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Alstom's response to the European Commission's consultation on the green paper on 2030 framework for climate and energy policies

Alstom is a global equipment and services supplier to the power generation, power transmission and rail transport sectors. Through its innovative technologies, the Group contributes to improving energy efficiency, reducing CO2 emissions and developing renewable sources of energy, in line with the objectives of the EU energy and climate package for 2020 and the White Paper on Transport (2011).

Alstom believes that binding targets, e.g. for renewable energies, and a strong EU Emissions Trading Scheme closely aligned with other climate policies should be the key components of the 2030 Climate and Energy framework. A robust and predictable carbon price, together with targeted support to non-yet mature low carbon technologies and public funding continuously focused on Research, Development and Demonstration (R&DD) of low-carbon technologies and their deployment, will contribute to achieve the EU's emissions reduction objectives at the lowest cost and to stimulate low carbon investments.

Alstom calls for EU to agree 2030 objectives and targets as soon as possible and in any case before the UNFCCC international climate negotiations to be held in 2015 in Paris (COP 21). This timeliness will ensure the indispensable visibility needed to trigger the necessary long-term investments in infrastructure (power generation, electricity generation and transport).

Failure to agree before 2015 will seriously threaten the EU's negotiation position. Any delay in setting a clear framework and defining the EU's energy and climate objectives for the next decade will have negative implications for jobs and growth and will increase the cost of decarbonisation. Prolonged policy uncertainty will also block investments, It will also undermine progress towards energy security and our common climate goals, and risks distorting the internal market as governments might revert to introducing alternative national measures to deliver their own energy and climate policies.

Therefore, Alstom supports the following "package" to be agreed on as the new 2030 Climate and Energy policy framework:

1. An overall economy-wide greenhouse gas (GHG) emissions reduction target of at least 40% (compared to 1990).
2. A tight EU ETS cap reducing emission levels by 2.5% pa (instead of the current to 1.74% trajectory) ensuring trade-inducing scarcity in the market and reflecting the expected deployment of low-carbon energy.
3. A renewables target of 35% of total energy consumption, translated into national targets.
4. An EU-wide target for tonnes of CO_2 avoided as a result of CCS.
5. A target for the reduction of total CO_2 emissions across the transport sector of 20% (compared to 2008).

In addition, Alstom supports a 2030 target or equivalent action on energy efficiency provided it covers the supply as well as demand side.

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

- *Legislative certainty is the backbone of long term investment.*

Member States should be encouraged to create stable policies leading to the successful implementation of the agreed climate and energy package for 2020 and beyond.

- *Binding targets achieve the best result.*

With binding national targets, growth in renewable energy (RES) has increased. In 2011, the RES share in the final energy consumption of the EU was 13.0% compared to 8.5% in 2005. To achieve their national targets, Member States have put in place specific support schemes (Feed in Tariffs, Renewable Obligation Certificates), which have further driven the development of RES.

In contrast, the absence of binding targets for Carbon Capture and Storage is certainly one of the key reasons for EU seriously lagging behind today on the deployment of this technology, despite the Commission acknowledging the vital role of CCS in each of its 5 scenario developed in the "Roadmap for a low carbon economy in 2050".

The energy efficiency target (20% savings in EU's primary energy consumption compared to projections made in 2007) was not made binding when the Climate and Energy package was agreed on in 2008. According to the Commission[1], the Energy Efficiency Directive, only adopted in October 2012 and currently being transposed in national legislation, is expected to allow the EU to approximately reach up to 17% of the 20% energy efficiency for 2020. Other assessments say this number could even be lowered to 13%. The lack of progress on energy efficiency shows the necessity of setting targets which are binding to ensure the successful implementation of Climate and Energy policies.

[1] Energy challenges and policy - Commission contribution to the European Council of 22 May 2013

- *The CO2 price on its own is not enough to drive the technology transformation we need*

Whilst a robust CO2 price will support low-carbon investments in the long term, other support is needed to get pre-commercial technologies through the "valley of death" and onto the market. CO2 price is avoided costs, not revenue. Crucially, investors need positive incentives and long term visibility in their revenue stream. This is the obstacle which particularly prevents investments in CCS. The Electricity Market Reform in the UK, and the implementation of Contract for Difference/ Feed in Tariffs provide investors with the needed visibility on the price of electricity, and therefore clarity on their return on investment.

- *Interaction between the EU Emission Trading Scheme and other climate policies is key*

Obviously, the economic crisis and other international energy developments such as shale gas in the U.S. had not been anticipated in 2008, when the current climate and energy package was agreed. The effects of these developments strongly impacted the carbon price set via the EU ETS. The EU ETS was not designed to cope with significant changes on the demand side, which is certainly one of its main weaknesses. This needs to be corrected when implementing structural measures to strengthen the EU ETS beyond the backloading. The setting of a new ETS cap, based on the increase of the annual linear reduction from 1.74% today to 2.5% as soon as possible and in any case before the end of phase 3, will also have to take into account the expected continuous progress in RES deployment, improvements in Energy Efficiency and the development of other low carbon technologies, such as CCS.

- *Interaction with other energy policies, such as the energy market liberalisation and the energy infrastructure package, is also key.*

For instance, scale up of renewables implies the development of electricity transmission infrastructure and support for generation adequacy mechanisms as well as R&D support for energy storage to accommodate greater intermittency of supply and reduced load factors. This goes hand in hand with the completion of the Internal Energy Market, but also beyond the frontiers of the EU. Efficient cross-border interconnections are critical for energy security.

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2. Targets

- **An overall economy-wide greenhouse gas (GHG) emissions reduction target of at least 40% (compared to 1990).**

Consistent with the long-term 2050 objectives of the EU (80-95% reduction for GHG and 91-98% for the Power sector), Alstom supports an economy-wide GHG reduction target of ***at least*** 40% in 2030. The International Energy Agency even shows that a 48% reduction is needed EU-wide if the world is to remain in the limits of the 450ppm scenario. Hence, any target below or equal to 40% in 2030 is not enough and in any case needs to be complemented with other Co2 reduction efforts outside the power sector.

- **A binding renewables target of 35% of total energy consumption, translated into national targets**

As developed above, the set-up of a binding target for RES 2020 has proven efficient to support the development of RES at the level of Member States. So far, on-shore and off-shore wind and solar PV have particularly benefited from this policy. Since 2008, Research and Development have driven innovation in "new" renewable sources of energy such as marine energy (tidal, wave but also off-shore floating wind…) which will be contributing to the energy generation before 2030. In order to accelerate their deployment and benefit from their great potential in terms of emission avoidance and energy

supply security (tidal energy for instance is very predictable as tides are known), a new binding target for RES should be set for 2030.

Alstom believes that a share at 35% in total electricity consumption, translated into national target, is realistically achievable.

- **An EU-wide binding target for tonnes of CO2 avoided as a result of CCS**

Despite the ambition of the EU to have 12 large scale CCS demonstration projects in the EU in 2015, no one has been able to take Final Investment Decision (FID) so far. The lack of progress on CCS in the EU, and the rapid progress made in this area elsewhere in the world (USA, Canada, and China) shows urgent action is needed.

CCS is a key component of a cost effective decarbonisation of the power sector (both coal and gas power plants) and the industry sector. According to IEA (Energy Technology Perspective, 2012), "delaying or abandoning CCS as a mitigation option in electricity generation will increase the investment required in electricity generation by 40% or more (2DS scenario) and may place untenable demands on other emissions reduction options"

Alstom therefore supports, at the EU level, a binding CCS target in terms of CO2 avoided to cover both the power and industry sectors. This CCS target set up should be supported by the design of **an EU CCS Roadmap**, which will assess the opportunities of deploying CCS at Member State level, while easing the implementation of the target.

This objective could be translated in Member States, at their discretion, through a system of national **Obligation Certificates**, on the pattern used in the UK for Renewables (ROC - Renewable Obligation Certificates), or through **Feed in Tariffs and / or Contract for Difference**. The implementation of this CCS target in Member States imply CCS is treated a level playing field with the other low carbon technologies (equal treatment vis-à-vis feed in tariffs).

Visibility of the expected revenue stream is the key element to unlock investments in CCS while the carbon price on the EU ETS is still not high enough.

- **A 20% target for the reduction of total CO2 emissions across the transport sector**

In the White paper on Transport published in 2011[2], the European Commission adopted a roadmap of 40 concrete initiatives for the next decade to build a competitive and clean transport system. According to the Commission, specific efforts should be made in the Transport sector, "still a growing source of GHGs". Base on this statement, the Commission called for a reduction of at least 60% of GHGs in the Transport sector by 2050 (compared to 1990), and 20% by 2030 compared to 2008 level.

Therefore, in line with the Commission, Alstom supports that the 2030 milestone set in White paper on Transport (reduction of 20% in CO2 emissions compared to 1990 level) shall be made a binding target.

In addition, Alstom will support any 2030 targets or action on energy efficiency provided it covers the supply as well as demand side.

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[2] http://ec.europa.eu/transport/themes/strategies/2011_white_paper_en.htm

3. Instruments

- **A tight EU ETS that delivers supply/demand balance in the carbon market, ensure scarcity and reflect the expected deployment of low-carbon energy**

Alstom believes that the EU Emissions Trading Scheme is one of the main tools to achieve the EU's emissions reduction objectives at the lowest cost and to stimulate investment in low carbon technologies through an appropriate carbon price signal.

A functioning ETS needs a significantly higher linear factor than the current one (1.74% starting in 2013) and an adjustment mechanism to ensure supply/demand balance. And crucially, the ETS cap needs to reflect the expected progress of other climate and energy policies, such as Renewables and Energy Efficiency.

Therefore, Alstom supports an ETS cap for 2030 based on an increased annual linear reduction factor of CO2 emissions reduction **from 1.74% to 2.5%.** This **new cap for 2030 should be set as soon as possible and in any case before end 2014** in order to provide the required long term visibility to investors.

As part of the structural measures needed to strengthen the EU ETS, Alstom support the permanent set-aside of the backloaded allowances and encourages also the implementation of a Permanent Adjustment Mechanism (PAM). A volume adjustment mechanism would ensure the efficient functioning of the ETS on the long term and the scarcity needed to unlock and support investment in low carbon technologies. This PAM does not modify the cap once set, but acts as a shock absorber (when the Demand is below Supply, a reserve is built, when Demand exceeds Supply, reserved allowances are put back on the market). Please refer to Alstom's response to the European Commission's Consultation on Structural Measures to the ETS.

- **Continuous support to R&DD**

An ambitious Climate and Energy framework for 2030 should be a key driver for R&DD and innovation. By 2030, Europe needs to have developed, demonstrated and deployed a wide range of low carbon and energy efficient technologies. Programmes should not only target research but also demonstration in order to shorten the time to commercialisation for the most promising technologies.
Main areas of action should include flexible gas turbines, power plants efficiency, CCUS, energy storage and renewable technologies.

There is a clear link between the volume of technology deployed and cost reduction. Thus, technology costs will be reduced much faster if deployment is supported, instead of isolated and limited R&D projects. Public funding and as well as incentivised private investments will therefore be critical. Additional sources of financing earmarked to RD&D should be found, both at the EU and at the Member States' level.

Financial instruments should be adapted to the 2030 objectives. Instruments such as the NER300 and other financing tools (loans, guarantees, project bonds) should be developed to support the deployment of innovative energy projects.

Today, the EU ETS Directive only recommends that at least 50 % of the revenues from the EU ETS should be used for climate action. Alstom would support this threshold to be increased to 100% and be made binding, so as the revenues coming from the auctioning of allowances would be yearly earmarked to national RD&D program to encourage research in low carbon and energy efficient technologies, or gathered in a "Technology Fund for Cleaner Energy" and allocated after competitive process (NER 300 - like).

- **A strengthened Internal Energy Market**

Alstom promote capacity mechanisms that support peak, dependable and flexible power capacity, both from generation and storage, and that give priority to speed of dispatch. A functioning Internal Energy Market can only become a reality through the extension of the transmission and distribution infrastructure and cross-border interconnections. Bottlenecks in the EU's transmission grids must be tackled as a matter of priority and with financial support via EU funding tools.

Energy storage can become a major game changer for the energy debate. Currently, 99% of energy storage is delivered by pumped storage. Further R&D e.g. on variable speed pumped storage can help to improve network stability and integration of renewables. Again a cross-border perspective needs to be adopted by the involved actors in order to be cost-efficient. Here, EU coordination and support would really be an added value.

Increasing grid and cross-border interconnection will also be imperative to improving supply security and efficient use of energy in the EU. It will also help to deal with the intermittency and peak (as the peak time is different from country to country) by coupling cross-border balancing.

In this context, the EU Electricity Market Liberalisation legislation has an important role and needs to be applied in such a way that supports investment in 3rd party projects (those being run by non-TSO actors) in cross-border transmission and supply markets.