

Contact person: Lisa Ekstrand, Head of Public Affairs Northern Europe
lieks@vestas.com, M: +46 767 677 180

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Comments from Vestas Wind Systems

On the European Commission's Green Paper: A 2030 framework for climate and energy policies

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Summary

- A 2030 ambitious, transparent, stable and predictable energy and climate policy and regulatory framework must be adopted as soon as possible. Ambition, transparency, stability and predictability should be sought both at EU and Member State level. These are pre-requisites to attracting to the energy sector the long term investments required to transform the EU energy system into a secure, sustainable and competitive one.
- The 2030 framework must build on the success of the renewable energy targets. Without these targets the EU energy and climate policy would have delivered very little. Despite the targets' success in initiating renewable integration and driving investments, there is room for improvement in how the Renewables Directive is implemented across the EU. Stop and go policies are currently threatening past, current and future investments in many Member States. Renewable energy targets should be increased to at least 30 per cent renewable energy by 2030. A 30 per cent renewable energy target is likely to require at least 50 per cent of gross electricity consumption to come from renewable sources
- The 2030 package must learn the lessons of the failures of the EU Emission Trading Scheme (ETS). The ETS has failed to provide a signal for investors by not delivering a robust and predictable carbon price. Carbon emission reductions have been achieved by the introduction of renewables and by the decrease in energy demand mostly provoked by the economic crisis. Achieving at least 40% reductions in emissions by 2030 will require a robust, predictable and long-term carbon price. A strong carbon price is consistent with the polluter pays principle and delivery of a level playing field across the energy and electricity markets.
- A major flaw of the 2020 framework is the lack of transmission and distribution infrastructure to accommodate the increased integration of renewables. In parallel with 2030 targets on renewable energy and GHG reductions, a clear strategy including targets on what infrastructure is required to deliver on the 2030 ambition is needed.
- Establishing a robust and visible long term carbon price would be the most effective way for the EU to regain its leading role in the global climate negotiations. Reaching a global climate agreement by 2015 would be necessary to frame the policies and regulations of the 2030 energy and climate framework.
- The route towards the internal market for electricity has to be built taking into account expected increases in the amount of electricity generated by renewable energy sources and the physical infrastructures supporting that will be required.
- The EU has a crucial role to play in financing research and innovation. In particular supporting the demonstration and initial deployment of first power plants of new offshore wind technology and the inception phase of the specialised supply chain.

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?

Vestas recommends the 2030 framework builds on the success of the 2020 framework and in particular the binding renewable energy targets which have worked well. Binding targets are clear and provide the regulatory certainty upon which industry can make long-term investment decisions.

Vestas recommends the 2030 framework learns from the failure of the EU ETS to deliver a carbon price signal that supports new low-carbon investments.

Vestas recommends that 2030 targets on renewable energy and GHG reductions are complemented with a clear strategy, including targets, on what infrastructure is required to deliver on the 2030 ambition

The renewable energy target

Vestas considers the renewable energy target to be working well; it has increased the share of renewables considerably. Part of the success of the target and the associated legally binding national targets is due to the fact they were clear, unambiguous and specific. The risk of the national renewable energy targets being missed does not necessarily mean that the policy as such has not been a success. Rather, overcompensation by some support schemes for some renewable technologies (most notably solar) has attracted criticism, in particular in the light of the economic crisis. This has led to reductions in the level of support provided by some support schemes for all technologies, not just those with high costs, creating a high degree of investor uncertainty and putting the achievement of the overall renewable energy target at risk. The retro-active reductions that some Member States have applied are in particular concerning since they create an investment “trap” which undermines investors’ confidence for future investment decisions. It is especially troublesome for investments with high capital expenditure and low operations costs such as wind farms.

The EU 2030 framework for energy and climate policies needs to consider these uncertainties and introduce measures that will restore investor confidence. Vestas agrees with the Commission that measures and support schemes which incentivise cost reductions and competitiveness, and thereby minimise the costs on state budgets or households should be promoted. Moreover, the 2030 renewable framework needs to be designed so that the EU’s objective of reducing emissions by 80-95 per cent by 2050 is achievable. The Energy Roadmap 2050 indicates that a high share of renewable energy is needed in all decarbonisation scenarios. Early action will give EU industry a competitive leading edge, resulting in jobs and growth. Failing to implement a realistic trajectory is very likely to mean a much higher price tag on reaching the 2050 objective.

The 20 per cent GHG reduction target

The EU Emission Trading Scheme (ETS) as designed today has failed to deliver a carbon price signal that supports investment in renewable power generation. Just as the Commission outlined, the huge over-allocation of allowances, coupled with the financial crisis, has resulted in a massive surplus of allowances. The result is a current price that is neither high enough nor stable enough to support investment in renewables. Vestas also finds it important to separate between the emission reductions that have taken place because of lower industrial activity caused by the economic recession and actual reductions. An increasing surplus of allowances will have very negative long-term repercussions.

It is absolutely vital that lessons are learned from the failures of the ETS. A variety of carbon pricing instruments needs to be carefully considered when developing the 2030 framework. Options could include an adapted ETS, a

carbon tax, a carbon floor price or a combination. In any choice of mechanism, it is fundamental that the 2030 framework delivers greenhouse gas emissions as well a transparent, robust and predictable carbon price.

Although Vestas considers back-loading of emission allowances necessary it is still only a short-term temporary fix and it will not solve the structural problems of the ETS. In order to deliver on the climate ambitions by 2020, structural measures that tackle the growing supply-demand imbalance are absolutely crucial. This could be achieved by for example permanently retiring sufficient emission allowances from the amount foreseen to be auctioned.

The EU internal electricity market

Reaching the objective of 80-95 per cent GHG reductions by 2050 will require an electricity market and electricity infrastructure designed to accommodate large amounts of variable capacity. Vestas strongly agrees with the Commission that a major flaw of the 2020 framework is the lack of transmission and distribution infrastructure to accommodate the increased integration of renewables – as required by the 2020 framework.

Vestas strongly recommends that in parallel with 2030 targets on renewable energy and GHG reductions, a clear strategy including targets on what infrastructure is required to deliver on the 2030 ambition is needed. To accommodate large amounts of variable generation the system will need sufficient flexible, back-up thermal capacity. Availability of such capacity must be properly valued in the market. A range of other measures including increases in interconnection, storage capacity, the creation of a super grid, smart grids and more demand side management will also help accommodate large amounts of variable generation.

Given the variability of renewables, it is equally important to establish electricity markets with settlements much closer to physical delivery. Price signals will then ensure that electricity flows in “the right direction” and an optimal deployment of all generation sources.

It should also be considered how each generation source is remunerated in line with the benefits provided to the system. For example, renewables deliver variable electricity generation but at a known cost up to 20 years in advance. At the other end of the extreme, peak plants deliver on-demand electricity but usually with high sensitivity to fuel price variability, and thus at unknown future costs. Forcing different technologies to compete in the same market is unlikely to deliver optimal solutions. Future electricity markets should reflect this.

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, MS or sectorial?) and to what extent should they be legally binding?

Vestas recommends the 2030 framework builds on the 2020 design logic with binding GHG target, renewable energy target and energy efficiency target but supplemented with clear infrastructure targets.

Vestas recommends the continuation of renewable energy targets but stresses that it does not have to equate to volumes of support schemes for renewable energy until 2030. Clear renewable energy targets will however help ensure adequate strategic planning and delivery of accommodating measures occurs.

Vestas recommends national binding targets with continued flexibility in regards to sectorial targets.

A continuation of the 2020 design logic with a combination of reinforcing targets (RES, GHG, EE), but supplemented with clear infrastructure targets, will deliver an effective energy and climate framework for 2030.

Long-term renewable energy targets have proven to drive investments and reduce costs in renewable energy technologies, and in particular onshore wind. A binding 2030 renewable energy target of at least 30% will allow for this development to continue and to achieve the 2050 objective of reducing emissions with 80-95% in the most cost-efficient way.

Vestas supports the current target as renewable energy over gross final energy consumption. Renewable energy targets (as opposed to renewable electricity targets) are needed to incentivise the shift towards electrification of surface transport and heating. This will enable far greater levels of decarbonisation to be achieved in the longer term.

Vestas also supports the current 2020 design of an overall EU target translated into national Member State targets; legally binding overall targets but flexibility as regards sectorial targets in order to make most use of their resources. Mandatory sub-sector targets are not appropriate as they can weaken incentives for cross-sectorial technology shifts to take place. We particularly oppose renewables targets for heating and transport as they could prevent greater electrification of these sectors.

The GHG target should be increased to at least 40% by 2030 and supported by an effective carbon price mechanism delivering a robust and predictable carbon price. A strong and robust carbon price will reinforce the renewable energy target by delivering a level playing field across the energy and electricity markets, further driving investments in low-carbon technologies and putting EU on track with the 2050 objectives.

A major flaw of the 2020 framework is the lack of transmission and distribution infrastructure to accommodate the increased integration of renewables. In parallel with 2030 targets on renewable energy and GHG reductions, a clear strategy including targets on what infrastructure is required to deliver on the 2030 ambition is needed.

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

The target for emissions reductions under the 2020 framework should have been more robust and measures to avoid over allocation of allowances in the EU ETS should have been implemented. It is important that the 2030 emissions reductions targets should take full account of expected emissions reductions delivered by the renewable energy targets.

Vestas also see the 10 per cent renewable transport fuels as inconsistent within the objective of delivering renewable energy targets as cost effectively as possible.

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

It is important to recognize that renewable energy targets do not have to equate to volumes of support schemes for renewable energy. Vestas would expect that with an efficient and robust carbon price mechanism the vast majority of renewable electricity needed to meet 2030 targets will not require separate financial support to be economically viable. Flexible support mechanisms, responding to cost reductions and market evolutions, should be promoted in order to avoid overcompensation while sudden changes or retro-active cuts must be strongly discouraged.

Less mature technologies such as offshore wind are however unlikely to be economically viable without separate support until after 2020. It is therefore necessary for support to remain available for less mature technologies to ensure they can be deployed and thereby mature and achieve the cost-reductions that will follow with scale.

It remains necessary to set ambitious 2030 renewable energy targets, covering both mature and less mature technologies, to ensure that actions needed to accommodate large amounts of renewables on the electricity system and in the electricity markets are taken. The market is likely to deliver sufficient renewable energy capacity to meet the targets, but not the market arrangements and infrastructure needed to accommodate it. As

we head to truly transformational levels of renewable energy in Europe's electricity mix strategic planning will be even more important. Clear renewable energy targets will help ensure adequate strategic planning and delivery of accommodating measures occurs.

Long-term targets are also crucial for providing the regulatory certainty needed for large-scale investments in R&D aiming at reducing cost of energy. This will lead to faster cost reductions and thereby also decreased levels of support.

3. Instruments

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

Vestas recommends that effective policies are put in place aimed at facilitating grid development, including priority of grid access. Moreover, the introduction of well-functioning intra-day markets both at national as well as on cross-border is essential.

Vestas recommends support mechanisms are designed to track technology cost-effectiveness and that encourages market responsiveness. However, it is crucial that any changes to current schemes are foreseeable, transparent and not applied retro-actively in order not to increase financing costs.

Vestas recommends the 2030 framework further develops flexibility mechanisms in order to direct investments to the most cost-efficient locations.

The wind industry is committed to making wind energy as cost-effective as possible with further investments and dedicated efforts towards innovation, and has already shown a remarkable track record in this regard. Therefore, EU and national level instruments are best designed in a way that enables them to closely track these efficiency gains. However, experience shows that these changes need to be foreseeable and transparent for the investor and not be undertaken as a sudden shift or retroactive cut. Regulatory certainty is critical to achieving the objectives in the most cost-effective way. Sudden changes only provoke increased risk premia and financing costs, as they undermine investor confidence.

With increasing wind energy penetration levels, support mechanisms should encourage greater market responsiveness. In a well-designed and functioning market, producers should be exposed to price signals in order to ensure that they take an active part in making the market as efficient as possible.

Revenues for wind projects need to be relatively stable to undue risk which could increase financing costs. Revenue risk can be considerable for low marginal cost plant, which will set very low wholesale prices under marginal cost pricing. This needs to be addressed in a carbon price based market, whilst exposing wind operators to necessary market signals.

The 2030 framework should also promote much greater use of flexibility mechanisms for Members States to achieve their national targets in the most cost-efficient way. So far the flexibility mechanisms have only been used to a limited extent, the Swedish-Norwegian joint certificate market being the only implemented case. With a 2030 target for renewable energy we see a much bigger need for mechanisms allowing for new renewable electricity production to be placed where the best conditions are and thereby also to the lowest cost, keeping the electricity costs for the EU citizens as low as possible.

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

The internal market needs significant improvement and development to avoid fragmentation and facilitate the realisation of the EU targets, which includes utilisation of wind energy as a mainstream generation technology. Improvements are needed on the market's functioning, rules and infrastructure. Vestas notes there is considerable

pressure from some member states to implement national policies. These could undermine the larger efficiency gains possible from the full implementation of the internal market. Better electricity market design and infrastructure will be instrumental in improving the affordability of wind energy and levelling the playing field between different generation technologies.

The EU target model sets out the way forward for market integration at all timescales. Next to enhanced and more integrated forward and day-ahead markets, the introduction of well-functioning intra-day markets both at national as well as on cross-border level (which will help the large scale integration of wind power in the electricity market) is essential. Furthermore, the scoping work on cross-border balancing markets is of vital importance and must be continued and coordinated at EU level.

To accommodate for planned wind deployment and to enable free flows of power across the internal market, an additional 60GW of interconnection is needed. Also, much closer alignment of grid codes is needed to standardise treatment of wind on the system.

Finally, effective policies must be put in place to facilitate grid development, to remove all discriminating practices, including barriers to grid access (through, for example, priority connection, priority or guaranteed access to the grid, no capacity caps).

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?

Long term policy frameworks will induce investments in renewables promoting growth and competitiveness by reducing capital costs, creating jobs and increase security of supply.

Increased reliance on renewables will mitigate exposure to fossil fuel price volatility.

2030 energy and climate targets should be long-term and binding, but flexible in how they are achieved, leaving Member States to adapt to market evolutions.

While wind power is capital intensive, investment in wind power has a significant job creation potential. A study by Ernst and Young found that for each €1m investment in wind power in EU 27, 21 job-years are created (compared to 13 job-years for Combined Cycle Gas Turbine investments). To reap the full job creation potential of wind power investments, it is necessary to ensure that the turbines are manufactured in the EU. There are several channels through which EU energy policies may promote job creation and renewable technology exports:

- Long term certainty: a stable pipeline of intra-EU projects is a pre-requisite for localisation of the industrial supply chain. Accordingly, erratic stop-go policies will push the industrial supply chain overseas.
- Economies of scale: the industry should invest and localise itself within the EU where it makes more sense from an overall planning perspective. Hence, tendering processes and support measures must respect the word and spirit of the internal market.

Growth and competitiveness will follow from the job creation induced by investments in renewables and competitiveness from long term certain policy frameworks and increased security of supply. Even with the exploitation of unconventional gas deposits, gas imports to the EU are expected to increase in the coming decades. The associated risks to security of supply and exposure to price volatility undermine competitiveness. Increased reliance on renewables will mitigate this risk.

In 2010 the wind industry exports amounted to 8.8 € billion (5.5 € billion net). This is a 33 per cent increase over only a period of four years (2007-2010). This significant increase clearly reflects that the renewable energy

target in the 2020 framework provided the regulatory stability for the European wind industry to scale up investments.

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

Today's energy costs, or fossil fuel prices, are volatile and unpredictable. This holds true even in the light of recent downward trends in natural gas prices in the US, not least since these are unlikely to be mirrored in the EU. The EU cannot influence the volatility of fossil fuel prices. Even if unconventional gas resources are exploited in the EU, dependency on gas imports is projected to increase. However, the EU may mitigate exposure to volatility of fossil fuel prices by increasing reliance on renewables. The cost of energy, rather than the cost of fossil fuel prices only, will be less volatile and more predictable with increased reliance on renewables. In addition, certainty with respect to policies and carbon prices will reduce capital costs and thereby the cost of energy from renewables.

The effect on electricity prices of more renewables in the system is ambiguous. Due to the merit-order effect, more renewables in the system will reduce the market-clearing price as the most costly marginal plants no longer need to be activated. This is a first-order effect but does not consider the system wide costs of more renewables. Insofar as renewables are remunerated at a price above the market-clearing price, more renewables will have a second-order effect of additional subsidies. Which effect dominates is market specific and depends in particular on the composition of renewables and their respective levels of remuneration.

KPMG quantified these effects for Spain in a 2012 study on wind power integration. Through analysis of various scenarios, the study found that system-wide costs over 2011-20 are dependent on which renewables are integrated in the system. More solar PV integration would increase total system costs while relatively more wind power integration would decrease overall system costs. These effects were relatively modest compared to system cost sensitivity to increased fossil fuel prices. A Redpoint analysis of the Irish market found that the merit order effect was greater than the cost of the support system for wind, so the more wind there was on the system, the greater the benefit to consumers.

More generally, in scenarios considering more wind power and higher fossil fuel costs, the overall systems costs fall. In other words, increased wind power integration provides a practically free hedge against higher fossil fuel prices. In the theoretical framework above, it means that the first-order and second-order effects cancel each other out, as long as the additional renewables consists of the cheaper technology (wind power). And in addition to this free addition of wind power to the system, an automatic hedge and insulation from fossil fuel price rises is provided.

Should we take into account uncertainty about efforts that other developed countries and economically important developing nations will make in the on-going international negotiations? If so, how?

From a climate perspective, inaction by other countries would leave EU policies near-futile. However, this is no reason for inaction by the EU. The intra-EU benefits of increased renewable energy deployment under an ambitious 2030 framework are sufficiently large for such a framework to be justified irrespective of the actions of other countries (job creation, technology exports, innovation, and improved competitiveness as a result of reduced exposure to volatile fossil fuel prices). To the extent that energy-intensive manufacturing suffers from EU energy policies, a border tax on carbon should be considered.

How can we increase the 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 meaningful and stable price on carbon, combined with renewable energy target in light of the long term nature of electricity generation facilities, would be the best means to ensure regulatory certainty. Both would be compatible with changing energy markets and progress in international climate negotiations. Targets should be long-term and binding but flexible leaving the Member States to choose how to best achieve their targets.

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

Fundamental for increasing the innovation capacity of the manufacturing industry are long-term policies with clear and unambiguous targets. It is simple, clear targets create a strong signal to the manufacturing industry and supply chain. A stable renewable energy framework and a robust carbon price create a level playing field among energy technologies. This will stimulate the industry's innovation capacity and in particular innovations in electricity storage and transmission technology

How can we 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?

The best and readily available method to improve the security of supply would be a stable and ambitious build-out of renewable energy rather than being dependent on fossil fuel imports. Implementation of the internal electricity market is obviously a pre-requisite for efficient utilisation of a build-out of renewable energy. Grid infrastructure is key and the investments in necessary infrastructure need to be in place in due time in order to deliver on the 2030 target in the most cost-efficient way. According to IHS CERA, a consultancy, the European Network of Transmission System Operators for Electricity' planned 60GW expansion of interconnectors the next decade is likely to be delayed. Failure to expand the transmission capacity could threaten the security of supply by preventing variable renewables such as wind power to be moved around the system freely.

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?

Vestas recommends the distribution of effort to consider the Member States individual potential for large-scale deployment of renewable energy providing for cost-effective delivery of the new energy objectives.

Vestas recommends the 2030 framework develops and promotes flexibility mechanisms on a larger scale.

Vestas recommends the Commission explores ways of how to increase suitable guarantees, grants and support for grid investment that could foster the development of large scale offshore wind build out.

Vestas recommends the Commission to propose new rules that would open up for private capital to invest in both electricity production facilities and in energy infrastructure. Billions of euros will be required to deliver the necessary infrastructure while today's rules prevent pension funds and other investors to invest in both.

The new framework should ensure that the distribution of effort among the EU countries takes into account the actual potential of the individual Member States, but it should also actively encourage the use of flexible mechanisms to ensure the targets are met at least cost.

Member States have different potential of renewable resources, which should be taken into account in the allocation of effort. Part of the EU with good sun exposure has good conditions for the development of PV, while in another part there are better conditions for wind energy and biomass. Significant cost-effectiveness will be achieved when wind power is built where there are good wind resources and solar where there are most hours of sun in a year. However, it would not be fair to simply set high renewable energy targets to those countries with high renewable resources, burden sharing with greater use of flexibility mechanisms is necessary.

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?

The 2020 framework introduced the flexible mechanisms for cross-border cooperation in achieving the renewable energy target in the most cost-effective way. However, so far only Sweden and Norway decided to implement a joint support system with the decision on a joint green certificate market.

Within the 2030 framework flexible mechanisms should be developed and further promoted on a larger scale, allowing for achievement of targets to the lowest cost. Use of flexibility mechanisms should be the norm, rather than the exception.

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

Yes. The European energy industry is facing major challenges the coming years due to replacement of a vast number of aging power stations and massive investments in grids. And we have to act now. Energy systems whether infrastructure or generation take years to build and are in operation for decades. 2020 is just around the corner and reducing the regulatory risk is crucial to secure the needed investments

We agree with the Commission that access to finance for investments, be it through direct funding or smart finance, is already part of the toolbox of EU policies (for example European Regional Development Fund 2014-2020 and the Connecting Europe Facility) but they must be enhanced in a 2030 perspective. However, for large scale offshore wind to take off, project finance backed by suitable EU guarantees, grants and support for offshore grid infrastructure, is most likely to be required. Therefore, the Commission should explore ways to increase suitable guarantees and grants that could foster the development of large scale offshore wind build out.

Some EU rules hinder investment in green transition. The energy transition will need large amounts of capital to carry out the necessary modernization of the European energy sector. However, EU rules prevent pension funds and other investors to invest simultaneously in energy infrastructure and production. There is a massive need to invest in modernizing the EU infrastructure with stronger and new power lines. Pension funds and other institutional investors need to be able to clearly see what options they have to invest more in infrastructure. The Commission need to look into an interpretation in the form of a set of transparent guidelines describing as precisely as possible what types of simultaneous investments in infrastructure and power generation that could be authorized under the 3rd liberalization package to clarify the rules for institutional investors. Private investors are destined to have to finance a significant portion of the billions of euros, which is estimated to be necessary investment in the European energy infrastructure and production to 2030.

Investments in R&D, low-carbon technologies and infrastructure are basic to ensure future economic growth and EU global competitiveness. Innovative financial EU instruments can play a role in high-risk investments that could possibly generate economic returns. For such investments, innovative financial EU instruments can cover part of the associated costs and risks, thereby serving as catalysts to make projects bankable from a private perspective.

Innovative financial EU instruments could be EU equity and debt platforms where EU participates in equity (risk capital) funds, guarantees to banks who lend to project developers, or risk-sharing with financial institutions to boost investment in large infrastructure projects. Financial instruments in energy should differ from standalone grants and become part of a package linking different forms of EU-budget support with financial products from financial institutions.