with higher energy demand)).

As we are committed in the creation of the internal market, which will empower and facilitate flows among MSs, it will be more effective the definition of an overall target at EU level, taking really profit of the areas where RES potential is greater and more efficient.

To implement the guideline and goals of the Directive 2009/28/EC it is important to improve and incentive the effective interchange of RES production through physical transfer and free flows within EU as well as enhancing the potential of neighboring zones, like North Africa, assuming that all the interconnections needed within MSs had be reinforced accordingly to allow the correct functioning of internal market.

Given its importance for the future of energy policy in Europe, security of supply should also have a quantified target for 2030. Being a complex issue, this target would have to be addressed in separate sub items:

- A target related to minimum level of interconnections between regions to assure that excess energy in a region (either from internal renewable sources, or from imports) can be easily transferred to other European countries.

- A target linked to diversification of natural gas supply routes, taking advantage of the Iberian LNG terminals and increasing the number and geographic location of gas suppliers.

4.2.5. 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?

Security of supply is hard to measure directly against the progress achieved in reaching out for generic climate and energy targets. As a rule, it should benefit from the decrease of the dependency on external energy supplies, from the increased diversification of sources and routes and from the development of strong and meshed trans-European networks. So, as efficiency targets are pursued, RES penetration continues and new and innovative techniques are put in place both for the development of energy storage and for coping with the intermittency associated to renewables, of which security of supply should also benefit. This suggests that it should be possible to identify a valid correlation between the headline targets' trends and the trends of the indicators that are used to assess security of supply, namely in terms of the infrastructure and supply standards of the EU Regulation's for gas and electricity.

By addressing the following topics TSOs will be able to maintain electricity grid reliability while helping to achieve European climate and energy goals.

- technologies to foster network flexibility and enhance the observability and control of the pan-European network;
- development of new tools and by researching on alternative market designs that contribute to the construction of the Internal Electricity Market;
- new resources for operation delivered not only through the relation with DSOs but also the resources coming from the demand side;

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

The environmental issue is so serious and the need for cleaner energies is so urgent that contributions from all type of new technologies must be studied and improved.

Within this scope, research and innovation policies must be wide enough to embrace all new ideas. Universities and Companies must work together with clear objectives for innovation and development of new technologies, with a special focus on renewable energies and sustainable practices.

The research and development structures must be light and flexible enough in order to give quick responses and to be able to cover a greater number of projects.

In this moment some promising technologies can be referred (low cost photovoltaic; thermal solar; new ocean technology; bio fuels (including bio-methane); energy storage (P2G); smart grids; solid oxide fuel cell technology; etc.) but in a 20 years' time frame new ideas will surely appear and EU policies have to support them.

Finally, we believe that all aspects concerning mobility should be tackled from every possible angle. This is important when considering land, sea and air transportation – for instance, many alternatives are now being studied, including LNG as a bunker fuel for the shipping industry, or the creation of specific land transportation routes where CNG or LNG filling stations are used as an alternative to more conventional (and pollutant) fuels. But apart from the logistics, the vehicles themselves can evolve into more sophisticated design either in terms of construction materials (lighter, recyclable, etc.) or efficient engine solutions, including the electric vehicle and the role that it can play in distributing electricity grids.

Within the new energy technologies, solar PV and ocean power deserve a particular attention, bearing in mind the resource availability in some European regions. Accordingly, coherent and stable policies and investments should be designed, in order to slump manufacturing costs and promote industrial competitiveness of European providers.

Development of new technologies in terms of energy transmission network

In the short term and more specifically some of the issues of interest to TSO are, amid others, the following:

- *Demonstration of future smart HV substations*
    - Upgrading and building of "greenfield" HV substations, with emphasis on minimized time for upgrading along with low investment and maintenance costs while meeting normal

requirements on reliability, security of power supply and personal safety.

- Integration of advanced functions in substations for enhanced operation, monitoring and maintenance based on full digitalization of existing substations or new modern substations.

- *Diffused Energy Storage*
  - Implementation of diffused Energy Storage (such as batteries) is seen as an inevitable strategy to cope with larger variability and intermittency of supply. Energy storage should be considered as one of the many means to provide various services to the system, such as capacity firming, capacity accommodation, congestion management, voltage and frequency regulation, or back-up capacity.
  - In the short term, electricity balancing market is where energy storage will be first applied, based on commercial business cases. In a long-term perspective, energy storage will become an even more significant part of the electricity system. This will be one consequence of the increasing penetration of renewable energy sources, alongside the corresponding withdrawal of fossil-based dispatchable generation capacity.
- *Control and protection of large power systems with a large amount of inverter-based components*
  - In the future a growing amount of power electronics will lead to a transition of the system to a structure with very low synchronous generation and, at least in some specific areas, the load could be completely supplied by inverter-based generators. During this transition some control schemes and/or operational rules might need to be redefined.
  - Specific protection schemes might locally have to be changed, fault detection could be based either on new principles or inverter-based components would have to emulate synchronous machine behavior during faults, or even to simulate a kind of "inertia" to maintain the frequency stable.
- *Methods and tools to optimize asset management*
  - Set out a methodology for managing the information and data currently available: technical specifications of different assets, lifetime characteristics, maintenance and operational practices, data and information coming from measurement, protection and

monitoring devices, as well as from metering devices (generation & demand connection points, including metering for contracted and activated reserves).

- *Training tools and methods to ensure better coordination at the regional and pan-European levels*
  - To train dispatchers to reproduce and understand large-scale incidents.
  - To provide training, but also certification, to operators on a validated European power system model and improve emergency response procedures.
- *Advanced tools for capacity allocation and congestion management*
  - The aim is to develop new capacity calculation methods for medium- to long- time horizons (week, month, year, multi-year ahead) and congestion management approaches in accordance with a new comprehensive reliability methodology being developed for the pan-European transmission network. The work should also develop the relevant tools supporting capacity allocation and congestion management.

4.4. Competitiveness and security of supply

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

The framework to steer EU energy and climate policies up to 2020 has clear objectives delivered by three headline targets for GHG emission reductions, renewable energy and energy efficient savings. The 2030 framework for climate and energy policies should tackle the issue of whether having only a GHG emissions target for 2030 would be appropriate, in line with World Energy Outlook (WEO) of the International Energy Agency, but also take into account the relevance of other objectives such as security of supply and competitiveness.

Projections of the WEO 2012:

- The world population is assumed to rise from 6.8 billion in 2010 to 8.6 billion in 2035.
- Energy-related CO2 emissions will rise from an estimated 32.2 Gt in 2011 to 37.0 Gt in 2035, pointing to long-term temperature increase of 3.6ºC.

- Global primary energy demand will rise over one-third in the period to 2035.
- These trends call for $37 trillion of investment in the world's energy supply infrastructure up to 2035.

Topics for brainstorming: What could be strengthened?

- *Promote energy efficiency* - EU needs to go further in tackling energy poverty: Africa is an important primary resources and energy supplier area. Africa and other developing regions have a vital interest, like Europe, to boost diversification and energy efficiency. EU must be committed to support developing countries in promoting sustainable and secure energy supply and use (Guarantee accessibility and affordability of energy supply across the population. Management of geopolitical and socio-economic imbalances): Growth (Social equity)

- *Development of technologies in areas with major energy potential including renewable energy, energy conservation, low-energy buildings, clean coal and carbon capture, energy storage, bio-fuels and bio-methane and other non-conventional supply (*TSO's must have an interest in promoting connection by renewable, combined heat and power and micro generation, stimulating innovation and encouraging smaller companies and individuals to consider non-conventional supply): Boosting investment, in particular in energy efficiency and renewable energy should create jobs, promote innovation and the knowledge-based economy in the EU: Job creation and competitiveness

- *Increase the dialogue with general public* - there must be honest communication and debates with consumers and end-users about trade-offs, related energy costs and new infrastructure (generation and/or grid). It is important to promote the awareness and acceptance and emphasize the advantages and the attractiveness of new and emerging energy technologies: Growth and competitiveness

- *Draw holistic strategies for sustainable mobility* – taking into account that the transport sector accounts for more than 20% of global carbon emissions, coherent and long-run policies should be design towards a sustainable mobility. This new mobility paradigm should include both technological developments (i.e. efficient internal combustion engines, electric mobility, biofuels and hydrogen vehicles),

and also behavioral changes (i.e. improving traffic flow, driving behavior and distance driven), through specific market and fiscal mechanisms.

The increase of renewable energy penetration is vital for job creation, economic growth and competitiveness. Being a decentralized way of energy production, it favors local employment and wealth growth, as well as improves security of energy supply, by diversification of resources and geographical localizations. Considering that renewables have almost zero marginal cost production (most costs are investment for installation of the facility), after the payback period, the costs tend to drop dramatically, creating conditions for future decreases in energy costs.

Some renewable technologies are now in the edge of becoming competitive even without special support schemes and in time this tendency will be reinforced.

To support the integration of more renewables, it is vital to develop energy storage in a larger scale either with existing technologies (hydro pumping) or new technologies (batteries, etc.), as well as grid and interconnections. Better infrastructures, will also contribute to the reinforcement of security of supply goals.

In the recent years shale gas and liquids have proven to be game changers on a global scale. Nowadays the US are undergoing a transformation phase of its industry based on the use of their indigenous shale gas and liquids resources, which have displaced the use of coal, sending impact waves across to Europe that have severely impacted the gas to power sector, just to mention one of its many implications. We believe that in order to sustain a competitive position in these circumstances Europe should turn to its own shale gas resources and study a safe and reliable way to have them available to use when their economic or political interest is considered relevant. This should somehow counterbalance the power of Europe's traditional gas suppliers and decrease energy prices, which in turn should boost the economy and job creation. In this scenario a strongly interconnected internal energy market is essential in order to ensure that the benefit of a more affordable gas could be reaped by all Member States. This theme should be openly discussed in order to address local populations' fears and concerns – assuring that proper care is given to all justified environmental impact and specific safety issues – in line with EU sustainable development, and as well as assuming the best exploration of EU indigenous reserves.

"To make affordable, secure and environmentally energy systems a reality, policymakers urgently need to develop interconnected, lasting, and coherent energy policies." (Time to get real the case for sustainable energy policy, WEC)

4.4.5. 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)?

A harmonized development of the needed infrastructures both for gas and electricity all over Europe is vital for the success of the competitiveness strategy in the EU. The financial perspective from which each investor looks at these infrastructures is crucial for its harmonized development.
This will be achieved in a more efficient way if there is a top strategy covering economic, financial and technical visions, scenarios and guidelines. Of course, in the modern world, one cannot establish an immutable strategy for a very long period; this strategy must be updated whenever necessary.

For the success of its implementation it must be clear that each similar energy infrastructure generates correspondent revenue. So it is demanding at first hand that a transparent framework for financing, implementation and payback is previously set and linked to all projects of common interest (PCI).

The new regulation on trans-European energy infrastructure already assumes interconnecting and RES development as a priority while selecting PCI's. Considering this we should keep a strong investment on this path and influence other continents to fulfill the same goals.

In the meanwhile one must pay particular attention to the present constraints of the banking sector (see 4.5.1 and 4.5.3).

Traditional bond investors will be extremely relevant to the implementation of these investments (especially Project Bond Initiatives (PBI)). Even though some remarks that still need to be developed may be pointed out:

- presently there is no EU alignment of regulatory mechanisms. It would be relevant to achieve some alignment on the regulation applicable to PCI's. This is

fundamental to level the interest in these projects across different MS and to reinforce investors' trust.

- the rating of these investments shouldn't be overcharged with the sovereign rating. These are EU PCIs. Therefore, similar PCI's must have similar ratings no matter where they are located in EU. For that purpose EIB should have the possibility to, with its own instruments, level the rating of each of the similar PCI's to a similar rating. We recommend that sufficient flexibility should be given to the EIB to proceed as needed, so that these PCIs are able to be placed in the market and supported by new investors.
- energy assets are recovered in 30-40 years and there is the perception that such deadlines are not feasible for the financial market, for which the maximum term can be 15 to 20 years. This is extremely structural to allow the development, for example, of the PBI in energy sector.
- It must be safeguarded that the PBI's operating structure is not inhibiting its implementation due to any kind of excessive Red Tape or administrative overload (as presently with regular PB) and it must be ensured that this instrument applies, within Europe, only to PCI's.

4.4.8. 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?

Security of energy supply can be improved by developing and maximizing the benefits from specific inherent capabilities of different regions within Europe (e.g., in terms of specific power generation sources, in terms of adequate conditions for LNG reception, energy storage, etc.) and by strengthening the interconnections between those regions in order to promote a fully-fledged internal energy market. The diversification of external energy sources and routes will provide better flexibility and redundancy mechanisms, thus contributing to foster liquidity, which in turn can help sustain the progressive shifting of existing paradigms such as hub pricing versus oil indexing and ToP long-term contracts versus spot acquisitions, without disregarding the fact that there must be a proper balance between security of supply (for the consumers) and security of demand (for the producers).

Improved security of supply can be achieved through many and different ways, but we emphasize some of the most relevant:

a) Increase of internal production from renewable sources, allowing job creation, wealth distribution and improving energy independency from the traditional energy suppliers.
b) Ensuring the functioning of the internal energy market and development of interconnections, making possible that the most appropriate zones for energy production can be used, obtaining global optimization.
c) Diversification of energy supply routes, increasing the use of Iberian Peninsula LNG terminals (nowadays working under its maximum capacity) and improving natural gas interconnections to central Europe.

Finally, it is important to emphasize that he successful implementation of the political targets on RES integration having in mind the low-carbon energy future of Europe and the full and effective functioning of the internal energy market are motivating unprecedented changes in the electricity system that will take place within this decade. Amongst these changes stands the dynamic behavior of the network when demand, in electricity terms, is supplied by almost 100% non-synchronously connected generation. Hence, it must be recognized that the transition to the future system operation is not a matter of minor adjustments, but a real change of paradigm.

In order to maintain security of supply efforts must be done not only in solving the capacity challenge but also to pursue and implement all the technical requirements for the new generation technologies and demand side response in the challenge of controlling the system frequency and voltage.

4.5. Capacity and distributional aspects

4.5.1. 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?

RES should be supported considering countries characteristics in order to get best efficiency from a technology that is considering that southern countries have better solar exposure, Atlantic countries have better waves (swell), and north countries have better wind. All should be taken into account and supported in order to get the best mix, with best efficiency and lower cost.

And

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

It is important to emphasize that the implementation of upgrading grid connections and other Trans-European infrastructures are common goals which demand massive investments and call for efforts of diverse magnitudes between the different EU Member States.

In this context, the lower income Member States will bear a heavier burden than the wealthier Member States and the current economic crisis aggravates substantially these differences.

An internal market has to exist, so there will be no competitive discrimination on the basis of who is better served by energy networks.

Therefore the magnitude of investments to be implemented, its different geographies and the differences between lower and higher income Member States are realities which call for a different funding approach: new funding instruments will certainly be needed to simultaneously address two main issues: (i) raising the necessary funding to properly respond to the magnitude of investment needs across Europe and (ii) mitigation of the differences (risk and return) between wealthier Member States and lower income Member States, so the latter can have proper access to funding in terms which make the implementation of common interest projects viable.

Given the magnitude of the investments to be implemented, the ability to ensure the participation of the private sector in the projects funding is a critical success factor (either through equity or debt, or instruments that combine debt and equity).

Several initiatives can be taken to achieve this goal. Project bonds are one of the initiatives to bring in the private investors. Other structures and products can be designed, such as securitization, equity funds, household savings at EU level channeled directly to investment financing (proper incentives should be given to achieve long term maturities and also to mitigate potential cannibalization issues with other finance products at the local distribution level), etc.

Increasing the risk tolerance of multilateral banks such as EIB can also prove to be a valuable solution to mitigate the differences between wealthier Member States and lower income Member States.

In addition a better relation between return and risk could be achieved by gathering a set of projects to be implemented by different Member States in a fund or a SPV which would issue debt backed by that set of projects. A rating would be awarded to the debt to be issued by the SPV, which would reflect the average risk of the incorporated set of projects. Bringing equity investors and/or guarantees by EU entities (such as EIB) into the structure could be an important element to mitigate risk and provide comfort to private investors.

Different vehicles or funds could be eventually created based in distinct criteria to define the appropriate sets of projects in order to target a wider investor base. Criteria such as type of business, life-span of the assets, among others, could suit the different preferences of the investors.

Private investors' long term financing is also a key issue to be assessed: an adequate balance between the debt repayment schedule and the investment payoff profile should be achieved (refinancing risk would be reduced and a better alignment between debt servicing and investment return would be ensured). This would provide the investment promoter with a higher degree of visibility and of certainty on one of the key elements to properly assess its investment decision: the financing terms. Therefore these funding instruments should have adequate maturities (typically long maturities for infrastructure projects given the long life span of the assets and investment payback periods) that could naturally vary according to the specific features and nature of the projects.

Funding instruments backed by a set of projects would also have the important benefit of allowing the inclusion of smaller projects of common interest.

Proper and specific regulation should then be adopted for these projects, if possible on a transnational basis. These projects, to the possible extent, should not fall under the different regulation schemes of each Member State. Projects of common interest qualified for these funding instruments should have a specific economic regulation. If transnational regulatory frameworks are not viable, specific national regulation, insulated from the main regulatory framework, should be implemented. We must bear in mind that regulatory risk will play a key

role in the investment/funding decision of the project promoter as well as of the private investor.

QUESTIONS (all) for debate on Green paper "A 2030 Framework for climate and energy policies"

4. QUESTIONS

4.1. General

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

4.2. Targets

4.2.1. 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 sectorial), and to what extent should they be legally binding?

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

4.2.3. 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 CO2 reductions for passenger cars and light commercial vehicles?

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

4.2.5. 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?

4.3. Instruments

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

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

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

4.3.4. Which measures could be envisaged to make further energy savings most cost effectively?

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

4.4. Competitiveness and security of supply

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

4.4.2. 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?

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

4.4.4. 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?

4.4.5. 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)?

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

4.4.7. 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?

4.4.8. 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?

4.5. Capacity and distributional aspects

4.5.1. 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?

4.5.2. 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?

4.5.3. Are new financing instruments or arrangements required to support the new2030 framework?